School District of Manawa

Special Board of Education Agenda
May 8, 2019

AMENDED **AMENDED**

1. Call to Order – President Johnson – **5:30 p.m.** – MES Board Room, 800 Beech Street
2. Pledge of Allegiance
3. Roll Call
4. Verify Publication of Meeting
5. Unfinished Business:
    a. Appoint New Member to Ad-Hoc Recognition Committee - Diane Teuscher
6. New Business:
    a. Accept Resignation of Cortney Stilen - Kindergarten Teacher
    b. Hoffman Planning, Design & Construction, Inc. - Progress Update by Jody Andres
    c. Consider Approval of Design Development Package Reduction
    d. Consider Approval of Reductions to the Design Development Plan as Presented
    e. Consider Approval of the Final Scherrer Payment Agreement as Presented
7. Next Meeting Dates:
    a. May 9, 2019 – MES Site Groundbreaking 10:00-10:30 a.m.
    b. May 20, 2019 - Regular BOE Mtg – 7:00 p.m. – MES Board Room
    c. May 25, 2019 – Commencement Ceremony – 11:00 a.m. – LWHS Gymnasium
    d. June 6, 2019 – Heart of Gold Recognition – 7:30 a.m. – LWHS Commons
    e. June 12, 2019 – Special BOE Mtg – Hoffman Update – 5:30 p.m. – LWHS Library
    f. June 17, 2019 – Regular BOE Mtg – 7:00 p.m. – LWHS Library
    g. July 22, 2019 – Regular BOE Mtg – 7:00 p.m. – LWHS Library
    h. Aug. 14, 2019 – MS/HS Project Groundbreaking – 5:30-6:00 p.m.
    i. Aug. 19, 2019 – Regular BOE Mtg – 7:00 p.m. – HS Library
    j. Aug. 20, 2019 MES Site Project Grand Opening & Ribbon Cutting – 6:00-6:30 p.m.
8. Adjourn

PLEASE NOTE: Any person with a qualifying disability under the Americans with Disabilities Act that requires the meeting or material to be in accessible format, please contact the District Administrator to request reasonable accommodation. The meeting room is wheelchair accessible.

Stephanie Flynn <sflynn@manawaschools.org>

Fwd: Cortney Stilen - Resignation Letter

1 message

Melanie Oppor <moppor@manawaschools.org> Tue, May 7, 2019 at 11:48 AM
To: Stephanie Flynn <sflynn@manawaschools.org>

Consider acceptance of a teacher resignation

Melanie J. Oppor, PhD

District Administrator
School District of Manawa

800 Beech Street
Manawa, WI 54949
Office: 920-596-2525

Make it a wonderful learning day!

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---------- Forwarded message ---------
From: **Cortney Stilen** <cstilen@manawaschools.org>
Date: Mon, May 6, 2019 at 7:46 PM
Subject: Cortney Stilen - Resignation Letter
To: Melanie Oppor <moppor@manawaschools.org>, Michelle Pukita <mpukita@manawaschools.org>

Dear Dr. Oppor and Mrs. Pukita,

Please accept this letter as my resignation from my kindergarten teaching position in the School District of Manawa. My last day of work will be June 6th 2019.

I will miss all the connections I have made with students and their families. Thank you for the opportunity to work in Manawa for five years.

Sincerely,

Cortney Stilen

--

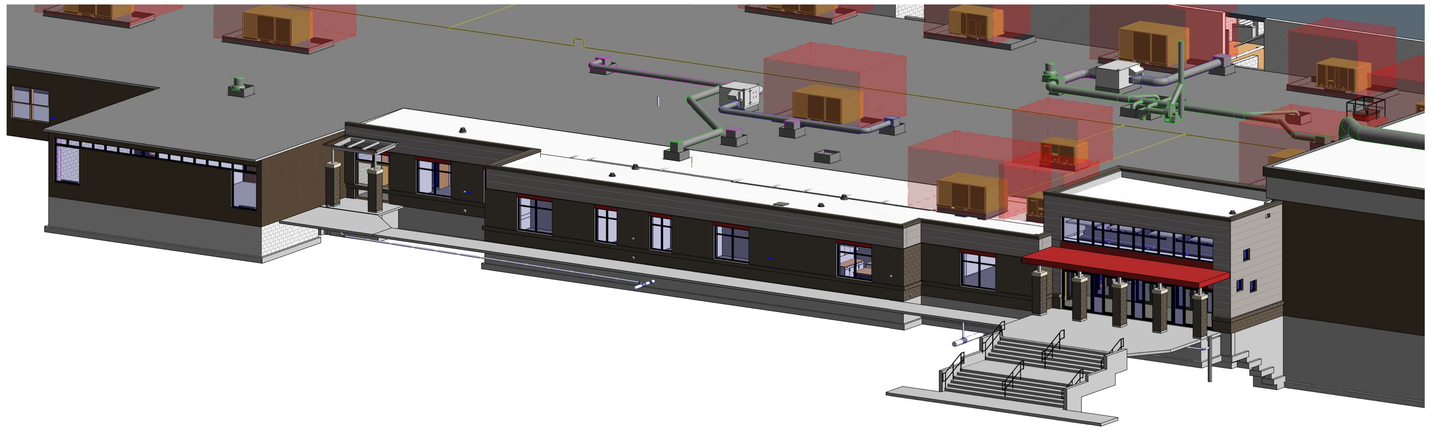
Cortney Stilen
Kindergarten Teacher
Manawa Elementary School

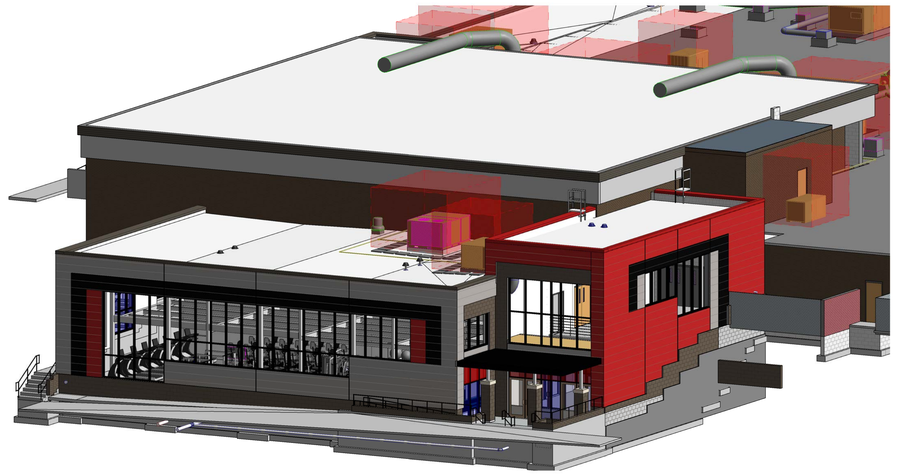
COVER SHEET FOR PART 2

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS

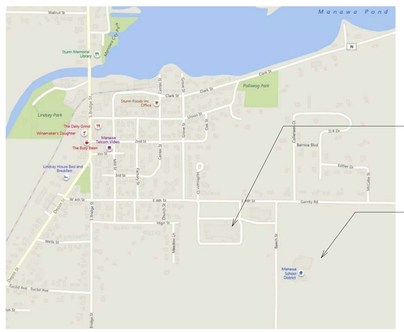
PART 2 - MANAWA MIDDLE / HIGH SCHOOL

515 E. 4th STREET
MANAWA, WI 54949





STATE LOCATION MAP



MANAWA MIDDLE/HIGH SCHOOL
515 E. 4TH ST.,
MANAWA, WI 54949

MANAWA ELEMENTARY
800 BEECH ST.,
MANAWA, WI 54949

LOCAL AREA MAP

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

PROJECT MANUAL IS PART OF THESE CONSTRUCTION DOCUMENTS

5/3/2019 2:08:32 PM BIM 360://Manawa Schools/18268 HS-Arch-18 Central.rvt

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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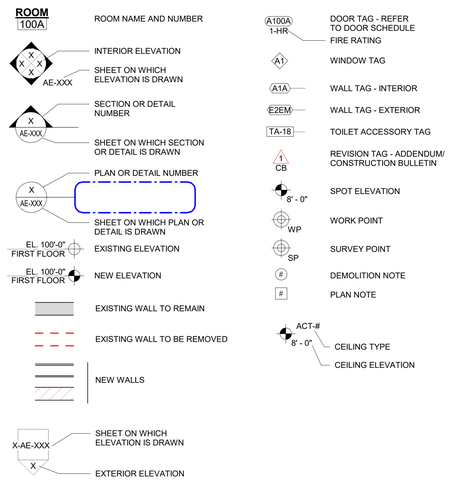
SHEET TITLE:
TITLE SHEET

SHEET NUMBER
2-GI-001

ABBREVIATIONS

AB	ANCHOR BOLT	ID	INSIDE DIAMETER
ACC	ACCESSIBLE	IF	INSIDE FACE
ACT	ACOUSTICAL CEILING TILE	INSUL	INSULATION
ADA	AMERICANS WITH DISABILITIES ACT	IS	INSIDE
ADJ	ADJACENT	ISF	INSIDE FACE OF
AFF	ABOVE FINISHED FLOOR	JAN	JANITOR
AHU	AIR HANDLING UNIT	JT	JOINT
ALT	ALTERNATE		
ALUM	ALUMINUM	L	ANGLE
		LAM	LAMINATE
B PL	BASE PLATE	LAV	LAVATORY
BF	BOTH FACES	LL	LIVE LOAD
BLDG	BUILDING	LP	LIGHT POLE
BLKG	BLOCKING	LPT	LOW POINT
BM	BENCH MARK	LT	LIGHT
BOT	BOTTOM	LVR	LOUVER
BRG	BEARING		
		MATL	MATERIAL
CB	CATCH BASIN	MAX	MAXIMUM
CJ	CONSTRUCTION JOINT	MECH	MECHANICAL
CJ	CONTROL JOINT	MFG	MANUFACTURER
CL	CENTER LINE	MH	MANHOLE
CLG	CEILING	MIN	MINIMUM
CLG HT	CEILING HEIGHT	MO	MASONRY OPENING
CLR	CLEAR	MTL	METAL
CMU	CONCRETE MASONRY UNIT		
CO	CLEANOUT	NIC	NOT IN CONTRACT
COL	COLUMN	NO	NUMBER
CONC	CONCRETE	NTS	NOT TO SCALE
CONT	CONTINUOUS		
CONTR	CONTRACTOR	OC	ON CENTER
CPT	CARPET	OD	OUTSIDE DIAMETER
CSMT	CASEMENT	OFD	OVERFLOW DRAIN
CSWK	CASEWORK	OPH	OPPOSITE HAND
CT	CERAMIC TILE	OPNG	OPENING
CTR	CENTER	OPT	OPTIONAL
		OS	OUTSIDE
DEMO	DEMOLITION	OSF	OUTSIDE FACE OF
DF	DRINKING FOUNTAIN		
DH	DOUBLE HUNG	PART	PARTITION
DIA	DIAMETER	PCC	PRECAST CONCRETE
DIM	DIMENSION	PL	PROPERTY LINE
DL	DEAD LOAD	PLAM	PLASTIC LAMINATE
DS	DOWNSPOUT	PLAS	PLASTER
DT	DRAIN TILE	PT	PAINT
EJ	EXPANSION JOINT	QT	QUARRY TILE
EL	ELEVATION		
ELEV	ELEVATOR	R	RADIUS
EQ	EQUAL	R	RISER
EQUIP	EQUIPMENT	RD	ROOF DRAIN
EWC	ELECTRIC WATER COOLER	REC	RECESSED
EXC	EXCAVATE	REF	REFERENCE
EXIST	EXISTING	RFG	ROOFING
EXP BT	EXPANSION BOLT	RO	ROUGH OPENING
FC BRK	FACE BRICK	SCP	SCUPPER
FCO	FLOOR CLEANOUT	SHTHG	SHEATHING
FD	FLOOR DRAIN	SP	SURVEY POINT
FDTN	FOUNDATION	SSTL	STAINLESS STEEL
FE	FIRE EXTINGUISHER	STL JST	STEEL JOIST
FEC	FIRE EXTINGUISHER CABINET	SUSP	SUSPENDED
FIN FLR	FINISH FLOOR		
FO	FACE OF	T or TR	TREAD
FTG	FOOTING	TO	TOP OF
		TYP	TYPICAL
GB	GRAB BAR		
GALV	GALVANIZED	UL	UNDERWRITERS LABORATORY
GSB	GYPSUM SHEATHING BOARD	UNEX	UNEXCAVATED
GYP BD	GYPSUM BOARD	UNO	UNLESS NOTED OTHERWISE
HB	HOSE BIB	VB	VINYL BASE
HC	HANDICAP	VCT	VINYL COMPOSITE TILE
HCP	HANDICAPPED	VTR	VENT THROUGH ROOF
HDR	HEADER		
HDW	HARDWARE	WC	WATER CLOSET
HM	HOLLOW METAL	W/O	WITH OUT
HPT	HIGH POINT	WP	WORK POINT
		WWF	WELDED WIRE FABRIC

DRAWING SYMBOLS LEGEND:



GENERAL NOTES:

1. ALL WORK OF ALL TRADES SHALL BE COMPLETED IN ACCORDANCE WITH ALL GOVERNING CODES AND ORDINANCES. IF ANY CONTRACTOR OBSERVES THAT ANY OF THE CONTRACT DOCUMENTS ARE AT VARIANCE WITH APPLICABLE LAWS, STATUTES, BUILDING CODES, OR ORDINANCES, THEY SHALL PROMPTLY NOTIFY HOFFMAN.
2. EACH CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE; NEITHER THE OWNER NOR HOFFMAN ASSUMES RESPONSIBILITY FOR CONDITIONS OR DIMENSIONS SHOWN AS EXISTING.
3. NOTIFY HOFFMAN IMMEDIATELY IF ANY HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION, REMODELING, OR EXCAVATION, AND STOP WORK IN THE IMMEDIATE AREA UNTIL A COURSE OF ACTION IS DETERMINED. DO NOT ABATE.
4. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONTRACT DOCUMENTS FOR WORK PERTAINING TO THEIR SCOPE, INCLUDING CODE AND REFERENCE SHEETS. KEYNOTE LIST ON INDIVIDUAL SHEETS MAY NOT INCLUDE ALL KEYNOTES ON THAT SHEET.
5. PLAN NOTES ARE GLOBAL; INDIVIDUAL PLAN NOTES MAY NOT BE PRESENT ON EVERY PLAN SHEET.
6. NEITHER HOFFMAN NOR THE OWNER ARE RESPONSIBLE FOR ERRORS IN SCALING DUE TO PRINTING, REPRODUCTION, OR ELECTRONIC FILE CREATION. SCALE AT YOUR OWN RISK.

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APPLETON, WI 54913-7889
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WAUWATOSA, WI 53226
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MANAWA MIDDLE/HIGH SCHOOL
515 E. 4TH ST.,
MANAWA, WI 54949

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CIVIL
XXXXXXXXXXXXXXXXX

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XXXXXXXXXXXXXXXXX

PLUMBING
XXXXXXXXXXXXXXXXX

HVAC
XXXXXXXXXXXXXXXXX

ELECTRICAL
XXXXXXXXXXXXXXXXX

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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT 18268
CAD DWG
DRAWN BY: Author
CHECKED BY: Checker

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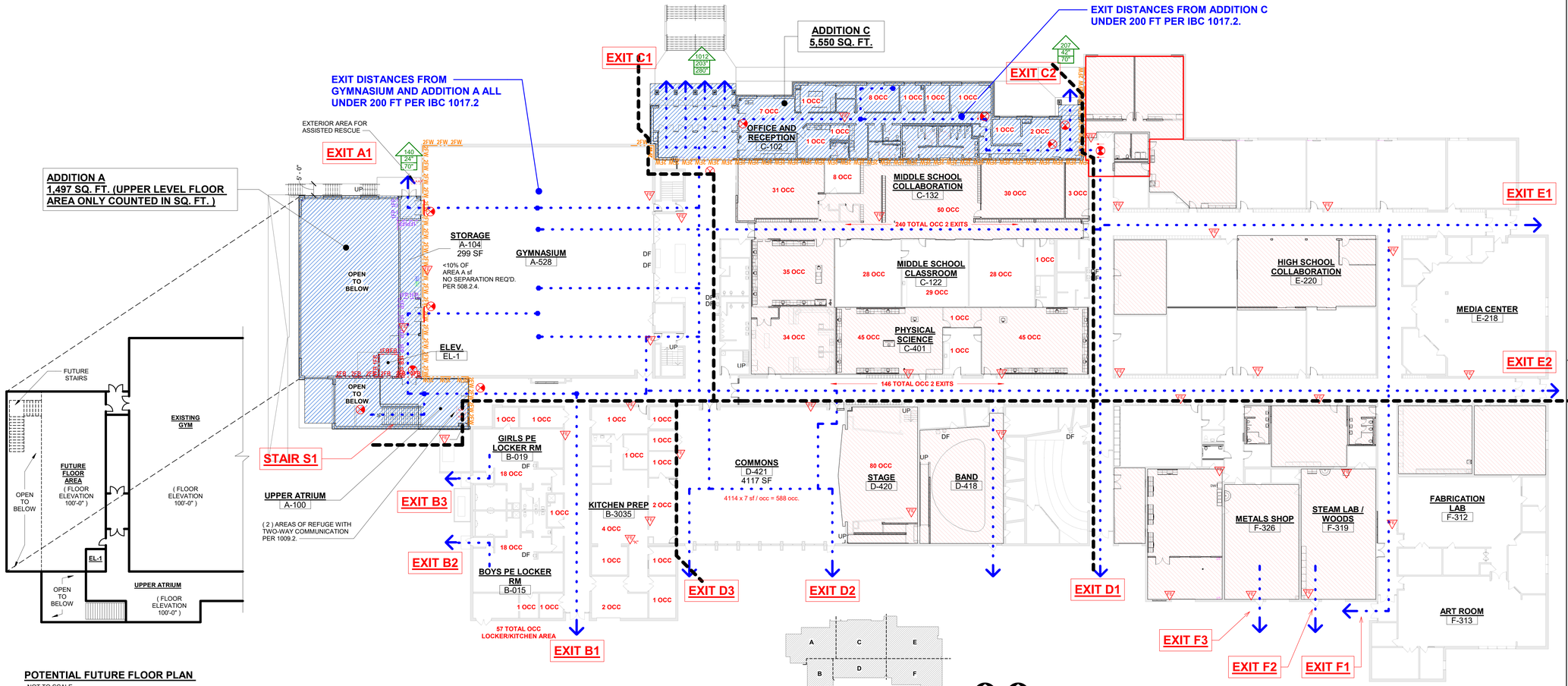
SHEET TITLE:
SHEET INDEX

SHEET NUMBER:
2-GI-002

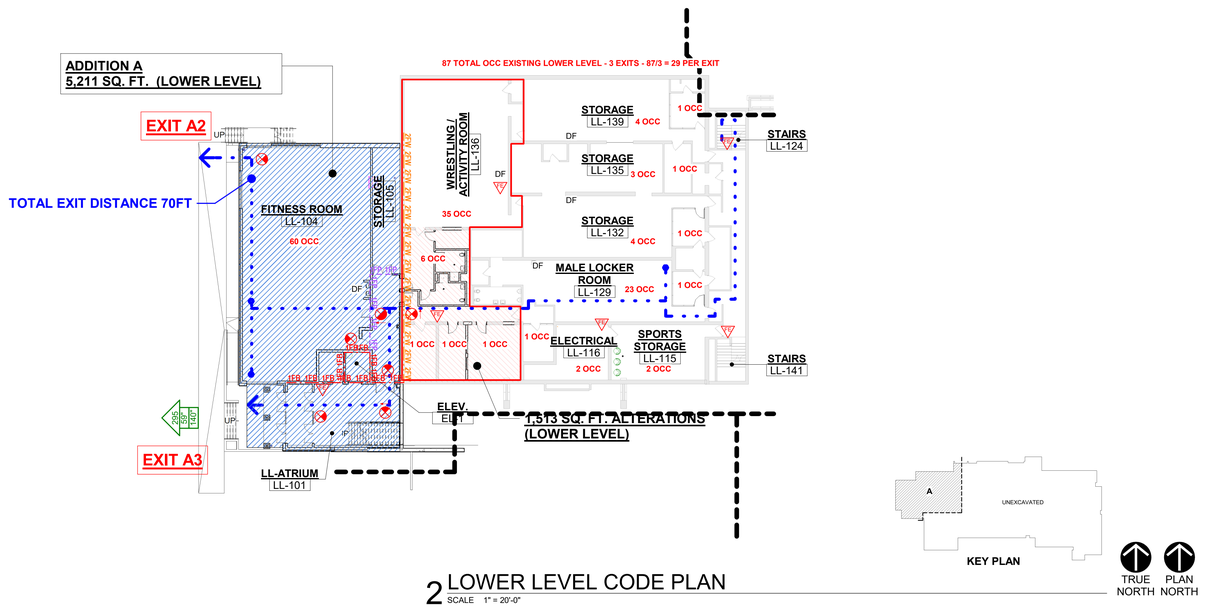


1 FIRST FLOOR CODE PLAN

SCALE 1" = 20'-0"

POTENTIAL FUTURE FLOOR PLAN

NOT TO SCALE



2 LOWER LEVEL CODE PLAN

SCALE 1" = 20'-0"

WALL PRIORITY LEGEND

PRIORITY	#	PLAN GRAPHIC	PARTITION TYPE
HIGHEST	1	2FW 2FW	2 HOUR - FIRE WALL
	2	2FB 2FB	2 HOUR - FIRE BARRIER
MEDIUM	3	1FB 1FB	1 HOUR - FIRE BARRIER
LOWEST	4	1FP 1FP	1 HOUR - FIRE PARTITION

WALL TO LIMIT THE TRANSFER OF SMOKE (DOORS AND GLAZING FOR BORROWED LIGHTS ARE NOT RATED)

NOTE: PARTITIONS WITH A HIGHER PRIORITY # TAKE PRECEDENCE OVER PARTITIONS WITH A LOWER PRIORITY # - SEE AE-501 FOR DETAILS

CODE SHEET KEY

- 72" / 56" / 573 — PROVIDED WIDTH / REQUIRED WIDTH / OCCUPANT LOAD
- FIRE EXTINGUISHER
- FIRE EXTINGUISHER TYPE "K"
- EXIT LIGHT
- EGRESS PATH
- A.O.R. — AREA OF REFUGE
- E.A.A.R. — EXTERIOR AREA FOR ASSISTED RESCUE
- AREAS OF ADDITION
- AREAS OF ALTERATION
- OUTLINE OF AREA PROHIBITED DURING CONSTRUCTION DUE TO EXCEEDING EXIT DISTANCE

BUILDING DATA SUMMARY:

APPLICABLE CODES:

Building, Accessibility, and Life Safety:
- 2015 IBC and IEBC as modified per Wisconsin SPS 362
- 2013 ASHRAE 90.1 (Energy Compliance) per SPS 363.0401(1)
- 2009 ICC/ANSI A117.1

Fire Protection:
- 2009 IFC

Plumbing:
- 2009 IPC as modified per Wisconsin SPS 381 through 387

HVAC:
- 2015 IMC as modified per Wisconsin SPS 364
- 2015 IFGC as modified per Wisconsin SPS 365

Electrical:
- 2011 NEC as modified per Wisconsin SPS 316

BUILDING OCCUPANCIES (IBC CH. 3)

PRIMARY
- E Education

SECONDARY
- E (A-2) Cafeteria / Commons (per IBC 303.1, exc. 4)
- E (A-3) Gymnasium, Fitness (ps (per IBC 303.1, exc. 4)
- B Administrative Offices
- S-1 Storage / Mechanical

IBC CH. 4 - SPECIAL DETAILED REQ'TS.
- ATRIUM
- 404.3, exception 1: Atrium not sprinklered. Separate by 2-hour fire barrier.
- 404.4: Provide Fire Alarm.
- 404.5: Smoke Control: no smoke control system required due to only connecting two stories.

IBC CH. 5 - BUILDING AREA

SUMMARY DESCRIPTION OF BUILDING AREAS

THE EXISTING SCHOOL'S SQUARE FOOTAGE DOES NOT ALLOW ADDITIONAL SQ. FT. WITHOUT SEPARATION.

THEREFORE FIRE WALLS WILL BE UTILIZED TO COMPLETELY SEPARATE THE NEW ADDITIONS FROM THE EXISTING BUILDING.

Existing High School, first floor:	93,261 sf
Level 2 Alterations, first floor:	26,966 sf
Level 2 percentage (<50% required):	= 28.9%
Existing High School, lower level:	11,678 sf
Level 2 Alterations, lower level:	1,513 sf
Level 2 percentage (<50% required):	= 12.8%
Building Addition A:	5,211 + 1,497 = 6,708 sf
Building Addition C:	5,550 sf
Total Addition Area:	= 12,258 sf
TOTAL EXISTING AREA:	93,261 + 11,678 = 104,939 sf
TOTAL ALTERATION AREA:	26,966 + 1,513 = 28,479 sf
TOTAL ADDITION AREA:	12,258 sf
TOTAL SQ. FT.:	145,676 sf

TABLE 508.2 ACCESSORY OCCUPANCIES
STORAGE S-1:
NO RATING IF < 10% FLOOR AREA

TABLE 509 INCEDENTAL USE AREAS
VOCATIONAL SHOPS = 1 HOUR SEPARATION
LAUNDRY ROOMS > 100 SF = 1 HOUR SEPARATION

IBC CH. 6 - BUILDING CLASS OF CONSTRUCTION
- Type IIB

IBC CH. 7 - FIRE AND SMOKE PROTECTION
- Table 706.4 Fire Wall Fire-Resistance Ratings, note a. In Type II or V Construction, walls shall be permitted to have a 2-hour fire-resistance rating.
- Elevator shaft 1-hour rating per 713.4.

IBC CH. 9 - FIRE PROTECTION SYSTEMS
- New Additions: Not sprinklered
  1. Addition A (A-3 Occupancy) non sprinklered per IBC 903.2.1.3
  2. Addition C (B Occupancy) non sprinklered per IBC table 506.2 area limitations not being exceeded.
- Existing Building: Not sprinklered per IEBC 804.2.2 exc. 2

IBC CH. 10 - MEANS OF EGRESS
- Refer to life safety plan.

IBC CH. 11 - ACCESSIBILITY
- new construction and all Level 2 Alterations meet all accessibility requirements per IBC Chapter 11 and ANSI A117.1 (2009 edition).

IBC CH. 29 - PLUMBING SYSTEMS
- ADDITION A - 60 occupants capacity -
  REQ'D: 2 WC, 2 LAV's.
  PROVIDED: 3 WC, 3 LAV's.
  No additional drinking fountains required.
- ADDITION C - 20 person capacity -
  REQ'D: 1 WC, 1 LAV.
  PROVIDED: 2 WC's, 4 LAV's.
  No additional drinking fountains required.
- ALTERATION AREA - 50 additional students + 4 staff.
  25 MALES:
  REQ'D: 1 WC.
  PROVIDED: 2 WC, 2 UR, 3 LAV's.

  25 FEMALES:
  REQ'D: 1 WC.
  PROVIDED: 4 WC, 3 LAV's.

  REQ'D: 1 additional DF.
  PROVIDED: 2 additional DF's.

IECC - ENERGY CODE
- COMCheck (IECC 2009 Compliance Code 90.1 (2013) Standard.

EGRESS WIDTH CALCULATIONS

GYMNASIUM
OCCUPANT LOAD 1048 PER LOCAL FIRE MARSHAL.
1048 OCC. X .2" / OCC. = 210" EXIT WIDTH REQUIRED.
MIN. (4) EXITS REQ'D PER 1006.2.1.1
(16) 36" DOOR OPENINGS PROVIDED = 560"
DISTRIBUTED PER 1007.1.2.
697 OCC. TO EAST DOORS.
117 OCC. TO S.E. DOORS.
117 OCC. TO S.W. DOORS.
117 OCC. TO N.W. DOORS.

EXIT A1 - FIRST FLOOR
117 OCCUPANTS
REQUIRED EXIT WIDTH: 117 OCC. X .2" / OCC. = 24".
PROVIDED: (2) 35" DOOR OPENINGS = 70"

EXIT A2 - LOWER LEVEL
30 OCCUPANTS
REQUIRED EXIT WIDTH: 30 OCC. X .2" / OCC. = 6".
PROVIDED: (1) 35" DOOR OPENING = 35"

EXIT A3 - LOWER LEVEL:
295 OCCUPANTS
(265 FIRST FLOOR, 30 LOWER LEVEL)
REQUIRED EXIT WIDTH: 295 OCC. X .2" / OCC. = 59".
PROVIDED: (4) 35" DOOR OPENINGS = 140".

EXIT C1 FIRST FLOOR:
1012 OCCUPANTS
(700 GYM, 195 CLASSROOMS, 95 COMMONS, 10 STAGE, 12 NEW ADDITION).
REQUIRED EXIT WIDTH: 1012 OCC. X .2" / OCC. = 203".
PROVIDED: (8) 35" DOOR OPENINGS = 280".

EXIT C2 FIRST FLOOR:
207 OCCUPANTS
(12 NEW ADDITION, 195 CLASSROOMS,)
REQUIRED EXIT WIDTH: 207 OCC. X .2" / OCC. = 42".
PROVIDED: (2) 35" DOOR OPENINGS = 70".

EXITS E1, E2, F1, F2, D1, D2, D3, B1, B2 AND B3 ALL FIRST FLOOR:
NO ADDITIONAL OCCUPANT LOAD.
EXISTING EXITS TO REMAIN.

STAIR S1
205 OCCUPANTS
(117 GYM, 18 KITCHEN / LOCKERS, 63 COMMONS, 7 STAGE)
REQUIRED STAIR WIDTH: 201 OCC. X .3" / OCC. = 62".
PROVIDED: 91".

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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SHEET TITLE:

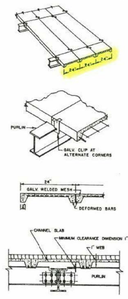
CODE PLANS

SHEET NUMBER:

2-GI-101

Duwe Channel Slabs

Duwe Channel Slabs provide a dense, lightweight, fire-resistant, reinforced roof slab system that offers economical and structural advantages. Galvanized reinforcing mesh, dense concrete and smooth finished surfaces make the slabs an ideal roof deck for moist environments. Installed roof slabs result in an attractive, low-maintenance ceiling requiring no additional finishing.



GENERAL DATA

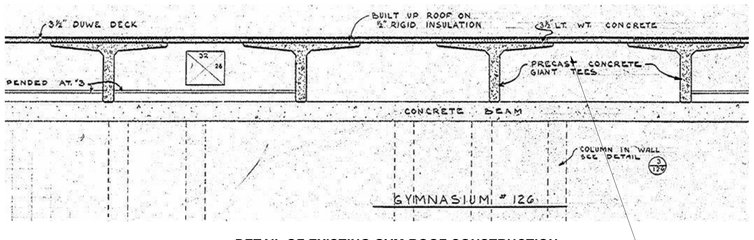
Depth of Leg	Nominal Width	Light Weight Lbs/Sq. Ft.	Normal Weight Lbs/Sq. Ft.	Web Thickness	Max. Length with 2" Bearing
2½"	24"	12	15	1"	6'8"
3½"	24"	15	18	1"	8'4"
4½"	24"	17	21	1¼"	12'6"

CHANNEL SLAB LOAD TABLE

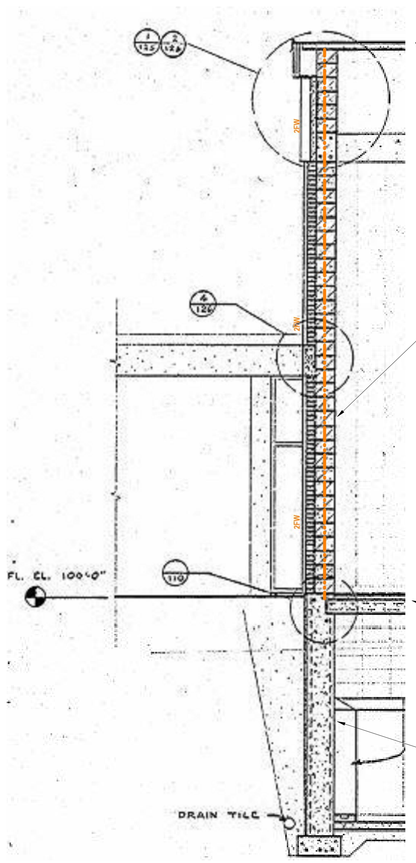
Safe Superimposed Uniform Load – PSF

Section	Span	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'
2½" Channel Slab	Untopped	240	149	99	62						
	With 2" Topping			205	141						
3½" Channel Slab	Untopped				211	158	116				
	With 2" Topping					260	170				
4½" Channel Slab	Untopped						262	208	175	132	100
	With 2" Topping							260	198	132	

Live load deflections limited to 1/240 of the span for roof decks and 1/360 of the span for floor slabs with 2" topping.
For special load conditions contact our engineering department.
All designs are formed on 3000 PSI concrete topping.



DETAIL OF EXISTING GYM ROOF CONSTRUCTION



EXISTING GYM WALLS

EXISTING CONCRETE "T's"
CH. 722
722.2.2.1.2 SLABS WITH SLOPING SOFFITS
***t* = 4"**
TABLE 722.2.2.1 SHOWS 3.6" CONCRETE = 2 HOUR FIRE-RESISTANCE RATING.
THEREFORE EXISTING CONCRETE "T'S" MEET MIN. 2 HOUR RATING

CONCRETE DECK BETWEEN T's:
CH. 722
722.2.2.1
EXISTING DUWE DECK CONSISTS OF MIN. 1" LIGHTWEIGHT CONCRETE.
PLUS 3 1/2" LIGHTWEIGHT CONCRETE ON TOP OF DUWE DECK, RESULTING A TOTAL OF 4 1/2" OF LIGHTWEIGHT CONCRETE.
TABLE 722.2.2.1 SHOWS 3.6" CONCRETE = 2 HOUR FIRE-RESISTANCE RATING.
THEREFORE EXISTING CONCRETE DECK BETWEEN T's MEETS MIN. 2 HOUR RATING.

THEREFORE, EXISTING GYM ROOF MEETS CODE FOR MIN. 2 HOUR FIRE RESISTANCE RATING.

TYPICAL CONSTRUCTION OF EXISTING GYM WALL:
12" NOMINAL (11 5/8" ACUTAL) CONCRETE MASONRY UNITS
WITH 4" NOMINAL (3 5/8" ACUTAL) CLAY BRICK VENEER.

PER 2015 IBC
CH 722 CALCULATED FIRE RESISTANCE

CH 722.3.2 CONCRETE MASONRY WALLS
TABLE 722.3.2:
5.0" LIMESTONE, CINDERS OR EXPANDED SLAG (CONCRETE MASONRY UNITS)
= 3 HOUR FIRE RESISTANCE.

CH. 722.4 CLAY BRICK AND TILE MASONRY, TABLE 722.4.1 (1):
3.4" HOLLOW OR TILE OF CLAY OR SHALE, **UNFILLED = 2 HOUR FIRE RESISTANCE.**

THEREFORE, EXISTING GYM WALLS MEET CODE FOR MIN. 2 HOUR FIRE RESISTANCE RATING.

CONSTRUCTION OF EXISTING GYM FLOOR:
UNKNOWN MFR. 8" PRECAST CONCRETE PLANKS WITH CONCRETE TOPPING.
CALCULATIONS:
- FINISHED FLOOR IS 12" ABOVE PRECAST BEARING.
- GYM FINISHED FLOORING IS 1" HARDWOOD ON 1/2" SLEEPERS.
- THEREFORE, THICKNESS OF CONCRETE TOPPING PRESUMED TO BE 2.5".

PER UL DIRECTORY, DESIGN No. J901 SHOWS 1" OF TOPPING = 2 HOUR RATING.

THEREFORE, PRESUME EXISTING GYM FLOOR MEETS CODE FOR MIN. 2 HOUR FIRE RESISTANCE RATING.

TYPICAL CONSTRUCTION OF EXISTING GYM FOUNDATION WALL:
16 INCHES SOLID CONCRETE WITH STEEL REINFORCING RODS.

PER 2015 IBC
TABLE 721.1 (2)
MATERIAL 4. SOLID CONCRETE
2 HOUR FIRE RESISTANCE REQUIRES MINIMUM 3.6 INCHES.

THEREFORE, EXISTING GYM FLOOR MEETS CODE FOR MIN. 2 HOUR FIRE RESISTANCE RATING.

1 EXISTING WALL SECTION FROM 1968 DRAWINGS
N.T.S.

705.8 OPENINGS
705.8.1 ALLOWABLE AREA OF OPENINGS
EXCEPTION 2:
BUILDINGS WHOSE EXTERIOR BEARING WALLS, EXTERIOR NON-BEARING WALLS AND EXTERIOR PRIMARY STRUCTURAL FRAME ARE NOT REQUIRED TO BE FIRE-RESISTIVE RATED SHALL BE PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS.

THEREFORE, UNPROTECTED OPENINGS ALLOWED.

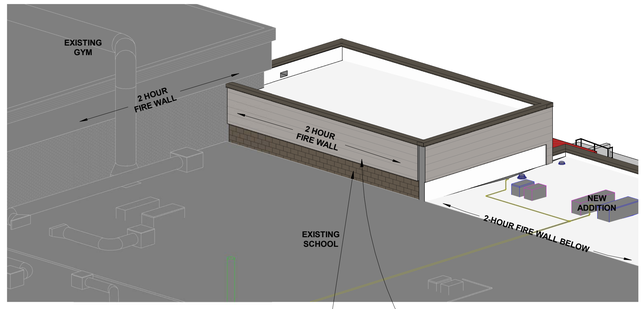
706 FIRE WALLS
706.5 HORIZONTAL CONTINUITY
EXTEND FIRE WALL MIN. 18" BEYOND EXTERIOR WALL.

706 FIRE WALLS
706.6 VERTICAL CONTINUITY, EXCEPTION 3:
WALLS SHALL BE PERMITTED TO TERMINATE AT THE UNDERSIDE OF NONCOMBUSTIBLE ROOF SHEATHING, DECK OR SLABS WHERE BOTH BUILDINGS ARE PROVIDED WITH NOT LESS THAN A CLASS B ROOF COVERING. OPENINGS IN THE ROOF SHALL NOT BE LOCATED WITHIN 4 FEET OF THE FIRE WALL.

REFER TO SECTION 3 / 2-AE-314

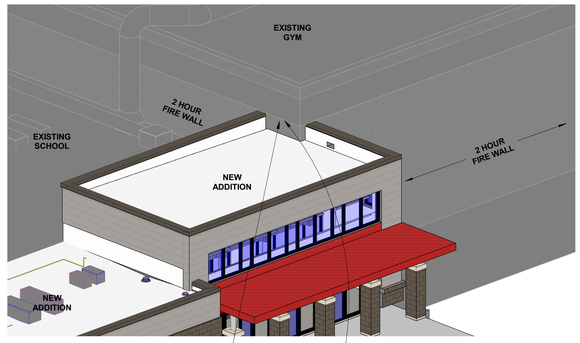
REFER TO SECTION 3 / 2-AE-315

6 ADDITION C VIEW FROM NORTHWEST
N.T.S.



REFER TO:
DETAIL 3 SHEET 2-AE-302

5 ADDITION C VIEW FROM SOUTHEAST
SCALE
AS REFERENCED BY:



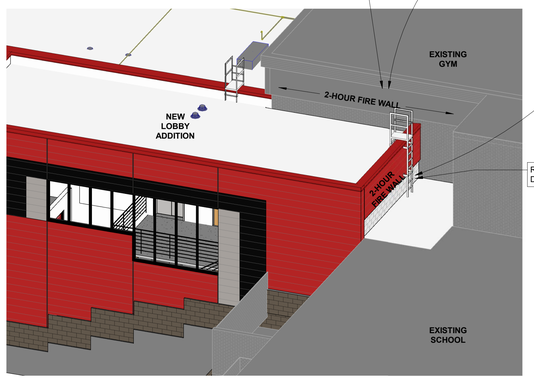
REFER TO:
DETAIL 1 SHEET 2-AE-316

4 ADDITION C VIEW FROM NORTHEAST
N.T.S.

706 FIRE WALLS
706.6 VERTICAL CONTINUITY
706.6.1 - STEPPED BUILDINGS
FIRE WALL SHALL TERMINATE NOT LESS THAN 30 INCHES ABOVE THE LOWER ROOF LEVEL, PROVIDED THE EXTERIOR WALL FOR A HEIGHT OF 15 FEET ABOVE THE LOWER ROOF IS NOT LESS THAN 1-HOUR FIRE-RESISTANCE RATED CONSTRUCION FROM BOTH SIDES WITH OPENINGS PROTECTED BY FIRE ASSEMBLIES HAVING A FIRE PROTECTION RATING OF NOT LESS THAN 3/4 HOUR.

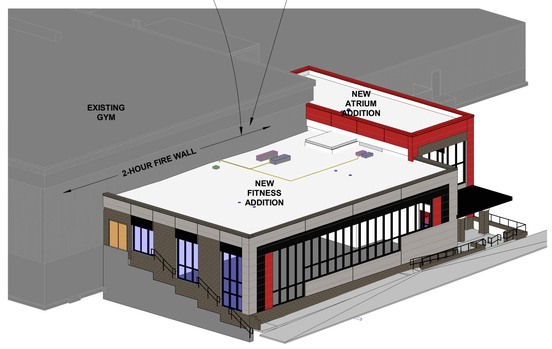
PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

REFER TO:
DETAIL 3 SHEET 2-AE-301



REFER TO:
DETAIL 4 SHEET 2-AE-301

REFER TO:
DETAIL 2 SHEET 2-AE-313



2 ADDITION A VIEW FROM SOUTHEAST
N.T.S.

3 ADDITION A VIEW FROM NORTHWEST
N.T.S.

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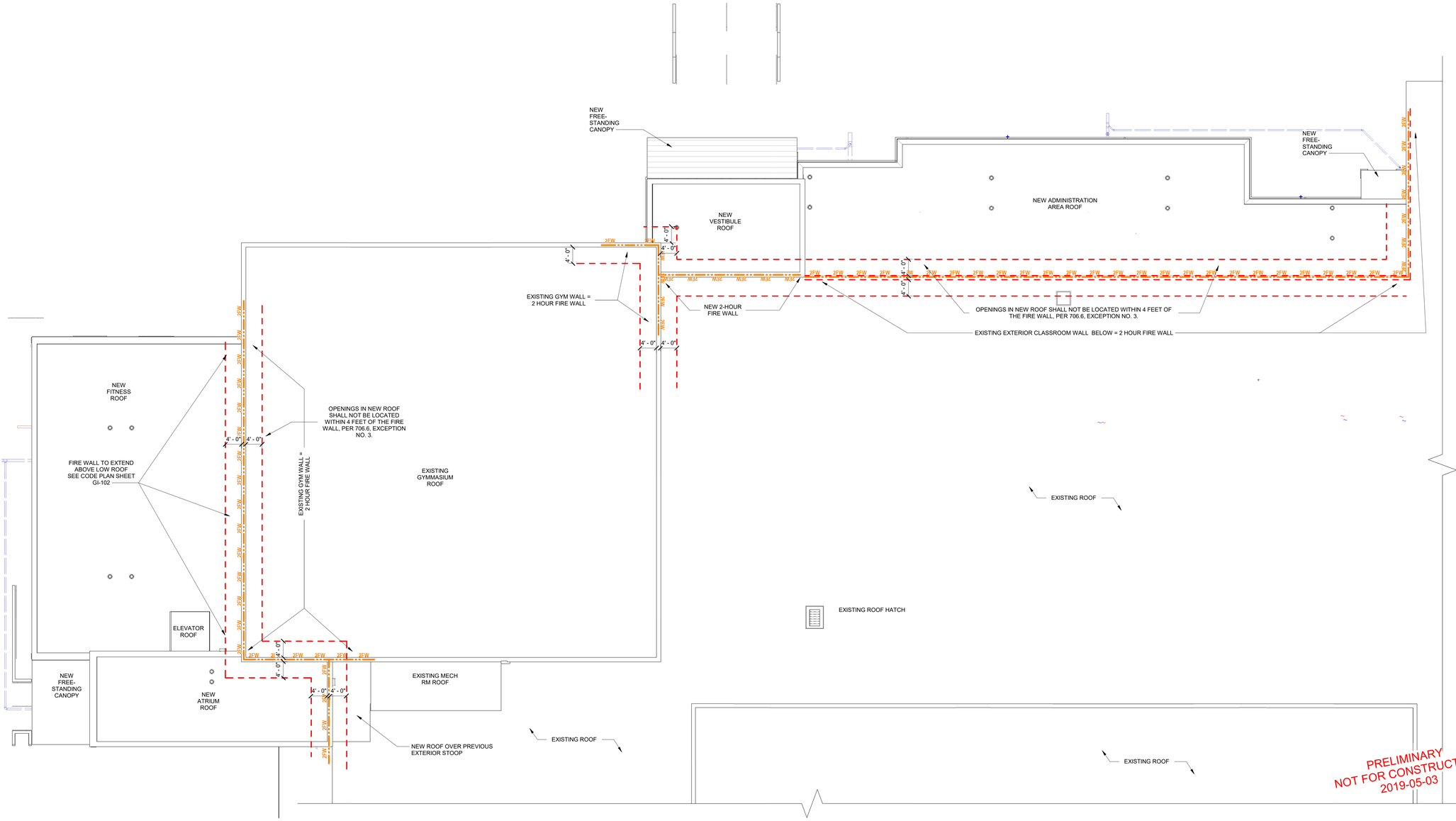
SHEET TITLE:
CODE INFORMATION

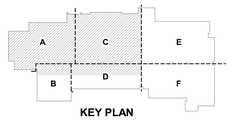
SHEET NUMBER:
2-GI-102



1 PARTIAL ROOF PLAN

SCALE 3/32" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH
PLAN NORTH

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MANAWA

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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SHEET TITLE:
CODE INFORMATION

SHEET NUMBER:
2-GI-103

Design No. U905

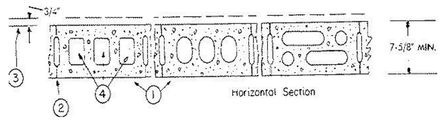
March 11, 2016

Bearing Wall Rating — 2 HR.

Nonbearing Wall Rating — 2 HR

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.*



1. **Concrete Blocks* —** Various designs. Classification D-2 (2 hr). See **Concrete Blocks** category for list of eligible manufacturers.

2. **Mortar —** Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland Cement Stucco or Gypsum Plaster —** Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).

4. **Loose Masonry Fill —** If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kiln Process), water repellant vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 hr to classification.

5. **Foamed Plastic* —** (Optional-Not Shown) — 1-1/2 in. thick max, 4 ft wide sheathing attached to concrete blocks (Item 1).
ATLAS ROOFING CORP — "EnergyShield Pro Wall Insulation" and "EnergyShield Pro 2 Wall Insulation"

CARLISLE COATINGS & WATERPROOFING INC — Type R2+ Sheath

FIRESTONE BUILDING PRODUCTS CO L L C — "Enverge™ CI Foil Exterior Wall Insulation" and "Enverge™ CI Glass Exterior Wall Insulation"

HUNTER PANELS — Types Xci-Class A, Xci 286

RMAX OPERATING L L C — "TSX-8500", "TSX-8510", "Thermasheath-XP", "ECOMAXci", "Thermasheath-3", "Durasheath-3"

THE DOW CHEMICAL CO — Types Thermax Sheathing, Thermax Light Duty Insulation, Thermax Heavy Duty Insulation, Thermax Metal Building Board, Thermax White Finish Insulation, Thermax ci Exterior Insulation, Thermax XARMOR ci Exterior Insulation, Thermax IH Insulation, Thermax Plus Liner Panel, Thermax Heavy Duty Plus (HDP) and TUFF-R™ ci Insulation

5A. **Building Units —** As an alternate to Items 5, min. 1-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in.
RMAX OPERATING L L C — "Thermasheath-SI", "ECOBASEci", "ThermaBase-CI"

** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.*

Last Updated on 2016-03-11

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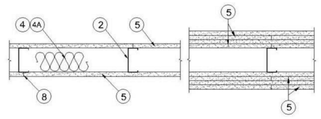
Design No. U419

September 02, 2011

Nonbearing Wall Ratings — 1, 2, 3 or 4 Hr (See Items 4 & 5)



1. **Floor and Ceiling Runners —** (Not shown) — For use with Item 2 - Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members* - Floor and Ceiling Runners —** Not shown - In lieu of Item 1 — For use with Item 2A, proprietary channel shaped, min. 3-5/8 in. deep, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC max. Effective thickness is 0.034 in.

CLARKDIETRICH BUILDING SYSTEMS — UltraSTEEL®.

1B. **Framing Members* - Floor and Ceiling Runners —** (Not shown - In lieu of Item 1) — For use with Item 2A, proprietary channel shaped, min. 2-1/2 in. deep, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling fasteners 24 in. OC. max. Effective thickness is 0.034 in.

CLARKDIETRICH BUILDING SYSTEMS — UltraSTEEL®.

1F. **Floor and Ceiling Runners —** (Not shown)—For use with Item 2B- Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, min depth to accommodate stud size, with min 1 in. long legs, attached to floor and ceiling with fasteners spaced max 24 in. OC.

1G. **Framing Members* — Floor and Ceiling Runners —** (Not shown, As an alternate to Item 1) — For use with Items 2F, 5F or 5G or 5I only, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, attached to floor and ceiling with fasteners 24 in. OC. max.

CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK **DMFCWBS L L C** — ProTRAK

2. **Steel Studs —** Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

2A. **Framing Members* - Steel Studs —** In lieu of Item 2 - Proprietary channel shaped studs, min. depth as indicated under Item 5, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height. Allowable use of studs is shown in the table below. For direct attachment of gypsum board only. Effective thickness is 0.034 in.

CLARKDIETRICH BUILDING SYSTEMS — UltraSTEEL®.

2B. **Steel Studs —** (As an alternate to Item 2, for use with Items 5B & 5E) Channel shaped, fabricated from min 20 MSG corrosion-protected or galv steel, 3-1/2 in. min depth, spaced a max of 16 in. OC. Studs friction-fit into floor and ceiling runners. Studs to be cut 5/8 to 3/4 in. less than assembly height.

2F. **Framing Members* — Steel Studs —** (Not shown, As an alternate to Item 2) —For use with Items 1G, 5F or 5G or 5I only, channel shaped studs, min depth as indicated under Item 5F, 5G or 5I, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

3. **Wood Structural Panel Sheathing —** (Optional, For use with Item 5 Only.)- (Not Shown) - 4 ft wide, 7/16 in. thick oriented strand board (OSB) or 15/32 in. thick structural I sheathing (plywood) complying with DOC PS1 or PS2, or APA Standard PRP-108, manufactured with exterior glue, applied horizontally or vertically to the steel studs. Vertical joints centered on studs, end joints staggered and located over gypsum board joints. Attached to studs with flat-head self-drilling tapping screws with a min. head diam. of 0.292 in. at maximum 6 in. OC. in the perimeter and 12 in. OC. in the field. When used, fastener lengths for gypsum panels increased by min. 1/2 in.

4. **Batts and Blankets* —** (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

4A. **Batts and Blankets* —** (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNV or BZJZ) Categories** for names of Classified companies.

5. **Gypsum Board* —** Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, In. Items 2, 2D, 2E, 2G and 2F	Min Stud Depth, In. Item 2A	No. of Layers & Thkns of Panel	Min Thkns of Insulation (Item 4)
1	3-1/2	3-5/8	1 layer, 5/8 in. thick	Optional
1	2-1/2	3-5/8	1 layer, 1/2 in. thick	1-1/2 in.
1	1-5/8	3-5/8	1 layer, 3/4 in. thick	Optional
2	1-5/8	2-1/2	2 layers, 1/2 in. thick	Optional
2	1-5/8	2-1/2	2 layers, 5/8 in. thick	Optional
2	3-1/2	3-5/8	1 layer, 3/4 in. thick	3 in.

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type SCX, SHX, WRX, IP-X1, AR, C, WRC, FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Types IP-X3 or ULTRACODE

When Item 7B, Steel Framing Members*, is used, Nonbearing Wall Rating is limited to 1 Hr. Min. stud depth is 3-1/2 in., min. thickness of insulation (Item 4) is 3 in., and two layers of gypsum board panels (1/2 in. or 5/8 in. thick) shall be attached to furring channels as described in Item 6. One layer of gypsum board panels (1/2 in. or 5/8 in. thick) attached to opposite side of stud without furring channels as described in Item 6.

5A. **Gypsum Board* —** (As an alternate to Item 5) — 5/8 in. thick, 24 to 54 in. wide, applied horizontally as the outer layer to one side of the assembly. Secured as described in Item 6.

UNITED STATES GYPSUM CO — Type FRX-G, SHX.

5C. **Gypsum Board* —** (For Use With Item 2C) Rating Limited to 1 Hour. 5/8 in. thick, 48 in. wide, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. (Vertical Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All ho¨izontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.

UNITED STATES GYPSUM CO — Type SCX.

5D. **Gypsum Board* —** (As an alternate to Item 5) — 5/8 in. thick, 48 in. wide, applied vertically or horizontally. Secured as described in Item 6. For use with Items 1 and 2 only.

UNITED STATES GYPSUM CO — Type USGX.

5F. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1G and 2F and limited to 1 Hour Rating only, Gypsum panels with beveled, square or tapered edges, applied vertically, and fastened to the steel studs with 1 in. long Type S screws spaced 8 in. OC along vertical and bottom edges and 12 in. OC in the field. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Steel stud depth shall be a minimum 3-5/8 in.

UNITED STATES GYPSUM CO — 5/8 in. thick Type SCX.

5G. **Gypsum Board* —** (As an alternate to Item 5) — For use with Items 1G and 2F only, Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally, as specified in the table below and fastened to the steel studs as described in Item 6. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, In. Item 2F	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional

UNITED STATES GYPSUM CO — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type SCX, SHX, IP-X1, AR, C, , FRX-G, IP-AR, IP-X2, IPC-AR ; 3/4 in. thick Types IP-X3 or ULTRACODE

6. **Fasteners —** (Not shown) — For use with Items 2 and 2F - Type S or S-12 steel screws used to attach panels to studs (Item 2) or furring channels (Item 7). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8 in. OC when panels are applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. **Two layer systems:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer.**Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC with screws offset 8 in. from first layer. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below.

6A. **Fasteners —** (Not shown) —For use with Item 2A - Type S or S-12 steel screws used to attach panels to studs (Item 2A). **Single layer systems:** 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 8-1/2 in. OC with additional screws 1 in. and 2-1/2 in. from edges of the board when panels are horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. **Two layer systems applied vertically:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC with screws offset 8 in. from first layer. **Two layer systems applied horizontally:** First layer- 1 in. long for 1/2 and 5/8 in. thick panels or 1-1/4 in. long for 3/4 in. thick panels, spaced 24 in. OC with additional screw placed 1-1/4 in. from each edge of the board with screws offset 8 in. from edge of the board. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels or 2-1/4 in. long for 3/4 in. thick panels, spaced 16 in. OC starting 8 in. from each edge of the board with an additional screw placed 1-1/4 in. from each edge of the board with screws offset 8 in. from first layer. **Three-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in., 5/8 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. For all layers, an additional screw shall be placed 1-1/4 in. from each edge of the board. **Four-layer systems:** First layer- 1 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Second layer- 1-5/8 in. long for 1/2 in., 5/8 in. thick panels, spaced 24 in. OC. Third layer- 2-1/4 in. long for 1/2 in. thick panels or 2-5/8 in. long for 5/8 in. thick panels, spaced 24 in. OC. Fourth layer- 2-5/8 in. long for 1/2 in. thick panels or 3 in. long for 5/8 in. thick panels, spaced 12 in. OC. Screws offset min 6 in. from layer below. For all layers, an additional screw shall be placed 1-1/4 in. from each edge of the board.

7. **Furring Channels —** (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min

25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A and 5E.

7B. **Framing Members* —** (Optional, Not Shown) — As an alternate to Item 7, for single or double layer systems, furring channels and Steel Framing Members on only one side of studs as described below:

a. **Furring Channels —** Formed of No. 25 MSG galv steel, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Batts and Blankets placed in stud cavity as described in Item 5. Two layers of gypsum board attached to furring channels as described in Item 5. Not for use with Item 5A and 5E.

b. **Steel Framing Members* —** Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 21/2 in. coarse drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.

KINETICS NOISE CONTROL INC — Type Isomax

7C. **Framing Members* —** Optional - Not Shown - Used as an alternate method to attach resilient channels (Item 7). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the steel stud with min. 1 in. long Type S12 steel screws through the center hole of the clip and the resilient channel flange.

KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

8. **Joint Tape and Compound —** Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.

9. **Siding, Brick or Stucco —** (Optional, not shown) — Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

10. **Caulking and Sealants* —** (Optional, not shown) — A bead of acoustical sealant applied around the partition perimeter for sound control.

UNITED STATES GYPSUM CO — Type AS

*Bearing the UL Classification Mark

Last Updated on 2011-09-02

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:

FIRE RATING ASSEMBLIES

SHEET NUMBER:

2-GI-501

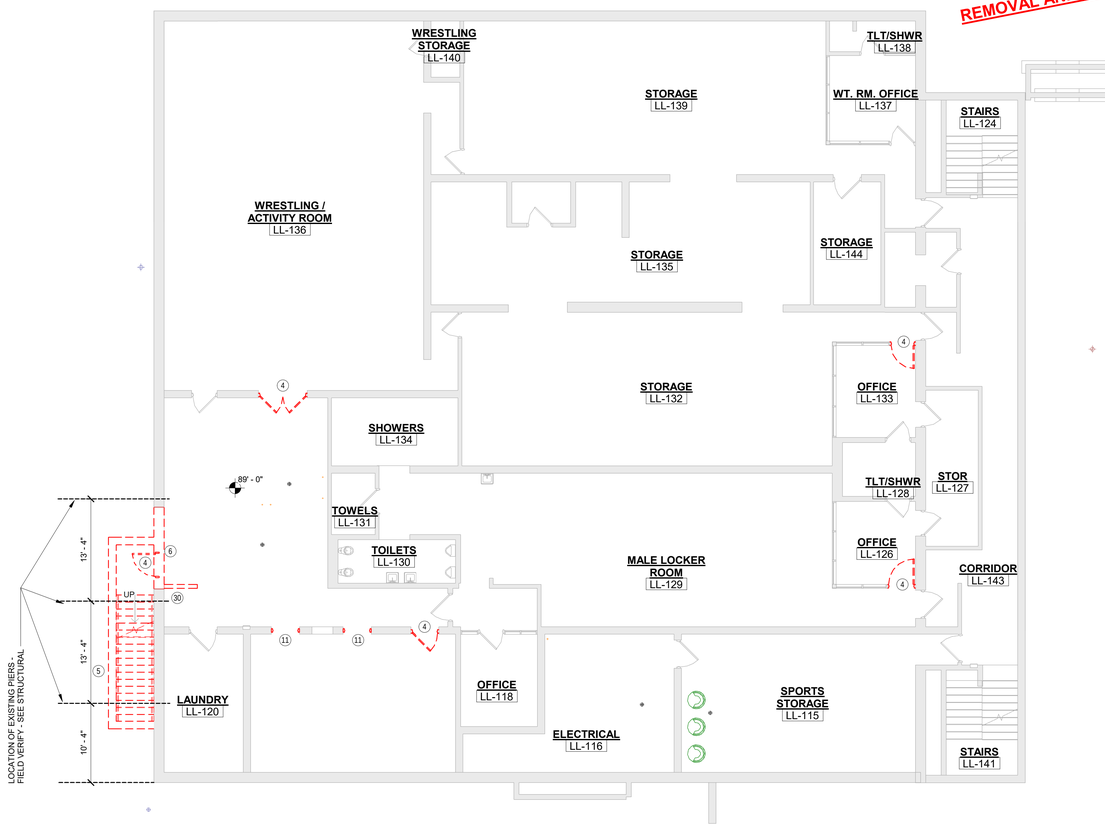
GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

(#) DEMOLITION NOTES KEY

NO.	DESCRIPTION
1	02 41 00 B1 - REMOVE STUD WALL
2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
3	02 41 00 - REMOVE DOOR SYSTEM IN ITS ENTIRETY
4	02 41 00 D1 - REMOVE DOOR, FRAME AND THRESHOLD
5	02 41 00 - REMOVE CONC STAIRS, FDTN WALLS, FTNGS, SLABS IN THEIRE ENTIRETY
6	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR NEW DOOR OR WINDOW
7	02 41 00 - REMOVE HVAC EQUIP, CONC. ENCLOSURE WALLS AND FDTN
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVEMENT
9	0241 00 - REMOVE SUSPENDED CEILING
11	02 41 00 - REMOVE DOOR FRAME
12	02 41 00 - REMOVE GATE AND FRAME
13	02 41 00 - REMOVE DOOR AND TRANSOM PANEL TO ALLOW FOR INSTALLATION OF NEW DOOR AND TRANSOM PANEL
14	02 41 00 - EQUIPMENT TO BE REMOVED BY OWNER
15	02 41 00 - REMOVE LOCKERS AND STORE FOR POTENTIAL OWNERS RE-USE
17	02 41 00 - REMOVE COUNTERTOP ASSEMBLY
18	02 41 00 - REMOVE RAISED FLOOR CONSTRUCTION DOWN TO EXISTING CONCRETE SLAB
19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
20	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR MECHANICAL WORK
21	02 41 00 - REMOVE CASEWORK & CTR TOPS IN THEIR ENTIRETY. REMOVAL OF MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL BE BY THE RESPECTIVE CONTRACTOR
22	02 41 00 - REMOVE WINDOW ASSEMBLY IN ITS ENTIRETY
23	02 41 00 - REMOVE RAISED FLOOR IN ITS ENTIRETY
24	02 41 00 P1 - REMOVE FIXTURE - PLUMBING TO DISCONNECT AND CAP
25	02 41 00 - REMOVE STAIR SYSTEM AND RAILINGS IN THEIR ENTIRETY
26	02 41 00 P2 - REMOVE PLUMBING EQUIPMENT - RELOCATE ROOF DRAIN LEADER
27	02 41 00 B1 - REMOVE WALL/SOFFIT
28	02 41 00 - REMOVE DRENCH SHOWER/EYE WASH STATION, BASIN AND ALL ASSOCIATED PLUMING. REMOVE FLOOR DRAIN AND CAP.
29	02 41 00 H1 - EXISTING FUME HOOD STATION TO BE ROTATED 90 DEGREES AND REMAIN IN GENERAL SAME LOCATION. COORDINATE WITH OWNER.
30	02 41 00 B2 - REMOVE MASONRY WALL
31	02 41 00 G2A- REMOVE FURNISHINGS AND STORE FOR REINSTALLATION
32	02 41 00 F2- REMOVE BASE
33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

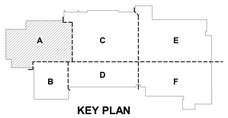
VERIFY ALL FLOORING REMOVAL AND NEW



1 LOWER FLOOR DEMOLITION PLAN

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
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MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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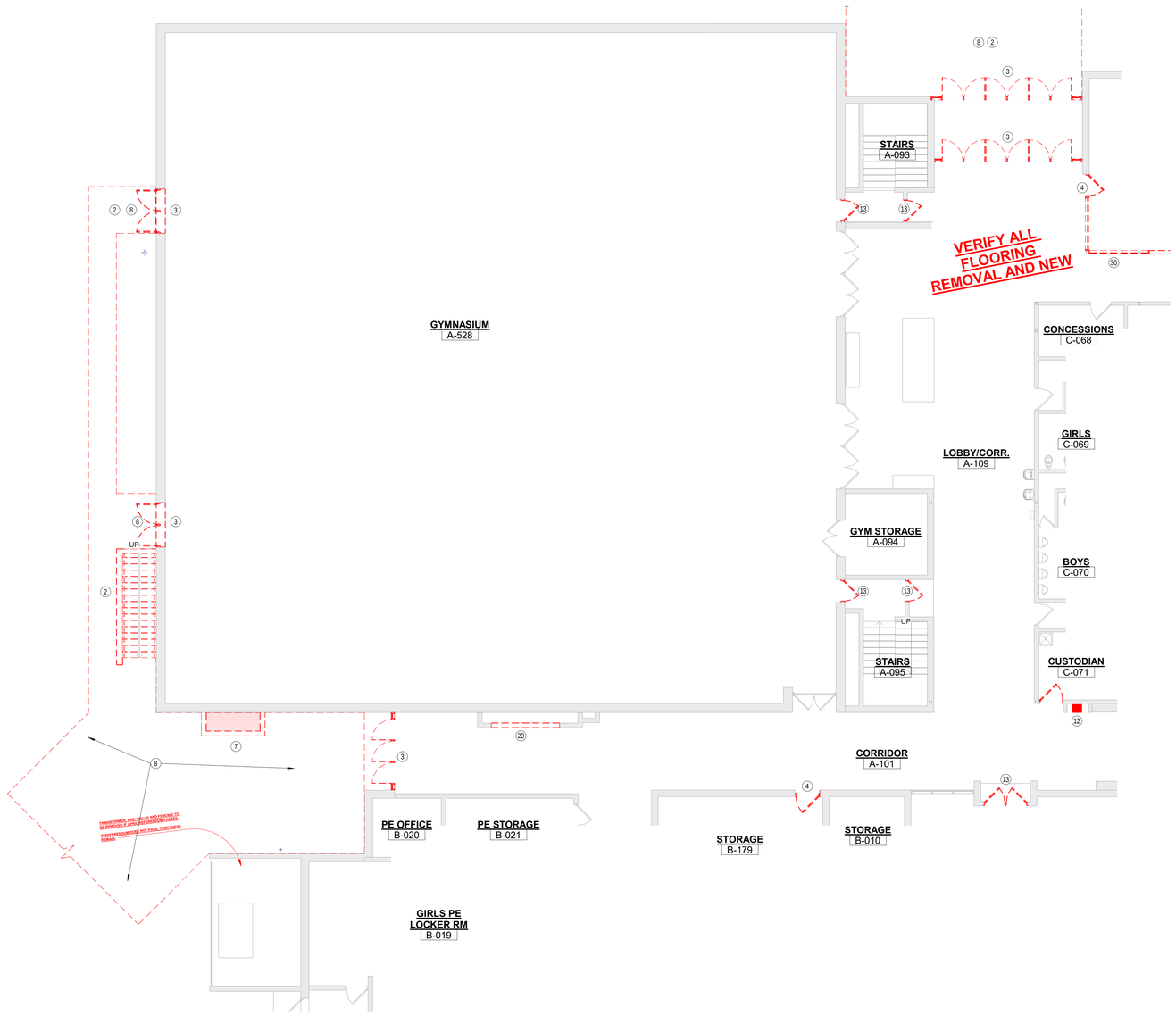
SHEET TITLE:
DEMOLITION PLAN - LOWER LEVEL

SHEET NUMBER:
2-AD-101



1 FIRST FLOOR DEMOLITION PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

DEMOLITION NOTES KEY

NO.	DESCRIPTION
1	02 41 00 B1 - REMOVE STUD WALL
2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
3	02 41 00 - REMOVE DOOR SYSTEM IN ITS ENTIRETY
4	02 41 00 D1 - REMOVE DOOR, FRAME AND THRESHOLD
5	02 41 00 - REMOVE CONC STAIRS, FDTN WALLS, FTNGS, SLABS IN THEIRE ENTIRETY
6	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR NEW DOOR OR WINDOW
7	02 41 00 - REMOVE HVAC EQUIP, CONC. ENCLOSURE WALLS AND FDTN
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVEMENT
9	0241 00 - REMOVE SUSPENDED CEILING
11	02 41 00 - REMOVE DOOR FRAME
12	02 41 00 - REMOVE GATE AND FRAME
13	02 41 00 - REMOVE DOOR AND TRANSOM PANEL TO ALLOW FOR INSTALLATION OF NEW DOOR AND TRANSOM PANEL
14	02 41 00 - EQUIPMENT TO BE REMOVED BY OWNER
15	02 41 00 - REMOVE LOCKERS AND STORE FOR POTENTIAL OWNER'S RE-USE
17	02 41 00 - REMOVE COUNTERTOP ASSEMBLY
18	02 41 00 - REMOVE RAISED FLOOR CONSTRUCTION DOWN TO EXISTING CONCRETE SLAB
19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
20	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR MECHANICAL WORK
21	02 41 00 - REMOVE CASEWORK & CTR TOPS IN THEIR ENTIRETY. REMOVAL OF MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL BE BY THE RESPECTIVE CONTRACTOR
22	02 41 00 - REMOVE WINDOW ASSEMBLY IN ITS ENTIRETY
23	02 41 00 - REMOVE RAISED FLOOR IN ITS ENTIRETY
24	02 41 00 P1 - REMOVE FIXTURE - PLUMBING TO DISCONNECT AND CAP.
25	02 41 00 - REMOVE STAIR SYSTEM AND RAILINGS IN THEIR ENTIRETY
26	02 41 00 P2 - REMOVE PLUMBING EQUIPMENT - RELOCATE ROOF DRAIN LEADER
27	02 41 00 B1 - REMOVE WALL/SOFFIT
28	02 41 00 - REMOVE DRENCH SHOWER/EYE WASH STATION, BASIN AND ALL ASSOCIATED PLUMING. REMOVE FLOOR DRAIN AND CAP.
29	02 41 00 H1 - EXISTING FUME HOOD STATION TO BE ROTATED 90 DEGREES AND REMAIN IN GENERAL SAME LOCATION. COORDINATE WITH OWNER.
30	02 41 00 B2 - REMOVE MASONRY WALL
31	02 41 00 G2A- REMOVE FURNISHINGS AND STORE FOR REINSTALLATION
32	02 41 00 F2- REMOVE BASE
33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

PRELIMINARY
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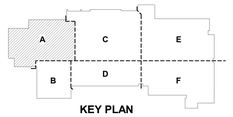
2019-05-03



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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
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515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:
DEMOLITION PLAN - AREA A

SHEET NUMBER:
2-AD-102

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO REQUIRE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

DEMOLITION NOTES KEY

NO.	DESCRIPTION
1	02 41 00 B1 - REMOVE STUD WALL
2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
3	02 41 00 - REMOVE DOOR SYSTEM IN ITS ENTIRETY
4	02 41 00 D1 - REMOVE DOOR, FRAME AND THRESHOLD
5	02 41 00 - REMOVE CONC STAIRS, FDTN WALLS, FTNGS, SLABS IN THEIRE ENTIRETY
6	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR NEW DOOR OR WINDOW
7	02 41 00 - REMOVE HVAC EQUIP, CONC. ENCLOSURE WALLS AND FDTN
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVEMENT
9	0241 00 - REMOVE SUSPENDED CEILING
11	02 41 00 - REMOVE DOOR FRAME
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17	02 41 00 - REMOVE COUNTERTOP ASSEMBLY
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19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
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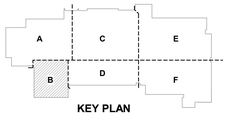
30	02 41 00 B2 - REMOVE MASONRY WALL
31	02 41 00 G2A- REMOVE FURNISHINGS AND STORE FOR REINSTALLATION
32	02 41 00 F2- REMOVE BASE
33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

VERIFY ALL FLOORING REMOVAL AND NEW

1 FIRST FLOOR DEMOLITION PLAN - AREA B

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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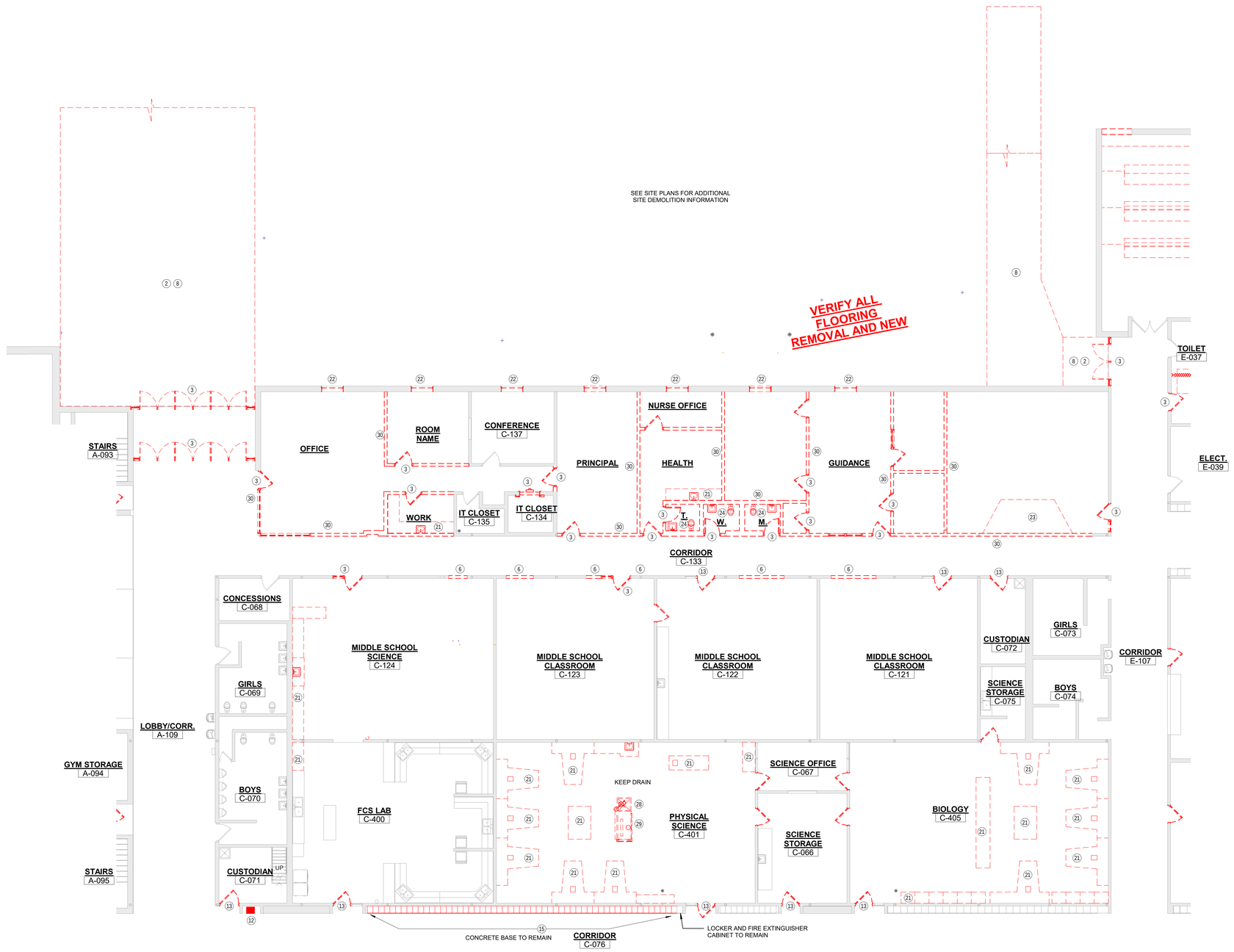
SHEET TITLE:
DEMOLITION PLAN - AREA B

SHEET NUMBER:
2-AD-103



1 FIRST FLOOR DEMOLITION PLAN - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

(#) DEMOLITION NOTES KEY

NO.	DESCRIPTION
1	02 41 00 B1 - REMOVE STUD WALL
2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
3	02 41 00 - REMOVE DOOR SYSTEM IN ITS ENTIRETY
4	02 41 00 D1 - REMOVE DOOR, FRAME AND THRESHOLD
5	02 41 00 - REMOVE CONC STAIRS, FDTN WALLS, FTNGS, SLABS IN THEIRE ENTIRETY
6	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR NEW DOOR OR WINDOW
7	02 41 00 - REMOVE HVAC EQUIP, CONC. ENCLOSURE WALLS AND FDTN
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVEMENT
9	0241 00 - REMOVE SUSPENDED CEILING
11	02 41 00 - REMOVE DOOR FRAME
12	02 41 00 - REMOVE GATE AND FRAME
13	02 41 00 - REMOVE DOOR AND TRANSOM PANEL TO ALLOW FOR INSTALLATION OF NEW DOOR AND TRANSOM PANEL
14	02 41 00 - EQUIPMENT TO BE REMOVED BY OWNER
15	02 41 00 - REMOVE LOCKERS AND STORE FOR POTENTIAL OWNER'S RE-USE
17	02 41 00 - REMOVE COUNTERTOP ASSEMBLY
18	02 41 00 - REMOVE RAISED FLOOR CONSTRUCTION DOWN TO EXISTING CONCRETE SLAB
19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
20	02 41 00 - REMOVE PORTION OF WALL TO ALLOW FOR MECHANICAL WORK
21	02 41 00 - REMOVE CASEWORK & CTR TOPS IN THEIR ENTIRETY. REMOVAL OF MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL BE BY THE RESPECTIVE CONTRACTOR
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24	02 41 00 P1 - REMOVE FIXTURE - PLUMBING TO DISCONNECT AND CAP.
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26	02 41 00 P2 - REMOVE PLUMBING EQUIPMENT - RELOCATE ROOF DRAIN LEADER
27	02 41 00 B1 - REMOVE WALL/SOFFIT
28	02 41 00 - REMOVE DRENCH SHOWER/EYE WASH STATION, BASIN AND ALL ASSOCIATED PLUMING. REMOVE FLOOR DRAIN AND CAP.
29	02 41 00 H1 - EXISTING FUME HOOD STATION TO BE ROTATED 90 DEGREES AND REMAIN IN GENERAL SAME LOCATION. COORDINATE WITH OWNER.
30	02 41 00 B2 - REMOVE MASONRY WALL
31	02 41 00 G2A- REMOVE FURNISHINGS AND STORE FOR REINSTALLATION
32	02 41 00 F2- REMOVE BASE
33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

PRELIMINARY
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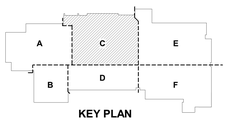
2019-05-03



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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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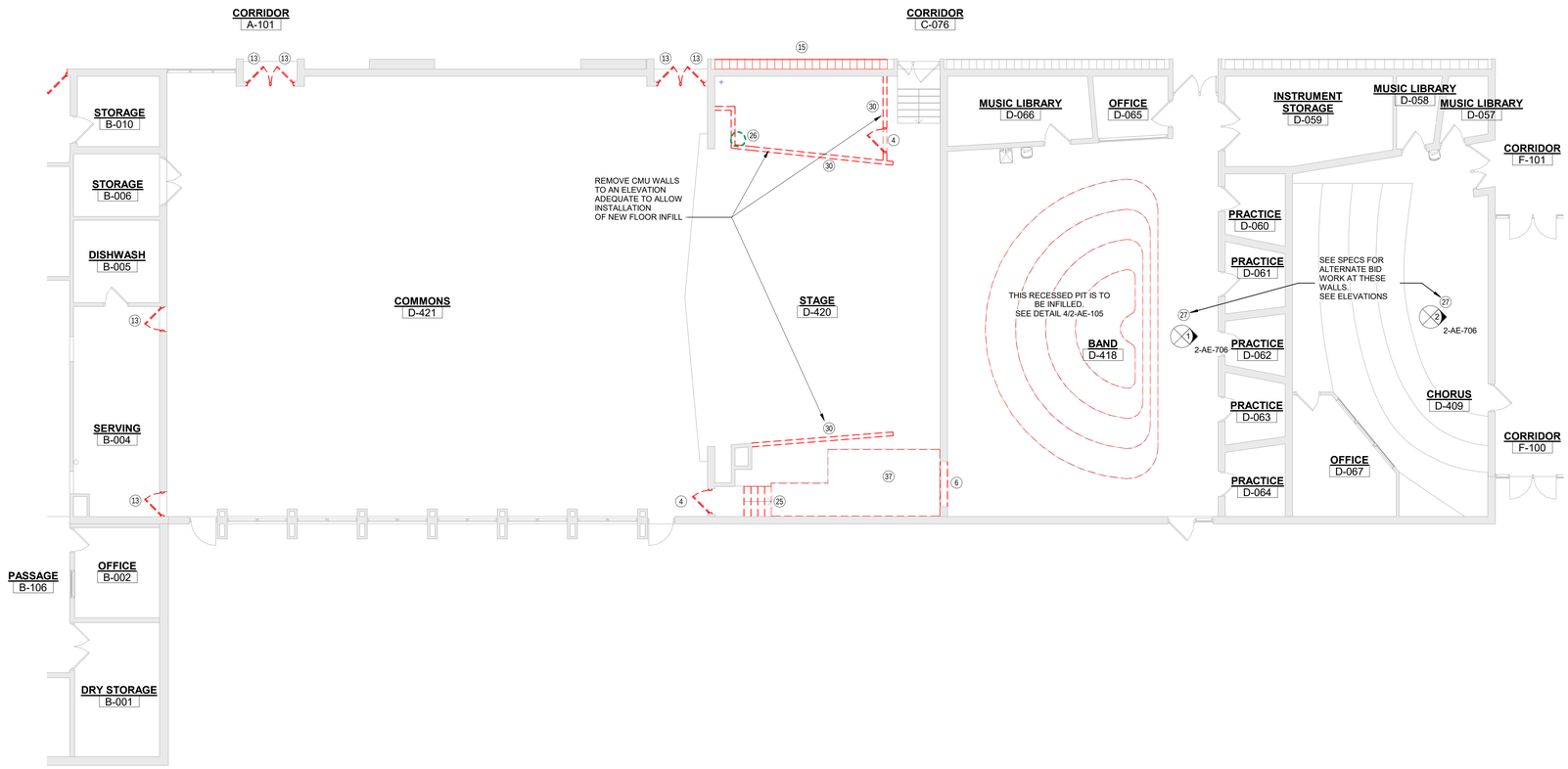
SHEET TITLE:
DEMOLITION PLAN - AREA C

SHEET NUMBER:
2-AD-104



VERIFY ALL FLOORING REMOVAL AND NEW

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

(#) DEMOLITION NOTES KEY

NO.	DESCRIPTION
1	02 41 00 B1 - REMOVE STUD WALL
2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
3	02 41 00 - REMOVE DOOR SYSTEM IN ITS ENTIRETY
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33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

1 FIRST FLOOR DEMOLITION PLAN - AREA D

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

PRELIMINARY
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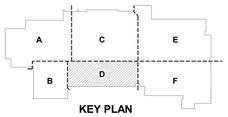
2019-05-03



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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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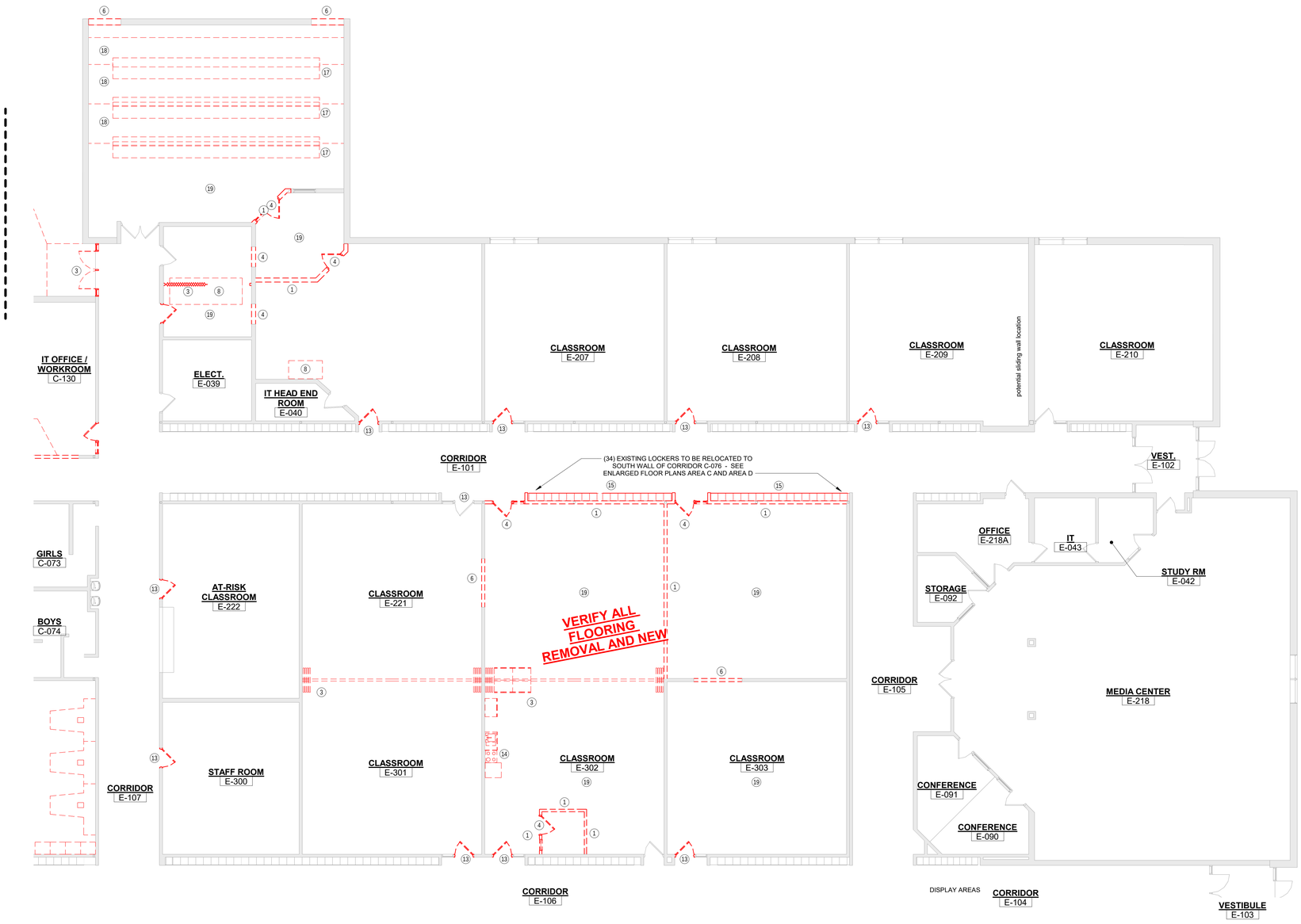
SHEET TITLE:
DEMOLITION PLAN - AREA D

SHEET NUMBER:
2-AD-105



1 FIRST FLOOR DEMOLITION PLAN - AREA E

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
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DEMOLITION NOTES KEY

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37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

PRELIMINARY
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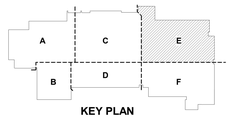
2019-05-03



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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO:	18268
CAD DWG FILE:	
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SHEET TITLE:
DEMOLITION PLAN - AREA E

SHEET NUMBER:
2-AD-106

VERIFY ALL FLOORING REMOVAL AND NEW

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
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(#) DEMOLITION NOTES KEY

NO.	DESCRIPTION
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2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
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4	02 41 00 D1 - REMOVE DOOR, FRAME AND THRESHOLD
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8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVEMENT
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33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE
37	02 41 00 N5 - REMOVE FLOOR STRUCTURE

1 FIRST FLOOR DEMOLITION PLAN - AREA F
SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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CONSULTANT:

MANAWA

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
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SHEET TITLE:
DEMOLITION PLAN - AREA F

SHEET NUMBER:
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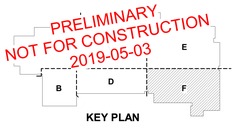

KEY PLAN

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PLAN NORTH

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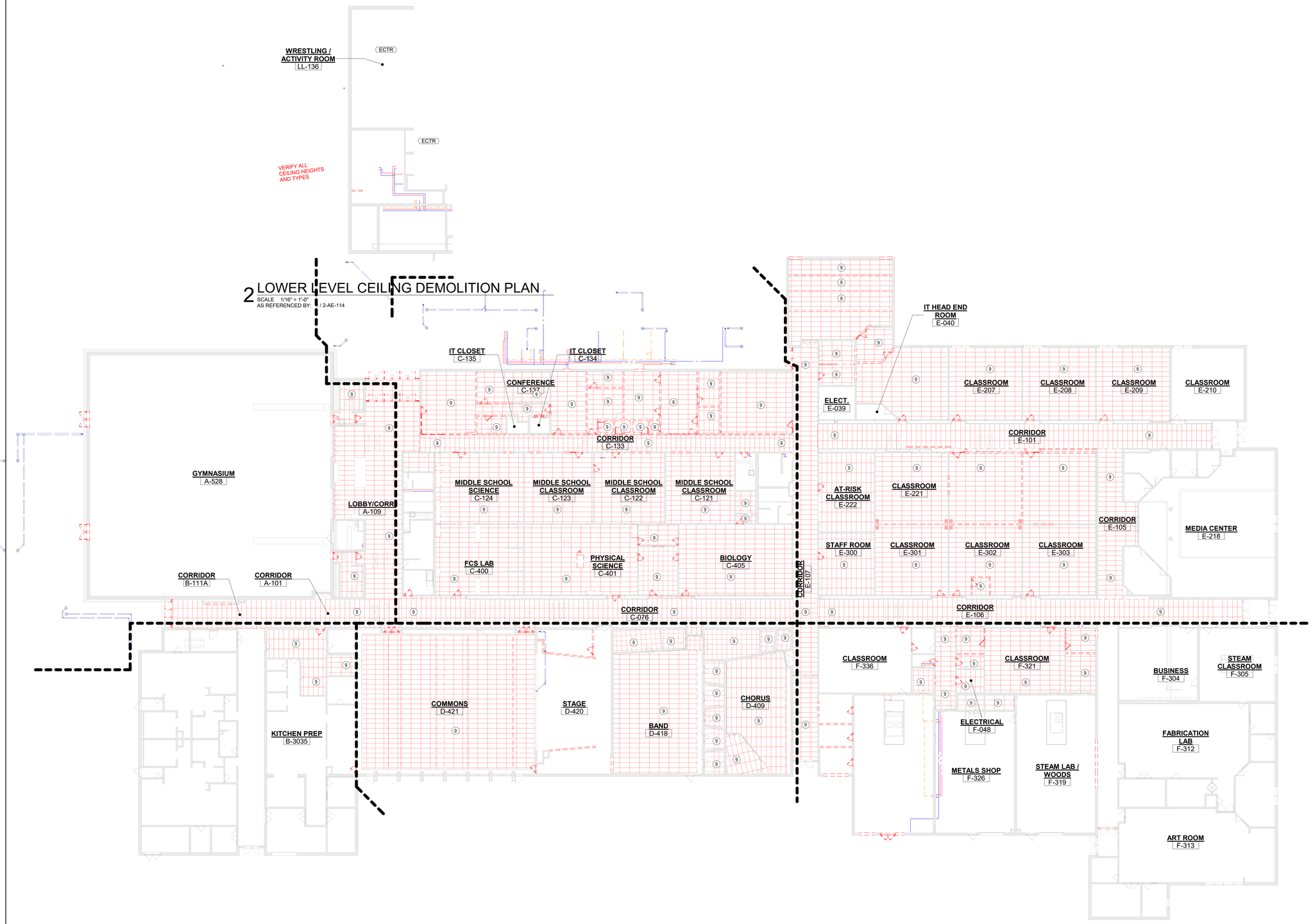

2 LOWER LEVEL CEILING DEMOLITION PLAN

SCALE 1/16" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

1 FIRST FLOOR CEILING DEMOLITION PLAN

SCALE 1/16" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

GENERAL CEILING DEMOLITION NOTES

1. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
2. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REGER TO AE SHEETS IN THIS SET.
3. REFER TO MECHANICAL, PLUMBING, ELECTRICAL DEMOLTION PLANS FOR ADDITIONAL INFORMATION.
4. ABCDEF

(#) DEMOLITION NOTES KEY

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2	02 41 00 A2 - REMOVE FOUNDATION COMPLETELY
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MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
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CHECKED BY: Checker

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SHEET TITLE:
DEMOLITION PLANS - LL & FIRST FLR. CEILING

SHEET NUMBER:
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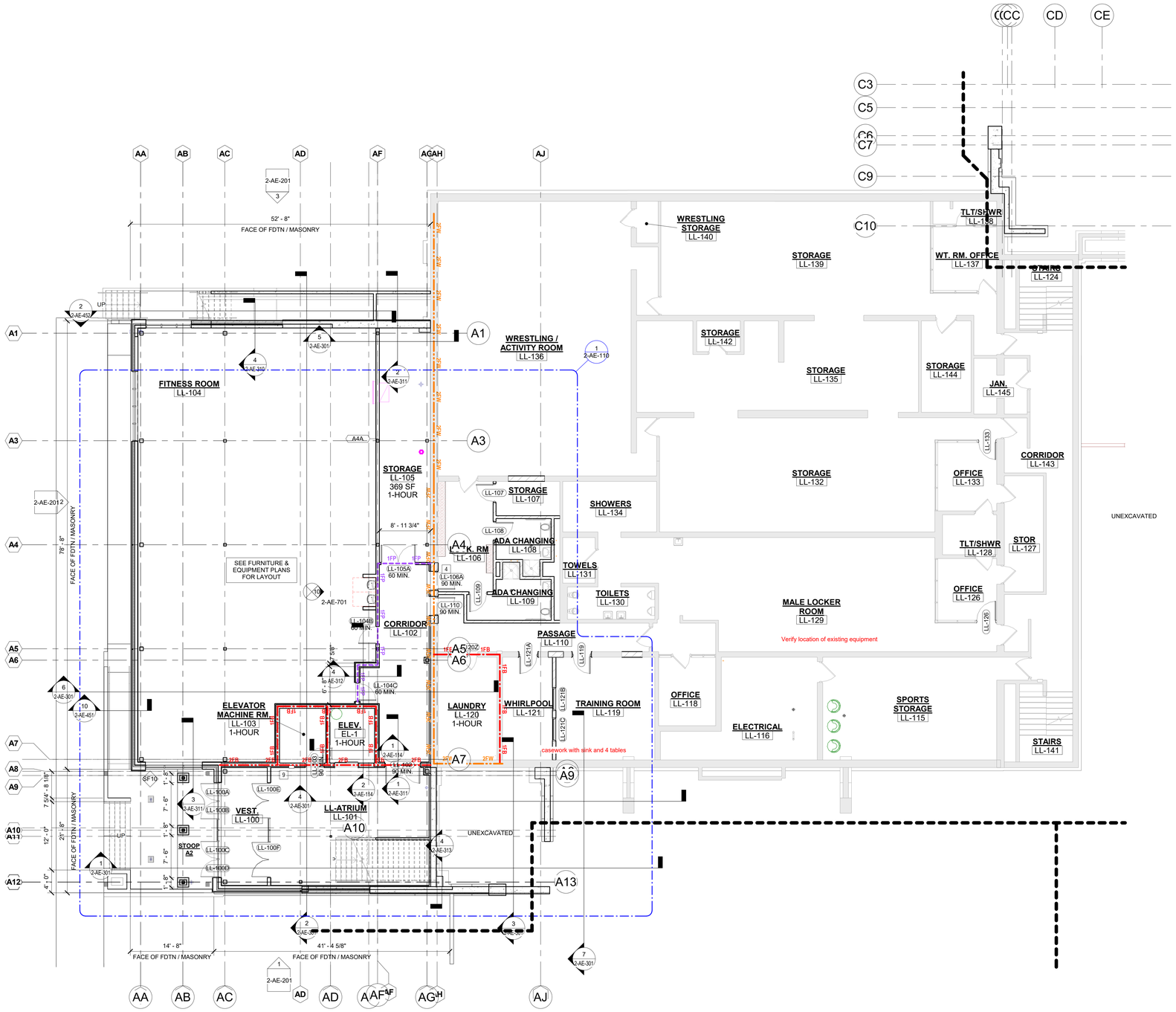
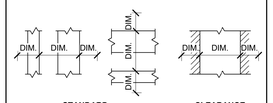


1 LOWER FLOOR PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING

CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
2. ALL OPENINGS IN RATED WALLS SHALL PROVIDE OPENING PROTECTION AS REQUIRED BY CODE.
3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

KEY PLAN

TRUE NORTH

PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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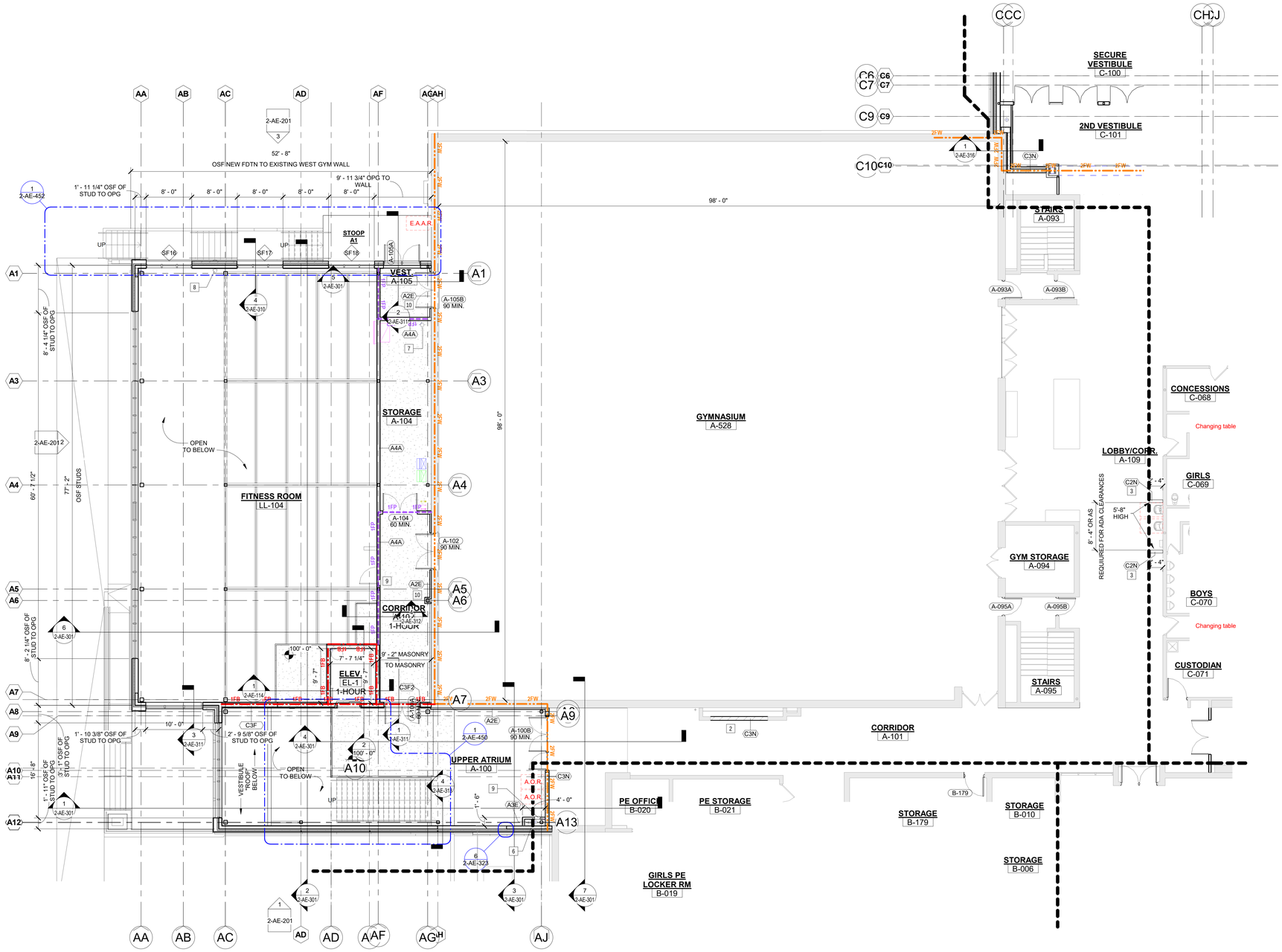
SHEET TITLE:
LOWER LEVEL PLAN

SHEET NUMBER:
2-AE-101



1 FIRST FLOOR PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.

STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

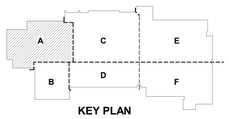
PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH | PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

TOILET ACCES

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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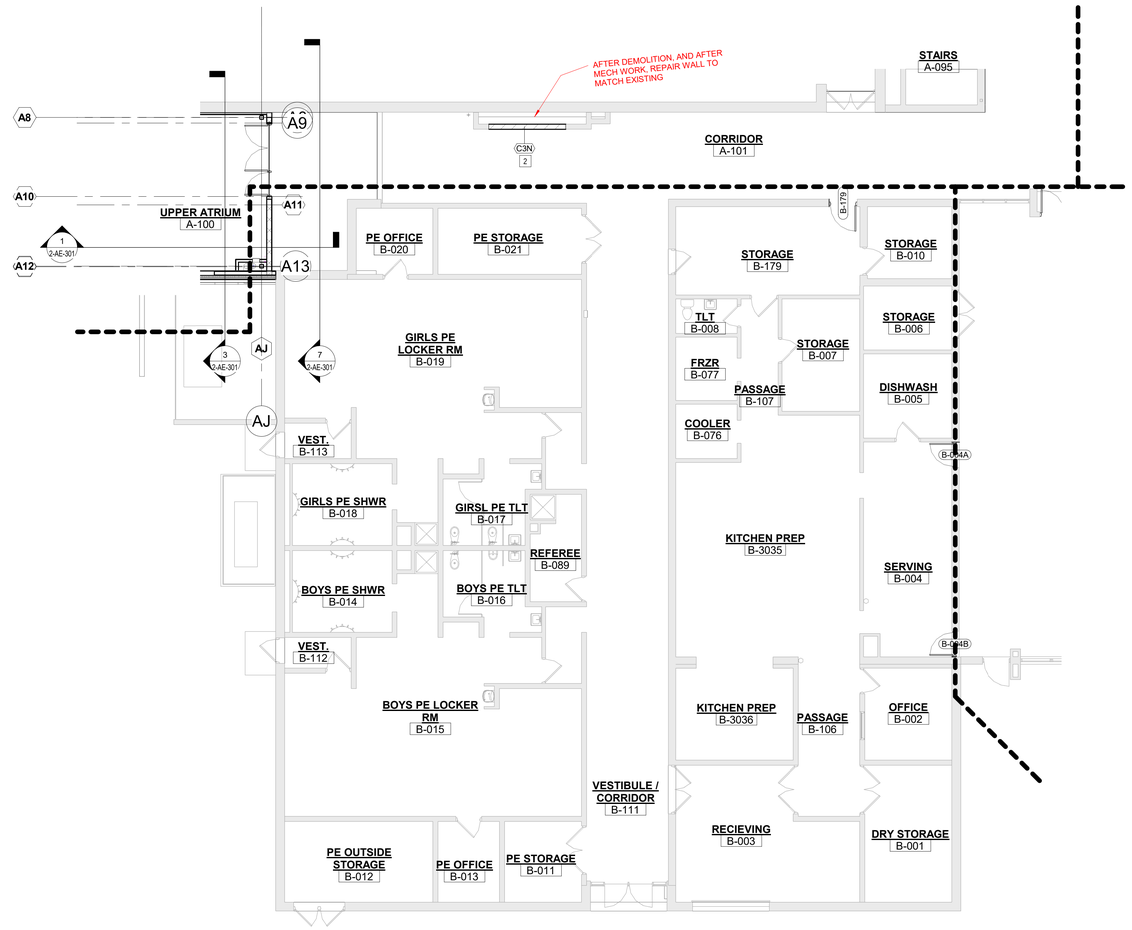
SHEET TITLE:
FIRST FLOOR PLAN - AREA A

SHEET NUMBER:
2-AE-102

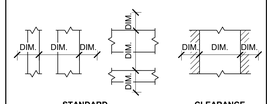


1 FIRST FLOOR PLAN - AREA B

SCALE: 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

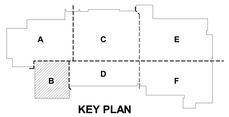
PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #S NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH | PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

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Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

TOILET ACCES

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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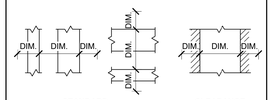
SHEET TITLE:
FIRST FLOOR PLAN - AREA B

SHEET NUMBER:
2-AE-103

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER.
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

KEY PLAN

TRUE NORTH | PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

1 FIRST FLOOR PLAN - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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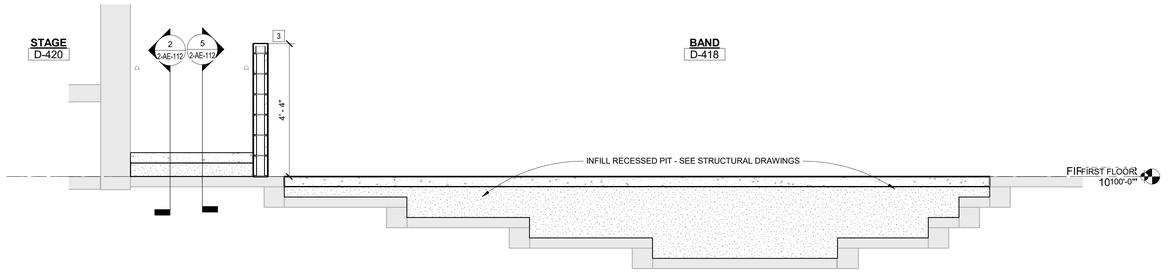
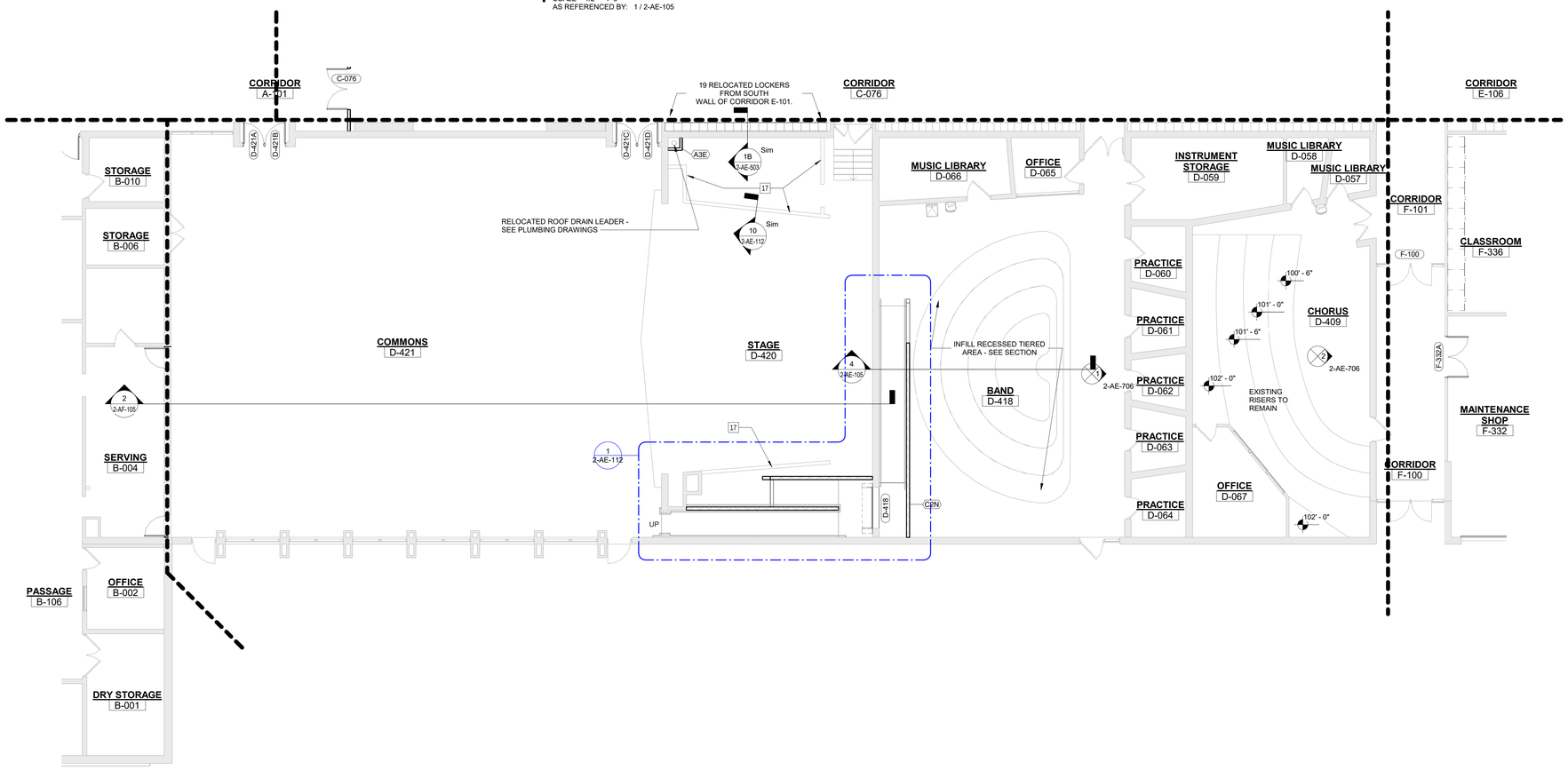
SHEET TITLE: FIRST FLOOR PLAN - AREA C

SHEET NUMBER: 2-AE-104



4 BAND D-418 - RAMP & FLOOR INFILL SECTION

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-105

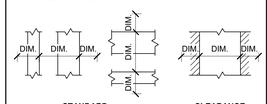


1 FIRST FLOOR PLAN - AREA D

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

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FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
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7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
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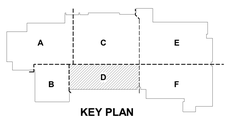
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH | PLAN NORTH

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CONSULTANT:

MANAWA

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

TOILET ACCES

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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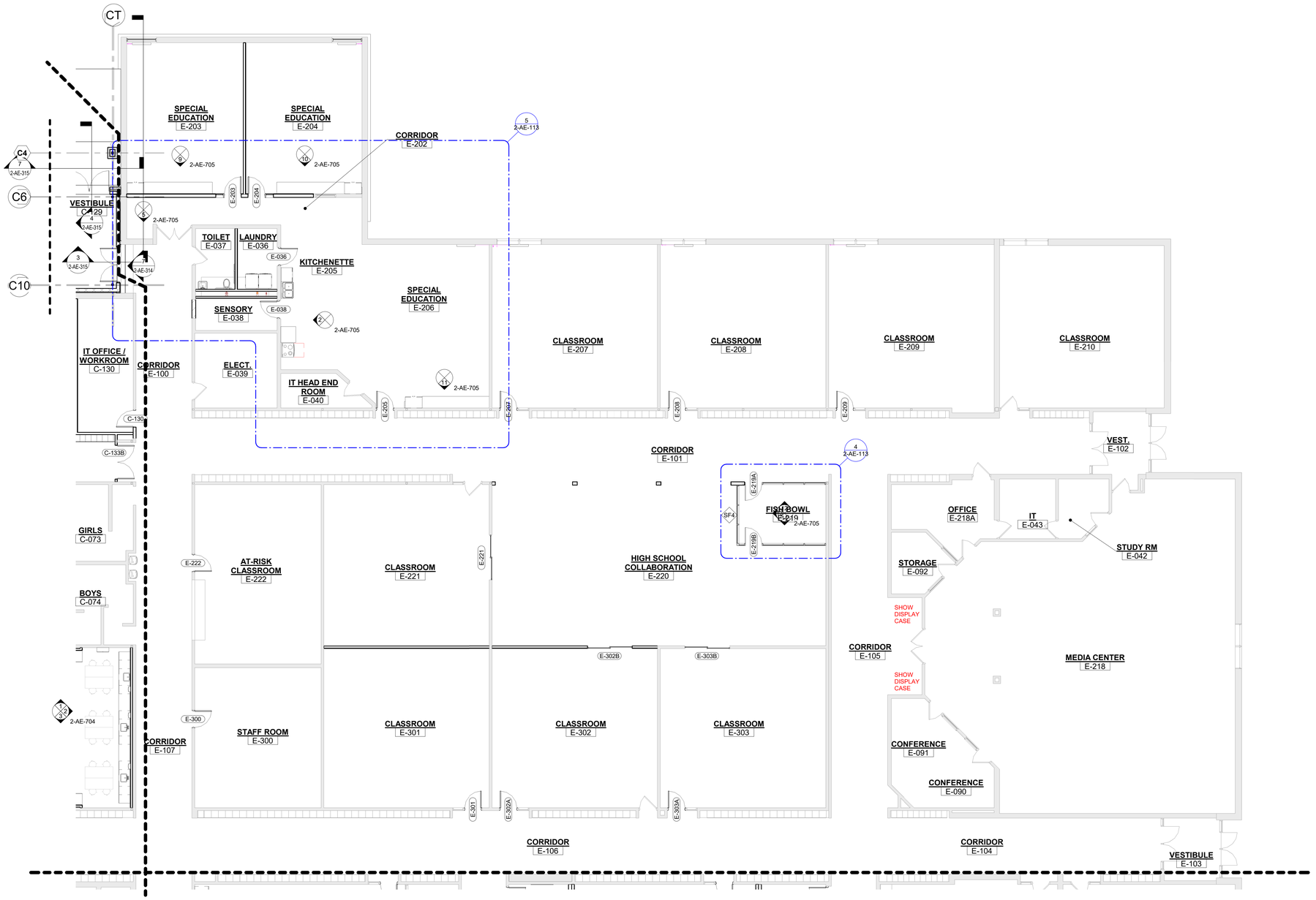
SHEET TITLE:
FIRST FLOOR PLAN - AREA D

SHEET NUMBER:
2-AE-105



1 FIRST FLOOR PLAN - AREA E

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

WALL DIMENSION KEY

NOTE:
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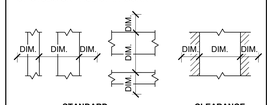

STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

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FLOOR PLAN LEGEND

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NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
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PLAN NOTES KEY

NO.	DESCRIPTION
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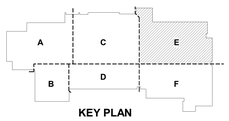
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH | PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

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Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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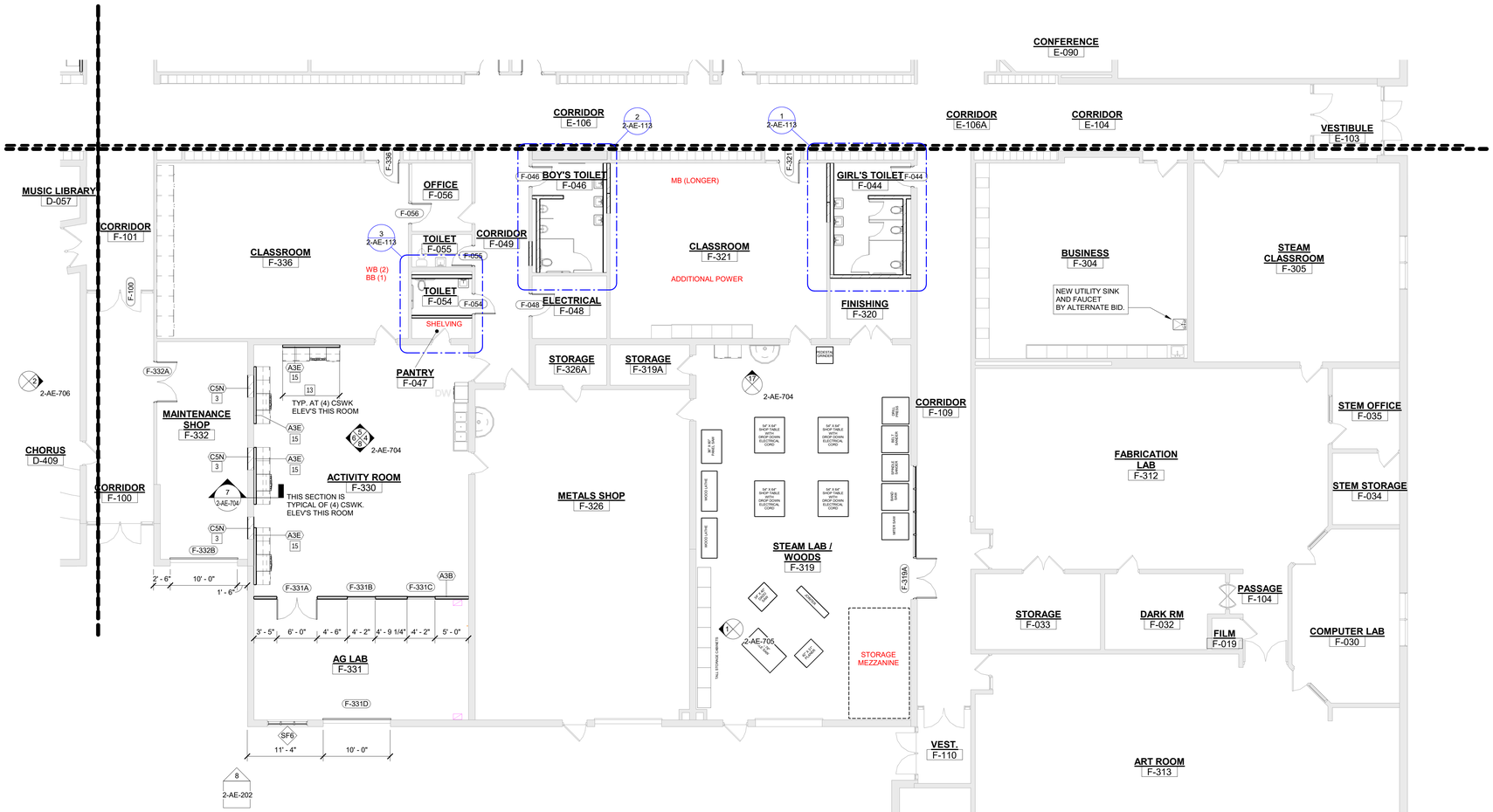
SHEET TITLE:
FIRST FLOOR PLAN - AREA E

SHEET NUMBER:
2-AE-106

TOILET ACCES

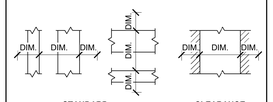


1 FIRST FLOOR PLAN - AREA F

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
2. ALL OPENINGS IN RATED WALLS SHALL PROVIDE OPENING PROTECTION AS REQUIRED BY CODE.
3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

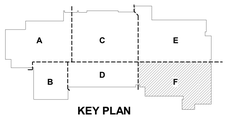
PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH | PLAN NORTH

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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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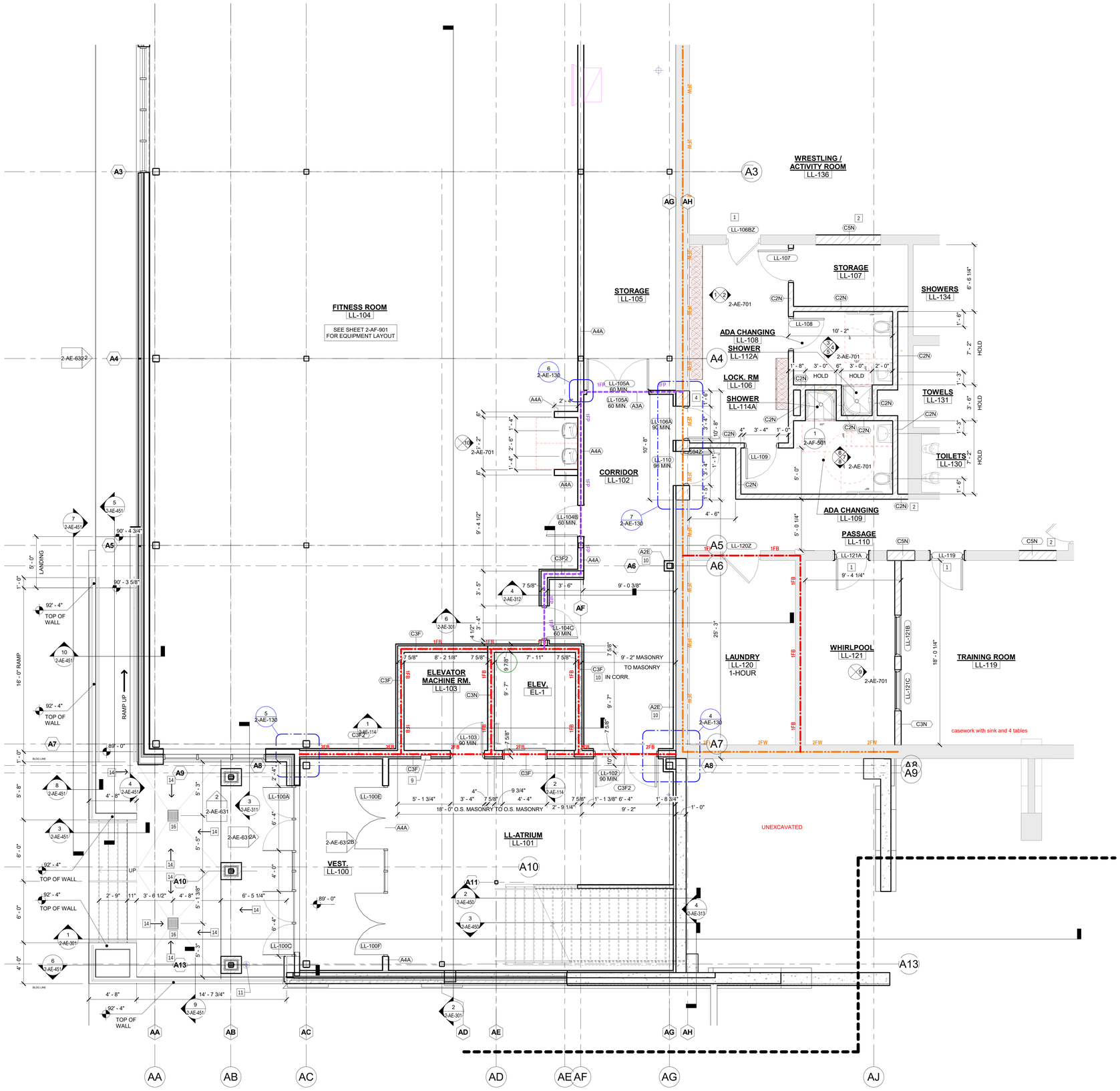
SHEET TITLE:
FIRST FLOOR PLAN - AREA F

SHEET NUMBER:
2-AE-107

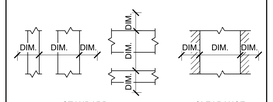


1 LOWER LEVEL - ENLARGED PLAN

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 6" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
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FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

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2	TOOTH IN NEW CMU INTO EXISTING COURSING
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4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
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16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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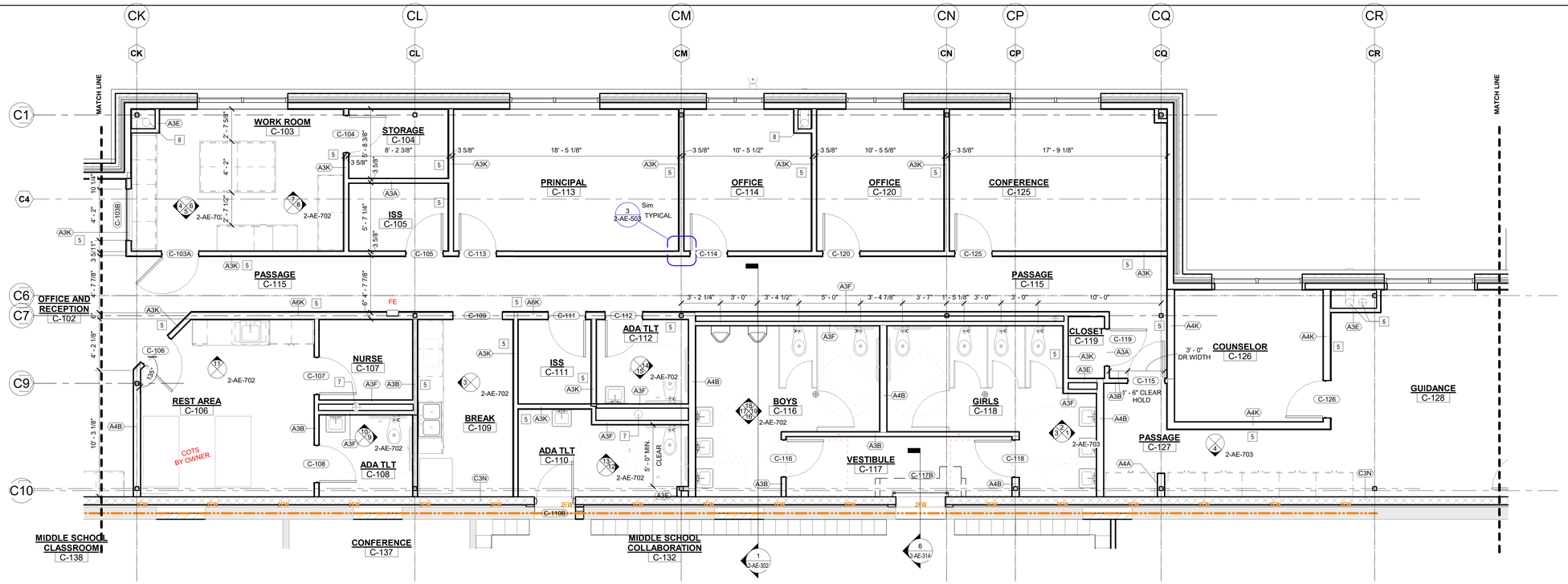
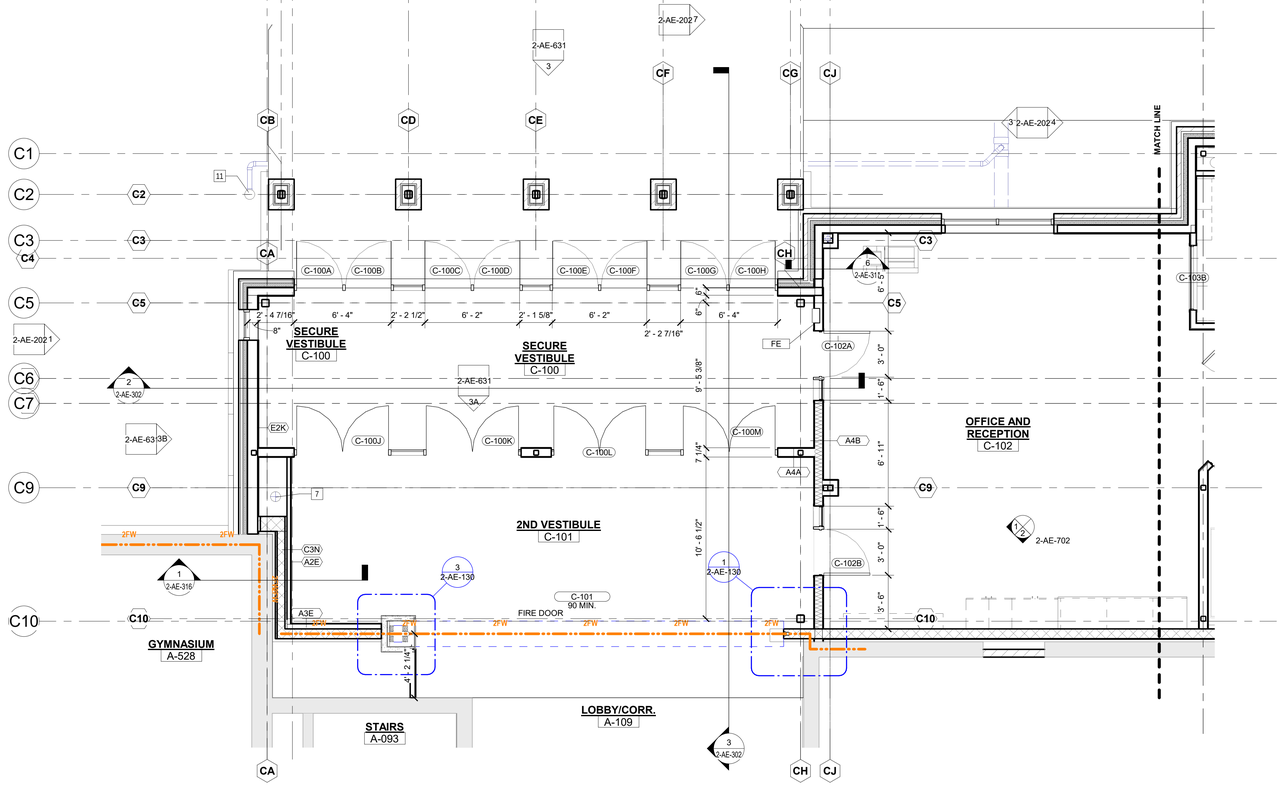
SHEET TITLE:
ENLARGED PLAN - LOWER LEVEL

SHEET NUMBER:
2-AE-110



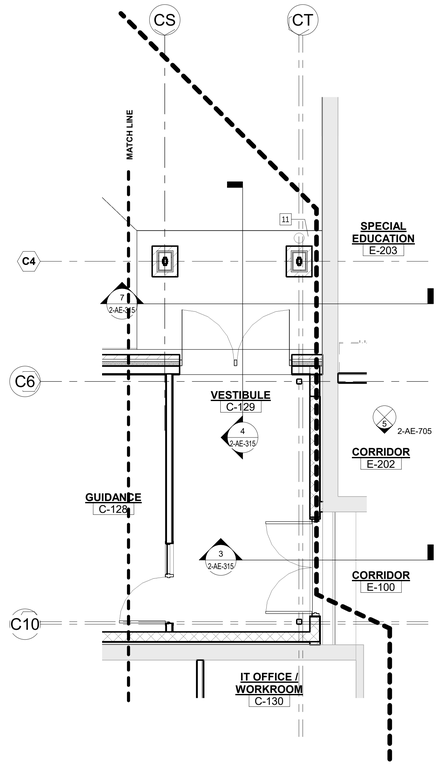
3 AREA C - ENLARGED PLAN 3

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



2 AREA C - ENLARGED PLAN 2

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

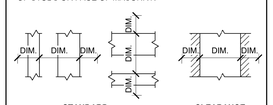


1 AREA C - ENLARGED PLAN 1

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



WALL TYPE NOTES

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FLOOR PLAN LEGEND

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16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

TOILET ACCESSORIES KEY

TAG	DESCRIPTION
TA-1	GRAB BARS
TA-2	MIRRORS
TA-3	PAPER TOWEL DISPENSER
TA-4	PAPER TOWEL DISPENSER W/ WASTE RECEPTACLE
TA-5	WASTE RECEPTACLE
TA-6	TOILET TISSUE DISPENSER
TA-7	SANITARY NAPKIN VENDOR
TA-8	SANITARY NAPKIN DISPOSAL
TA-9	SOAP DISPENSER / SOAP DISH
TA-10	TOILET SEAT COVER DISPENSER
TA-11	BABY CHANGING STATION
TA-12	WARM AIR HAND DRYER
TA-13	FOLDING SHOWER SEAT
TA-14	SHOWER CURTAIN ROD / HOOKS
TA-15	TOWEL BAR / SHELF
TA-16	ROBE HOOK
TA-17	MOP AND BROOM HOLDER
TA-18	MEDICINE CABINET

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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PLAN NORTH

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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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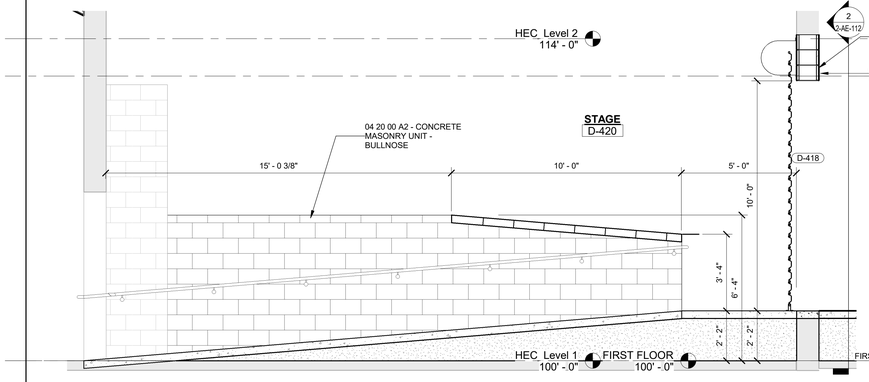
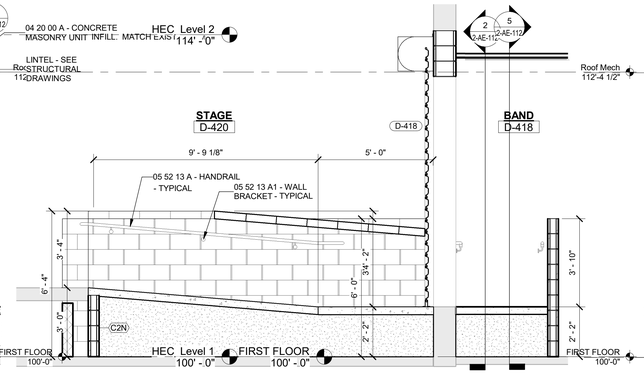
SHEET TITLE:
ENLARGED PLANS AREA C

SHEET NUMBER:
2-AE-111



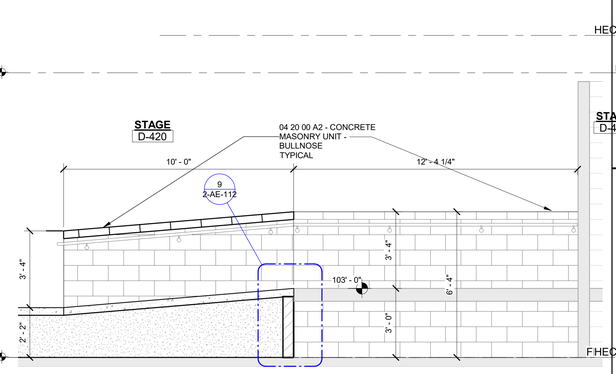
8 STAGE D-425 SECTION 4

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-112



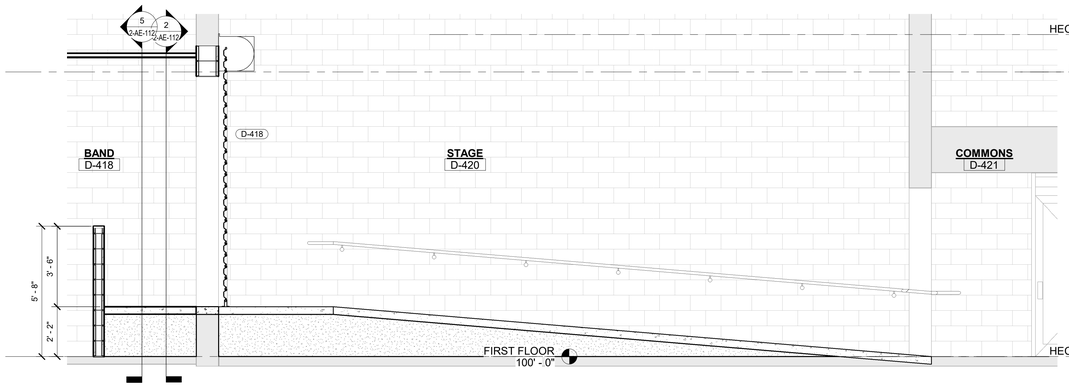
7 STAGE D-425 SECTION 3

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-112



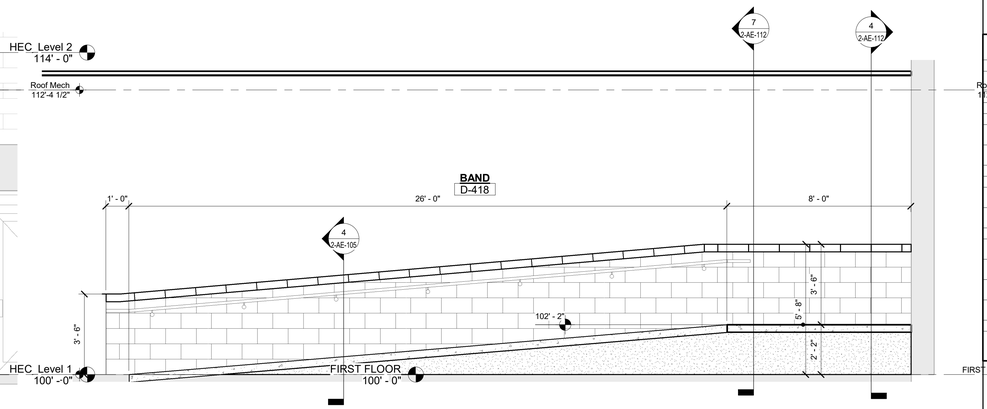
6 STAGE D-425 SECTION 2

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-112



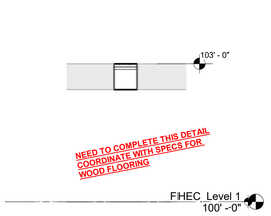
4 STAGE D-425 SECTION 1

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-112



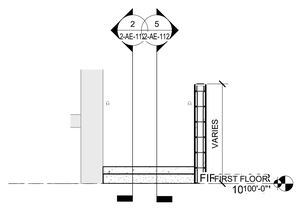
5 BAND D-418 RAMP SECTION 2

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105



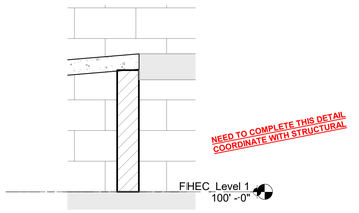
10 STAGE D-425 FLOOR INFILL

SCALE 3/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-105



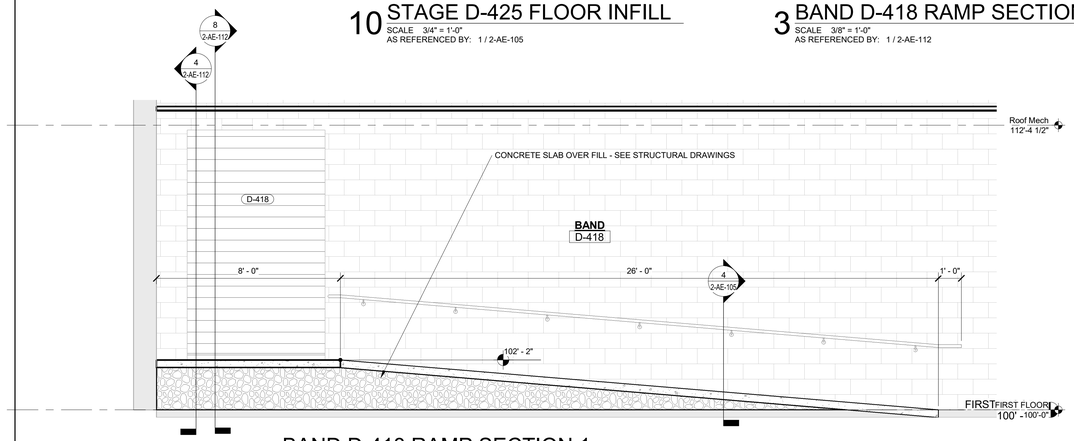
3 BAND D-418 RAMP SECTION 3

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-112



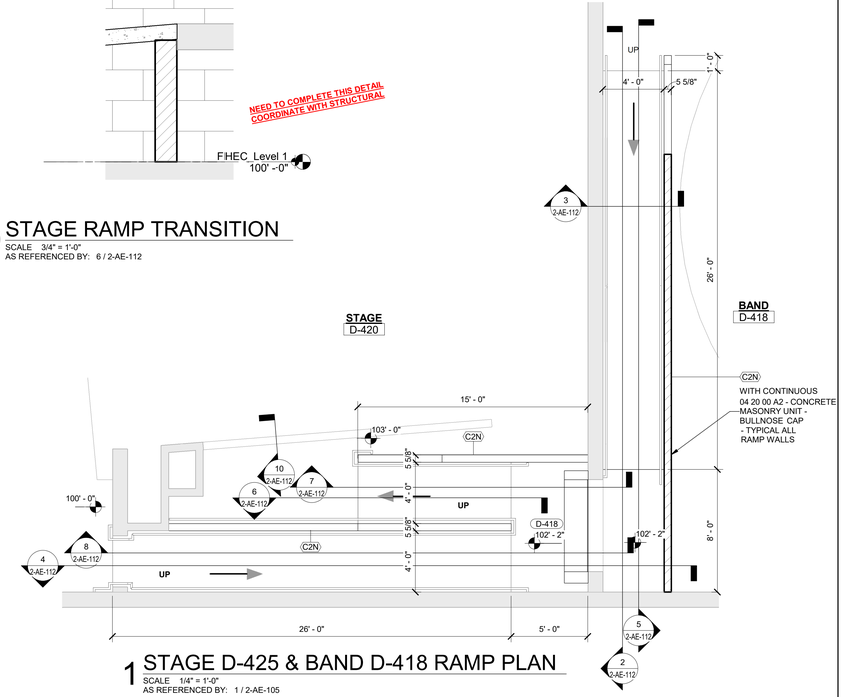
9 STAGE RAMP TRANSITION

SCALE 3/4" = 1'-0"
AS REFERENCED BY: 6 / 2-AE-112



2 BAND D-418 RAMP SECTION 1

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105



1 STAGE D-425 & BAND D-418 RAMP PLAN

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-105

WALL DIMENSION KEY

NOTE:
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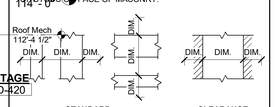

WALL TYPE NOTES

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FLOOR PLAN LEGEND

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NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

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7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
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12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
04 20 00 A2 -	CONCRETE MASONRY UNIT - BULLNOSE
04 20 00 A -	CONCRETE MASONRY UNIT
05 52 13 A1 -	WALL BRACKET
05 52 13 A -	HANDRAIL

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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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MANAWA, WI 54949

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PROJECT NO:	18268
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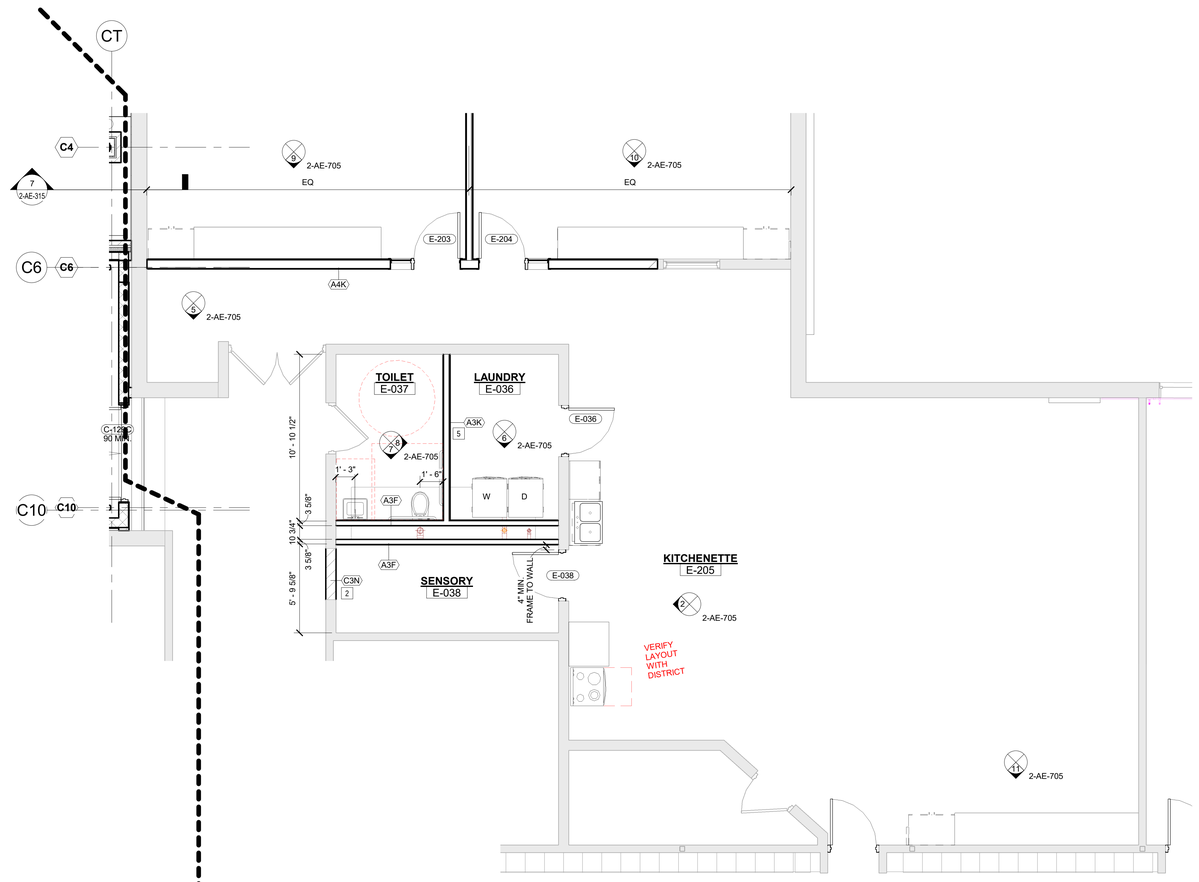
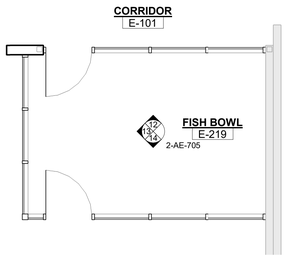
SHEET TITLE:
ENLARGED BAND AND STAGE RAMP PLANS & SECTIONS

SHEET NUMBER:
2-AE-112



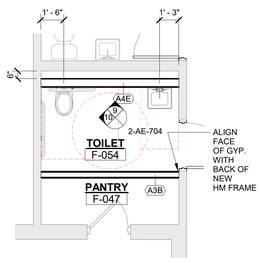
5 AREA E - ENL. PLAN 1

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



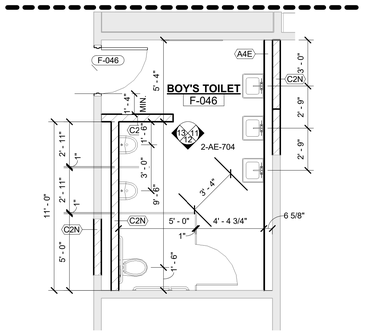
4 ENLARGED E-219A FISH BOWL

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



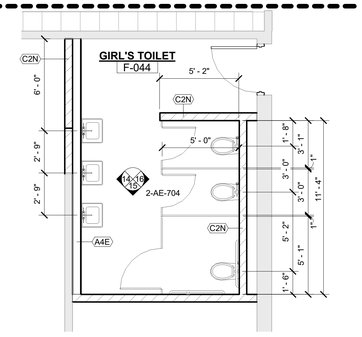
3 ENLARGED F-054

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107



2 ENLARGED F-046

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107

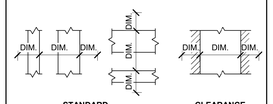


1 ENLARGED F-044

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
2. ALL OPENINGS IN RATED WALLS SHALL PROVIDE OPENING PROTECTION AS REQUIRED BY CODE.
3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

TOILET ACCESSORIES KEY

TAG	DESCRIPTION
TA-1	GRAB BARS
TA-2	MIRRORS
TA-3	PAPER TOWEL DISPENSER
TA-4	PAPER TOWEL DISPENSER W/ WASTE RECEPTACLE
TA-5	WASTE RECEPTACLE
TA-6	TOILET TISSUE DISPENSER
TA-7	SANITARY NAPKIN VENDOR
TA-8	SANITARY NAPKIN DISPOSAL
TA-9	SOAP DISPENSER / SOAP DISH
TA-10	TOILET SEAT COVER DISPENSER
TA-11	BABY CHANGING STATION
TA-12	WARM AIR HAND DRYER
TA-13	FOLDING SHOWER SEAT
TA-14	SHOWER CURTAIN ROD / HOOKS
TA-15	TOWEL BAR / SHELF
TA-16	ROBE HOOK
TA-17	MOP AND BROOM HOLDER
TA-18	MEDICINE CABINET

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MANAWA, WI 54949

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PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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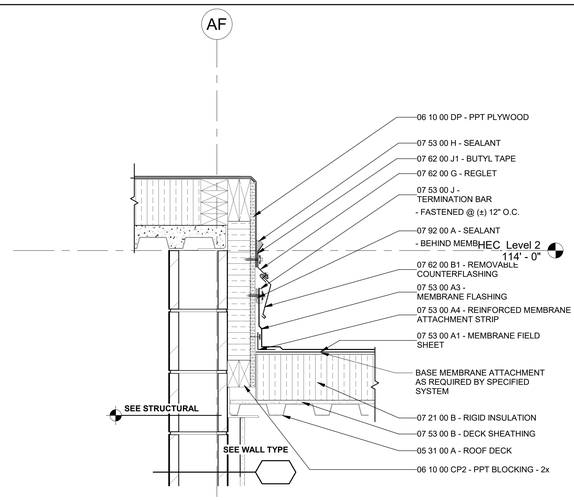
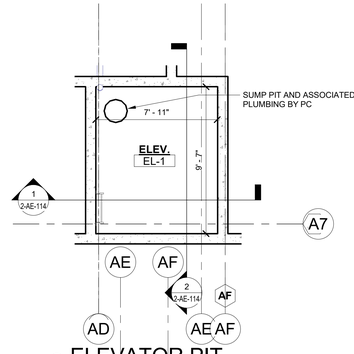
SHEET TITLE:
ENLARGED PLANS AREAS E & F

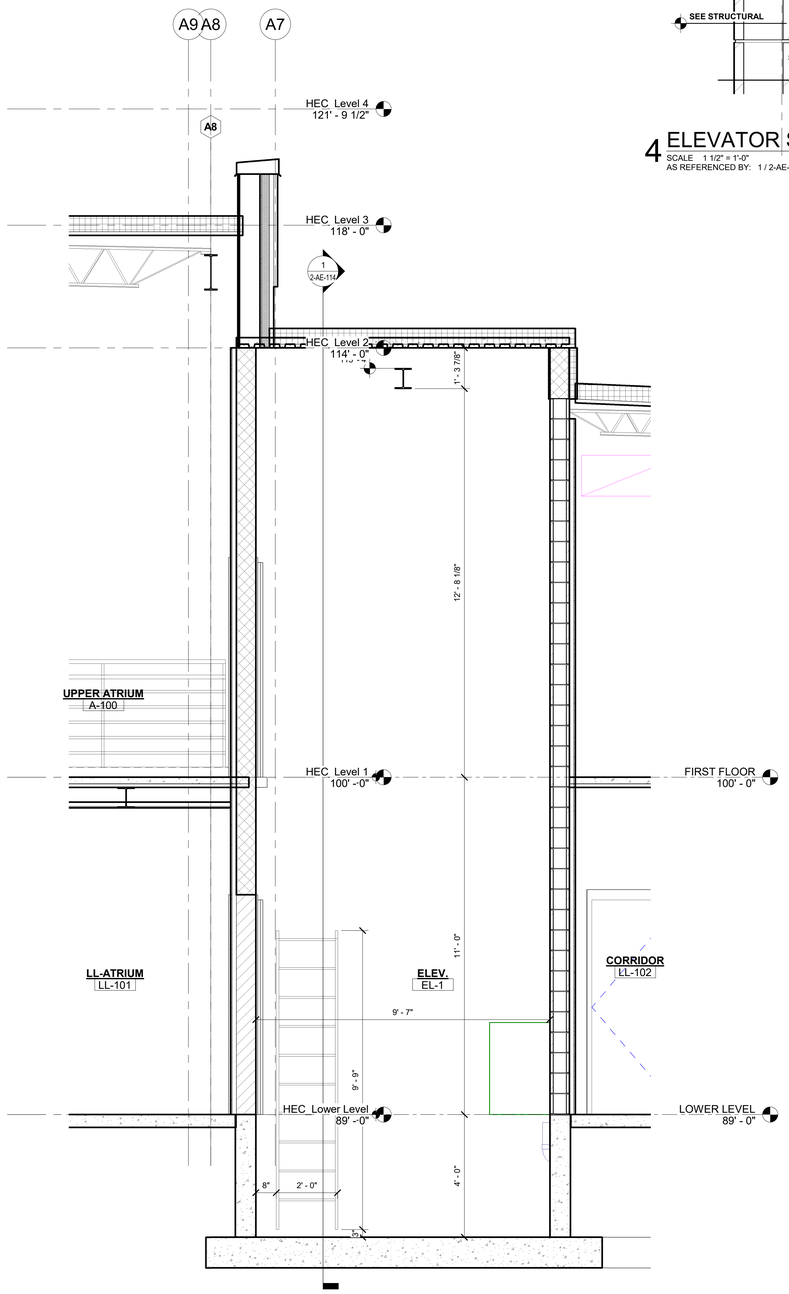
SHEET NUMBER:
2-AE-113



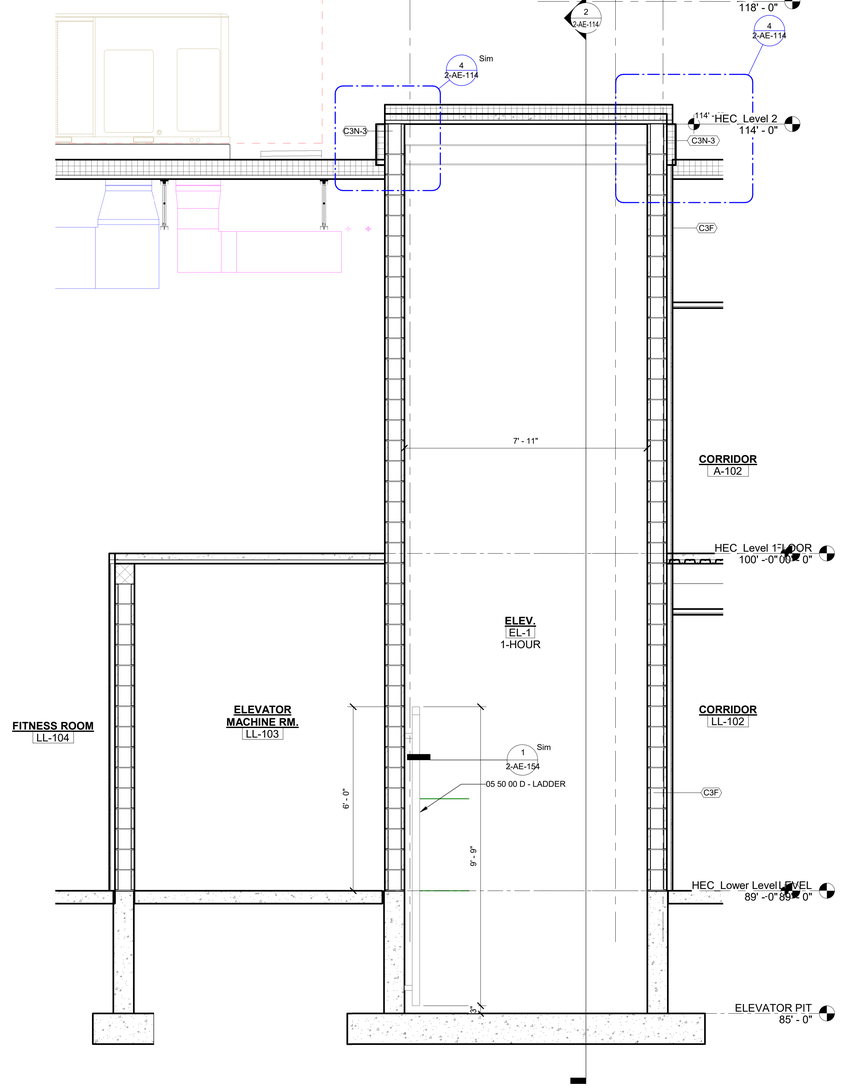
4 ELEVATOR SHAFT CAP DETAIL 1
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114



3 ELEVATOR PIT
SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114



2 ELEVATOR N-S SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



1 ELEVATOR E-W SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
2. ALL STOOP CONSTRUCTION
3. ALL WALL GROUTING / REINFORCING AND BOND BEAM LOCATIONS.
4. ALL BRICK LEDGE HEIGHTS AND LOCATIONS. ALSO REFER TO ARCHITECTURAL ELEVATIONS.
5. AREAS REQUIRING EXISTING STRUCTURAL REINFORCING.
6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
05 31 00 A -	ROOF DECK
05 50 00 D -	LADDER
06 10 00 CP2 -	PPT BLOCKING - 2x
06 10 00 DP -	PPT PLYWOOD
07 21 00 B -	RIGID INSULATION
07 53 00 A1 -	MEMBRANE FIELD SHEET
07 53 00 A3 -	MEMBRANE FLASHING
07 53 00 A4 -	REINFORCED MEMBRANE ATTACHMENT STRIP
07 53 00 B -	DECK SHEATHING
07 53 00 H -	SEALANT
07 53 00 J -	TERMINATION BAR
07 62 00 B1 -	REMOVABLE COUNTERFLASHING
07 62 00 G -	REGLET
07 62 00 J1 -	BUTYL TAPE
07 92 00 A -	SEALANT

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CHECKED BY:	Checker

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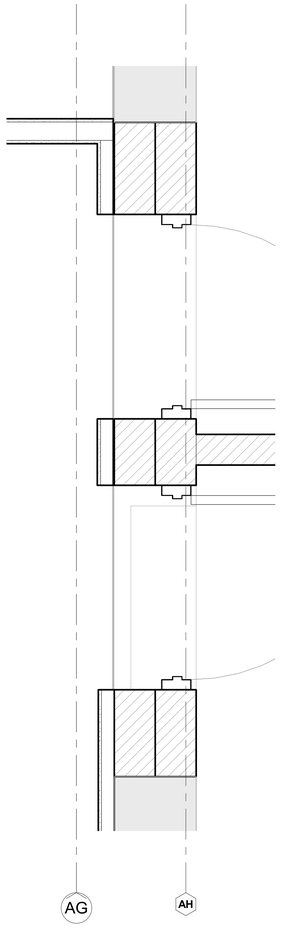
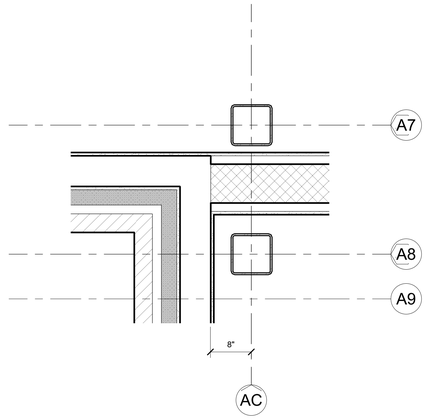
SHEET TITLE:
ELEVATOR PLANS AND SECTIONS

SHEET NUMBER:
2-AE-114

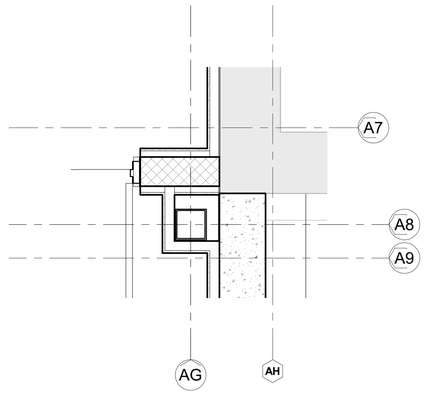


7 AREA A LOWER LEVEL DETAIL 7
SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

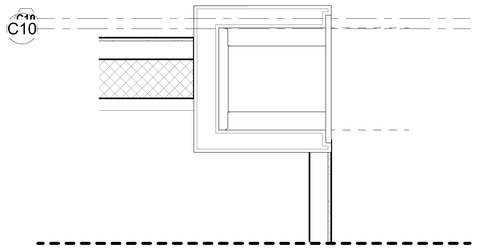
6 AREA A LOWER LEVEL DETAIL 6
SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



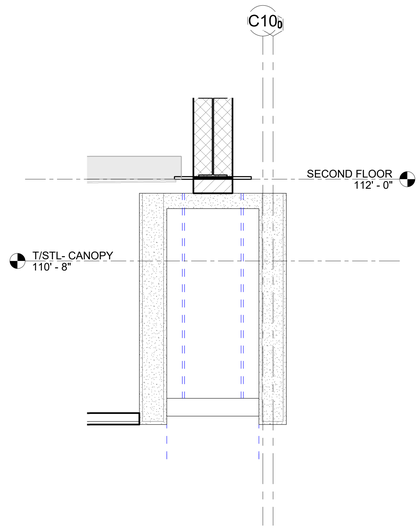
5 AREA A LOWER LEVEL DETAIL 5
SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



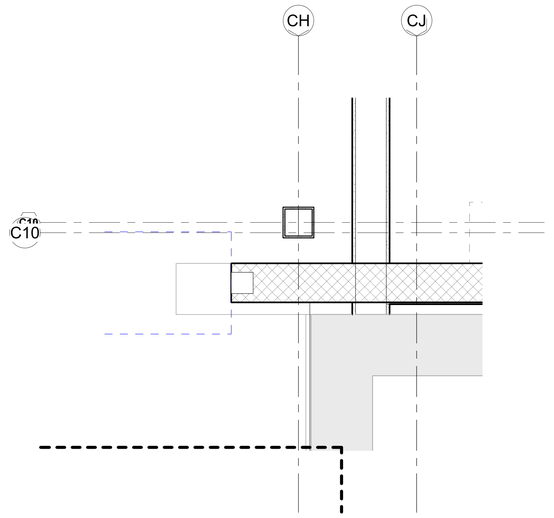
4 AREA A LOWER LEVEL DETAIL 4
SCALE 3/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



3 DOOR C-101 WEST END JAMB DETAIL
SCALE 1" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-111



2 DOOR C-101 HEAD DETAIL
SCALE 1" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-315



1 DOOR C-101 EAST END JAMB DETAIL
SCALE 1" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-111

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CONSULTANT:

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MANAWA, WI 54949

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SHEET TITLE:
BLDG PLAN DETAILS

SHEET NUMBER:
2-AE-130

KEY TO ROOF NOTES

1. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **WITH**
   07 53 00 C1 - INSULATION SADDLES (TAPERED INSULATION) WHERE INDICATED **OVER**
   05 31 00 A - METAL ROOF DECKING **OVER**
   05 05 21 00 A - STEEL JOISTS
2. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **OVER**
   03 30 00 F - CONCRETE TOPPING WITH REINFORCING **OVER**
   05 31 00 A - METAL ROOF DECKING
3. MECHANCAL EQUIPMENT - SEE MECHANICAL DRAWINGS
4. INFILL TO MATCH EXISTING ROOF
5. 07 53 00 E1 - ROOF PAVERS

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
1/4"/FT TAPERED POLYISOCYANURATE RIGID FOAM INSUL. OVER
CONSISTENT 4" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
METAL DECKING OVER
LEVEL STRUCTURE;
SEE SPECIFICATIONS.

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
CONSISTENT 6" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
1/2" EXTERIOR GYPSUM SHEATHING OVER
METAL DECKING OVER
SLOPED STRUCTURE;
SEE SPECIFICATIONS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
07 72 00 A -	ROOF HATCH
07 72 00 C -	SAFETY RAILING

ABBREVIATIONS AND SYMBOLS

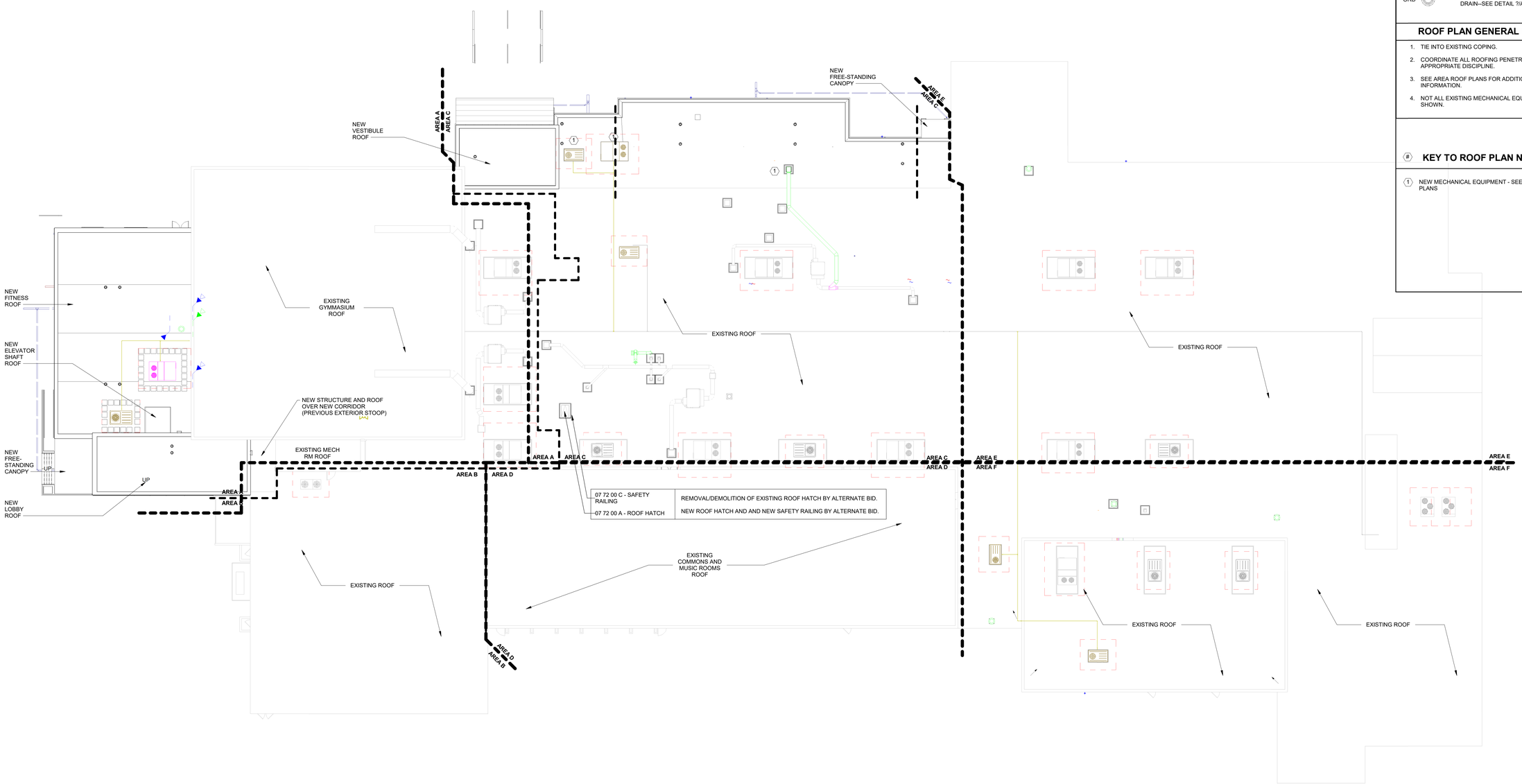
- X:12 — INDICATES ROOF SLOPE. REFER TO ROOF TYPES SCHEDULE FOR SLOPED VS. FLAT STRUCTURE.
- 07 53 00 - TAPERED RIGID FOAM INSULATION SADDLES
- or VTR — ROOF PENETRATION-- SEE DETAIL ?/AE-???
- R.E. — 23 00 00 - HVAC EXHAUST THROUGH ROOF
- FARA — 05 50 00 - FALL ARREST ROOF ANCHOR-- SEE DETAIL ?/AE-???
- 07 53 00 - PATCH NEW ROOF MEMBRANE INTO EXISTING AS NECESSARY
- RD — 22 14 26.13 A - ROOF DRAIN-- SEE DETAIL ?/AE-???
- ORD — 22 14 26.13 B - OVERFLOW DRAIN--SEE DETAIL ?/AE-???

ROOF PLAN GENERAL NOTES

1. TIE INTO EXISTING COPING.
2. COORDINATE ALL ROOFING PENETRATIONS WITH APPROPRIATE DISCIPLINE.
3. SEE AREA ROOF PLANS FOR ADDITIONAL INFORMATION.
4. NOT ALL EXISTING MECHANICAL EQUIPMENT IS SHOWN.

KEY TO ROOF PLAN NOTES

1. NEW MECHANICAL EQUIPMENT - SEE MECHANICAL PLANS



1 OVERALL ROOF PLAN
SCALE 1/16" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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SHEET TITLE:
OVERALL ROOF PLAN

SHEET NUMBER:
2-AE-150

KEY PLAN
A C E
B D F

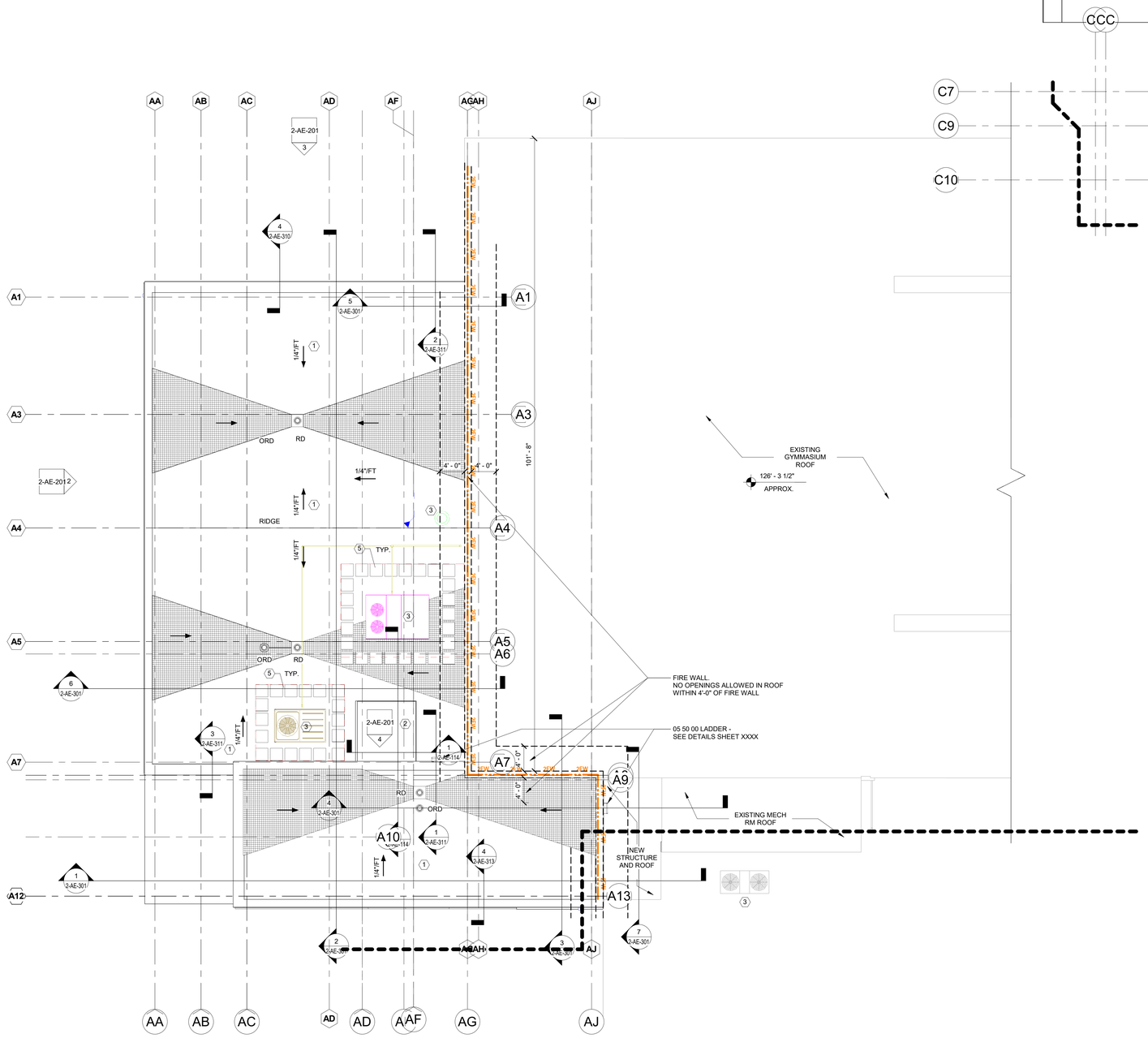
TRUE NORTH
PLAN NORTH

KEY TO ROOF NOTES

1. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **WITH**
   07 53 00 C1 - INSULATION SADDLES (TAPERED INSULATION) WHERE INDICATED **OVER**
   05 31 00 A - METAL ROOF DECKING **OVER**
   05 05 21 00 A - STEEL JOISTS
2. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **OVER**
   03 30 00 F - CONCRETE TOPPING WITH REINFORCING **OVER**
   05 31 00 A - METAL ROOF DECKING
3. MECHANCAL EQUIPMENT - SEE MECHANICAL DRAWINGS
4. INFILL TO MATCH EXISTING ROOF
5. 07 53 00 E1 - ROOF PAVERS

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
1/4"/FT TAPERED POLYISOCYANURATE RIGID FOAM INSUL. OVER
CONSISTENT 4" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
METAL DECKING OVER
LEVEL STRUCTURE
SEE SPECIFICATIONS.

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
CONSISTENT 6" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
1/2" EXTERIOR GYPSUM SHEATHING OVER
METAL DECKING OVER
SLOPED STRUCTURE
SEE SPECIFICATIONS.



ABBREVIATIONS AND SYMBOLS

X:12	INDICATES ROOF SLOPE. REFER TO ROOF TYPES SCHEDULE FOR SLOPED VS. FLAT STRUCTURE.
	07 53 00 - TAPERED RIGID FOAM INSULATION SADDLES
or VTR	ROOF PENETRATION-- SEE DETAIL ?/AE-???
R.E.	23 00 00 - HVAC EXHAUST THROUGH ROOF
FARA	05 50 00 - FALL ARREST ROOF ANCHOR-- SEE DETAIL ?/AE-???
	07 53 00 - PATCH NEW ROOF MEMBRANE INTO EXISTING AS NECESSARY
RD	22 14 26.13 A - ROOF DRAIN-- SEE DETAIL ?/AE-???
ORD	22 14 26.13 B - OVERFLOW DRAIN--SEE DETAIL ?/AE-???

ROOF PLAN GENERAL NOTES

1. TIE INTO EXISTING COPING.
2. COORDINATE ALL ROOFING PENETRATIONS WITH APPROPRIATE DISCIPLINE.
3. SEE AREA ROOF PLANS FOR ADDITIONAL INFORMATION.
4. NOT ALL EXISTING MECHANICAL EQUIPMENT IS SHOWN.

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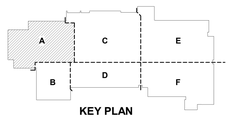
2019-05-03

1 ROOF PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105



KEY PLAN

TRUE NORTH
PLAN NORTH

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CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:
ROOF PLAN - AREA A

SHEET NUMBER:
2-AE-151

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
1/4"/FT TAPERED POLYISOCYANURATE RIGID FOAM INSUL. OVER
CONSISTENT 4" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
METAL DECKING OVER
LEVEL STRUCTURE.
SEE SPECIFICATIONS.

FULLY ADHERED 60 MIL. EPDM MEMBRANE OVER
CONSISTENT 6" THICK POLYISOCYANURATE RIGID FOAM INSULATION WITH
TAPERED RIGID INSULATION WHERE INDICATED OVER
1/2" EXTERIOR GYPSUM SHEATHING OVER
METAL DECKING OVER
SLOPED STRUCTURE.
SEE SPECIFICATIONS.

KEY TO ROOF NOTES

1. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **WITH**
   07 53 00 C1 - INSULATION SADDLES (TAPERED INSULATION) WHERE INDICATED **OVER**
   05 31 00 A - METAL ROOF DECKING **OVER**
   05 05 21 00 A - STEEL JOISTS
2. 07 53 00 A - FULLY ADHERED 60 MIL. EPDM MEMBRANE ROOFING **OVER**
   07 53 00 B - (6") THICK POLYISOCYANURATE RIGID FOAM INSULATION **OVER**
   03 30 00 F - CONCRETE TOPPING WITH REINFORCING **OVER**
   05 31 00 A - METAL ROOF DECKING
3. MECHANCAL EQUIPMENT - SEE MECHANICAL DRAWINGS
4. INFILL TO MATCH EXISTING ROOF
5. 07 53 00 E1 - ROOF PAVERS

ABBREVIATIONS AND SYMBOLS

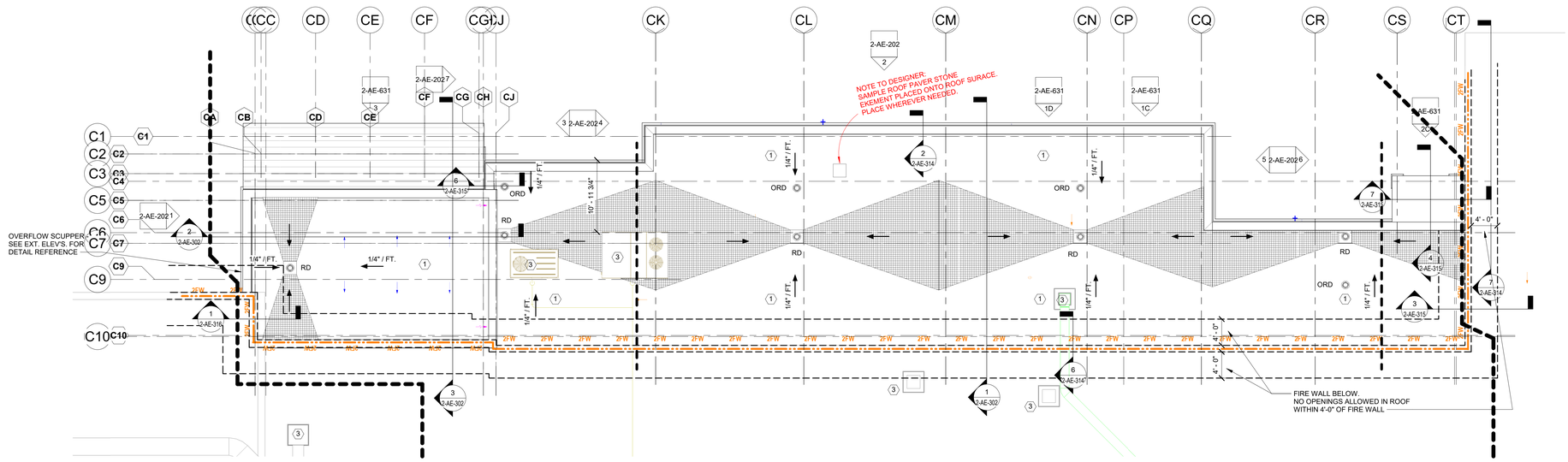
- X:12 — INDICATES ROOF SLOPE. REFER TO ROOF TYPES SCHEDULE FOR SLOPED VS. FLAT STRUCTURE.
- 07 53 00 - TAPERED RIGID FOAM INSULATION SADDLES
- or VTR — ROOF PENETRATION-- SEE DETAIL ?/AE-???
- R.E. — 23 00 00 - HVAC EXHAUST THROUGH ROOF
- FARA — 05 50 00 - FALL ARREST ROOF ANCHOR-- SEE DETAIL ?/AE-???
- 07 53 00 - PATCH NEW ROOF MEMBRANE INTO EXISTING AS NECESSARY
- RD — 22 14 26.13 A - ROOF DRAIN-- SEE DETAIL ?/AE-???
- ORD — 22 14 26.13 B - OVERFLOW DRAIN--SEE DETAIL ?/AE-???

ROOF PLAN GENERAL NOTES

1. TIE INTO EXISTING COPING.
2. COORDINATE ALL ROOFING PENETRATIONS WITH APPROPRIATE DISCIPLINE.
3. SEE AREA ROOF PLANS FOR ADDITIONAL INFORMATION.
4. NOT ALL EXISTING MECHANICAL EQUIPMENT IS SHOWN.

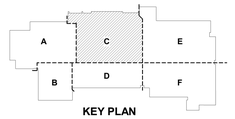
KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT



1 ROOF PLAN - AREA A
SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH
PLAN NORTH

FOR BIDS
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CONSULTANT:

MANAWA

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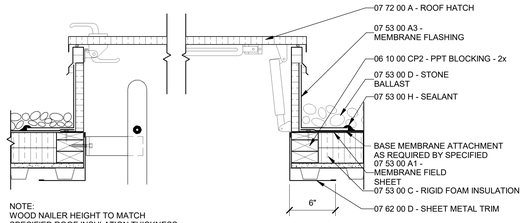
SHEET TITLE:
ROOF PLAN - AREA C

SHEET NUMBER:
2-AE-152



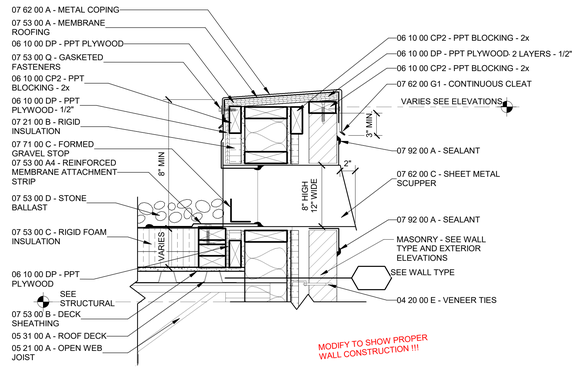
NOTE:
WOOD NAILER HEIGHT TO MATCH SPECIFIED ROOF INSULATION THICKNESS INCLUDING ANY TAPERED INSULATION.

Verify roofing type & roof structure

7 Thermal & Moisture - 7 Roof Hatch

20 ROOF HATCH

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

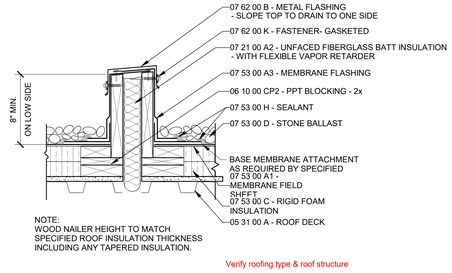


MODIFY TO SHOW PROPER WALL CONSTRUCTION !!!

7 Thermal & Moisture - 7 Scupper - Stud & Masonry W/ Bar Joists

19 SCUPPER DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-202



NOTE:
WOOD NAILER HEIGHT TO MATCH SPECIFIED ROOF INSULATION THICKNESS INCLUDING ANY TAPERED INSULATION.

Verify roofing type & roof structure

Roof Expansion Joint

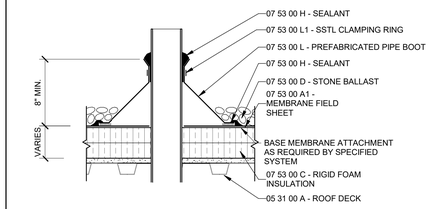
7 JT X001

10 ROOF EXPANSION JOINT DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

KEYNOTE LEGEND

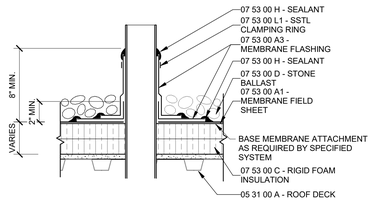
KEY NO.	KEYNOTE TEXT
04 20 00 E -	VENEER TIES
04 20 00 G4 -	WEEP VENTS @ 32" O/C
05 21 00 A -	OPEN WEB JOIST
05 31 00 A -	ROOF DECK
06 10 00 A -	WOOD FRAMING
06 10 00 CP2 -	PPT BLOCKING - 2x
06 10 00 DP -	PPT PLYWOOD
07 21 00 A2 -	UNFACED FIBERGLASS BATT INSULATION
07 21 00 B -	RIGID INSULATION
07 53 00 A1 -	MEMBRANE FIELD SHEET
07 53 00 A3 -	MEMBRANE FLASHING
07 53 00 A4 -	REINFORCED MEMBRANE ATTACHMENT STRIP
07 53 00 A -	MEMBRANE ROOFING
07 53 00 B -	DECK SHEATHING
07 53 00 C -	RIGID FOAM INSULATION
07 53 00 D -	STONE BALLAST
07 53 00 H -	SEALANT
07 53 00 L1 -	SSTL CLAMPING RING
07 53 00 L -	PREFABRICATED PIPE BOOT
07 62 00 A -	METAL COPING
07 62 00 B -	METAL FLASHING
07 62 00 C -	SHEET METAL SCUPPER
07 62 00 D -	SHEET METAL TRIM
07 62 00 G1 -	CONTINUOUS CLEAT
07 62 00 K -	FASTENER
07 71 00 A -	FORMED COPING
07 71 00 C -	FORMED GRAVEL STOP
07 72 00 A -	ROOF HATCH
07 92 00 A -	SEALANT
22 14 26.13 E -	INSULATION
22 30 00 L -	PIPE PROTECTION
22 30 00 P -	URINAL
23 00 00 M -	INSULATED MECHANICAL CURB
23 00 00 P -	FASTENERS AS REQUIRED



Verify roofing type & roof structure

9 ROOF PENETRATION DETAIL

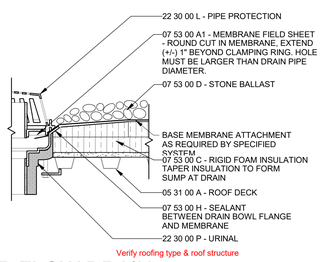
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



Verify roofing type & roof structure

8 ROOF PENETRATION DETAIL

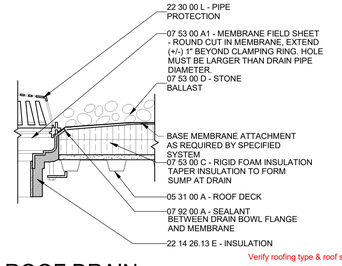
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



Verify roofing type & roof structure

7 OVER FLOW DRAIN

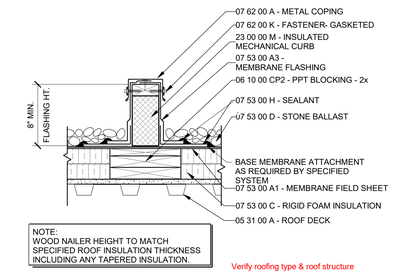
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 07 71 00 A - FORMED COPING



Verify roofing type & roof structure

6 ROOF DRAIN

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

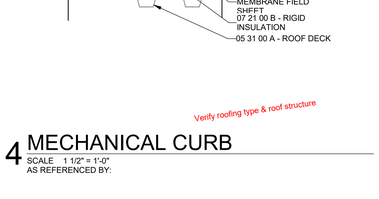


NOTE:
WOOD NAILER HEIGHT TO MATCH SPECIFIED ROOF INSULATION THICKNESS INCLUDING ANY TAPERED INSULATION.

Verify roofing type & roof structure

5 SUPPORT CURB

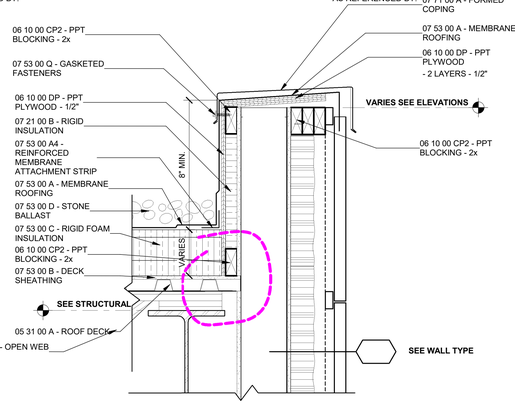
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



Verify roofing type & roof structure

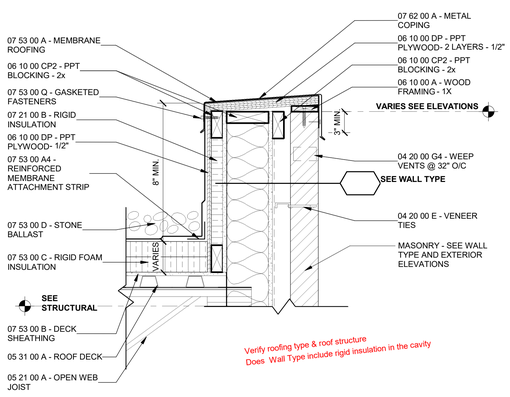
4 MECHANICAL CURB

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



3 PARAPET AT MTL STUD & MTL PANEL VENEER

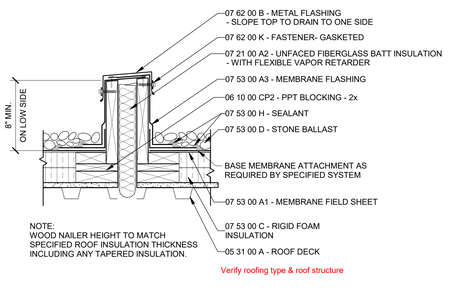
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



Verify roofing type & roof structure
Does Wall Type include rigid insulation in the cavity

2 PARAPET AT MTL STUD & MASONRY VENEER

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



NOTE:
WOOD NAILER HEIGHT TO MATCH SPECIFIED ROOF INSULATION THICKNESS INCLUDING ANY TAPERED INSULATION.

Verify roofing type & roof structure

1 ROOF EXPANSION JOINT

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

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CONSULTANT:

MANAWA

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SHEET TITLE:

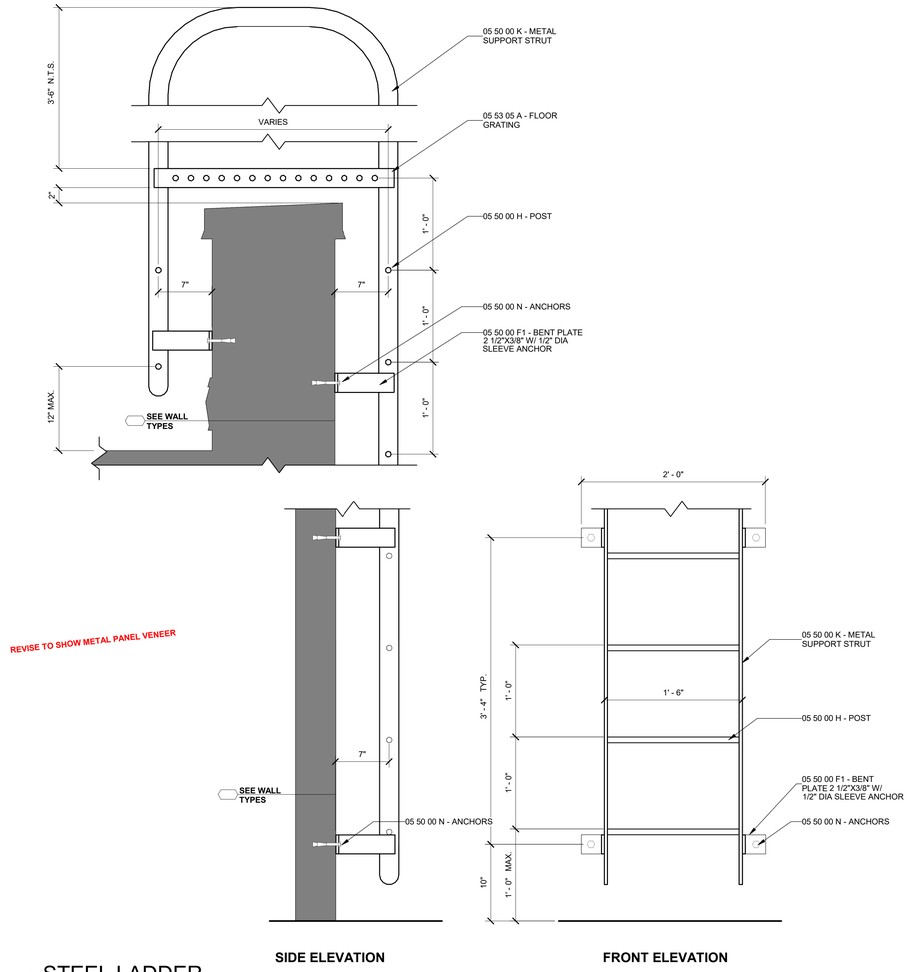
ROOF DETAILS 1

SHEET NUMBER:

2-AE-153

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
05 50 00 F1 -	BENT PLATE
05 50 00 H -	POST
05 50 00 K -	METAL SUPPORT STRUT
05 50 00 N -	ANCHORS
05 53 05 A -	FLOOR GRATING



SIDE ELEVATION

FRONT ELEVATION

1 STEEL LADDER

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

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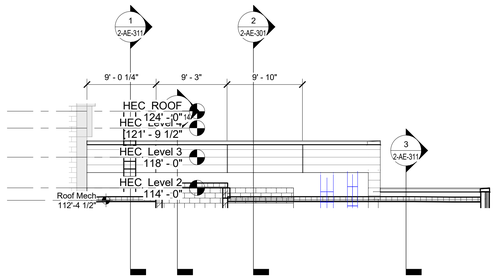
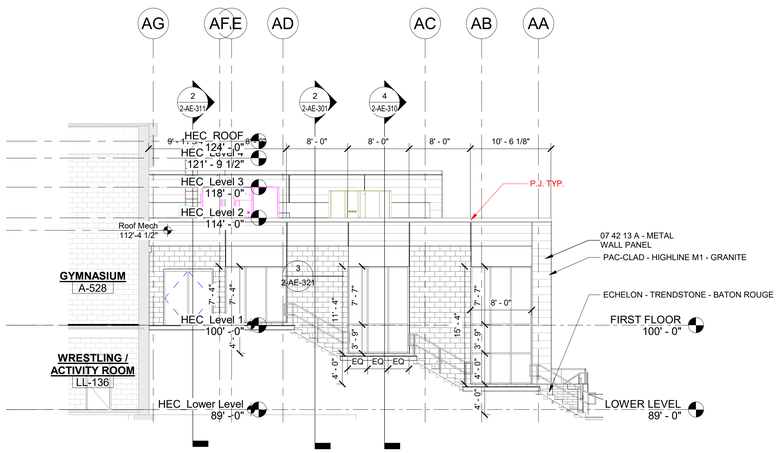
SHEET TITLE:
ROOF DETAILS 2

SHEET NUMBER:
2-AE-154



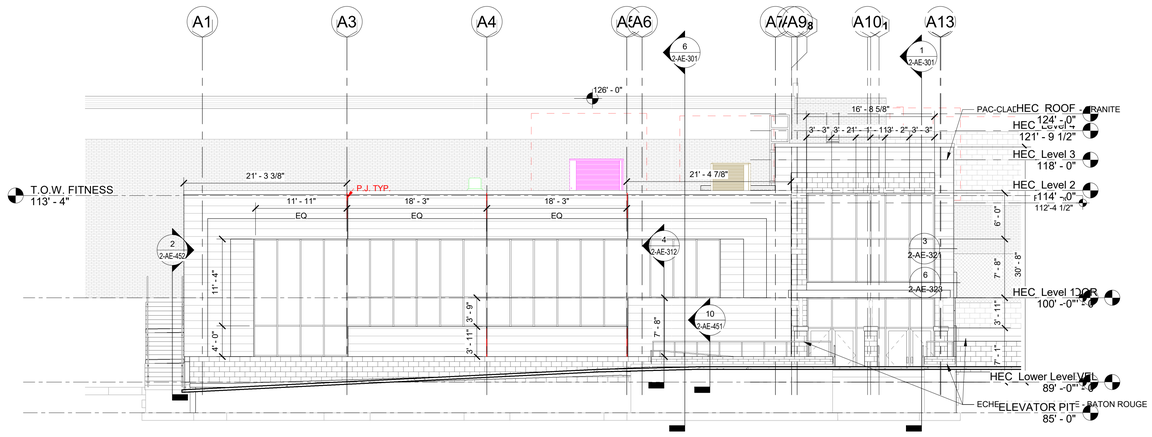
4 NORTH ELEVATION AREA A ABOVE FITNESS

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-151



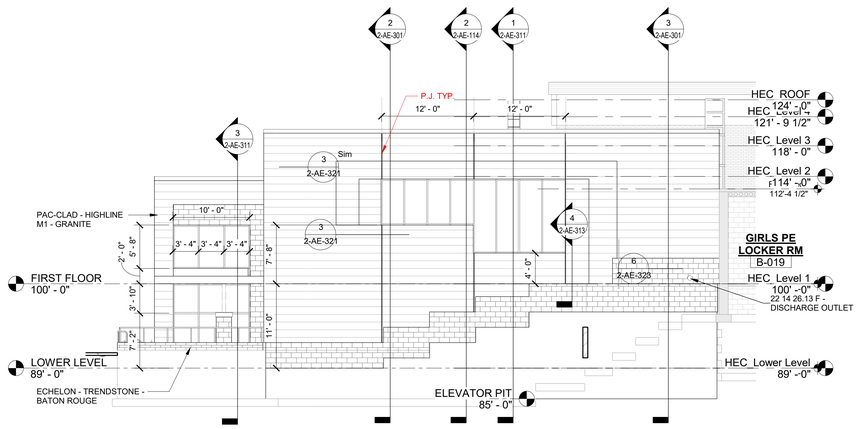
3 NORTH ELEVATION AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



2 WEST ELEVATION AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



1 SOUTH ELEVATION AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
07 42 13 A -	METAL WALL PANEL
22 14 26.13 F -	DISCHARGE OUTLET

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2019-05-03

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CONSULTANT:

MANAWA

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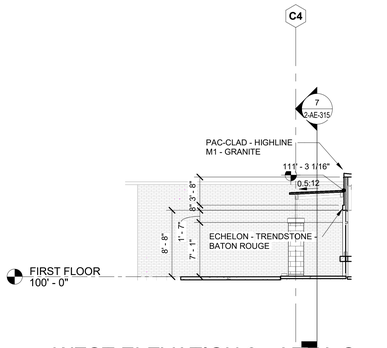
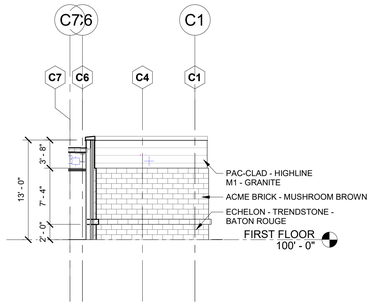
SHEET TITLE:
EXTERIOR ELEVATIONS - AREA A

SHEET NUMBER:
2-AE-201



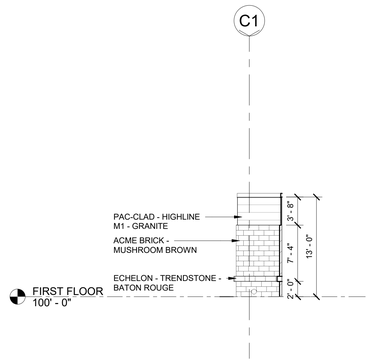
6 WEST ELEVATION 3 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



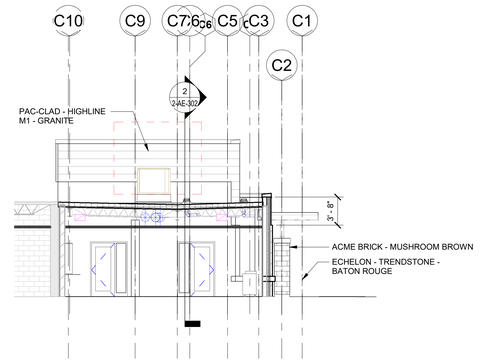
5 EAST ELEVATION 2 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



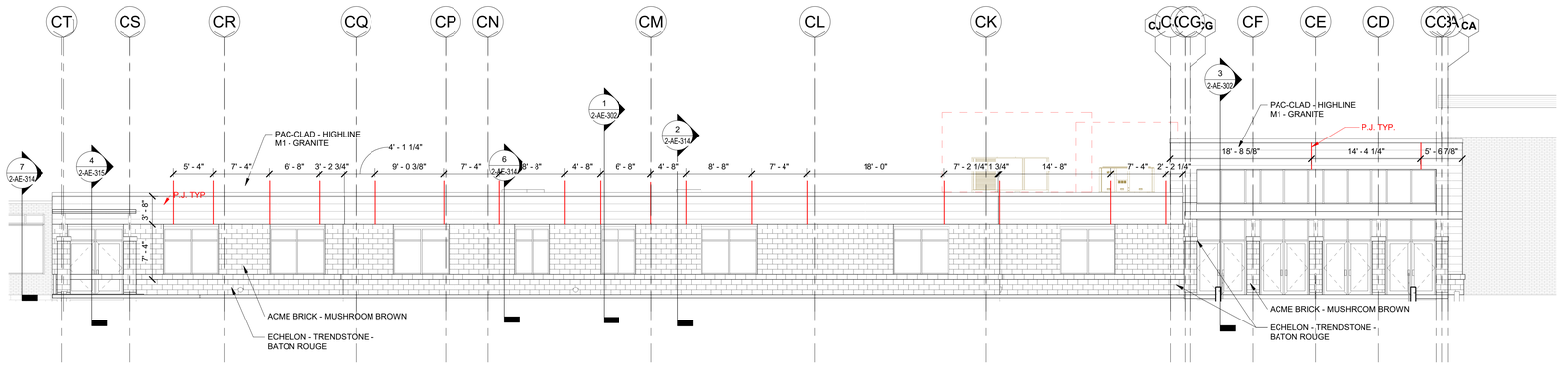
4 WEST ELEVATION 2 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



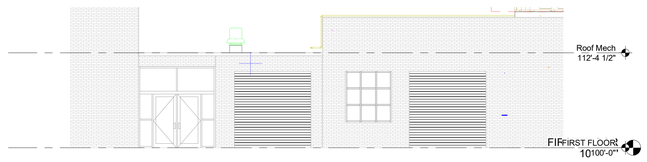
3 EAST ELEVATION 1 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



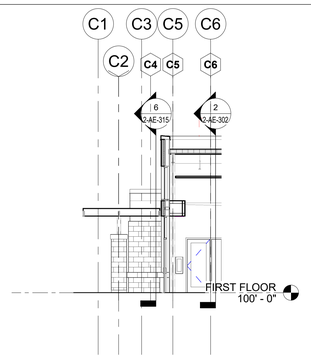
2 NORTH ELEVATION AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



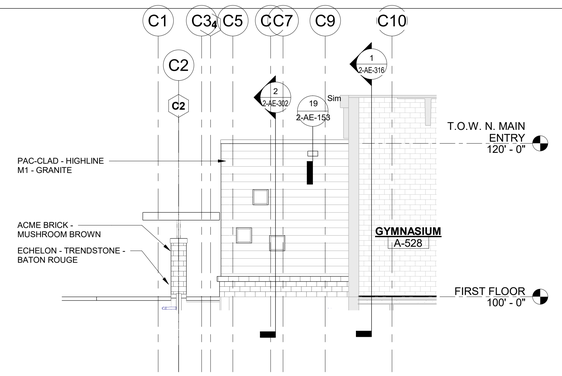
8 SOUTH ELEVATION - AREA F

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AD-105



7 EAST ELEVATION 3 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102



1 WEST ELEVATION 1 - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

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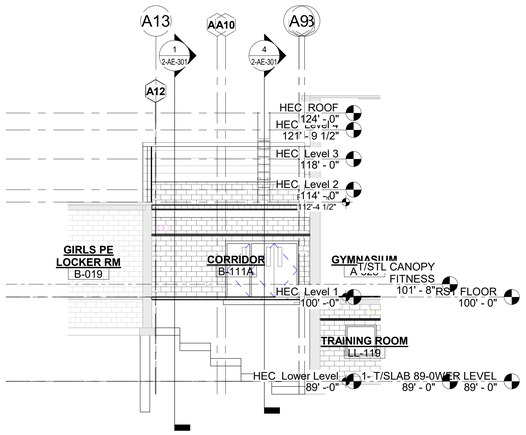
SHEET TITLE:
EXTERIOR ELEVATIONS - AREAS C AND F

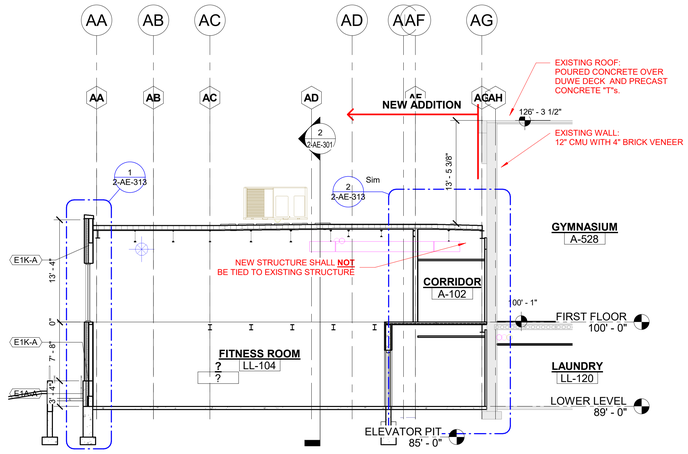
SHEET NUMBER:
2-AE-202

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT



7 AREA A - BUILDING SECTION 7

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



6 AREA A - BUILDING SECTION 6

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

5 AREA A - BUILDING SECTION 5

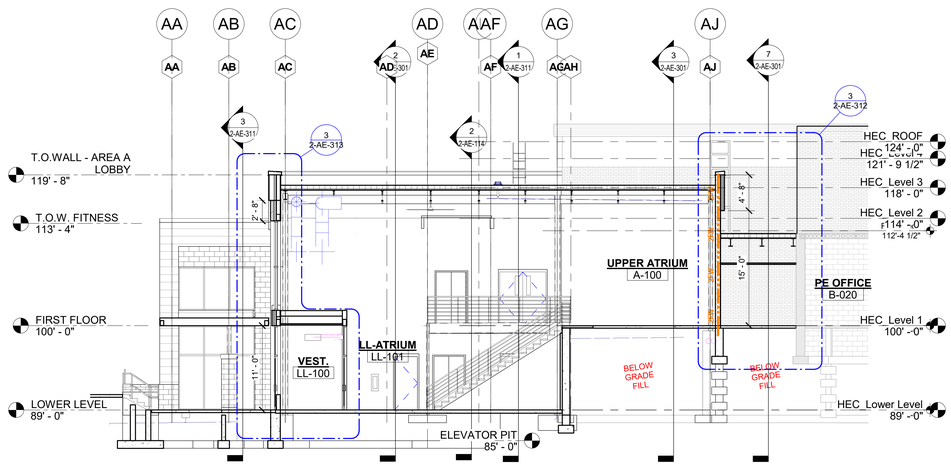
SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

4 AREA A - BUILDING SECTION 4

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

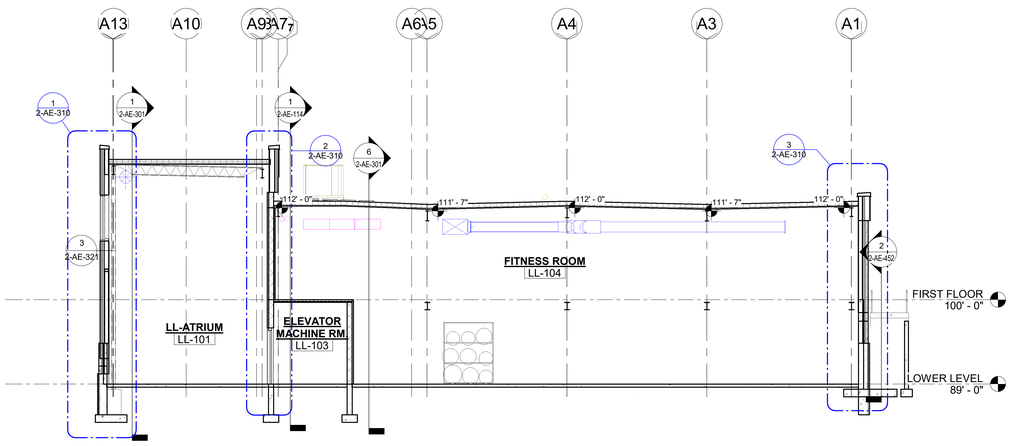
3 AREA A - BLDG SECTION 3

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



1 AREA A - BUILDING SECTION 1

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



2 AREA A - BUILDING SECTION 2

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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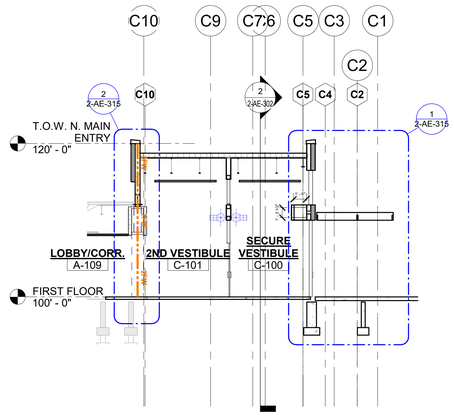
SHEET TITLE:
BUILDING SECTIONS - AREA A

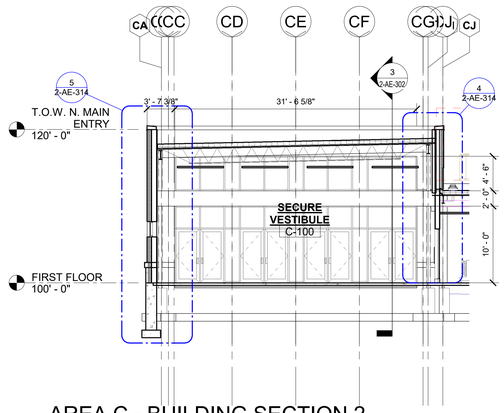
SHEET NUMBER:
2-AE-301

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT



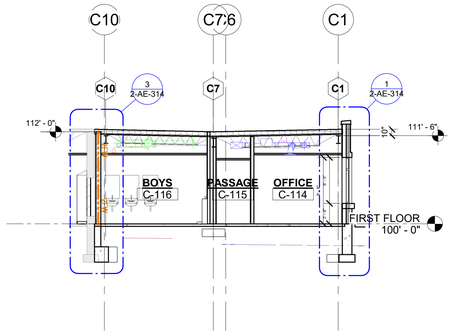
3 AREA C - BUILDING SECTION 3

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



2 AREA C - BUILDING SECTION 2

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



1 AREA C - BUILDING SECTION 1

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

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CHECKED BY:	Checker

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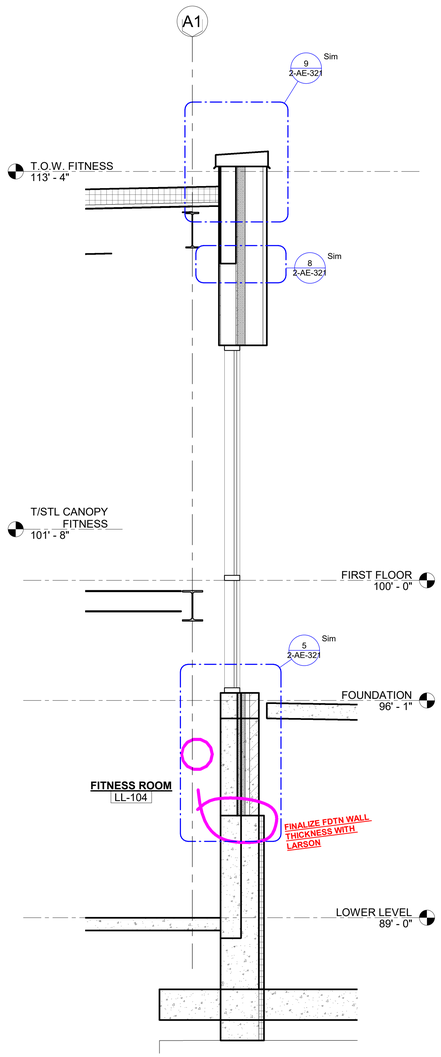
SHEET TITLE:

BUILDING SECTIONS - AREAS C & D

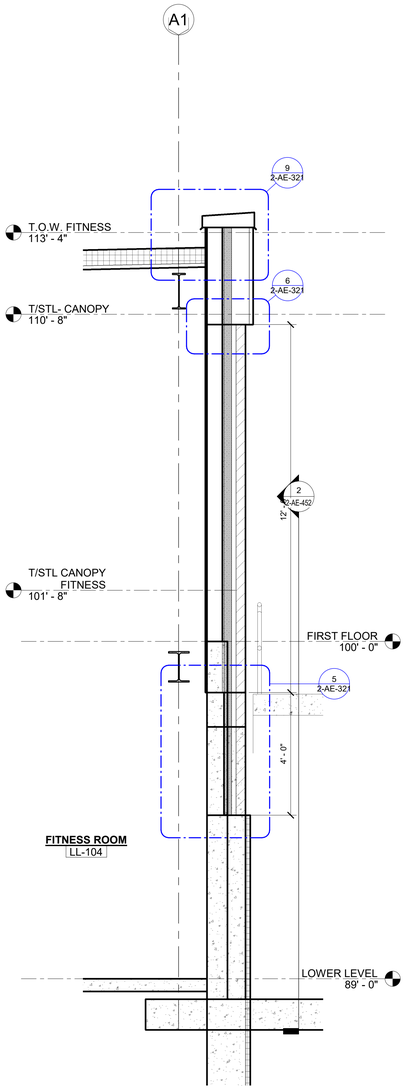
SHEET NUMBER:

2-AE-302



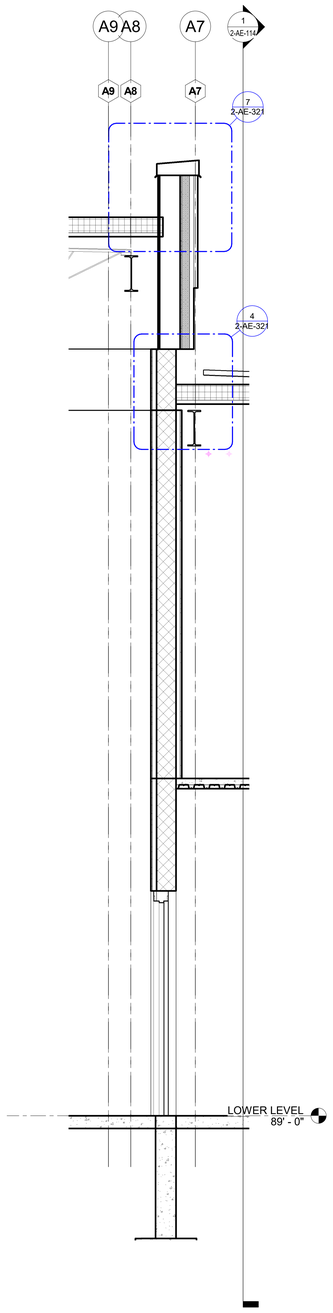
4 AREA A - FITNESS SECTION 2

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



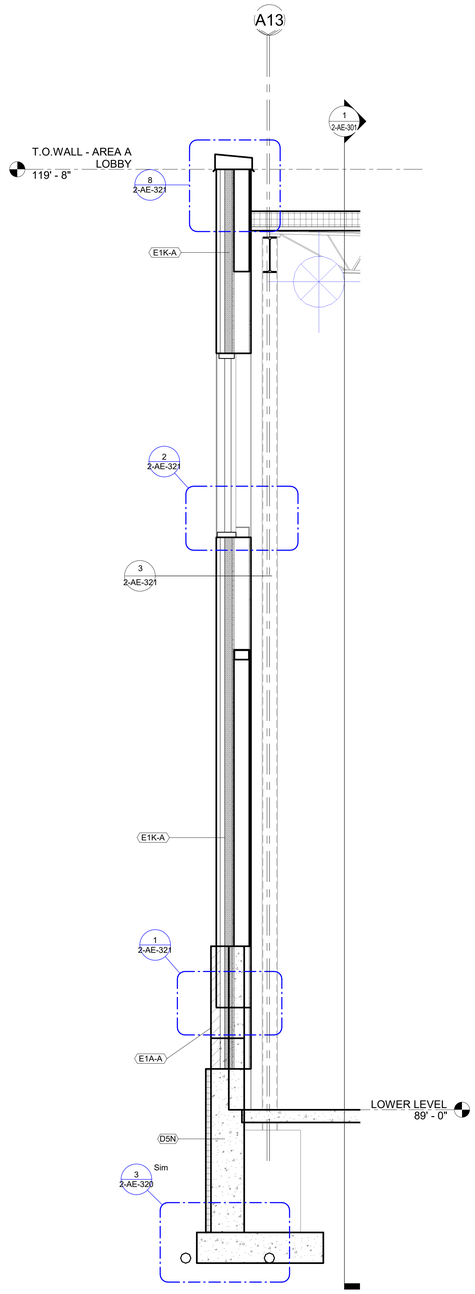
3 AREA A - FITNESS SECTION 1

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-301



2 AREA A - LOBBY SECTION 2

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-301



1 AREA A - LOBBY SECTION 1

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-301

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
2. ALL STOOP CONSTRUCTION
3. ALL WALL GROUTING / REINFORCING AND BOND BEAM LOCATIONS.
4. ALL BRICK LEDGE HEIGHTS AND LOCATIONS. ALSO REFER TO ARCHITECTURAL ELEVATIONS.
5. AREAS REQUIRING EXISTING STRUCTURAL REINFORCING.
6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT

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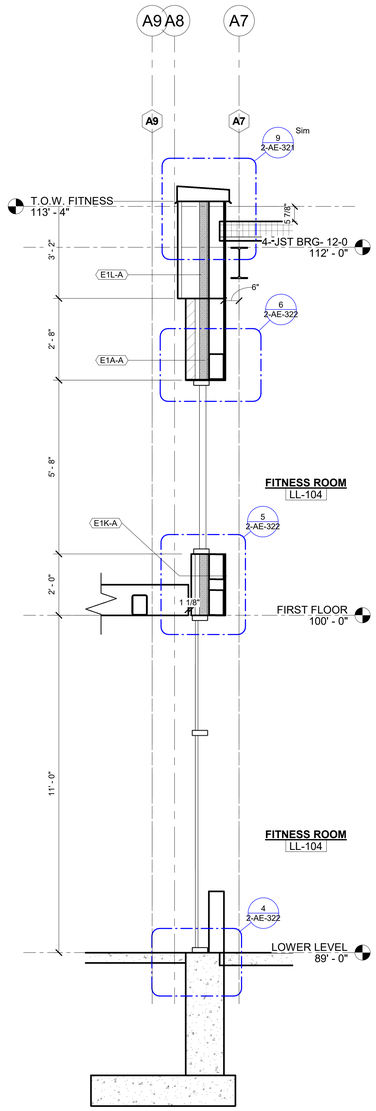
SHEET TITLE:

WALL SECTIONS - AREA A

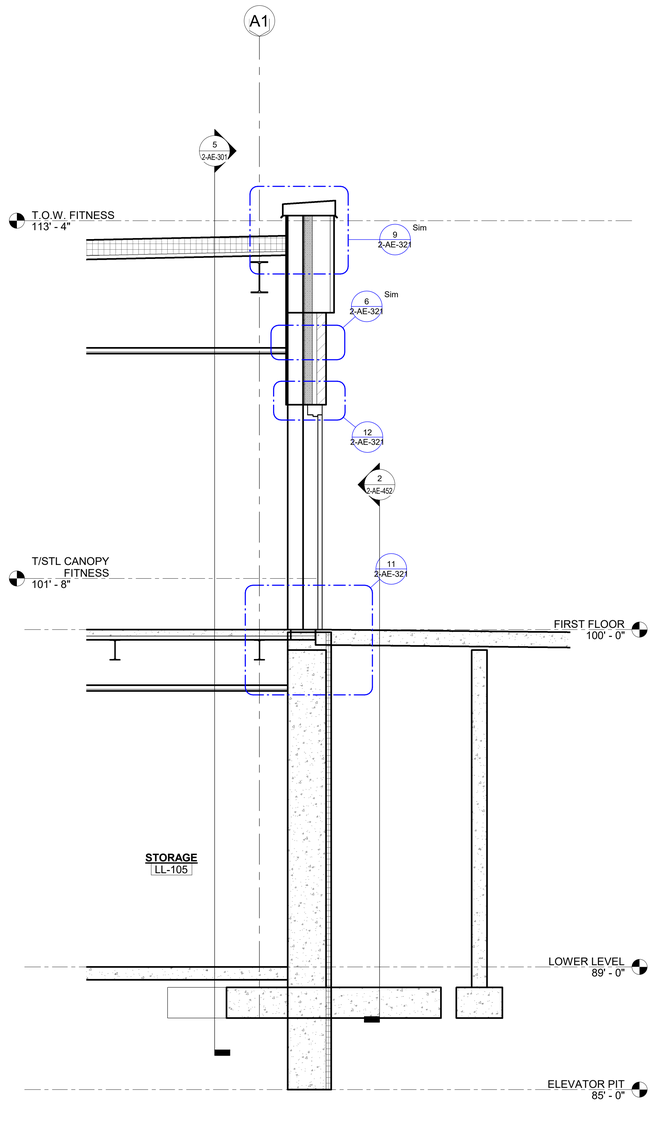
SHEET NUMBER:

2-AE-310



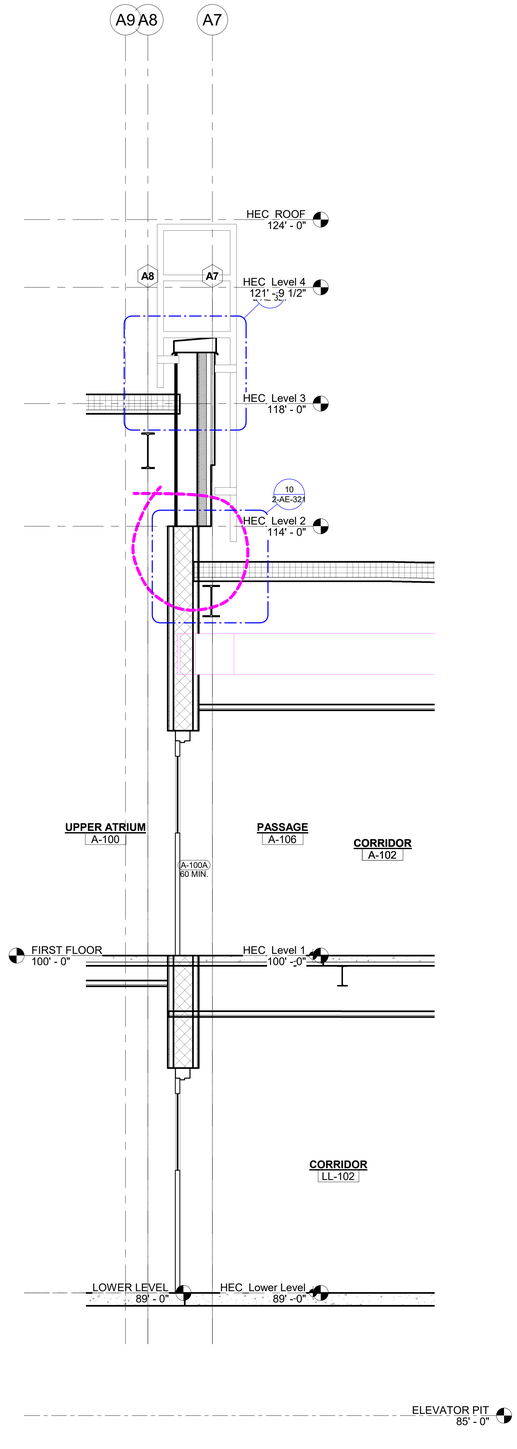
3 FITNESS EXTER. WALL SECTION

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



2 CORRIDOR EXTER. WALL SECTION

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



1 LOBBY-PASSAGE SECTION

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

STRUCTURAL COORDINATION NOTES

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6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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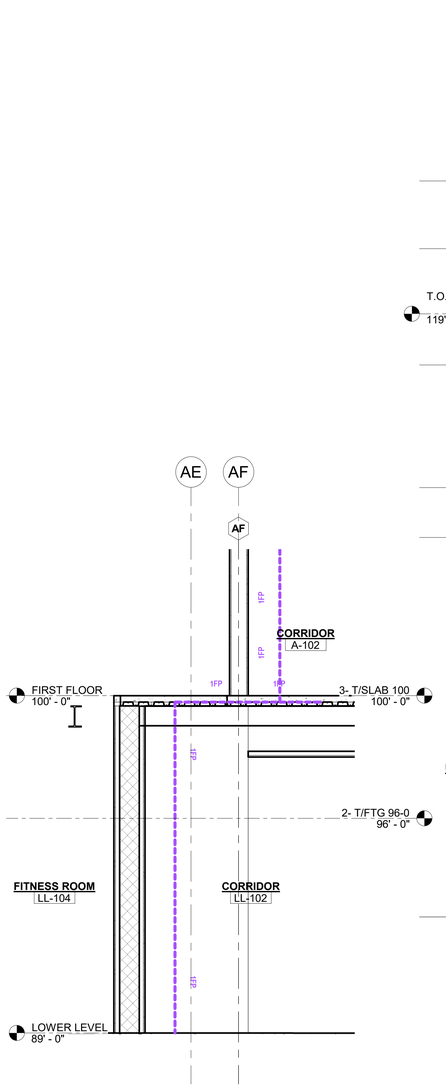
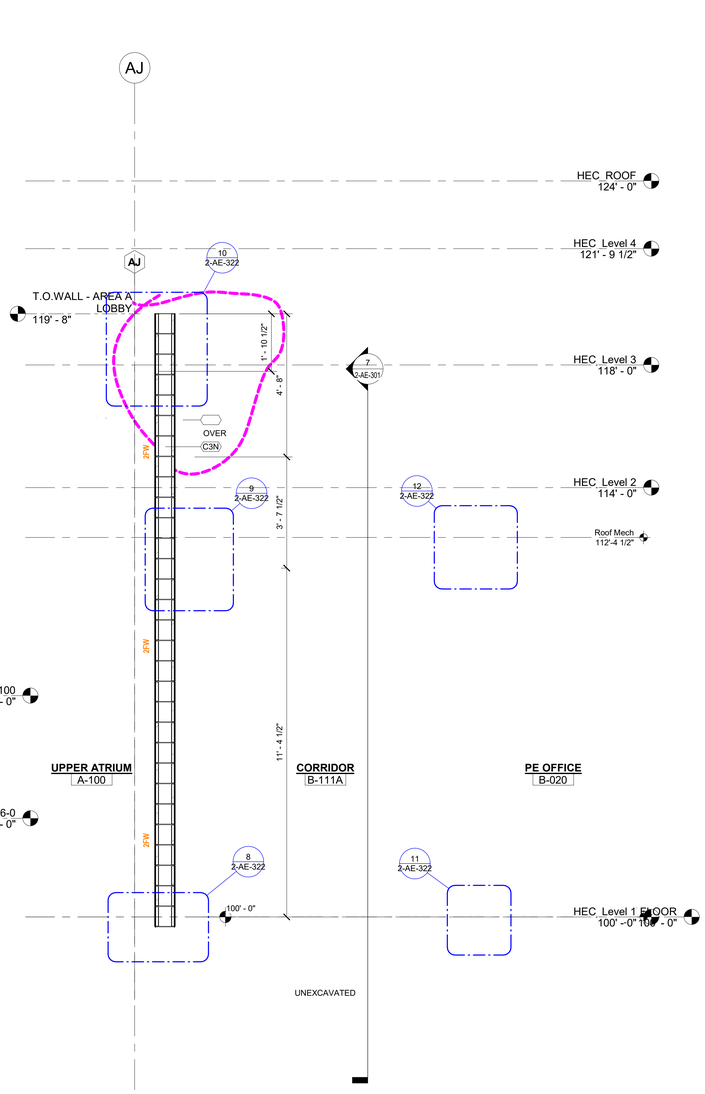
SHEET TITLE:
WALL SECTIONS - AREA A

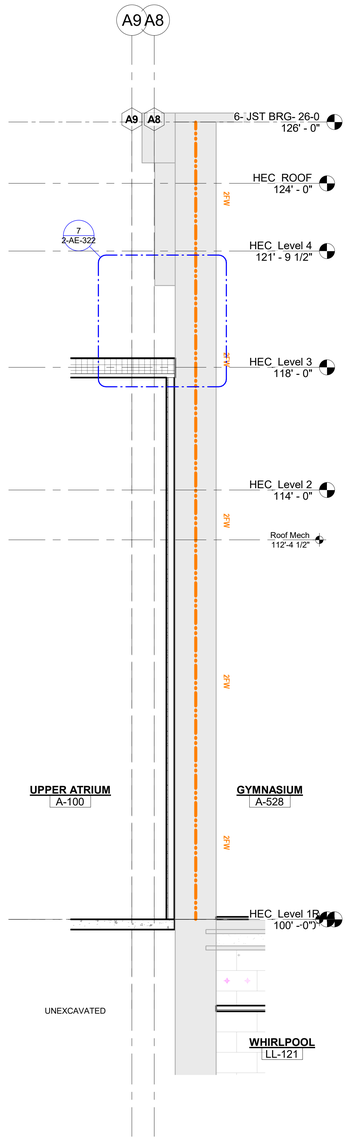
SHEET NUMBER:
2-AE-311



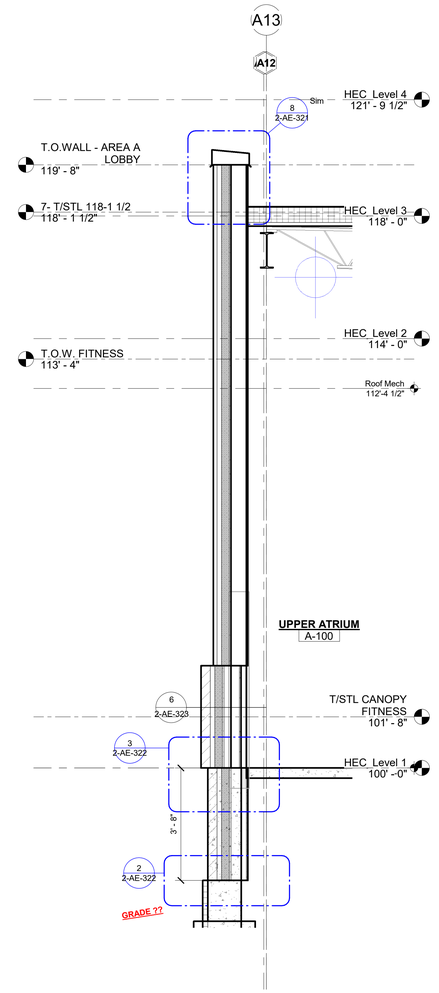
4 AREA A - PASSAGE SECTION 1
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



3 AREA A - LOBBY SECTION 5
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-301



2 AREA A - LOBBY SECTION 4
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-301



1 AREA A - LOBBY SECTION 3
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-301

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

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KEYNOTE LEGEND

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
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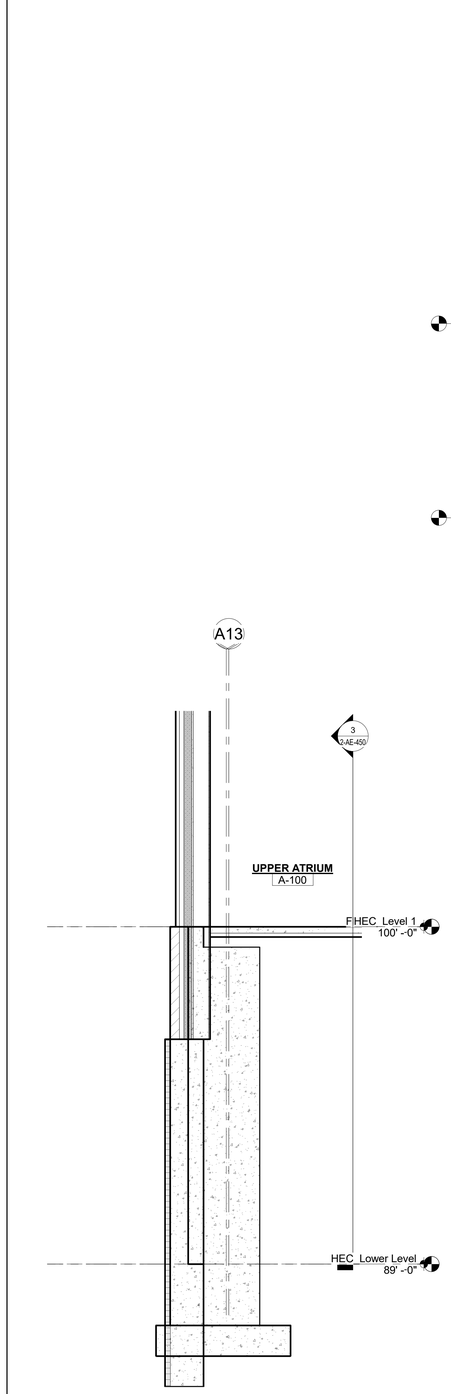
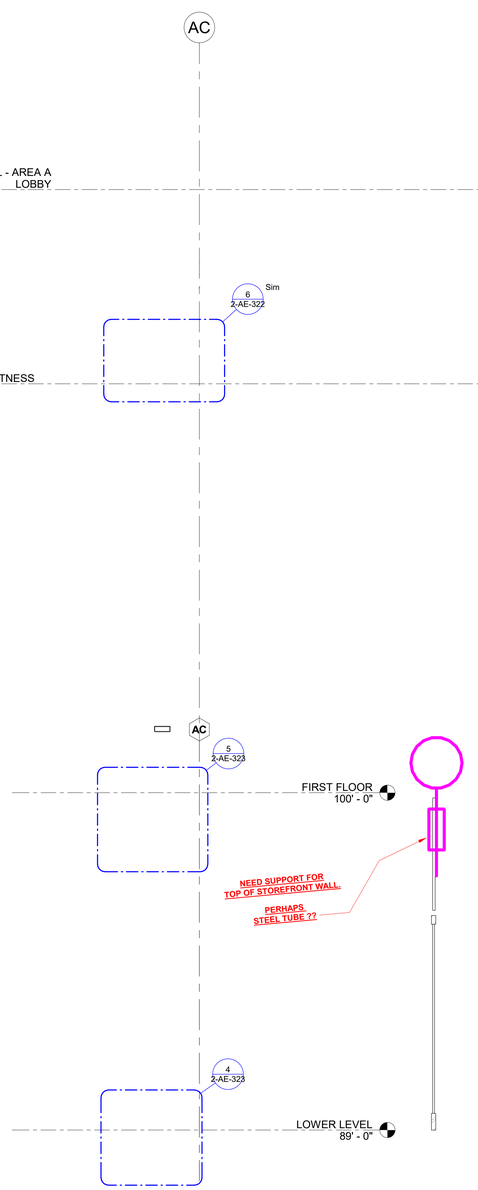
SHEET TITLE:
WALL SECTIONS - AREA A

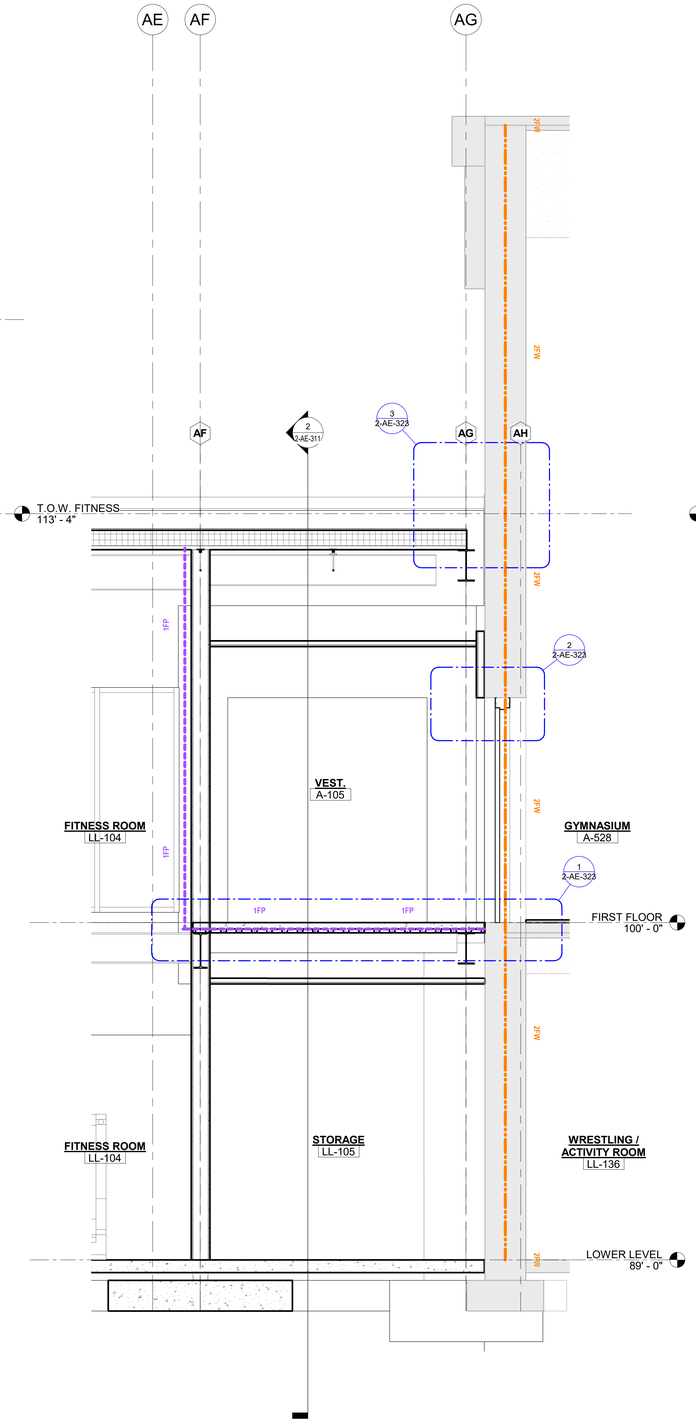
SHEET NUMBER:
2-AE-312



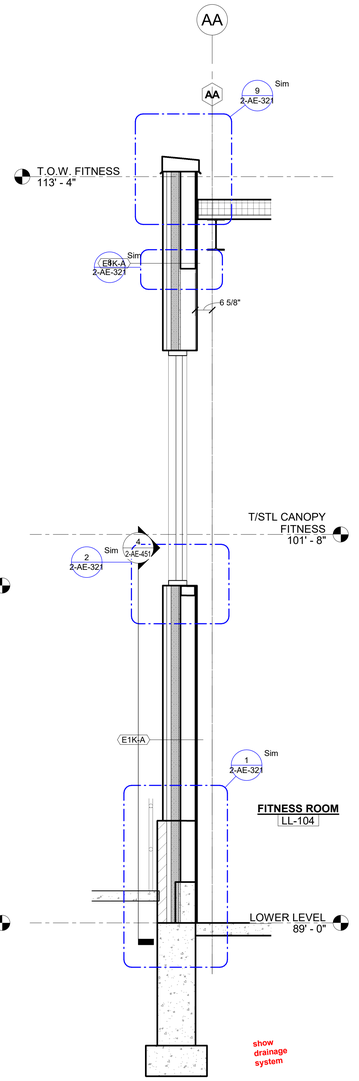
4 AREA A - LOBBY SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



3 AREA A - VESTIBULE SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-301



2 AREA A - CORRIDOR SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 5 / 2-AE-301



1 AREA A - FITNESS SECTION
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 6 / 2-AE-301

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

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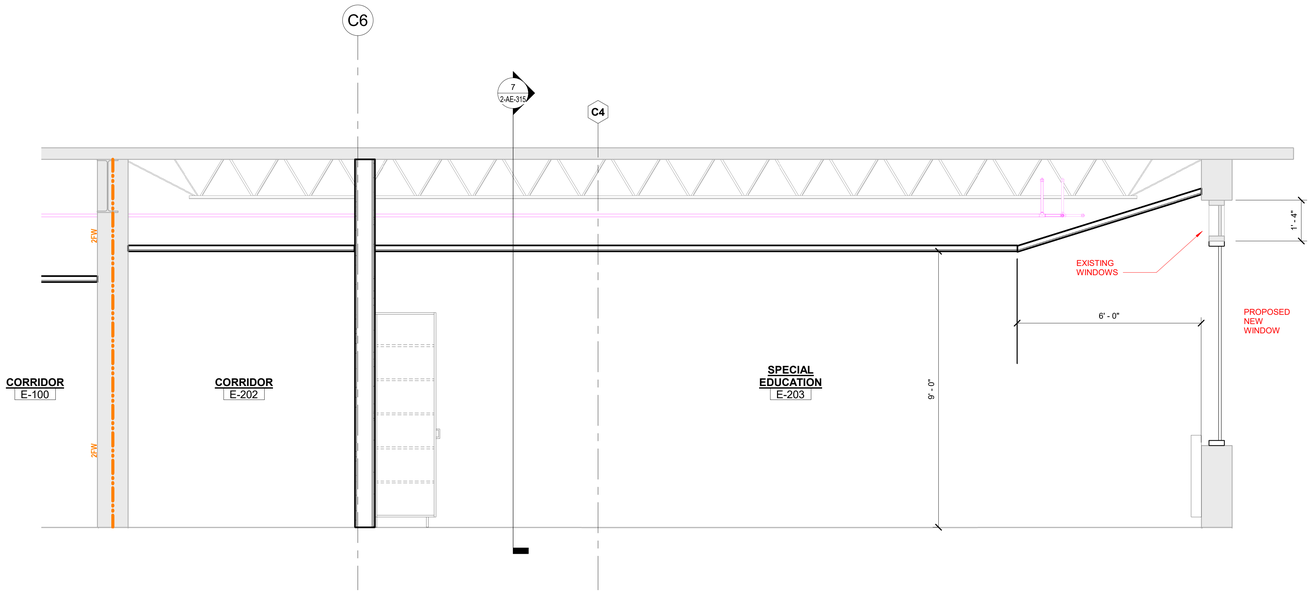
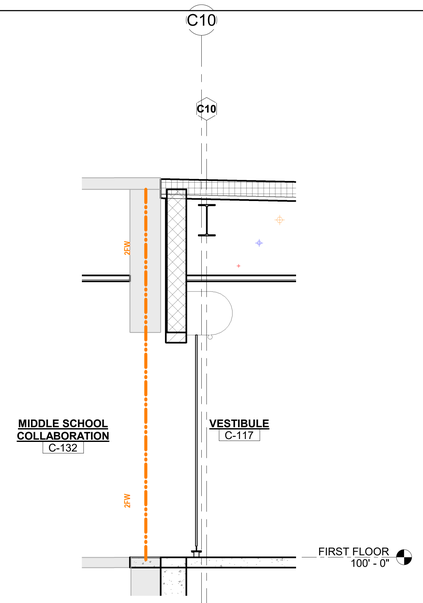
SHEET TITLE:
WALL SECTIONS - AREA A

SHEET NUMBER:
2-AE-313



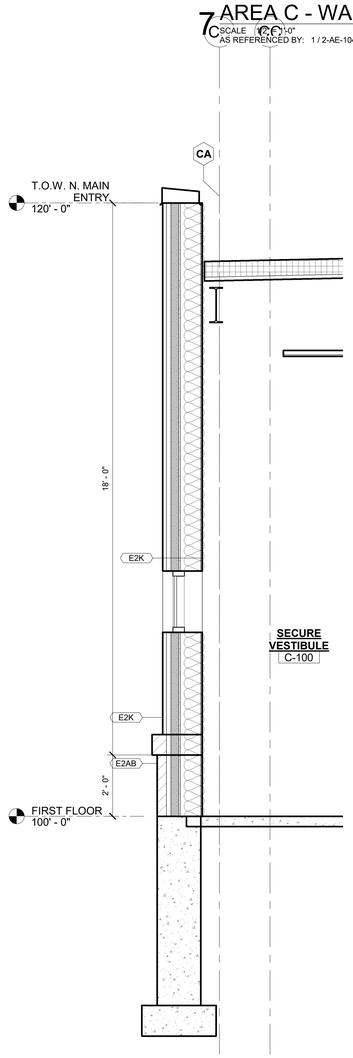
7 AREA C - WALL SECTION 7

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



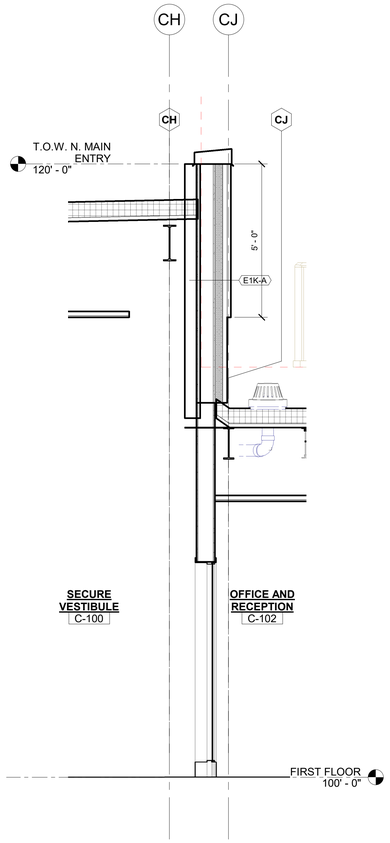
6 AREA C - WALL SECTION 6

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



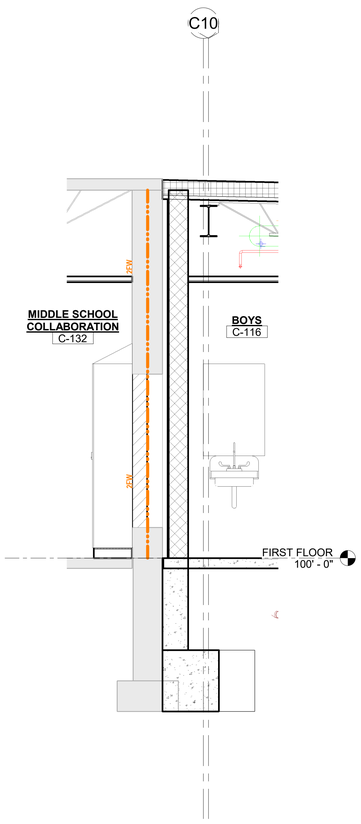
5 AREA C - WALL SECTION 5

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-302



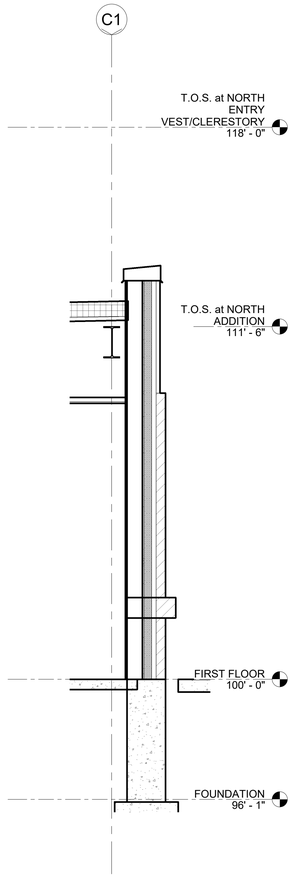
4 AREA C - WALL SECTION 4

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-302



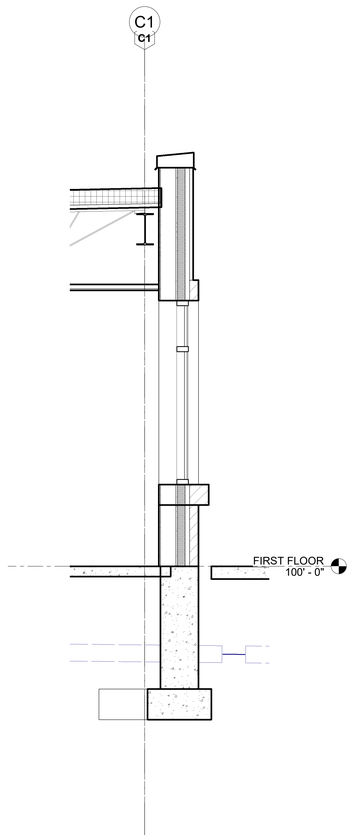
3 AREA C - WALL SECTION 3

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-302



2 AREA C - WALL SECTION 2

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



1 AREA C - WALL SECTION 1

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-302

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

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KEYNOTE LEGEND

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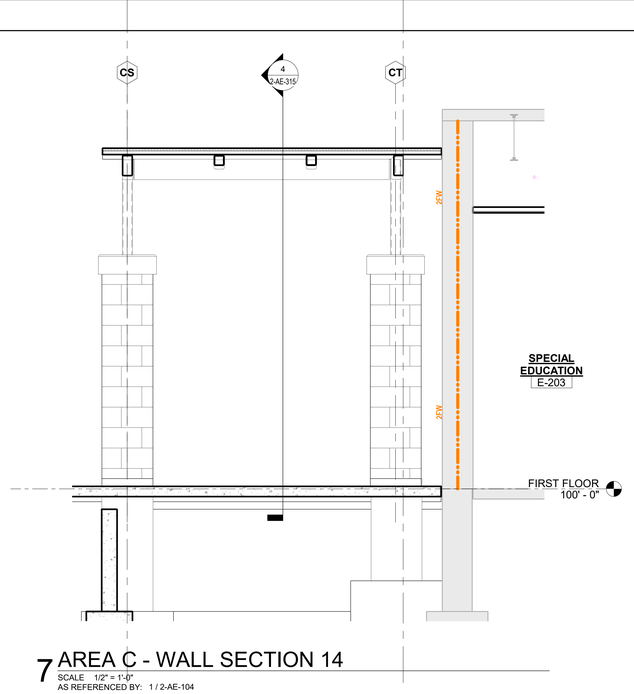
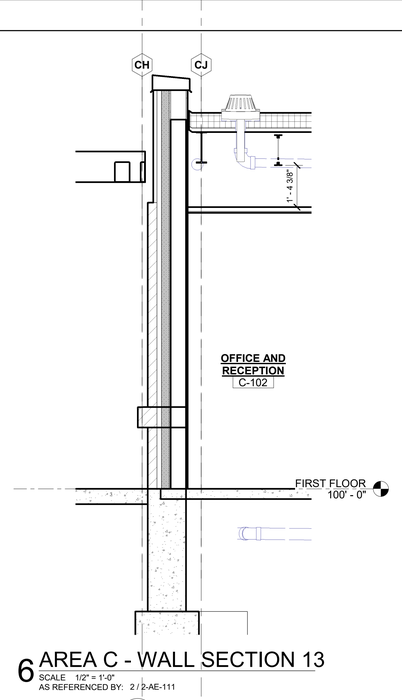
SHEET TITLE:
WALL SECTIONS - AREA C

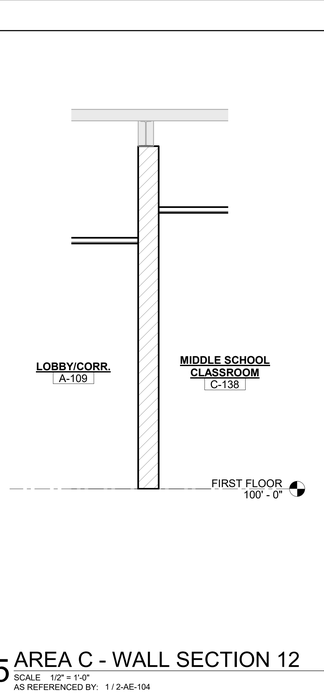
SHEET NUMBER:
2-AE-314



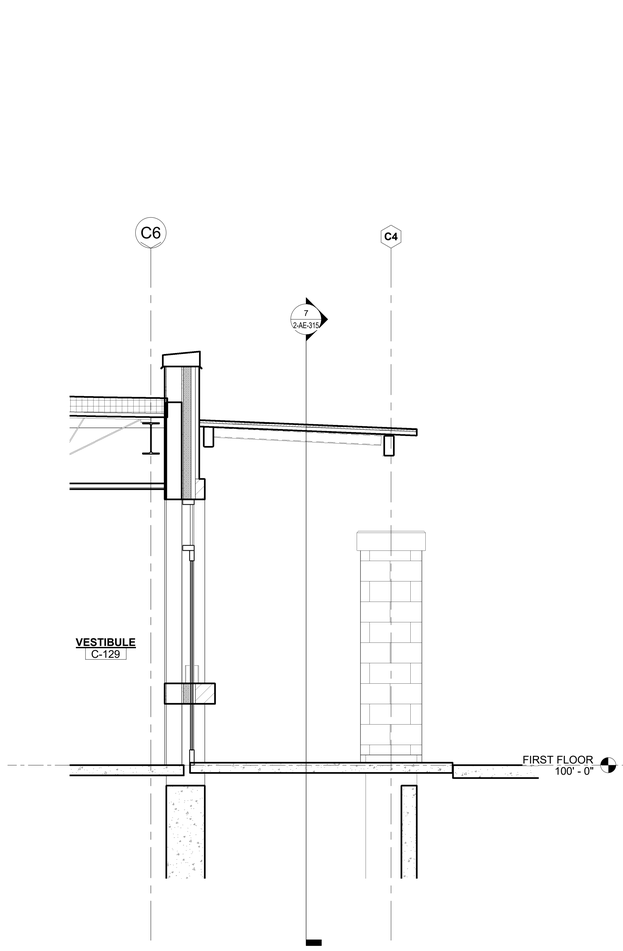
7 AREA C - WALL SECTION 14
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



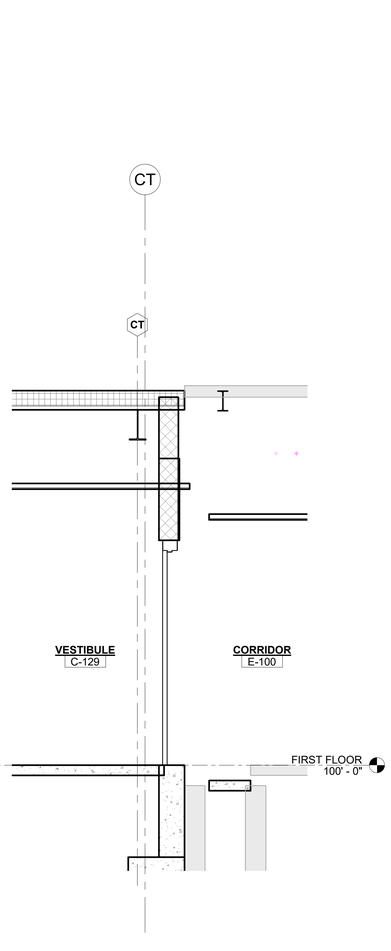
6 AREA C - WALL SECTION 13
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-111



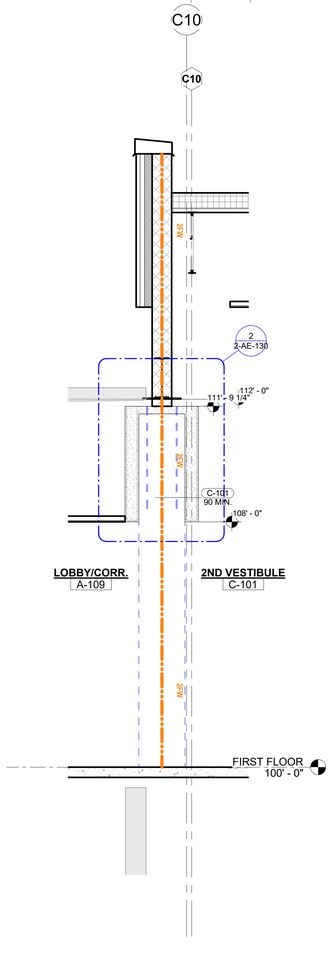
5 AREA C - WALL SECTION 12
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



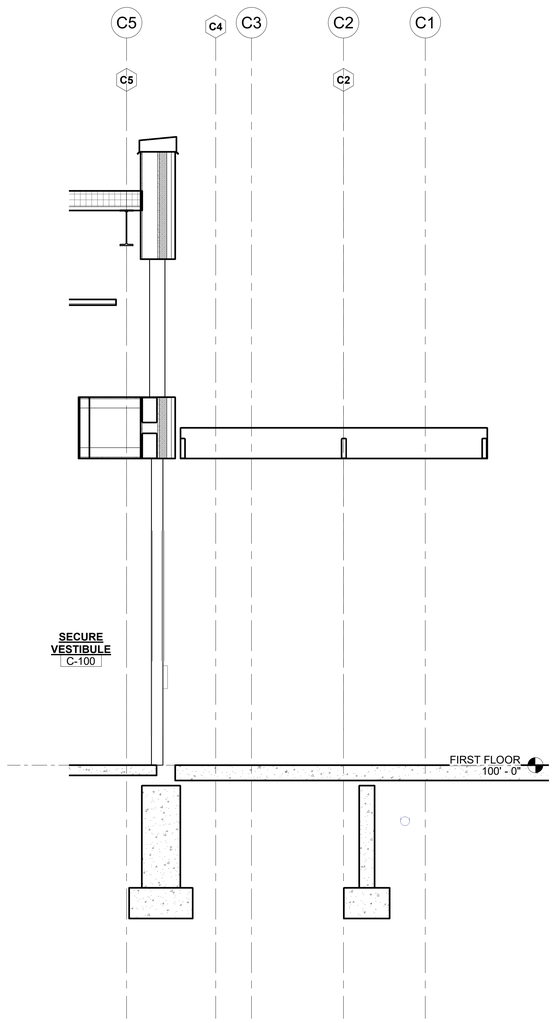
4 AREA C - WALL SECTION 11
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



3 AREA C - WALL SECTION 10
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



2 AREA C - WALL SECTION 9
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-302



1 AREA C - WALL SECTION 8
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-302

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
2. ALL STOOP CONSTRUCTION
3. ALL WALL GROUTING / REINFORCING AND BOND BEAM LOCATIONS.
4. ALL BRICK LEDGE HEIGHTS AND LOCATIONS. ALSO REFER TO ARCHITECTURAL ELEVATIONS.
5. AREAS REQUIRING EXISTING STRUCTURAL REINFORCING.
6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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SHEET TITLE:
WALL SECTIONS - AREA C

SHEET NUMBER:
2-AE-315

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
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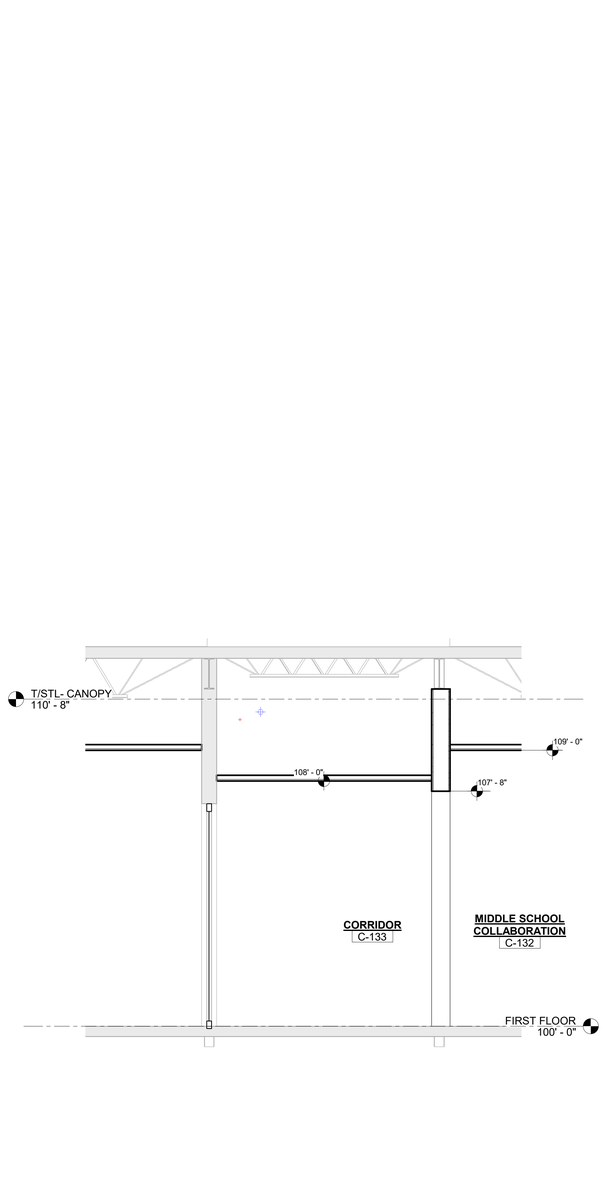
6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT



2 AREA C WALL SECTION 16
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

1 AREA C WALL SECTION 15
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102

FOR BIDS
NOT FOR CONSTRUCTION

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Planning, Design & Construction, Inc.
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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SHEET TITLE:
WALL SECTIONS - AREA C

SHEET NUMBER:
2-AE-316

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
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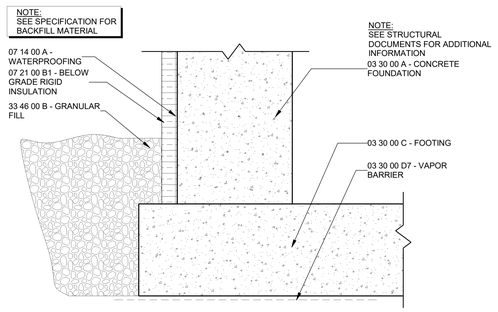
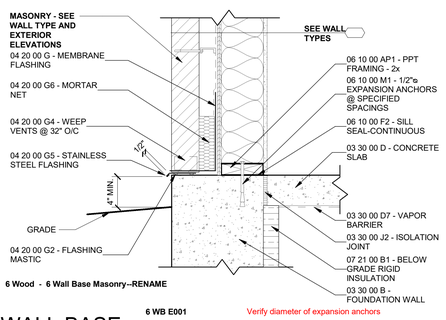
KEYNOTE LEGEND

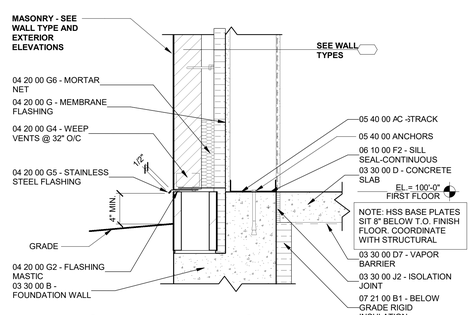
KEY NO.	KEYNOTE TEXT
03 30 00 A -	CONCRETE FOUNDATION
03 30 00 B -	FOUNDATION WALL
03 30 00 C -	FOOTING
03 30 00 D7 -	VAPOR BARRIER
03 30 00 D -	CONCRETE SLAB
03 30 00 J2 -	ISOLATION JOINT
04 20 00 G2 -	FLASHING MASTIC
04 20 00 G4 -	WEEP VENTS @ 32" O/C
04 20 00 G5 -	STAINLESS STEEL FLASHING
04 20 00 G6 -	MORTAR NET
04 20 00 G -	MEMBRANE FLASHING
05 40 00 A -	STUD
06 10 00 AP1 -	PPT FRAMING - 2x
06 10 00 F2 -	SILL SEAL-CONTINUOUS
06 10 00 M1 -	1/2"ø EXPANSION ANCHORS @ SPECIFIED SPACINGS
07 14 00 A -	WATERPROOFING
07 21 00 B1 -	BELOW GRADE RIGID INSULATION
33 46 00 B -	GRANULAR FILL



3 ELEVATOR PIT DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-310



2 WALL BASE
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



1 METAL STUD WALL BASE 1
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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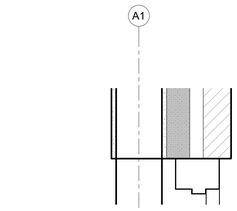
SHEET TITLE:

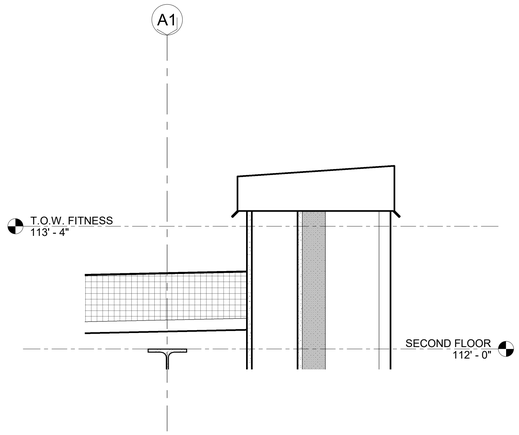
WALL DETAILS (base)

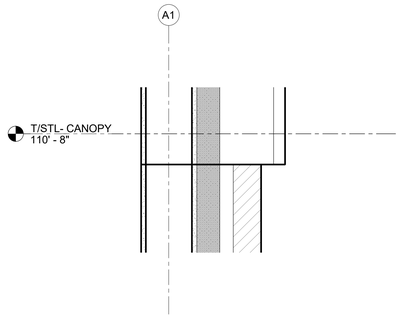
SHEET NUMBER:

2-AE-320

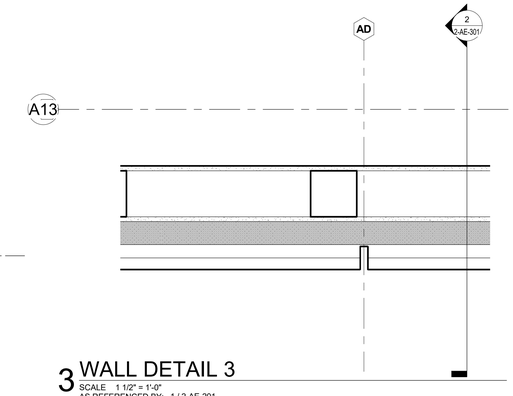


12 WALL DETAIL 12
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-311

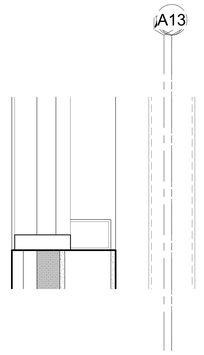




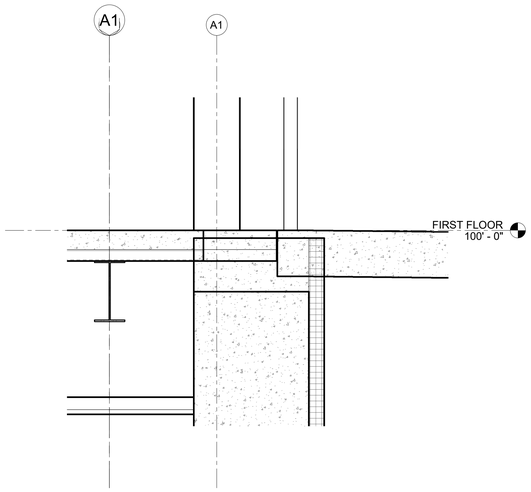
6 WALL DETAIL 6
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-310



3 WALL DETAIL 3
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-201



2 WALL DETAIL 2
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-310



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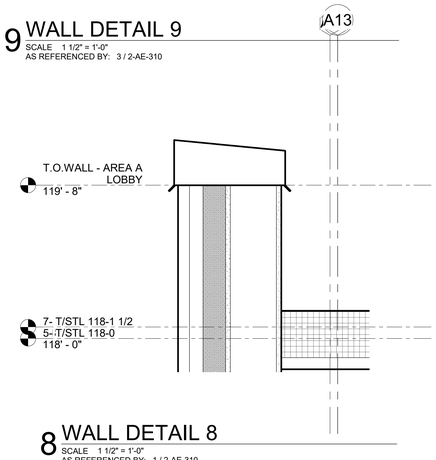
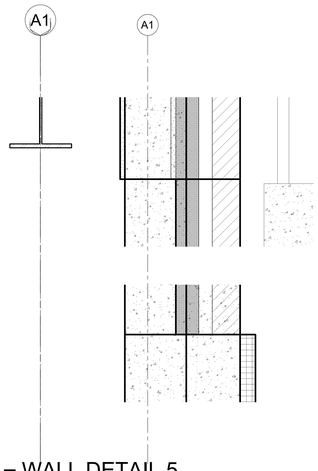
AS REFERENCED BY: 1 / 2-AE-311

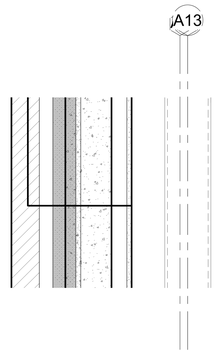


8 WALL DETAIL 8
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-310

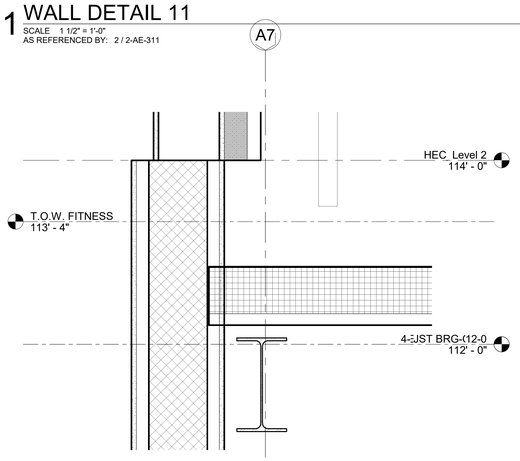
9 WALL DETAIL 9
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-310



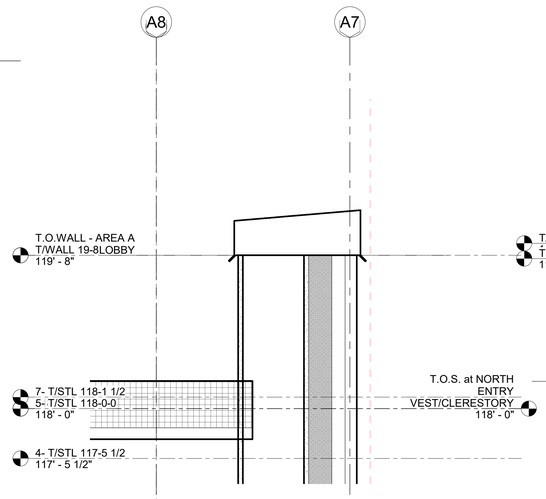
5 WALL DETAIL 5
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-310



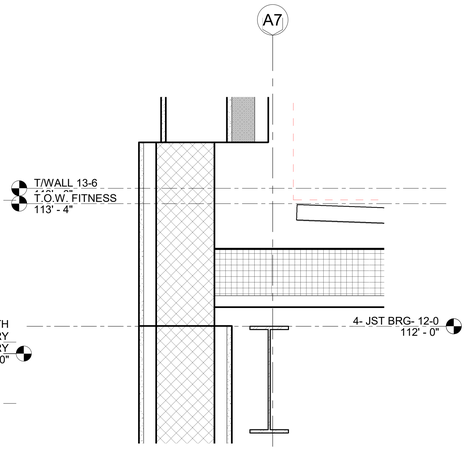
1 WALL DETAIL 1
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-310



11 WALL DETAIL 11
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-311



7 WALL DETAIL 7
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-310



4 WALL DETAIL 4
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-310

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

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KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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Planning, Design & Construction, Inc.
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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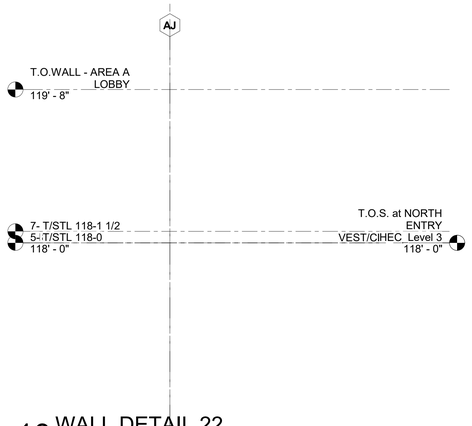
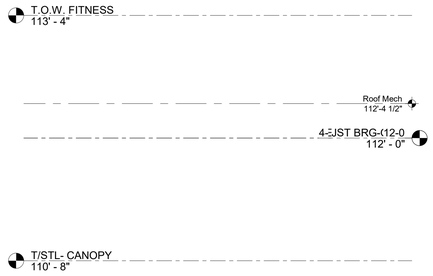
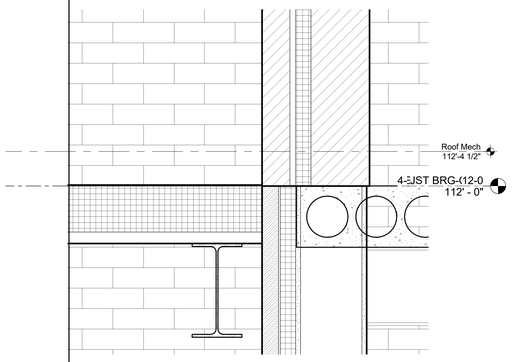
SHEET TITLE:
WALL DETAILS

SHEET NUMBER:
2-AE-321



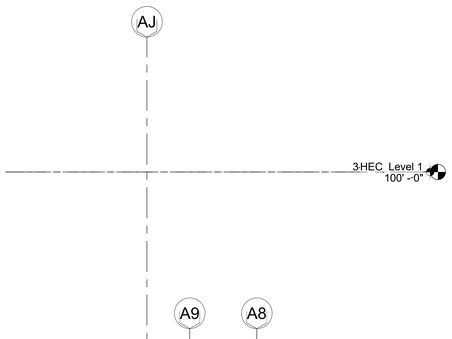
10 WALL DETAIL 22
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-312

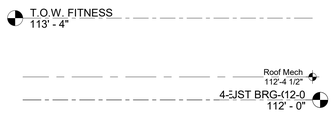




13 Detail 3
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-301

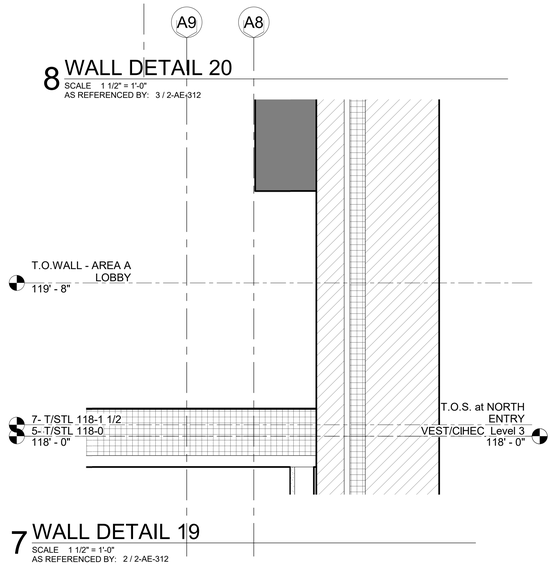
9 WALL DETAIL 21
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-312





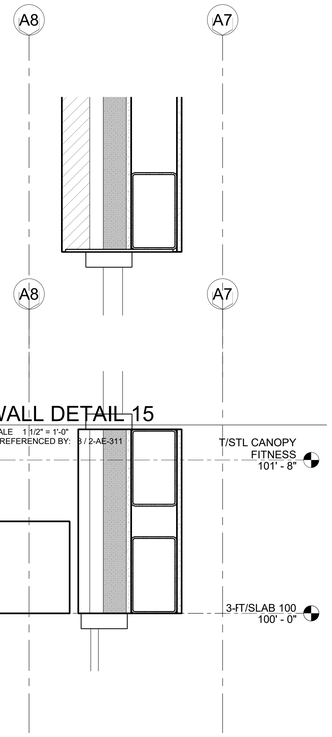
12 WALL DETAIL 24
SCALE 1" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-312

11 WALL DETAIL 23
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-312

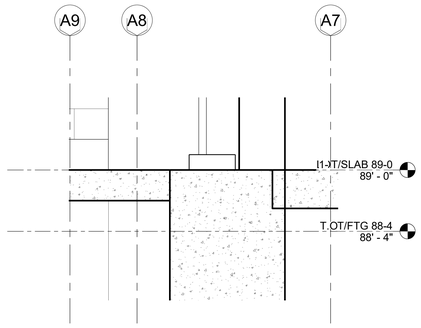


8 WALL DETAIL 20
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-312

7 WALL DETAIL 19
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-312

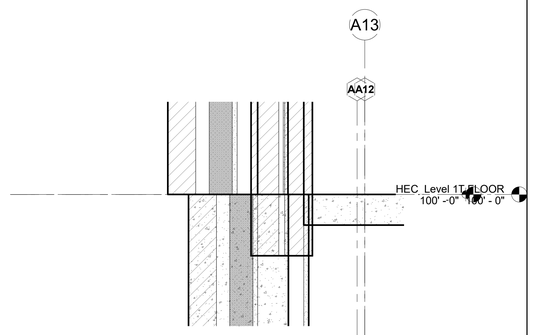


6 WALL DETAIL 15
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-311

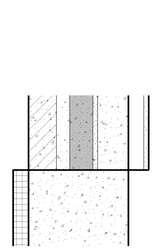


5 WALL DETAIL 14
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-311

4 WALL DETAIL 13
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-311



3 WALL DETAIL 18
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-312



2 WALL DETAIL 17
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-312

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

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KEYNOTE LEGEND

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PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED: Issue Date	
PROJECT NO: 18268	
CAD DWG FILE:	
DRAWN BY: Author	
CHECKED BY: Checker	

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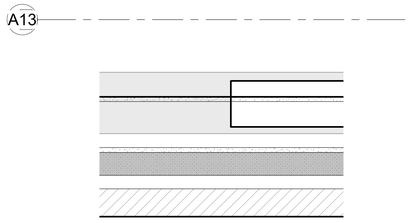
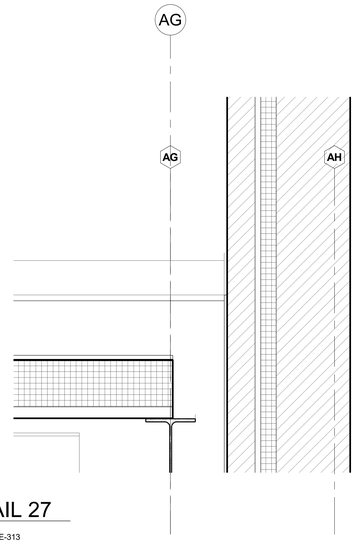
SHEET TITLE:
WALL DETAILS

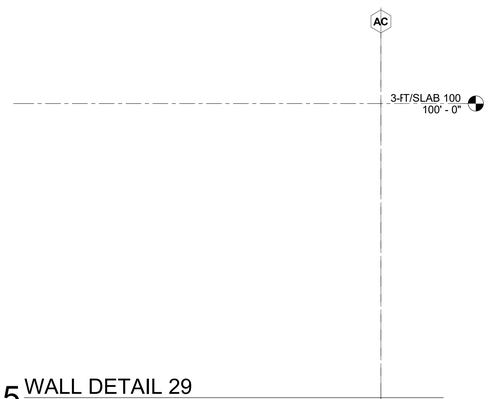
SHEET NUMBER:
2-AE-322

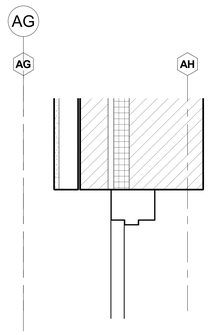


6 WALL DETAIL 30
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102



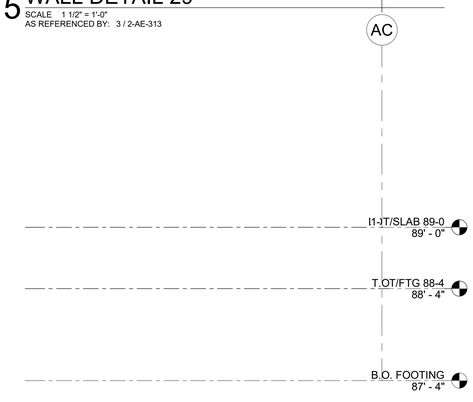
3 WALL DETAIL 27
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-313

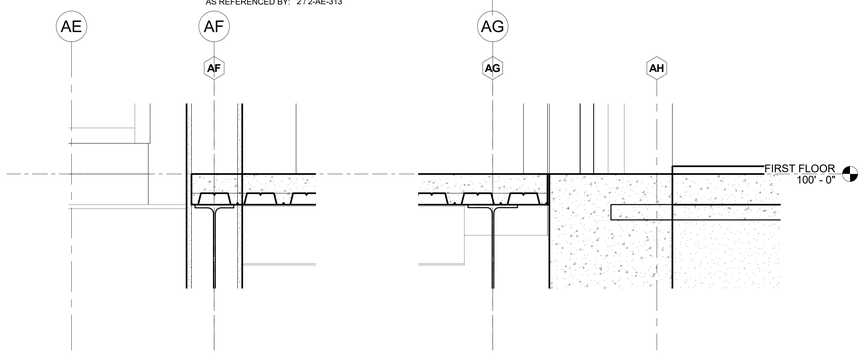




5 WALL DETAIL 29
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-313

2 WALL DETAIL 26
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-313





4 WALL DETAIL 28
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-313

1 WALL DETAIL 25
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-313

STRUCTURAL COORDINATION NOTES

COORDINATE WITH STRUCTURAL ENGINEERING FOR THE FOLLOWING:

1. ALL FOOTING AND FOUNDATIONS.
2. ALL STOOP CONSTRUCTION
3. ALL WALL GROUTING / REINFORCING AND BOND BEAM LOCATIONS.
4. ALL BRICK LEDGE HEIGHTS AND LOCATIONS. ALSO REFER TO ARCHITECTURAL ELEVATIONS.
5. AREAS REQUIRING EXISTING STRUCTURAL REINFORCING.
6. DOWELED CONNECTION REQUIREMENTS BETWEEN EXISTING AND NEW CONCRETE SLABS.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

MANAWA

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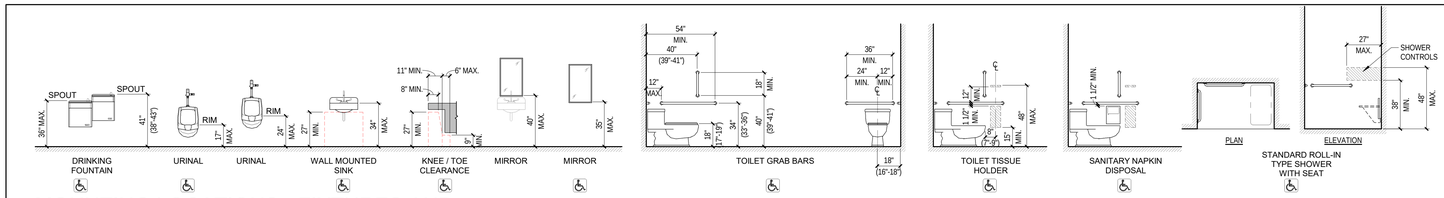
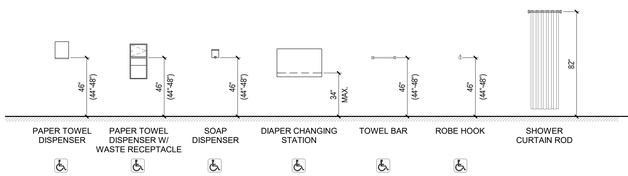
SHEET TITLE:
WALL DETAILS

SHEET NUMBER:
2-AE-323



MOUNTING LOCATIONS - FIXTURES AND ACCESSORIES

SCALE 1/4" = 1'-0"



ADD LOCATIONS FOR:
- GOGGLES CABINET (in Science Rooms)
- FIRE HOSE CABINET (in Science Rooms)

MOUNTING LOCATIONS - TOILET ACCESSORIES

N.T.S.

VERIFY FIXTURES INCLUDED

TOILET ACCESSORIES SCHEDULE - 10 28 00

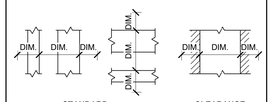
TAG	DESCRIPTION	MFR	MODEL	REMARKS

TOILET ACCESSORIES KEY

TAG	DESCRIPTION
TA-1	GRAB BARS
TA-2	MIRRORS
TA-3	PAPER TOWEL DISPENSER
TA-4	PAPER TOWEL DISPENSER W/ WASTE RECEPTACLE
TA-5	WASTE RECEPTACLE
TA-6	TOILET TISSUE DISPENSER
TA-7	SANITARY NAPKIN VENDOR
TA-8	SANITARY NAPKIN DISPOSAL
TA-9	SOAP DISPENSER / SOAP DISH
TA-10	TOILET SEAT COVER DISPENSER
TA-11	BABY CHANGING STATION
TA-12	WARM AIR HAND DRYER
TA-13	FOLDING SHOWER SEAT
TA-14	SHOWER CURTAIN ROD / HOOKS
TA-15	TOWEL BAR / SHELF
TA-16	ROBE HOOK
TA-17	MOP AND BROOM HOLDER
TA-18	MEDICINE CABINET

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING

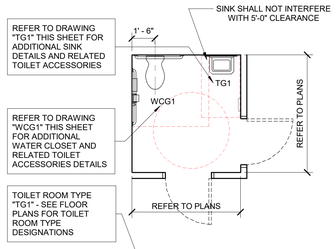
CLEARANCE DIMENSIONING

TOILET ROOM & ACCESSORY NOTES

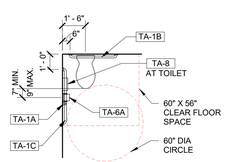
1. ENLARGED PLANS INDICATE TYPICAL DIMENSIONS, LOCATIONS FOR ACCESSORIES AND SPECIALTIES AND REQUIRED CLEARANCES TO BE MAINTAINED. TOILET ROOM AND SINK "TYPES" ARE KEYED ON FLOOR PLANS.
2. REFER TO FLOOR PLAN SHEETS FOR TOILET ROOM AND/OR FIXTURE ORIENTATION, DOOR LOCATION(S), WALL CONSTRUCTION, AND ADDITIONAL EQUIPMENT ITEMS.
3. DIMENSIONS INDICATED ARE TYPICAL UNLESS NOTED OTHERWISE ON DIMENSIONED FLOOR PLAN SHEETS.
4. DIMENSIONS SHOWN FOR ACCESSORIES AND EQUIPMENT ITEMS AND CLEAR FLOOR SPACE ARE FROM FACE OF ROOM FINISH (SUCH AS TILE).
5. "GENERIC" PLUMBING FIXTURES AND ACCESSORIES ARE SHOWN - SEE PLUMBING DRAWINGS AND/OR PROJECT MANUAL FOR SCHEDULED FIXTURES AND ACCESSORIES.

KEYNOTE LEGEND

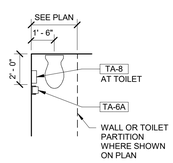
KEY NO.	KEYNOTE TEXT



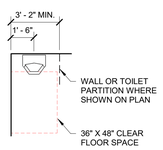
TG1 TYP. ACCESSIBLE TOILET ROOM
SCALE 1/4" = 1'-0"



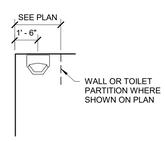
WCG1 TYP. ACCESSIBLE WATER CLOSET
SCALE 1/4" = 1'-0"



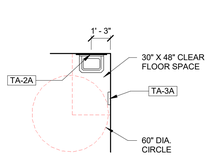
WCG2 WATER CLOSET
SCALE 1/4" = 1'-0"



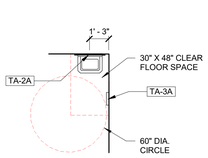
UG1 TYP. ACCESSIBLE URINAL
SCALE 1/4" = 1'-0"



UG2 URINAL
SCALE 1/4" = 1'-0"



SG1 TYP. ACCESSIBLE SINK
SCALE 1/4" = 1'-0"



SG2 TYP. ACCESSIBLE LAVATORY
SCALE 1/4" = 1'-0"

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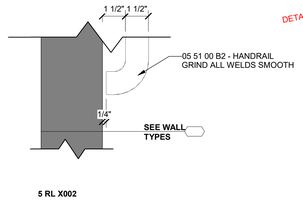
SHEET TITLE:
TOILET ROOM STANDARDS

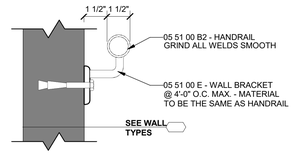
SHEET NUMBER:
2-AE-401

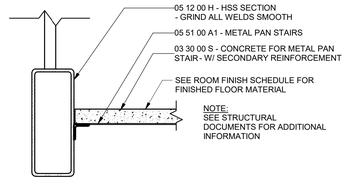
KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
03 30 00 S -	CONCRETE FOR METAL PAN STAIR
05 12 00 H -	HSS SECTION
05 51 00 A1 -	METAL PAN STAIRS
05 51 00 B2 -	HANDRAIL
05 51 00 C -	STEEL STRINGER
05 51 00 E -	WALL BRACKET



5 RL X002

DETAILS FOR THE BAND / STAGE RAMP





5 Metals - 5 Steel Handrail Return--RENAME

7 HANDRAIL RETURN

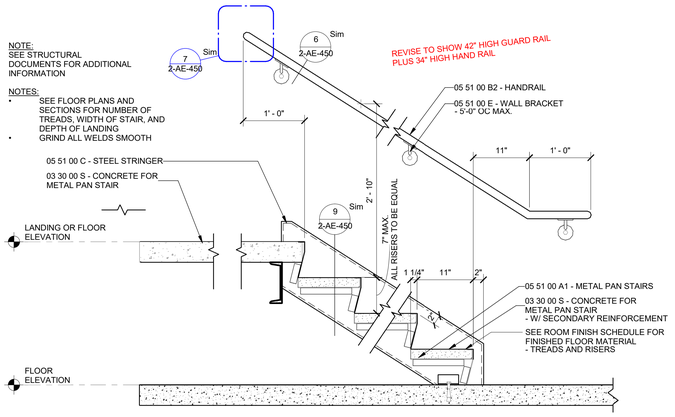
SCALE 3" = 1'-0"
AS REFERENCED BY: 8 / 2-AE-450

6 STEEL HANDRAIL

SCALE 3" = 1'-0"
AS REFERENCED BY: 8 / 2-AE-450

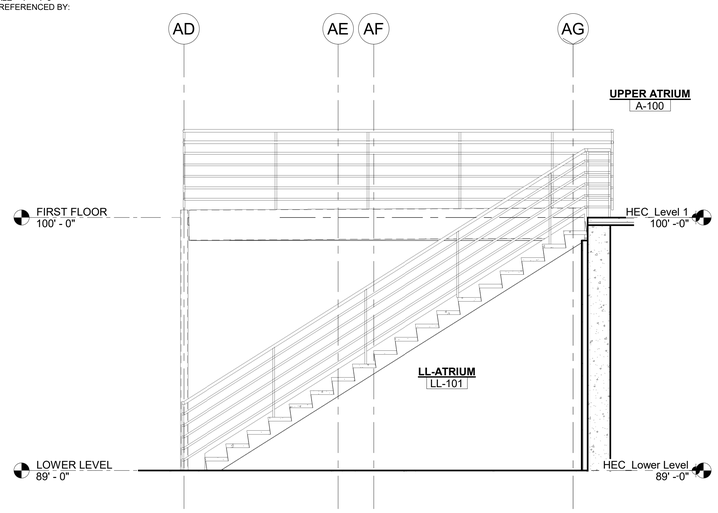
9 DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 8 / 2-AE-450



8 INTERIOR ATRIUM STAIR DETAIL

SCALE 1" = 1'-0"
AS REFERENCED BY:

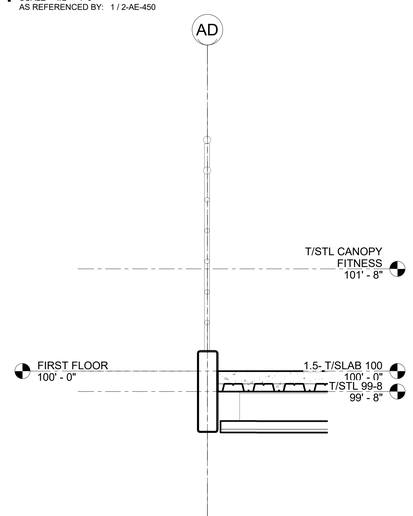


2 LOBBY STAIR SECTION 1

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

4 LOBBY RAILING ELEVATION

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-450

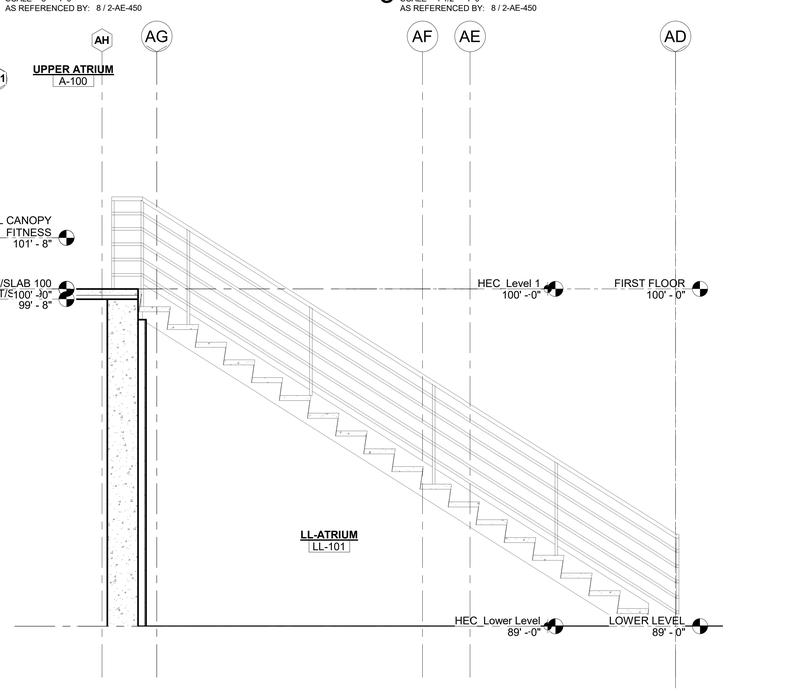


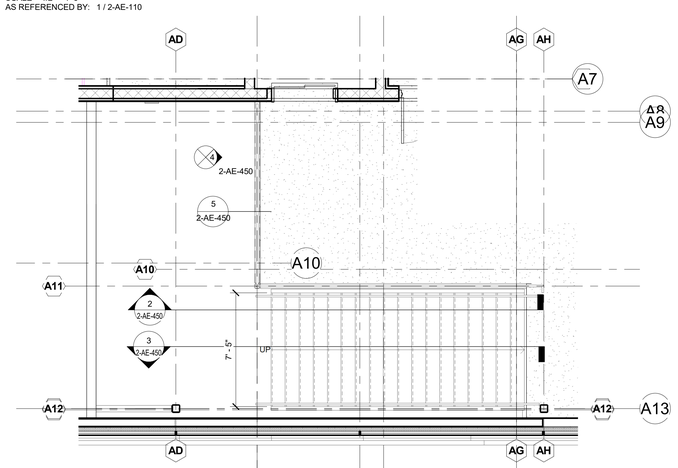
5 RAILING DETAIL

SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-450

3 LOBBY STAIR SECTION 2

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110





1 AREA A - LL - ENL. STAIR PLAN

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102

AD AE AF AG

PLAN NORTH

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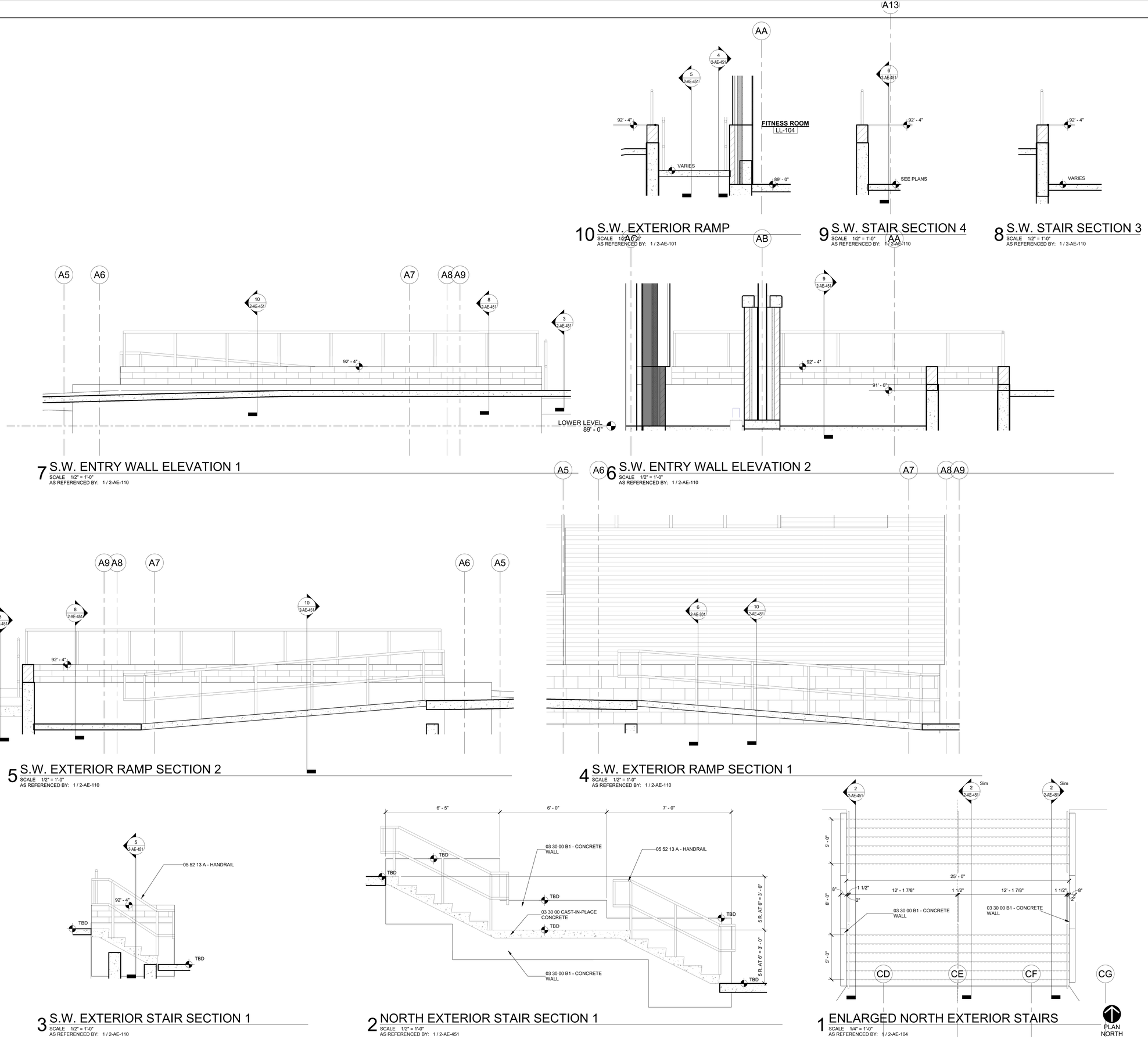
SHEET TITLE:

STAIR PLANS AND SECTIONS

SHEET NUMBER:

2-AE-450



7 S.W. ENTRY WALL ELEVATION 1
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

10 S.W. EXTERIOR RAMP
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

9 S.W. STAIR SECTION 4
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

8 S.W. STAIR SECTION 3
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

6 S.W. ENTRY WALL ELEVATION 2
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

5 S.W. EXTERIOR RAMP SECTION 2
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

4 S.W. EXTERIOR RAMP SECTION 1
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

3 S.W. EXTERIOR STAIR SECTION 1
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

2 NORTH EXTERIOR STAIR SECTION 1
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-451

1 ENLARGED NORTH EXTERIOR STAIRS
SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
03 30 00	CAST-IN-PLACE CONCRETE
03 30 00 B1 -	CONCRETE WALL
05 52 13 A -	HANDRAIL

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

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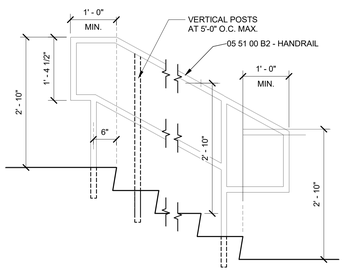
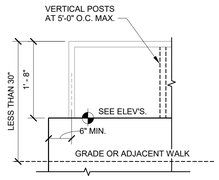
SHEET TITLE:
STAIR PLANS AND SECTIONS

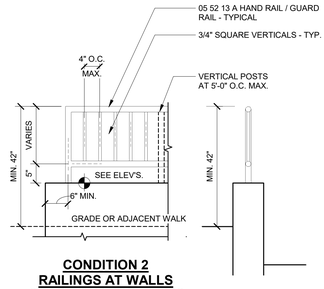
SHEET NUMBER:
2-AE-451



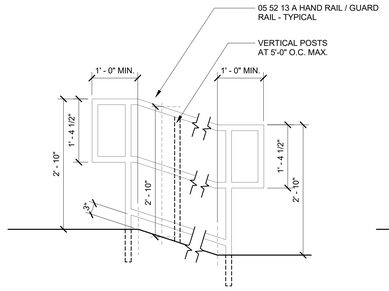
RAILINGS AT STAIRS



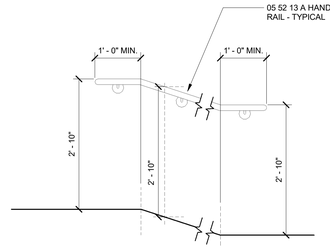
CONDITION 1
RAILINGS AT WALLS
GRADE CHANGE < 30"



CONDITION 2
RAILINGS AT WALLS
GRADE CHANGE =/> 30"



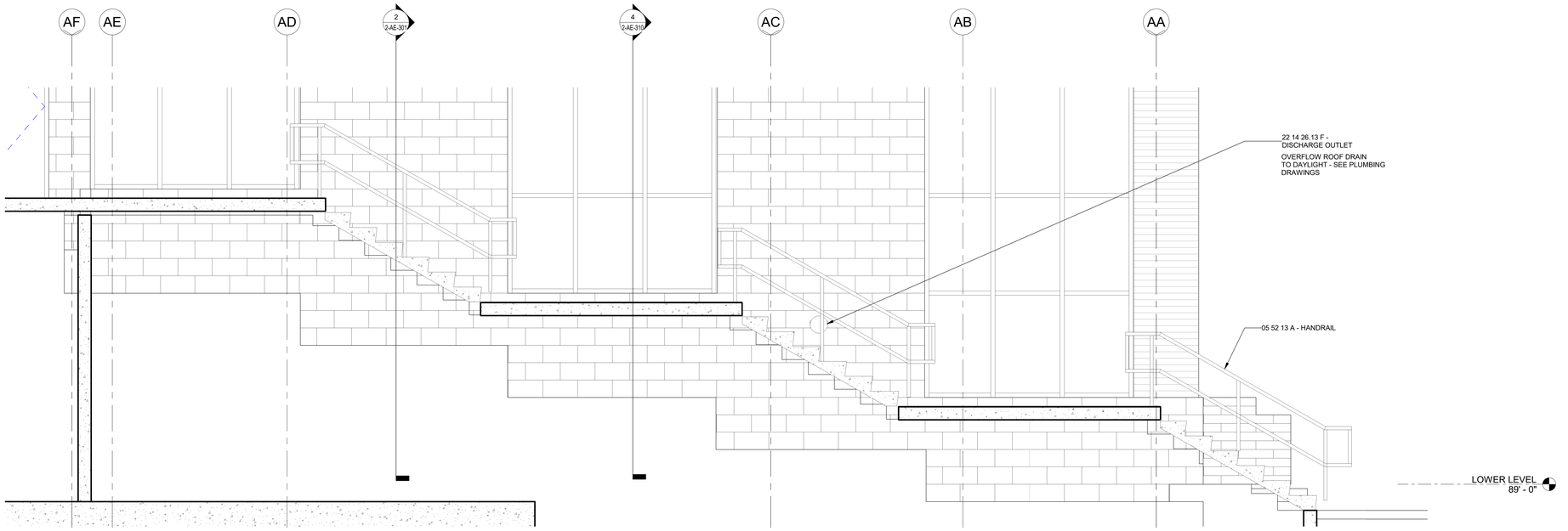
RAILINGS AT RAMPS



HAND RAILS AT RAMPS

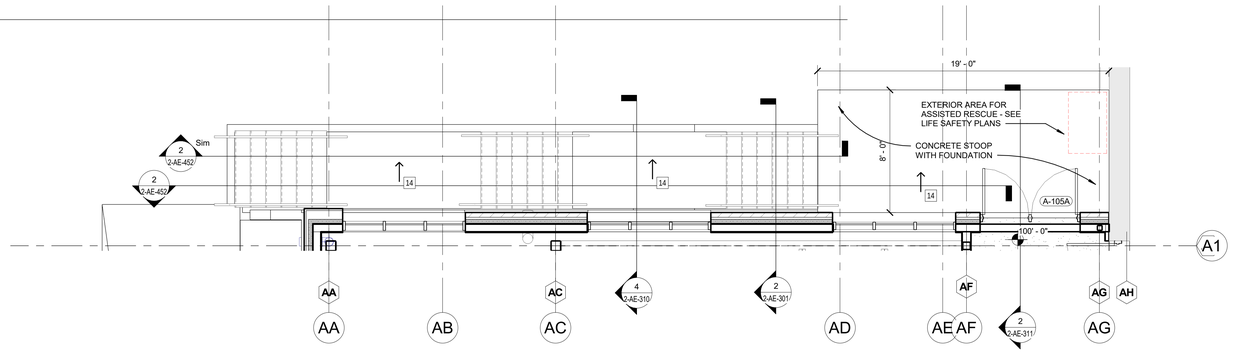
3 TYPICAL EXTERIOR RAILINGS

SCALE 3/4" = 1'-0"
AS REFERENCED BY:



2 WEST EXTERIOR STAIRS 1 - LOOKING SOUTH

SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101



1 WEST EXTERIOR STAIRS

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102

PLAN
NORTH

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
05 51 00 B2 -	HANDRAIL
05 52 13 A -	HANDRAIL
22 14 26.13 F -	DISCHARGE OUTLET

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT THIS DOOR
2	TOOTH IN NEW CMU INTO EXISTING COURSING
3	04 20 00 A2 - PROVIDE SOLID BULLNOSE CAP
4	ENLARGE EXISTING OPENING - SEE STRUCTURAL
5	INSTALL RESILIENT CHANNEL ON SIDE OF WALL WITH THIS #5 NOTATION
6	ROOF DRAIN AND OVERFLOW ROOF DRAIN LEADERS - SEE PLBG DRAWINGS
7	ROOF DRAIN LEADER - SEE PLBG DRAWINGS
8	ROOF OVERFLOW DRAIN LEADER - SEE PLBG DRAWINGS
9	10 44 00 - FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10	EXTEND MTL STUD/FURRING AND GYP WALL MIN. 4" ABOVE CEILING.
11	33 41 11 B - DOWNSPOUT RECIEVER
12	10 51 00 - RELOCATED LOCKERS FROM SOUTH WALL OF CORRIDOR E-101
13	FINISHED WALL LENGTH SHALL MATCH CASEWORK LENGTH
14	SLOPE EXTERIOR STOOPS AND SLABS FOR DRAINAGE MAX. 2% TO COMPLY WITH ADA.
15	TOP OF WALL TO MATCH TOP OF CASEWORK. PROVIDE 5/8" GYP. BD. CAP
16	33 41 11 - SITE DRAIN
17	SY-Plan Note-Symbol - #17 - FLOOR INFILL AT AREAS OF REMOVED STAGE FLOOR AND CMU WALLS - SEE DETAIL XXXX

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2019-05-03

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Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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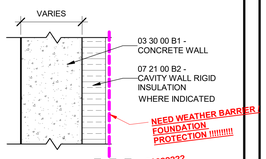
SHEET TITLE:
STAIR PLANS AND SECTIONS

SHEET NUMBER:
2-AE-452

D#N — SEE SPECIFIC WALL TYPES BELOW

TOP OF WALL SEE: T1 T2 T3

????????



BOTTOM OF WALL SEE: B1 B2 B3

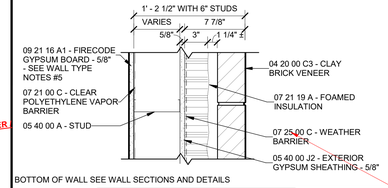
????????

- D1N - FOUNDATION WALL: SEE STRUCTURAL DRAWINGS FOR WIDTH
- D2N - 8" CONCRETE WALL
- D3N - 10" CONCRETE WALL
- D4N - 12" CONCRETE WALL
- D5N - 13" CONCRETE WALL
- D6N - 14" CONCRETE WALL

NOTE: X-HR RATED WALLS, USE UL DES. XXXX

E#A-A — SEE SPECIFIC WALL TYPES BELOW

TOP OF WALL SEE WALL SECTIONS AND DETAILS



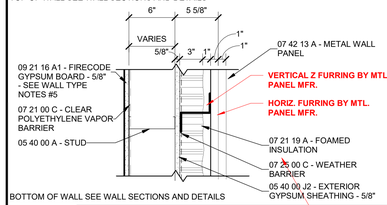
BOTTOM OF WALL SEE WALL SECTIONS AND DETAILS

- E0A - EXISTING METAL STUD
- E1A - 6" METAL STUD
- E2A - 8" METAL STUD

NOTE: X-HR RATED WALLS, USE UL DES. XXXX

E#K — SEE SPECIFIC WALL TYPES BELOW

TOP OF WALL SEE WALL SECTIONS AND DETAILS



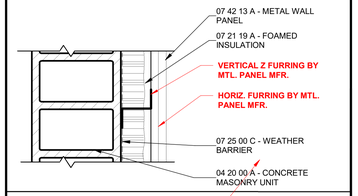
BOTTOM OF WALL SEE WALL SECTIONS AND DETAILS

- E0K - EXISTING METAL STUD
- E1K - 6" METAL STUD
- E2K - 8" METAL STUD

NOTE: X-HR RATED WALLS, USE UL DES. XXXX

G#BK-B — SEE SPECIFIC WALL TYPES BELOW

TOP OF WALL SEE WALL SECTIONS AND DETAILS

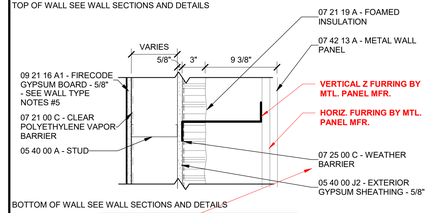


- G1K-A - 8" NOMINAL CONCRETE BLOCK WALL
- G2K-A - 10" NOMINAL CONCRETE BLOCK WALL
- G3K-A - 12" NOMINAL CONCRETE BLOCK WALL
- G4K-A - 14" NOMINAL CONCRETE BLOCK WALL

NOTE: X-HR RATED WALLS, USE UL DES. U905

E#L-B — SEE SPECIFIC WALL TYPES BELOW

TOP OF WALL SEE WALL SECTIONS AND DETAILS



BOTTOM OF WALL SEE WALL SECTIONS AND DETAILS

- E1L-B - 6" METAL STUD
- E2L-B - 8" METAL STUD

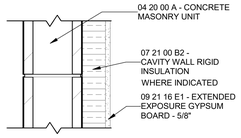
(WIDE WALL ABOVE HIGH MASONRY)

NOTE: X-HR RATED WALLS, USE UL DES. XXXX

CAN ELIMINATE WEATHER BARRIER IF FOAMED INSULATION CAN ACT AS WEATHER BARRIER. MUST REVIEW FOAM INSULATION'S PROPERTIES AND CODE TO DETERMINE.

C#N-# — SEE SPECIFIC WALL TYPES BELOW

INDICATES INSULATION THICKNESS



- C3N-# - 8" CMU WALL
- C4N-# - 10" CMU WALL
- C5N-# - 12" CMU WALL

NOTE: X-HR RATED WALLS, USE UL DES. XXXX

WALL PRIORITY LEGEND

PRIORITY	#	PLAN GRAPHIC	PARTITION TYPE
HIGHEST	1	2FW 2FW	2 HOUR - FIRE WALL
	2	2FB 2FB	2 HOUR - FIRE BARRIER
MEDIUM	3	1FB 1FB	1 HOUR - FIRE BARRIER
LOWEST	4	1FP 1FP	1 HOUR - FIRE PARTITION (WALL TO LIMIT THE TRANSFER OF SMOKE (DOORS AND GLAZING FOR BORROWED LIGHTS ARE NOT RATED)

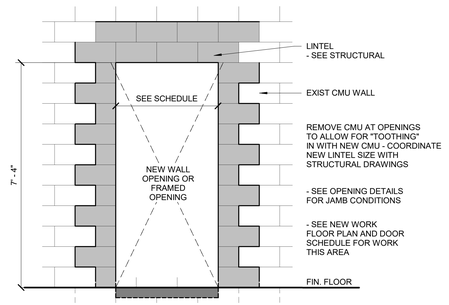
NOTE: PARTITIONS WITH A HIGHER PRIORITY # TAKE PRECEDENCE OVER PARTITIONS WITH A LOWER PRIORITY # - SEE AE-501 FOR DETAILS

WALL TYPE NOTES

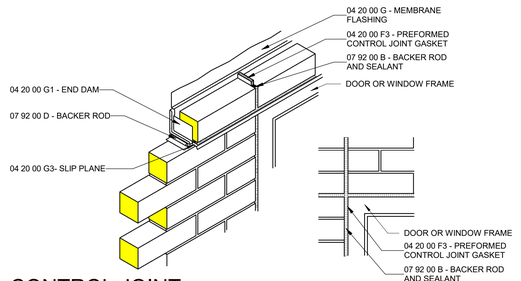
1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX. WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
2. ALL OPENINGS IN RATED WALLS SHALL PROVIDE OPENING PROTECTION AS REQUIRED BY CODE.
3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
03 30 00 B1 -	CONCRETE WALL
04 20 00 A5 -	CONCRETE MASONRY UNIT - SASH BLOCK
04 20 00 A -	CONCRETE MASONRY UNIT
04 20 00 C3 -	CLAY BRICK VENEER
04 20 00 F3 -	PREFORMED CONTROL JOINT GASKET
04 20 00 F -	CONTROL JOINT
04 20 00 G1 -	END DAM
04 20 00 G3-	SLIP PLANE
04 20 00 G -	MEMBRANE FLASHING
05 40 00 A -	STUD
05 40 00 J2 -	EXTERIOR GYPSUM SHEATHING - 5/8"
07 21 00 B2 -	CAVITY WALL RIGID INSULATION
07 21 00 C -	CLEAR POLYETHYLENE VAPOR BARRIER
07 21 19 A -	FOAMED INSULATION
07 25 00 C -	WEATHER BARRIER
07 42 13 A -	METAL WALL PANEL
07 84 00 A -	SEALANT - UL LISTED
07 84 00 B -	FIRE PROOF INSULATION - UL LISTED
07 92 00 B -	BACKER ROD AND SEALANT
07 92 00 D -	BACKER ROD
09 21 16 A1 -	FIRECODE GYPSUM BOARD - 5/8"
09 21 16 E1 -	EXTENDED EXPOSURE GYPSUM BOARD - 5/8"

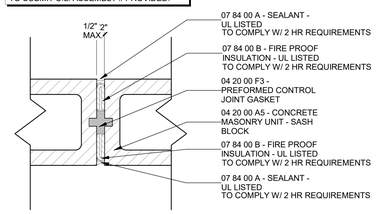


5 CMU WALL DOOR CUT-IN
N.T.S.

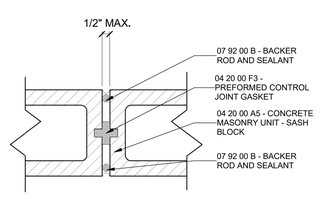


4 CONTROL JOINT
N.T.S.

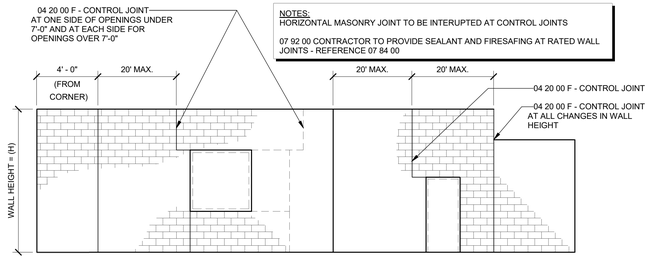
NOTE:
CONTROL JOINT TO BE IN ACCORDANCE WITH U.L. TESTED SYSTEM. CONTRACTOR TO SUBMIT U.L. ASSEMBLY # PROVIDED.



3 RATED CMU CONTROL JOINT DETAIL
SCALE 3" = 1'-0"
AS REFERENCED BY:



2 NON-RATED CMU CONTROL JOINT
SCALE 3" = 1'-0"
AS REFERENCED BY:



ELEVATION

1 INTERIOR & EXTERIOR MASONRY CONTROL JOINT LOCATIONS
SCALE 1/4" = 1'-0"
AS REFERENCED BY:

WALL BASE DETAILS, SILL DETAILS, ETC...

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2019-05-03

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NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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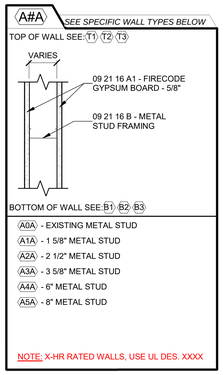
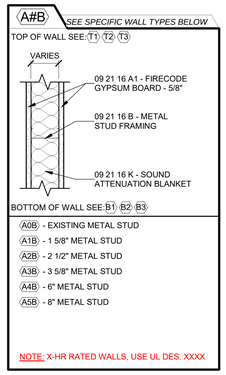
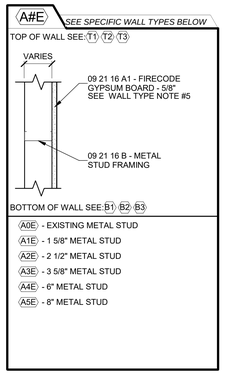
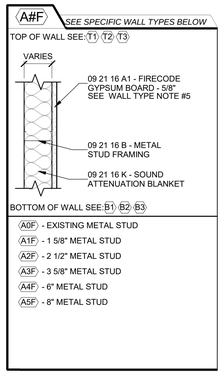
SHEET TITLE:
EXTERIOR WALL TYPES. INT. & EXT. WALL DETAILS

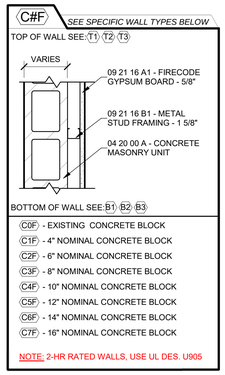
SHEET NUMBER:
2-AE-501

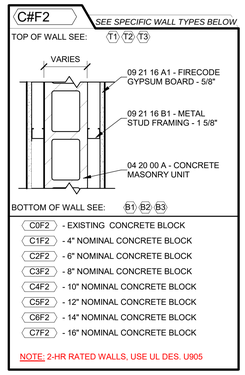


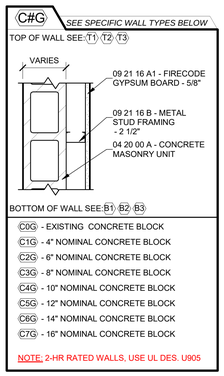


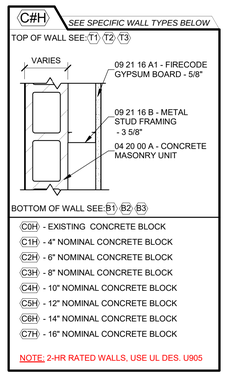


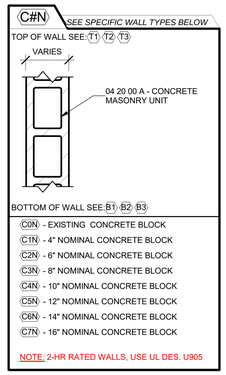












WALL PRIORITY LEGEND

PRIORITY	#	PLAN GRAPHIC	PARTITION TYPE
HIGHEST	1	2FW 2FW	2 HOUR - FIRE WALL
	2	2FB 2FB	2 HOUR - FIRE BARRIER
MEDIUM	3	1FB 1FB	1 HOUR - FIRE BARRIER
LOWEST	4	1FP 1FP	1 HOUR - FIRE PARTITION (WALL TO LIMIT THE TRANSFER OF SMOKE (DOORS AND GLAZING FOR BORROWED LIGHTS ARE NOT RATED)

NOTE: PARTITIONS WITH A HIGHER PRIORITY # TAKE PRECEDENCE OVER PARTITIONS WITH A LOWER PRIORITY # - SEE AE-501 FOR DETAILS

WALL TYPE NOTES

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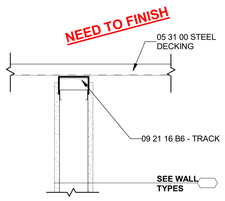
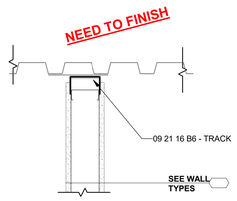
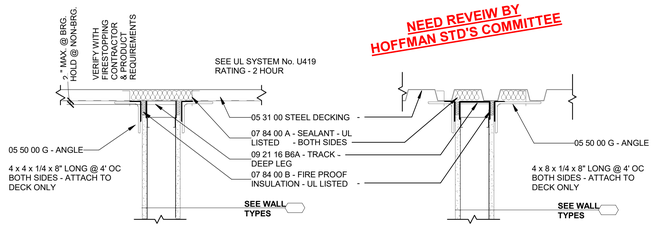
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATIONS THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

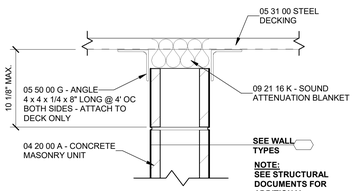
KEYNOTE LEGEND

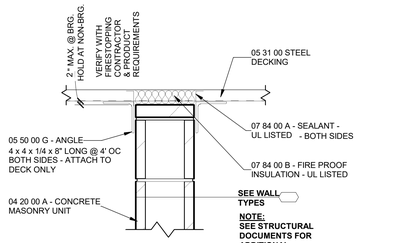
KEY NO.	KEYNOTE TEXT
04 20 00 A -	CONCRETE MASONRY UNIT
05 31 00	STEEL DECKING
05 50 00 G -	ANGLE
07 84 00 A -	SEALANT - UL LISTED
07 84 00 B -	FIRE PROOF INSULATION - UL LISTED
07 92 00 A1 -	SEALANT - BOTH SIDES
07 92 00 A -	SEALANT
09 21 16 A1 -	FIRECODE GYPSUM BOARD - 5/8"
09 21 16 A -	FIRECODE GYPSUM BOARD
09 21 16 B1 -	METAL STUD FRAMING - 1 5/8"
09 21 16 B6 -	TRACK
09 21 16 B6A -	TRACK - DEEP LEG
09 21 16 B -	METAL STUD FRAMING
09 21 16 C2 -	FURRING CHANNELS - 7/8"
09 21 16 K -	SOUND ATTENUATION BLANKET
09 21 16 L1 -	CONTROL JOINT
09 21 16 M -	GYPSUM SUSPENSION SYSTEM
09 51 00 A -	SUSPENDED ACOUSTICAL CEILING
09 51 00 B -	SUSPENDED CEILING GRID







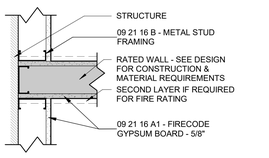


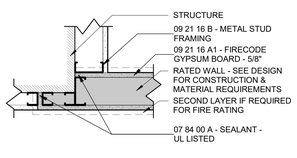


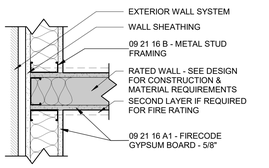
5 TOP OF INTERIOR WALL DETAILS

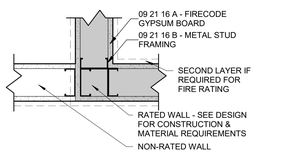
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

07 84 00 CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR REVIEW AND APPROVAL THE PROPOSED UL DESIGN INFORMATION MIN. THREE WEEKS PRIOR TO INSTALLATION, AND SHALL NOT INSTALL SUCH CONSTRUCTION WITHOUT WRITTEN APPROVAL BY ARHCITECT.





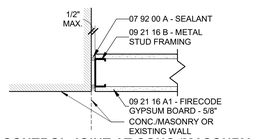


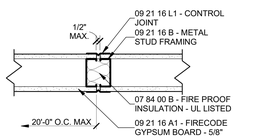


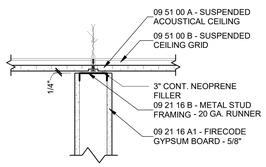
RATED WALLS APPEAR SHADED

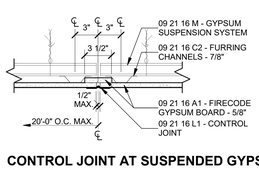
3 RATED WALL INTERSECTIONS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



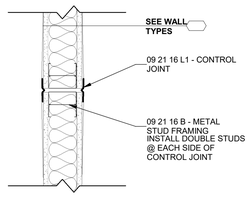






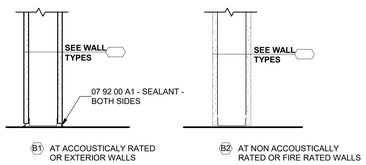
2 GYPSUM BOARD JOINT DETAILS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



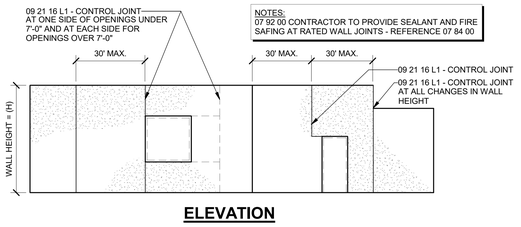
6 GYP. BD. CONTROL JOINT

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



4 BASE OF INTER. WALL DETAILS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



1 GYPSUM BOARD CONTROL JOINT LOCATIONS

SCALE 3/16" = 1'-0"

PRELIMINARY
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2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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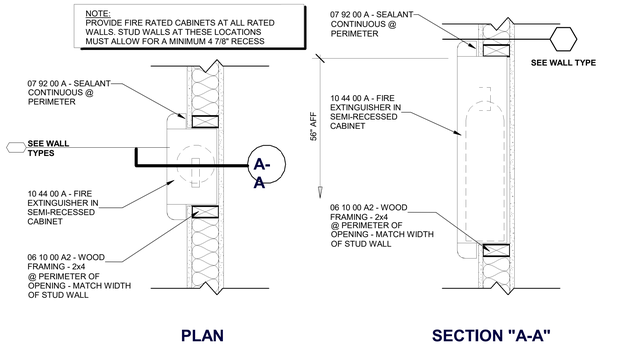
SHEET TITLE:
INTERIOR WALL TYPES AND DETAILS

SHEET NUMBER:
2-AE-502

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
04 20 00 A -	CONCRETE MASONRY UNIT
06 10 00 A2 -	WOOD FRAMING - 2x4
06 10 00 C1 -	WOOD BLOCKING - 1x
06 10 00 CP2 -	PPT BLOCKING - 2x
06 10 00 D4 -	PLYWOOD SUBFLOORING
07 92 00 A1 -	SEALANT - BOTH SIDES
07 92 00 A -	SEALANT
08 11 13 B -	STEEL DOOR FRAME
10 44 00 A -	FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
10 51 00 A -	METAL LOCKERS

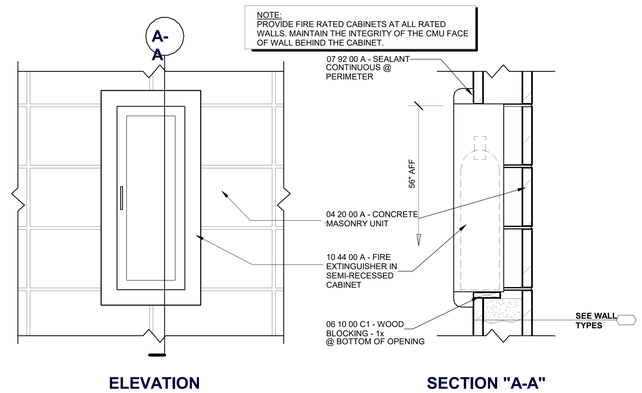


10 FE B001

10 Specialties - 10 Fire Exting. Cab Stud--RENAME

5 FIRE EXTINGUISHER CABINET DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

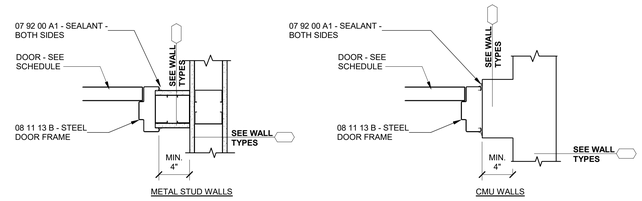


10 FE A001

10 Specialties - 10 Fire Exting. Cab CMU--RENAME

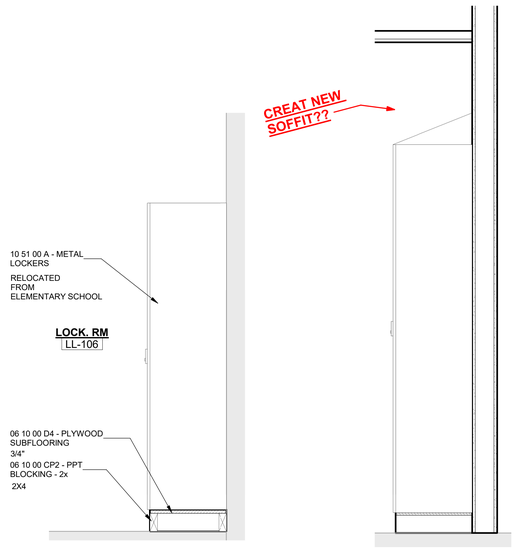
4 FIRE EXTINGUISHER CABINET DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



3 HM FRAME AT WALL INTERSECTION

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

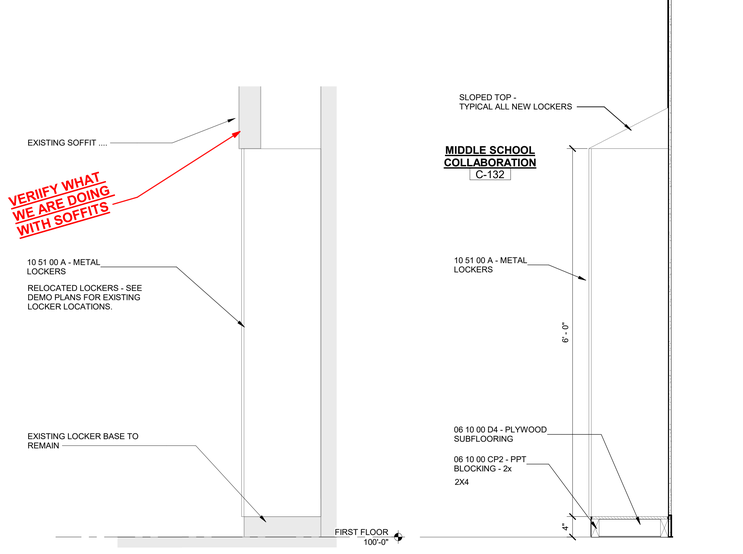


2 BENCH DETAIL

SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

1D LL-106 RELOCATED LOCKERS

SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-701



1C NEW LOCKER DETAIL

SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

1B RELOCATED LOCKER DETAIL

SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

1A LOCKER DETAIL 1

SCALE 1" = 1'-0"
AS REFERENCED BY: 15 / 2-AE-701

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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Planning, Design & Construction, Inc.
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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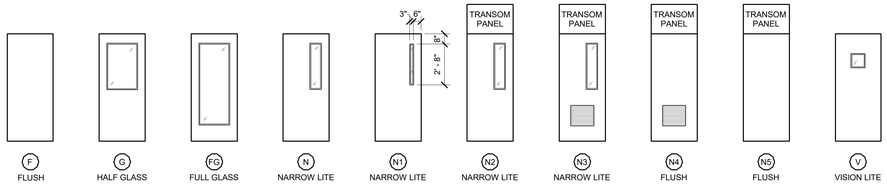
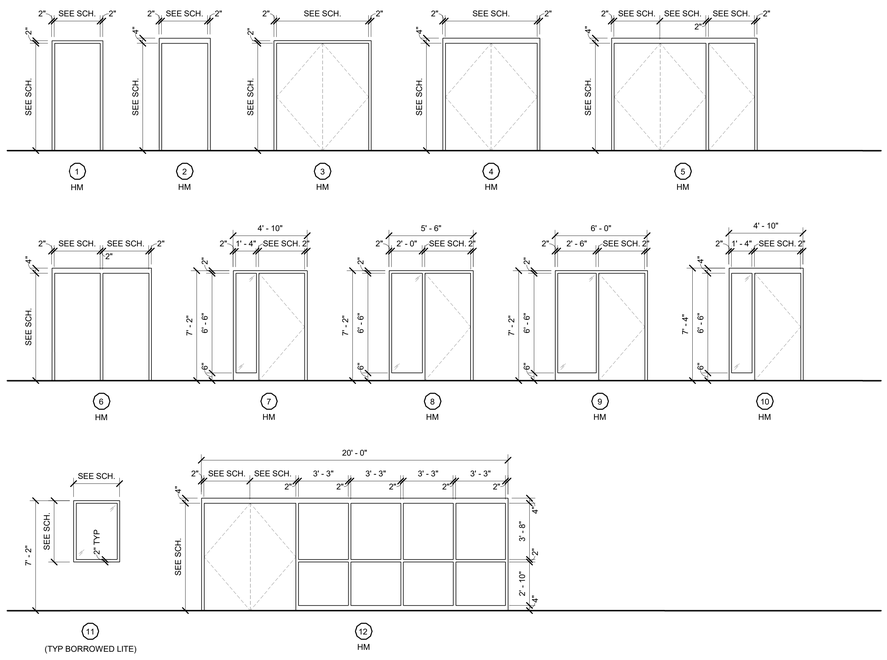
SHEET TITLE:
STANDARD DETAILS

SHEET NUMBER:
2-AE-503



1 DOOR TYPES

SCALE 1/4" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE



2 FRAME TYPES

SCALE 1/4" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE

DOOR SCHEDULE

		DOOR				FRAME			DETAILS					
DOOR NO.	QTY	WIDTH	HEIGHT	TYPE	MATERIAL	DEPTH	TYPE	MATERIAL	HEAD	JAMB	SILL	FIRE RATING	HARDWARE GROUP	REMARKS
A-093A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
A-093B	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
A-095A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
A-095B	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
A-100A	2	3' - 0"	7' - 0"	N1	WD	5 3/4"	4	HM	7/2-EA-603	3/2-EA-603	--	60 MIN.		
A-100B	3	3' - 0"	7' - 0"	N1	WD	5 3/4"	5	HM	5/2-EA-603	1/2-EA-603	--	90 MIN.		
A-102	2	3' - 1"	7' - 0"	F	WD	5 3/4"	4	HM				90 MIN.		
A-104	2	3' - 0"	7' - 0"	F	WD	8 1/4"	3	HM	6/2-EA-603	2/2-EA-603	--	60 MIN.		
A-105A	2	3' - 0"	7' - 0"	F	HM	5 3/4"	6	HM						
A-105B	2	3' - 1"	7' - 0"	F	WD	5 3/4"	4	HM				90 MIN.		
B-004A	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
B-004B	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
B-179	1	3' - 4"	7' - 0"	N5	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-066A	1	3' - 0"	7' - 0"	F	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-066B	1	3' - 0"	7' - 0"	F	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-066C	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-067A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-067B	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-071	1	3' - 4"	7' - 0"	N4	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-072	1	3' - 0"	7' - 0"	N4	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-075	1	3' - 0"	7' - 0"	F	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-076	2	3' - 0"	7' - 0"	N	WD	5 7/8"	3	HM	6/2-EA-603	2/2-EA-603	--			
C-078	2	3' - 0"	7' - 0"	F	HM	5 3/4"	6	HM						
C-100A	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100B	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100C	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100D	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100E	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100F	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100G	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100H	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF13	AL						
C-100J	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF12	AL						
C-100K	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF12	AL						
C-100L	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF12	AL						
C-100M	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF12	AL						
C-101		24' - 0"	8' - 0"	VG	ST		--	--				90 MIN.		
C-102A	1	3' - 0"	7' - 0"	FG	WD	8 1/4"	7	HM	6/2-EA-603	2/2-EA-603	--			
C-102B	1	3' - 0"	7' - 0"	FG	WD	8 1/4"	7	HM	6/2-EA-603	2/2-EA-603	--			
C-103A	1	3' - 0"	7' - 0"	N	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-103B	1	4' - 6"	3' - 6"	--	--	6 3/8"	11	HM	19/2-EA-603	15/2-EA-603	11/2-EA-603			
C-104	1	3' - 0"	7' - 0"	F	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-105	1	3' - 0"	7' - 0"	F	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-106	1	3' - 0"	7' - 0"	G	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-107	1	3' - 0"	7' - 0"	F	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-108	1	3' - 0"	7' - 0"	F	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-109		4' - 0"	7' - 2"	--										UNCASED OPENING
C-110A	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--	90 MIN.		
C-110B		3' - 4"	7' - 4"	--										
C-111	1	3' - 0"	7' - 0"	N	WD	8 3/4"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-112	1	3' - 0"	7' - 0"	F	WD	8 3/4"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-113	1	3' - 0"	7' - 0"	N	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-114	1	3' - 0"	7' - 0"	N	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-115	1	3' - 0"	7' - 0"	N	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-116	1	3' - 0"	7' - 0"	F	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-117A		4' - 0"	7' - 0"	N9	ST		--	--				90 MIN.		UNCASED OPENING
C-117B		4' - 0"	7' - 4"	--										
C-118	1	3' - 0"	7' - 0"	F	WD	8 1/4"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-119	1	3' - 0"	7' - 0"	F	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-120	1	3' - 0"	7' - 0"	N	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-121A		8' - 0"	7' - 4"	SG	AL		--	--						
C-121B	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-122A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-122B	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-122C		8' - 0"	7' - 4"	SG	AL		--	--						
C-123A	1	3' - 0"	7' - 0"	N	WD	5 3/4"	10	HM						
C-123B		8' - 0"	7' - 4"	SG	AL		--	--						
C-124	1	3' - 0"	7' - 0"	N	WD	5 3/4"	2	HM						
C-125	1	3' - 0"	7' - 0"	N	WD	6 3/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-126	1	3' - 0"	7' - 0"	F	WD	8 3/4"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-128	1	3' - 0"	7' - 0"	F	WD	6 3/8"	8	HM						
C-129A	1	3' - 5"	7' - 0"	FG	AL	4 1/2"	SF7	AL						
C-129B	1	3' - 5"	7' - 0"	FG	AL	4 1/2"	SF7	AL						
C-129C	2	3' - 0"	7' - 0"	N	WD	5 3/4"	4	HM	5/2-EA-603	1/2-EA-603	--	90 MIN.		
C-130	1	3' - 0"	7' - 0"	N	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
C-131	1	3' - 0"	7' - 0"	N	WD	5 7/8"	9	HM	6/2-EA-603	2/2-EA-603	--			
C-133A	2	3' - 0"	7' - 0"	N	WD	8 1/4"	3	HM	6/2-EA-603	2/2-EA-603	--			
C-133B	2	3' - 0"	7' - 0"	N	WD	5 7/8"	3	HM	6/2-EA-603	2/2-EA-603	--			
C-134	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
C-138	1	3' - 0"	7' - 0"	N	WD	5 7/8"	1	HM	6/2-EA-603	2/2-EA-603	--			
C-400	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--			--			REPLACE DOOR AND TRANSOM PANEL
C-400A	2	3' - 0"	7' - 0"	F	WD	5 7/8"	3	HM	6/2-EA-603	2/2-EA-603	--			
C-401	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
C-405	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
D-418		6' - 0"	10' - 0"	SS	ST		--	--						
D-421A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
D-421B	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
D-421C	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL/ALT. BID REMOVABLE MULLION
D-421D	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-036	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
E-038	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
E-203	1	3' - 0"	7' - 0"	N	WD	8 3/4"	7	HM	6/2-EA-603	2/2-EA-603	--			
E-204	1	3' - 0"	7' - 0"	N	WD	8 3/4"	7	HM	6/2-EA-603	2/2-EA-603	--			
E-205	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-207	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-208	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-209	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-219A	1	3' - 0"	7' - 2"	FG	AL	4 1/2"	SF5	AL						
E-219B	1	3' - 0"	7' - 2"	FG	AL	4 1/2"	SF3	AL						
E-221		8' - 0"	7' - 4"	SG	AL		--	--						
E-222	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-300	1	3' - 0"	7' - 0"	F	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-301	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-302A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-302B		8' - 0"	7' - 4"	SG	AL		--	--						
E-303A	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
E-303B		8' - 0"	7' - 4"	SG	AL		--	--						
F-044	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
F-046	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
F-048	1	3' - 4"	7' - 0"	N4	WD	5 3/4"	--	--			--			REPLACE DOOR AND TRANSOM PANEL
F-054	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
F-055	1	3' - 0"	7' - 0"	N4	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
F-056	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
F-100	1	3' - 0"	--	--		5 3/4"	--	--	--	--	--			ALT. BID - ADD REMOVABLE MULLION
F-319A	2	3' - 0"	7' - 0"	FG	WD	5 3/4"	12	HM	5/2-EA-603	1/2-EA-603	--			
F-321	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
F-331A	2	3' - 0"	7' - 0"	G	WD	5 7/8"	3	HM	6/2-EA-603	2/2-EA-603	--			
F-331B	1	4' - 6"	3' - 6"	--	--	5 7/8"	11	HM	19/2-EA-603	15/2-EA-603	11/2-EA-603			
F-331C	1	4' - 6"	3' - 6"	--	--	5 7/8"	11	HM	19/2-EA-603	15/2-EA-603	11/2-EA-603			
F-331D		10' - 0"	10' - 0"	OH	AL		--	AL						
F-332A	2	3' - 0"	7' - 0"	F	WD	5 3/4"	3	HM	5/2-EA-603	1/2-EA-603	--			
F-332B		10' - 0"	10' - 0"	OH	AL		--	AL						
F-336	1	3' - 0"	7' - 0"	N3	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
LL-100A	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF9	AL						
LL-100B	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF9	AL						
LL-100C	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF9	AL						
LL-100D	1	3' - 0"	7' - 0"	FG	AL	4 1/2"	SF9	AL						
LL-100E	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF8	AL						
LL-100F	1	6' - 0"	7' - 0"	FG	AL	4 1/2"	SF8	AL						
LL-102	2	3' - 0"	7' - 0"	N1	WD	5 3/4"	4	HM	3/2-EA-603	7/2-AE-603	--	90 MIN.		
LL-103	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	13/2-EA-603	9/2-EA-603	--	90 MIN.		
LL-104A	1	0' - 0"	0' - 0"	FG	AL	4 1/2"	SF15	AL						
LL-104B	1	3' - 0"	7' - 0"	F	WD	8 1/4"	1	HM	6/2-EA-603	2/2-EA-603	--	60 MIN.		
LL-104C	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	3/2-EA-603	7/2-AE-603	--	60 MIN.		
LL-105A	2	3' - 0"	7' - 0"	F	WD	5 7/8"	3	HM	6/2-EA-603	2/2-EA-603	--	60 MIN.		
LL-106A	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--	90 MIN.		
LL-107	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
LL-108	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
LL-109	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
LL-110	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--	90 MIN.		
LL-119	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
LL-121A	1	3' - 0"	7' - 0"	F	WD	5 3/4"	2	HM	5/2-EA-603	1/2-EA-603	--			
LL-121B	1	4' - 0"	4' - 0"	--	--	5 3/4"	11	HM	12/2-EA-603	8/2-AE-603	4/2-EA-603			
LL-121C	1	4' - 0"	4' - 0"	--	--	5 3/4"	11	HM	12/2-EA-603	8/2-AE-603	4/2-EA-603			
LL-126	1	3' - 4"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL
LL-133	1	3' - 0"	7' - 0"	N2	WD	5 3/4"	--	--	--	--	--			REPLACE DOOR AND TRANSOM PANEL

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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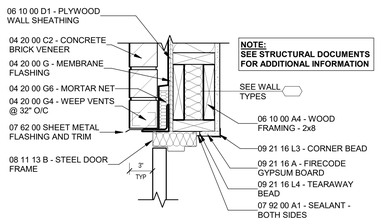
SHEET TITLE:
DOOR SCHEDULE, DOOR & FRAME TYPES

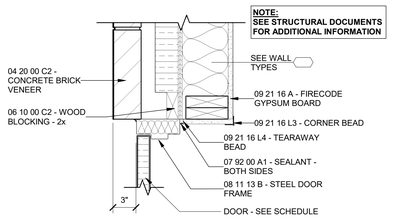
SHEET NUMBER:
2-AE-601

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
04 20 00 A2 -	CONCRETE MASONRY UNIT - BULLNOSE
04 20 00 C2 -	CONCRETE BRICK VENEER
04 20 00 G4 -	WEEP VENTS @ 32" O/C
04 20 00 G6 -	MORTAR NET
04 20 00 G -	MEMBRANE FLASHING
04 20 00 K -	GROUT FILL
06 10 00 A4 -	WOOD FRAMING - 2x8
06 10 00 AP1 -	PPT FRAMING - 2x
06 10 00 C2 -	WOOD BLOCKING - 2x
06 10 00 D1 -	PLYWOOD WALL SHEATHING
07 62 00	SHEET METAL FLASHING AND TRIM
07 92 00 A1 -	SEALANT - BOTH SIDES
08 11 13 A -	STEEL DOOR
08 11 13 B3 -	RIGID INSULATION @ HARDWARE LOCATIONS
08 11 13 B -	STEEL DOOR FRAME
09 21 16 A -	FIRECODE GYPSUM BOARD
09 21 16 L3 -	CORNER BEAD
09 21 16 L4 -	TEARAWAY BEAD



5 HEAD DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



1 JAMB DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

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NOT FOR CONSTRUCTION

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800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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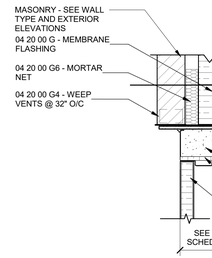
SHEET TITLE:
EXTERIOR DOOR DETAILS

SHEET NUMBER:
2-AE-602



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SCALE 1 1/2" = 1'-0"
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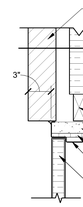

10 JAMB DETAIL
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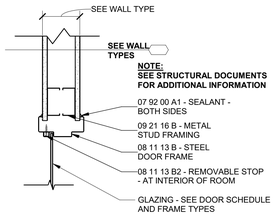

19 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
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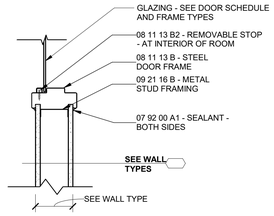

15 JAMB DETAIL

SCALE 1 1/2" = 1'-0"
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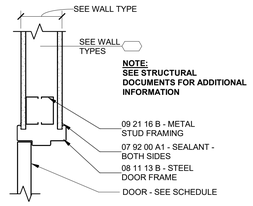
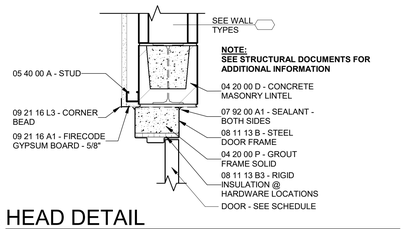


14 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



13 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
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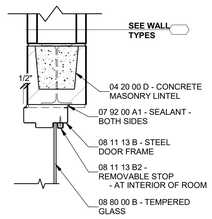
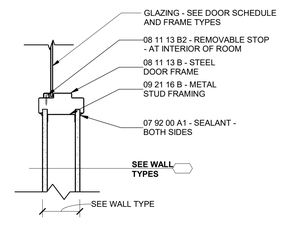


HEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



11 SILL DETAIL

SCALE 1 1/2" = 1'-0"
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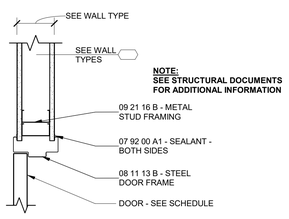

10 JAMB DETAIL

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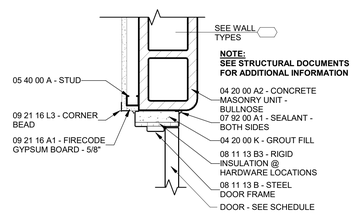
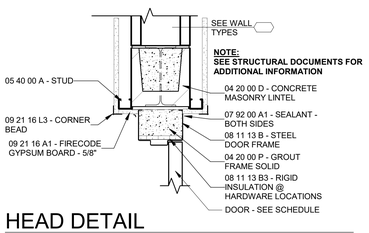


9 JAMB DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

JAMB DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



7 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
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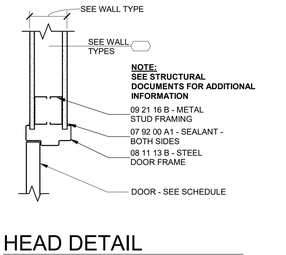
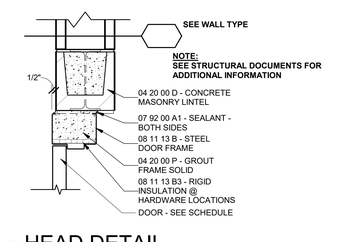


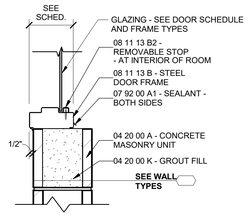
6 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



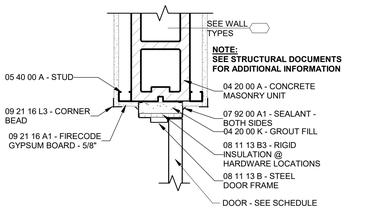
5 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



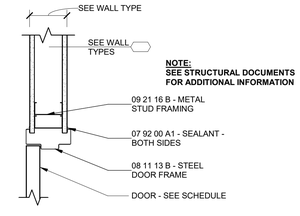
SILL DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



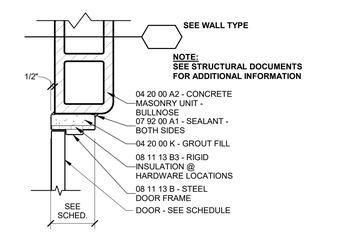
3 JAMB DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



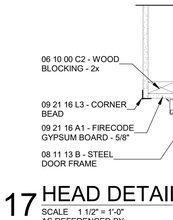
2 JAMB DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



1 JAMB DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



17 HEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:
INTERIOR DOOR DETAILS

SHEET NUMBER:
2-AE-603

WINDOW SCHEDULE

WINDOW NO	ROUGH OPENING		MAT	OPERATION	DETAIL			GLAZING		REMARKS
	WIDTH	HEIGHT			HEAD	JAMB	SILL	TYPE	THICK	
80	4' - 0"	5' - 0"								
83	4' - 0"	6' - 8"								
84	4' - 0"	6' - 0"								
85	4' - 0"	6' - 0"								
89	4' - 0"	4' - 0"								
99	0' - 0"	0' - 0"								
100	3' - 10"	2' - 10"								
101	5' - 1"	5' - 8"								

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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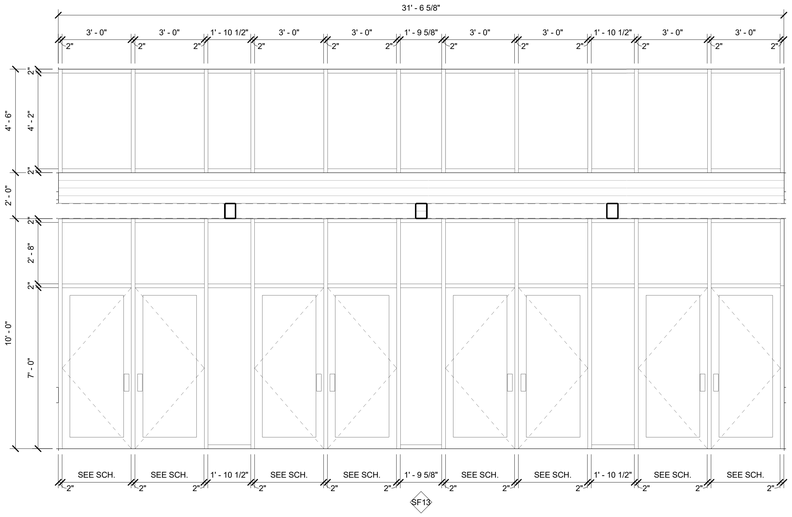
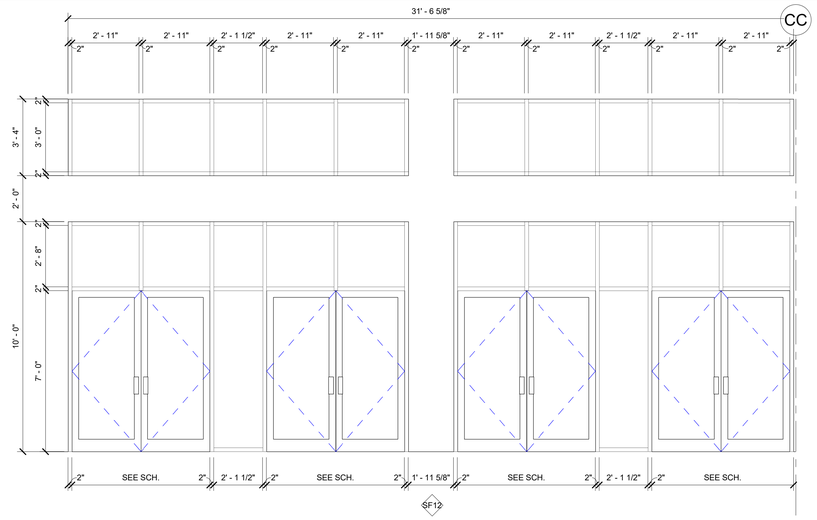
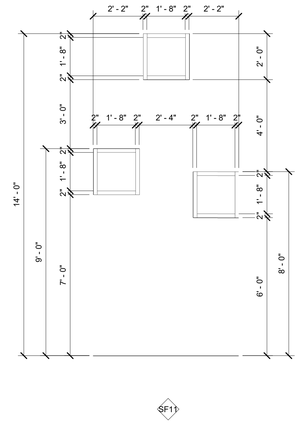
SHEET TITLE:
WINDOW SCHEDULE

SHEET NUMBER:
2-AE-630

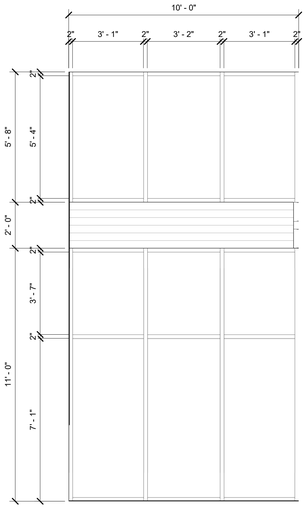


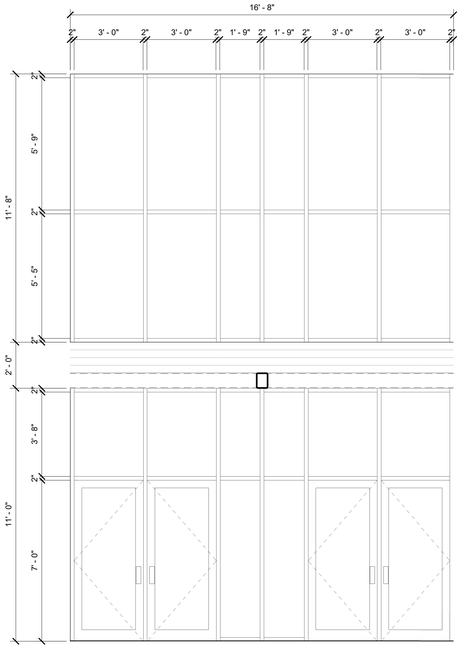


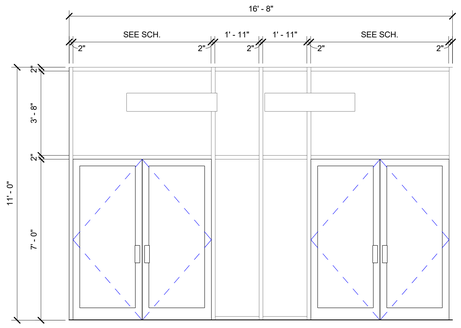


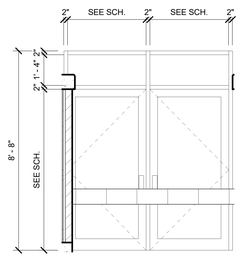
3 STOREFRONT ELEVATIONS

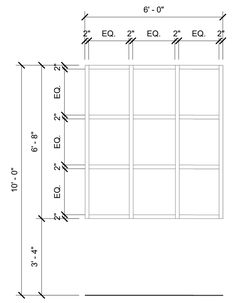
SCALE 3/8" = 1'-0"





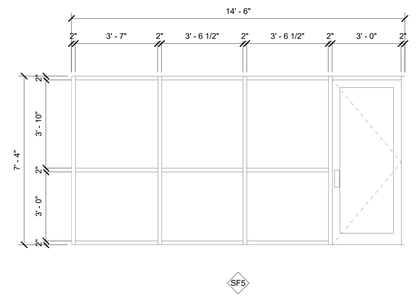


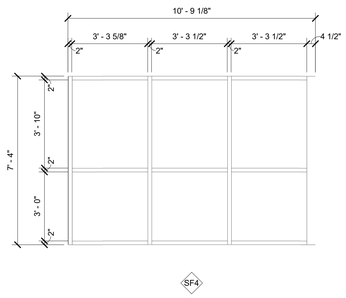


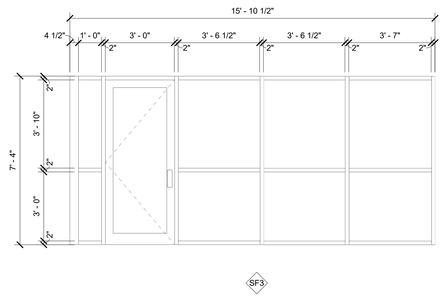


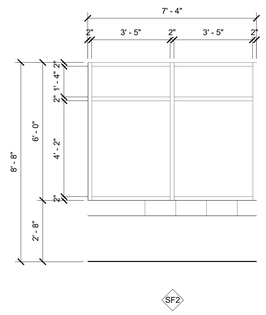
2 STOREFRONT ELEVATIONS

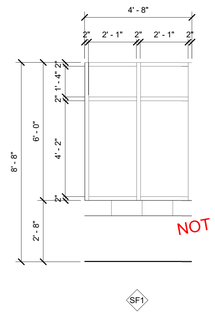
SCALE 3/8" = 1'-0"











PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

1 STOREFRONT ELEVATIONS

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AF-806

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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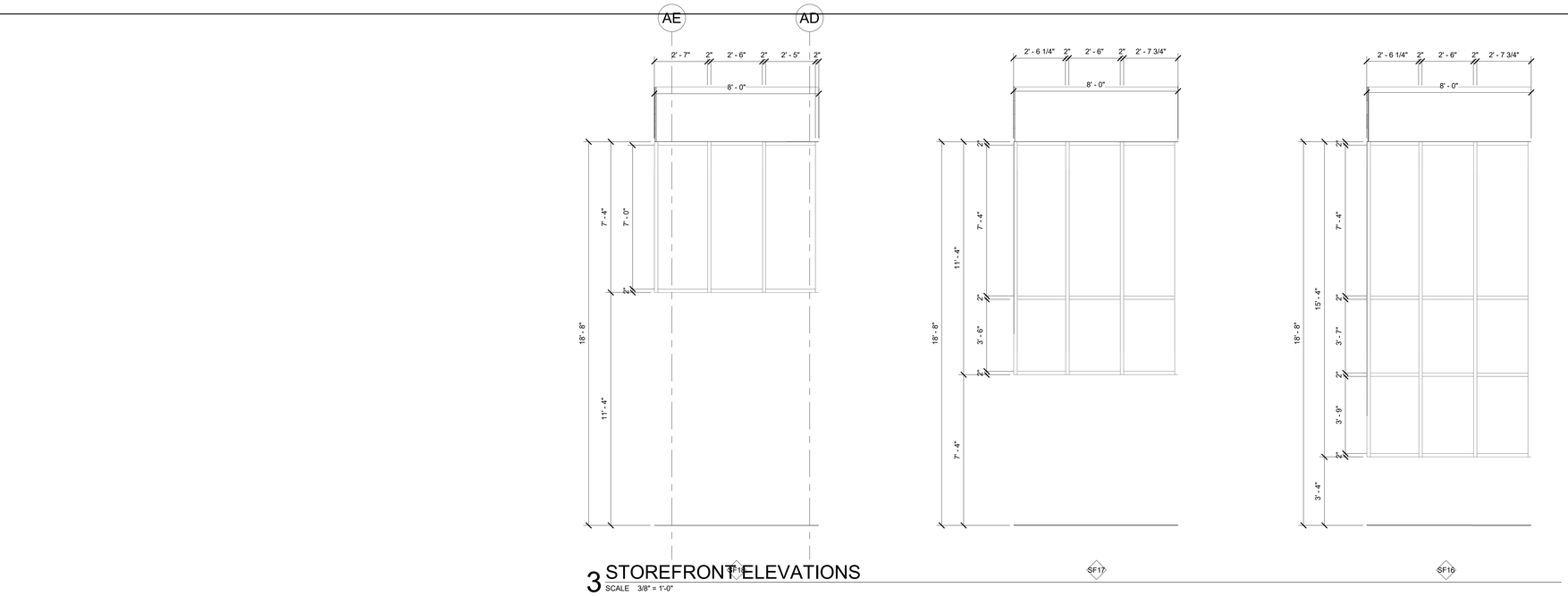
SHEET TITLE:

STOREFRONT ELEVATIONS

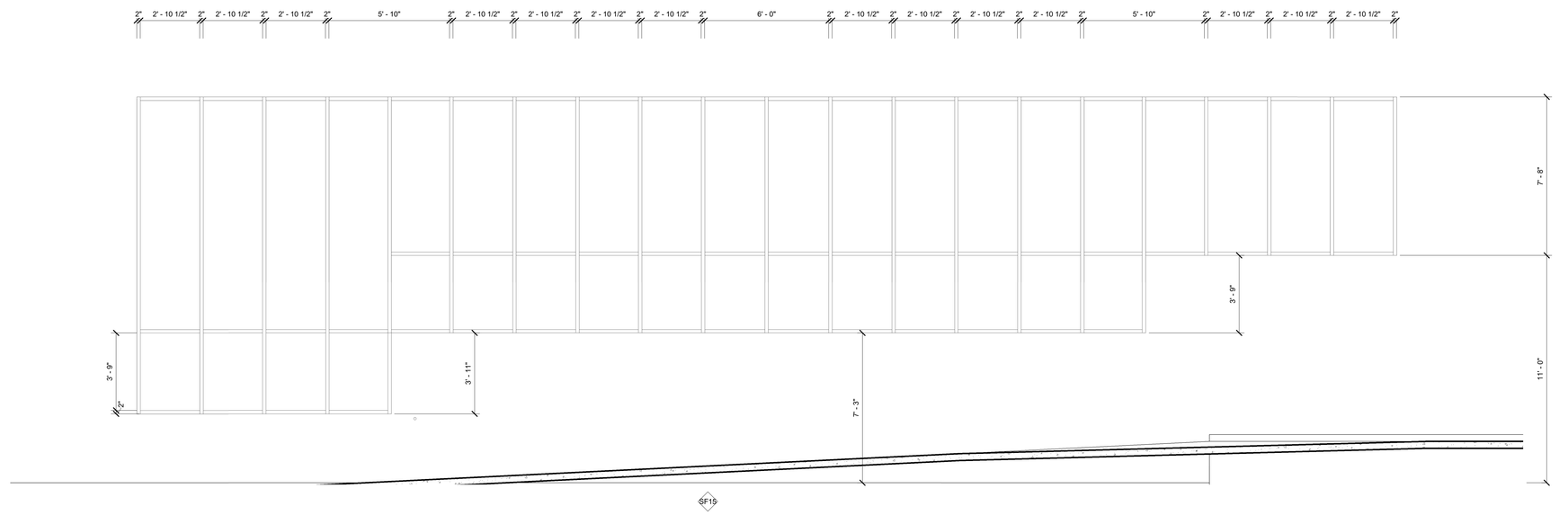
SHEET NUMBER:

2-AE-631



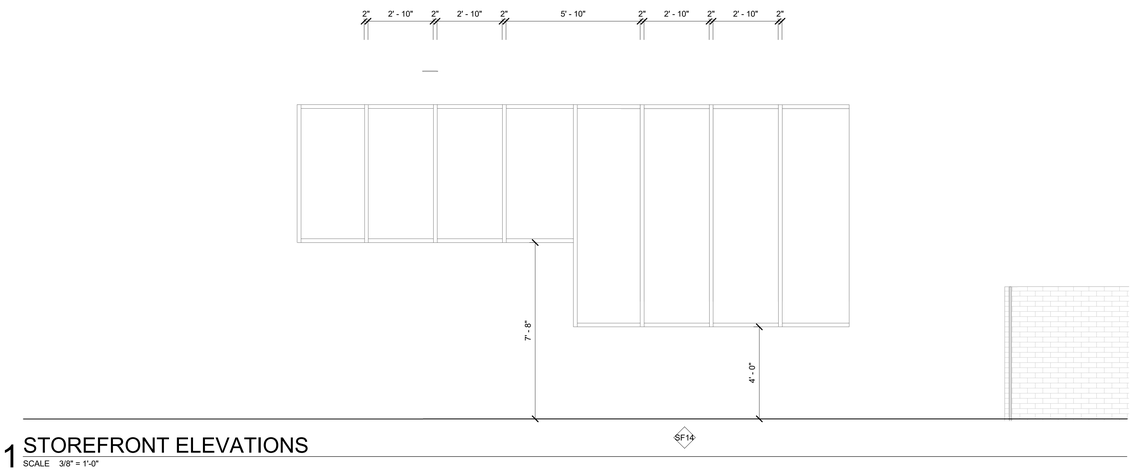
3 STOREFRONT ELEVATIONS

SCALE 3/8" = 1'-0"



2 STOREFRONT ELEVATIONS

SCALE 3/8" = 1'-0"



1 STOREFRONT ELEVATIONS

SCALE 3/8" = 1'-0"

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CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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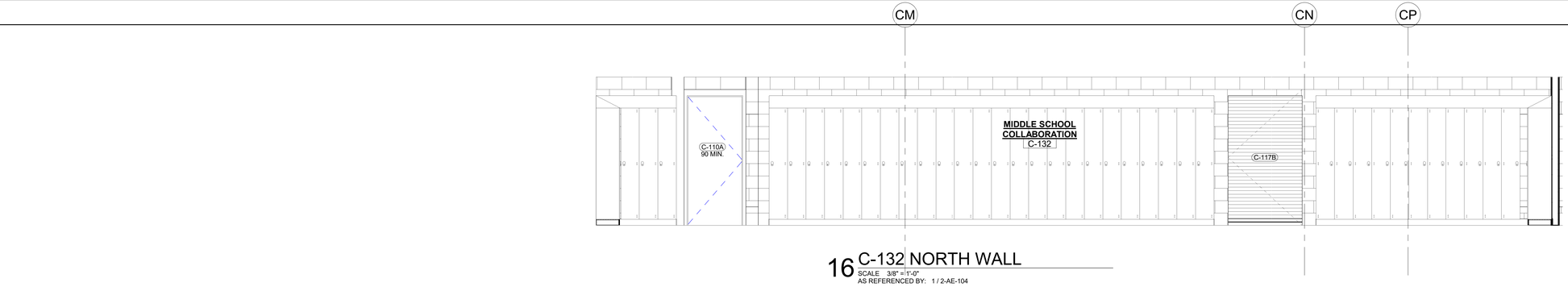
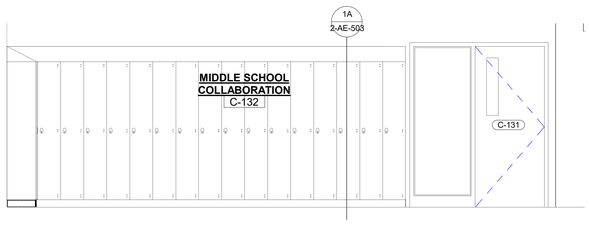
SHEET TITLE:
STOREFRONT ELEVATIONS

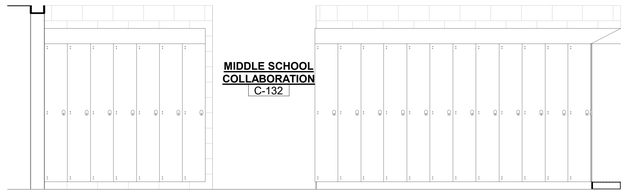
SHEET NUMBER:
2-AE-632



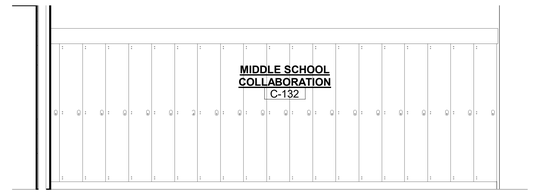
16 C-132 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



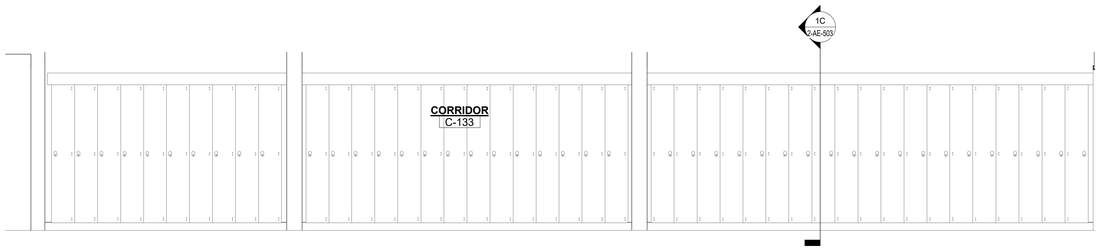
15 C-132 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



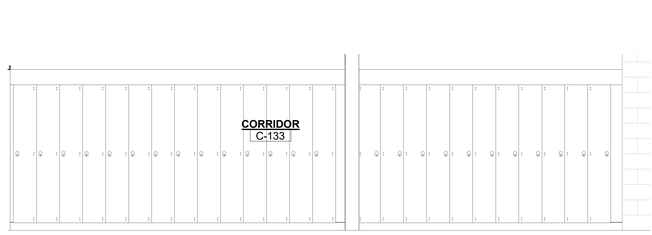
14 C-132 WEST WALL 2
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



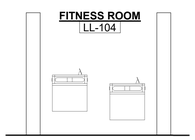
13 C-132 WEST WALL 1
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

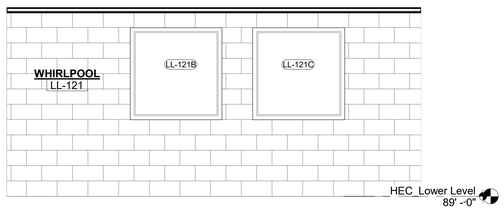


12 C-133 NORTH WALL 2
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



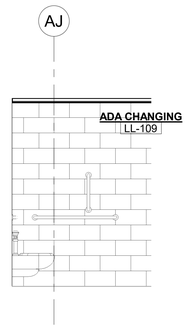
11 C-133 CORRIDOR NORTH WALL 1
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



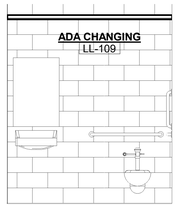


10 DRINKING FOUNTAINS & WALLS
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-101

9 LL-121 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



8 LL-109 ADA CHANGING 3
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



7 LL-109 ADA CHANGING 2
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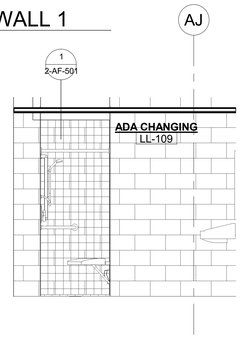
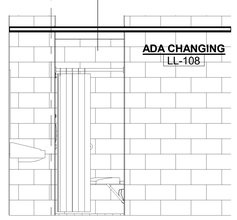
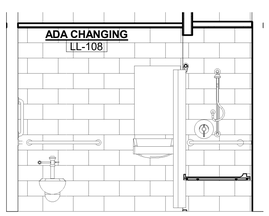
AS REFERENCED BY: 1 / 2-AE-110



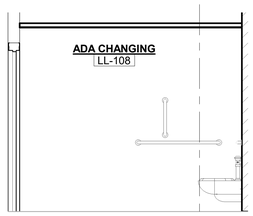
6 LL-109 ADA CHANGING 1
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



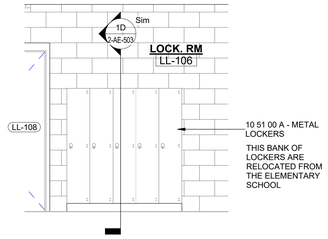
5 LL-108 ADA CHANGING 3
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



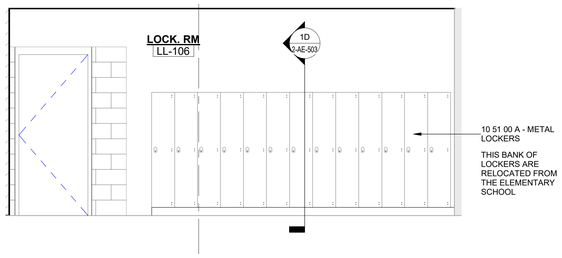
4 LL-108 ADA CHANGING 2
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



3 LL-108 ADA CHANGING 1
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



2 LL-106 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110



1 LL-106 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
10 51 00 A -	METAL LOCKERS

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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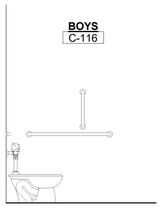
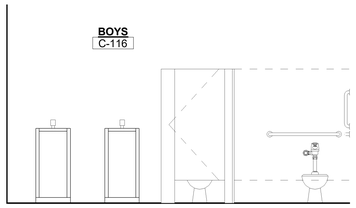
SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NUMBER:
2-AE-701

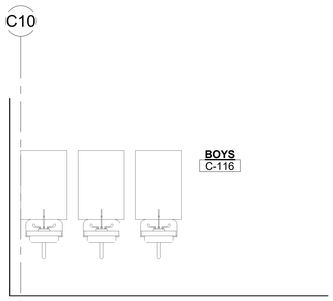
KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
06 41 00 A12 -	P-LAM MAIL BOXES
06 41 00 F -	MATCHING FILLER



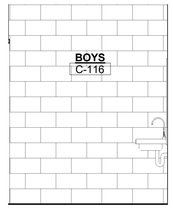
19 C-116 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



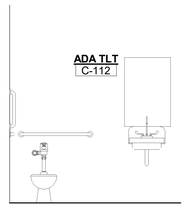
18 C-116 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



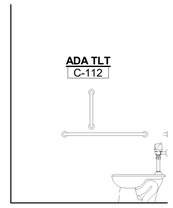
17 C-116 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



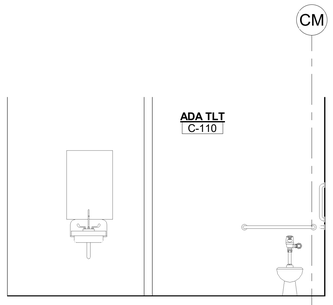
16 C-116 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



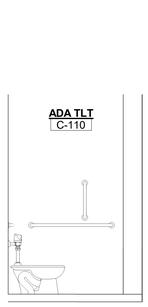
15 C-112 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



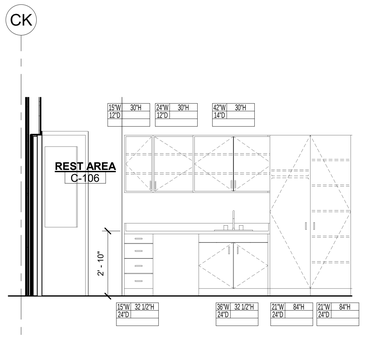
14 C-112 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



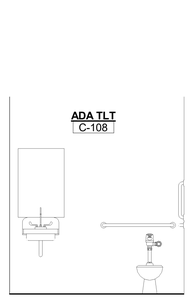
13 C-110 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



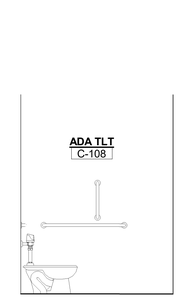
12 C-110 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



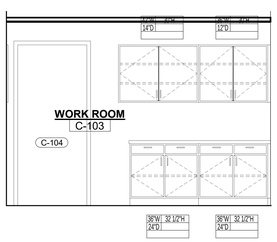
11 C-106 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-111



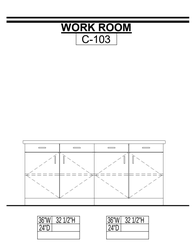
10 C-108 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



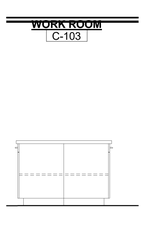
9 C-108 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



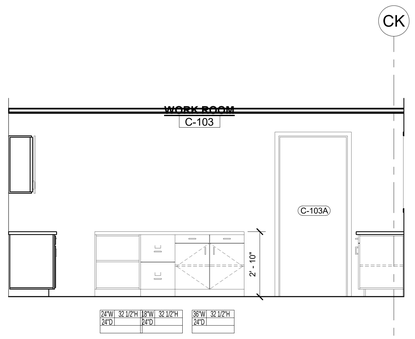
8 C-103 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



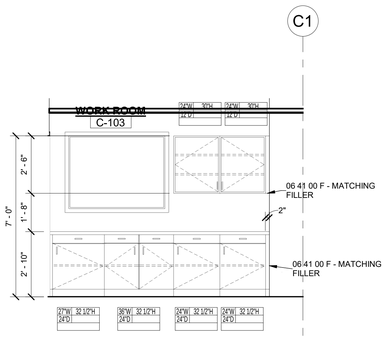
7 C-103 ISLAND 2
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



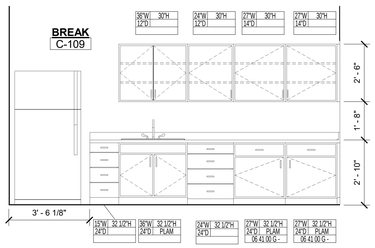
6 C-103 ISLAND 1
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



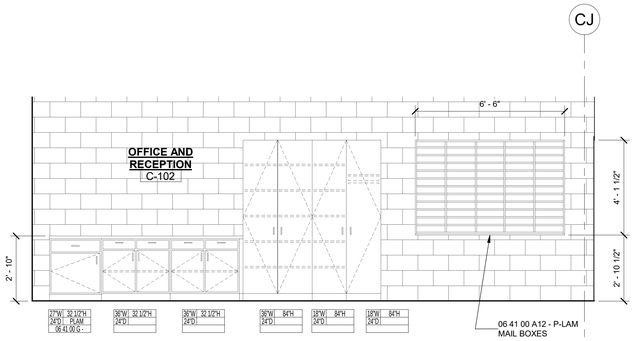
5 C-103 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



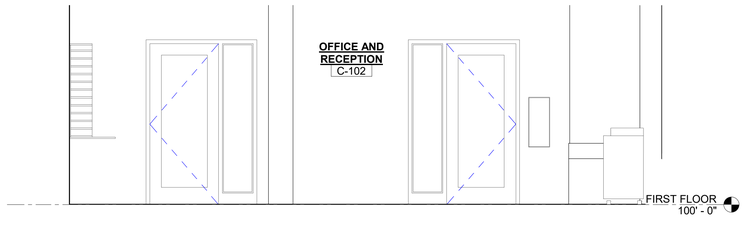
4 C-103 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



3 C-109 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



2 C-102 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-102



1 C-102 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-111

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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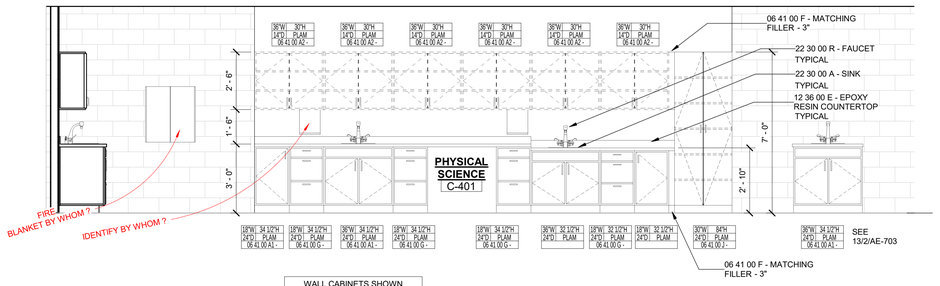
SHEET TITLE:
INTERIOR ELEVATIONS

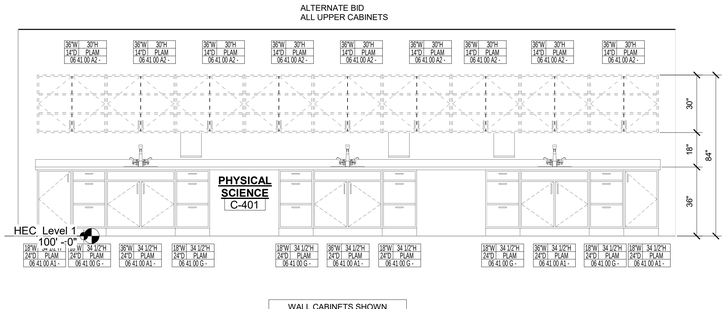
SHEET NUMBER:
2-AE-702



12 C-401 NORTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

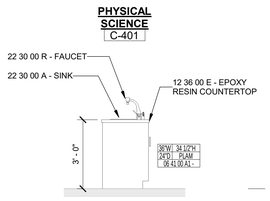
WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



11 C-401 WEST WALL

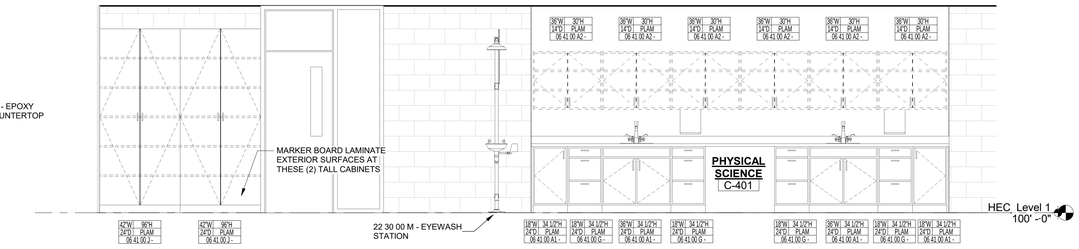
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



13 C-401 ISLAND

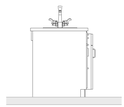
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



10 C-401 SOUTH WALL

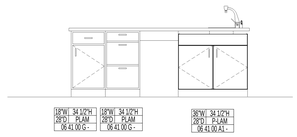
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



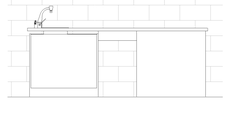
8C C-124 DEMO STATION 3

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



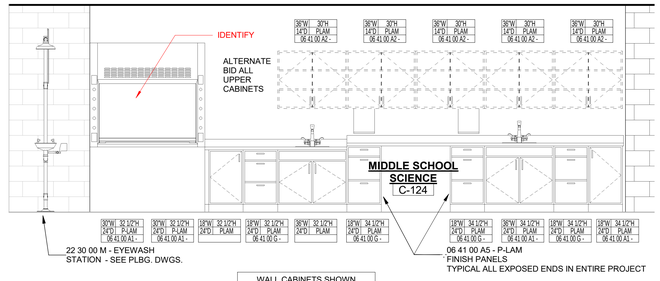
8B C-124 DEMO STATION 2

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



8A C-124 DEMO STATION 1

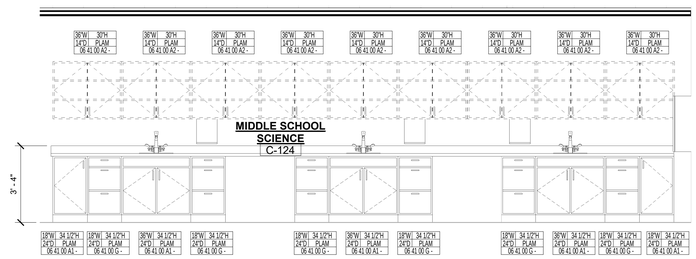
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



7 C-124 SOUTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

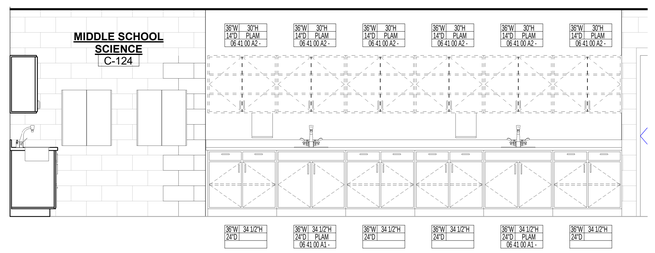
WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



6 C-124 WEST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

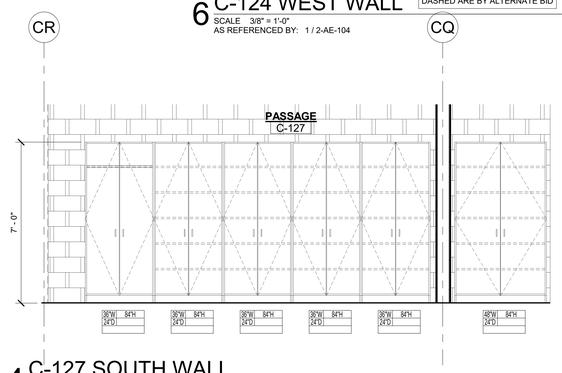
WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



5 C-124 NORTH WALL

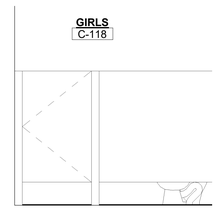
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID



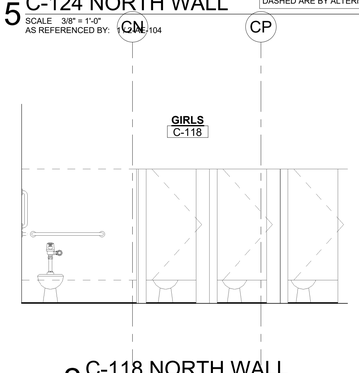
4 C-127 SOUTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



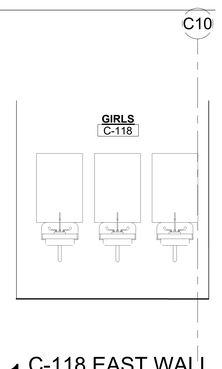
3 C-118 WEST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



2 C-118 NORTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111



1 C-118 EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-111

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
06 41 00 A5 -	P-LAM FINISH PANELS
06 41 00 F -	MATCHING FILLER
12 36 00 E -	EPOXY RESIN COUNTERTOP
22 30 00 A -	SINK
22 30 00 M -	EYEWASH STATION
22 30 00 R -	FAUCET

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:

INTERIOR ELEVATIONS

SHEET NUMBER:

2-AE-703

PRELIMINARY
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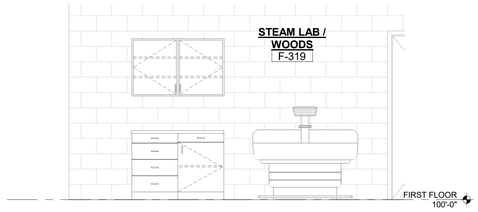
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

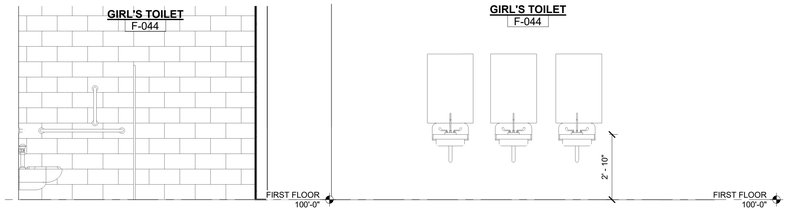


17 F-319 NORTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107

16 F-044 EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106

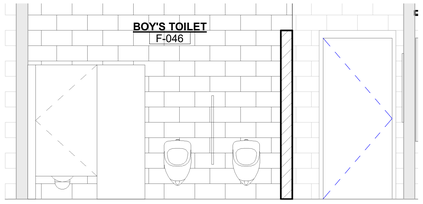


15 F-044 SOUTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-113

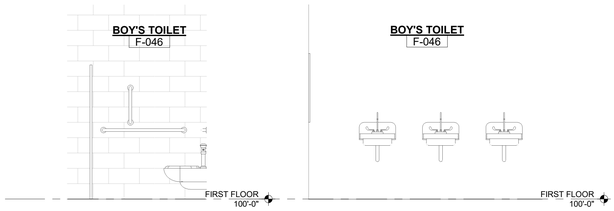
14 F-044 WEST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



13 F-046 WEST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106

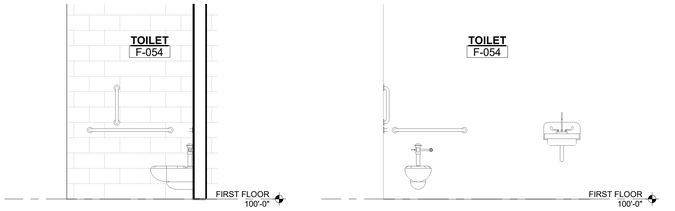


12 F-046 SOUTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 2 / 2-AE-113

11 F-046 EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106

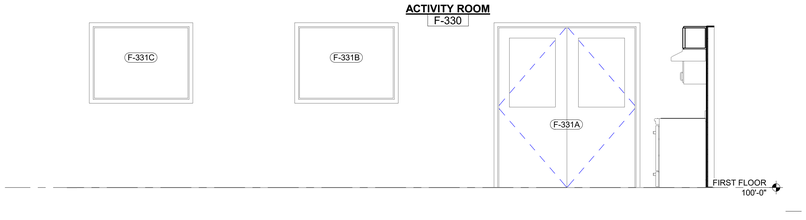


10 F-054 WEST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-113

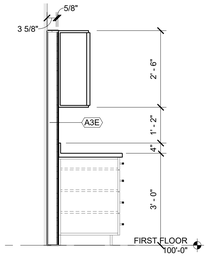
9 F-054 NORTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 3 / 2-AE-113



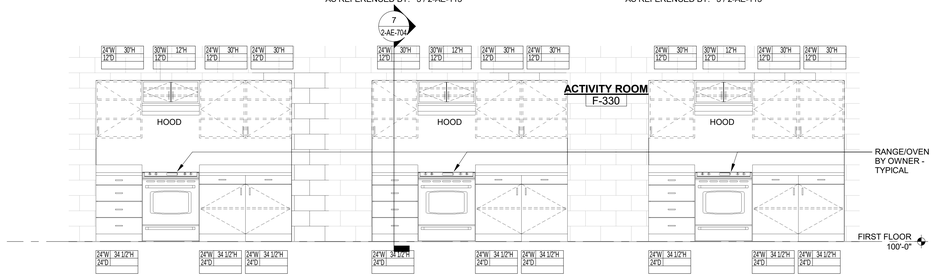
8 F-330 SOUTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107



7 CSWK SECTION

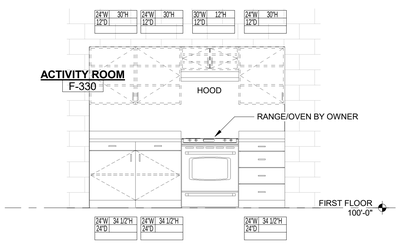
SCALE 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107



6 F-330 WEST WALL

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107



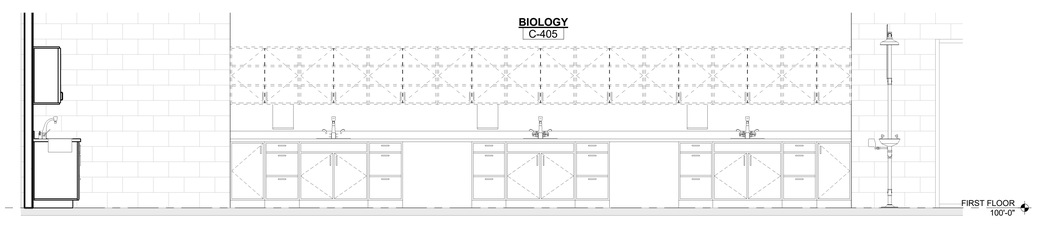
5 F-330 NORTH WALL

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107

4 F-330 EAST WALL

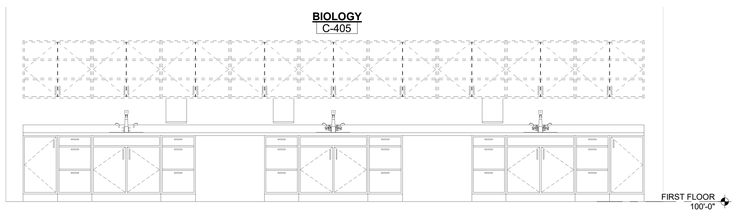
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107



3 C-405 SOUTH WALL

WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID

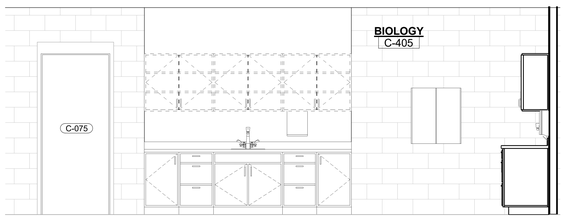
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID

2 C-405 EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104



WALL CABINETS SHOWN DASHED ARE BY ALTERNATE BID

1 C-405 NORTH WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-104

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

FOR BIDS
NOT FOR CONSTRUCTION

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CONSULTANT:

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date

PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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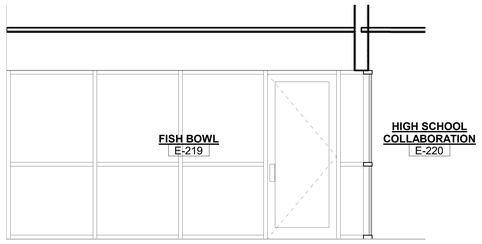
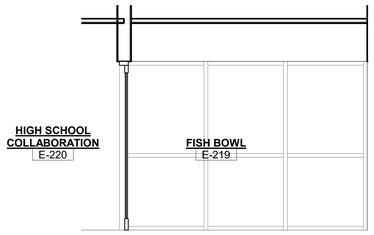
SHEET TITLE:
INTERIOR ELEVATIONS

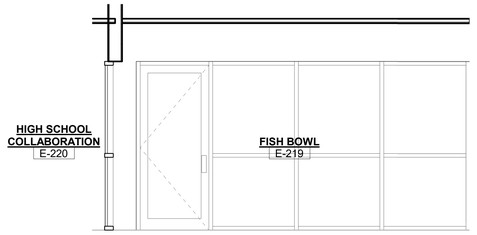
SHEET NUMBER:
2-AE-704



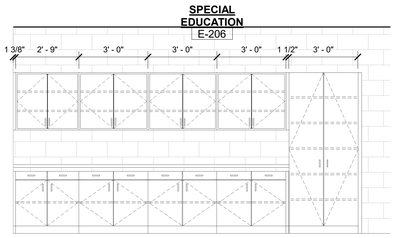
14 E-219 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



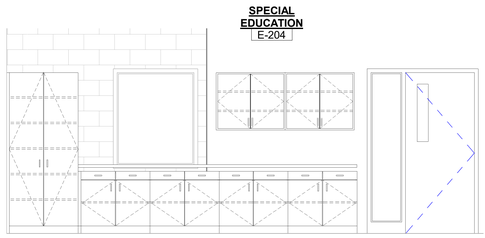
13 E-219 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



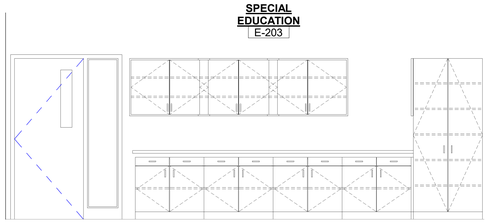
12 E-219 NORTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



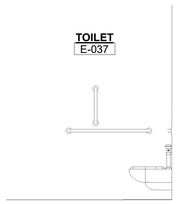
11 E-206 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



10 E-204 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



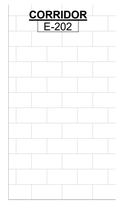
9 E-203 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



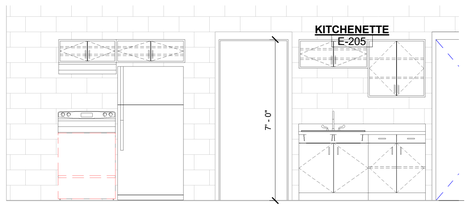
8 E-037 EAST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 5 / 2-AE-113

7 E-037 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 5 / 2-AE-113

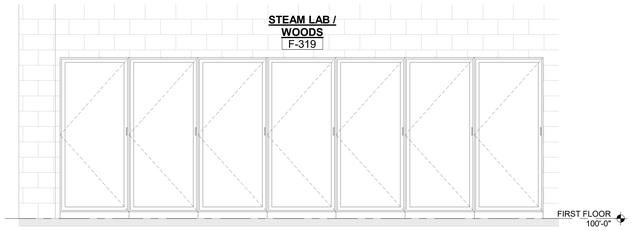
6 E-036 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 5 / 2-AE-113



5 E-202 SOUTH WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



2 E-205 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-106



1 F-319 WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-107

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

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2019-05-03

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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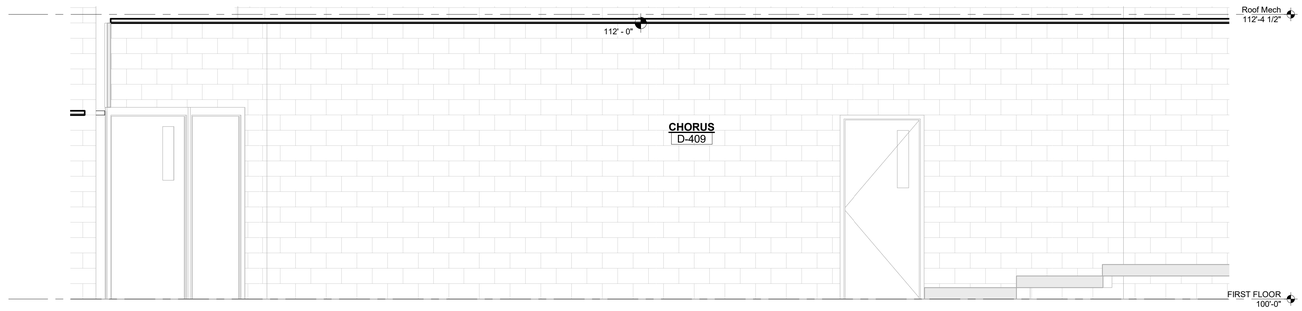
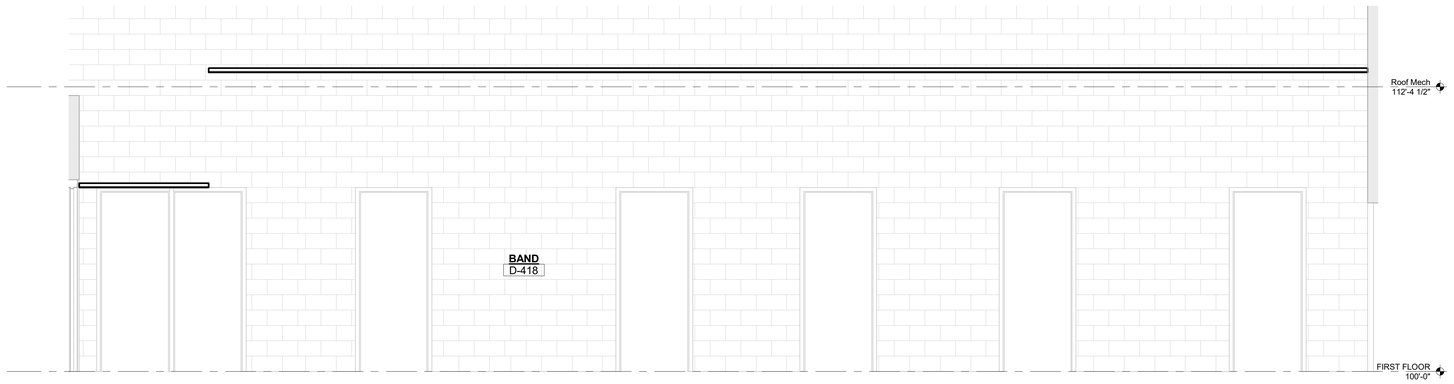
SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NUMBER:
2-AE-705



2 D-409 CHORUS EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AD-105



1 D-418 BAND EAST WALL

SCALE 3/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AD-105

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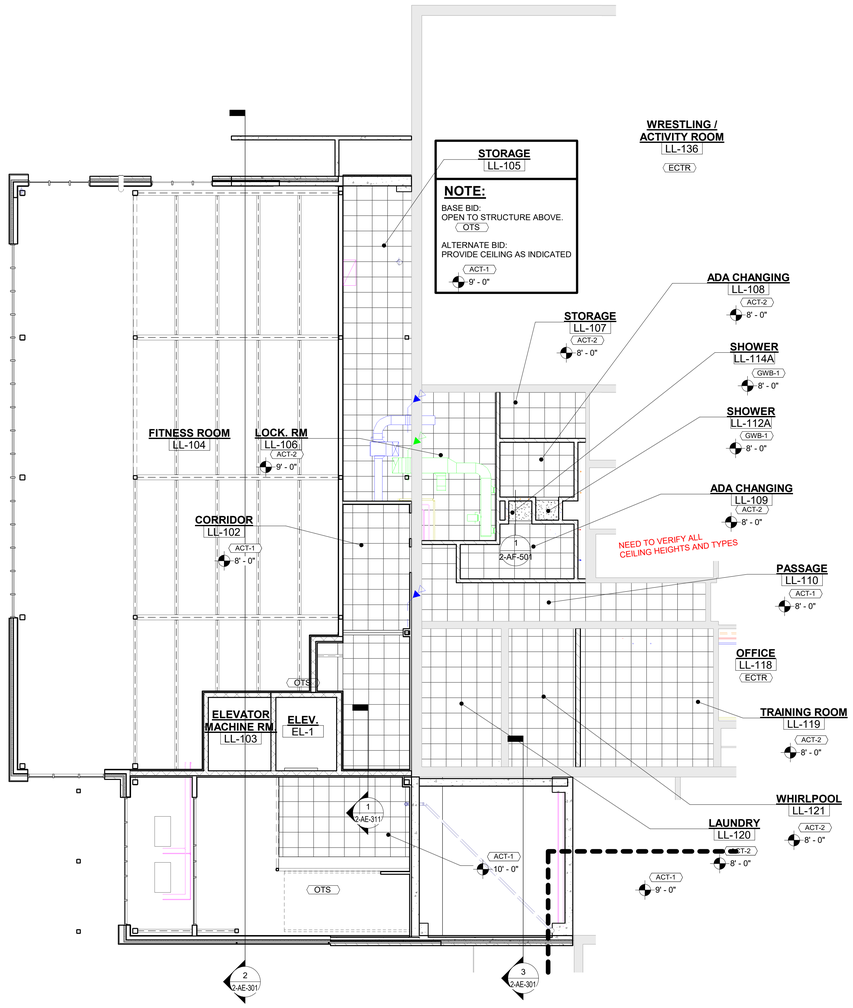
SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NUMBER:
2-AE-706



2 LOWER LEVEL REFLECTED CEILING PLAN

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

REFLECTED CEILING PLAN KEY:

CEILING TYPE - SEE TYPES BELOW.

ACT-# 9'-0"

CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE — ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

TOILET ROOMS — ACT-2
09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES

STD UTILITY — ACT-3
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

SHOWER ROOMS — GWB-1
09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

GRID ALIGNMENT CHANGE

CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION

23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

REFER TO ELECTRICAL LIGHTING PLANS FOR SWITCHING, CIRCUITING, AND SPECIFIC FIXTURE TYPES

GENERAL CEILING PLAN NOTES

1. ALL CEILING HEIGHTS TAKEN ABOVE FINISH FLOOR, UNLESS OTHERWISE NOTED.
2. ALL CEILINGS PRESUMED TO BE 8'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. COORDINATE FIXTURE AND DIFFUSER LOCATIONS WITH M.E.P. DRAWINGS.
4. MECHANICAL AND ELECTRICAL DRAWINGS TAKE PRECEDENCE OVER REFLECTED CEILING PLANS FOR TYPE, QUANTITY AND LOCATION OF FIXTURES, DIFFUSERS AND GRILLES.
5. IN 2' X 2' ACT CEILINGS, WHERE TILE IS SHOWN TO BE LESS THAN 2", CUT FROM 2' x 4' TILE TO BE LONGER THAN 2 FT TO ELIMINATE SLIVERS, AND ELIMINATE THE 2' GRID SECTIONS.
6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

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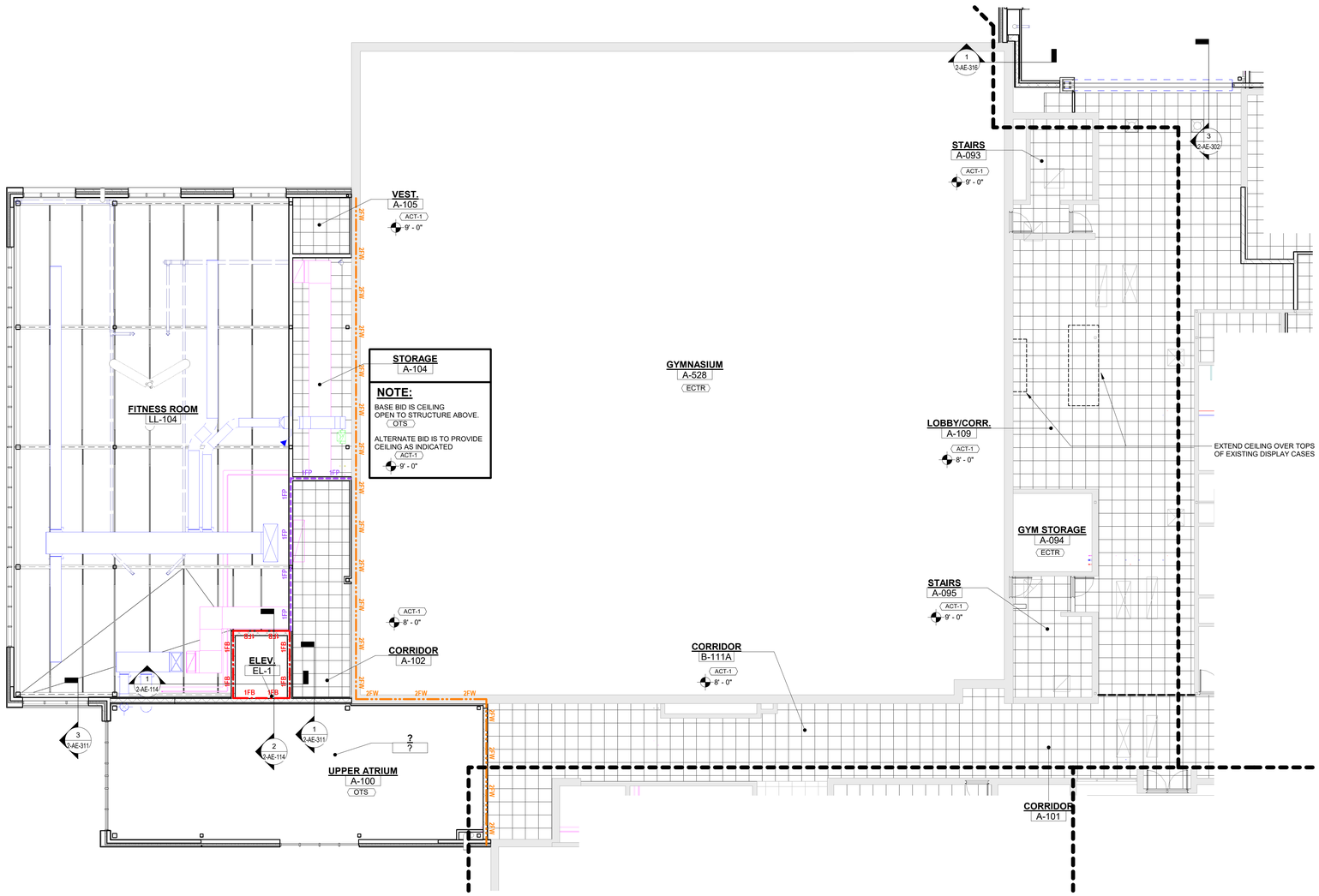
SHEET TITLE:
REFLECTED CEILING PLAN - LOWER LEVEL

SHEET NUMBER:
2-AF-101



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

REFLECTED CEILING PLAN KEY:

CEILING TYPE - SEE TYPES BELOW.
ACT-#
9'-0"
CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE
ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

TOILET ROOMS
ACT-2
09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES

STD UTILITY
ACT-3
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

SHOWER ROOMS
GWB-1
09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

GRID ALIGNMENT CHANGE

CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION

23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

REFER TO ELECTRICAL LIGHTING PLANS FOR SWITCHING, CIRCUITING, AND SPECIFIC FIXTURE TYPES

GENERAL CEILING PLAN NOTES

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2. ALL CEILINGS PRESUMED TO BE 8'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. COORDINATE FIXTURE AND DIFFUSER LOCATIONS WITH M.E.P. DRAWINGS.
4. MECHANICAL AND ELECTRICAL DRAWINGS TAKE PRECEDENCE OVER REFLECTED CEILING PLANS FOR TYPE, QUANTITY AND LOCATION OF FIXTURES, DIFFUSERS AND GRILLES.
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6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

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2019-05-03

KEY PLAN

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CONSULTANT:

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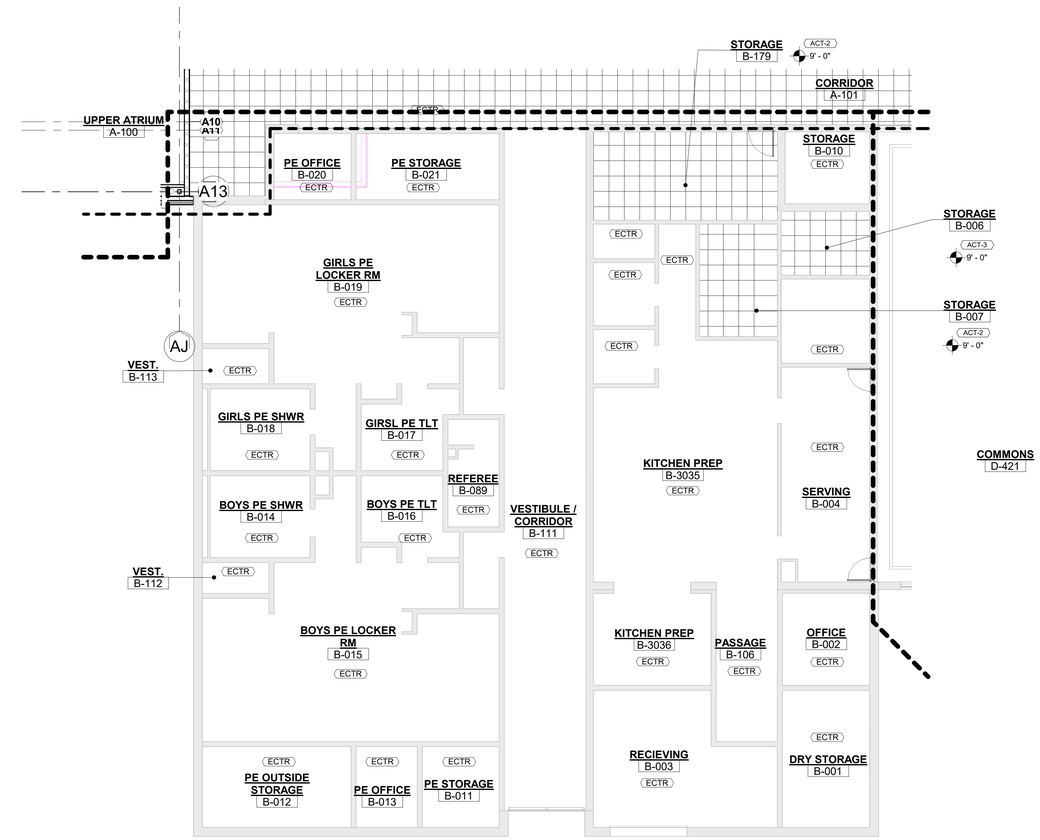
SHEET TITLE:
REFLECTED CEILING PLAN - AREA A

SHEET NUMBER:
2-AF-102



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA B

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

REFLECTED CEILING PLAN KEY:

CEILING TYPE - SEE TYPES BELOW.

ACT-4
9'-0"

CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE

ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

TOILET ROOMS

ACT-2
09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES

STD UTILITY

ACT-3
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

SHOWER ROOMS

GWB-1
09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

GRID ALIGNMENT CHANGE

CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION

23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

REFER TO ELECTRICAL LIGHTING PLANS FOR SWITCHING, CIRCUITING, AND SPECIFIC FIXTURE TYPES

GENERAL CEILING PLAN NOTES

1. ALL CEILING HEIGHTS TAKEN ABOVE FINISH FLOOR, UNLESS OTHERWISE NOTED.
2. ALL CEILINGS PRESUMED TO BE 8'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. COORDINATE FIXTURE AND DIFFUSER LOCATIONS WITH M.E.P. DRAWINGS.
4. MECHANICAL AND ELECTRICAL DRAWINGS TAKE PRECEDENCE OVER REFLECTED CEILING PLANS FOR TYPE, QUANTITY AND LOCATION OF FIXTURES, DIFFUSERS AND GRILLES.
5. IN 2' X 2' ACT CEILINGS, WHERE TILE IS SHOWN TO BE LESS THAN 2", CUT FROM 2' x 4' TILE TO BE LONGER THAN 2 FT TO ELIMINATE SLIVERS, AND ELIMINATE THE 2' GRID SECTIONS.
6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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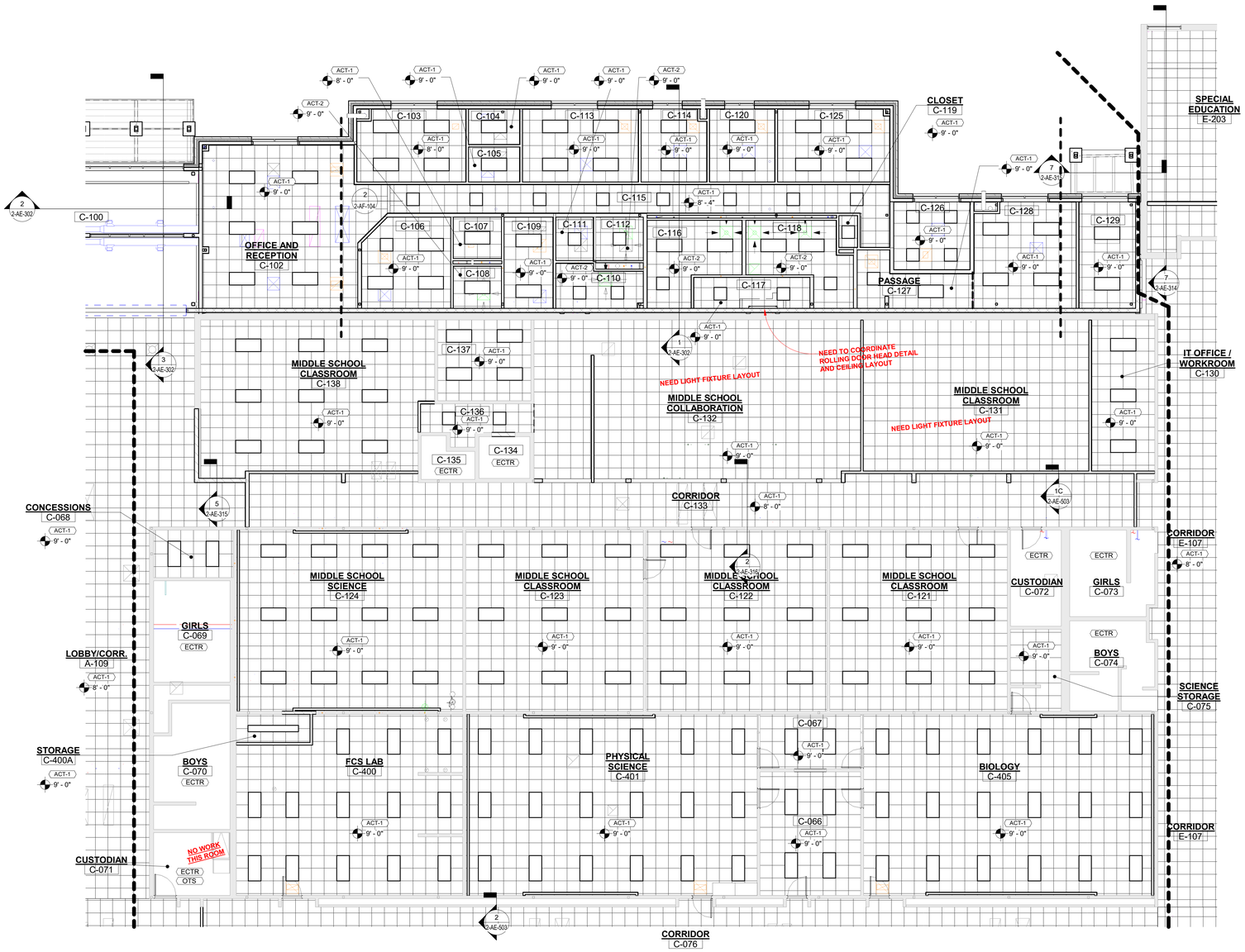
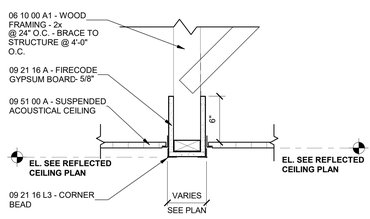
SHEET TITLE:
REFLECTED CEILING PLAN - AREA B

SHEET NUMBER:
2-AF-103



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105



2 GYPSUM BD. BULKHEAD DETAIL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: 1 / 2-AF-104

REFLECTED CEILING PLAN KEY:

- ACT-# / 9'-0" — CEILING TYPE - SEE TYPES BELOW. / CEILING HEIGHT ABOVE FLOOR.
- STD DECORATIVE — ACT-1: 09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS). UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.
- TOILET ROOMS — ACT-2: 09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES
- STD UTILITY — ACT-3: 09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)
- SHOWER ROOMS — GWB-1: 09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL
- GWB-2: 09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING
- GRID ALIGNMENT CHANGE
- CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION
- 23 00 00 E - GRID HVAC SUPPLY DIFFUSER
- 23 00 00 E - GRID HVAC RETURN DIFFUSER
- RECESSED CAN LIGHT
- PENDANT
- WALL SCONCE / VANITY LIGHT
- SURFACE-MOUNTED DOME LIGHT
- OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.
- ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

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6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
06 10 00 A1 -	WOOD FRAMING - 2x
09 21 16 A -	FIRECODE GYPSUM BOARD
09 21 16 L3 -	CORNER BEAD
09 51 00 A -	SUSPENDED ACOUSTICAL CEILING

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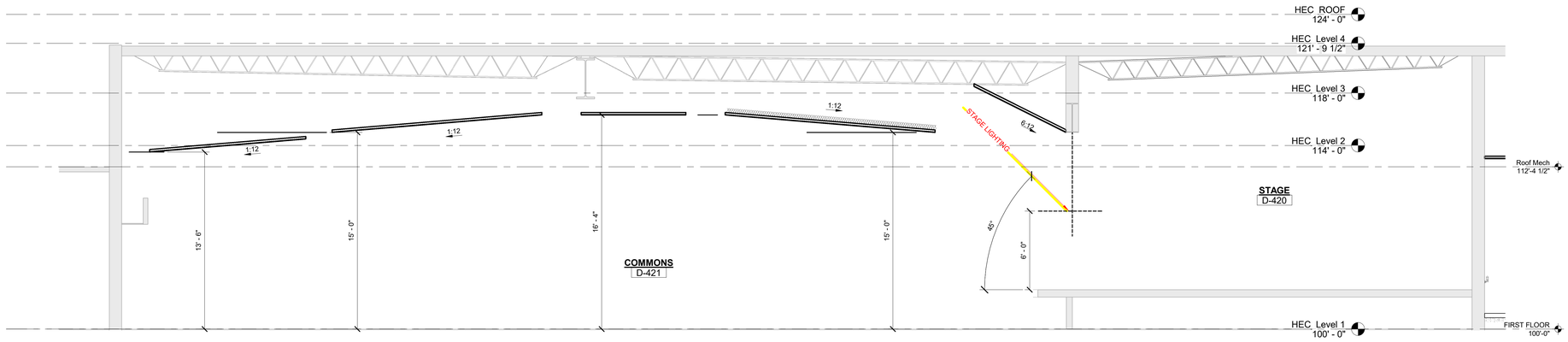
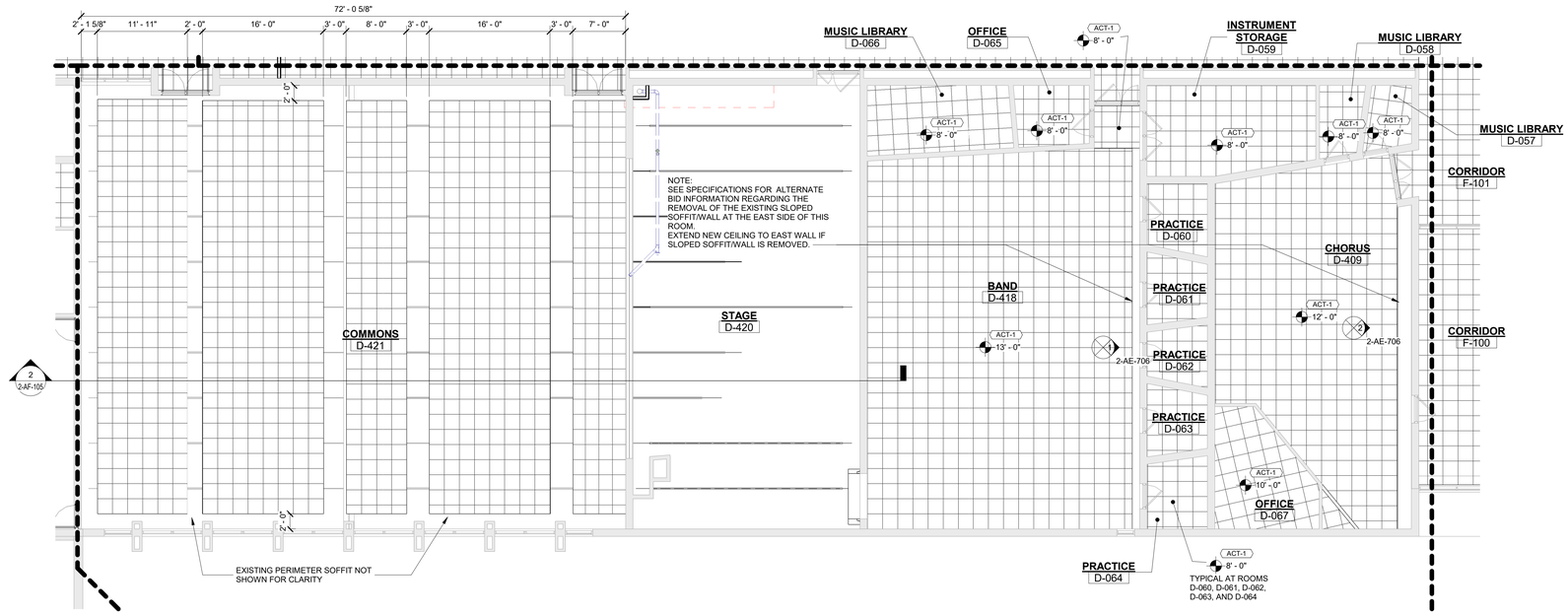
SHEET TITLE: REFLECTED CEILING PLAN - AREA C

SHEET NUMBER: 2-AF-104



2 AREA D - COMMONS LONGITUDINAL SECTION

SCALE 1/4" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-105



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA D

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

REFLECTED CEILING PLAN KEY:

ACT-# 9'-0" — CEILING TYPE - SEE TYPES BELOW. CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE — ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

TOILET ROOMS — ACT-2
09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES

STD UTILITY — ACT-3
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

SHOWER ROOMS — GWB-1
09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

GRID ALIGNMENT CHANGE

CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION

23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

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KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

KEY PLAN

TRUE NORTH
PLAN NORTH

FOR BIDS
NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: Issue Date
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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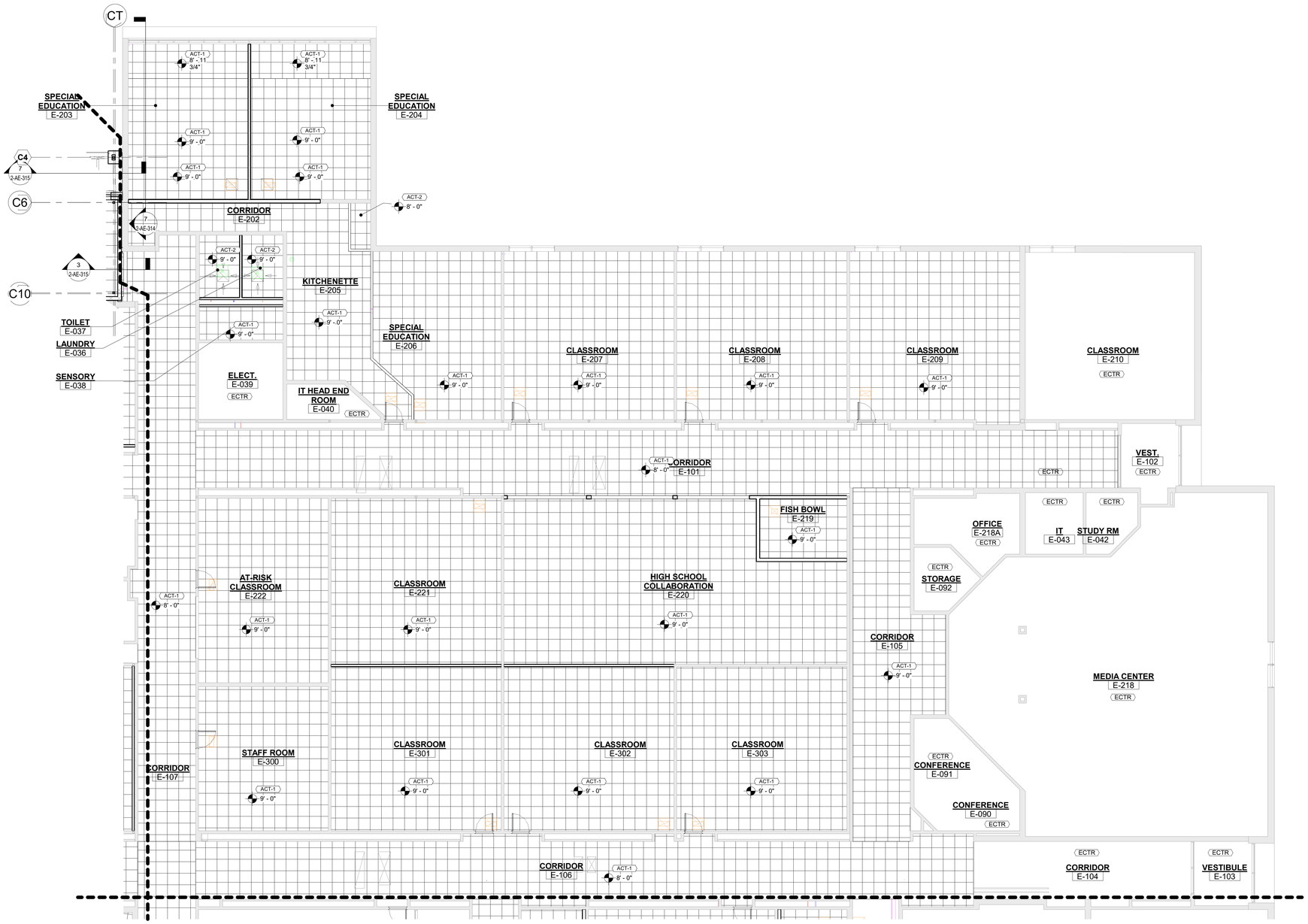
SHEET TITLE:
REFLECTED CEILING PLAN - AREA D

SHEET NUMBER:
2-AF-105



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA E

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

REFLECTED CEILING PLAN KEY:

ACT-# 9'-0" — CEILING TYPE - SEE TYPES BELOW. / CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE — ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

TOILET ROOMS — ACT-2
09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES

STD UTILITY — ACT-3
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

SHOWER ROOMS — GWB-1
09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

GRID ALIGNMENT CHANGE

CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION

23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

REFER TO ELECTRICAL LIGHTING PLANS FOR SWITCHING, CIRCUITING, AND SPECIFIC FIXTURE TYPES

GENERAL CEILING PLAN NOTES

1. ALL CEILING HEIGHTS TAKEN ABOVE FINISH FLOOR, UNLESS OTHERWISE NOTED.
2. ALL CEILINGS PRESUMED TO BE 8'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. COORDINATE FIXTURE AND DIFFUSER LOCATIONS WITH M.E.P. DRAWINGS.
4. MECHANICAL AND ELECTRICAL DRAWINGS TAKE PRECEDENCE OVER REFLECTED CEILING PLANS FOR TYPE, QUANTITY AND LOCATION OF FIXTURES, DIFFUSERS AND GRILLES.
5. IN 2' X 2' ACT CEILINGS, WHERE TILE IS SHOWN TO BE LESS THAN 2", CUT FROM 2' x 4' TILE TO BE LONGER THAN 2 FT TO ELIMINATE SLIVERS, AND ELIMINATE THE 2' GRID SECTIONS.
6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY NOT FOR CONSTRUCTION 2019-05-03

KEY PLAN (B, D, E, F)

TRUE NORTH / PLAN NORTH

FOR BIDS
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MANAWA

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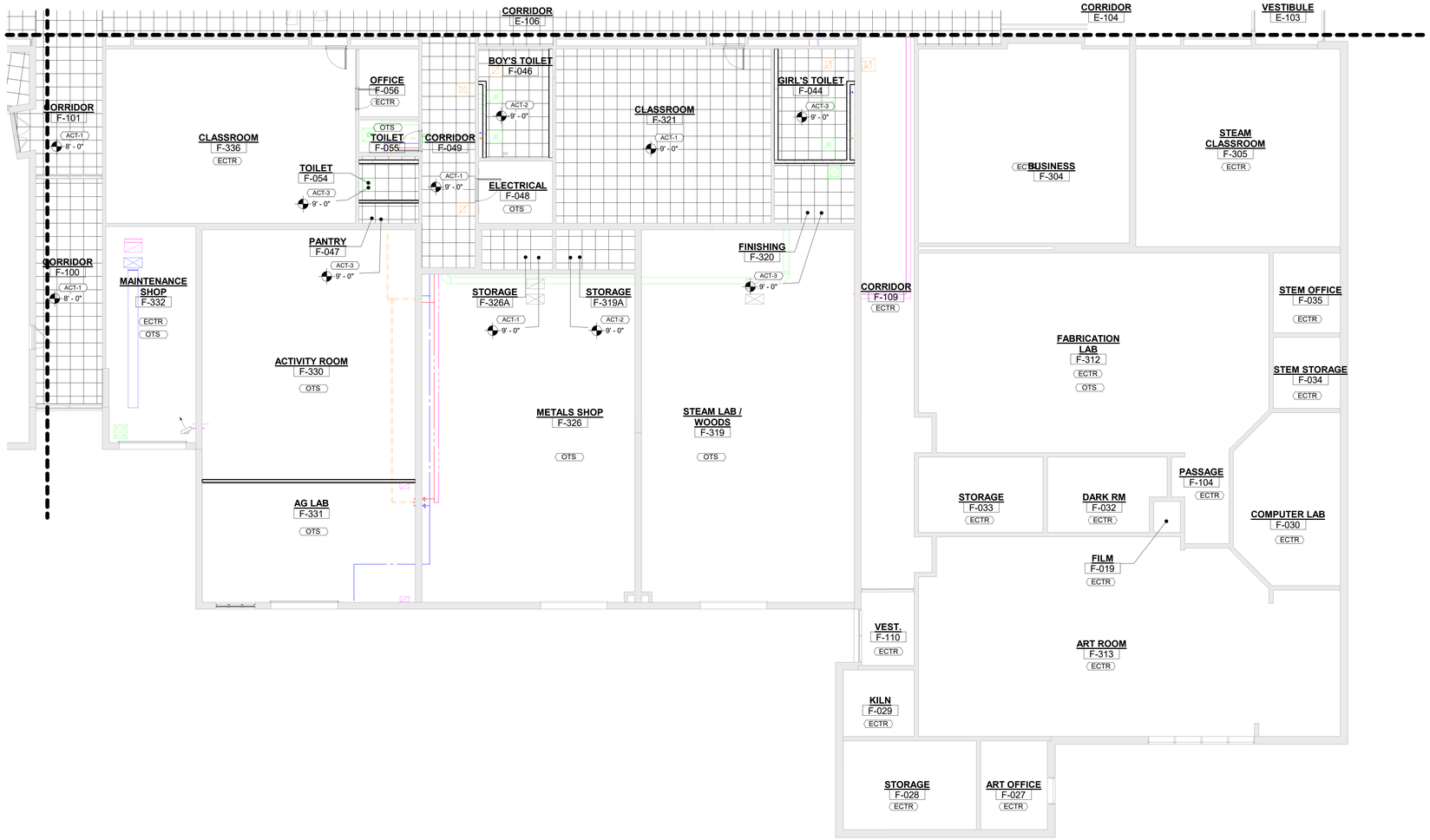
SHEET TITLE:
REFLECTED CEILING PLAN - AREA E

SHEET NUMBER:
2-AF-106



1 FIRST FLOOR REFLECTED CEILING PLAN - AREA F

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

REFLECTED CEILING PLAN KEY:

CEILING TYPE - SEE TYPES BELOW.

ACT-4
9'-0"

CEILING HEIGHT ABOVE FLOOR.

STD DECORATIVE — ACT-1
09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS).
UNLESS NOTED OTHERWISE, ALL SUSPENDED ACOUSTICAL CEILINGS SHALL BE TYPE ACT-1.

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09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS)

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09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL

GWB-2
09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING

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23 00 00 E - GRID HVAC SUPPLY DIFFUSER

23 00 00 E - GRID HVAC RETURN DIFFUSER

RECESSED CAN LIGHT

PENDANT

WALL SCONCE / VANITY LIGHT

SURFACE-MOUNTED DOME LIGHT

OTS — DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.

ECTR — DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

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KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
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2019-05-03

KEY PLAN

TRUE NORTH
PLAN NORTH

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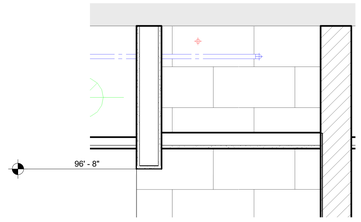
SHEET TITLE:
REFLECTED CEILING PLAN - AREA F

SHEET NUMBER:
2-AF-107

KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT



1 TYP. SHOWER BULKHEAD/CEILING
SCALE 1" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-110

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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SHEET TITLE:
CEILING DETAILS

SHEET NUMBER:
2-AF-501

ROOM FINISH SCHEDULE

No.	ROOM NAME	FLOOR	BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	Ceiling Finish	CASEWORK CABINETS	CASEWORK COUNTERTOPS	REMARKS
A-093	STAIRS	RF	-	-	-	-	-	ACT-1	-	-	
A-095	STAIRS	RF	-	-	-	-	-	ACT-1	-	-	
A-100	UPPER ATRIUM	SC	VB	PT	PT	PT	-		-	-	ADD ALT - LVT FLOOR - STAIR RF
A-101	CORRIDOR	SC	-	-	-	-	-	ACT-1	-	-	
A-102	CORRIDOR	SC	VB	PT	PT	PT	PT	ACT-1	-	-	
A-103	MECH. EQUIP.	SC	-	PT	PT	PT	PT	-	-	-	
A-104	STORAGE	SC	VB	PT	PT	PT	PT	-	-	-	
A-105	VEST.										
A-106	PASSAGE	SC	VB	PT	PT	PT	PT	ACT-1			
A-109	LOBBY/CORR.	SC	-	-	-	-	-	ACT-1	-	-	
B-006	STORAGE	SC	-	-	-	-	-	ACT-1	-	-	
B-007	STORAGE	-	-	-	-	-	-	ACT-1	-	-	
B-179	STORAGE	-	-	-	-	-	-	ACT-1	-	-	
C-066	SCIENCE STORAGE	SC	-	-	-	-	-	ACT-1	-	-	
C-067	SCIENCE OFFICE	SC	-	-	-	-	-	ACT-1	-	-	
C-068	CONCESSIONS	SC	-	-	-	-	-	ACT-1	-	-	
C-075	SCIENCE STORAGE	SC	-	-	-	-	-	ACT-1	?	?	
C-076	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	PT, VB WALLS ADJ TO NEW DOORS
C-100	SECURE VESTIBULE	CPT-WO	VB	PT	PT	PT	PT	ACT-1	-	-	
C-101	2ND VESTIBULE	CPT-WO	VB	-	PT	PT	PT	ACT-1	-	-	
C-102	OFFICE AND RECEPTION	CPT	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	
C-103	WORK ROOM	LVT	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	
C-104	STORAGE	CPT	VB	PT	PT	PT	PT	ACT-1	-	SHELVING	
C-105	ISS	LVT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-106	REST AREA	LVT	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
C-107	NURSE	LVT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-108	ADA TLT	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
C-109	BREAK	LVT	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
C-110	ADA TLT	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
C-111	ISS	LVT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-112	ADA TLT	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
C-113	PRINCIPAL	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-114	OFFICE	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-115	PASSAGE	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-116	BOYS	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
C-117	VESTIBULE	SC	VB	PT	PT	PT	PT	ACT-1	-	-	ADD ALT - LVT FLOOR
C-118	GIRLS	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
C-119	CLOSET										
C-120	OFFICE	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-121	MIDDLE SCHOOL CLASSROOM	CPT	-	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
C-122	MIDDLE SCHOOL CLASSROOM	CPT	-	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
C-123	MIDDLE SCHOOL CLASSROOM	CPT	-	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
C-124	MIDDLE SCHOOL SCIENCE	SC	-	-	-	-	-	ACT-1	PLAM	SS	ADD ALT - EPX FLOOR/ BASE
C-125	CONFERENCE	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-126	COUNSELOR	CPT	VB	PT	PT	PT	PT	ACT-1	-	-	
C-127	PASSAGE										
C-128	GUIDANCE	CPT	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	
C-129	VESTIBULE	CPT-WO	VB	PT	PT	PT	PT	ACT-1	-	-	
C-130	IT OFFICE / WORKROOM	CPT	VB	-	-	PT	PT	ACT-1	-	-	
C-131	MIDDLE SCHOOL CLASSROOM	SC	VB	-	PT	PT	PT	ACT-1	-	-	ADD ALT - LVT FLOOR
C-132	MIDDLE SCHOOL COLLABORATION	CPT	VB	-	PT	PT	PT	ACT-1	-	-	ADD ALT - LVT FLOOR
C-133	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	PT, VB WALLS ADJ TO NEW DOORS
C-134	IT CLOSET	-	-	-	-	-	-	-	-	-	
C-135	IT CLOSET	SC	-	-	-	-	-	-	-	-	
C-136	PASSAGE	SC	-	-	-	-	PT	ACT-1	-	-	
C-137	CONFERENCE	CPT	-	-	-	-	-	ACT-1	-	-	
C-138	MIDDLE SCHOOL CLASSROOM	SC	-	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
C-400	FCS LAB	SC	-	-	-	-	-	ACT-1			ADD ALT - EPX FLOOR/ BASE
C-400A	STORAGE	SC	-	PT	PT	PT	-	ACT-1	?	?	
C-401	PHYSICAL SCIENCE	SC	-	-	-	-	-	ACT-1	PLAM	SS	ADD ALT - EPX FLOOR/ BASE
C-405	BIOLOGY	SC	-	-	-	-	-	ACT-1	PLAM	SS	ADD ALT - EPX FLOOR/ BASE
D-057	MUSIC LIBRARY	CPT	VB	-	-	-	-	ACT-1	-	-	
D-058	MUSIC LIBRARY	CPT	VB	-	-	-	-	ACT-1	-	-	
D-059	INSTRUMENT STORAGE	SC	VB	-	-	-	-		-	-	
D-060	PRACTICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-061	PRACTICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-062	PRACTICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-063	PRACTICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-064	PRACTICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-065	OFFICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-066	MUSIC LIBRARY	SC	-	-	-	-	-	ACT-1	-	-	
D-067	OFFICE	CPT	VB	-	-	-	-	ACT-1	-	-	
D-409	CHORUS	CPT	VB	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
D-418	BAND	LVT	VB	-	-	-	-	ACT-1	-	-	ADD ALT - LVT FLOOR
D-420	STAGE	-	-	-	-	-	-		-	-	
D-421	COMMONS	SC	VB	PT	PT	PT	PT	CLOUD	-	-	ADD ALT - LVT FLOOR
E-036	LAUNDRY	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
E-037	TOILET	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
E-038	SENSORY	CPT		PT	-	-		ACT-1	-	-	
E-039	ELECT.	-	-	-	-	-	-		-	-	
E-040	IT HEAD END ROOM	-	-	-	-	-	-	-	-	-	
E-100	CORRIDOR										
E-101	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
E-105	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
E-106	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
E-106A	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
E-107	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
E-202	CORRIDOR	SC	VB	PT	-	-	-	ACT-1	-	-	
E-203	SPECIAL EDUCATION	SC	VB	-	PT	PT	-	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-203D	LAUNDRY	SC	VB	-	-	-	-	ACT-1	?	?	
E-204	SPECIAL EDUCATION	SC	VB	-	-	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-205	KITCHENETTE	SC	VB	PT	PT	-	-	ACT-1	?	?	ADD ALT - LVT FLOOR
E-206	SPECIAL EDUCATION	SC	VB	-	-	-	-	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-207	CLASSROOM	SC	VB	-	-	-	-	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-208	CLASSROOM	SC	VB	-	-	-	-	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-209	CLASSROOM	SC	VB	-	-	-	-	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-219	FISH BOWL	CPT	VB	-	PT	-		ACT-1	?	?	
E-220	HIGH SCHOOL COLLABORATION	CPT	VB	-	PT	PT	PT	ACT-1	?	?	ADD ALT - LVT FLOOR
E-221	CLASSROOM	SC	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-222	AT-RISK CLASSROOM	-	-	-	-	-	-	ACT-1	?	?	
E-300	STAFF ROOM	-	-	-	-	-	-	ACT-1	?	?	
E-301	CLASSROOM	SC	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-302	CLASSROOM	SC	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
E-303	CLASSROOM	SC	VB	PT	PT	PT	PT	ACT-1	PLAM	PLAM	ADD ALT - LVT FLOOR
EL-1	ELEV.	NA	NA	-	-	-	-	-	-	-	FINISH SELECTION BY ARCH FROM MANUFACTURES FULL RANGE
F-044	GIRL'S TOILET	EPX	EPX	PT	PT	PT	PT	ACT-3	-	-	
F-046	BOY'S TOILET	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
F-047	PANTRY	-	VB	PT	-	-	-	-	-	PLAM SHELVING	
F-048	ELECTRICAL	-	-	-	-	-	-	-	-	-	
F-049	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
F-054	TOILET	EPX	EPX	-	-	-	-	ACT-3	-	-	
F-056	OFFICE	CPT		-	-	-	-		-	-	
F-100	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
F-101	CORRIDOR	-	-	-	-	-	-	ACT-1	-	-	
F-319	STEAM LAB / WOODS	-	-	-	-	-	-	-	?	?	
F-319A	STORAGE	-	-	-	-	-	-	ACT-1	-	-	
F-320	FINISHING	-	-	PT	-	-	-	ACT-3	?	?	
F-321	CLASSROOM	SC	VB	-	-	-	-	ACT-1	?	?	
F-326	METALS SHOP	-	-	-	-	-	-	-	?	?	
F-326A	STORAGE	-	-	-	-	-	-	ACT-1	-	-	
F-330	ACTIVITY ROOM	-	-	-	-	-	-	-	PLAM	PLAM	
F-331	AG LAB	EPX	EPX	-	-	-	-	-	?	?	
F-336	CLASSROOM	-	-	-	-	-	-	-			
LL-100	VEST.	CPT-WO	VB	PT	-	PT	PT	ACT-1	-	-	
LL-101	LL-ATRIUM	SC	VB	PT	PT	PT	PT	-	-	-	
LL-102	CORRIDOR	SC	VB	PT	PT	PT	PT	ACT-1	-	-	ADD ALT - LVT FLOOR
LL-103	ELEVATOR MACHINE RM.	SC	NA	-	-	-	-	-	-	-	
LL-104	FITNESS ROOM	RF	VB	PT	PT	PT	PT	CLOUD	PLAM	PLAM	
LL-105	STORAGE	SC	NA	PT	PB	PT	PT	-			
LL-106	LOCK. RM	SC	VB	PT	PT	PT	PT	ACT-2	-	-	ADD ALT - EPX FLOOR/ BASE
LL-107	STORAGE	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
LL-108	ADA CHANGING	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
LL-109	ADA CHANGING	EPX	EPX	PT	PT	PT	PT	ACT-2	-	-	
LL-110	PASSAGE	-	VB	PT	-	PT	-	-	-	-	
LL-111	CORRIDOR										
LL-111A	STORAGE										
LL-112	Room										
LL-112A	SHOWER										
LL-113	VEST.										
LL-114A	SHOWER										
LL-119	TRAINING ROOM	SC	VB	PT	PT	PT	PT	ACT-2	PLAM	PLAM	
LL-120	LAUNDRY	-	-	-	-	-	-	ACT-2	-	-	
LL-121	WHIRLPOOL	-	VB	PT	PT	PT	PT	ACT-2	-	-	
LL-124	STAIRS	RF									
LL-141	STAIRS	RF									

GENERAL FINISH NOTES LEGEND

A. ROOMS NOT SHOWN ON SCHEDULE DO NOT RECEIVE ANY FINISH WORK.

B. IN ROOMS AND AREAS WHERE WORK OCCURS BUT WITH OTHERWISE NO FINISHES INDICATED, PATCH OR FINISH AREA OF WORK TO MATCH ADJACENT SURFACES.

C. SEE REFLECTED CEILING PLANS FOR CEILING TREATMENTS, SOFFIT COLORS, ETC.

D. SEE INTERIOR ELEVATIONS FOR WALL ACCENTS, ACOUSTIC PANELS, ETC.

E. SEE FLOOR PATTERN PLANS FOR FLOOR ACCENTS.

REMARKS KEY

1. ABCDEF
2. ABCDEF

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO: 18268

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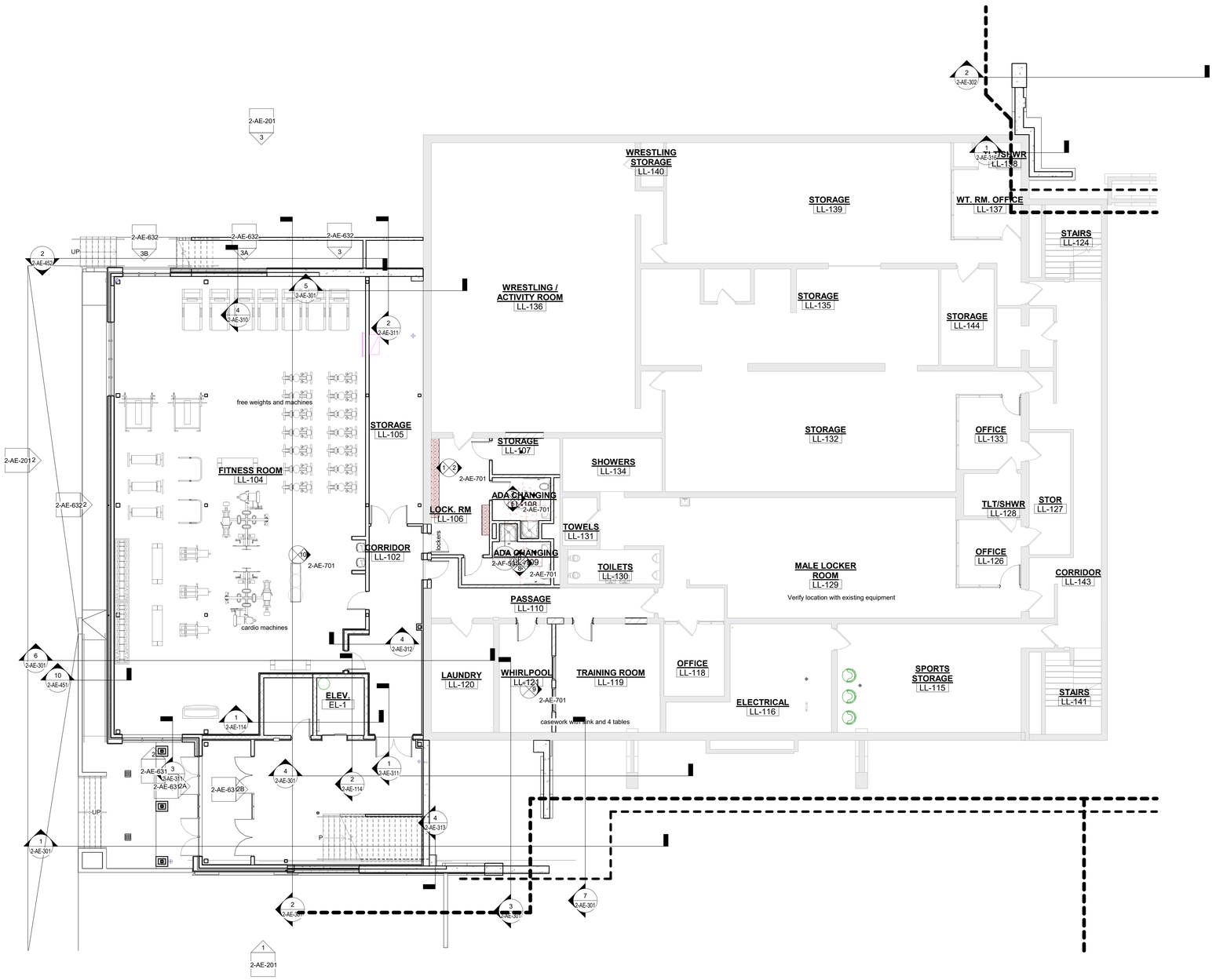
SHEET TITLE:

ROOM FINISH SCHEDULE

SHEET NUMBER:

2-AF-601



1 LOWER FLOOR PATTERN PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

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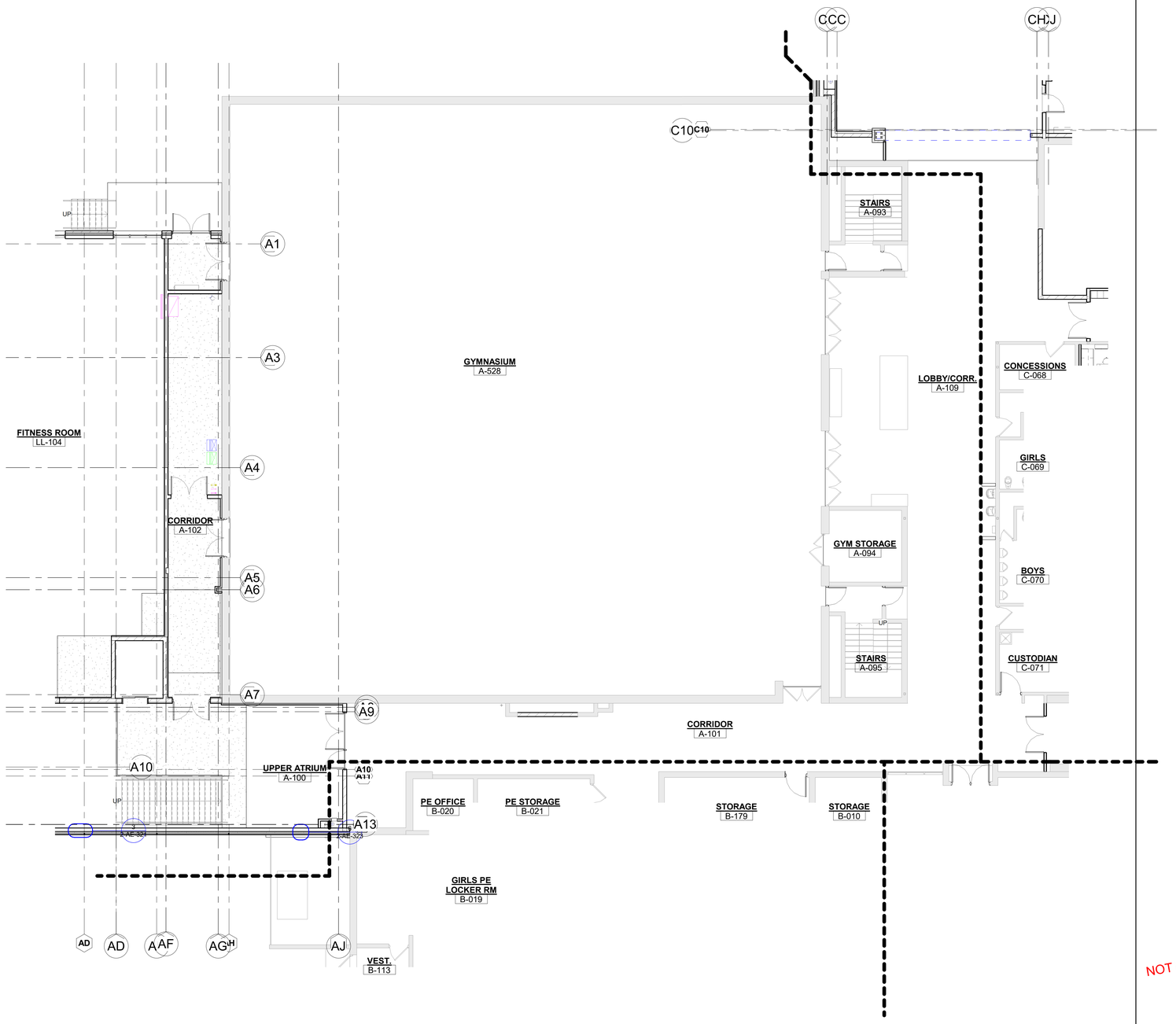
SHEET TITLE:
FLOOR PATTERN PLAN - LOWER LEVEL

SHEET NUMBER:
2-AF-801



1 FIRST FLOOR PATTERN PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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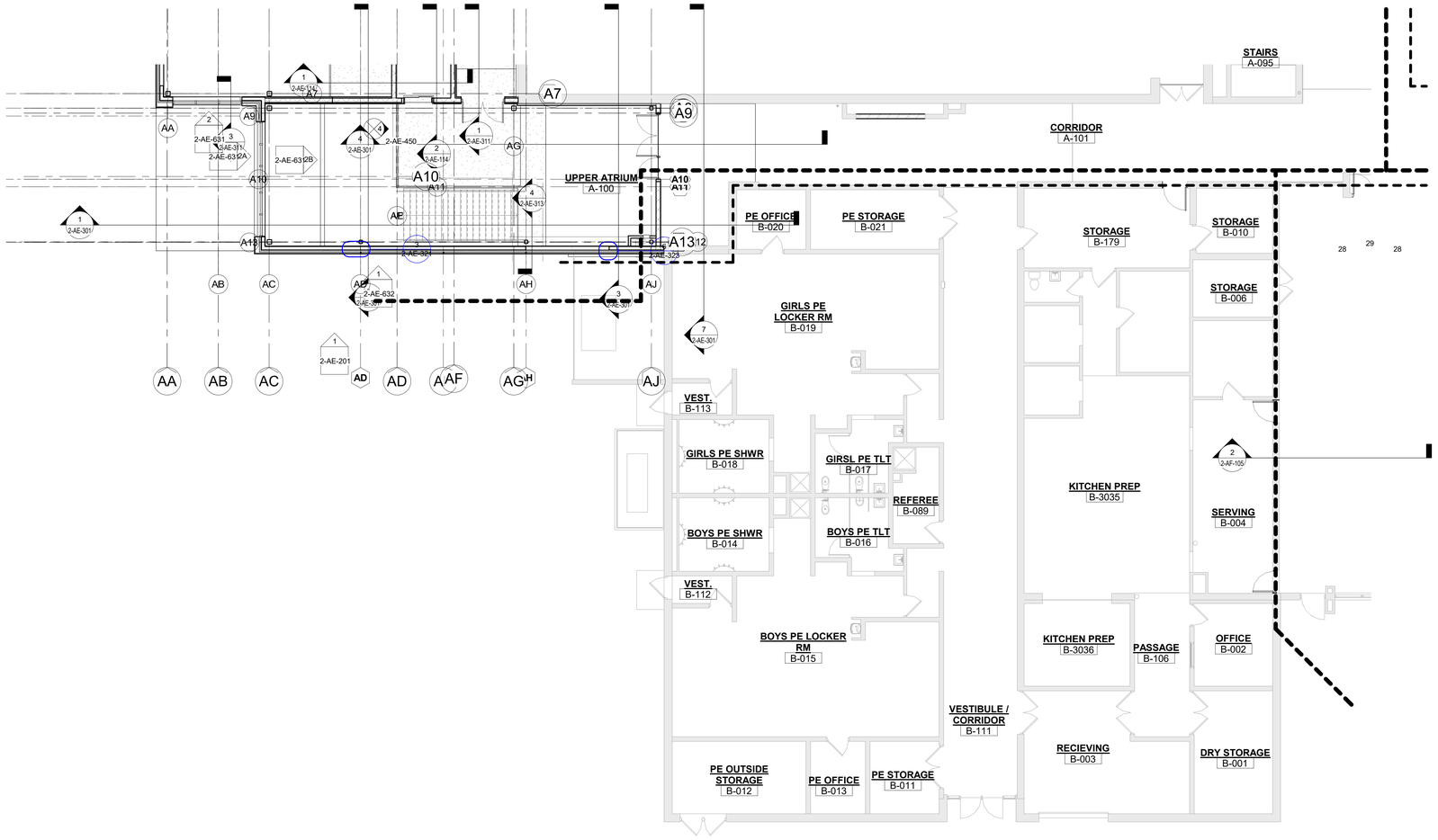
SHEET TITLE:
FLOOR PATTERN PLAN - AREA A

SHEET NUMBER:
2-AF-802



1 FIRST FLOOR PATTERN PLAN - AREA B

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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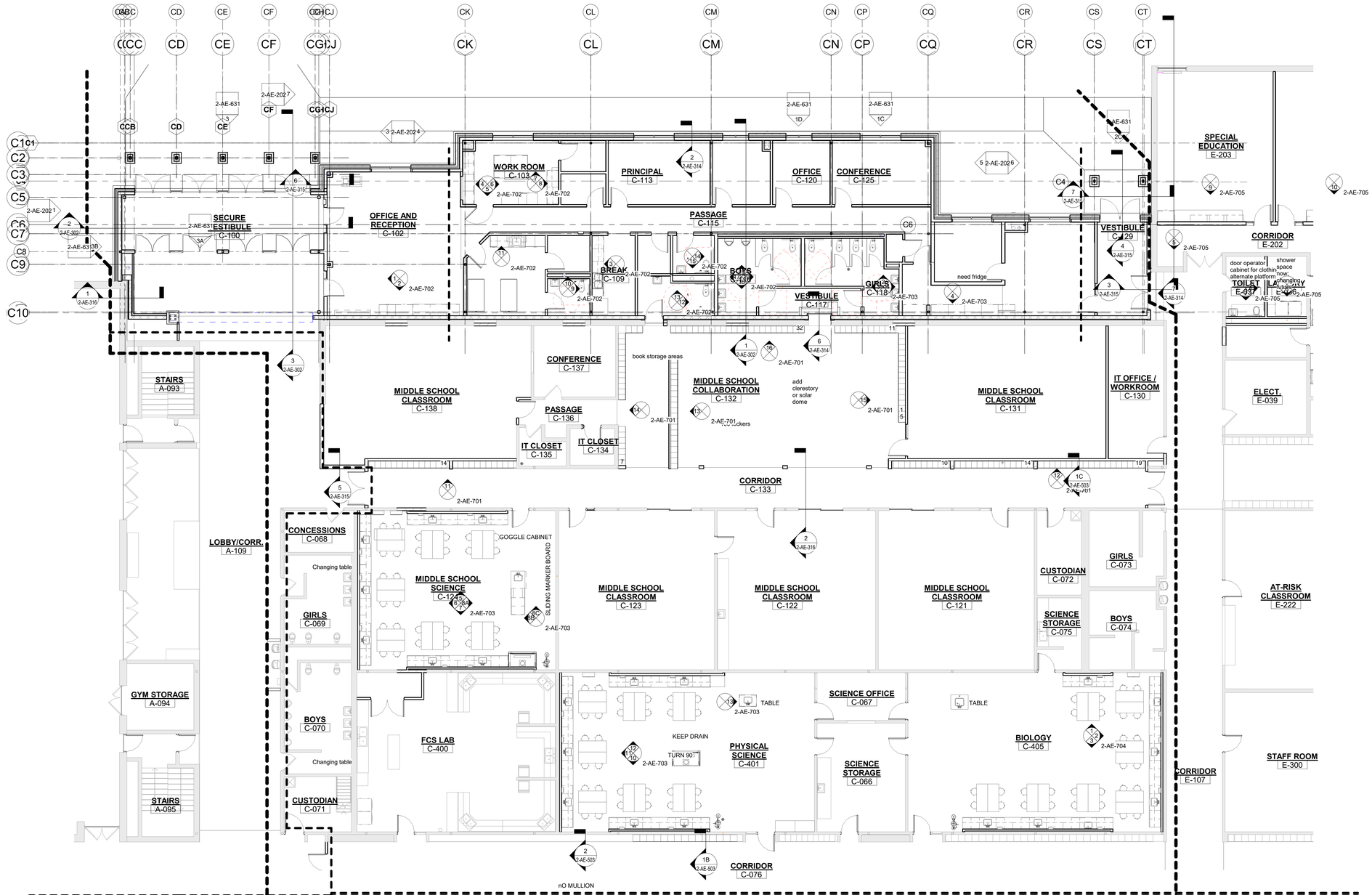
SHEET TITLE:
FLOOR PATTERN PLAN - AREA B

SHEET NUMBER:
2-AF-803



1 FIRST FLOOR PATTERN PLAN - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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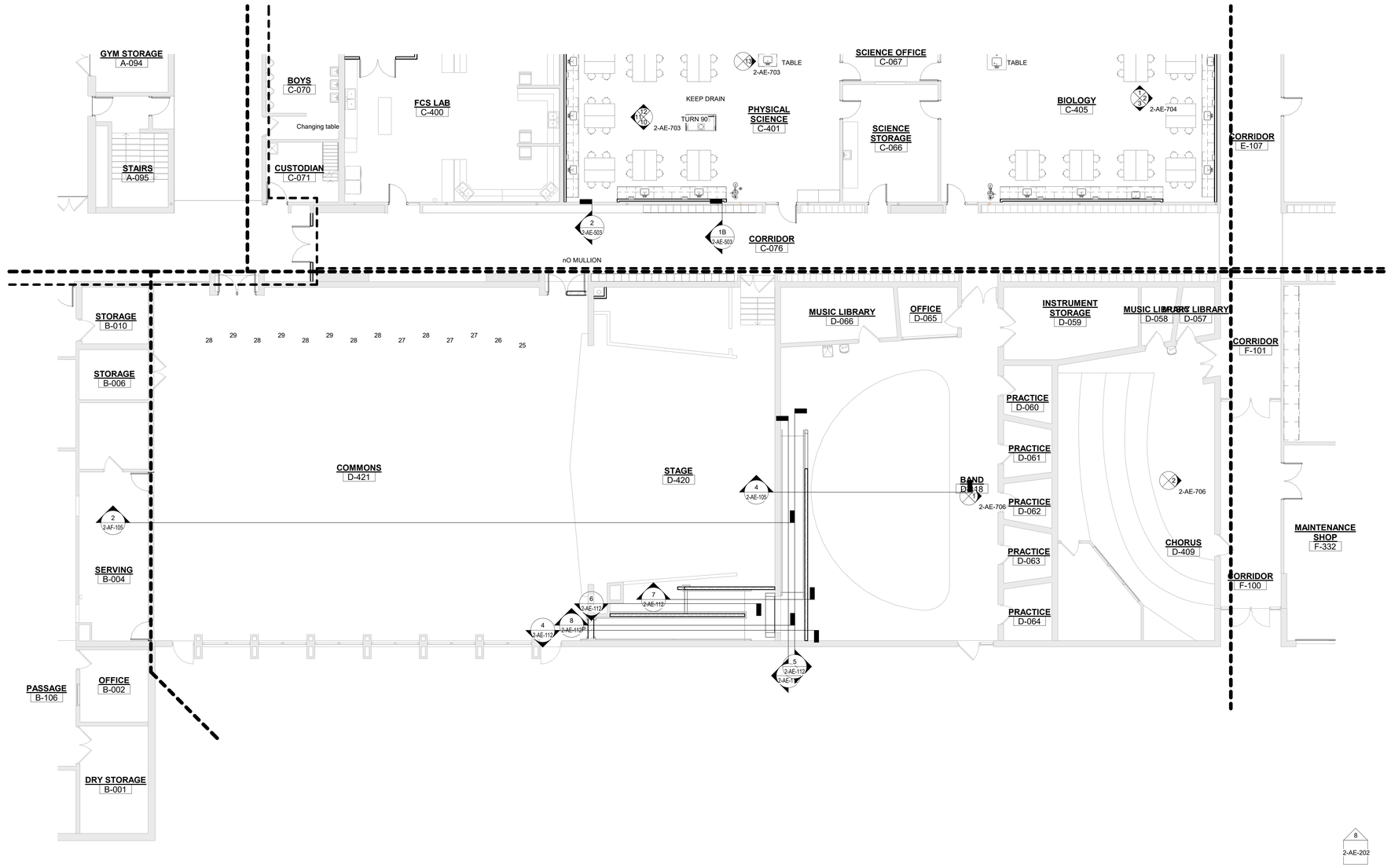
SHEET TITLE:
FLOOR PATTERN PLAN - AREA C

SHEET NUMBER:
2-AF-804



1 FIRST FLOOR PATTERN PLAN - AREA D

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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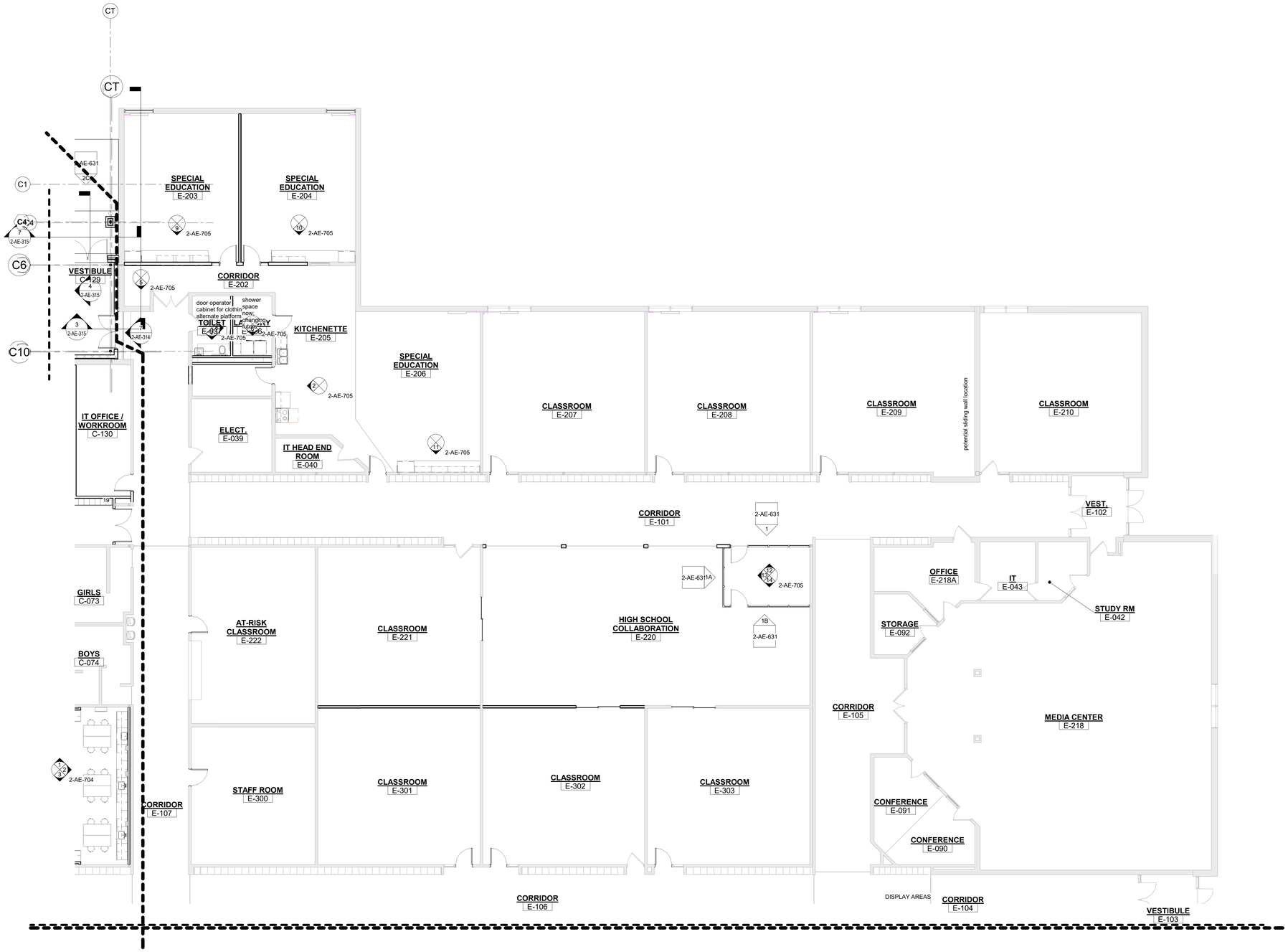
SHEET TITLE:
FLOOR PATTERN PLAN - AREA D

SHEET NUMBER:
2-AF-805



1 FIRST FLOOR PATTERN PLAN - AREA E

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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SHEET TITLE:
FLOOR PATTERN PLAN - AREA E

SHEET NUMBER:
2-AF-806

1 FIRST FLOOR PATTERN PLAN - AREA F

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 4 / 2-AE-105

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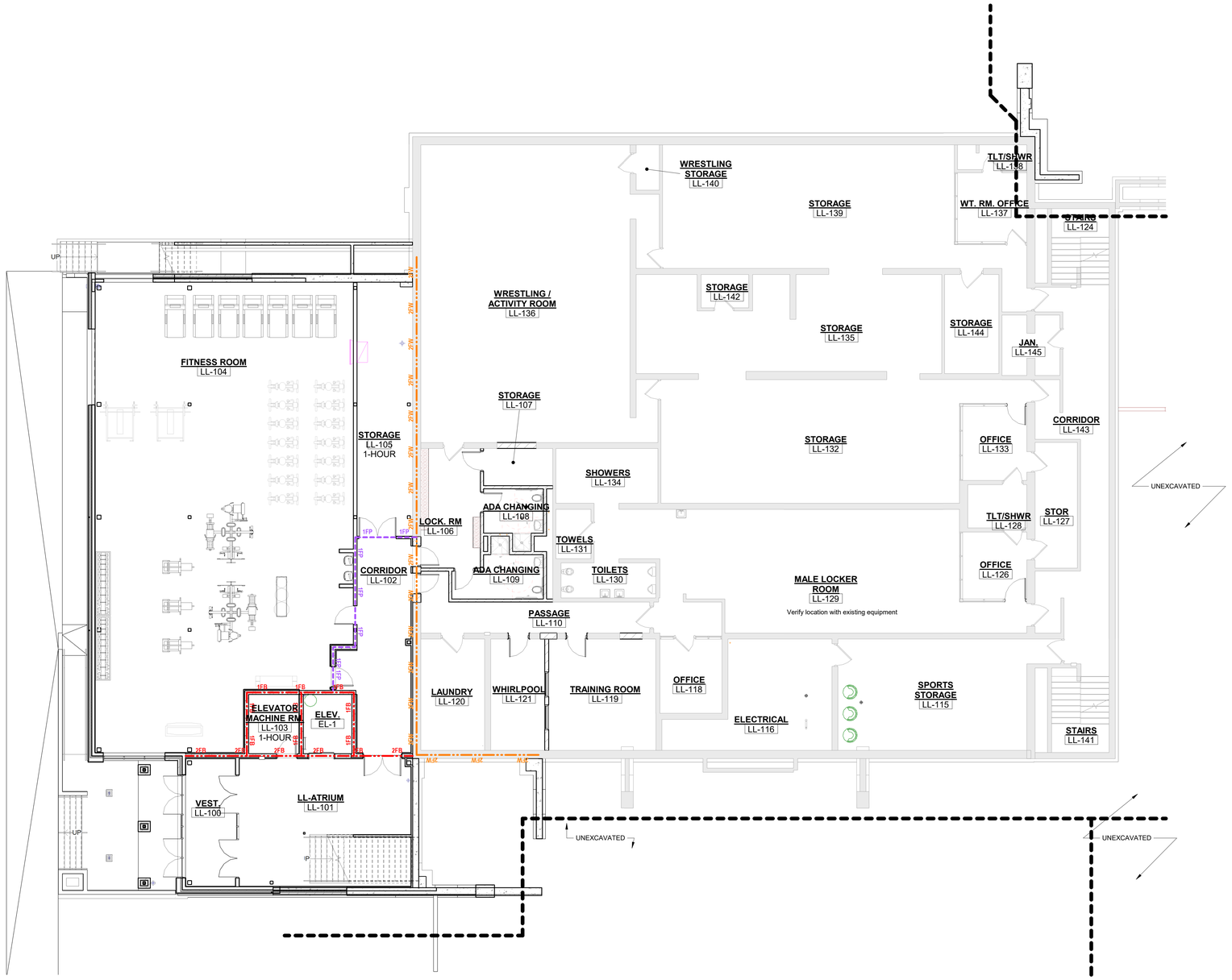
SHEET TITLE:
FLOOR PATTERN PLAN - AREA F

SHEET NUMBER:
2-AF-807



1 LOWER FLOOR PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY: 1 / 2-AE-114

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SHEET TITLE:
EQUIPMENT PLAN - AREA A LOWER LEVEL

SHEET NUMBER:
2-AF-901

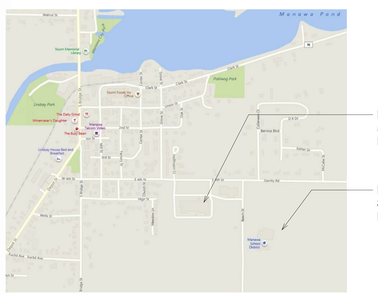
COVER SHEET FOR PART 1

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS

PART 1 - MANAWA ELEMENTARY SCHOOL

800 BEECH STREET
MANAWA, WI 54949

STATE LOCATION MAP



LOCAL AREA MAP

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5/3/2019 2:46:20 PM BIM 360://Manawa Schools/18268 ES-Arch-18 Central.rvt

PROJECT MANUAL IS PART OF THESE CONSTRUCTION DOCUMENTS

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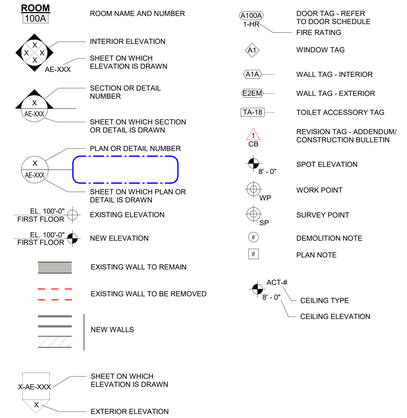
SHEET TITLE:
TITLE SHEET

SHEET NUMBER
1-GI-001

ABBREVIATIONS

AB	ANCHOR BOLT	ID	INSIDE DIAMETER
ACC	ACCESSIBLE	IF	INSIDE FACE
ACT	ACOUSTICAL CEILING TILE	INSUL	INSULATION
ADA	AMERICANS WITH DISABILITIES ACT	IS	INSIDE
ADJ	ADJACENT		
AFF	ABOVE FINISHED FLOOR	JAN	JANITOR
AHU	AIR HANDLING UNIT	JT	JOINT
ALT	ALTERNATE		
ALUM	ALUMINUM	L	ANGLE
		LAM	LAMINATE
B PL	BASE PLATE	LAV	LAVATORY
BF	BOTH FACES	LL	LIVE LOAD
BLDG	BUILDING	LP	LIGHT POLE
BLKG	BLOCKING	LPT	LOW POINT
BM	BENCH MARK	LT	LIGHT
BOT	BOTTOM	LVR	LOUVER
BRG	BEARING		
		MATL	MATERIAL
CB	CATCH BASIN	MAX	MAXIMUM
CJ	CONSTRUCTION JOINT	MECH	MECHANICAL
CJ	CONTROL JOINT	MFG	MANUFACTURER
CL	CENTER LINE	MH	MANHOLE
CLG	CEILING	MIN	MINIMUM
CLG HT	CEILING HEIGHT	MO	MASONRY OPENING
CLR	CLEAR	MTL	METAL
CMU	CONCRETE MASONRY UNIT		
CO	CLEANOUT	NIC	NOT IN CONTRACT
COL	COLUMN	NO	NUMBER
CONC	CONCRETE	NTS	NOT TO SCALE
CONT	CONTINUOUS		
CONTR	CONTRACTOR	OC	ON CENTER
CPT	CARPET	OD	OUTSIDE DIAMETER
CSMT	CASEMENT	OFD	OVERFLOW DRAIN
CSWK	CASEWORK	OPH	OPPOSITE HAND
CT	CERAMIC TILE	OPNG	OPENING
CTR	CENTER	OPT	OPTIONAL
		OS	OUTSIDE
DEMO	DEMOLITION		
DF	DRINKING FOUNTAIN	PART	PARTITION
DH	DOUBLE HUNG	PCC	PRECAST CONCRETE
DIA	DIAMETER	PL	PROPERTY LINE
DIM	DIMENSION	PLAM	PLASTIC LAMINATE
DL	DEAD LOAD	PLAS	PLASTER
DS	DOWNSPOUT	PT	PAINT
DT	DRAIN TILE		
		QT	QUARRY TILE
EJ	EXPANSION JOINT		
EL	ELEVATION	R	RADIUS
ELEV	ELEVATOR	R	RISER
EQ	EQUAL	RD	ROOF DRAIN
EQUIP	EQUIPMENT	REC	RECESSED
EWC	ELECTRIC WATER COOLER	REF	REFERENCE
EXC	EXCAVATE	RFG	ROOFING
EXIST	EXISTING	RO	ROUGH OPENING
EXP BT	EXPANSION BOLT		
		SCP	SCUPPER
FC BRK	FACE BRICK	SHTHG	SHEATHING
FCO	FLOOR CLEANOUT	SP	SURVEY POINT
FD	FLOOR DRAIN	SSTL	STAINLESS STEEL
FDTN	FOUNDATION	STL JST	STEEL JOIST
FE	FIRE EXTINGUISHER	SUSP	SUSPENDED
FEC	FIRE EXTINGUISHER CABINET		
FIN FLR	FINISH FLOOR	T or TR	TREAD
FO	FACE OF	TO	TOP OF
FTG	FOOTING	TYP	TYPICAL
GB	GRAB BAR	UL	UNDERWRITERS LABORATORY
GALV	GALVANIZED	UNEX	UNEXCAVATED
GSB	GYPSUM SHEATHING BOARD	UNO	UNLESS NOTED OTHERWISE
GYP BD	GYPSUM BOARD		
		VB	VINYL BASE
HB	HOSE BIB	VCT	VINYL COMPOSITE TILE
HC	HANDICAP	VTR	VENT THROUGH ROOF
HCP	HANDICAPPED		
HDR	HEADER	WC	WATER CLOSET
HDW	HARDWARE	W/O	WITH OUT
HM	HOLLOW METAL	WP	WORK POINT
HPT	HIGH POINT	WWF	WELDED WIRE FABRIC

DRAWING SYMBOLS LEGEND:



GENERAL NOTES:

1. ALL WORK OF ALL TRADES SHALL BE COMPLETED IN ACCORDANCE WITH ALL GOVERNING CODES AND ORDINANCES. IF ANY CONTRACTOR OBSERVES THAT ANY OF THE CONTRACT DOCUMENTS ARE AT VARIANCE WITH APPLICABLE LAWS, STATUTES, BUILDING CODES, OR ORDINANCES, THEY SHALL PROMPTLY NOTIFY HOFFMAN.
2. EACH CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE SITE; NEITHER THE OWNER NOR HOFFMAN ASSUMES RESPONSIBILITY FOR CONDITIONS OR DIMENSIONS SHOWN AS EXISTING.
3. NOTIFY HOFFMAN IMMEDIATELY IF ANY HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION, REMODELING, OR EXCAVATION, AND STOP WORK IN THE IMMEDIATE AREA UNTIL A COURSE OF ACTION IS DETERMINED. DO NOT ABATE.
4. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONTRACT DOCUMENTS FOR WORK PERTAINING TO THEIR SCOPE, INCLUDING CODE AND REFERENCE SHEETS. KEYNOTE LIST ON INDIVIDUAL SHEETS MAY NOT INCLUDE ALL KEYNOTES ON THAT SHEET.
5. PLAN NOTES ARE GLOBAL; INDIVIDUAL PLAN NOTES MAY NOT BE PRESENT ON EVERY PLAN SHEET.
6. NEITHER HOFFMAN NOR THE OWNER ARE RESPONSIBLE FOR ERRORS IN SCALING DUE TO PRINTING, REPRODUCTION, OR ELECTRONIC FILE CREATION. SCALE AT YOUR OWN RISK.

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APPLETON, WI 54913-7889
920-734-9867

AUDIO VISUAL:
ARROW AV GROUP
1209 FULLVIEW DRIVE
APPLETON, WI 54913
920-730-4888

FIRE DETECTION & ALARM:
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WAUWATOSA, WI 53226
414-790-0232

PLUMBING:
HARWOOD ENGINEERING
255 NORTH 21st STREET
MILWAUKEE, WI 53223
414-475-5554

MECHANICAL:
MEAD & HUNT
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WAUWATOSA, WI 53226
414-790-0232

ELECTRICAL:
MEAD & HUNT
10700 WEST RESEARCH DRIVE, SUITE 155
WAUWATOSA, WI 53226
414-790-0232

TELECOMMUNICATION:
MEAD & HUNT
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PART 1 SHEET INDEX

MANAWA ELEMENTARY SCHOOL
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MANAWA, WI 54949

GENERAL
1-GI-001 TITLE SHEET
1-GI-002 SHEET INDEX, SYMBOLS, GENERAL NOTES, CONSULTANTS LIST

LIFE SAFETY
1-GI-101 CODE PLAN

ARCHITECTURAL
1-AD-101 DEMOLITION PLAN - AREA A
1-AD-102 DEMOLITION PLAN - AREA B
1-AD-103 DEMOLITION PLAN - AREA C
1-AD-203 DEMOLITION CEILING PLAN - AREA A
1-AE-101 FLOOR PLAN - AREA A
1-AE-102 FLOOR PLAN - AREA B
1-AE-103 FLOOR PLAN - AREA C
1-AE-401 TOILET ROOM STANDARDS
1-AE-402 ENLARGED PLAN - AREA C
1-AE-501 WALL SECTIONS, WALL TYPES, WALL DETAILS
1-AE-601 DOOR SCHEDULE, DOOR & FRAME TYPES, DOOR DETAILS
1-AE-701 CASEWORK / INTERIOR ELEVATIONS
1-AF-103 REFLECTED CEILING PLAN - AREA C, CEILING DETAILS
1-AF-601 ROOM FINISH SCHEDULE
1-AF-801 FLOOR PATTERN PLAN - AREA A
1-AF-802 FLOOR PATTERN PLAN - AREA B
1-AF-803 FLOOR PATTERN PLAN - AREA C

ADD STRUCTURAL INFO TO AN ARCHY SHEET.

FIRE DETECTION & ALARM
VERIFY 1-FA-103 FIRE DETECTION AN ALARM PLAN - AREA C

PLUMBING
VERIFY 1-PD-101 PLUMBING DEMOLITION PLAN
1-PL-101 PLUMBING NEW WORK PLANS

HVAC
1-MD-103 DEMOLITION PLAN - AREA C
1-MH-103 DUCTWORK PLAN - AREA C
VERIFY 1-MH-501 MECHANICAL DETAILS, EQUIP. SCHEDULE
1-MP-103 PIPING PLAN -AREA C

ELECTRICAL
1-DP-103 DEMOLITION PLAN - AREA C
VERIFY 1-EP-103 POWER PLAN - AREA C
1-EL-103 LIGHTING PLAN - AREA C
1-EP-501 PANEL SCHEDULES, DIAGRAMS, FIXTURE SCHEDULES

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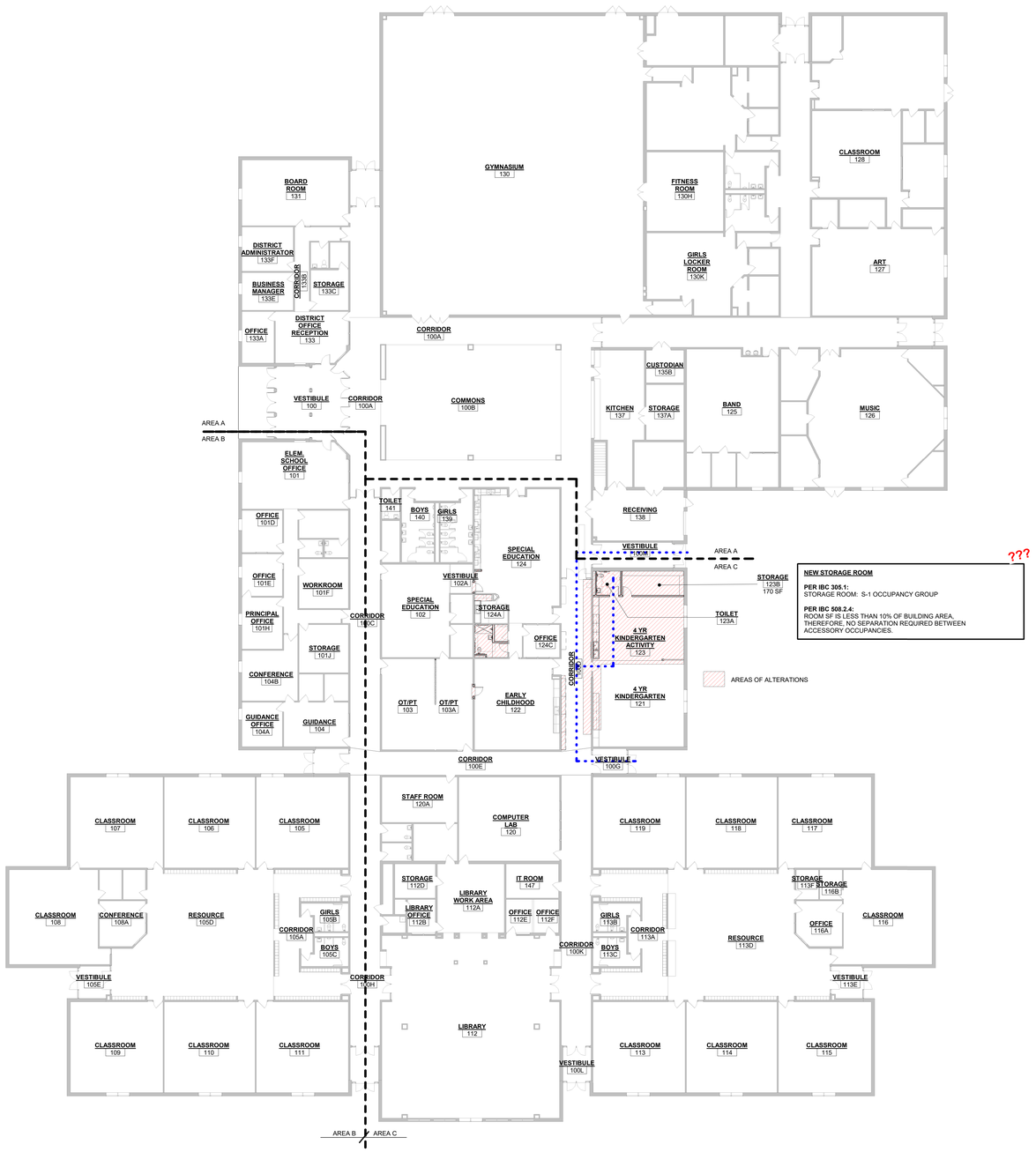
SHEET TITLE:
SYMBOLS, GEN. NOTES, CONSULTANTS

SHEET NUMBER:
1-GI-002



1 CODE PLAN
SCALE 1/16" = 1'-0"
AS REFERENCED BY:

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WALL PRIORITY LEGEND

PRIORITY	#	PLAN GRAPHIC	PARTITION TYPE
HIGHEST	1	4FW 4FW	4 HOUR - FIRE WALL
	2	3FW 3FW	3 HOUR - FIRE WALL
	3	2FW 2FW	2 HOUR - FIRE WALL
	4	4FB 4FB	4 HOUR - FIRE BARRIER
	5	3FB 3FB	3 HOUR - FIRE BARRIER
	6	2FB 2FB	2 HOUR - FIRE BARRIER
MEDIUM	7	1FB 1FB	1 HOUR - FIRE BARRIER
	8	1FP 1FP	1 HOUR - FIRE PARTITION
	9	1SB 1SB	1 HOUR - SMOKE BARRIER
	10	1BW 1BW	1 HOUR - BEARING WALL
	11	5FP 5FP	1/2 HOUR - FIRE PARTITION
	12	0SP 0SP	0 HOUR - SMOKE PARTITION (WALL TO LIMIT THE TRANSFER OF SMOKE (DOORS AND GLAZING FOR BORROWED LIGHTS ARE NOT RATED)
LOWEST	13		NON-RATED

NOTE: PARTITIONS WITH A HIGHER PRIORITY # TAKE PRECEDENCE OVER PARTITIONS WITH A LOWER PRIORITY # - SEE AE-501 FOR DETAILS

CODE SHEET KEY

- 72" / 50" / 373 — PROVIDED WIDTH / REQUIRED WIDTH / OCCUPANT LOAD
- FIRE EXTINGUISHER
- FIRE EXTINGUISHER TYPE "K"
- EXIT LIGHT
- AREA OF LEVEL 2 ALTERATION
- EGRESS PATH

BUILDING DATA SUMMARY

APPLICABLE CODES:

BUILDING ACCESSIBILITY AND LIFE SAFETY:
- 2015 IBC - International Building Code
- 2015 IEBC - Existing Building Code
- Wisconsin SPS 362
- 2015 IECC - International Energy Conservation Code
- 2009 ICC/ANSI A117.1 - American National Standards Institute

BUILDING AREA:

Existing First Floor: 81,786 sf
First Floor Alterations: 1,372 SQ. FT.
Level 2 Alterations: <50%

BUILDING OCCUPANCIES / TYPE (IBC CH. 3&5):

Primary Occupancy:
- E Education

Secondary Occupancy:
- E / A-2) Cafeteria / Commons (per IBC 303.1.3)
- E/ A-3) Gymnasium (per IBC 303.1.3)
- B Administrative Offices
- S-2 Storage / Mechanical

Accessory Occupancy:
- S-1 Storage

TYPE OF CONSTRUCTION (IBC CH. 6 & 7):
- All existing construction is Construction Type IIB
- All alterations shall be Construction Type IIB

MEANS OF EGRESS / OCCUPANT LOAD (IBC CH. 10):
- Egress paths and occupant load unchanged.

PLUMBING CALCULATIONS (IBC CH. 29):
- Occupant load and fixture counts unchanged

ACCESSIBILITY (IBC CH. 11, IEBC CH. 5&6):
- The new construction and all Level 2 zones meet all accessibility requirements per IBC Chapter 11 and ANSI A117.1 (2009 Edition)

SPRINKLER SYSTEM / FIRE SAFETY:
- Existing building not sprinklered

???

NEW STORAGE ROOM

PER IBC 305.1:
STORAGE ROOM: S-1 OCCUPANCY GROUP

PER IBC 508.2.4:
ROOM SF IS LESS THAN 10% OF BUILDING AREA, THEREFORE, NO SEPARATION REQUIRED BETWEEN ACCESSORY OCCUPANCIES.

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

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PLAN NORTH

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Planning, Design & Construction, Inc.
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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:
CODE PLAN

SHEET NUMBER:
1-GI-101

1 FIRST FLOOR DEMOLITION PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
NOT FOR CONSTRUCTION

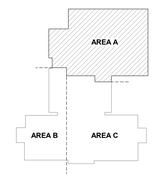
GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

DEMOLITION NOTES KEY

NO.	DESCRIPTION
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVING
9	02 41 00 F5 - REMOVE SUSPENDED CEILING
19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
24	02 41 00 P1 - REMOVE FIXTURE - PLUMBING TO DISCONNECT & CAP
30	02 41 00 B2 - REMOVE MASONRY WALL
31	02 41 00 G2A - REMOVE FURNISHINGS AND STORE FOR REINSTALLATION
32	02 41 00 F2 - REMOVE BASE
33	02 41 00 D1A - REMOVE AND STORE DOOR
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

MANAWA

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MANAWA, WI 54949

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CHECKED BY:	Checker

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SHEET TITLE:
DEMOLITION PLAN - AREA A

SHEET NUMBER:
1-AD-101

1 FIRST FLOOR DEMOLITION PLAN - AREA B

SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
NOT FOR CONSTRUCTION

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
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5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
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DEMOLITION NOTES KEY

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8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVING
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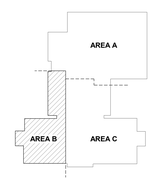
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

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SHEET TITLE:

DEMOLITION PLAN - AREA B

SHEET NUMBER:

1-AD-102

1 FIRST FLOOR DEMOLITION PLAN - AREA C

SCALE 1/8" = 1'-0"
AS REFERENCED BY:

FOR BIDS
NOT FOR CONSTRUCTION

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

DEMOLITION NOTES KEY

NO.	DESCRIPTION
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVING
9	02 41 00 F5 - REMOVE SUSPENDED CEILING
19	02 41 00 F1 - REMOVE FLOORING AND ADHESIVE
24	02 41 00 P1 - REMOVE FIXTURE - PLUMBING TO DISCONNECT & CAP
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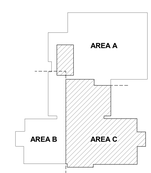
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

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PROJECT NO:	18268
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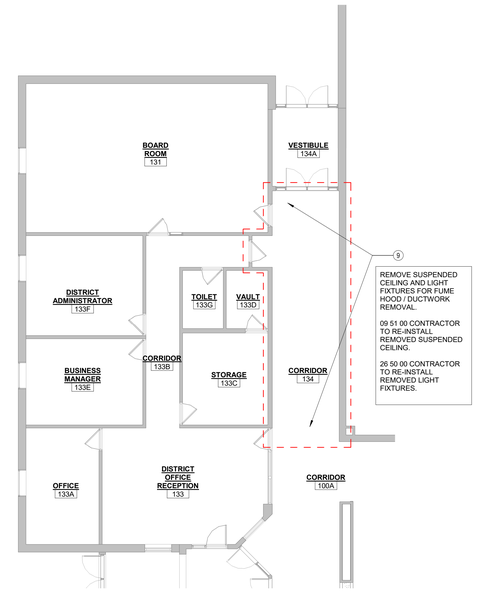
SHEET TITLE:
DEMOLITION PLAN - AREA C

SHEET NUMBER:
1-AD-103

1 CEILING DEMOLITON PLAN - AREA C
SCALE 1/8" = 1'-0"
AS REFERENCED BY:



2 PARTIAL CEILING DEMOLITON PLAN - AREA A
SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
NOT FOR CONSTRUCTION

GENERAL DEMOLITION NOTES

1. DEMOLOTION NOTES ON THIS SHEET APPLY TO THE MIDDLE SCHOOL / HIGH SCHOOL PROJECT ONLY.
2. NOT ALL NOTES ARE APPLICABLE TO THIS SHEET.
3. REFERENCE SECTION 02 41 00 FOR ITEMS TO BE REMOVED AND SALVAGED FOR OWNER RE-USE.
4. SEE SHEET XXX FOR CEILING DEMOLITION PLANS.
5. COORDINATE ALL DEMOLITION WORK WITH NEW CONSTRUCTION. REFER TO AE SHEETS THIS SET.
6. REFERENCE MECHANICAL, PLUMBING, ELECTRICAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
7. IN AREAS SCHEDULED TO RECIEVE NEW FLOORING. REMOVE ALL FLOORING, SETTING BEDS, MASTICS, ADHESIVES AND PREPARE FLOOR TO RECEIVE NEW FINISHES. REFER TO SECTION 09 XX XX - FOR ADDITIONAL INFORMATION.

DEMOLITION NOTES KEY

# NO.	DESCRIPTION
8	02 41 00 C2 - SAWCUT AND REMOVE PORTLAND CEMENT PAVING
9	02 41 00 F5 - REMOVE SUSPENDED CEILING
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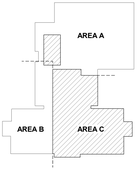
34	02 41 00 G1A - REMOVE AND STORE EXISTING CASEWORK
36	02 41 00 - REMOVE LOCKER BASE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

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MANAWA, WI 54949

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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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SHEET TITLE:
DEMOLITION CEILING PLANS

SHEET NUMBER:
1-AD-203

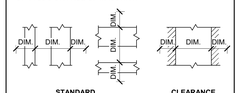
1 FIRST FLOOR PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY:

FOR BIDS
NOT FOR CONSTRUCTION

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
2. ALL OPENINGS IN RATED WALLS SHALL PROVIDE OPENING PROTECTION AS REQUIRED BY CODE.
3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATION THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

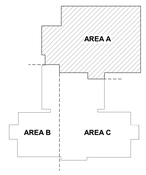
PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT EACH LEAF
2	04 20 00 A - CONCRETE MASONRY UNITS - TOOTH IN NEW CMU INTO EXISTING COURSING
3	EXTEND WALL TO MIN. 4" ABOVE CEILING HT.
5	03 30 00 D - NEW CONCRETE SLAB AT AREA OF REMOVED SLAB, MATCH EXISTING THICKNESS. SLOPE TO DRAIN. REFER TO PLUMBING PLANS.
6	03 30 00 D - PATCH CONCRETE SLAB AT AREA OF REMOVED CMU WALL
7	09 91 13 A - PAINT - PAINT DOORS - SEE ROOM FINISH SCHEDULE
8	04 20 00 A2 - PATCH/REPAIR AREA OF REMOVED WALL WITH NEW BULLNOSE CMU
9	04 20 00 A CONCRETE MASONRY UNITS AND 05 12 00 STEEL LINTEL - SEE LINTEL SCHEDULE
10	12 35 30 - RE-INSTALL REMOVED CASEWORK
11	22 30 00 - RE-INSTALL REMOVED PLUMBING FIXTURES

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

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PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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SHEET TITLE:
FIRST FLOOR PLAN - AREA A

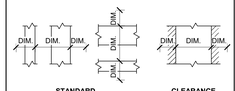
SHEET NUMBER:
1-AE-101

1 FIRST FLOOR PLAN - AREA B
SCALE 1/8" = 1'-0"
AS REFERENCED BY:

FOR BIDS
NOT FOR CONSTRUCTION

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY- UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATION THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT EACH LEAF
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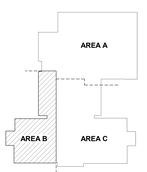
6	03 30 00 D - PATCH CONCRETE SLAB AT AREA OF REMOVED CMU WALL
7	09 91 13 A - PAINT - PAINT DOORS - SEE ROOM FINISH SCHEDULE
8	04 20 00 A2 - PATCH/REPAIR AREA OF REMOVED WALL WITH NEW BULLNOSE CMU
9	04 20 00 A CONCRETE MASONRY UNITS AND 05 12 00 STEEL LINTEL - SEE LINTEL SCHEDULE
10	12 35 30 - RE-INSTALL REMOVED CASEWORK
11	22 30 00 - RE-INSTALL REMOVED PLUMBING FIXTURES

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

MANAWA

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DRAWN BY:	Author
CHECKED BY:	Checker

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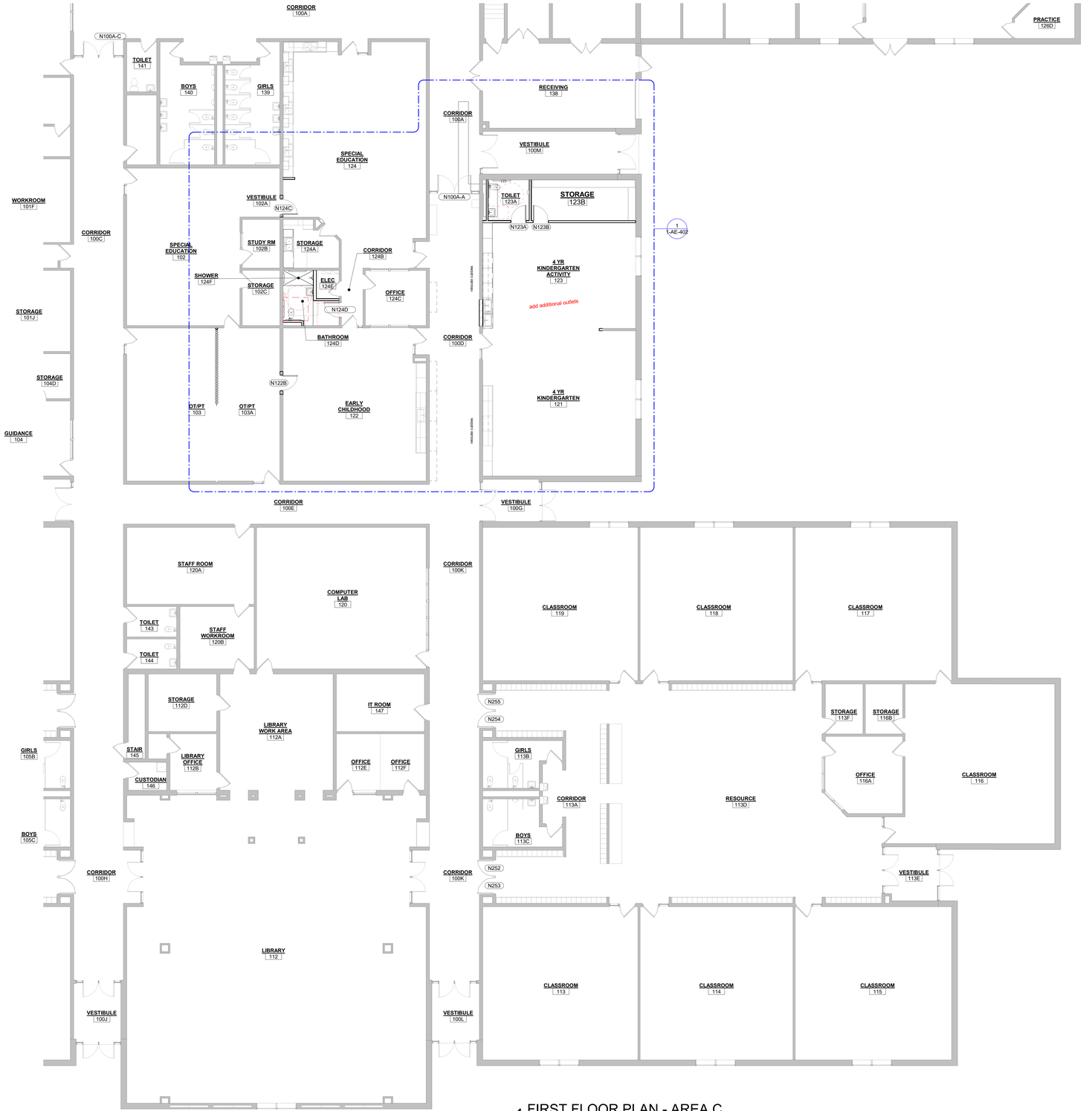
SHEET TITLE:
FIRST FLOOR PLAN - AREA B

SHEET NUMBER:
1-AE-102



1 FIRST FLOOR PLAN - AREA C
SCALE: 1/8" = 1'-0"
AS REFERENCED BY:

FOR BIDS
NOT FOR CONSTRUCTION

WALL DIMENSION KEY

NOTE:
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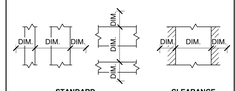

STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

WALL TYPE NOTES

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5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATION THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

- X — DENOTES WINDOW TYPE. SEE SHEET AE-603
- NIC — DENOTES ITEM NOT IN CONTRACT - BY OWNER
- XXXX — DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
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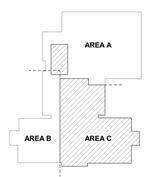
6	03 30 00 D - PATCH CONCRETE SLAB AT AREA OF REMOVED CMU WALL
7	09 91 13 A - PAINT - PAINT DOORS - SEE ROOM FINISH SCHEDULE
8	04 20 00 A2 - PATCH/REPAIR AREA OF REMOVED WALL WITH NEW BULLNOSE CMU
9	04 20 00 A CONCRETE MASONRY UNITS AND 05 12 00 STEEL LINTEL - SEE LINTEL SCHEDULE
10	12 35 30 - RE-INSTALL REMOVED CASEWORK
11	22 30 00 - RE-INSTALL REMOVED PLUMBING FIXTURES

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



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CONSULTANT:

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MANAWA, WI 54949

MARK	DATE
ISSUED:	PRELIMINARY
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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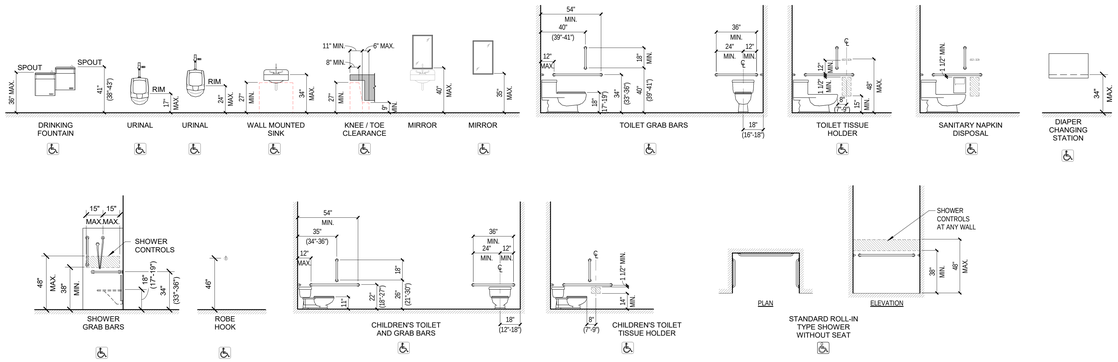
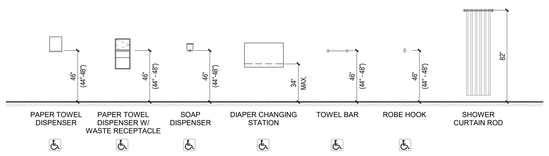
SHEET TITLE:
FIRST FLOOR PLAN - AREA C

SHEET NUMBER:
1-AE-103



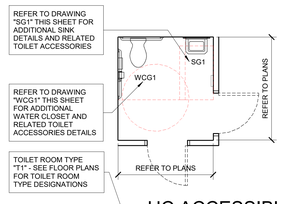
MOUNTING LOCATIONS - FIXTURES AND ACCESSORIES

SCALE 1/4" = 1'-0"

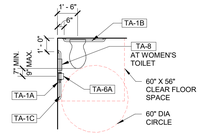


MOUNTING LOCATIONS - TOILET ACCESORIES

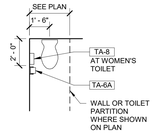
SCALE 1/4" = 1'-0"



T1 HC ACCESSIBLE TOILET ROOM
SCALE 1/4" = 1'-0"

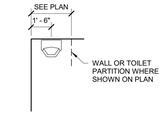


WCG1 TYP. HC ACCESS WATER CLOSET
SCALE 1/4" = 1'-0"

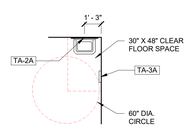


WCG2 WATER CLOSET
SCALE 1/4" = 1'-0"

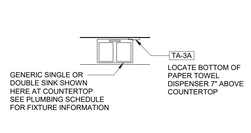
UG1 TYPICAL HC ACCESS URINAL
SCALE 1/4" = 1'-0"



UG2 URINAL
SCALE 1/4" = 1'-0"



SG1 TYPICAL HC ACCESS LAV
SCALE 1/4" = 1'-0"



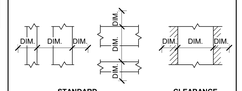
SG2 SINK
SCALE 1/4" = 1'-0"

TOILET ACCESSORIES SCHEDULE - 10 28 00

TAG	DESCRIPTION	MFR	MODEL	REMARKS
TA-1				
TA-2	Stainless Steel Mirror	Bobrick	B-165 2436	
TA-3		Bobrick	B-262	
TA-6				
TA-9				

WALL DIMENSION KEY

NOTE:
ALL WALLS ARE DIMENSIONED TO FACE OF STUD OR FACE OF MASONRY. CLEARANCE DIMENSIONS ARE FROM FACE OF STUDS OR FACE OF MASONRY.



STANDARD DIMENSIONING | CLEARANCE DIMENSIONING

TOILET ROOM & ACCESSORY NOTES:

1. ENLARGED PLANS INDICATE TYPICAL DIMENSIONS, LOCATIONS FOR ACCESSORIES AND SPECIALTIES AND REQUIRED CLEARANCES TO BE MAINTAINED. TOILET ROOM AND SINK "TYPES" ARE KEYED ON FLOOR PLANS.
2. REFER TO FLOOR PLAN SHEETS FOR TOILET ROOM AND/OR FIXTURE ORIENTATION, DOOR LOCATION(S), WALL CONSTRUCTION, AND ADDITIONAL EQUIPMENT ITEMS.
3. DIMENSIONS INDICATED ARE TYPICAL UNLESS NOTED OTHERWISE ON DIMENSIONED FLOOR PLAN SHEETS.
4. DIMENSIONS SHOWN FOR ACCESSORIES AND EQUIPMENT ITEMS AND CLEAR FLOOR SPACE ARE FROM FACE OF ROOM FINISH (SUCH AS TILE).
5. "GENERIC" PLUMBING FIXTURES AND ACCESSORIES ARE SHOWN - SEE PLUMBING DRAWINGS AND/OR PROJECT MANUAL FOR SCHEDULED FIXTURES AND ACCESSORIES.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

FOR BIDS
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

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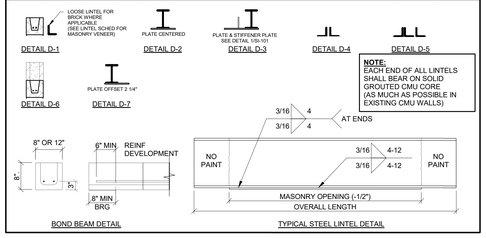
SHEET TITLE:
TOILET ROOM STANDARDS

SHEET NUMBER:
1-AE-401

MASONRY LINTEL SCHEDULE

MARK	TYPE	MAS. WIDTH	SIZE	BEARING	DETAIL
L1	STEEL	8"	W8X15 W/ 5/16" X 7" BOTTOM PLATE	8" BRG	D-2



TOILET ACCESSORIES SCHEDULE - 10 28 00

TAG	DESCRIPTION	MFR	MODEL	REMARKS
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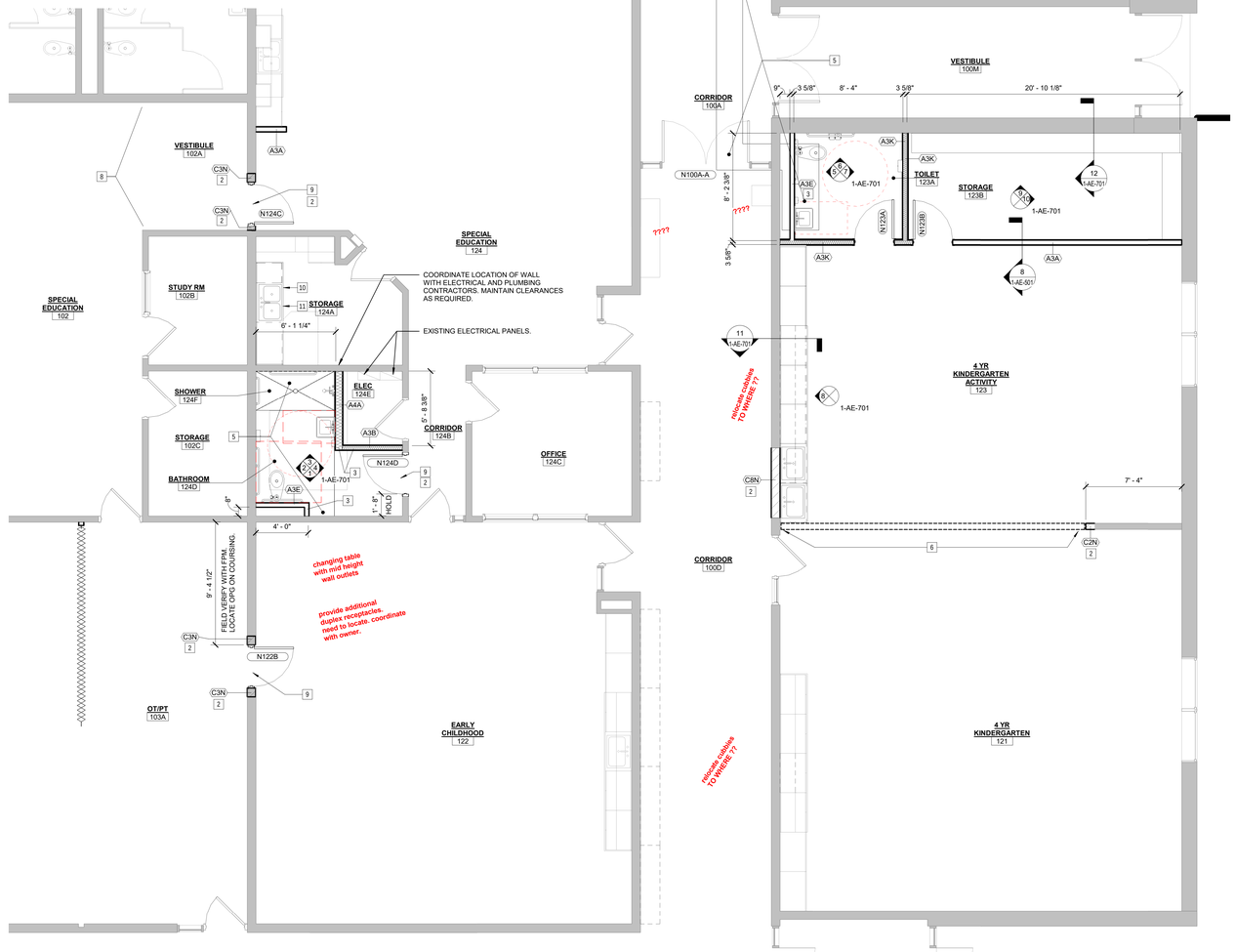
TA-2	Stainless Steel Mirror	Bobrick	B-165 2436	
TA-3		Bobrick	B-262	
TA-6				
TA-9				



1 ENLARGED PARTIAL FLOOR PLAN - AREA C

SCALE 1/4" = 1'-0"
AS REFERENCED BY:1 / 1-AE-103

FOR BIDS
NOT FOR CONSTRUCTION

WALL DIMENSION KEY

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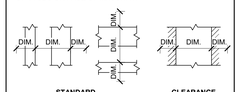

WALL TYPE NOTES

1. 09 21 16 - IDENTIFY ALL RATED WALLS WITH A FIRE RATED LABEL / STENCIL 8" ABOVE THE CEILING AT 10'-0" O.C. MAX WITH 1 1/2" LETTERS BRIGHTLY INDICATED ON A CONTRASTING BACKGROUND. MINIMUM 1 LABEL / STENCIL PER ROOM / WALL RUN.
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3. SEE CODE PLANS FOR LOCATION OF WALLS/ROOMS REQUIRED TO BE RATED.
4. FOR ALL UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY: UNDERWRITERS LABORATORIES, LATEST EDITION AND/OR SHEET GI-501
5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATION THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

FLOOR PLAN LEGEND

X	DENOTES WINDOW TYPE. SEE SHEET AE-603
NIC	DENOTES ITEM NOT IN CONTRACT - BY OWNER
XXXX	DENOTES WALL TYPE - SEE SHEET AE-501 FOR EXTERIOR AND AE-502 FOR INTERIOR WALLS

PLAN NOTES KEY

NO.	DESCRIPTION
1	SEE DOOR & FRAME SCHEDULE FOR WORK AT EACH LEAF.
2	04 20 00 A - CONCRETE MASONRY UNITS - TOOTH IN NEW CMU INTO EXISTING COURSING
3	EXTEND WALL TO MIN. 4" ABOVE CEILING HT.
5	03 30 00 D - NEW CONCRETE SLAB AT AREA OF REMOVED SLAB. MATCH EXISTING THICKNESS. SLOPE TO DRAIN. REFER TO PLUMBING PLANS.
6	03 30 00 D - PATCH CONCRETE SLAB AT AREA OF REMOVED CMU WALL
7	09 91 13 A - PAINT - PAINT DOORS - SEE ROOM FINISH SCHEDULE
8	04 20 00 A2 - PATCH/REPAIR AREA OF REMOVED WALL WITH NEW BULLNOSE CMU
9	04 20 00 A CONCRETE MASONRY UNITS AND 05 12 00 STEEL LINTEL - SEE LINTEL SCHEDULE
10	12 35 30 - RE-INSTALL REMOVED CASEWORK
11	22 30 00 - RE-INSTALL REMOVED PLUMBING FIXTURES

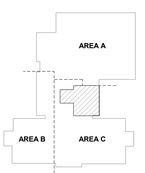
KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

TOILET ACCESSORIES KEY

TAG	DESCRIPTION
TA-1	GRAB BARS
TA-2	MIRRORS
TA-3	PAPER TOWEL DISPENSER
TA-4	PAPER TOWEL DISPENSER W/ WASTE RECEPTACLE
TA-5	WASTE RECEPTACLE
TA-6	TOILET TISSUE DISPENSER
TA-7	SANITARY NAPKIN VENDOR
TA-8	SANITARY NAPKIN DISPOSAL
TA-9	SOAP DISPENSER / SOAP DISH
TA-10	TOILET SEAT COVER DISPENSER
TA-11	BABY CHANGING STATION
TA-12	WARM AIR HAND DRYER
TA-13	FOLDING SHOWER SEAT
TA-14	SHOWER CURTAIN ROD / HOOKS
TA-15	TOWEL BAR / SHELF
TA-16	ROBE HOOK
TA-17	MOP AND BROOM HOLDER
TA-18	MEDICINE CABINET

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH
PLAN NORTH

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CONSULTANT:

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
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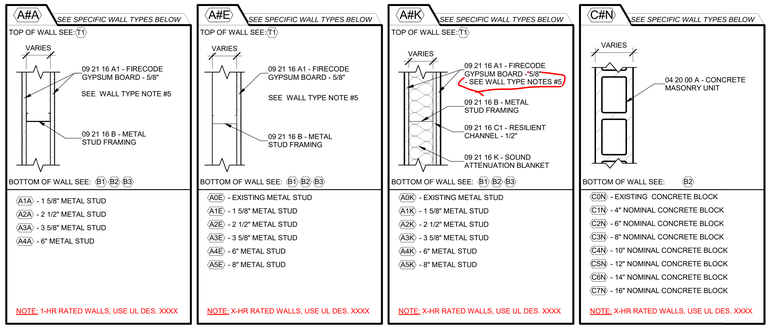
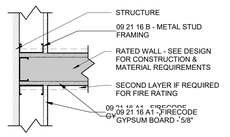
SHEET TITLE:
ENLARGED PLAN - AREA C

SHEET NUMBER:
1-AE-402

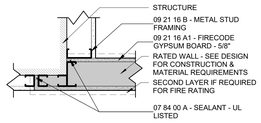


1 WALL TYPES

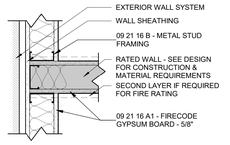
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



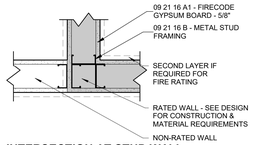
INTERSECTION AT CONC. OR MASONRY



INTERSECTION AT CONC. OR MASONRY



INTERSECTION AT EXTERIOR WALL
REFER TO EXTERIOR WALL TYPES FOR MATERIALS

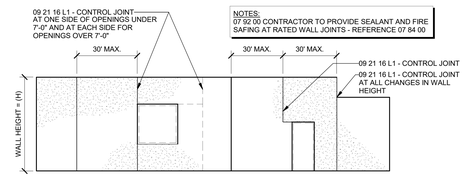


INTERSECTION AT STUD WALL

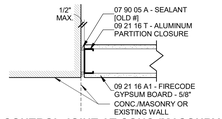
RATED WALLS APPEAR SHADED

2 GYPSUM BOARD CONTROL JOINT LOCATIONS

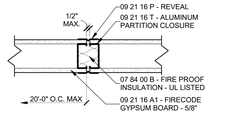
SCALE 3/16" = 1'-0"
AS REFERENCED BY:



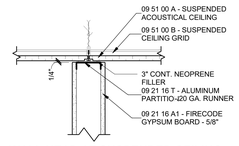
ELEVATION



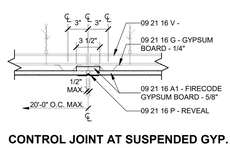
CONTROL JOINT AT CONC./MASONRY OR EXISTING WALL



CONTROL JOINT



WALL HEAD AT SUSPENDED CEILING

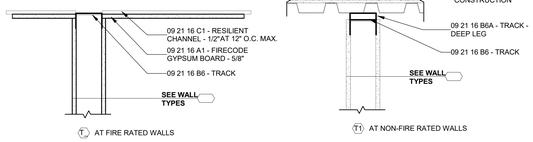


CONTROL JOINT AT SUSPENDED GYP. BOARD CEILING SYSTEM

3 GYPSUM BOARD JOINT DETAILS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

revise to show metal deck and roof joists parallel and perpendicular conditions !!!!!

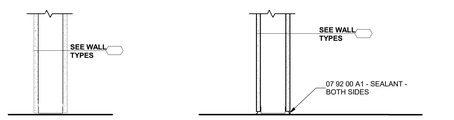


T1 AT FIRE RATED WALLS
Assign "T" Number

T1 AT NON-FIRE RATED WALLS

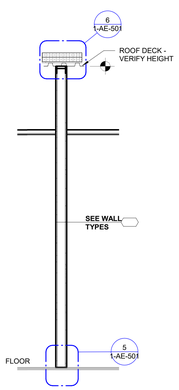
4 RATED WALL INTERSECTIONS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:



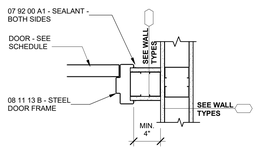
5 BASE OF METAL STUD WALL

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY8 / 1-AE-501



6 TOP OF INTERIOR WALL DETAILS

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY8 / 1-AE-501



7 HM FRAME AT WALL INTERSECTION

SCALE 1 1/2" = 1'-0"
AS REFERENCED BY:

8 WALL SECTION 1

SCALE 1/2" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402

WALL PRIORITY LEGEND

PRIORITY	#	PLAN GRAPHIC	PARTITION TYPE
HIGHEST	1	4FW 4FW	4 HOUR - FIRE WALL
	2	3FW 3FW	3 HOUR - FIRE WALL
	3	2FW 2FW	2 HOUR - FIRE WALL
	4	4FB 4FB	4 HOUR - FIRE BARRIER
	5	3FB 3FB	3 HOUR - FIRE BARRIER
	6	2FB 2FB	2 HOUR - FIRE BARRIER
MEDIUM	7	1FB 1FB	1 HOUR - FIRE BARRIER
	8	1FP 1FP	1 HOUR - FIRE PARTITION
	9	1SB 1SB	1 HOUR - SMOKE BARRIER
	10	1BW 1BW	1 HOUR - BEARING WALL
	11	0FP 0FP	1/2 HOUR - FIRE PARTITION
	12	0SP 0SP	0 HOUR - SMOKE PARTITION (WALL TO LIMIT THE TRANSFER OF SMOKE; DOORS AND GLAZING FOR BORROWED LIGHTS ARE NOT RATED)
LOWEST	13		NON-RATED

NOTE: PARTITIONS WITH A HIGHER PRIORITY # TAKE PRECEDENCE OVER PARTITIONS WITH A LOWER PRIORITY # - SEE AE-501 FOR DETAILS

WALL TYPE NOTES

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5. SEE PROJECT MANUAL, 09 21 16 GYPSUM BOARD ASSEMBLIES, FOR BOARD MATERIALS AT SPECIFIC LOCATION THAT ARE REQUIRED TO BE DIFFERENT THAN THIS KEY NOTED MATERIAL.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
04 20 00 A -	CONCRETE MASONRY UNIT
07 84 00 A -	SEALANT - UL LISTED
07 84 00 B -	FIRE PROOF INSULATION - UL LISTED
07 90 05 A -	SEALANT [OLD #]
07 92 00 A1 -	SEALANT - BOTH SIDES
08 11 13 B -	STEEL DOOR FRAME
09 21 16 A1 -	FIRECODE GYPSUM BOARD - 5/8"
09 21 16 B6 -	TRACK
09 21 16 B6A -	TRACK - DEEP LEG
09 21 16 B -	METAL STUD FRAMING
09 21 16 C1 -	RESILIENT CHANNEL - 1/2"
09 21 16 G -	GYPSUM BOARD - 1/4"
09 21 16 K -	SOUND ATTENUATION BLANKET
09 21 16 L1 -	CONTROL JOINT
09 21 16 P -	REVEAL
09 21 16 T -	ALUMINUM PARTITION CLOSURE
09 21 16 V -	
09 51 00 A -	SUSPENDED ACOUSTICAL CEILING
09 51 00 B -	SUSPENDED CEILING GRID

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SHEET TITLE:
WALL SECTIONS, WALL TYPES, WALL DETAILS

SHEET NUMBER:
1-AE-501

DOOR SCHEDULE - NEW DOORS

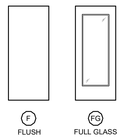
MARK	DOOR WIDTH	DOOR HEIGHT	Door Material	DOOR TYPE	FRAME DEPTH	FRAME TYPE	FRAME MATERIAL	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	FIRE RATING	HARDWARE GROUP	COMMENTS
N122B	3' - 0"	7' - 0"	WD	FG	5 3/4"	2	HM	6/ES-AE-601	5/ES-AE-601				
N123A	3' - 0"	7' - 0"	WD	F	6 3/8"	2	HM	4/ES-AE-601	3/ES-AE-601				
N123B	3' - 0"	7' - 0"	WD	F	5 7/8"	2	HM	4/ES-AE-601	3/ES-AE-601				
N124C	3' - 0"	7' - 0"	WD	FG	5 3/4"	2	HM	6/ES-AE-601	5/ES-AE-601				
N124D	3' - 0"	7' - 0"	WD	FG	5 3/4"	2	HM	6/ES-AE-601	5/ES-AE-601				

DOOR SCHEDULE - EXISTING DOORS

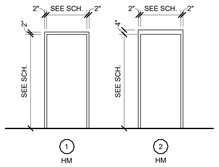
MARK	HARDWARE GROUP	COMMENTS
N100A-A		AT EACH LEAF: REMOVE DOOR STOPS. RE-CONNECT CLOSERS. PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N100A-B		AT EACH LEAF: REMOVE DOOR STOPS. RE-CONNECT CLOSERS. PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N100A-C		AT EACH LEAF: REMOVE DOOR STOPS. RE-CONNECT CLOSERS. PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N252		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N253		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N254		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N255		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N257		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N258		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N259		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.
N260		AT EACH LEAF: PROVIDE MAGNETIC HOLD-OPEN DEVICE CONNECTED TO BUILDING FIRE ALARM SYSTEM.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT
04 20 00 A2 -	CONCRETE MASONRY UNIT - BULLNOSE
04 20 00 D -	CONCRETE MASONRY LINTEL
04 20 00 K -	GROUT FILL
07 92 00 A1 -	SEALANT - BOTH SIDES
08 11 13 B3 -	RIGID INSULATION @ HARDWARE LOCATIONS
08 11 13 B -	STEEL DOOR FRAME
09 21 16 B -	METAL STUD FRAMING



1 DOOR TYPES
SCALE 1/4" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE



2 FRAME TYPES
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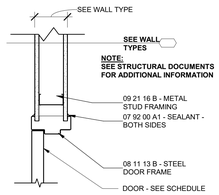
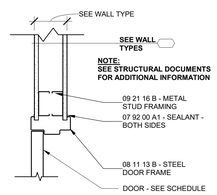
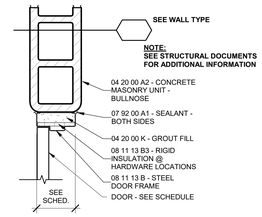
AS REFERENCED BY: DOOR SCHEDULE



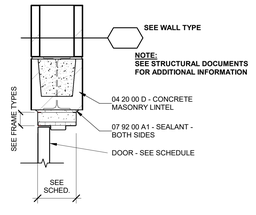
3 JAMB DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE



4 HEAD DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE



5 JAMB DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE



6 HEAD DETAIL
SCALE 1 1/2" = 1'-0"
AS REFERENCED BY: DOOR SCHEDULE

GLAZING LEGEND ????

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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
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MANAWA, WI 54949

MARK	DATE
ISSUED:	PRELIMINARY

PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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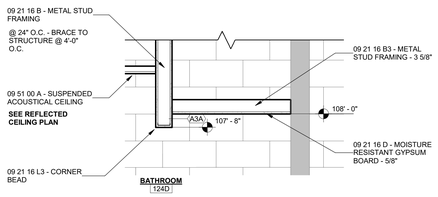
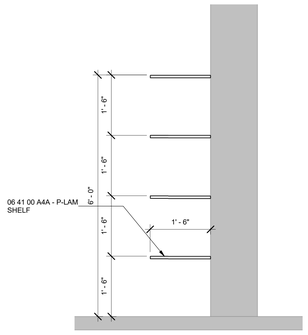
SHEET TITLE:
DOOR SCHEDULE

SHEET NUMBER:
1-AE-601

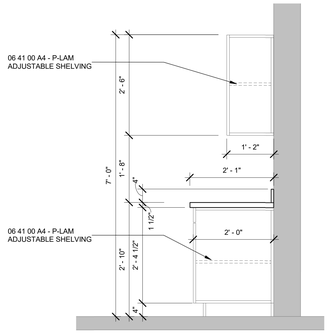
KEYNOTE LEGEND	
KEY NO.	KEYNOTE TEXT
06 41 00 A1 -	P-LAM BASE CABINET
06 41 00 A3 -	P-LAM TALL STORAGE CABINET
06 41 00 A4 -	P-LAM ADJUSTABLE SHELVING
06 41 00 A4A -	P-LAM SHELF
06 41 00 A5 -	P-LAM FINISH PANELS
06 41 00 F -	MATCHING FILLER
09 21 16 B3 -	METAL STUD FRAMING - 3 5/8"
09 21 16 B -	METAL STUD FRAMING
09 21 16 D -	MOISTURE RESISTANT GYPSUM BOARD - 5/8"
09 21 16 L3 -	CORNER BEAD
09 51 00 A -	SUSPENDED ACOUSTICAL CEILING
12 36 00 A -	P-LAM COUNTERTOP
22 30 00 A -	SINK
22 30 00 B -	LAVATORY
22 30 00 Q -	WATER CLOSET
22 30 00 R -	FAUCET



13 SHOWER DETAIL
SCALE 3/4" = 1'-0"
AS REFERENCED BY:3 / 1-AE-701



12 ROM 123B - STORAGE SHELVING
SCALE 3/4" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



11 RM. 123 - CASEWORK SECTION
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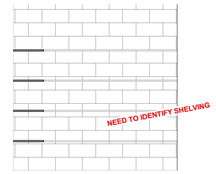
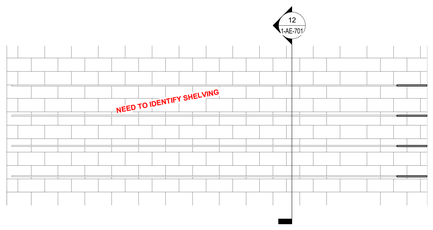
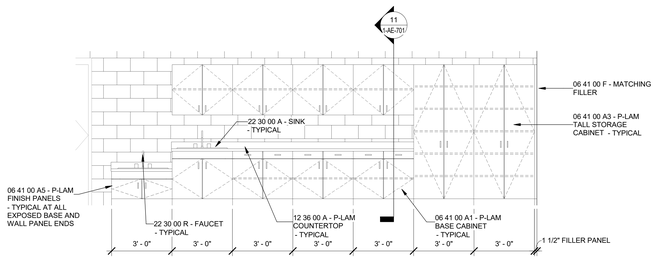
AS REFERENCED BY:1 / 1-AE-402



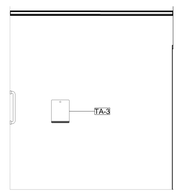
10 RM. 123B STORAGE E. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



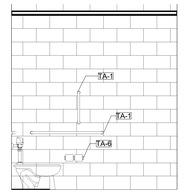
9 RM. 123B STORAGE - N. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



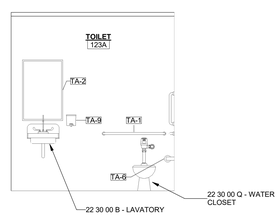
8 RM. 123 4YR KINDERGARTEN ACTIVITY - WEST WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



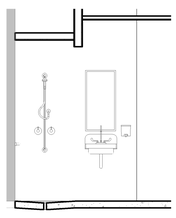
7 RM 123A TOILET - E. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



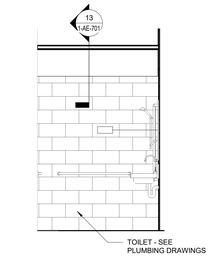
6 RM 123A TOILET - N. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



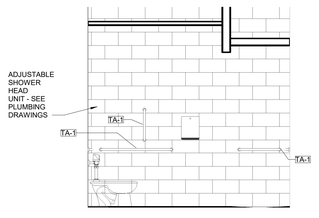
5 RM 123A TOILET - W. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



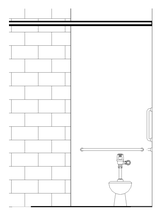
4 RM 124D BATHROOM - E. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



3 RM 124D BATHROOM - N. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



2 RM 124D BATHROOM - W. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402



1 RM 124D BATHROOM - S. WALL
SCALE 3/8" = 1'-0"
AS REFERENCED BY:1 / 1-AE-402

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CONSULTANT:

MANAWA

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PART 1 - MANAWA ELEMENTARY SCHOOL
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MANAWA, WI 54949

MARK	DATE
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PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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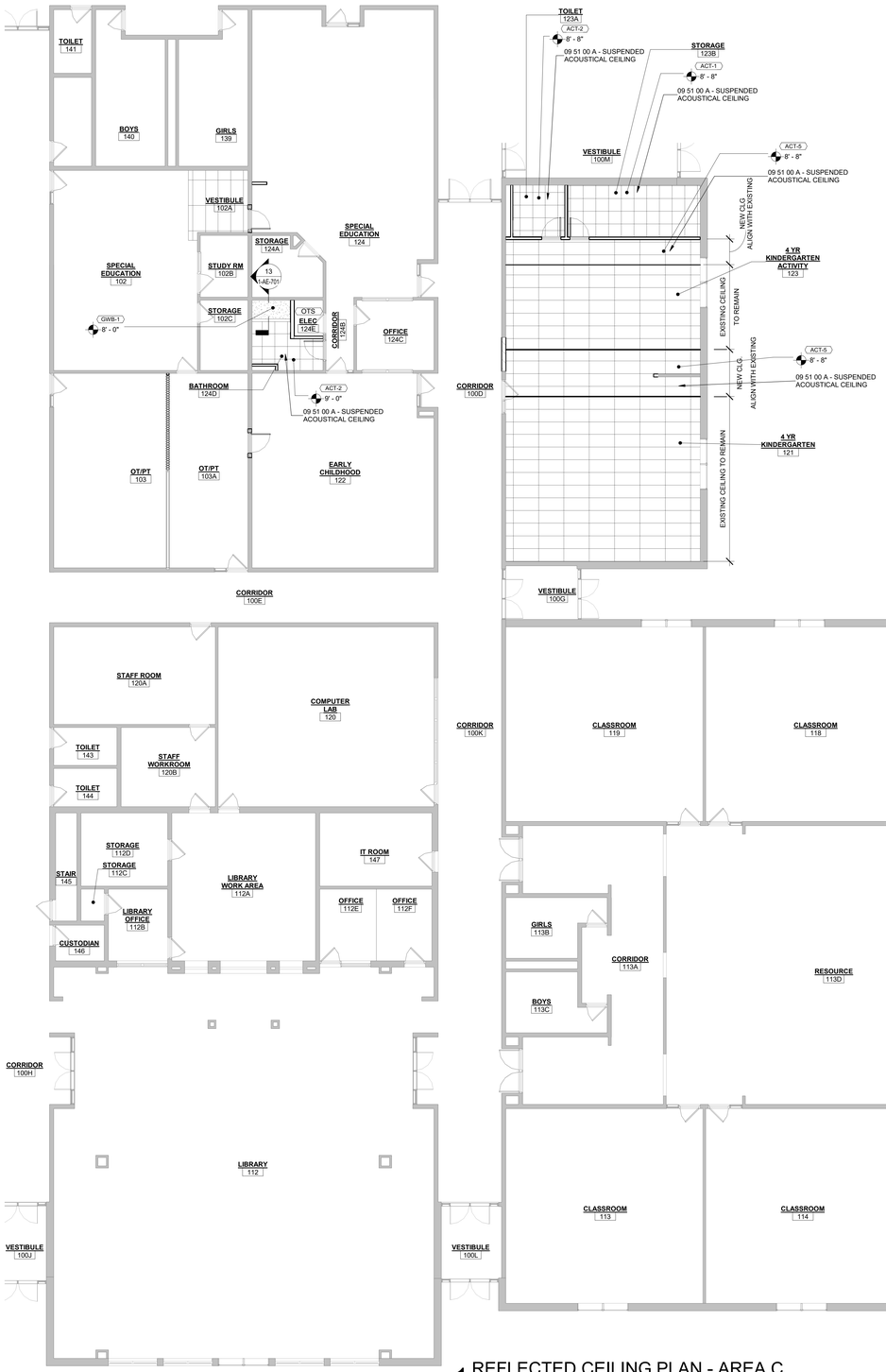
SHEET TITLE:
CASEWORK / INTERIOR ELEVATIONS

SHEET NUMBER:
1-AE-701



2 PARTIAL REFLECTED CEILING PLAN - AREA A
SCALE 1/8" = 1'-0"
AS REFERENCED BY:

1 REFLECTED CEILING PLAN - AREA C
SCALE 1/8" = 1'-0"

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REFLECTED CEILING PLAN KEY:

- ACT-1 09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x2 GRID AND TILE (SEE SPECIFICATIONS); USE AT-1 UNLESS OTHERWISE NOTED PER PLANS.
- ACT-2 09 51 00 C - SUSPENDED VINYL FACED GYPSUM BOARD CEILING, 2x2 STANDARD GRID WITH VINYL-COVERED GWB TILES
- ACT-5 09 51 00 A - SUSPENDED ACOUSTICAL CEILING, 2x4 GRID AND TILE (SEE SPECIFICATIONS)
- GWB-1 09 21 16 A - 5/8" FIRECODE GYPSUM BOARD ON 1/2" RESILIENT CHANNEL
- GWB-2 09 21 16 A - 5/8" FIRECODE GYPSUM GYPSUM BOARD SOFFIT, BULKHEAD OR CEILING
- GRID ALIGNMENT CHANGE
- CEILING LIGHT FIXTURES - GRAPHIC REPRESENTATION ONLY FOR GRID LAYOUT - SEE ELECTRICAL DRAWINGS FOR SPECIFIC FIXTURE INFORMATION
- 23 00 00 E - GRID HVAC SUPPLY DIFFUSER
- 23 00 00 E - GRID HVAC RETURN DIFFUSER
- (OTS) DENOTES AREA OPEN TO EXPOSED STRUCTURE ABOVE. REFER TO ROOM FINISH SCHEDULE FOR FINISHING OF EXPOSED STRUCTURE, DECKING, DUCTWORK, CONDUITS, PIPING, ETC.
- (ECTR) DENOTES EXISTING CEILING TO REMAIN. REFER TO MEP DRAWINGS FOR INFORMATION REGARDING REPLACEMENT OF CEILING MOUNTED FIXTURES.

REFER TO ELECTRICAL LIGHTING PLANS FOR SWITCHING, CIRCUITING, AND SPECIFIC FIXTURE TYPES

GENERAL CEILING PLAN NOTES

1. ALL CEILING HEIGHTS TAKEN ABOVE FINISH FLOOR, UNLESS OTHERWISE NOTED.
2. ALL CEILINGS PRESUMED TO BE 8'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. COORDINATE FIXTURE AND DIFFUSER LOCATIONS WITH M.E.P. DRAWINGS.
4. MECHANICAL AND ELECTRICAL DRAWINGS TAKE PRECEDENCE OVER REFLECTED CEILING PLANS FOR TYPE, QUANTITY AND LOCATION OF FIXTURES, DIFFUSERS AND GRILLES.
5. IN 2' X 2' ACT CEILINGS, WHERE TILE IS SHOWN TO BE LESS THAN 2", CUT FROM 2' x 4' TILE TO BE LONGER THAN 2 FT TO ELIMINATE SLIVERS, AND ELIMINATE THE 2' GRID SECTIONS.
6. PROVIDE HURRICANE CLIPS AT CEILING TILES AT RETURN AIR PLENUMS AND VESTIBULES (TYP.)

(#) KEY TO CEILING PLAN NOTES

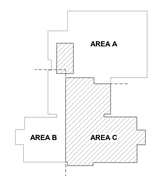
(1) RE-INSTALL REMOVED CEILING GRID AND PANELS TO GREATEST EXTENTS POSSIBLE. PROVIDE NEW MATCHING GRID AND PANELS AT DAMAGED GRID AND PANELS AND WHERE NECESSARY. MATCH ADJACENT GRID PATTERN.

26 50 00 CONTRACTOR TO RE-INSTALL REMOVED LIGHT FIXTURES.

KEYNOTE LEGEND

KEY NO.	KEYNOTE TEXT

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

TRUE NORTH
PLAN NORTH

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
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MANAWA, WI 54949

MARK	DATE
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SHEET TITLE:
REFLECTED CEILING PLANS

SHEET NUMBER:
1-AF-103

ROOM FINISH SCHEDULE

RM No.	ROOM NAME	FLOOR	BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING	CASEWORK CABINETS	CASEWORK COUNTERTOPS	REMARKS
100	VESTIBULE	EX-WT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100A	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	Install ADA protection for AED cabinet.
100B	COMMONS	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-WD/ACT 2X4	-	-	
100C	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100D	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	Relocate coat racks and add new as necessary
100E	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100F	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100G	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100H	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100J	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100K	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100L	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
100M	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
101	ELEM. SCHOOL OFFICE	EX-CPT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
101A	NURSE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
101B	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
101C	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
101D	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
101E	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
101F	WORKROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
101G	CORRIDOR	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
101H	PRINCIPAL OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
101J	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
102	SPECIAL EDUCATION	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
102A	VESTIBULE	VCT	VB	P	P	P	P	EX-ACT 2X4	-	-	
102B	STUDY RM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
102C	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
103	OT/PT	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
103A	OT/PT	EX-VCT	EX-VB	EX-P	P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
104	GUIDANCE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
104A	GUIDANCE OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
104B	CONFERENCE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
104C	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
104D	STORAGE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
105	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
105A	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
105B	GIRLS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
105C	BOYS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
105D	RESOURCE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-WD/ACT 2X4	EX	EX	
105E	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
105F	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
106	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
107	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
108	CLASSROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
108A	CONFERENCE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
108B	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
109	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
110	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
111	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
112	LIBRARY	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-WD/ACT 2X4	EX	EX	
112A	LIBRARY WORK AREA	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
112B	LIBRARY OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
112C	STORAGE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
112D	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
112E	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
112F	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
113	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
113A	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
113B	GIRLS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
113C	BOYS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
113D	RESOURCE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-WD/ACT 2X4	EX	EX	
113E	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
113F	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
114	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
115	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
116	CLASSROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
116A	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
116B	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
117	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
118	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
119	CLASSROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
120	COMPUTER LAB	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
120A	STAFF ROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
120B	STAFF WORKROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
121	4 YR KINDERGARTEN	VCT	VB	P	P	P	P	EX-ACT 2X4 / ACT 2X4	EX	EX	Provide additional duplex receptacles
122	EARLY CHILDHOOD	EX-VCT	EX-VB	EX-P	EX-P	EX-P	P	EX-ACT 2X4	EX	EX	Provide additional duplex receptacles
123	4 YR KINDERGARTEN ACTIVITY	VCT	VB	P	P	P	P	EX-ACT 2X4 / ACT 2X4	PL	PL	Relocate existing casework; Provide additional duplex receptacles
123A	TOILET	CT	CT	P	P	P	P	ACT 2x2 VG	-	-	
123B	STORAGE	VCT	VB	P	P	P	P	ACT 2X4	PL	PL	
124	SPECIAL EDUCATION	EX-VCT/CPT	EX-VB	EX-P	EX-P	EX-P	P	EX-ACT 2X4	PL	PL	
124A	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	P	EX-ACT 2X4	EX	EX	
124B	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	P	EX-ACT 2X4	-	-	
124C	OFFICE	CPT	VB	P	P	P	P	EX-ACT 2X4	-	-	

ROOM FINISH SCHEDULE

RM No.	ROOM NAME	FLOOR	BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING	CASEWORK CABINETS	CASEWORK COUNTERTOPS	REMARKS
124D	BATHROOM	CT	CT	P	P	P	P	ACT 2x2 VG	-	-	
124E	ELEC	SC	VB	EX-P	EX-P	P	P	OTSA			
124F	SHOWER	CT	CT	CT	CT	-	CT	GWB	-	-	
125	BAND	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
125A	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
125B	PRACTICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4			
125C	OFFICE	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4			
126	MUSIC	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
126A	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
126B	PRACTICE	VCT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
126C	OFFICE	VCT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
126D	PRACTICE	VCT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
126E	PRACTICE	VCT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
127	ART	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
127A	ART OFFICE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
127B	ART STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
127C	KILN	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
128	CLASSROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
128A	ACTIVITY	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
129A	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
129B	STORAGE	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
129C	STORAGE	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
130	GYMNASIUM	EX-WD	EX-RB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
130A	STORAGE	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
130B	CORRIDOR	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130C	BOYS LOCKER ROOM	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130D	BOYS SHOWERS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-GYP	-	-	
130E	BOYS LOCKER RM OFFICE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130F	CORRIDOR	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130G	BOYS LOCKER RM TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130H	FITNESS ROOM	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
130J	CORRIDOR	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130K	GIRLS LOCKER ROOM	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130L	GIRLS SHOWERS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-GYP	-	-	
130M	GIRLS LOCKER RM OFFICE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130N	CORRIDOR	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
130P	GIRLS LOCKER ROOM TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
131	BOARD ROOM	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
133	DISTRICT OFFICE RECEPTION	EX-CPT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	
133A	OFFICE	EX-CPT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
133B	CORRIDOR	EX-CPT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
133C	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	Replace AHU-7 indoor fan coil unit, DX condensing unit and associated duct electric coils.
133D	VAULT	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
133E	BUSINESS MANAGER	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
133F	DISTRICT ADMINISTRATOR	CPT	VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
133G	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
134	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
134A	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
135	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
135A	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
135B	CUSTODIAN	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
136	CORRIDOR	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
136A	VESTIBULE	EX-RT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
136B	ELECTRICAL	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	Replace generator and relocate away from building switchboard; Emergency and standby power are not segregated; Add surge suppression to emergency system.
137	KITCHEN	EX-QT	EX-QT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
137A	STORAGE	EX-QT	EX-QT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
138	RECEIVING	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
138A	STORAGE	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
138B	STAIRS	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
139	GIRLS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
140	BOYS	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
141	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
142	STORAGE	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
143	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
144	TOILET	EX-CT	EX-CT	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X2 VG	-	-	
145	STAIR	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
146	CUSTODIAN	EX-SC	EX-VB	EX-P	EX-P	EX-P	EX-P	EXP	-	-	
147	IT ROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	-	-	
1002	ENTIRE BUILDING	--	-	-	-	-	-	-	-	-	Repair damaged drywall
1003	ENTIRE BUILDING	--	-	-	-	-	-	-	-	-	Replace deteriorated or missing sealant
WT	CLASSROOM	EX-VCT	EX-VB	EX-P	EX-P	EX-P	EX-P	EX-ACT 2X4	EX	EX	Paint exterior doors

GENERAL FINISH NOTES

A. ROOMS NOT SHOWN ON SCHEDULE DO NOT RECEIVE ANY FINISH WORK.

B. IN ROOMS AND AREAS WHERE WORK OCCURS BUT WITH OTHERWISE NO FINISHES INDICATED, PATCH OR FINISH AREA OF WORK TO MATCH ADJACENT SURFACES

C. SEE REFLECTED CEILING PLANS FOR CEILING TREATMENTS, SOFFIT COLORS, ETC.

D. SEE INTERIOR ELEVATIONS FOR WALL ACCENTS, ACOUSTIC PANELS, ETC.

E. SEE FLOOR PATTERN PLANS FOR FLOOR ACCENTS.

REMARKS KEY

1 ABCDE

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2019-05-03

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CONSULTANT:

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

MARK	DATE
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PROJECT NO: 18268
CAD DWG FILE:
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SHEET TITLE: ROOM FINISH SCHEDULE

SHEET NUMBER: 1-AF-601

1 FIRST FLOOR PATTERN PLAN - AREA A

SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
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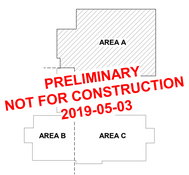
5/3/2019 2:45:52 PM BIM 360://Manawa Schools/18268 ES-Arch-18 Central.rvt

FLOOR PATTERN PLAN GENERAL NOTES

1. NOT ALL NEW FLOOR FINISHES ARE SHOWN.
2. REFER TO ROOM FINISH SCHEDULE FOR NEW FINISHES.



KEY PLAN

TRUE NORTH PLAN NORTH

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SHEET TITLE:
FLOOR PATTERN PLAN - AREA A

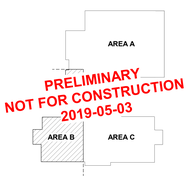
SHEET NUMBER:
1-AF-801

1 FIRST FLOOR PATTERN PLAN - AREA B
SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
NOT FOR CONSTRUCTION

FLOOR PATTERN PLAN GENERAL NOTES

1. NOT ALL NEW FLOOR FINISHES ARE SHOWN.
2. REFER TO ROOM FINISH SCHEDULE FOR NEW FINISHES.



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KEY PLAN

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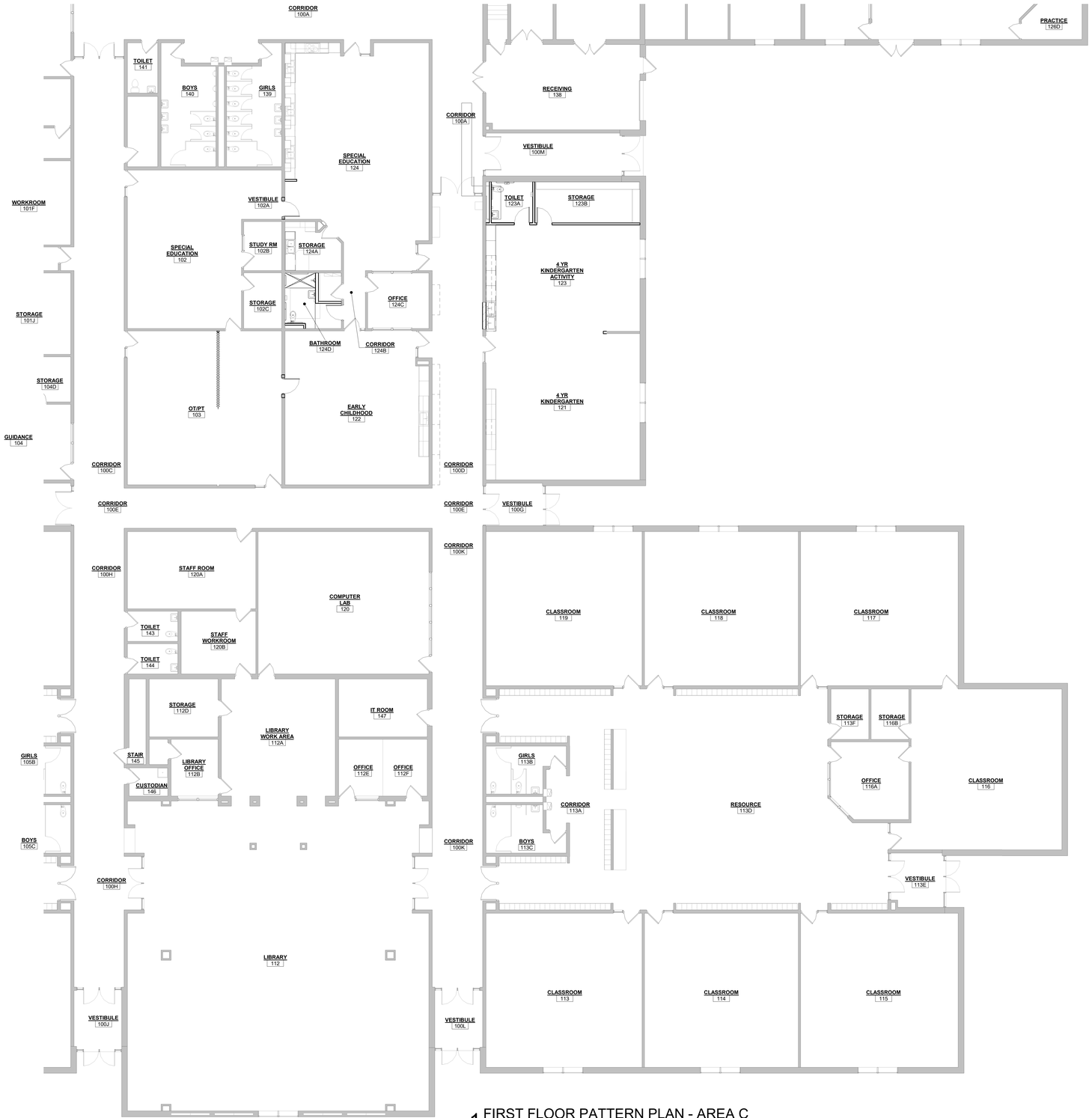
SHEET TITLE:
FLOOR PATTERN PLAN - AREA B

SHEET NUMBER:
1-AF-802



1 FIRST FLOOR PATTERN PLAN - AREA C

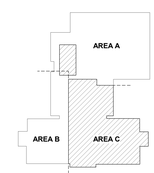
SCALE 1/8" = 1'-0"
AS REFERENCED BY:

PRELIMINARY
NOT FOR CONSTRUCTION

FLOOR PATTERN PLAN GENERAL NOTES

1. NOT ALL NEW FLOOR FINISHES ARE SHOWN.
2. REFER TO ROOM FINISH SCHEDULE FOR NEW FINISHES.

PRELIMINARY
NOT FOR CONSTRUCTION
2019-05-03



KEY PLAN

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CONSULTANT:

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MANAWA, WI 54949

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SHEET TITLE:
FLOOR PATTERN PLAN - AREA C

SHEET NUMBER:
1-AF-803

COMcheck Software Version 4.1.1.0

Envelope Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	
Location:	Manawa, Wisconsin
Climate Zone:	6a
Project Type:	Addition
Vertical Glazing / Wall Area:	25%
Performance Sim. Specs:	EnergyPlus 8.1.0.009 (EPW: USA_WI_Green.Bay-Austin.Straubel.Intl.AP.726450_TMY3.epw)

Construction Site:

Owner/Agent:

Designer/Contractor:

Building Area	Floor Area
1-School/University : Nonresidential	5550

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Insulation Entirely Above Deck, [Bldg. Use 1 - School/University]	4850	---	30.0	0.032	0.032
Floor 1: Slab-On-Grade:Unheated, Vertical 4 ft., [Bldg. Use 1 - School/University] (c)	226	---	10.0	0.480	0.510
NORTH					
Exterior Wall 1: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	2258	0.0	21.0	0.042	0.049
Window 1: Metal Frame:Fixed, Perf. Specs.: Product ID 6646, SHGC 0.26, VT 0.35, [Bldg. Use 1 - School/University] (b)	604	---	---	0.360	0.420
Door 1: Glass (> 50% glazing):Metal Frame, Entrance Door, Perf. Specs.: Product ID 6647, SHGC 0.25, VT 0.30, [Bldg. Use 1 - School/University] (b)	210	---	---	0.430	0.770
EAST					
Exterior Wall 2: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	327	0.0	21.0	0.042	0.049
SOUTH					
Exterior Wall 4: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	270	0.0	21.0	0.042	0.049
WEST					
Exterior Wall 3: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	409	0.0	21.0	0.042	0.049
Window 2: Metal Frame:Fixed, Perf. Specs.: Product ID 6646, SHGC 0.26, VT 0.35, [Bldg. Use 1 - School/University] (b)	12	---	---	0.360	0.420

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.

Envelope PASSES: Design 2% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title	Signature	Date

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 5.4.3.1.1, 5.7 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.3 [FO1][2]	Below-grade wall insulation R-value.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.3.5 [FO3][2]	Slab edge insulation R-value.	R-____ ☐ Unheated ☐ Heated	R-____ ☐ Unheated ☐ Heated	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [FO4][2]	Slab edge insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.5 [FO5][2]	Slab edge insulation depth/length.	____ ft	____ ft	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.7 [FO6][1]	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.7.3 [FO7][1]	Insulation in contact with the ground has <=0.3% water absorption rate per ASTM C272.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.4.1.5 [FO11][3]	Bottom surface of floor structures incorporating radiant heating insulated to >=R-3.5.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Envelope Assemblies table for values.*

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.2 [FR1][3]	Factory-built and site-assembled fenestration and doors are labeled or certified as meeting air leakage requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.4.3.4 [FR4][3]	Vestibules are installed where building entrances separate conditioned space from the exterior, and meet exterior envelope requirements. Doors have self-closing devices, and are >=7 ft apart (>= 16 ft apart for adjoinging floor area >= 40000 sq.ft.). Vestibule floor area <=7 50 sq.ft. or 2 percent of the adjoining conditioned floor area.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.4.3a [FR8][1]	Vertical fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.3b [FR9][1]	Skylight fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.1 [FR10][1]	Vertical fenestration SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.2 [FR11][1]	Skylight SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.2.1, 5.8.2.3, 5.8.2.4, 5.8.2.5 [FR12][2]	Fenestration products rated (U-factor, SHGC, and VT) in accordance with NFRC or energy code defaults are used.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.2.2 [FR13][1]	Fenestration and door products are labeled, or a signed and dated certificate listing the U-factor, SHGC, VT, and air leakage rate has been provided by the manufacturer.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.6 [FR14][2]	U-factor of opaque doors associated with the building thermal envelope meets requirements.	U-____ ☐ Swinging ☐ Nonswinging	U-____ ☐ Swinging ☐ Nonswinging	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.4.3.1 [FR15][1]	Continuous air barrier is wrapped, sealed, caulked, gasketed, and/or taped in an approved manner, except in semiheated spaces in climate zones 1-6.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** SDS 363.0401(1)(d)

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.1 [IN2][1]	Roof R-value. For some ceiling systems, verification may need to occur during Framing Inspection.	R-_____ ☐ Above deck ☐ Metal ☐ Attic	R-_____ ☐ Above deck ☐ Metal ☐ Attic	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2, 5.8.1.3 [IN3][1]	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the ceiling slope is <= 3:12.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.2 [IN6][1]	Above-grade wall insulation R-value.	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN7][1]	Above-grade wall insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.4 [IN8][2]	Floor insulation R-value.	R-_____ ☐ Mass ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.1 [IN10][2]	Building envelope insulation is labeled with R-value or insulation certificate has been provided listing R-value and other relevant data.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.9 [IN18][2]	Building envelope insulation extends over the full area of the component at the proposed rated R or U value.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.4 [IN11][2]	Eaves are baffled to deflect air to above the insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.5 [IN12][2]	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.6 [IN13][2]	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.7.1 [IN15][2]	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.8.1.7.2 [IN16][2]	Foundation vents do not interfere with insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.8 [IN17][3]	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [FI1][1]	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

COMcheck Software Version 4.1.1.0

Envelope Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	
Location:	Manawa, Wisconsin
Climate Zone:	6a
Project Type:	Addition
Vertical Glazing / Wall Area:	45%
Performance Sim. Specs:	EnergyPlus 8.1.0.009 (EPW: USA_WI_Green.Bay-Austin.Straubel.Intl.AP.726450_TMY3.epw)

Construction Site:

Owner/Agent:

Designer/Contractor:

Building Area	Floor Area
1-School/University : Nonresidential	5673

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Insulation Entirely Above Deck, [Bldg. Use 1 - School/University]	4998	---	30.0	0.032	0.032
Floor 1: Slab-On-Grade:Heated, Vertical 4 ft., [Bldg. Use 1 - School/University] (c)	226	---	10.0	0.780	0.688
NORTH					
Exterior Wall 1: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	1115	0.0	21.0	0.042	0.049
Window 1: Metal Frame:Fixed, Perf. Specs.: Product ID 6645, SHGC 0.26, VT 0.20, [Bldg. Use 1 - School/University] (b)	335	---	---	0.360	0.420
Door 1: Insulated Metal, Swinging, [Bldg. Use 1 - School/University]	42	---	---	0.200	0.500
EAST					
Exterior Wall 4: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	150	0.0	21.0	0.042	0.049
SOUTH					
Exterior Wall 3: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	1781	0.0	21.0	0.042	0.049
Window 3: Metal Frame:Fixed, Perf. Specs.: Product ID 6645, SHGC 0.26, VT 0.20, [Bldg. Use 1 - School/University] (b)	746	---	---	0.360	0.420
Door 2: Glass (> 50% glazing):Metal Frame, Entrance Door, Perf. Specs.: Product ID 6647, SHGC 0.25, VT 0.30, [Bldg. Use 1 - School/University] (b)	21	---	---	0.480	0.770
WEST					
Exterior Wall 2: Steel-Framed, 16" o.c., [Bldg. Use 1 - School/University]	2503	0.0	21.0	0.042	0.049
Window 2: Metal Frame:Fixed, Perf. Specs.: Product ID 6645, SHGC 0.24, VT 0.20, [Bldg. Use 1 - School/University] (b)	1320	---	---	0.360	0.420
Door 3: Glass (> 50% glazing):Metal Frame, Entrance Door, Perf.	84	---	---	0.480	0.770

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Specs.: Product ID 6647, SHGC 0.25, VT 0.30, [Bldg. Use 1 - School/University] (b)					

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.
(c) Slab-On-Grade proposed and budget U-factors shown in table are F-factors.

Envelope PASSES: Design 1% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 5.4.3.1.1, 5.7 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.3 [FO1][2]	Below-grade wall insulation R-value.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.3.5 [FO3][2]	Slab edge insulation R-value.	R-____ ☐ Unheated ☐ Heated	R-____ ☐ Unheated ☐ Heated	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [FO4][2]	Slab edge insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.5 [FO5][2]	Slab edge insulation depth/length.	____ ft	____ ft	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.7 [FO6][1]	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.7.3 [FO7][1]	Insulation in contact with the ground has <=0.3% water absorption rate per ASTM C272.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.4.1.5 [FO11][3]	Bottom surface of floor structures incorporating radiant heating insulated to >=R-3.5.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Envelope Assemblies table for values.*

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.2 [FR1][3]	Factory-built and site-assembled fenestration and doors are labeled or certified as meeting air leakage requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.4.3.4 [FR4][3]	Vestibules are installed where building entrances separate conditioned space from the exterior, and meet exterior envelope requirements. Doors have self-closing devices, and are >=7 ft apart (>= 16 ft apart for adjoinging floor area >= 40000 sq.ft.). Vestibule floor area <=7 50 sq.ft. or 2 percent of the adjoining conditioned floor area.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.4.3a [FR8][1]	Vertical fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.3b [FR9][1]	Skylight fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.1 [FR10][1]	Vertical fenestration SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.2 [FR11][1]	Skylight SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.2.1, 5.8.2.3, 5.8.2.4, 5.8.2.5 [FR12][2]	Fenestration products rated (U-factor, SHGC, and VT) in accordance with NFRC or energy code defaults are used.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.2.2 [FR13][1]	Fenestration and door products are labeled, or a signed and dated certificate listing the U-factor, SHGC, VT, and air leakage rate has been provided by the manufacturer.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.6 [FR14][2]	U-factor of opaque doors associated with the building thermal envelope meets requirements.	U-____ ☐ Swinging ☐ Nonswinging	U-____ ☐ Swinging ☐ Nonswinging	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.4.3.1 [FR15][1]	Continuous air barrier is wrapped, sealed, caulked, gasketed, and/or taped in an approved manner, except in semiheated spaces in climate zones 1-6.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** Spray Foam Insulation

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. **Location on plans/spec:** SDS 363.0401(1)(d)

Additional Comments/Assumptions:

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.1 [IN2][1]	Roof R-value. For some ceiling systems, verification may need to occur during Framing Inspection.	R-_____ ☐ Above deck ☐ Metal ☐ Attic	R-_____ ☐ Above deck ☐ Metal ☐ Attic	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2, 5.8.1.3 [IN3][1]	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the ceiling slope is <= 3:12.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.2 [IN6][1]	Above-grade wall insulation R-value.	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN7][1]	Above-grade wall insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.3.4 [IN8][2]	Floor insulation R-value.	R-_____ ☐ Mass ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.1 [IN10][2]	Building envelope insulation is labeled with R-value or insulation certificate has been provided listing R-value and other relevant data.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.9 [IN18][2]	Building envelope insulation extends over the full area of the component at the proposed rated R or U value.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.4 [IN11][2]	Eaves are baffled to deflect air to above the insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.5 [IN12][2]	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.6 [IN13][2]	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.7.1 [IN15][2]	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.8.1.7.2 [IN16][2]	Foundation vents do not interfere with insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.8 [IN17][3]	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [FI1][1]	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 00 31 00 - Available Project Information: Existing building survey conducted by Owner; information about known hazardous materials.

B. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.

C. Section 01 10 00 - Summary: Description of items to be removed by Owner.

D. Section 01 10 00 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

E. Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS: Site fences, security, protective barriers, and waste removal.

F. Section 01 57 13 - TEMPORARY EROSION AND SEDIMENT CONTROL.

G. Section 01 60 00 - PRODUCT REQUIREMENTS: Handling and storage of items removed for salvage and relocation.

H. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

I. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL: Limitations on disposal of removed materials; requirements for recycling.

J. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.

K. Section 31 22 00 - Grading: Topsoil removal.

L. Section 31 23 23 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Provide a copy of the engineering survey performed by a competent person prior to the start of demolition per OSHA 1926.850.
   3. Identify demolition firm and submit qualifications.

C. Shoring and Bracing: Submit calculations, plans, details, etc. sealed by a Professional Engineer licensed in the State in which the project is located.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section.

1.06 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.07 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.
   1. Minimum of five years of documented experience.

1.08 SCHEDULING

A. Schedule work under the provisions of Section 01 32 16.

B. Schedule building demolition activities to precede site excavation work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: As specified in Section 31 23 23 - Fill.

PART 3 EXECUTION

3.01 SCOPE

A. Remove all other paving and curbs as indicated on drawings.

B. Remove concrete slabs on grade as indicated on drawings.

C. Remove other items indicated, for salvage, relocation, and recycling.

D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 22 00.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 01 70 00.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   5. Provide, erect, and maintain temporary barriers and security devices.
   6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   8. Do not close or obstruct roadways or sidewalks without permit.
   9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

F. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.

G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

H. If hazardous materials are discovered during removal operations, stop work and notify Hoffman and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Comply with requirements of Section 01 74 19 - Waste Management.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Hoffman before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction indicated on drawings in locations indicated on drawings.
   2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Install temporary ventilation systems to permit continued occupancy. Clean filters of air intake system regularly.

E. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

F. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. See Section 01 10 00 for other limitations on outages and required notifications.
4. Verify that abandoned services serve only abandoned facilities before removal.
5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

G. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

H. Lamps:
1. Remove fluorescent, HID and other lamps containing mercury intact from fixtures in demolition areas.
2. Properly dispose of lamps legally away from the site according to requirements of EPA and other state and local authorities.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Do not burn or bury materials on site.

C. Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.

D. Leave site in clean condition, ready for subsequent work.

E. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 20 00 - Concrete Reinforcing.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE.

C. Section 05 12 00 - Structural Steel Framing: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.

B. ACI 301 - Specifications for Structural Concrete.

C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

D. ACI 347R - Guide to Formwork for Concrete.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

G. PS 1 - Structural Plywood.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheet for form release agents .

1.05 QUALITY ASSURANCE

A. The design, construction, and safety of all formwork shall be the responsibility of the Contractor. All forms, shores, backshores, falsework, bracing and any other temporary supports shall be engineered to support all loads imposed including the wet weight of concrete, construction equipment, live loads, lateral loads due to wind and wet concrete imbalances.

B. The Contractor is also solely responsible for determining when temporary supports, shores, and other bracing may be safely removed.

C. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in Wisconsin.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Chamfer outside corners of beams, joists, columns, and walls.

D. Comply with applicable State and local codes with respect to design, fabrication, erection, and removal of formwork.

E. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.

F. Forms for Exposed Finish Concrete:
   1. Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, or other acceptable panel-type materials. Provide continuous, straight, smooth, exposed surfaces.
   2. Furnish in largest practicable sizes to minimize the number of joints.
   3. Provide form material with sufficient thickness to withstand pressure of newly placed concrete, restricting bow and deflection to specified tolerances.

G. Forms for Unexposed Finish Concrete:
   1. Form concrete surfaces that are not to be exposed in finished structure with plywood, lumber, metal or other material at contractor's option.

2.02 WOOD FORM MATERIALS

A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.

2.03 REMOVABLE PREFABRICATED FORMS

A. Preformed Steel Forms: Minimum 16 gage, 0.0598 inch thick, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

B. Preformed Aluminum Forms: ASTM B221 (ASTM B221M), 6061-T6 alloy, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

C. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes indicated.

2.04 FORMWORK ACCESSORIES

A. Form Ties: Removable type, galvanized metal, fixed length, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
   1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
   2. Do not use materials containing diesel oil or petroleum-based compounds.
   3. VOC Content: None; water-based.
   4. Products:
      a. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#sle.
      b. W. R. Meadows, Inc; Duogard II (water-based): www.wrmeadows.com/#sle.
      c. Dayton Superior Corporation; Farm Fresh XL (water based).
      d. TK Products; TK - Gold WB.
      e. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Filler Strips for Chamfered Corners: Wood strip type; 3/4 x 3/4 inch size; maximum possible lengths.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

E. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 12 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Provide top forms for inclined surfaces where slope is too steep to place concrete with side forms only.

F. Obtain approval before framing openings in structural members that are not indicated on drawings.

G. Coordinate this section with other sections of work that require attachment of components to formwork.

H. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Hoffman before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.
   1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
   2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

B. Camber slabs and beams in accordance with ACI 301.

3.08 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

SECTION 03 20 00
CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Reinforcing steel for concrete masonry.

C. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE.

C. Section 03 41 13 - Precast Concrete Hollow Core Planks: Reinforcing bars for anchoring precast decking.

D. Section 04 20 00 - Unit Masonry: Reinforcement for masonry.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete.

B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

C. ACI SP-66 - ACI Detailing Manual.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

F. CRSI (DA4) - Manual of Standard Practice.

G. CRSI (P1) - Placing Reinforcing Bars.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's product data and installation instructions.
   1. Adhesives and grouting materials.

C. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with CRSI (DA4), CRSI (P1), ACI 301, ACI SP-66, and ACI 318.

B. Provide Hoffman with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

C. Adjustments: Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If bars are moved more than one bar diameter, or in excess of specified tolerances, the resulting arrangement of bars shall require the Engineer's approval. Minimum spacings shall not be decreased, and the required number of bars shall be placed.
   1. Bars moved to permit access for cleanup operations shall be properly replaced and secured before the start of concrete placement.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver steel reinforcement to the jobsite, sort, and cover in a manner which will ensue that no damage shall occur to it from moisture, dirt, grease, oil, or other causes which might impair bond with concrete.

B. Deliver steel reinforcement properly tagged and identified for checking, sorting, and placing. Sizes and marks shall correspond to placing Shop Drawings and schedules. Tags and markings shall be water-resistant and shall not be removed until steel reinforcement is placed in position.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Deformed billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement (WWR): Plain type; ASTM A1064/A1064M.
   1. Flat Sheets, coiled rolls when approved in writing by the Engineer.
   2. WWR Style: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 ACCESSORY MATERIALS

A. Bar/Anchor Grouting: Use one of the following depending on conditions.
   1. Epoxy Adhesive: Two component, 100% solid epoxy-based adhesive meeting ASTM C 881, Types I, II, IV, and V, Grade 3, Classes B and C.
      a. Uses: Anchor grouting and rebar doweling in temperatures above 40 degrees F.
      b. Product: Similar to ET-HP adhesive as manufactured by Simpson Strong-Tie.
   2. Acrylic Adhesive: Two component, acrylic based adhesive meeting ASTM C 881, Types I and IV, Grade 3, Classes A, B, and C.
      a. Uses: Anchor grouting and rebar doweling in temperatures to 0 degrees F.
      b. Product: Similar to AT adhesive as manufactured by Simpson Strong Tie.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice, ACI SP-66 - ACI Detailing Manual, and ACI 318.

B. Welding of reinforcement is not permitted.

C. Fabricate bars, cut to length, and bent cold. Heating of bars for bending or straightening will not be permitted.

D. Locate reinforcing splices not indicated on drawings at point of minimum stress.
   1. Review locations of splices with Hoffman.

PART 3 EXECUTION

3.01 GENERAL

A. Place reinforcement in accordance with drawings, approved shop drawings and requirements of ACI and CRSI.

B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.02 REINFORCING BARS

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale.

B. Place, support and secure reinforcement against displacement. Do not deviate from required position.

C. Do not displace or damage vapor barrier.

D. Accommodate placement of formed openings.

E. Do not bend reinforcing after being partially embedded in hardened concrete, unless approved in writing by the Engineer.

F. Maintain concrete cover around reinforcing as follows:
   1. Column Ties:
      a. Exterior: 2 inch.
      b. Interior: 1 1/2 inch.
   2. Column Piers: 2 inch.
   3. Walls (exposed to weather or backfill): 2 inch.
   4. Footings and Concrete Formed Against Earth: 3 inch.
   5. Slabs on Fill: 2 inch.

G. Comply with applicable code for concrete cover over reinforcement.

H. Reinforcement Supports:
   1. On ground use metal or plastic bar chairs and spacers.
   2. Over formwork use metal, plastic or other specified bar chairs and spacers.

I. Reinforcement Bar Splices:
   1. Locate splices where indicated on drawings, on shop drawings, or where approved by the Engineer in advance of installation.
   2. Lap concrete reinforcement as noted on drawings:
      a. All splice lengths should be Class B unless otherwise noted on drawings.
      b. Splices of alternate bars shall be staggered a minimum clear offset of 2 feet between splices.
   3. Lap masonry reinforcement:
      a. Minimum 30 bar diameters for bars in compression members.
      b. Minimum 48 bar diameters for bars in flexural or tension members.
      c. Minimum 48 bar diameters for bond beams and lintels.

3.03 WELDED WIRE FABRIC

A. Lap adjoining pieces at least one full mesh and lace splices with wire.

B. Offset laps of adjoining widths to prevent continuous laps in either direction.

C. Do not continue mesh through expansion joints or other locations noted on drawings.

D. Support fabric off grade on permanent forms before placing concrete.

E. Fabric Depth:
   1. Slabs-on-Grade: Locate fabric not less than 1/3 nor more than 2/3 thickness of slabs, as measured from the top surface downward, unless otherwise noted on drawings.

3.04 TOLERANCES

A. Bar placement tolerances should meet the following:
   1. Between Bars: 1/4" (+/-).
   2. Vertical Bars - 8" Deep or Less: 1/4" (+/-).
   3. Vertical Bars - Members 8" to 24" Deep: 1/2" (+/-).
   4. Vertical Bars - Members Over 24" Deep: 1" (+/-).

3.05 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 40 00, or Hoffman field personnel will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete building frame members.

B. Topping for precast concrete hollow core plank.

C. Concrete for steel stair treads and landings.

D. Floors and slabs on grade.

E. Concrete foundation walls and footings.

F. Joint devices associated with concrete work.

G. Miscellaneous concrete elements, including equipment pads.

H. Concrete curing.

I. Concrete floor grinding when required.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Code-Required Special Inspections.

B. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.

C. Section 03 20 00 - Concrete Reinforcing.

D. Section 03 41 13 - Precast Concrete Hollow Core Planks: Precast decking.

E. Section 07 13 00 - Sheet Waterproofing: Waterproofing membrane.

F. Section 07 14 00 - Fluid-Applied Waterproofing: Waterproofing membrane.

G. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

H. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

C. ACI 301 - Specifications for Structural Concrete.

D. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

F. ACI 305R - Hot Weather Concreting.

G. ACI 306R - Cold Weather Concreting.

H. ACI 308R - Guide to Curing Concrete.

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

J. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

K. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.

N. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens).

O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.

P. ASTM C150/C150M - Standard Specification for Portland Cement.

Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

R. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete.

S. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.

U. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

W. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.

X. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

Y. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

Z. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.

AA. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.

AB. ASTM E1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers (Metric).

AC. COE CRD-C 513 - COE Specifications for Rubber Waterstops.

AD. COE CRD-C 572 - Corps of Engineers Specifications for Polyvinylchloride Waterstop.

AE. NSF 61 - Drinking Water System Components - Health Effects.

AF. NSF 372 - Drinking Water System Components - Lead Content.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section.

B. Attendance:
   1. Hoffman Field Project Manager (FPM).
   2. Independent Testing Laboratory (ITL) retained by Hoffman.
   3. Structural Engineer -of-Record (SER) (optional).
   4. Representatives of the concrete contractor including project foreman.
   5. Representative of the concrete supplier.
   6. M-E-P contractors (optional).
   7. Representative of product manufacturer (optional).
   8. Special Inspection Agency when required for code-required special inspections.

C. Review the following as a minimum:
   1. Project schedule.
   2. Forming, placement, vibration, finishing, and curing of concrete.
   3. Concrete mix designs.
   4. Placement, inspection and protection of vapor retarder and seams.
   5. Loading limitation and protection of precast and steel decks.
   6. Field and laboratory procedures including defective concrete specifications.
   7. Governing regulations and requirements for safety and fall protection.
   8. Placement of reinforcement and locations of joints in slabs.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Submit a minimum of 7 days prior to the start of work in this section the following:
   1. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
      a. Curing and sealing compounds.
      b. Water stops.
      c. Chemical admixtures.
      d. Accessory materials.
   2. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
   3. Mix Design: Submit proposed concrete mix design.
      a. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
      b. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.

C. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Acquire cement and aggregate from same source for entire project.

C. Follow recommendations of ACI 305R when concreting during hot weather.

D. Follow recommendations of ACI 306R when concreting during cold weather.

E. For slabs required to include moisture vapor reduction admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement.

F. Batch Tickets: For each load of concrete submit (2) legible copies of the batch ticket to the contractor. Conform to ASTM C94 for batch ticket requirements. Include the following as a minimum:
   1. Serial number of ticket and name of supplier.
   2. Date, truck number, name of purchaser, and job designation.
   3. Specification class or designation of the concrete.
   4. Amount of concrete in yards and time loaded or first mixing of cement and aggregates.
   5. Water added by receiver of concrete and initials.
   6. Type, brand and amount of cement and admixtures.
   7. Weights of fine and coarse aggregates
   8. Location where placed in structure and time of placement.
   9. Information required to calculate the total mixing water added by the producer. Total mixing water includes free water on the aggregates, water or ice batched at plant, and water added by truck operator at site.

G. Test Reports: Submit report for each test or series of tests specified.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

C. Slabs with Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover the cost of flooring failures due to moisture migration from slabs for ten years.
   1. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.

D. Moisture Emission Reducing Curing and Sealing Compound: Provide warranty to cost of flooring delamination failures for 10 years.

1. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.
   1. Acquire aggregates for entire project from same source.

C. Fly Ash: ASTM C618, Class C or F.

D. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.

E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. Water Reducing Admixture: ASTM C494/C494M Type A.

D. Moisture Vapor Reduction Admixture (MVRA): Liquid, inorganic admixture free of volatile organic compounds (VOCs) and formulated to close capillary systems formed during curing to reduce moisture vapor emission and transmission with no adverse effect on concrete properties or finish flooring.
   1. Provide admixture in slabs to receive adhesively applied flooring.

2.05 ACCESSORY MATERIALS

A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Grout: Comply with ASTM C1107/C1107M.
   2. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
   3. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
   4. Products containing aluminum powder are not permitted.

2.06 BONDING AND JOINTING PRODUCTS

A. Waterstops: Chloroprene Rubber hydrophilic waterstop.
   1. Configuration: Square or rectangular.
   2. Size: 0.39 x 1.18 inch or 1.18 x 1.18 inches, as required.
   3. Manufacturers:
      a. Greenstreak; Hydrotite.
      b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
   4. Accessories: Manufacturer's recommended adhesives, sealants, and primers.

B. Waterstops: PVC, complying with COE CRD-C 572.
   1. Configuration: Ribbed, with 1/4" inside diameter center-bulb.
   2. Size: 6 inch.
   3. Manufacturers:
      a. Greenstreak; Ribbed with Center Bulb, Style 703.

b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

4. Accessories:
   a. Provide grommets, pre-punched holes, or hog rings (installed by others) spaced at 12 inches on center along length of waterstop.
   b. Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.

C. Waterstops: Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
1. Configuration: Rectangular.
2. Size: 3/4" x 1"..
3. Manufacturers:
   a. Volclay Waterstop RX.
   b. Greenstreak Swellstop.
   c. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
4. Accessories: Manufacturer's recommended adhesives and primers.

D. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness.
1. Material: ASTM D1751, cellulose fiber.

2.07 CURING MATERIALS

A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
1. Product dissipates within 4 to 6 weeks.
2. Manufacturers:
   a. Dayton Superior Corporation; Clear Cure VOC J7WB: www.daytonsuperior.com/#sle.
   b. Euclid Chemical Company; Kurez DR VOX: www.euclidchemical.com/#sle.
   c. W. R. Meadows, Inc; 1100-Clear: www.wrmeadows.com/#sle.
   d. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Curing and Sealing Compound, Moisture Emission Reducing, Membrane-Forming: Liquid, membrane-forming, clear sealer, for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
3. VOC Content: Less than 100 g/L.
4. Solids Content: 25 percent, minimum.

C. Polyethylene Film: ASTM D2103, 6 mil, 0.006 inch thick, clear.

D. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
1. For trial mixtures method, employ independent testing agency acceptable to Hoffman for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:
1. Footings: 3,000 psi, 1-1/2" maximum aggregate, 2" - 4" (+/- 1/2") slump.
2. Piers: 4,000 psi, 3/4" maximum aggregate, 2" - 4" (+/- 1/2") slump, 6% (+/- 1%) air entrainment.
3. Foundation, Basement, and Retaining Walls: 4,000 psi, 3/4" maximum aggregate, 2" - 4" (+/- 1/2") slump, 6% (+/- 1%) air entrainment.
4. Interior Slabs-On-Grade: 4,000 psi, 3/4" maximum aggregate, 2" - 4" slump.

5. Pile Caps and Grade Beams: 4,000 psi, 3/4" maximum aggregate, 2" - 4" slump.
6. Precast Concrete Topping: 4,000 psi, 3/8" maximum aggregate, 2" - 4" (+/- 1/2") slump, with secondary reinforcement.
7. Concrete for Metal Pan Stairs: 3,500 psi, 3/8" maximum aggregate, 2" - 4" (+/- 1/2") slump, with secondary fiber reinforcement.

E. Fly Ash Content: Maximum 5 percent of cementitious materials by weight.

F. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
1. The use of Silica Fume (ground granulated blast furnace slag) is not permitted in elevated slabs, toppings, interior or exterior slabs-on-grade unless written approval is received from the Structural Engineer-of-Record (SER) prior to receipt of bids.
2. Silica Fume is not permitted in interior slabs-on-grade to receive finish flooring materials.

G. Water-Cement Ratio:
1. Water-Cement Ratio-Slabs:
   a. Interior Slabs: Maximum 0.50 percent by weight.
   b. Exterior Slabs: Maximum 0.45 percent by weight.
2. Water-Cement Ratio-Walls and Footings: Maximum 0.54 percent by weight.
3. Maximum Aggregate Size: 3/4 inch.

2.09 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

C. Temperature Control:
1. Use preparation methods capable of producing concrete with a temperature not more than 90 degrees F. and not less than 45 degrees F. at the time of placement.
2. Do not heat concrete ingredients to a temperature higher than that necessary to keep the temperature of the mixed concrete as placed, within the specified temperatures.

D. Adding Water: No water shall be added after the initial introduction of mixing water for the batch except as follows:
1. Approval from the on-site Hoffman representative must be received before adding any water.
2. The slump of the concrete upon arrival at the site is less than that specified, and the maximum water/cement ratio for the mix has not been exceeded.
3. The added water should not result in a slump that exceeds the specified values.
4. The drum should be turned at least 30 additional revolutions at mixing speed.
5. Water shall not be added to the batch at any later time.
6. The contractor shall insure that the concrete strength meets specifications with the added water.

E. Mixing Time: ASTM C94 and as noted:
1. Discharge of the concrete shall be completed within 90 minutes after the introduction of the water to the cement and aggregate mixture or before the drum has achieved 300 revolutions, whichever comes first.
2. The 90 minute/300 revolution requirement may be waived by Hoffman if the slump is within specifications without the addition of water.
3. The 90 minute/300 revolution requirement may be reduced during hot weather or during conditions that may contribute to a shorter stiffening time of the concrete.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

B. Examine the areas and conditions under which the work of this section will be performed. Correct conditions detrimental to the timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 VAPOR RETARDER INSTALLATION

A. Place vapor retarder sheeting in longest lengths possible with longest dimension parallel with direction of placement.

B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 12 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.04 INSTALLING WATERSTOPS

A. Install waterstops in accordance with manufacturer's written installation guidelines.

B. Prime surfaces of concrete if required by manufacturer of waterstop.

C. Remove dust, oil, etc. from concrete surfaces prior to installation.

D. PVC Waterstop:
   1. Fasten to reinforcement at 12" o.c..
   2. Place waterstop exterior to outermost reinforcement or as noted on drawings.

E. Bentonite or Rubber Waterstop:
   1. Fasten/adhere to concrete as required by manufacturer.
   2. Place waterstop to provide a minimum of 2" of concrete cover to the hydrostatic surface.
   3. Keep waterstops dry until new concrete is cast.

3.05 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify Hoffman not less than 24 hours prior to commencement of placement operations.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, waterstops, embedded parts, and vapor retarders will not be disturbed during concrete placement.

F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

G. Repair underslab vapor retarder damaged during placement of concrete. Repair with vapor retarder material; lap over damaged areas minimum 12 inches and seal watertight.

H. Place concrete as rapidly as practicable by methods which prevent segregation.

I. If an interruption occurs when placing concrete and is long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will secure proper union with subsequent work; provided that construction joints shall be made only where acceptable to the Engineer.

J. Place concrete continuously between predetermined expansion, control, and construction joints.

K. Place and maintain all concrete to the lines, grades, and elevations shown on the project drawings.

L. Place concrete so a minimum amount of concrete is permitted to flow from one position to another

M. Thoroughly work concrete around reinforcement and embedded fixtures and into corners of forms during placing operations.

N. Use mechanical vibrators to consolidate concrete until it is dense and free of honeycombing and other defects.
   1. Insert vibrator in such a pattern that the influence area of each insert overlaps that of an adjacent insert.
   2. Do not over-vibrate the concrete.
   3. Do not move concrete by use of the vibrator.

O. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

P. Concrete Temperature:
   1. The temperature of the concrete when it is being placed shall be not more than 90 degrees F nor less than 45 degrees F.
   2. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the contractor shall employ effective means, such as pre cooling of aggregates and mixing water, use of ice, or placing later in day, as necessary to maintain the temperature of the concrete as it is placed, below 90 degrees F.

3.06 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
   1. If joint pattern is not indicated in Contract Drawings, provide joints at intervals not exceeding 30 times the slab thickness in either direction, and located to conform to bay spacing wherever possible at column centerlines, half bays, or third bays.

E. Construction Joints: Locate construction joints in floor slab, which are not shown on drawings, and notify Engineer for approval.
   1. Provide keyways at least 1-1/2 inches deep in construction joints in walls.
   2. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.

3.07 SEPARATE FLOOR TOPPINGS

A. Seal all openings in substrate larger than 1/8 inch prior to placing topping.

B. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean. Roughen the surface of existing concrete by means that does not produce micro cracking.

C. Place required dividers, edge strips, reinforcing, and other items to be cast in.

D. Apply sand and cement slurry coat on base course, immediately prior to placing toppings.

E. Place concrete floor toppings to required lines and levels.

3.08 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. An independent testing agency, as specified in Section 01 40 00, will inspect finished slabs for compliance with specified tolerances.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15.

2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15.
3. Under Carpeting: F(F) of 25; F(L) of 20.
4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25.

C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.09 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Rough Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Smooth Form Finish: Formed concrete surfaces exposed to view, to be covered with a coating material applied directly to the concrete, or as scheduled.
1. An as-cast concrete surface obtained with selected form-facing materials, arranged in an orderly and symmetrical manner with a minimum of seams.
2. Completely remove and smooth fins and other projections.
3. Repair and patch all surface defects including tie holes immediately after removing formwork.

D. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:

E. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

F. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.

G. Finishes for Related Unformed Surfaces: At tops of walls and horizontal surfaces, strike-off smooth and finish with texture matching adjacent formed surfaces.

H. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
1. Scratch Finish: Wood float to FI15/FI13 then roughen surface with stiff brushes or rakes before final set
   a. Locations: Surfaces to receive thick floor coverings including quarry tile and ceramic tile with full bed setting system over 1 inch in thickness.
2. Float Finish: After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating.
   a. Begin floating when surface water has disappeared and when concrete has stiffened sufficiently to permit operation of power-driven floats.
   b. Cut down high spots and fill low spots.
   c. Immediately after leveling, re-float surface to uniform, sandy texture.
   d. Provide float finish for all surfaces requiring trowel finish.
3. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
4. Fine Broom Finish: After trowel finish, while surface is still plastic, draw soft fiber bristle broom uniformly over surface to create fine-grained but smooth texture.
   a. Locations: Interior stairs and ramps.
5. Heavy Broom Finish: After float finish, while surface is still plastic, draw fiber bristle broom uniformly over surface to provide texture perpendicular to main traffic or at right angles to floor slope.
   a. Locations: Sidewalks, exterior steps, landings, ramps and platforms.

I. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.10 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than seven days.
   2. High early strength concrete: Not less than four days.

C. Surfaces Not in Contact with Forms:
   1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
   2. Begin curing before surface is dry.
      a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
      b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.
      c. Do not apply curing compound on slabs with wood float finishes or which are to receive urethane or epoxy coatings.

3.11 TOLERANCES

A. Tolerances for concrete construction and materials shall conform to all requirements of ACI 117, Standard Specifications for Tolerances for Concrete Construction and Materials except as noted above.
   1. Correct slab surfaces if tolerances are less than specified.
   2. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified by the Engineer/Architect. Re-measure corrected areas by the same process.

3.12 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with designated firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Testing Requirements:
   1. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
   2. Air Content: ASTM C 231; one test for every 50 cu yd of concrete placed, minimum one for each day's pour of each type of air-entrained concrete.
   3. Compression Test Specimen: ASTM C 31; mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
   4. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 50 cubic yards or less of each class of concrete placed.
      a. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   5. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below, when 80 deg F and above, and one test for each set of compressive-strength specimens.

6. Slump: ASTM C 143/C; perform one slump test for each set of test cylinders taken; for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed..
7. Slab Testing: Cooperate with manufacturer of specified moisture vapor reduction admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

E. Coordinate with Special Inspection Agency for any required code-required special inspections related to work of this section.

3.13 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Hoffman and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Hoffman. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Hoffman for each individual area.

3.14 PROTECTION

A. Do not permit traffic over unprotected concrete floor surfaces until fully cured.

B. Protect all concrete against damage until final acceptance by Hoffman.

C. Fresh concrete shall be protected from damage due to rain. The contractor shall provide such protection while the concrete is still plastic and whenever such precipitation is imminent or occurring.

3.15 SCHEDULE - CONCRETE FINISHES

A. Retaining Walls:
1. Exposed to View: Smooth rubbed finish.
2. Not Exposed to View: Rough formed finish.

B. Below Grade Frost Walls:
1. Exposed to View: Smooth formed finish.
2. Not Exposed to View: Rough formed finish.

C. Foundation Walls:
1. Exposed to View: Smooth rubbed finish.
2. Not Exposed to View: Smooth formed finish.

D. Walls to Receive Waterproofing: Smooth formed finish.

END OF SECTION

SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 2 PRODUCTS

END OF SECTION

SECTION 03 35 19
STAINED AND POLISHED CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Dyed and polished concrete.

1.02 RELATED SECTIONS

A. Section 03 30 00 Cast-in-Place Concrete.

B. Section 07 92 00 - Joint Sealants.

1.03 REFERENCES

A. American Concrete Institute (ACI):
   1. ACI 302.1R Guide for Concrete Floor and Slab Construction.

B. ASTM International:
   1. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   2. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete.
   3. ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

C. Reunion Internationale des Laboratoires D'Essais et de Recherches sur les Materiaux et les Constructions (RILEM):
   1. Rilem Test Method 11.4 Standard Measurement of Reduction of Moisture Penetration through Horizontal Concrete Surfaces.

D. National Floor Safety Institute (NFSI):
   1. NFSI Test Method 101-A Standard for Evaluating High-Traction Flooring Materials, Coatings, and Finishes.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Conduct a preinstallation meeting to verify project requirements, manufacturer’s installation instructions and manufacturer’s warranty requirements. Review the following:
   1. Environmental requirements.
   2. Scheduling and phasing of work.
   3. Coordinating with other work and personnel.
   4. Protection of adjacent surfaces.
   5. Surface preparation.
   6. Repair of defects and defective work prior to installation.
   7. Cleaning.
   8. Installation of polished floor finishes.
   9. Application of liquid hardener, densifier.
   10. Protection of finished surfaces after installation.

1.05 SYSTEM DESCRIPTION

A. Performance Requirements: Provide polished flooring that has been selected, manufactured and installed to achieve the following:
   1. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch (0.20 mm) wear in 30 minutes.
   2. Reflectivity: Increase of 35% as determined by standard gloss meter.
   3. Waterproof Properties: Rilem Test Method 11.4, 70% or greater reduction in absorption.
   4. High Traction Rating: NFSI 101-A, non-slip properties.

B. Design Requirements:
   1. Hardened Concrete Properties:
      a. Minimum Concrete Compressive Strength: 3,500 psi.

b. Normal Weight Concrete: No lightweight aggregate.
c. Non-air entrained.
d. Placement Properties:
    1) Natural concrete slump of 4 1/2 inches - 5 inches. Admixtures may be used.
    2) Flatness Requirements:
        (a) Overall FF 40.
        (b) Local FF 20.
e. Hard-Steel Troweled (3 passes) Concrete: No burn marks. Finish to ACI 302.1R, Class 5 floor.
    1) Class 6 floors, special colored mineral aggregate hardener with repeated hard steel trowel finish.
f. Curing Options:
    1) Membrane forming curing compounds (ASTM C309, Type 1, Class B, all resin, dissipating cure).
        (a) Acrylic curing and sealing compounds not recommended.
    2) Sheet membrane (ASTM C171); polyethylene film not recommended.
    3) Damp Curing: Seven day cure.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit product data for specified products.
    1. Safety Data Sheets (SDS).
    2. Preparation and concrete grinding procedures.
    3. Colored Concrete Surface, Dye Selection Guides.

1.07 INFORMATION SUBMITTALS

A. Quality Assurance:
    1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties as cited in 1.03 Performance Requirements.
    2. Certificates:
        a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
        b. Letter of certification from the National Floor Safety Institute confirming the system has been tested and passed phase Two Level of certification when tested by Method 101-A.
        c. Current contractor’s certificate signed by manufacturer declaring contractor as an approved installer of polishing system.
        d. Manufacturer’s Instructions: Manufacturer’s installation instructions.

1.08 CLOSEOUT SUBMITTALS

A. Warranty: Submit warranty documents specified.

B. Operation and Maintenance Data: Submit operation and maintenance data for installed products in accordance with Section 01 78 00 - Closeout Submittals.
    1. Include:
        a. Manufacturer’s instructions on maintenance renewal of applied treatments.
        b. Protocols and product specifications for joint filing, crack repair and/or surface repair.

1.09 QUALITY ASSURANCE

A. Qualifications:
    1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
    2. Installer trained and holding current certification for FGS PermaShine installation.
    3. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

B. Regulatory Requirements.

1. NFSI Test Method 101-A Phase Two Level High Traction Material.

C. Mock-Ups:
   1. Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
   2. Mock-Up Size: 4 x 4 foot sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.
   3. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine.
   4. Allow 24 hours for inspection of mock-up before proceeding with work.
   5. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.10 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with 01 61 00 - Common Product Requirements.

B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Delivery:
   1. Deliver materials in manufacturer's original packaging with identification labels and seals intact.

D. Storage and Protection:
   1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
   2. Protect concrete slab.
      a. Protect from petroleum stains during construction.
      b. Diaper hydraulic power equipment.
      c. Restrict vehicular parking.
      d. Restrict use of pipe cutting machinery.
      e. Restrict placement of reinforcing steel on slab.
      f. Restrict use of acids or acidic detergents on slab.

E. Waste Management and Disposal:
   1. Separate waste materials for Reuse and Recycling in accordance with Section 01 74 19 - Construction Waste Management and Disposal.
   2. Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.11 PROJECT AMBIENT CONDITIONS

A. Installation Location: Comply with manufacturer's written recommendations.

1.12 SEQUENCING

A. Sequence with Other Work: Comply with manufacturer's written recommendations for sequencing construction operations.

1.13 WARRANTY

A. Project Warranty: Refer to Contract Conditions for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and does not limit, other rights Owner may have under Contract Documents.

C. Warranty: Commencing on date of substantial completion.

1.14 MAINTENANCE

A. Comply with manufacturer's written instructions to maintain installed product.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.

2.02 POLISHED CONCRETE FINISHING PRODUCTS

A. Manufacturer: L & M Construction Chemicals, Inc.

B. Proprietary Products/Systems:

1. Hardener, Sealer, Densifier: Proprietary, water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film.
   a. Acceptable Material: L & M Construction Chemicals, Inc., FGS Hardener Plus.
   b. Joint Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, polyurea control joint and crack filler with Shore A 80 or higher hardness.
      1) Acceptable Material: L & M Construction Chemicals, Inc., Joint Tite 750.
   c. Oil Repellent Sealer: Ready to use, silane, siloxane and fluoropolymers blended water based solution sealer, quick drying, low-odor, oil and water repellent, VOC compliant and compatible with chemically hardened floors.
      1) Acceptable Material: L & M Construction Chemicals, Inc., Petrotex.
   d. Concrete Dyes: Fast-drying dye, packaged in premeasured units ready for mixing with VOC exempt solvent; formulated for application to polished cementitious surfaces.
      1) Acceptable Material: L & M Construction Chemicals, Inc., Vivid Concrete Dyes.
   e. Cleaning Solution: Proprietary, mild, highly concentrated liquid concrete cleaner and conditioner containing wetting and emulsifying agents; biodegradable, environmentally safe and certified High Traction by National Floor Safety Institute (NFSI).
      1) Acceptable Material: L & M Construction Chemicals, Inc., FGS Concrete Conditioner.
   f. Finish: Standard [High gloss (HG-1), 1500 grit], or optional [Medium gloss (MG-2), 800 grit] [Very high gloss (VGH-3), 3000 grit] [_____].
   g. Color: [_____].

2.03 SOURCE QUALITY CONTROL

A. Ensure concrete finishing components and materials are from single manufacturer.

2.04 PRODUCT SUBSTITUTIONS

A. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 MANUFACTURERS INSTRUCTIONS

A. Compliance: Comply with manufacturer’s written data, including product technical bulletins, product catalog installation instructions, and product carton installation instructions.

3.02 EXAMINATION

A. Site Verification of Conditions:

1. Verify that concrete substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer’s instructions prior to installation of concrete finishing materials.

B. Verify Concrete Slab Performance Requirements:

1. Verify concrete surfaces received a hard steel-trowel finish (3 passes) during placement.

3.03 PREPARATION

A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.

B. Examine surface to determine soundness of concrete for polishing.

C. General Contractor to remove surface contamination.

3.04 INSTALLATION

A. Floor Surface Polishing and Treatment:

1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
2. Apply floor finish prior to installation of fixtures and accessories.
3. Diamond polish concrete floor surfaces with power disc machine recommended by floor finish manufacturer. Sequence with coarse to fine grit using dry method.
    a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall match that of approved mock-up.
    b. Expose aggregate in concrete surface only as determined by approved mock-up.
    c. All concrete surfaces shall be as uniform in appearance as possible.
    d. Dyed and Polished Concrete (option):
        1) Locate demarcation line between dyed surfaces and other finishes.
        2) Polish concrete to final finish level.
        3) Apply diluted dyes to polished concrete surface.
        4) Allow dye to dry.
        5) Remove residue with dry buffer; reapply as necessary for desired result.
    e. Apply FGS Hardener Plus, Hardener, Densifier As Follows:
        1) First coat at 250 ft2/gal (6.25 m2/L).
        2) Second coat at 350 ft2/gal (8.75 m2/L).
        3) Follow manufacturer's recommendations for drying time between successive coats.
4. Remove defects and repolish defective areas.
5. Finish edges of floor finish adjoining other materials in a clean and sharp manner.

3.05 ADJUSTMENTS

A. Polish to higher gloss those areas not meeting specified gloss levels per mock-up.

B. Fill joints flush to surface.

3.06 FINAL CLEANING

A. Mechanically scrub treated floors for seven days with soft to medium pads with approved cleaning solution.

B. Upon completion, installer must remove surplus and excess materials, rubbish, tools and equipment.

3.07 PROTECTION

A. Protect installed product from damage during construction.

B. Protect with EZ Cover™ by McTech Corp., or comparable product.

3.08 SCHEDULE

A. Standard Finish High Gloss HG-1, Color [_____]: [Location].

B. Optional Finish Medium Gloss MG-2, Color [_____]: [Location].

C. Optional Finish Very High Gloss VHG-3, Color [_____]: [Location].

END OF SECTION

SECTION 03 54 00
CAST UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid-applied self-leveling floor underlayment.
   1. Use gypsum-based type at locations noted on drawings.

B. Sound Control Mat.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Alteration project procedures; selective demolition for remodeling.

B. Section 06 10 00 - Rough Carpentry: Wood sheathing substrate.

1.03 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens).

B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

C. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.

D. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate location of devices for fire protection, plumbing, mechanical and electrical work.

B. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, mixing instructions, environmental limitations, storage and handling requirements, and installation instructions.
   1. Acoustical Data: Submit sound tests according to IBC code criteria ASTM E492 (IIC) and ASTM E90 (STC).

C. Manufacturer's Instructions.

1.06 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

B. All materials shall be furnished by a single manufacturer and installed in accordance with current written recommendations.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.08 SYSTEM REQUIREMENTS

A. Sound Control: 2009 IBC: Section 1207.2 and 1207.3.

1. Minimum Sound Transmission Class (STC): 50 per ASTM E90 and E336.

1.09 FIELD CONDITIONS

A. Do not install underlayment until floor penetrations and peripheral work are complete.

B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.

C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gypsum Underlayment:
   1. Hacker Industries, Inc: www.hackerindustries.com/#sle.
   2. Maxxon Corporation; Gyp-Crete 2000/3.2K: www.maxxon.com/#sle.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Cast Underlayments, General:
   1. Comply with applicable code for combustibility or flame spread requirements.
   2. Provide certificate of compliance from authority having jurisdiction indicating approval of underlayment materials in the required fire rated assembly.
   3. Fire Rating: Meeting the requirements of the Underwriters Laboratory File Number as noted on drawings.

B. Gypsum-Based Underlayment: Gypsum based mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
   1. Compressive Strength: Minimum 2500 pounds per square inch, tested per ASTM C472.
   2. Density: Maximum ___ pounds per cubic foot.
   3. Final Set Time: 1 to 2 hours, maximum.
   4. Thickness: 3/4 inch to maximum 1-1/2 inch.
   5. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.

C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.

D. Sound Control Mat: Random filament, corrugated "U" groove core sound control mat designed to limit impact noise. Sound control mat cannot negate the fire rating and must be specified in the UL design.
   1. Product - 1/8 Inch Mat: Similar to Firm-Fill SCM-125 as manufactured by Hacker Industries.
   2. Product - 1/4 Inch Mat: Similar to Firm-Fill SCM-250 as manufactured by Hacker Industries.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.

F. Primer or Bonding Agent: Manufacturer's recommended type.

G. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.03 MIXING

A. Site mix materials in accordance with manufacturer's instructions.

B. Add aggregate for areas where thickness will exceed 1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.

C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

B. Do not proceed with underlayment installation until unacceptable conditions are corrected.

3.02 PREPARATION

A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.

B. Vacuum clean surfaces.

C. Prime substrate in accordance with manufacturer's instructions. Allow to dry.

D. Close floor openings.

3.03 APPLICATION - SOUND CONTROL MAT

A. Install sound control mat in strict accordance with manufacturer's recommendations.

3.04 APPLICATION - UNDERLAYMENT

A. Install underlayment in accordance with manufacturer's instructions.

B. Pump or pour material onto substrate. Do not retemper or add water.
   1. Pump, move, and screed while the material is still highly flowable.
   2. Be careful not to create cold joints.
   3. Wear spiked shoes while working in the wet material to avoid leaving marks.

C. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.

D. Place after partition installation.

E. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.

3.05 CURING

A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.

B. Air cure in accordance with manufacturer's instructions.

3.06 FIELD QUALITY CONTROL

A. An independent testing agency will perform field inspection and testing, as specified in Section 01 40 00 - Quality Requirements.
   1. Compressive Strength Test: Make and test cubes in accordance with ASTM C472.
   2. At least one set of 3 molded cubes shall be taken from each 10,000 sq. ft., minimum of one set of cubes per day.

B. Placed Material: Agency may inspect and test for conformance to specification requirements.

3.07 PROTECTION

A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.

B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 04 01 00
MAINTENANCE OF MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water cleaning of brick surfaces.

B. Repointing mortar joints.

C. Repair or replacement of damaged brick masonry.

D. Sawcutting exterior control joints in existing walls.

1.02 RELATED REQUIREMENTS

A. Section 04 05 11 - Mortar and Masonry Grout.

B. Section 04 20 00 - Unit Masonry: Brick masonry units.

1.03 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.
   2. Review conditions of installation, installation procedures, and coordination with related work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on cleaning solutions.

C. Samples: Submit four samples of face brick units to illustrate matching color, texture and extremes of color range.

D. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.

1.06 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

B. Restorer: Company specializing in masonry restoration with minimum three years of documented experience.

1.07 MOCK-UP

A. Restore and repoint an existing masonry wall area sized 4 feet long by 4 feet high; include in mock-up area instances of mortar.

B. Locate where directed.

C. Acceptable panel and procedures employed will become the standard for work of this section.

D. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

B. Store blast medium materials in manufacturer's packaging.

1.09 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

A. Comply with requirements of Section 04 05 11.

2.02 MASONRY MATERIALS

A. Brick: Section 04 20 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces to be restored are ready for work of this section.

3.02 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fittings; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

F. Close off areas, materials, and surfaces not receiving work of this section to protect from damage.

G. Close off adjacent occupied areas with dust proof partitions.

H. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

I. Protect roof membrane and flashings from damage with minimum 1/2 inch plywood laid on roof surfaces over full extent of work area and traffic route.

J. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

3.03 REBUILDING

A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.

B. Support structure as necessary in advance of cutting out units.

C. Cut away loose or unsound adjoining masonry as directed.

D. Build in new units following procedures for new work specified in other section(s).

E. Mortar Mix: Colored and proportioned to match existing work.

F. Ensure that anchors are correctly located and built in.

G. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.04 REPOINTING

A. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached.

B. Use power tools only after test cuts determine no damage to masonry units will result.

C. Do not damage masonry units.

D. When cutting is complete, remove dust and loose material by brushing.

E. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.

3.05 CLEANING EXISTING MASONRY

A. High Pressure Cold Water: Cold water blast with to be determined psi pressure to brick masonry surfaces, at noted locations, providing uniform finish.

3.06 CLEANING NEW MASONRY

A. Verify mortar is fully set and cured.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Scrub walls with cleaning agent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, pressurized water.

D. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.

E. Before solution dries, rinse and remove acid solution and dissolved mortar, using clean, pressurized water.

3.07 CLEANING

A. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

B. Clean surrounding surfaces.

END OF SECTION

SECTION 04 05 11
MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 01 00 - Maintenance of Masonry: Bedding and pointing mortar for masonry restoration work.

B. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

1.03 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries.

B. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.

C. ASTM C91/C91M - Standard Specification for Masonry Cement.

D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

E. ASTM C150/C150M - Standard Specification for Portland Cement.

F. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.

G. ASTM C270 - Standard Specification for Mortar for Unit Masonry.

H. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.

I. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix using the Property specification of ASTM C 270. Also include required environmental conditions and admixture limitations.

1. Mortar: Submit reports on mortar indicating conformance of mortar to property requirements of ASTM C 270 and test and evaluation reports per ASTM C 780.

C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

D. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

B. Single-Source Responsibility - Mortar Materials: Obtain mortar ingredients of uniform quality, including color for masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

B. Store cementitious materials off the ground, under cover, and in dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided. Store different aggregates separately.

D. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store pre-blended, dry mortar mix in delivery containers on

elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.

B. Mortar Color: Match existing.

C. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Exterior Masonry Veneer: Type N.
   2. Engineered Masonry: Type S.
   3. Exterior, Loadbearing Masonry: Type S.
   4. Exterior, Non-loadbearing Masonry: Type N.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Types as scheduled in this section.
   2. Color: Mineral pigments added as required to produce approved color sample.

B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing mortar in accordance with ASTM C270 with the addition of water only.
   1. Color: Mineral pigments added as required to produce approved color sample.

C. Portland Cement: ASTM C150/C150M.
   1. Type: Type I - Normal; ASTM C150/C150M.
   2. Color: Color as required to produce approved color sample.

D. Hydrated Lime: ASTM C207, Type S.

E. Quicklime: ASTM C5, non-hydraulic type.

F. Mortar Aggregate: ASTM C144.

G. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): To match existing.
   2. Manufacturers:
      a. Solomon Colors; Solomon Colors Concentrated A, H, and X Series: www.solomoncolors.com/#sle.
      b. Davis Colors: www.daviscolors.com/#sle.
      c. Lambert Corporation: www.lambertusa.com/#sle.
      d. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

H. Water: Clean and potable.

I. Masonry Cement: The use of masonry cement is strictly forbidden in all masonry construction.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Do not use anti-freeze compounds to lower the freezing point of mortar.

D. If water is lost by evaporation, re-temper only within two hours of mixing.

E. Use mortar within two hours after mixing at temperatures at or above 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

PART 3 EXECUTION

3.01 PREPARATION

3.02 INSTALLATION

A. Install mortar to requirements of section(s) in which masonry is specified.

3.03 FIELD QUALITY CONTROL

A. An Independent Testing Agency, retained by Hoffman will perform construction field tests, in accordance with provisions of Section 01 40 00.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Reinforcement and anchorage.

C. Flashings.

D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 04 01 00 - Maintenance of Masonry.

B. Section 04 05 11 - Mortar and Masonry Grout.

C. Section 07 62 00 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

D. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 21 00 - ALLOWANCES, for cash allowances affecting this section.

1.04 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

D. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).

E. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.

F. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.

G. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units.

H. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.

I. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

J. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.

K. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry.

L. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing.

M. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls.

N. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls.

O. BIA Technical Notes No. 46 - Maintenance of Brick Masonry.

P. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

Q. UL (FRD) - Fire Resistance Directory.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section.

1. Attendance:

a. Hoffman Field Project Manager.
b. Architect/Engineer (optional)
c. Testing Laboratory retained by Hoffman.
d. Mason contractor representative including foreman.
e. Grout and mortar supplier representative (optional).

2. Review the following as a minimum:
   a. Schedule.
   b. Methods and procedures related to reinforcement placement, grouting, and tooling of joints.
   c. Installation and placement of mechanical/electrical components within walls.
   d. Temporary shoring and bracing guidelines.
   e. Flashing locations and installation details.
   f. Control joint requirements and details for interior and exterior masonry walls.
   g. Warm and cold weather requirements when appropriate.
   h. Cleaning and protection procedures.
   i. Grout and mortar testing procedures.
   j. Governing regulations and standards for safety, fall protection, and scaffolding.
   k. Review requirements for any code-required special inspections.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and masonry accessories.
   1. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements, included required fire ratings.

C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.

1.07 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
   1. Maintain one copy of each document on project site.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

D. Single-Source Responsibility - Masonry Units: Obtain masonry units of uniform texture and color, or of a uniform blend with the ranges accepted for these characteristics, from one manufacturer for each different product required for each surface or visually related surface.

1.08 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized at least 4 feet long by 4 feet high; include mortar and accessories, structural backup, wall openings, flashings, and wall insulation in mock-up.

B. Make panel large enough to include all anticipated masonry or stone types, banding, special features, etc.

C. Locate where directed.

D. Mock-up may remain as part of the Work.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. All brick and clay products must be covered during transport and delivery to the project.

C. Cover materials when necessary to protect from the elements.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations. Pre-Faced units nominal 16 by 4 by 4 inches at exterior building wall veneer, 16 by 8 by 8 inches at exterior landscaping walls.
   2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
      a. Provide bullnose units for outside corners.
      b. Bullnose all exposed corners to 7'-4" above finished floor, unless noted otherwise.
   3. Fire-rated Units: As indicated on drawings.
   4. Load-Bearing Units: ASTM C90, medium weight.
      a. Hollow block.
      b. Exposed Faces: Manufacturer's standard color and texture where indicated.
   5. Non-Loadbearing Units: ASTM C129.
      a. Hollow block, as indicated.
      b. Medium weight.
   6. Pre-Faced Units: ASTM C90, hollow block, with smooth resinous facing complying with ASTM C744.
      a. Colors and styles: As indicated on drawings.
      b. Manufacturers:
         1) Echelon - Trendstone.

2.02 MORTAR AND GROUT MATERIALS

A. Mortar and Grout: As specified in Section 04 05 11.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
   1. Blok-Lok Limited: www.blok-lok.com/#sle.
   2. Hohmann & Barnard, Inc: www.h-b.com/#sle.
   3. WIRE-BONDwww.wirebond.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
   1. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

C. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.

D. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Triangular shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.
   4. Fasteners: Self-tapping or self-piercing, corrosion resistant coating, with bonded EPDM washer with vulcanized bonding.

2.04 FLASHINGS

A. Metal Flashing Materials:
   1. Prefabricated Metal Flashing: Smooth fabricated 26 ga, 0.0747 inch stainless steel (type 304) flashing for thru-wall conditions.

a. Manufacturers:
1) Hohmann & Barnard, Inc: www.h-b.com/#sle.
2) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Membrane Asphaltic Flashing Materials:
1. Rubberized Asphalt Flashing: Self-adhering polymer modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; 8 mil cross-laminated polyethylene bonded to adhesive rubberized asphalt, with a removable release liner.
a. Manufacturers:
1) Heckmann Building Products, Inc: www.heckmannbuildingprods.com/#sle
2) WIRE-BOND; AquaFlash 500: www.wirebond.com/#sle.
3) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

2.05 ACCESSORIES

A. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 3/8 inch wide by maximum lengths available.
1. Manufacturers:
a. Hohmann & Barnard, Inc: www.h-b.com.
b. WIRE-BOND; Expansion Joint 3000: www.wirebond.com.

B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
a. Manufacturers:
1) Mortar Net Solutions: www.mortarnet.com.
2) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Weeps and Vents:
1. Type: Molded PVC grilles, insect resistant.
2. Color(s): As selected by Hoffman from manufacturer's full range.
a. Manufacturers:
1) Blok-Lok Limited: www.blok-lok.com.
2) Hohmann & Barnard, Inc: www.h-b.com/sle.
3) Mortar Net Solutions: www.mortarnet.com/#sle.
4) WIRE-BOND: www.wirebond.com.
5) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.04 GENERAL

A. Build masonry construction to the full thickness shown, using units of nominal thickness indicated.

B. Erect walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

C. During erection, cover tops of walls, projections, and sills with waterproof sheathing at end of each days work. Cover partially completed masonry when construction is not in progress.
   1. Extend cover a minimum of 24 inches down both sides and hold securely in place.
   2. Where one wythe of a multiple wythe masonry wall is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to non-constructed wythe and hold cover in place.

D. Do not apply floor or roof loads until masonry has obtained design strengths unless allowed by Engineer-of-record.

3.05 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running, 1/2 bond.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave, 3/8 inch thickness.

3.06 PLACING AND BONDING

A. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

B. Remove excess mortar and mortar smears as work progresses.

C. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

D. Interlock intersections and external corners.

E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

G. Cut mortar joints flush where liquid-applied weather barriers are indicated, wall tile is scheduled, resilient base is scheduled, or bitumen dampproofing is applied.

H. Stain Prevention:
   1. Prevent grout, mortar, reinforcing, and soil from staining the faces of masonry to be left exposed or painted. Immediately remove materials that come in contact with such masonry.
   2. Protect base of walls from water-splashed mud and mortar splatter by ground and/or wall coverings.
   3. Protect sills, ledges and projections from mortar droppings.
   4. Protect surfaces of window and door frames as well as similar products with painted and integral finishes, from mortar or grout droppings.
   5. Protect exposed metal and/or rubber flashings from staining and damage during construction.

3.07 TOOLING

A. Tool joints when "thumb-print" hard with a v-groove jointer to match existing, slightly larger than width of joint.

B. Uniformly tool all joints to be smooth and free of irregularities.

3.08 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

B. Install cavity vents in veneer and cavity walls at 32 inches on center horizontally below shelf angles and lintels and near top of walls.

3.09 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.10 REINFORCEMENT AND ANCHORAGE - CAVITY WALL MASONRY

A. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.11 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 16 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.12 MASONRY FLASHINGS

A. Install flexible flashings to dry surfaces at air temperatures of 25 degrees F and above in accordance with manufacturer's recommendations.

B. Remove all deleterious materials from surfaces to be flashed.

C. Apply primer or surface conditioner by spray, brush, or roller at rate recommended by the manufacturer, prior to flashing installation.

D. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

E. Apply a bead or trowel coat of mastic along flexible flashing top edge, seams, cuts and penetrations.

F. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

G. Install metal through-wall flashings, receivers and reglets where noted on drawings.

H. Extend laminated flashings to within 1/4 inch of exterior face of masonry.

I. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.13 CONTROL AND EXPANSION JOINTS

A. Size control joint in accordance with Section 07 90 05 for sealant performance.

B. Form expansion joint as detailed on drawings.

C. Space control joints at a maximum spacing of 20 feet on center unless otherwise noted on drawings.

3.14 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.15 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.16 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

B. A Special Inspection Agency will perform code-required special inspections when required.

C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.17 REPAIRING, POINTING AND CLEANING

A. Remove excess mortar and mortar droppings.

B. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged, or if units do not match adjoining units, or mock-up panel.
   1. Install new units to mach adjoining units; install fresh mortar or grout, pointed to eliminate evidence of replacement.

C. During tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction to provide a neat, uniform appearance.

D. Replace defective mortar. Match adjacent work.

E. Final Cleaning:
   1. Remove large particles by hand with wooden paddles and non-metallic tools.
   2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
   3. Protect adjacent stone and non-masonry surfaces from contact with cleaners.
   4. Use cleaners in strict accordance with manufacturer's written recommendations and instructions.
   5. Clean soiled surfaces with cleaning solution, then rinse thoroughly with clear water.
   6. Prepare all joints and block surfaces for painting or finishing.

3.18 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members.

B. Structural steel support members.

C. Base plates and shims.

D. Anchor rods, nuts and washers.

E. Expansion and adhesive anchors.

F. Grouting under base plates.

G. Furnish and install elevator hoist beam or eyebolt.

H. Installation of elevator pit ladder(s), furnished by Section 05 50 00.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Code-Required Special Inspections

B. Section 05 21 00 - Steel Joist Framing.

C. Section 05 31 00 - Steel Decking: Support framing for small openings in deck.

D. Section 05 40 00 - Cold-Formed Metal Framing.

E. Section 05 50 00 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual.

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

E. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished.

F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

H. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.

I. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

J. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric).

K. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

L. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.

M. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

N. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.

O. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

P. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

Q. AWS D1.1/D1.1M - Structural Welding Code - Steel.

R. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections.

S. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

T. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

U. SSPC-SP 3 - Power Tool Cleaning.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

B. Review the following as a minimum:
   1. Status of shop drawings and submittals.
   2. Project schedule and sequence.
   3. Local, state, and federal safety regulations.
   4. Installation requirements for specified materials.
   5. Testing requirements and procedures.
   6. Coordination with other trades.
   7. Review any code-required special inspections that will be required.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data sheets showing compliance with specified requirements for the following products.
   1. Anchors and adhesives.
   2. Grout.

C. Shop Drawings:
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
   2. Connections.
   3. Expansion and adhesive anchors.
   4. Indicate cambers.
   5. Paint and primers.
   6. Yield stress of steel.
   7. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

1.06 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

B. Fabricator: Company specializing in performing the work of this section with minimum five years of documented experience.

C. Erector: Company specializing in performing the work of this section with minimum five years of documented experience.

D. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

E. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

F. Welder Certificates shall be made available upon request for welders employed on the project.

G. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Wisconsin.

1.07 REGULATORY REQUIREMENTS

A. Conform to local, state, and federal regulations for use of domestically produced materials when required.

B. Fabrication and erection of all products and components specified under this section shall be done in strict accordance with all current local, state, and federal regulations.

1.08 DELIVERY, STORAGE AND HANDLING

A. Handle steel with care to avoid bending, twisting or other damage.

B. Unload under supervision of Contractor.

C. Place on blocking to keep steel of ground.

D. Store steel to allow drainage of water from all parts.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles, Plates, and Channels: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. Rolled Steel Structural Shapes: ASTM A992/A992M.

D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.

E. Pipe: ASTM A53/A53M, Grade B, Finish black.

F. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars, AWS D1.1, Type B.

G. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.
   1. Nuts: ASTM A563, Grade C, heavy hex nuts.
   2. Washers: ASTM F436, Type 1 washers.

H. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
   1. Nuts: ASTM A563, Grade A, heavy-hex nuts.

I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

J. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 72 Hours: 4,300 pounds per square inch.

K. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

L. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 ACCESSORIES

A. Expansion Anchors:
   1. Wedge Anchors: Wedge type, torque-controlled, non-bottom bearing type complete with required nuts and washers.
   2. Sleeve Anchors: Single piece steel expansion sleeve providing 360-degree contact, non-bottom bearing type complete with required nuts and washers.
   3. Anchor Finish: Based on location shall be one of the following:
      a. Interior Use: Unless otherwise noted on drawings or as noted below, provide carbon steel anchors with electroplated zinc finish.
         1) Provide hot dip galvanized or electroplated zinc finish as required by code for anchors in contact with fire treated or preservative treated lumber.
      b. Exterior Use: Unless otherwise noted on drawings, provide AISA Type 304 stainless steel provided with stainless steel nuts and washers of matching alloy group.

B. Cartridge Injection Adhesive Anchors: Cartridge type, two-component, solid epoxy based system dispensed and mixed through a static mixing nozzle supplied by the manufacturer. The adhesive shall meet the minimum requirements of ASTM C 881 Type I, II, IV and V, Grade 3, Class B and C. Verify acceptable installation and performance temperature requirements with manufacturer prior to installation.

1. Interior Use: Unless otherwise indicated on drawings, provide carbon steel threaded rods conforming to ASTM A36 with zinc plating in accordance with ASTM B633, Type III.
    a. Provide hot dip galvanized or electroplated zinc finish as required by code for anchors in contact with fire treated or preservative treated lumber.
2. Exterior Use: Unless otherwise indicated on drawings, provide chisel-pointed stainless steel anchors, AISI Type 304 provided with stainless steel nuts and washers of matching alloy group.

C. Capsule Anchors: Threaded steel rod, inserts and reinforcing dowels with 45 degree chisel point, complete with nuts, washers, glass or foil capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator.
1. Interior Use: Unless otherwise indicated on drawings, provide chisel-pointed carbon steel rods conforming to ASTM A36 with zinc plating in accordance with ASTM B633, Type III.
    a. Provide hot dip galvanized or electroplated zinc finish as required by code for anchors in contact with fire treated or preservative treated lumber.
2. Exterior Use: Unless otherwise indicated on drawings, provide chisel-pointed stainless steel anchors, AISI Type 304 provided with stainless steel nuts and washers of matching alloy group.

D. Screw Anchors: Manufactured from carbon steel, heat treated meeting the following:
1. General: Shall have 360-degree contact with the base material and shall not require oversized holes for installation.
2. Finish: Zinc plated in accordance with ASTM B633 or mechanically galvanized in accordance with ASTM B695.
3. Screw anchors shall be similar to Titen HD anchors as manufactured by Simpson Strong-Tie.

E. Eyebolt: Hot dipped galvanized steel eyebolt, 10,000 pound vertical capacity, 2 inch diameter eye, without shoulder, similar to Eyebolt with Nut, 3016T87 as manufactured by McMaster-Carr.

2.03 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

C. Fabricate connections for bolt, nut, and washer connectors.

D. If not shown, provide connections to support the maximum allowable web shear or the computed end reaction shown on the drawings, using the tables for "Allowable Uniform Loads on Beam", Part 2, AISC Manual, Ninth Edition.

E. Clip angle lengths must not be less than one-half the T-Dimension of the framing members. For minimum length clip angles, provide fasteners at 3 inch on center or continuous welds.

F. Welds shall fully develop strength of the materials being welded, unless noted otherwise, except that fillet welds shall be a minimum 3/16".

G. Welded connections shall be made by approved certified welders using filler metal conforming to E70XX.

H. Fabricate pipe and tube columns with minimum 1/4 inch thick cap plates unless noted otherwise on plans.

I. Fabricate anchor rods as detailed on drawings or threaded both ends with double nut at the bottom.

2.04 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components and shear studs indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

E. Do not field cut or alter structural members without written approval of Hoffman.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 ANCHOR INSTALLATION

A. Install anchors in accordance with manufacturer's written instructions.

B. Screw anchors are not to be reused after initial installation.

C. Anchor finish shall be as required by manufacturer and code for substrate and materials being anchored.

3.04 TOLERANCES

A. Erect structural steel within tolerances in the AISC Code of Standard Practice, Section 7.11.

3.05 FIELD QUALITY CONTROL

A. An Independent Testing Agency will perform field quality control tests, as specified in Section 01 40 00.

B. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

C. Defective welds shall be replaced and retested at the expense of the Contractor.

D. Contractor shall assume all costs for repair or replacement of work that has been rejected for non-conformance to the requirements including the cost of any additional testing or retesting.

END OF SECTION

SECTION 05 21 00
STEEL JOIST FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Open web steel joists and shear stud connectors, with bridging, attached seats and anchors.

B. Loose bearing members, such as plates or angles, and anchor bolts for site placement.

C. Supplementary framing for roof openings greater than 18 inches.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing: Superstructure framing.

B. Section 05 31 00 - Steel Decking: Bearing plates and angles.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

E. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

F. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric).

G. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

H. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel.

J. SJI 100 - Catalog of Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders.

K. SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Joist Girders.

L. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

M. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, and attachments.

C. After final shop drawing approval, submit 3 sets of plans and calculations to Architect, stamped by a professional Engineer for submittal to State of Wisconsin, Department of Safety & Professional Services when required by code.
   1. Contractor to include all fees and costs associated with component submittals.
   2. Provide Design Engineer's stamp on shop drawings.
   3. Provide calculations for loadings and stresses of special joists and joist girders, stamped by a Professional Structural Engineer.

1.05 QUALITY ASSURANCE

A. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Wisconsin.

B. Perform Work, including that for headers and other supplementary framing, in accordance with SJI 100 Standard Specifications Load Tables and SJI Technical Digest No. 9.

C. Manufacturer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

D. Erector Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

E. All shop and field welding shall conform to requirements of the "Structural Welding Code - Steel, AWS D1.1.

F. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

G. Welder Certificates shall be made available upon request for welders employed on the project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Transport, handle, store, and protect products to SJI requirements.

B. Reject damaged, deteriorated or distorted material and immediately remove from site. Replace rejected materials with new members at no cost to Owner or Hoffman.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Joists:
   1. Canam Group Inc: www.canam-steeljoists.ws
   2. Nucor-Vulcraft Group: www.vulcraft.com/#sle.
   3. New Millennium: www.newmill.com
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Open Web Joists: SJI Type K Joists:
   1. Provide bottom and top chord extensions as indicated.
   2. Minimum End Bearing on Steel Supports: Comply with referenced SJI standard.
   3. Minimum End Bearing on Concrete or Masonry Supports: Comply with referenced SJI standard.
   4. Finish: Shop primed.

B. Anchor Bolts, Nuts and Washers: ASTM A307, hot-dip galvanized per ASTM A153/A153M, Class C.

C. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.

D. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.

E. Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A 36/A 36M.

F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03 FINISH

A. Shop prime joists as specified.
   1. Do not prime surfaces that will be fireproofed.

B. Prepare surfaces to be finished in accordance with SSPC-SP 2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

3.02 ERECTION

A. Erect joists with correct bearing on supports.

B. Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb, and in true alignment.

C. Coordinate the placement of anchors for securing loose bearing members furnished as part of the work of this section.

D. After joist alignment and installation of framing, field weld joist seats to steel bearing surfaces.

E. Position and field weld joist chord extensions and wall attachments as detailed.

F. Install supplementary framing for floor and roof openings greater than 18 inches.

G. Do not permit erection of decking until joists are braced, bridged, and secured or until completion of erection and installation of permanent bridging and bracing.

H. Do not field cut or alter structural members without approval of joist manufacturer.

I. After erection, prime welds and damaged shop primer, except surfaces specified not to be primed.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch.

B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

END OF SECTION

SECTION 05 31 00
STEEL DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof deck and accessories.

B. Bearing plates and angles.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Code-Required Special Inspections.

B. Section 04 20 00 - Unit Masonry: Placement of anchors for bearing plates embedded in unit masonry assemblies.

C. Section 05 12 00 - Structural Steel Framing: Support framing for openings larger than 18 inches.

D. Section 05 21 00 - Steel Joist Framing: Support framing for openings larger than 18 inches.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

E. ICC-ES AC43 - Acceptance Criteria for Steel Deck Roof and Floor Systems; ICC Evaluation Service, Inc.

F. ICC-ES AC70 - Acceptance Criteria for Fasteners Power Driven into Concrete, Steel and Masonry Elements; ICC Evaluation Service, Inc.

G. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks.

H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

I. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section.
   1. Review the following as a minimum:
      a. Status of shop drawings and submittals.
      b. Project schedule and sequence.
      c. Local, state, and federal safety regulations.
      d. Installation requirements for specified materials.
      e. Coordination with other trades.
      f. Review requirements for any code-required special inpsections

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.

C. Shop Drawings: Indicate deck plan, support locations, projections, openings, pertinent details, and accessories.
   1. Include details for accessories.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this Section with minimum five years of experience.

B. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

C. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

D. Welder Certificates shall be made available upon request for welders employed on the project.

1.07 REGULATORY REQUIREMENTS

A. Erection of all products specified in this section shall be done in strict accordance with all local, state, and federal regulations.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Cut plastic wrap to encourage ventilation.

B. Store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Deck:
   1. Canam Steel Corporation: www.canam-steeljoists.ws.
   2. Nucor-Vulcraft Group: www.vulcraft.com.
   3. New Millennium: www.newmill.com
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 STEEL DECK

A. Roof Deck: Non-composite type, fluted steel sheet:
   1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
   2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
   3. Span Design: Multiple (minimum 3 spans).
   4. Minimum Base Metal Thickness: 22 gage, 0.0299 inch.
   5. Nominal Height: 1-1/2 inch.
   6. Profile: Fluted; SDI WR.
   7. Side Joints: Lapped and fastened as noted on drawings.
   8. End Joints: Lapped and fastened as noted on drawings.

2.03 MATERIALS

A. Bearing Plates and Angles: ASTM A36/A36M steel, unfinished.

B. Fasteners: Galvanized hardened steel, self tapping.

C. Powder Actuated Mechanical Fasteners: Steel; with knurled shank and forged ballistic point. Comply with applicable requirements of ICC-ES AC70.
   1. Design Requirements: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM) design method for roof deck and floor deck applications and ICC-ES AC43.
   2. Material: Steel; ASTM A510/A510M, Grade 1077.
      a. Hardness: Rockwell C 54.5, minimum.
      b. Tensile Strength: 285 kips per square inch, minimum.
      c. Shear Strength: 175 kips per square inch, minimum.
      d. Washers:
         1) Steel Bar Joist Framing Applications: 0.472 inch diameter, minimum.
      e. Corrosion Resistance:

1) Steel Bar Joist Framing Applications: ASTM B633, SC1, Type III zinc electroplate..

3. Products:
   a. Hilti; X-ENP or X-HSN24 dependent on steel thickness.
   b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

D. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
   1. Design Requirements for Sidelap Connections: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM)SDI design method for roof deck and floor deck applications and ICC-ES AC43.
   2. Fasteners for Steel Roof Decks Protected with Waterproofing Membrane: ASTM B633, SC1, Type III zinc electroplate.

E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.

G. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.

2.04 FABRICATED DECK ACCESSORIES

A. General: Provide accessory materials for steel deck that comply with requirements indicated and recommendations of the steel deck manufacturer.

B. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gage, 0.0299 inch thick sheet steel; of profile and size as indicated; finished same as deck.

C. Pour Stops and Girder Fillers: Steel sheet, of same material as deck panels, size and profile as required, thickness in accordance with SDI Pour Stop Selection Table.

D. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material and thickness as deck panels, unless otherwise noted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

B. Examine support framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work of this section.

3.02 INSTALLATION

A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

B. Place deck in accordance with approved placement plans.

C. Do not place deck panels on concrete support structure until concrete has cured and is dry.

D. Place deck panels on structural supports and adjust to final position with ends aligned. Attach firmly to the supports immediately after placement in order to form a safe working platform. Provide bearing as follows:
   1. On concrete and masonry surfaces provide minimum 4 inch bearing.
   2. On steel supports provide minimum 1-1/2 inch bearing.

E. Fasten deck to steel support members at ends and intermediate supports as noted on drawings.

F. Locate deck bundles to prevent overloading of support members.

G. Fasten side laps as noted on drawings.

H. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.

I. Fasten pour stops and girder fillers to supporting structure according to manufacturer's recommendations.

J. Fasten column closures, cell closures, and Z closures to deck to provide tight fitting closures at open ends of ribs and sides of decking. Fasten cell closures at changes of direction of deck units unless otherwise directed.

K. At deck openings from 6 inches to 18 inches in size, provide minimum 3 x 3 x 5/16 inch steel angle reinforcement or as noted on drawings. Place angles perpendicular to flutes spanning between framing members and mechanically attach to deck at each flute.

L. At deck openings greater than 18 inches in size, provide steel angle reinforcement. as specified in Section 05 12 00.

M. Where deck changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Mechanically fasten 12 inches on center maximum.

N. At floor edges, install concrete stops upturned to top surface of slab, to contain wet concrete. Provide stops of sufficient strength to remain stationary without distortion.

O. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings to within 1/4 inch maximum width.

P. Do not cut unscheduled openings through the deck without the approval of the Engineer; reinforce openings as directed.

Q. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.

R. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

3.03 PROTECTION

A. Do not use deck units for storage or working platform until permanently secured in position.

B. Construction loads must not exceed carrying capacity of deck.

END OF SECTION

SECTION 05 40 00
COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formed steel stud exterior wall framing.
   1. Exterior walls - axially loaded.
   2. Exterior walls - non axially loaded.

B. Exterior wall sheathing.

C. Water-resistive barrier over sheathing.

D. Bridging, bracing, clips, accessories, fasteners and other materials.

E. Sealants.

1.02 RELATED REQUIREMENTS

A. Section 0145 33 - Code-Required Special Inspections.

B. Section 04 20 00 - Unit Masonry: Veneer masonry supported by wall stud metal framing.

C. Section 06 10 00 - Rough Carpentry: Wood blocking and miscellaneous framing.

D. Section 07 21 00 - BOARD AND BATT INSULATION: Insulation within framing members.

E. Section 07 25 00 - WEATHER BARRIERS: Weather barrier over sheathing.

F. Section 07 92 00 - Joint Sealants.

G. Section 09 21 16 - Gypsum Board Assemblies: Lightweight, non-load bearing metal stud framing.

H. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

E. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

F. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel.

H. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.

I. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section.
   1. Review the following as a minimum:

a. Status of shop drawings and submittals.
b. Project schedule and sequence.
c. Local, state, and federal safety regulations.
d. Attachment of studs to structural framing systems.
e. Attachment of gypsum wall sheathing.
f. Coordination with other trades.
g. Installation requirements for specified materials.
h. Review requirements for any code-required special inspections.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
1. Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.

C. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, and welds, and accessories or items required of related work.
1. Indicate stud and framing component layout.
2. Describe method for securing studs to tracks and for welded framing connections.
3. Provide Design Engineer's stamp on shop drawings.
4. Calculations for loadings and stresses of specially fabricated framing, signed and sealed by a professional structural engineer.
5. Details of vertical movement devices and connection to framing and structure.
6. Methods of fastening framing members to each other and to adjacent materials and structure.
7. Bearing and anchor points and anchor details.
8. Accessory products required for complete installation.
9. Prefabricated assemblies and special details.

D. After final shop drawing approval, submit 3 sets of plans and calculations to Architect, stamped by a professional Engineer for submittal to State of Wisconsin, Department of Safety & Professional Services.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Wisconsin.
1. Designer shall include all attachments of framing members to supporting structures.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

D. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

E. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

F. Welder Certificates shall be made available upon request for welders employed on the project.

G. Code Requirements: Comply with pertinent codes and regulations of agencies having jurisdiction.
1. Fastening requirements for exterior gypsum sheathing shall comply with all requirements for listed U.L. Assemblies where those requirements are more stringent than specified fastener spacings and materials.

1.07 MOCK-UP

A. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, sheathing, window frame, door frame, exterior wall finish, and interior wall finish.

B. Location: As directed.

C. Mock-up may not remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store materials protected from exposure to rain, snow or other harmful weather conditions, at temperature and humidity conditions.

1.09 PROJECT CONDITIONS

A. Verify that field measurements are as indicated on the drawings.

B. Coordinate work of this section with the placement of components within the stud framing system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Framing Connectors and Accessories:
   1. Same manufacturer as metal framing.
   2. ClarkDietrich Building Systems: www.clarkdietrich.com.
   3. Simpson Strong Tie: www.strongtie.com.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 FRAMING SYSTEM

A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.

B. Design Requirements: Provide completed framing system having the following characteristics:
   1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12.
   2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
   3. Design Loads: As indicated on the drawings.
   4. Live load deflection meeting the following, unless otherwise indicated:
      a. Exterior Walls: Maximum horizontal deflection under wind load of 1/600 of span.
      b. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
   5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
   6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

C. Deliver to site in largest practical sections.

D. Behind masonry veneer, studs shall be minimum 16 gage and 16 inches on center.

2.03 FRAMING MATERIALS

A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
   1. Gage and depth: As required to meet specified performance levels, and as indicated on drawings.
      a. 18 gage and lighter: Minimum yield strength 33,000 psi.
      b. 16 gage and heavier: Minimum yield strength 50,000 psi.
   2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.

3. Studs to be continuously formed from single sections. No welded studs are permitted.

2.04 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.

B. Anchorage Devices: Powder actuated.

C. Welding: Comply with AWS D1.1/D1.1M.

2.05 WALL SHEATHING

A. Wall Sheathing: Glass mat faced gypsum; ASTM C 1177/C 1177M, water-resistant core, square long edges, 5/8 inch Type X fire-resistant.
   1. Manufacturers:
      a. DensGlass Gold as manufactured by Georgia Pacific.
      b. GlasRoc as manufactured by BPB America, Inc.
      c. Securock Glass Mat Sheathing as manufactured by USG.
   2. Size: Minimum 4'x8' panels.
   3. Flame Spread: ASTM E 84; 0 maximum.
   4. Smoke Developed: ASTM E 84; 0 maximum.
   5. Warranty: Exposure to weather; 6 months, and manufacturing defects; 5 years.

2.06 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

B. Plates, Gussets, Clips: Formed Sheet Steel, thickness determined for conditions encountered; finish to match framing components.

C. Breakaway Fire Wall Anchors: Manufactured from rolled strip zinc alloy, type 710.
   1. Manufacturer: Heckmann Building Products Inc.
   2. Size and Thickness: As noted on drawings.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

E. Water-Resistive Barrier: As specified in Section 07 25 00.

F. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, track width, closed cell plastic foam from continuous rolls.

G. Grout: Commercial, non-shrink cement grout; apply to bearing surfaces to ensure full contact of bearing flanges or track webs on supporting concrete or masonry surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements, including installation tolerances and other conditions affecting performance of framing members.

B. Verify that work by other trades is complete and accurate to the point where installation of the framing can begin.

C. Verify that field measurements are as indicated in the drawings. Notify Hoffman in writing of any deviation between the drawings and actual conditions prior to starting work.

D. Immediately notify Hoffman of any discrepancies in the work, on the drawings or in the specification that will interfere with the work.

E. Correct conditions detrimental to the timely and proper completion of the work.

F. Do not proceed with installation until unsatisfactory conditions have been corrected.

G. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION - GENERAL

A. Install components in accordance with requirements of Contract Documents, the manufacturer's instructions and recommendations, and approved shop drawings.

B. Install framing to support design loads and to accommodate movement of the primary building structure and clearances of intended openings.

C. Cut framing members by sawing or shearing; do not torch cut.
   1. Cut framing members square for attachment to perpendicular members.

D. Field Welding: In accordance with AWS D1.3, and the following:
   1. Stud-to-track connections: 1/2 inch fillet weld, full length of inside flange dimension, inside each flange of stud onto track web, unless otherwise noted.
   2. All other connections: Flat, plug, butt, or seam.
   3. Minimum steel thickness for welded connections: 18 gage.

E. Field Fastening: Use minimum 2 self-tapping metal screws per connection, unless otherwise indicated.

F. Framing: Install components in accordance with manufacturer's instructions, shop drawings, and requirements of ASTM C 1007.
   1. Provide for erection stresses; provide temporary bracing as construction activities progress.
   2. Erect load bearing components in single piece full length; splicing of load bearing components is prohibited.
   3. Brace and reinforce load bearing assemblies as indicated or required for full design strength.

G. Do not bridge building expansion joints and control joints with framing members; frame both sides of joints independently.

H. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

I. Touch up damaged coating surfaces; use specified primer.

3.03 STUD WALLS - GENERAL

A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.

B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center, using fastening methods specified in manufacturer's printed installation instructions for substrate types.

C. Splice abutting lengths of track or butt weld or securely attach each length to supporting structure as indicated.

D. Wall Openings Larger Than Stud Spacing: Frame with headers and supporting studs as indicated on approved shop drawings.
   1. Install double studs at wall openings, door and window jambs.
   2. Install headers so that they lie entirely within the width of the wall.
   3. Install king studs, jack studs and cripple studs below window sills, above window and door heads, and elsewhere as necessary to support openings, securely attached to adjacent supporting members.
   4. Design studs above openings to support all imposed loads.

E. Seat studs in track square with track flange, with stud end maximum 1/16 inch from surface of track web.

F. Install load bearing studs full length in one piece. Splicing of studs is not permitted.

G. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

H. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

I. Install intermediate studs above and below openings to align with wall stud spacing.

J. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

K. Attach cross studs to studs for attachment of fixtures anchored to walls.

L. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

M. Touch-up field welds and damaged galvanized surfaces with primer.

3.04 AXIALLY-LOADED BEARING WALLS

A. Provide complete, uniform and level bearing support for bottom track; use grout if necessary to level.

B. Walls Directly Supported by Concrete Foundations or Slabs on Grade: Install continuous strip of sill gasket the full width of the track under the track.

C. Do not splice studs in axially loaded walls.

D. Align studs vertically and transfer all loads to the structural support and foundations; maintain vertical alignment at floor/wall intersections and where wall framing continuity is interrupted at floor framing.
   1. Where studs can not be aligned, continuously reinforce track to transfer the loads.
   2. Alignment refers to plane of the webs of wall framing.
   3. Alignment Tolerance: Plus/minus 1/4 inch per floor and plus/minus 3/4 inch over entire height of structure.
   4. Extend additional framing members used to support members that are out of alignment continuously to foundation or structural support.

E. Install studs with ends tightly nested and squarely seated against webs of the top and bottom tracks and attached to both flanges of both tracks.
   1. Gap Between End of Studs and Track: 1/16 inch, maximum.

F. Install axially loaded members in built-up headers, beams and columns, and sections squarely against web of their track members.

G. Brace and reinforce load bearing assemblies as indicated or as required to achieve full strength design.

H. Install studs at spacing indicated and no more than 2 inches from adjoining walls.

I. Construct corners with minimum of three studs.

J. Install horizontal bridging, using one of the following types:
   1. Cold-rolled steel channel, fastened to web of stud by a piece of angle of same thickness as the framing member.

K. Space bridging as indicated but not less than 48 inches on center if no supporting calculations are provided.

L. Install sheathing and gypsum board prior to loading of the wall.

3.05 EXTERIOR WALLS - NON-AXIALLY LOADED

A. Install horizontal bridging, using the following:
   1. Cold-rolled steel channel, fastened to web of stud by a piece of angle of same thickness as the framing member.

B. Space bridging as indicated but not less than 48 inches on center if no supporting calculations are provided.

C. Structural Movement Isolation: Isolate wall framing from building structure to prevent transfer of vertical loads while providing lateral support, using one of the following methods attached to continuous angles or supplementary framing anchored to the building structure:
   1. Vertical slide clips.
   2. Deep leg slip track.

3.06 INSTALLATION OF WALL SHEATHING

A. Install sheathing in accordance with ASTM C 1280 and manufacturer's written instructions.

B. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.

C. Secure gypsum wall sheathing with specified screws, at the minimum following spacings:
   1. Panel Edges: 7 inches on center.
   2. Intermediate Supports: 7 inches on center.

D. Apply fasteners so screw heads bear tightly against face of sheathing boards but do not cut into facing.

E. Fit boards tightly against each other and around openings.

F. Install solid metal blocking where end joints do not bear against framing sills or plates.

3.07 CLEANUP

A. Cleanup, remove from the site, and legally dispose of all materials related to work in this section.

3.08 TOLERANCES

A. Variation from Plumb: Maximum 1/8 inch in 10 feet.

B. Variation from Level: Maximum 1/8 inch in 10 feet.

C. Variation from True Plane: Maximum 1/8 inch in 10 feet.

D. Maximum Variation from True Position: 1/4 inch.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel and accessory items.

B. Prefabricated ladders and ship ladders.

C. Permanent fall arrest roof anchors.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Placement of metal fabrications in concrete.

B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.

C. Section 05 12 00 - Structural Steel Framing: Structural steel column anchor bolts.

D. Section 05 21 00 - Steel Joist Framing: Structural joist bearing plates, including anchorage.

E. Section 05 31 00 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.

F. Section 05 51 00 - Metal Stairs.

G. Section 05 52 13 - Pipe and Tube Railings.

H. Section 09 91 13 - Exterior Painting: Paint finish.

I. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel.

J. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc.

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

M. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on anchors, fall arrest anchors; describe materials and finish, product criteria.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

A. Conform to local, state and federal regulations fro use of domestically produced materials when required.

B. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

C. Qualify welding processes and welding operations in accordance with AWS D1.1 and D1.3.

D. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

E. Welder Certificates shall be made available upon request for welders employed on the project.

F. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original unopened packaging.

B. Store materials in a protected area and in a manner to prevent damage.

C. Do not install damaged materials. Remove damaged materials immediately from site.

1.07 PROJECT CONDITIONS

A. Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings.

B. Coordinate fabrication schedule with construction progress to avoid delay of work.

C. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M where connecting galvanized components.
   1. Nuts: ASTM A563, Grade C, heavy hex nuts, finish to match bolts.
   2. Washers: ASTM F436, Type 1 washers, finish to match bolts.

F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 ACCESSORIES

A. Expansion Anchors:
   1. Wedge Anchors: Wedge type, torque-controlled, non-bottom bearing type complete with required nuts and washers.
   2. Sleeve Anchors: Single piece steel expansion sleeve provding 360 degree contact, non-bottom bearing type complete with required nuts and washers.

3. Anchor Finish: Based on location shall be one of the following:
    a. Interior Use: Unless otherwise noted on drawings, provide carbon steel anchors with electroplated zinc finish.
    b. Exterior Use: Unless otherwise noted on drawings, provide AISA Type 304 stainless steel provided with stainless steel nuts and washers of matching alloy group.

B. Cartridge Injection Adhesive Anchors: Cartridge type, two component, solid epoxy based system dispensed and mixed through a static mixing nozzle supplied by the manufacturer. The adhesive shall meet the minimum requirements of ASTM C 881 Type I, II, IV and V, Grade 3, Class B and C. Verify acceptable installation and performance temperature requirements with manufacturer prior to installation.
    1. Interior Use: Unless otherwise noted on drawings, provide chisel point carbon steel rods conforming to ASTM A 36 with zinc plating in accordance with ASTM B633, Type III.
    2. Exterior Use: Unless otherwise noted on drawings, provide AISA Type 304 stainless steel chisel point anchors provided with stainless steel nuts and washers of matching alloy group.

C. Capsule Anchors: Threaded steel rod, inserts and reinforcing dowels with 45-degree chisel point, complete with nuts, washers, glass or foil capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator.
    1. Interior Use: Unless otherwise noted on drawings, provide chisel point carbon steel rods conforming to ASTM A 36 with zinc plating in accordance with ASTM B633, Type III.
    2. Exterior Use: Unless otherwise noted on drawings, provide AISA Type 304 stainless steel chisel point anchors provided with stainless steel nuts and washers of matching alloy group.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; prime paint finish.
    1. Rungs: one inch diameter solid round bar spaced 12 inches on center.
    2. Space rungs 7 inches from wall surface.

B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

C. Lintels: As detailed; prime paint finish.

2.05 PREFABRICATED ROOF ANCHORS

A. Permanent Fall Arrest Anchors: Assembly to support current OSHA and ANSI regulations at time of installation.

B. Steep Slope Permanent Roof Anchor (SSPRA - RDG): Type 304 stainless steel stamping with zinc plated steel D-rings at each end meeting all the requirements of OSHA/ANSI for roof anchors, similar to Miller RA40 Permanent Roof Anchor.

C. Steep Slope Permanent Roof Anchor (SSPRA - RDG2): Type 304 stainless steel stamping with zinc plated steel D-rings at one end meeting all the requirements of OSHA/ANSI for roof anchors, similar to Miller RA41 Permanent Roof Anchor.

D. Steep Slope Permanent Roof Anchor (SSPRA - TRS): Truss fitted permanent roof anchor with 2 inch stainless steel tab, similar to Trus-T Anchor as manufactured by Guardian.

E. Low Slope Permanent Roof Anchor (LSPRA - FW): Field weld installed permanent roof anchor, hot dip galvanized, with interior of post filled with urethane foam insulation.
   1. Type SM-4 Weld to Beam Roof Anchor, as manufactured by Summit Anchor Company, Inc.
   2. CB-12 or CB-18 Weld On Post as manufactured by Guardian Fall Protection
   3. Substitutions: See Section 01 60 00 - Product Requirements.

F. Low Slope Permanent Roof Anchor (LSPRA - FB): Bolt around type with stainless steel threaded rods and under-beam plate, hot-dip galvanized, with interior of post filled with urethane foam insulation.
   1. SM-1, SM-TRA, SM-PLT Roof Anchor as manufactured by Summit Anchor Company, Inc.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

G. Low Slope Permanent Roof Anchor (LSPRA - SDM); Rivet attached permanent roof anchor, epoxy finished suitable for mounting to steel decking.
   1. Similar to Permanent Roof Top Anchor 2100071 as manufactured by DBI/SALA.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 FINISHES - STEEL

A. Prime paint all interior steel items.
   1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

B. Hot dip galvanize exterior steel items including bollards and exterior ladders.
   1. Exceptions: Exterior steel lintels scheduled to pe painted.

C. Prepare surfaces to be primed in accordance with SSPC-SP2.

D. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

E. Prime Painting: One coat.

F. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 2.0 oz/sq ft galvanized coating.

2.07 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 51 00
METAL STAIRS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stairs with concrete treads.

B. Stairs with metal treads.

C. Structural steel stair framing and supports.

D. Handrails and guards.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete fill in stair pans; mesh reinforcement for landings.

B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.

C. Section 05 50 00 - Metal Fabrications.

D. Section 05 52 13 - Pipe and Tube Railings: Metal handrails and balusters other than specified in this section.

E. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

I. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

J. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

K. AWS D1.1/D1.1M - Structural Welding Code - Steel.

L. SSPC-SP 6 - Commercial Blast; Society for Protective Coatings (Part of Steel Structures Painting Manual, Vol. Two).

M. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on components, anchors, and accessories.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Submit manufacturer's data on shop primer.
   3. Include the design engineer's seal and signature on each sheet of shop drawings.

1.05 QUALITY ASSURANCE

A. Perform design and prepare shop drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Wisconsinin the State of Wisconsin.

B. Welder Qualifications: Make welder certificates available upon request shwoing certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.

C. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

D. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

E. Welder Certificates shall be made available upon request for welders employed on the project.

F. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

1.06 DELIVERY, STORAGE,AND HANDLING

A. Deliver materials to project site in good condition and properly protected against damage to finished surfaces.

B. Store materials in a protected area and in a manner to prevent damage.

C. Do not install damaged materials. Remove damaged materials from site.

1.07 PROJECT CONDITIONS

A. Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings.

B. Coordinate fabrication schedule with construction progress to avoid delay of work.

C. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings complying with the most stringent requirements of local, state, and federal regulations; where requirements of the contract documents exceed those of regulations, comply with the contract documents.
   2. Handrails: Comply with applicable accessibility requirements of ADA Standards.
   3. Structural Design: Provide complete stair and railing assemblies complying with drawings and the applicable local code.
      a. Deflection of Stringer or Landing Framing: Not to exceed 1/240 of span.
   4. Dimensions: As indicated on approved shop drawings.
   5. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   6. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.

7. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Architectural: All joints as inconspicuous as possible, whether welded or mechanical.
      a. Welded Joints: Continuously welded and ground smooth and flush.
      b. Mechanical Joints: Butted tight, flush, and hairline; concealed fastenings only.
      c. Exposed Edges and Corners: Eased to small uniform radius.
      d. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for highest quality gloss finish.

C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH CONCRETE TREADS

A. Jointing and Finish Quality Level: Architectural, as defined above.

B. Risers: Closed.

C. Treads: Metal pan with field-installed concrete fill.
   1. Concrete Depth: 1-1/2 inches, minimum.
   2. Tread Pan Material: Steel sheet.
   3. Tread Pan Thickness: As required by design; 14 gage, 0.075 inch minimum.
   4. Pan Anchorage to Stringers: Welded or bolted to carrier angles welded or bolted to stringers.
   5. Concrete Reinforcement: None.
   6. Concrete Finish: For resilient floor covering.

D. Risers: Same material and thickness as tread pans.
   1. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.
   2. Nosing Depth: Not more than 1-1/2 inch overhang.
   3. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch wide.

E. Stringers: Rolled steel channels.
   1. Stringer Depth: 12 inches.
   2. End Closure: Sheet steel of same thickness as risers welded across ends.

F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.

G. Railings: Steel pipe railings.

H. Finish: Shop- or factory-prime painted.

2.03 HANDRAILS AND GUARDS

A. Wall-Mounted Rails: Round pipe unless otherwise indicated.
   1. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.

B. Guards:
   1. Top Rails: Round pipe unless otherwise indicated.
      a. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.
   2. Infill at Pipe Railings: Pipe rails sloped parallel to stair.
      a. Outside Diameter: 1 inch.
      b. Material: Steel pipe.
      c. Vertical Spacing: Maximum 4 inches on center.
      d. Jointing: Welded and ground smooth and flush.
   3. End and Intermediate Posts: Same material and size as top rails.
      a. Horizontal Spacing: As indicated on drawings.
      b. Mounting: Welded to top surface of stringer.

2.04 MATERIALS

A. Steel Sections: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.

C. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.

D. Ungalvanized Steel Sheet: Hot- or cold-rolled, except use cold-rolled where finished work will be exposed to view.
   1. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Designation CS (commercial steel).
   2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel).

E. Concrete Fill: Type specified in Section 03 30 00.

2.05 ACCESSORIES

A. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.

B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

C. Shop and Touch-Up Primer: High solids, rust-inhibitive, interior-exterior alkyd primer, 51% solids by volume, similar to Devguard 4160 as manufactured by ICI Devoe Coatings.

2.06 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.
   1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
   2. Number of Coats: One.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Do not proceed with work of this section until unsatisfactory conditions have been corrected in a manner acceptable to Installer and Architect.

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

D. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

E. Obtain written approval prior to site cutting or creating adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair railings and guardrails.

C. Free-standing railings at steps.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Placement of anchors in concrete.

B. Section 04 20 00 - Unit Masonry: Placement of anchors in masonry.

C. Section 05 51 00 - Metal Stairs: Handrails other than those specified in this section.

D. Section 09 91 13 - Exterior Painting: Paint finish.

E. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.

D. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

E. SSPC-SP6 - Commercial Blast; The Society for Protective Coatings; 1991 (Part of Steel Structures Painting Manual, Vol. Two).

F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

G. SSPC (PM2) - Painting Manual, Vol 2; Steel Structures Painting Council.

1.04 DESIGN REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E 985 and applicable codes.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.06 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in Wisconsin, or personnel under direct supervision of such an engineer.

B. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.

C. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

D. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

E. Welder Certificates shall be made available upon request for welders employed on the project.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.

B. Allow for expansion and contraction of members and building movement without damage to connections or members.

C. Dimensions: See drawings for configurations and heights.

D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

E. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

A. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish, 1-1/4 inch diameter, unless noted otherwise on drawings.

B. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

C. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast steel.

D. Mounting: Brackets and flanges, with steel inserts for casting in concrete.

E. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

F. Straight Splice Connectors: Steel concealed spigots.

G. Galvanizing: In accordance with requirements of ASTM A123/A123M.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

I. Shop and Touch-Up Primer: High solids, rust-inhibitive, interior-exterior alkyd primer, 51% solids by volume, similar to Devguard 4160 as manufactured by ICI Devoe Coatings.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Provide anchors and plates required for connecting railings to structure.

E. Exposed Mechanical Fastenings: Provide flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

G. Accurately form components for proper connection to building structure.

H. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

2.04 FINISHES - STEEL

A. Prime paint all interior steel items.

B. Galvanize all exterior steel items unless specifically noted to be primed and painted on drawings.

C. Prepare surfaces to be primed in accordance with SSPC-SP6.

D. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

E. Prime Painting: One coat, 2.0-2.5 mils dry, 4.0-5.0 mils wet.

F. Galvanizing: Provide minimum 2.0 oz/sq.ft. galvanized coating on steel components.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.

E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 53 05
METAL GRATINGS AND FLOOR PLATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formed metal floor and area well gratings.

B. Perimeter closure.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing.

B. Section 05 50 00 - Metal Fabrications.

C. Section 05 51 00 - Metal Stairs: Framing for grating and stair treads.

D. Section 07 95 13 - Expansion Joint Cover Assemblies.

E. Section 09 91 13 - Exterior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

B. NAAMM MBG 531 - Metal Bar Grating Manual.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide span and deflection tables.

C. Shop Drawings: Indicate details of component supports, openings, perimeter construction details, and tolerances.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design gratings and plates under direct supervision of a Professional Structural Engineer experienced in design of this type of work and licensed in Wisconsin.

B. All shop and field welding shall conform to all requirements of the "Structural Welding Code - Steel, AWS D1.1.

C. Welder Certification: All shop and field welders shall be certified according to AWS procedures for the welding process and welding position used.

D. Welder Certificates shall be made available upon request for welders employed on the project.

PART 3 EXECUTION

2.01 EXAMINATION

A. Verify that field measurements are as indicated on drawings.

B. Verify that opening sizes and dimensional tolerances are acceptable.

C. Verify that supports are correctly positioned.

2.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions.

B. Place frames in correct position, plumb and level.

C. Mechanically cut galvanized finish surfaces. Do not flame cut.

D. Install gratings with cross bars in alignment.

E. Anchor by bolting through saddle clips.

F. Set perimeter closure flush with top of grating and surrounding construction.

G. Secure to prevent movement.

H. Repair damaged galvanized steel grating surfaces and apply galvanizing repair paint in accordance with ASTM A 780.

2.03 TOLERANCES

A. Comply with NAAMM MBG 531.

2.04 PROTECTION

A. Protect installed metal gratings and fasteners from damage during construction.

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Non-structural dimension lumber framing.
C. Rough opening framing for doors, windows, and roof openings.
D. Engineered wood products framing.
E. Subflooring.
F. Underlayment.
G. Roof-mounted curbs.
H. Roofing nailers.
I. Preservative treated wood materials.
J. Fire retardant treated wood materials.
K. Communications and electrical room mounting boards.
L. Concealed wood blocking, nailers, and supports.
M. Miscellaneous wood nailers, furring, and grounds.
N. Accessories and flashings at openings.
O. Stair treads and stringers.
P. Sill seal insulation.
Q. Framing anchors and fasteners.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Code-Required Special Inspections.
B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
C. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Setting anchors in concrete.
D. Section 04 20 00 - Unit Masonry.
E. Section 05 12 00 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.
F. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
G. Section 06 17 33 - WOOD I-JOISTS.
H. Section 06 17 53 - Shop-Fabricated Wood Trusses.
I. Section 07 25 00 - WEATHER BARRIERS: Water-resistive barrier over sheathing.
J. Section 07 62 00 - Sheet Metal Flashing and Trim: Sill flashings.
K. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard.
B. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings.
C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. AWPA U1 - Use Category System: User Specification for Treated Wood.

G. PS 1 - Structural Plywood.

H. PS 2 - Performance Standard for Wood-Based Structural-Use Panels.

I. PS 20 - American Softwood Lumber Standard.

J. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
   1. Review requirements for any code-required special inspections.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on the following products.
   1. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.
   2. Wood treatment data.
   3. Engineered wood products.
   4. Sheathing and underlayment.
   5. Metal framing anchors.
   6. Construction adhesives.
   7. Flashings and accessories.

C. Panelized Shop Drawings: Show wall panel configurations, sheathing installation, connections, openings, headers and additonal structural framing as noted on structural drawings.
   1. Include wood grade and species for stud and plate members.
   2. Provide details on framed openings and accessories.
   3. Number of plies required for headers.
   4. Bearing sizes and locations.

D. Submit written statement of responsibility for each item related to Wind Force-Resisting Systems to AHJ and Owner prior to starting work Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed when required.

1.06 QUALITY ASSURANCE

1.07 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. For lumber and plywood pressure treated with waterborne chemicals, spacers shall be placed between each bundle to provide air circulation.

C. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Spruce-Pine-Fir (South), unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.

3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: West Coast Lumber Inspection Bureau; WCLIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Stud Framing (2 by 2 through 2 by 6):
1. Species: Spruce-Pine-Fir.
2. Grade: Stud.
a. Fb-single (minimum extreme fiber stress in bending): 675 psi.
b. E (minimum modulus of elasticity): 1,200,000 psi.
c. Fc (compressive stress parallel to grain): 675 psi.
d. Fcp (compressive stress perpendicular to grain): 425 psi.

E. Plates and Sills (2 x 2 through 2 x 6):
1. Species: Spruce-Pine-Fir.
2. Grade: Stud.
a. Fb-single (minimum extreme fiber stress in bending): 675 psi.
b. E (minimum modulus of elasticity): 1,200,000 psi.
c. Fc (compressive stress parallel to grain): 725 psi.
d. Fcp (compressive stress perpendicular to grain): 425 psi.

F. Header, Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
1. Loadbearing Conditions (2 x 6 through 4 x 16); Spruce-Pine-Fir; No. 2:
a. Fb-single (minimum extreme fiber stress in bending): 875 psi.
b. E (minimum modulus of elasticity): 1,400,000 psi.
c. Fv (shear stress): 135 psi.
d. Fcp (compressive stress perpendicular to grain): 425 psi.
2. Non-Loadbearing Conditions (2 x 2 through 2 x 6); Spruce-Pine-Fir; Stud Grade:
a. Fb-single (minimum extreme fiber stress in bending): 675 psi.
b. E (minimum modulus of elasticity): 1,200,000 psi.
c. Fv (shear stress): 135 psi.
d. Fcp (compressive stress perpendicular to grain): 425 psi.

G. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: No. 2.

H. Truss Bridging, Bracing, and Strongbacks:
1. Lumber: No. 2 or Standard Grade, Spruce-Pine-Fir.

2.03 STRUCTURAL COMPOSITE LUMBER

A. General: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model research or evaluation reports exist that evidence compliance with building code in effect for project.
1. Allowable Design Stresses: Provide engineered wood products with allowable design stress, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing.

B. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
   1. Studs (1-1/2 inch width): Use laminated strand lumber, with manufacturer's published E (modulus of elasticity): 1,300,000 psi, minimum.
   2. Studs (1-3/4 inch width): Use laminated veneer lumber, with manufacturer's published E (modulus of elasticity): 1,900,000 psi, minimum.
   3. Columns: Use parallel strand lumber with manufacturer's published E (modulus of elasticity): 1,800,000 psi, minimum.
   4. Beams and Headers: Use laminated veneer lumber or parallel strand lumber with manufacturer's published E (modulus of elasticity): 1,900,000 psi, minimum.
   5. Manufacturers:
      a. Weyerhaeuser Company; ____: www.weyerhaeuser.com/#sle.
      b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.04 CONSTRUCTION PANELS

A. Subfloor/Underlayment Combination: Oriented strand board wood structural panel; PS 2, rated Single Floor.
   1. Bond Classification: Exterior.
   2. Performance Category: 23/32 PERF CAT.
   3. Span Rating: 24.
   4. Edges: Tongue and groove.
   5. Surface Finish: Fully sanded face.

B. Underlayment: APA Underlayment; plywood, Exterior exposure class, 1/2 inch thick. Fully sanded faces at resilient flooring.
   1. Edge: Square.

C. Roof Sheathing: Oriented strand board wood structural panel; PS 2.
   1. Grade: Structural 1 Sheathing.
   2. Bond Classification: Exposure 1.
   3. Performance Category: 5/8 PERF CAT.
   4. Span Rating: 40/20.
   5. Edges: Square.

D. Wall Sheathing: Oriented strand board wood structural panel; PS 2.
   1. Grade: Structural 1 Sheathing.
   2. Bond Classification: Exposure 1.
   3. Performance Category: 1/2 PERF CAT.
   4. Span Rating: 32/16.
   5. Edges: Square.

E. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.05 ACCESSORIES

A. Fasteners and Anchors:
   1. General: All fasteners, anchors and connectors in contact with fire-retardant treated or preservative-treated wood shall meet current governing codes.
   2. Metal and Finish: Hot-dipped galvanized steel per ASTM A153/A153M or stainless steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Nails: FS FF-N-105.

C. Wood Screws: ANSI B18.6.1.

D. Bolts:
   1. Lag Bolts: ANSI B18.2.1.
   2. Anchor Bolts: Steel bolts, galvanized, complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and flat washers where indicated.

E. Expansion Anchors:
   1. Wedge Anchors: Wedge type, torque-controlled, non-bottom bearing type complete with required nuts and washers.
   2. Sleeve Anchors: Single piece steel expansion sleeve providing 360-degree contact, non-bottom bearing type complete with required nuts and washers.
   3. Anchor Finish: Based on location shall be one of the following unless noted otherwise on drawings:
      a. Interior Use: Carbon steel anchors with electroplated zinc finish.
      b. Exterior Use: Provide AISA Type 304 stainless steel provided with stainless steel nuts and washers of matching alloy group.

F. Capsule Anchors: Threaded steel rod, inserts and reinforcing dowels with 45 degree chisel point, complete with nuts, washers, glass or foil capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator. Based on location shall be one of the following unless otherwise indicated on drawings:
   1. Interior Use: Provide carbon steel anchors with electroplated zinc finish.
   2. Exterior Use: Provide chisel-pointed stainless steel anchors, AISI Type 304 provided with stainless steel nuts and washers of matching alloy group.

G. Cartridge Injection Adhesive Anchors: Cartridge type, two-component, solid epoxy based system dispensed and mixed through a static mixing nozzle supplied by the manufacturer. The adhesive shall meet the minimum requirements of ASTM C 881 Type I, II, IV and V, Grade 3, Class B and C. Verify acceptable installation and performance temperature requirements with manufacturer prior to installation. Based on location shall be one of the following unless otherwise indicated on drawings:
   1. Interior Use: Provide chisel-pointed carbon steel rods conforming to ASTM A36 with zinc plating in accordance with ASTM B633, Type III, with matching nuts and washers.
   2. Exterior Use: Provide chisel-pointed stainless steel anchors, AISI Type 304 provided with stainless steel nuts and washers of matching alloy group.

H. Heavy Duty Screw Anchors: Self-tapping anchors shall have 360-degree contact with the base material and shall not require oversized or undersized holes for installation.
   1. Material: Carbon steel, heat treated.
   2. Finish: Zinc plated in accordance with ASTM B633 or mechanically galvanized in accordance with ASTM B695, Class 65, Type 1.
   3. Product: Similar to Titen HD anchors as manufactured by Simpson Strong-Tie.

I. Heavy Duty Screws: Similar to SDS Heavy Duty Connector as manufactured by Simpson.

J. Drive Anchors: Pre-expanded anchors with minimum 7/16 inch diameter flat heads, similar to Powers Drive, lengths as required for noted embedment.

K. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M or as required by code.

L. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
   1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M or as required by code.
   2. Hangers shall be sized as required and for the following minimum loads:
      a. 2x4: 475 pounds each.
      b. 2x6 and 2x8: 740 pounds each.
      c. 2x10: 1145 pounds each.
      d. 2x12: 1445 pounds each.
   3. Hanger fasteners shall be of the type recommended by manufacturer.

M. Wind Tie down Anchor: Similar to Simpson H-3, standard 18 gauge galvanized steel, 320 pound wind uplift capacity, 105 pound maximum horizontal load.

N. Plywood Roof Clips: "H" type extruded aluminum or 20 gauge galvanized steel, sized for sheathing thickness.

O. Breakaway Fire Wall Anchors: Manufactured from rolled strip zinc alloy, type 710.
   1. Manufacturer: Heckmann Building Products Inc.
   2. Size and Thickness: As noted on drawings.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

P. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

Q. Subfloor Adhesive: APA AFG-01, Waterproof, water base, air cure type, cartridge dispensed.
   1. VOC Limit: 27 g/L.
   2. Provide one of the following:
      a. Titebond GREENchoice Weatherproof Subfloor Adhesive as manufactured by Franklin International.
      b. Liquid Nails LN-902 Subfloor and Deck Construction Adhesive as manufactured by Akzo Nobel Paints LLC.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

R. Water-Resistive Barrier: As specified in Section 07 25 00.

S. Opening Flashings:
   1. Straight Flashing - Self-Adhering: Self-adhering, butyl adhesive with textured polyethylene laminate barrier, 30 mil thickness, with 1 piece siliconized release paper, width as required.
      a. Similar to StraightFlash as manufactured by DuPont.
   2. Flexible Flashing - Self-Adhering: Self-adhering, butyl adhesive with conformable textured polyethylene laminate barrier, 70 mil thickness, with 2 piece siliconized release paper, width as required.
      a. Similar to FlexWrap as manufactured by DuPont.
   3. Flashing Primer: Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.

2.06 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Lonza Group: www.wolmanizedwood.com.
      b. Hoover Treated Wood Products, Inc: www.frtw.com/#sle.
      c. _____.
      d. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat rough carpentry items as indicated .
      c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:

1. Manufacturers:
    a. Lonza Group: www.wolmanizedwood.com.
    b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

D. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    a. Treat lumber exposed to weather.
    b. Treat lumber in contact with roofing, flashing, or waterproofing.
    c. Treat lumber in contact with masonry or concrete.
    d. Treat lumber less than 18 inches above grade.
    e. Treat lumber in other locations as indicated.
2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
    a. Kiln dry plywood after treatment to maximum moisture content of 15 percent.

E. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative.
1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.
3. Kiln dry lumber after treatment to maximum moisture content of 19 percent, and 15 percent for plywood.
4. Treat wood in the following locations:
    a. Treat wood in contact with ground.
    b. Treat wood in contact with fresh water.
    c. Treat wood used as posts, landscaping timbers, retaining walls, piers, or docks.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate and adjacent materials are ready to receive work of this section.

B. Verify substrate surfaces are flat and free of irregularities that would affect work of this section.

3.02 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

B. Coordinate installation of rough carpentry members specified in other sections.

3.03 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

D. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

E. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

3.04 FASTENERS AND FRAMING DEVICES

A. Nails and Spikes:
1. Use hot-dip galvanized or stainless steel nails where rough carpentry is exposed to weather, in ground contact, or in areas of high humidity.

2. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
3. Use coated, common wire nails, unless otherwise noted. Use finishing nails for finish work.
4. Select fasteners of size and length that will not fully penetrate members where opposite side will be exposed to view, or that will receive finish materials.
5. Install fasteners without splitting wood; predrill as required.

B. Lag Screws:
1. When installing lag screws in a wood member, pre-drill hole as required.
2. Lag screws, which bear in wood, shall be fitted with standard steel plate washers under head. Lag screws shall be screwed and not driven into place.

C. Bolts:
1. Lumber and timber to be fastened together with bolts shall be clamped together with holes for bolts bored true to line.
2. Bolts shall be fitted with steel plates or standard cut washers under heads and nuts. Bolts shall be tightened when installed and again before completion of the work of this section.

D. Wood Screws: When installing wood screws, pre-drill holes as required.

3.05 INSTALLATION - FRAMING

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

F. A single plate shall be provided at the bottom and a double plate at the top of wall framing unless otherwise noted. Joints in upper and lower members of the top plate shall be staggered not less than 4 feet.

G. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

H. Provide bridging at framing in excess of 8 feet span at mid-span. Fit solid blocking at ends of members.

I. Unless noted on plans frame openings with two studs at each jamb; support headers on cripple studs for 1-1/2 inch bearing.

J. Construct corners and intersections with three (3) or more studs.

K. Do not notch joists unless approved in writing by the engineer. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches from top or bottom.

L. Frame headers with spacers to match wall width.

M. Install truss bracing as indicated on approved truss shop drawings.

N. Insulate inaccessible cavities in walls, headers, and floor construction as work progresses.

O. Under jamb studs at openings provide solid blocking between joists.

3.06 SILLS

A. Set sills level and square.

B. Anchor sills to foundation or concrete slabs as indicated on drawings.

1. When not shown on drawings, anchor bearing, exterior or shear walls to concrete with 1/2 inch diameter heavy duty screw type anchors spaced not more than 4 feet on center.
2. When not shown on drawings, anchor non-bearing walls to concrete with 1/2 inch diameter heavy duty screw type anchors spaced not more than 6 feet on center.

C. There shall be an anchor within 9 inches of each end piece of sill plate, and a minimum of two anchors per sill plate.

D. Provide additional anchors at corners and splices.

3.07 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Except as otherwise noted, blocking and backing in walls and ceilings shall be nominal 2-inch thick material of a depth as needed to support finishes, fixtures, specialty items, and trim.

G. Blocking shall fit snugly and shall be spiked or screwed into the supporting members.

H. Coordinate locations and installation with other trades.

I. Attach blocking to substrates to support applied loading. Bolts and nuts shall be recessed flush with surfaces, unless otherwise indicated.

J. Provide the following specific non-structural framing and blocking:
1. Cabinets and shelf supports.
2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Wall paneling and trim.
8. Joints of rigid wall coverings that occur between studs.

3.08 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at all roof openings except where prefabricated curbs are specified and where specifically indicated otherwise. Form corners by alternating lapping side members.

C. Anchor wood nailers as follows unless otherwise noted on drawings:
1. Masonry block walls: 1/2 inch diameter heavy duty screw anchors at 48 inch centers, 24 inch centers for 8'-0" each way at corners, minimum 4-1/2 inch embedment. Anchors to be furnished and installed by 06 10 00 contractor.
2. Steel framing: 3/8" diameter galvanized carriage bolts at 32 inch centers, 16 inch centers for 8'-0" each way at corners. Bolts to be furnished and installed by 06 10 00 contractor.
3. Metal decking: Two rows of No. 10 galvanized steel metal screws at 24 inch centers. Install with 5/8" diameter washer under screw heads.

D. Install nailers to match thickness of roof insulation unless otherwise indicated.

3.09 INSTALLATION - STAIR FRAMING

A. Provide stair framing of size, spacing, and configuration as indicated. If not otherwise noted, comply with the following:
   1. Stringer Size: 2 x 12 inch nominal size.
   2. Notching: Notch stringers to receive treads, risers, and supports; leave at least 3-1/2 inches of effective depth.
   3. Stringer Spacing: At least 3 stringers for each 36 inch clear width of stair.
   4. Variations: Provide stair framing that does not exceed the following variations between treads and risers within each flight:
      a. Adjacent Treads and Risers: 3/16 inch.
      b. Between Largest and Smallest Treads and Risers: 3/8 inch.

3.10 INSTALLATION - CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.

B. Roof Sheathing: Secure panels perpendicular to framing members, with ends staggered and sheet ends over firm bearing. Install panels with end and edge gaps recommended by the panel manufacturer.
   1. At long edges use sheathing clips where joints occur between roof framing members.
   2. Nail panels to framing; staples are not permitted. Nails to be 8d minimum or as noted or scheduled on drawings, spaced as follows:
      a. Panel Edges: 6 inches on center.
      b. Intermediate Supports: 12 inches on center.

C. Plywood Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered.
   1. Nail panels to framing; staples are not permitted. Nails to be 8d minimum or as noted or scheduled on drawings, spaced as follows:
      a. Panel Edges: 6 inches on center.
      b. Intermediate Supports: 12 inches on center.

D. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 16 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

3.11 INSTALLATION - OPENING FLASHINGS

A. Flanged Windows Installed After Air Barrier:
   1. Cover horizontal sill with flexible flashing aligning inside edge with edge of rough opening. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
   2. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.

B. Non-Flanged Windows Installed After Air Barrier:
   1. Cover horizontal sill with flexible flashing aligning inside edge with edge of rough opening. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
   2. Fan flexible flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.

3. Apply 9-inch wide strips of straight flashing at jambs. Align flashing with interior edge of jamb framing. Start flashing at head of opening and lap sill flashing down to sill.
4. Spray-apply primer to top 6 inches of jambs and exposed sheathing.
5. Install flexible flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.

3.12 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plumb: Maximum 1/8 inch in 10 feet.

D. Variation from Level: Maximum 1/8 inch in 10 feet.

E. Variation from Plane (Other than Floors): 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.13 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Coordinate with Special Inspector for any inspections related to High Load Diaphragms and wind resistance systems where required.

3.14 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

C. Section 06 41 00 - CUSTOM CABINETS & COUNTERTOPS: Shop fabricated custom cabinet work.

D. Section 08 80 00 - Glazing:

E. Section 09 91 13 - Exterior Painting: Painting of finish carpentry items.

F. Section 09 91 23 - Interior Painting: Painting of finish carpentry items.

G. Section 12 35 30 - PREMANUFACTURED CASEWORK: Shop fabricated cabinet work.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards.

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0.

C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.

D. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress.

E. PS 1 - Structural Plywood.

F. PS 20 - American Softwood Lumber Standard.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on fire retardant treatment materials and application instructions.
   2. Provide instructions for attachment hardware and finish hardware.

C. Samples: Submit two samples of finish plywood, 12 by 12 inch in size illustrating wood grain and specified finish.

D. Samples: Submit two samples of each type and species of wood trim 12 inch long.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect from moisture damage.

B. Store millwork and components in a ventilated space, with a relative humidity range of 20% to 40%.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

B. Interior Woodwork Items:
   1. Trim and Base: Clear, rift sawn, kiln-dried red oak; prepare for transparent finish.
   2. Balustrades, and Handrails: Clear, red oak, kiln-dried railing stock, profile to match F-900 as manufactured by Ferche Millwork, Inc.; prepare for transparent finish.

3. _____.
4. _____.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 LUMBER MATERIALS

A. Softwood Lumber: S-P-F species, maximum moisture content of 15 percent; B Select grade.

B. Hardwood Lumber: Red oak species, rift sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
   1. Grading: In accordance with NHLA G-101 Grading Rules; www.nhla.org.

2.04 SHEET MATERIALS

A. Softwood Plywood : Douglas fir face species, veneer core; PS 1 Grade A-B; glue type as recommended for application.

B. Hardwood Plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core; HPVA HP-1, Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.

2.05 FASTENINGS

A. Nails, Screws, and Other Anchoring Devices: Type, size, material and finish required for application.
   1. Provide galvanized anchors and fasteners in areas of high interior humidity and all exterior applications.

2.06 ACCESSORIES

A. Lumber for Shimming and Blocking: Softwood lumber of S-P-F species.

B. Primer: Alkyd primer sealer.

C. Wood Filler: Solvent base, tinted to match surface finish color.

2.07 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

C. Ease edges of lumber less than 1 inch in nominal thickness to 1/16 inch radius.

D. Ease edges of lumber 1 inch or more in nominal thickness to 1/8 inch radius.

2.08 FINISHING

A. Apply wood filler in exposed nail and screw indentations.

B. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

C. Do not proceed with installation if unsatisfactory conditions exist. Start of work in this section indicates acceptance of substrate tolerances and conditions.

D. See Section 06 10 00 - Rough Carpentry for installation of recessed wood blocking.

3.02 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

B. Condition finish carpentry to average prevailing humidity conditions in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.03 INSTALLATION - GENERAL

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

D. Do not use finish carpentry materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.

E. Dowel plugs to be same species as required for components.

3.04 INSTALLATION - STANDING AND RUNNING TRIM

A. Install trim with a minimum number of joints as practical, using full length pieces from maximum lengths of lumber. Do not sue pieces less than 24 inches long, except where necessary.

B. Stagger joints in adjacent and related standing and running trim. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact across joint.

C. Use scarf joints for end-to-end joints. Plane the backs of casings to provide uniform thickness across joints, if required.

D. Install trim after gypsum board joint finishing operations are completed.

E. Drill pilot holes in hardwood before fastening to prevent splitting. Fasten to prevent movement or warping.

F. Match color and grain pattern across joints.

3.05 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09 91 13 and 09 91 23.

C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.06 CLEANING

A. Clean exposed or semi-exposed finish carpentry components and surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.07 PROTECTION

A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at the time of Substantial Completion.

3.08 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 06 41 00
CUSTOM CABINETS & COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

C. Section 06 20 00 - Finish Carpentry.

D. Section 08 80 00 - Glazing: Glass for casework.

E. Section 09 91 23 - Interior Painting: Field finishing of cabinet exterior.

1.03 DEFINITIONS

A. Unit Body Open Interiors: Any storage unit surface without solid door or drawer fronts and units with glass sliding or glass framed doors.

B. Unit Body Closed Interiors: Any storage unit surface behind solid door or drawer fronts.

C. Unit Body Exposed Side: Any storage unit exterior side surface that is visible.

D. Concealed Surfaces: Any surface not normally visible after installation.

1.04 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards.

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0.

C. NEMA LD 3 - High-Pressure Decorative Laminates.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Submit shop drawings for laminate clad casework and countertops showing layout, elevations, ends, cross-sections, service run spaces, and location of services. Show details and location of anchorages.

1. Include layout of units with relation to surrounding walls, doors, windows, and other building components.
2. Coordinate shop drawings with other work involved.

C. Product Data: Provide data for hardware accessories.

D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

E. Samples: Submit actual sample items of proposed pulls, hinges, and drawer slides, demonstrating hardware design, quality, and finish.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with a minimum of five years experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

B. Deliver laminate clad casework and countertops only after wet operations in building are completed.

C. Store completed laminate clad casework and countertops in a ventilated place, protected from the weather, with relative humidity range of 20% to 50%.

D. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with a protective covering.

1.09 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

1.10 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. All materials and workmanship covered by work in this section shall carry a three (3) year warranty from date of substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hinges:
   1. Blum.
   2. Salice.

B. Adjustable Cabinet Shelf Supports:
   1. Bainbridge.

C. Adjustable Wall-Mounted Shelf Supports:
   1. Knape and Vogt Mfg. Co.

D.

E. Locks:
   1. National Cabinet Lock.
   2. Timberline.

F. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

G. Single Source Responsibility: Provide and install this work from single fabricator.

2.02 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.03 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.04 PANEL MATERIALS

A. Particleboard: Complying with ANSI A208.1; composed of wood chips, medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

B. Hardboard: Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth two sides (S2S); use for drawer bottoms, dust panels, and other components indicated on drawings.

2.05 LAMINATE MATERIALS

A. Manufacturers:
   1. Formica Corporation: www.formica.com/#sle.
   2. Panolam Industries International, Inc; Nevamar Standard HPL: www.panolam.com/#sle.
   3. Wilsonart LLC; ____: www.wilsonart.com/#sle.

4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

C. Provide specific types as indicated.
   1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, _____ color, finish as indicated.
   2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, _____ color, finish as indicated.
   3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, _____ color, finish as indicated.
   4. Post-Formed Vertical Surfaces: VGP, 0.028 inch nominal thickness, through color, _____ color, finish as indicated.
   5. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, _____ color, finish as indicated.
   6. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

D. Plastic Edging:
   1. PVC Banding - 3mm: Machine applied with waterproof hot melt adhesive, edges machine profiled to 1/8" radius for safety.
   2. PVC Banding - 2mm: Machine applied with waterproof hot melt adhesive, edges machine profiled to 1/8" radius for safety.
   3. PVC Banding - 1mm: Machine applied with waterproof hot melt adhesive.
   4. Extruded PVC Plastic: Of design to hold and trim glass in framed doors.
   5. PVC Colors: Selected from Manufacturers standard and custom color range.

2.06 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Fasteners: Size and type to suit application.

C. Countertop Supports: Brackets, legs and miscellaneous metal parts shall be furniture steel, welded, degreased, cleaned, treated and powder painted in color as selected.

D. Rubber Bumpers: Provide resilient rubber bumpers on all doors and drawers to prevent laminate to laminate contact.

E. Concealed Joint Fasteners: Threaded steel.

F. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.

G. Resins: No added urea-formaldehyde resins.

2.07 HARDWARE

A. Hinges: Blum, full overlay type with mounting plate for clip-on style hinge with 125 degree swing and self-closing. The number of hinges per door shall be as follows:
   1. Door Height 0"-36": 2 hinges per door.
   2. Door Height 37"-62": 3 hinges per door.
   3. Door Height 63"-80": 4 hinges per door.

B. Adjustable Cabinet Shelf Supports:
   1. Injection molded polycarbonate, clear color to blend with selected interior finish, friction fit into cabinet end panels and vertical dividers, readily adjustable on 32mm centers.
   2. Each shelf support shall have two (2) integral support pins, 5mm diameter, to interface predrilled holes, and to prevent accidental rotation of support.
   3. The supports shall be automatically adaptable to 3/4 inch or 1 inch thick shelving and shall provide non-tip feature for shelving.
   4. Design supports that readily permit field fixing of shelf if desired.

C. Adjustable Wall Mounted Shelf Supports: Standard back-mounted system using surface mounted metal shelf standards and coordinated cantilevered shelf brackets, satin chrome finish, for nominal 1 inch spacing adjustments.
   1. Shelves 12" - 14" deep:
      a. Standards: KV0080.
      b. Brackets: KV0180.
   2. Shelves over 14" deep:
      a. Standards: KV0087.
      b. Brackets: KV0186.

D. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.

E. Cabinet Locks: Keyed cylinder, disc tumbler cylinder cam type for overlay cabinet construction, two keys per lock, master keyed, steel with chrome finish.
   1. Verify with Owner key schedule and cylinder designations.
   2. Key to be removable in locked and unlocked position.

F. Catches: Magnetic.

G. Drawer Slides:
   1. Type: Extension types as indicated.
   2. Static Load Capacity: Commercial grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.
   5. Finish: Epoxy finish.
   6. Warranty: Life time warranty as offered by slide manufacturer.
   7. Pencil drawers shall be equipped with K.V. No. 8250 for under counter or support frame mounting.
   8. Features: Provide self closing/stay closed type.
   9. Manufacturers:
      a. Knape & Vogt Manufacturing Company; Light-Duty Drawer Slides: www.knapeandvogt.com/#sle.
      b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.08 SITE FINISHING MATERIALS

A. Finishing: Site finished as specified in Section 09 91 23.

2.09 FABRICATION - GENERAL

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Cap exposed plastic laminate finish edges with material of same finish and pattern.

D. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

E. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

F. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

G. Provide cutouts for plumbing fixtures, inserts, outlet boxes, and fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal cut edges.

2.10 CABINET FABRICATION

A. General:
   1. Fabricate laminate clad casework to dimensions, profiles, and details shown.

B. Cabinet Joinery:

1. Tops and bottoms shall be joined to cabinet ends using a minimum of six (6) dowels at each joint for twenty-four (24) inch deep cabinets, and a minimum of four (4) dowels at each joint for twelve (12) inch deep cabinets.
2. Dowels are to be industrial grade hardwood, laterally fluted, with chamfered ends and minimum diameter of ten (10) millimeters.
3. Internal cabinet components such as fixed horizontals, rails and verticals are to be doweled in place.
4. Dowels are to be securely glued and cabinets clamped under pressure during assembly to assure secure joints and cabinet squareness.

C. Unit Door and Drawer Fronts:
1. Fabricate using 3/4 inch thick particleboard.
2. Laminate exposed surface with high pressure decorative laminate VGS.
3. Laminate interior surfaces with cabinet liner CLS.
4. All edges shall be finished with 3mm PVC.
5. Double doors shall be used on all cabinets in excess of 24 inches in width.
6. Clearance between doors and drawers shall be 1/8" maximum.

D. Unit Body Open Interiors:
1. Exposed Cabinet Sides:
   a. Fabricate from 3/4 inch thick particleboard.
   b. Laminate both sides with high pressure decorative laminate VGS.
   c. The front edge shall be edge-banded with 1 mm PVC to match the door and drawer front edge color.
2. Unexposed Cabinet Sides:
   a. Fabricate from 3/4 inch thick particleboard.
   b. Laminate the interior with high pressure decorative laminate VGS and balanced with high pressure backer BKL.
   c. The front edge shall be edge-banded with 1 mm PVC to match the door and drawer front edge color.
3. Unit Top or Sub-Top:
   a. Fabricate from 3/4 inch thick particleboard.
   b. Laminate with high pressure decorative laminate VGS and balanced with high pressure backer BKL.
   c. Front edge with 1mm PVC to match the door and drawer front edge color.
   d. All sub-tops shall be full depth.
4. Bottom of Base:
   a. Fabricate from 3/4 inch thick particleboard.
   b. Laminate the interior with high pressure decorative laminate VGS, and balanced with high pressure backer BKL.
   c. Front edge with 1 mm PVC to match the door and drawer front edge color.
5. Fixed Intermediates: Meeting the following:
   a. Fixed intermediates shall be 3/4 inch thick particleboard.
   b. Laminate both sides with high pressure decorative laminate VGS.
   c. Front edge with 1 mm PVC to match the door and drawer front edge color.
   d. An intermediate will be provided on all units over 36 inches wide.
6. Exposed Back on Fixed or Movable Cabinets:
   a. Fabricate from 3/4 inch thick particleboard.
   b. Laminate with VGS on the interior and exterior.
7. Adjustable Shelves: Meeting the following:
   a. Fabricate from 3/4 inch thick particleboard up to 27 inches wide and 1 inch thick particleboard over 27 inches wide.
   b. Laminate both sides with high pressure decorative laminate VGS.
   c. Shelves shall be front edged only with 1 mm PVC to match the shelf color.

E. Unit Body Closed Interiors:

1. Exposed Cabinet Sides:
    a. Fabricate from 3/4 inch thick particleboard.
    b. Laminate the exterior with high pressure decorative laminate VGS.
    c. Balance with high pressure cabinet liner CLS.
    d. The front edge shall be edge-banded with 1 mm PVC to match the door and drawer front edge.
2. Unexposed Cabinet Sides:
    a. Fabricate from 3/4 inch thick particleboard.
    b. Laminate both sides with CLS in neutral color.
    c. The front edge shall be edge-banded with 1 mm PVC to match the door and drawer front edge color.
3. Unit Top or Sub top:
    a. Fabricate from 3/4 inch thick particleboard.
    b. Laminate both sides with CLS.
    c. Front edge with 1 mm PVC to match the door and drawer front edge color.
    d. Sink base units shall have a 3/4" front and rear stretcher in lieu of full sub top. Depth of stretcher varies with sink size and location.
4. Bottom of Base and Wardrobe Units:
    a. Fabricate from 3/4 inch thick particleboard.
    b. Laminate both sides with CLS.
    c. Front edge with 1 mm PVC to match the door and drawer front edge color.
    d. Sink cabinet bottoms shall be laminated both sides with CLS.
5. Fixed Intermediates:
    a. Fabricate from 3/4 inch thick particleboard.
    b. Laminate both sides with CLS.
    c. Front edge with 1 mm PVC to match the door and drawer front edge color.
    d. Provide an intermediate on all units over 36 inches wide.
6. Cabinet Unit Backs:
    a. Fabricate with 3/8 inch thick particleboard.
    b. Laminate with CLS on both sides in neutral color.
    c. Exposed back on cabinet shall be 3/4 inch thick particleboard laminated with CLS on the interior to match side color and VGS on the exterior.
    d. Cabinet backs shall be fully housed into sides, top and bottom and recessed 7/8 inch from cabinet rear.
    e. Attach cabinet backs with waterproof hot melt adhesive.
7. Adjustable Shelves: Meeting the following:
    a. Fabricate from 3/4 inch thick particleboard up to 27 inches wide and 1 inch thick particleboard over 27 inches wide.
    b. Laminate both sides with high pressure decorative laminate VGS.
    c. Shelves shall be front edged only with 2 mm PVC to match the shelf color.

F. Wall Unit Bottom:
1. Open Interiors:
    a. Units with open interiors shall be fabricated from 3/4 inch thick particleboard for units up to 27" wide. Fabricate from 1 inch thick particleboard for units over 27" wide.
    b. Laminate with high pressure decorative laminate VGS on the inside.
    c. Laminate the outside with CLS, neutral color to match adjacent unit bottom.
2. Closed Interiors:
    a. Units with closed interiors shall be fabricated from 3/4 inch thick particleboard for units up to 27" wide. Fabricate from 1 inch thick particleboard for units over 27" wide.
    b. Laminate both sides with CLS in neutral color.
3. Front Edges: Edge-banded with 1 mm PVC to match the door and drawer front edge color.
4. Exposed Bottom Edge: Edge band each cabinet side with 1 mm PVC.

G. Wall and Tall Unit Tops:
   1. The top edge of all wall and tall unit end panels shall be factory edged with 1 mm PVC in neutral color.
   2. Raw edges at top of wall and tall end panels shall not be permitted.
   3. Top shall be laminated with CLS in neutral color to match interior.

H. Drawers:
   1. Sides, Back and Sub-Front:
      a. Fabricate from 1/2 inch thick particleboard.
      b. Laminate with CLS in neutral color.
      c. Back and sub-front are to be butt jointed, glued with melamine glue, and pinned.
   2. Drawer bottoms shall be 3/8 inch thick particleboard, laminated with CLS both sides in neutral color.
   3. Drawer bottom shall be fully housed in back, sub front and sides, recessed 1/2 inch, and attached with waterproof hot melt adhesive.
   4. Reinforce drawer bottoms with intermediate spreaders.
   5. Paper storage drawers constructed the same as noted above with retaining hood at the rear of each drawer.
   6. Painted finish on drawer sides and/or bottom will not be permitted.

I. Bases:
   1. Shall be of ladder type construction at front, back and sides with intermediates to form secure and level top and side surfaces to attach units.

2.11 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.

C. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

E. Finish work in accordance with AWI P-200 - Section 1500 System #1.

F. Seal, stain and varnish exposed to view surfaces. Spray apply only.

G. Seal stain and varnish internal exposed to view and semi-concealed surfaces. Brush apply only.

H. Seal internal surfaces of cabinets with one coat of shellac. Brush apply only.

I. Prime paint surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

C. Do not proceed with installation if unsatisfactory conditions exist at project site and notify contractor in writing of conditions.

3.02 PREPARATION

A. Condition laminate clad casework to average prevailing humidity conditions in installation areas prior to installing.

3.03 INSTALLATION - CABINETS

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor using appropriate angles and anchorages.

G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.04 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.05 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

B. Protect installed work from subsequent construction operations.

END OF SECTION

SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Replacement of existing ballasted and adhered SPM roofing systems` in preparation for new roofing system in designated areas as indicated on drawings.

B. Removal of existing flashing and counterflashings.

C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

A. Section 07 53 00 - Elastomeric Membrane Roofing.

B. Section 07 62 00 - Sheet Metal Flashing and Trim: Replacement of flashing and counterflashings.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

B. Repair Existing Roof Metal Decking:
   1. Basis of Measurement: By the square foot.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with affected mechanical and electrical work associated with roof penetrations.

B. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Attendees:
      a. Hoffman.
      b. Contractor.
      c. Owner.
   2. Meeting Agenda: Provide agenda to participants prior to meeting in preparation for discussions on the following:
      a. Removal and installation schedule.
      b. Necessary preparatory work.
      c. Protection before, during, and after roofing system installation.
      d. Removal of existing roofing system.
      e. Installation of new roofing system.
      f. Temporary roofing and daily terminations.
      g. Transitions and connection to and with other work.
      h. Inspections and testing of installed systems.

C. Schedule work to coincide with commencement of installation of new roofing system.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit for each type of material.

1.06 QUALITY ASSURANCE

A. Materials Removal Firm Qualifications: Company specializing in performing the work of this section with minimum five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

B. Locate materials on site where directed by Hoffman.

1.08 FIELD CONDITIONS

A. Existing Roofing System: EPDM single-ply roofing.

B. Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.

C. Maintain continuous temporary protection prior to and during installation of new roofing system.

D. Provide notice at least three days before starting activities that will affect normal building operations.

E. Verify that occupants have been evacuated from building areas when work on structurally impaired roof decking is scheduled to begin.

F. Owner will occupy building areas directly below re-roofing area.
   1. Provide Hoffman with at least 48 hours written notice of roofing activities that may affect Owner operations and to allow them to prepare for upcoming activities as necessary
   2. Do not disrupt Owner's operations or activities.
   3. Maintain access of Owner's personnel to corridors, existing walkways, and adjacent buildings.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Existing Warranties: Perform this work using methods and materials that will maintain existing roof system warranties.
   1. Notify existing roof system warrantor prior to starting this work and obtain written instructions for procedures necessary to maintain this existing warranty.
   2. Upon completion of this work, notify warrantor of reroofing completion and obtain documentation to verify that existing roofing system has been inspected and warranty is still in effect.
      a. Submit documentation upon project closeout.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Refer to following sections for additional information on components relating to this work:
   1. Replacement and removal of existing roofing system in preparation for new roofing system in designated areas as indicated on drawings, refer to Section 07 53 00.
   2. Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, refer to Section 07 62 00 for material requirements.

2.02 MATERIALS

A. Temporary Roofing Protection Materials:
   1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.02 PREPARATION

A. Sweep roof surface clean of loose matter.

B. Remove loose refuse and dispose of properly off-site.

3.03 MATERIAL REMOVAL

A. Remove only existing roofing materials that can be replaced with new materials the same day.

B. Remove metal counter flashings.

C. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.

D. Repair existing metal deck surface to provide smooth working surface for new roof system.

3.04 INSTALLATION

A. Coordinate scope of this work with requirements for installation of new roofing system, refer to Section 07 53 00 for additional requirements.

3.05 FIELD QUALITY CONTROL

A. Independent agency inspection and testing will be provided under provisions of Section 01 40 00.

3.06 PROTECTION

A. Provide temporary protective sheeting over uncovered deck surfaces.

B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with temporary fasteners or weights as required.

C. Provide for surface drainage from sheeting to existing drainage facilities.

END OF SECTION

SECTION 07 13 00
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet Waterproofing:
   1. Self-adhered modified bituminous sheet membrane.

1.02 RELATED REQUIREMENTS

A. Section 31 23 23 - Fill.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete substrate.

C. Section 07 21 00 - BOARD AND BATT INSULATION: Insulation used for protective cover.

D. Section 07 92 00 - Joint Sealants: Sealing moving joints in waterproofed surfaces that are not required to be treated in this section.

E. Section 22 10 06 - Plumbing Piping Specialties: Roof drain and plumbing vent flashing flanges.

1.03 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

B. ASTM D570 - Standard Test Method for Water Absorption of Plastics.

C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

E. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

F. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.

G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

H. NRCA (WM) - The NRCA Waterproofing Manual.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for warranty, membrane, surface conditioner, flexible flashings, and joint cover sheet.
   1. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.

1.05 QUALITY ASSURANCE

A. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.

C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer

D. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.01 MEMBRANE MATERIALS

A. Self-Adhered Modified Bituminous Sheet Membrane:
   1. Thickness: 60 mil, 0.060 inch, minimum.
   2. Tensile Strength:
      a. Film: 5000 pounds per square inch, minimum, measured according to ASTM D882 and at grip-separation rate of 2 inches per minute.
      b. Membrane: 325 pounds per square inch, minimum, measured according to ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches per minute.
   3. Low Temperature Flexibility: Unaffected when tested according to ASTM D1970/D1970M at minus 20 degrees F, 180 degree bend on 1 inch mandrel.
   4. Peel Strength: 7 pounds per inch, minimum, when tested according to ASTM D903.
   5. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
   6. Manufacturers:
      a. Carlisle Coatings & Waterproofing Inc; MiraDRI 860/861: www.carlisleccw.com/#sle.
      b. GCP Applied Technologies; ____: www.gcpat.com/#sle.
      c. W.R. Meadows, Inc; MEL-ROL: www.wrmeadows.com/#sle.
      d. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Concrete Primer: As recommended by membrane manufacturer.

C. Seaming Materials: As recommended by membrane manufacturer.

D. Membrane Sealant: As recommended by membrane manufacturer.

E. Termination Bars: Aluminum; compatible with membrane and adhesives.

F. Adhesives: As recommended by membrane manufacturer.

G. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.02 ACCESSORIES

A. Protection Board: Rigid insulation specified in Section 07 21 00.

B. Flexible Flashings: Type recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work. Do not start work of this section until unsatisfactory conditions have been corrected.

B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.

C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

A. Protect adjacent surfaces from damage not designated to receive waterproofing.

B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.

C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.

D. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.

E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.

F. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate according to ASTM D5295/D5295M.
   1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
   2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in the reference standard.
   3. Remove and replace areas of defective concrete as specified in Section 03 30 00.
   4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
   5. Test concrete surfaces as described in the referenced standards. Verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 MEMBRANE INSTALLATION - WALLS

A. Install membrane waterproofing in accordance with manufacturer's instructions.

B. Roll out membrane. Minimize wrinkles and bubbles.

C. Self-Adhering Membrane: Remove release paper layer. Roll out on substrate with a mechanical roller to encourage full contact bond.

D. Overlap edges and ends and seal by method recommended by manufacturer, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.

F. Install flexible flashings. Seal items penetrating through membrane with flexible flashings. Seal watertight to membrane.

G. Basement Walls: Extend waterproofing from finish grade line to top of footing, extend over top of footing, and down minimum of 6 inches over outside face of footing. Extend minimum 12 inches onto intersecting walls and footings, without extending onto surfaces that will be exposed to view when the project is complete.

H. Elevator Pit: Extend waterproofing from finish floor line to top of footing, extend over top of footing, and down minimum of 6 inches over outside face of footing. Extend minimum 12 inches onto intersecting walls and footings.

I. Schedule installation of waterproofing to minimize exposure of membrane to elements as recommended by manufacturer.

3.04 MEMBRANE INSTALLATION - FLOORS

A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Roll out membrane, and minimize wrinkles and bubbles.

C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.

D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.

E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.

F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.

G. Coordinate with drain installation; refer to Section 22 10 06.

H. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.

I. Seal membrane and flashings to adjoining surfaces.

3.05 INSTALLATION - PROTECTION BOARD

A. Place protection board directly against membrane; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.

3.06 PROTECTION

A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 07 21 00
BOARD AND BATT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall and over roof deck.

B. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

C. Polyethylene vapor retarder.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 04 20 00 - Unit Masonry: Cavity wall construction.

C. Section 05 40 00 - Cold-Formed Metal Framing: Board insulation as wall sheathing.

D. Section 06 10 00 - Rough Carpentry: Supporting construction for batt insulation.

E. Section 07 21 26 - Blown Insulation: Blown-in, gravity-held fibrous insulation.

F. Section 07 25 00 - WEATHER BARRIERS: Separate air barrier and vapor retarder materials.

G. Section 07 53 00 - Elastomeric Membrane Roofing: Insulation specified as part of roofing system.

H. Section 07 84 00 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.

I. Section 09 21 16 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.03 REFERENCE STANDARDS

A. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.

B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

C. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
   1. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Thermal Insulation:

2.02 APPLICATIONS

A. Insulation Under Concrete Slabs: Type IV, Extruded polystyrene (XPS) board

B. Insulation at Perimeter of Foundation: Type IV, Extruded polystyrene (XPS) board.

C. Insulation in Metal Framed Walls: Batt insulation with separate vapor retarder.

2.03 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance:
      a. Type IV, 25 psi (173 kPa), minimum.
      b. Type X, 15 psi (104 kPa), minimum.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
   5. Board Size: 48 x 96 inch.
   6. Board Thickness: 2 inches or as scheduled.
   7. Board Edges: Square.
   8. Type and Water Absorption: Type IV, 0.3 percent by volume, maximum, by total immersion.

2.04 BATT INSULATION MATERIALS

A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thermal Resistance: R-value of 19.
   6. Facing: Unfaced.
   7. Manufacturers:
      a. CertainTeed Corporation: www.certainteed.com.
      b. Johns Manville: www.jm.com.
      c. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
   8. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.05 ACCESSORIES

A. Sheet Vapor Retarder: Clear polyethylene film for above grade application, 6 mil thick, with a maximum permeance rating of 0.06 perms.

B. Tape: Polyethylene self-adhering type, 2 inch wide.

C. Staples: Steel wire; electroplated; type and size to suit application.

D. Proper Vents: Formed plastic, matching the width of the truss spacing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, or irregularities.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Install boards horizontally on foundation perimeter.
   1. Install in running bond pattern.
   2. Butt edges and ends tightly to adjacent boards and to protrusions.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT EXTERIOR WALLS

A. Install boards horizontally on walls.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.05 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

3.06 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.07 VAPOR RETARDER INSTALLATION

A. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap sheet retarder joints over member face.

B. At metal framing, place vapor retarder on warm side of insulation; lap sheet retarder over member face.

C. Seal vertical joints in vapor retarders over framing by lapping not less than 2 wall studs.

D. Tape seal tears or cuts in vapor retarder.

E. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items penetrating the plane of the membrane.

F. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with tape of type recommended by manufacturer to create an airtight seal between penetrating objects and vapor retarder.

3.08 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

3.09 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

3.10 CLEANING

A. Remove loose insulation residue.

B. Remove and legally dispose of all materials related to work of this section.

END OF SECTION

SECTION 07 21 19
FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Foamed-in-place insulation.
   1. In exterior framed walls.

B. Protective intumescent coating.

1.02 RELATED SECTIONS

A. Section 09 21 16 - Gypsum Board Assemblies: Gypsum board for thermal barrier covering foam insulation.

1.03 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Participants: Architect/Engineer, Applicator, Field Project Manager, Independent Inspector (if required).
   2. Review wall framing assemblies for potential interferences and conflicts and coordinate layout and support provisions for interfacing work.
   3. Review spray polyurethane foam methods and procedures related to application, including manufacturer's installation guidelines.
   4. Review construction schedule and confirm availability of products, applicator personnel, equipment and facilities.
   5. Review governing regulatory requirements.
   6. Review field quality control and safety procedures.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.

C. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

D. Certificates: Certify that products of this section meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide materials packaged in the manufacturer's original, tightly sealed containers or unopened packages, clearly labelled with the manufacturer's name, product identification, safety information, and batch or lot numbers where appropriate. Where materials are covered by a referenced specification, the labels shall bear the specification number, type and class, as applicable.

B. Store materials out of the weather and out of direct sunlight in locations where the temperatures are within the limits specified by the manufacturer.

C. All materials shall be stored in compliance with local fire and safety requirements.

1.08 FIELD CONDITIONS

A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.

B. Refer to appropriate Safety Data Sheets (SDS) for additional safety information.

C. Proper disposal of waste materials and containers must be done in compliance with the manufacturer's guidelines and/or federal, state and local regulatory agencies.

D. For protection against exposure to higher levels of MDI (greater than 1 ppm) or for entry into confined spaces, workers must wear either a self-contained breathing apparatus, with full face-piece, operated in a pressure-demand or other positive-pressure mode, or a combination respirator, including a Type C air-supplied respirator, with full face-piece, operated in a pressure-demand or other positive-pressure mode, or an auxiliary self-contained breathing apparatus, operated in a pressure-demand or other positive-pressure mode. See API Bulletin "MDI based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal", Stock Number AX-119.

E. Personal protective clothing must be worn. This includes the wearing of the appropriate protective clothing, including eye protection (face shield or chemical worker's goggles), gloves and coveralls. This is essential to preventing skin exposure and is strongly recommended for most individuals who work with PMDI.

F. Provide temporary enclosures to prevent spray and noxious vapors from contaminating air beyond application area.

G. Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.

H. Dispose of waste foam daily in location designated by Hoffman and decontaminate empty drums in accordance with foam manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Foamed-In-Place Insulation:
   1. Johns Manville; JM Corbond III Closed Cell Spray Polyurethane Foam: www.jm.com.
   2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Foamed-In-Place Insulation: Medium-density, rigid or semi-rigid, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Regulatory Requirements: Comply with applicable code for flame and smoke, concealment, and overcoat limitations.
   2. Thermal Resistance: R-value of 7, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
   3. Water Vapor Permeance: Vapor retarder; 0.61 perm, at 1-1/2 inches, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
   4. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.

5. Air Permeance: 0.04 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.57 psf.
6. Closed Cell Content: At least 90 percent.
7. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

B. Insulating Foam Sealant: Low pressure type; semi-flexible soft, single-component polyurethane foam sealant.
1. Dow Chemical; Great Stuff Pro Window and Door Insulating Sealant.
2. Fomo Products, Inc.; Handi-Seal Window & Door Foam Sealant.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.03 ACCESSORIES

A. Primer: As required by insulation manufacturer.

B. Protective Coating: Intumescent or cementitious coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify work within construction spaces or crevices is complete prior to insulation application.

B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

C. Commencement of work of this section shall be deemed as acceptance of existing work and conditions.

3.02 PREPARATION

A. Mask and protect adjacent surfaces from over spray or dusting.

B. Apply primer in accordance with manufacturer's instructions.

C. Primed Steel: If the surface is free of loose scale, rust, weathered or chalking paint, it can be cleaned using vacuum equipment and hand or power tools to remove loose dirt.

3.03 APPLICATION - SPRAY INSULATION

A. Apply insulation in accordance with manufacturer's instructions.

B. Apply insulation by spray method, to a uniform monolithic density without voids.

C. Apply to achieve a thermal resistance R-value of 21.

D. Apply thermal or ignition barrier as required by applicable codes where other means of protection are not provided or indicated on the drawings.

E. Patch damaged areas, including coating.

F. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

G. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.04 APPLICATION - FOAM SEALANT

A. Apply foamed-in-place sealant in strict accordance with manufacturer's installation guidelines.

B. Avoid overfilling restricted spaces, assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

C. Apply by gun or straw.

D. Apply low pressure foam sealant in gaps and cracks adjacent to door and window frames.

E. Clean overspray from adjacent surfaces and ensure a suitable substrate for subsequent work.

F. Trim excess away for applied trim or subsequent construction.

3.05 FIELD QUALITY CONTROL

A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 01 40 00 - Quality Requirements.

3.06 PROTECTION

A. Do not permit subsequent construction work to disturb applied insulation.

3.07 CLEANING

A. Remove overspray from non-prescribed surfaces without causing damage to surface.

B. Remove loose insulation residue.

C. Remove and legally dispose of all materials related to work of this section.

3.08 SCHEDULES

END OF SECTION

SECTION 07 42 13.16

METAL PLATE WALL PANELS

PART 2 PRODUCTS

1.01 MANUFACTURERS

A. Basis of Design: Aluminum, Stainless Steel, and Zinc Plate Wall Panels.
   1. Highline M1 manufactured by PAC-CLAD.

B. Other Acceptable Manufacturers - Aluminum Plate Wall Panels:
   1. Alply Insulated Panels, LLC; Tech Wall ____: www.alply.com/#sle.
   2. DAMS Incorporated; CPRS Series: www.damsinc.com/#sle.
   3. Elemex Inc; Alumitex - Aluminum Plate: www.elemex.com/#sle.
   4. Fairview Architectural LLC; VitraPlate ____: www.fairviewarchitecturalusa.com/#sle.
   5. Metalwerks; Arcwall: www.metalwerksusa.com/#sle.
   6. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

1.02 DESIGN CRITERIA

A. Metal Plate Wall Panels System: Factory fabricated prefinished metal panel system, site assembled.
   1. Type of Wall Panel System: Pressure Equalized Rain Screen (PERS) in compliance with AAMA 508.
   2. Provide exterior wall panels, soffit panels, and subgirt framing assembly.
   3. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
   4. Wind Load Testing: In compliance with ASTM E330/E330M to obtain the following results:
      a. Maximum Allowable Deflection of Non-Exposed Panels: L/60 for length(L) of span; no permanent deformation of panel system is allowed.
      b. Maximum Allowable Deflection of Highly Visible Panels: L/175 for length(L) of span or 3/4 inch whichever is less, normal to plane of wall between supports of secured perimeter framing members.
   5. Intermediate Panel Stiffeners: Provide as required by design loads applied to panels, and secured to rear face of panel with silicone based adhesive and of size and strength to maintain panel flatness; stiffener material is compatible with silicone.
   6. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to 100 degrees F seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
   7. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
   8. Corners: Factory-fabricated in one continuous piece with minimum 2 inch returns.

1.03 MANUFACTURED METAL PANELS

A. Metal Plate Wall Panels:
   1. Orientation: Horizontal; style as indicated.
   2. Joint Layout: As indicated on Drawings.
   3. Material: Aluminum, 0.125 inch minimum thickness.
   4. Panel Width: ___ inch.

B. Metal Plate Soffit Panels:
   1. Joint Layout: Style as indicated for wall panels.
   2. Material: Aluminum, 0.125 inch minimum thickness.
   3. Panel Width: ___ inch.

C. Subgirts: C-shaped furring channel or SMARTci GREEGirt; to attach wall panel system to face of building structural wall.

1.04 MATERIALS

A. Aluminum Plate: ASTM B209 (ASTM B209M), 3003 alloy, H14 temper.

B. Substrate Wall Sheathing: Refer to Section 06 10 00 for additional information.

C. Substrate Wall Insulation: Refer to Section 07 21 00 for additional information.

1.05 FINISHES

1.06 ACCESSORIES

A. Sealants: Comply with ASTM C920, and refer to Section 07 92 00 for additional requirements.
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
   3. Seam Sealant: Factory-applied, non-skinning, non-drying type.

B. Fasteners: Manufacturer's standard type to suit application; cadmium coated metal with soft neoprene washers.

PART 3 EXECUTION

2.01 EXAMINATION

A. Verify that substrate framing members are ready to receive panels.

2.02 PREPARATION

A. Install subgirts perpendicular to panel length, securely fastened to substrates, shimmed and leveled to uniform plane, and spaced at intervals indicated.

2.03 INSTALLATION

A. Install panels on walls and soffits in accordance with manufacturer's instructions and approved shop drawings.

B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint; allow time to properly dry prior to wall panel installation.

C. Fasten panels to substrate structural supports; aligned, level, and plumb.

D. Locate joints over supports, and lap panel ends minimum 2 inches.

E. Provide expansion and control joints where indicated.

F. Use concealed fasteners unless otherwise indicated and approved by Hoffman.

G. Seal and place gaskets to prevent weather penetration; maintain neat appearance.

2.04 TOLERANCES

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

2.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Do not cover installed air/water barriers until required inspections have been completed.

2.06 CLEANING

A. Remove site cuttings from finish surfaces.

B. Remove protective material from wall panel surfaces.

C. See Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, for additional requirements.

2.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 07 51 00
BUILT-UP BITUMINOUS ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Built-up roofing membrane, conventional application.

B. Insulation, flat and tapered.

C. Vapor retarders.

D. Base flashings.

E. Roofing cant strips, accessories, and walkways.

1.02 RELATED REQUIREMENTS

A. Section 05 31 00 - Steel Decking: Roofing substrate.

B. Section 06 10 00 - Rough Carpentry: Wood nailers and curbs.

C. Section 07 01 50.19 - Preparation for Re-Roofing.

D. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets and _____.

E. Section 22 10 06 - Plumbing Piping Specialties: Roof drains.

1.03 REFERENCE STANDARDS

A. ASTM C728 - Standard Specification for Perlite Thermal Insulation Board.

B. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

C. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

D. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing.

E. ASTM D1863/D1863M - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.

F. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.

G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.

H. FM (AG) - FM Approval Guide.

I. FM DS 1-28 - Wind Design.

J. NRCA (RM) - The NRCA Roofing Manual.

K. UL (FRD) - Fire Resistance Directory.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated counterflashings installed by other sections as the work of this section proceeds.

B. Preinstallation Meeting: Convene one week before starting work of this section.
   1. Attendees:
      a. Architect.
      b. Owner (optional).
      c. Field Project Manager.
      d. Roofing Manufacturer's representative.
      e. Roofing Contractor's Foreman and Project Manager.
      f. Independent Testing Agency (ITA).
   2. Review the following:
      a. Roofing schedule including where project will start and how the installation will proceed.
      b. Submittal requirements and status.

c. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
d. Review loading limitations of decking during and after roofing.
e. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
f. Review governing regulations and requirements for safety, fall protection, and covering of roof openings.
g. Review temporary protection requirements for roofing system during and after installation. Also review roof observation and repair procedures after roofing installation.
h. Review roof observation and repair procedures after roofing installation.
i. Document discussions in writing, including actions required, and distribute copy of report to each meeting participant.
j. Review debris removal and cleanup procedures.

3. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating membrane and bitumen materials, base flashing materials, insulation, and surfacing.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout.

D. Samples of Aggregate: Submit one (1) one lb containers of roofing aggregate.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Manufacturer's Field Reports: Indicate procedures followed.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer:
1. Qualifications: Company specializing in performing the work of this section which has completed at least ten (10) previous installations of roofing materials similar to the type included in this section.
2. Certification: Furnish to the Architect, before roofing contract award, written documentation that installer is manufacturer certified to install roofing systems of the type included in this section.
3. Ability to furnish warranty specified in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

C. Handle and store roofing materials and equipment in a manner to avoid permanent deflection or damage of decking.

D. Keep all combustible materials away from all ignition sources.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 95 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

F. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.

G. Maintain continuous temporary protection prior to and during installation of new roofing system.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Project Installation Guarantee: Submit written agreement signed by the Installer, guaranteeing to correct failures in product and workmanship for a 2-year period from date of Substantial Completion, without reducing or otherwise limiting other rights to correction which the Owner may have under the contract documents. Guarantee shall cover work of this section including:
   1. Roof membrane, base sheet and base flashings.
   2. Insulation.
   3. Roofing Accessories.
   4. Metal flashings and counter-flashings.

C. Warranty for Full Replacement Value (No Dollar Limit or NDL) of completed installation signed by manufacturer warranting against water infiltration and defects of materials and workmanship for a period of 15 years. Warranty shall be complete for labor, materials, repair of defects, and other items necessary to obtain watertight roofing system for full specified time period.

D. Manufacturer's Warranty is not intended to cover products specified under Section 07620.

E. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet and Bitumen Materials:
   1. GAF; ____: www.gaf.com/#sle.
   2. Firestone Building Products Company.
   3. Johns Manville; _____: www.jm.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 ROOFING - CONVENTIONAL APPLICATION

A. Built-up Bituminous Roofing: Asphalt felt membrane, four ply plus base sheet, with vapor retarder and insulation.

B. Roofing Assembly Requirements:
   1. Classifications and Code Requirements:
      a. Roofing system used on metal decks shall meet the requirements of FM Approved Standard for Class I Insulated Steel Deck Roofs.
      b. Non-ballasted roofs shall be designed for a wind uplift pressures required by current codes and as calculated by ASCE-7.
   2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.
   3. Factory Mutual Classification: Class 1 and windstorm resistance of 1-60, in accordance with FM DS 1-28.

C. Acceptable Insulation Types - Constant Thickness Application: Any of the types specified.

1. Bottom Layer of Insulation: 2.0 inches isocyanurate board insulation.
2. Middle Layer of Insulation: 2.0 inches isocyanurate board insulation.
3. Top Layer of Insulation: 0.75 inches perlite insulation.

D. Acceptable Insulation Types - Tapered Application: Any of the types specified.
1. Bottom Layer of Insulation: 2.0 inches isocyanurate board insulation.
2. Middle Layer of Insulation: Tapered isocyanurate board insulation, minimum 0.5 inch thickness.
3. Top Layer of Insulation: 1.0 inches perlite insulation.

E. Surfacing: Aggregate.

2.03 SHEET MATERIALS

A. Vapor Retarder Felt: Asphalt-saturated organic, ASTM D226/D226M, Type I ("No.15") felt, unperforated.

B. Flexible Coping Flashing Material: EPDM sheet; conforming to the following:
1. Thickness: 60 mil.
2. Color: Black.

C. Roofing Felt: ASTM D2178/D2178M; Asphalt-saturated glass fiber felt, type IV; heavy duty.
1. Acceptable products include:
a. GlasPly Premier as manufactured by Johns Manville.
b. Ply VI as manufactured by Firestone.

D. Base Flashing Material: Modified bitumen, reinforced, granule surface.
1. Product: DynaLastic 250 manufactured by Johns Manville.
2. Product: SBS Premium FR as manufactured by Firestone.

2.04 BITUMINOUS MATERIALS

A. Bitumen: ASTM D312/D312M Type IV, asphalt.

B. Bitumen: ASTM D 312, asphalt.
1. Vapor Barrier Ply Sheets: Type IV.
2. Insulation Embedment: Type III or IV.
3. Interply Embedment: Type IV.
4. Flashing Embedment: Type IV.
5. Flood Coat and Gravel Embedment: Type II.

C. Primer: ASTM D 41, asphalt type equal to Concrete Primer as manufactured by Manville.

D. Roof Cement: ASTM D4586/D4586M, Type II, asbestos free.

2.05 INSULATION

A. Perlite Board Insulation: Expanded perlite mineral aggregate, and complies with ASTM C728.
1. Board Size: 24 by 48 inch.
2. Board Thickness: 3/4 inch.
3. Board Edges: Square.
4. Thermal Resistance at 1/2 inch Thickness: R-value of 1.4.

B. Crickets, Saddles and Tapered Areas: Provide pre-formed units of type and shape indicated. Taper to provide indicated slope to drain. Fabricate from rigid polyisocyanurate foam.

2.06 SURFACING MATERIALS - CONVENTIONAL APPLICATION

A. Aggregate: ASTM D1863/D1863M; sound, hard washed river gravel; 1/4 inch minimum to 1/2 inch maximum size.

B. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
1. Composition: Asphaltic with mineral granule surface.
2. Surface Color: White or yellow.

2.07 ACCESSORIES

A. Cant and Edge Strips: Bitumen-impregnated wood fiberboard, compatible with roofing materials; cants formed to 45 degree angle, tapered edge strips, and other configurations as detailed.

B. Lead Flashing: Soft lead sheet, 3 lbs/sq. ft., sizes as detailed.

C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.

D. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
   1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

E. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

F. Start of work in this section denotes acceptability by the roofing contractor of that substrate. Any corrective action required by having installed new roofing over an unsatisfactory surface shall be the Contractor's responsibility.

3.02 PREPARATION - GENERAL

A. Protect adjacent areas such as walls, glass and glazing, gravel and pavement and landscaped areas. Contractor shall be responsible for replacement and/or repair of any damaged adjacent area to the satisfaction of the Owner.

B. Waste materials shall not be thrown from the roof at any time.

3.03 CONCRETE DECK PREPARATION

A. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height. Verify grout keys are filled flush.

B. Fill surface honeycomb and variations with latex filler.

C. Confirm dry deck by moisture meter with 12 percent moisture maximum.

D. Apply mopped two-ply vapor retarder.

3.04 METAL DECK PREPARATION

A. Install preformed acoustical glass fiber insulation strips as specified in Section 05 31 00 within acoustic deck flutes. Install in accordance with manufacturer's instructions.

3.05 VAPOR RETARDER INSTALLATION - CONVENTIONAL APPLICATION

A. Mopped Two-Ply Vapor Retarder:
   1. Apply primer at a rate of 1.0 gal/square (100 sq ft) and allow to dry.
   2. Mop surface with hot bitumen and embed two plies of vapor retarder felt; lap plies 19 inches, full mop each ply.
   3. Apply bitumen at 20 lbs/square (100 sq ft).
   4. Glaze top surface of the vapor retarder with bitumen if insulation is not placed immediately.

B. Extend vapor retarder under cant strips and blocking.

3.06 INSTALLATION - GENERAL

A. Install roofing system in accordance with manufacturer's instructions unless more restrictive requirements are indicated by contract documents, or are necessary to accommodate project circumstances.

B. Schedule inspections and field tests required for roofing system with independent testing agencies, and cooperate with the testing agency personnel during the field visits.

C. Prevent roofing materials from damaging or spilling on adjacent construction. Replace adjoining materials damaged by roofing system installation.

D. End of each days Roofing Work:
   1. Install insulation roofing plies, asphalt, and other roofing materials in a way to prevent insulation and roofing plies from being left exposed during precipitation or overnight.
   2. At conclusion of daily work, close off exposed edges of roofing felts and insulation with two No. 15 roofing plies set in plastic cement. Remove seal layer before commencing next day's work.
   3. Apply glaze-coat to exposed roofing plies at conclusion of work day if finish surface material has not been installed.

E. Obtain approval from Hoffman Field Project Manager and Owner prior for location of heating kettle. Locate away from existing air intakes or HVAC equipment.

3.07 INSULATION INSTALLATION

A. General:
   1. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.
   2. Attachment of Insulation:
      a. Precast Decking: Embed each layer of insulation in floor coat mopping of hot bitumen in accordance with insulation manufacturer's instructions.
      b. Metal Decking:
         1) Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual approved requirements.
         2) Embed second layer of insulation into flood coat mopping of hot bitumen in accordance with roofing and insulation manufacturers' instructions.
   3. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
   4. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
   5. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
   6. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
   7. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
   8. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
   9. Do not apply more insulation than can be covered with membrane in same day.

B. Tapered Insulation:
   1. Install tapered insulation system in accordance with reviewed layout drawings.
   2. Embed second layer in a continuous application of insulation adhesive or steep asphalt applied at a rate of 30-pounds per square.
   3. Stagger end and side joints from joints of layer below.
   4. Provide tapered water diverter at upstream face of roof penetrations greater than 24 inches in width.

C. Overlay Board, Crickets and Saddles:

1. Embed overlay board in a continuous application of insulation adhesive or steep asphalt applied at a rate of 30-pounds per square.
2. Stagger end and side joints from joints of layer below.
3. Install preformed crickets and saddles using a solid mopping of steep asphalt.
4. Trim insulation as required to provide surface of insulation flush with roof drains.
5. Install cants where roof meets vertical surfaces, unless otherwise noted.

3.08 MEMBRANE APPLICATION

A. Install built-up bituminous roofing system in accordance with manufacturers recommendations and NRCA (RM) applicable requirements.

B. Equiviscous Temperature (EVT) at Point of Application: Comply with NRCA (RM) recommendations.
1. Establish softening point (SP), flash point (FP), finished blowing temperature (FBT) and equiviscous temperature (EVT) for bitumen, either by manufacturer's product data or by tests of actual materials.
2. Do not heat bitumen above a temperature 25 degrees below the flash point (FP).
3. Do not heat bitumen above a temperature necessary to attain EVT at point of application more than 1 hour prior to time of application.
4. Do not use bitumen which has been heated to and maintained at a temperature above the finished blowing temperature (FBT) for longer than 3 hours. Remove unacceptable bitumen from the project site.
5. Open heating kettle lid only to add bitumen.

C. At field of roof apply four (4) membrane plies, weather lap edges and ends, and mop with 25 lb/square (+/- 10 pounds per square) of bitumen per ply.
1. Begin membrane installation from low point of roof.
2. Lap each ply 27-1/2 inches over preceding ply, leaving 8-1/2 inches exposed.
3. Provide 6 inch end lap of each ply.

D. Broom felts to apply smooth, free from air pockets, wrinkles, fish-mouths, or tears.

E. Coordinate installation of roof drains and sumps and related flashings.

3.09 BASE FLASHINGS

A. Prime concrete or masonry surfaces to receive flashings with asphalt primer.

B. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
2. Mop on base flashing of two additional plies of felt and one ply of modified bitumen base flashing material.
3. Extend all plies of flashings to heights indicated on drawings, but not less than 8 inches above surface of membrane.
4. Secure base flashing to nailing strips at 4 inches on center.
5. Seal top edge of flashing at terminations and curbs with fiberglass mesh tape embedded and top-coated wit roofing cement.

C. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

D. Penetrations and Stripping In:
1. Do not strip in metal components heavier than 24 gauge sheet metal, 16-ounce copper, or 0.040 inch aluminum.
2. Do not strip in metal components greater than 10 feet in length.
3. Set metal flanges in full bed of roofing cement. Prime metal surface to receive stripping.
4. Install stripping plies in accordance with roofing membrane manufacturer.
5. Around roof penetrations, mop in and seal flanges and flashings with two additional plies of felt.

E. Roof Drains:
1. Coat clamping ring base with generous application of roofing cement.

2. Set minimum 36 inch square lead flashing in bed of roofing cement on roof membrane. Prime surfaces of lead flashing as required.
3. Apply stripping over lead flashing. Extend first ply a minimum of 4 inches beyond edge of lead flashing.

F. Install other accessories in accordance with manufacturer's instructions and NRCA Construction Details as applicable.

G. Install walkway pads in hot bitumen at 20 lb/square. Set joints 6 inches apart.

3.10 AGGREGATE SURFACING - CONVENTIONAL APPLICATION

A. Apply uniform flood coat of bitumen at rate of 60 lbs/square (100 sq ft).

B. While flood coat is hot, embed aggregate at rate of 400 lbs/square (100 sq ft).

C. Evenly distribute aggregate and ensure bond with flood coat. Extend aggregate to bottom edge of cant strips.

3.11 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field quality control and inspection.

B. Inspection, including test cuts and evaluation procedures, will be performed in accordance with ASTM D 3617 and Chapter V, "Quality Control," of the NRCA Low-Slope Roofing Manual

C. Field testing may be performed to:
1. Ascertain bitumen quantities placed.
2. Take and evaluate test cuts of installed membrane.

D. Require site attendance of roofing and insulation material manufacturers daily during installation of the Work.

3.12 CLEANING

A. Remove bituminous markings from finished surfaces.

B. In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.13 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

C. When remaining construction work will in no way affect or endanger roofing, installer shall make a final inspection of roofing and prepare a written report to the Architect, describing the nature and extent of deterioration or damage or non-conformance with specified requirements affecting the work or warranty.

D. Installer shall repair or replace (as required) deterioration or defective work found at time of final inspection.

END OF SECTION

SECTION 07 53 00
ELASTOMERIC MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Elastomeric roofing membrane, ballasted conventional and adhered conventional application.

B. Insulation, flat and tapered.

C. Flashings.

D. Roofing stack boots, roofing expansion joints, and walkway pads.

E. Roof pavers systems.

F. Related accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets.

B. Section 22 10 06 - Plumbing Piping Specialties: Roof drains.

1.03 REFERENCE STANDARDS

A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

C. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

D. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.

E. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.

F. FM DS 1-28 - Wind Design.

G. SPRI RP-4 - Wind Design Standard for Ballasted Single-Ply Roofing Systems.

H. UL (DIR) - Online Certifications Directory.

I. UL (FRD) - Fire Resistance Directory.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated counterflashings installed under other sections.

B. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section.

C. Attendees:
   1. Owner.
   2. Hoffman Field Project Manager.
   3. Roofing Manufacturer's representative.
   4. Roofing Contractor's Foreman and Project Manager.

D. Review the following:
   1. Roofing schedule including where project will start and how the installation will proceed.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review loading limitations of decking during and after roofing.
   4. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
   5. Review governing regulations and requirements for safety, fall protection, and covering of roof openings.
   6. Review temporary protection requirements for roofing system during and after installation.

7. Review roof observation and repair procedures after roofing installation.
8. Review debris removal and cleanup procedures.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, and surfacing.
   1. Maintenance Data: Submit a set of instructions detailing preventative maintenance and noting a list of harmful substances which may damage the roofing membrane.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, mechanical fastener layout, and paver layout.
   1. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.

D. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.

1.06 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
   2. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience, and approved by manufacturer.
   3. Roofing components shall be provided from a single manufacturer source or approved by the manufacturer to assure compatibility and conformance to manufacturer's warranty conditions.
   4. Review methods and procedures related to roofing installation, including manufacturer's written instructions.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

E. Handle and store roofing materials and equipment in a manner to avoid permanent deflection or damage of decking.

F. Flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow all precautions as outlined in manufacturer's Material Safety Data Sheets.

G. Materials having been determined by the Architect to be damaged shall be immediately removed from the construction site and replaced at no cost to Hoffman or the Owner.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 32 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

F. Maintain continuous temporary protection to interior of building prior to and during installation of new roofing system.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective Work within a two year period after Date of Substantial Completion.

C. Warranty for Full Replacement Value (No Dollar Limit or NDL) Systems Warranty signed by manufacturer warranting against water infiltration and defects of materials and workmanship for a period of 15 years. Warranty shall be complete for labor, materials, repair of defects, and other items necessary to obtain watertight roofing system for full specified time period.
   1. Exceptions NOT Permitted:
      a. Damage due to roof traffic.
      b. Damage due to wind of speed greater than 56 mph but less than 90 mph.

D. Warranty is not intended to cover products specified under Section 07 62 00.

E. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

F. Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. EPDM Membrane Manufacturer and Systems:
   1. Carlisle Roofing Systems, Inc; Sure-Seal EPDM: www.carlisle-syntec.com/#sle.
   2. Product: Rubberguard FR EPDM as manufactured by Firestone Building Products Co: www.firestonebpco.com.
   3. Johns Manville; JM EPDM FR : www.jm.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 ROOFING - UNBALLASTED APPLICATIONS

A. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over insulation.

B. Roofing Assembly Requirements:
   1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.
   2. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.

C. Acceptable Insulation Types - Constant Thickness Application: Any of the types specified.
   1. Bottom Layer of Insulation: 2.0 inches isocyanurate board insulation.
   2. Top Layer of Insulation: 2.0 inches isocyanurate board insulation.

D. Acceptable Insulation Types - Tapered Application: Any of the types specified.
   1. Bottom Layer of Insulation: 1.5 inches isocyanurate board insulation.
   2. Middle Layer of Insulation: Tapered isocyanurate board insulation, minimum 1/2 inch thickness, tapered at 1/4:12.
   3. Top Layer of Insulation: 1.5 inches isocyanurate board insulation.

E. Water Diverters and Crickets:
   1. Use tapered isocyanurate at minimum 1/2 inch per foot taper.

2.03 ROOFING - BALLASTED APPLICATIONS

A. Elastomeric Membrane Roofing: One ply membrane loose-laid over insulation with ballast.

B. Roofing Assembly Requirements:
   1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.

C. Acceptable Insulation Types- Under Membrane - Constant Thickness Application: Any of the types specified.

1. Bottom Layer of Insulation: 2.0 inches isocyanurate board insulation.
2. Top Layer of Insulation: 2.0 inches isocyanurate board insulation.

D. Acceptable Insulation Types- Under Membrane - Tapered Application: Any of the types specified.
1. Bottom Layer of Insulation: 1.5 inches isocyanurate board insulation.
2. Middle Layer of Insulation: Tapered isocyanurate, minimum 1/2 inch, tapered at 1/4:12.
3. Top Layer of Insulation: 1.5 inches isocyanurate board insulation.

E. Ballast: Comply with SPRI RP-4 for Category 3, Exposure B, using aggregate where noted on drawings.

2.04 MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); non-reinforced; complying with minimum properties of ASTM D4637.
1. Thickness: 0.060 inch (60 mil).
2. Sheet Width: 76 inch, minimum; factory-fabricate into largest sheets possible.
3. Color: Black.
4. Tensile Strength: 1305 psi, measured in accordance with ASTM D412.
5. Ultimate Elongation: 300 percent, measured in accordance with ASTM D412.
6. Tear Strength: 150 lbf/inch, measured in accordance with ASTM D624.

B. Seaming Materials: Three inch wide self-adhesive tape compatible with membrane.

C. Flexible Flashing Material: Same material as membrane.
1. Thickness: 60 mil.
2. Maximum Perm Rate: 2.0.
3. Tensile Strength: 1,200 psi.
4. Elasticity: 50 percent with full recovery without set.
5. Color: Black.

D. Cushion Sheet: _____.

2.05 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
1. Classifications:
a. Type II:
1) Class 2 - Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of core foam.
2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 2 - 8.0 (1.41) at 75 degrees F.
2. Board Size: 48 by 96 inch.
3. Board Thickness: 1.5 inch.
4. Board Edges: Square.

B. Infill Insulation: Use unfaced fiberglass insulation around penetrations and edges.

2.06 BALLAST MATERIALS

A. No.4 Aggregate: Sound, hard, washed stone, ASTM D 448 Size Classification 4.

B. No.2 Aggregate: Sound, hard, washed stone, ASTM D 448 Size Classification 2.

2.07 ACCESSORIES

A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

B. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer, with manufacturer's enhanced corrosion resistant coating.
1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

C. Termination Bar: 0.100" thick, 3003-H14, aluminum, pre-punched at 4" o.c. with slotted holes.

D. Termination Bar Anchors: Use stainless steel Zamac Nailin manufactured by the Rawlplug Co. for anchoring SPM holding bars to concrete or masonry.

E. Membrane Adhesive: A VOC compliant, solvent based contact bonding adhesive as recommended by membrane manufacturer.

F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

G. Insulation Adhesive: As recommended by insulation manufacturer.

H. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.

I. Night Seal: Compatible with materials with which it is used, furnished by membrane manufacturer.

J. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

K. Sealants: As recommended by membrane manufacturer.

L. Walkway Pads: Suitable for maintenance traffic.
   1. Composition: Roofing membrane manufacturer's standard.
   2. Size: Manufacturer's standard size(s).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION

3.03 INSULATION INSTALLATION

A. Attachment of Insulation:
   1. Mechanically fasten insulation to deck in accordance with insulation manufacturer's instructions and Factory Mutual requirements.

B. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.

C. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions and approved shop drawings.

D. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

F. Damaged or wet insulation shall not be used and shall be removed from the site.

G. Solidly fill with batt insulation all gaps at perimeter or penetrations.

H. Install tapered insulation water diverters at upslope face of all roof penetrations more than 30 inches in width.

I. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.

J. Do not apply more insulation than can be covered with membrane in same day.

3.04 MEMBRANE INSTALLATION

A. Cut sheets to maximum size possible to minimize seams.

B. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching and allow to relax.

C. Shingle joints on sloped substrate in direction of drainage.

D. Install membrane as required to minimize wrinkles and bubbles.

E. Fully Adhered Application: Apply adhesive to substrate at rate required by manufacturer . Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

F. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

G. Continue membrane up vertical surfaces minimum 8 inches above top of cant or edge strip unless otherwise noted. Fasten top of membrane with devices and at locations and frequency as recommended by manufacturer.

3.05 FLASHING INSTALLATION

A. Install flashings as indicated and recommended by manufacturer. Use longest pieces practical.

B. At intersections with vertical surfaces:
   1. Extend membrane up a minimum of 8 inches onto vertical surfaces.
   2. Fully adhere flexible flashing over membrane and up to nailing strips.
   3. Secure flashing to nailing strips at 8 inches on center.
   4. Insert flashing into reglets and secure.

C. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

D. Around roof penetrations, seal flanges and flashings with factory prefabricated pipe seals or field fabricated pipe seals.

E. Coordinate installation of roof drains and related flashings.

F. Coordinate installation of associated counterflashings installed under other sections.

3.06 BALLAST INSTALLATION

A. Place cushion sheet over membrane prior to placing concrete pavers.

B. Install ballast immediately after membrane has been installed. Evenly distribute aggregate ballast.

C. Place pavers carefully to avoid damage to insulation and membrane.

3.07 SEALANT INSTALLATION

A. Apply authorized sealant(s) at locations as required by manufacturer and per project requirements. Sealant(s) are to shed water.

B. Use primer when recommended by manufacturer.

3.08 TEMPORARY SEALS

A. At the end of each working day or at the sign of rain, install temporary, 100% watertight seals where the completed new roofing adjoins the uncovered deck or existing roof surface.

B. If water is allowed to enter beneath the newly completed roofing, the affected areas shall be removed and replaced at no additional expense.

C. Prior to the commencement of work, cut out and remove all contaminated membrane, insulation, roof cement or sealant and properly dispose off site.

3.09 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field quality control and inspection.

B. Manufacturer's Field Services:
   1. Notify manufacturer in timely manner to arrange for manufacturer's technical representative's site visits to ensure proper installation, verify work is in accordance with manufacturer's requirements, and warranty requirements have been met.
   2. Manufacturer's Qualified Technical Representative: Monitor activities and advise applicator of proper installation procedures and precautions.
   3. Minimum Site Visits:
      a. Pre-Installation meeting.
      b. First week of roofing work on site including acceptance of substrate conditions.
      c. Monthly during roofing installation.
      d. Inspection and acceptance of completed roofing.
   4. Submit reports; include site observations, instructions, and monitoring activities.

3.10 CLEANING

A. See Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, for additional requirements.

B. Remove bituminous markings from finished surfaces.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

E. Remove all debris from roof and legally dispose of.

3.11 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings and counterflashings.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 07 53 00 - Elastomeric Membrane Roofing: Roofing system.

B. Section 07 71 00 - Roof Specialties: Manufactured copings, flashings, and expansion joint covers.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.

E. CDA A4050 - Copper in Architecture - Handbook.

F. SMACNA (ASMM) - Architectural Sheet Metal Manual.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Include the following:
   1. Material profiles and jointing patterns.
   2. Jointing details, fastening methods and terminations.
   3. All installation details.
   4. Material gauges.

C. Samples: Submit two samples 6 x 6 inch in size illustrating metal finish color and sheet metal gauge.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricate and install perimeter flashings and components in accordance with the most current edition of FM 1-49 Loss Prevention Data Sheet.

C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

D. Field measurement shall be taken by the installer prior to fabrication.

E. Do not begin fabrication of sheet metal components until shop drawings have been submitted and approved by Architect.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

C. Protect all materials and installations from damage by other trades.

D. Coping, fascia or gravel stop with strippable film shall not be exposed to direct sunlight or extreme heat. All strippable film should be removed immediately after installation is complete.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a two year period after Date of Substantial Completion.

C. Contractor shall warrant installed system to be free of leaks and free from defects in materials and workmanship for two years.

D. Factory Finish: 20-year Warranty stating finish will be:
   1. Free of fading or color change in excess of 5 Delta E units; ASTM D 2244.
   2. Will not chalk in excess of numeral rating of 8 for colors and 6 for whites; ASTM D 4214.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.
   1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Hoffman from manufacturer's standard colors.
   3. Thickness: As scheduled, but not lighter than 24 gauge.
   4. Texture: Smooth finish.

2.02 FABRICATION

A. Shop fabricate components to maximum extent possible to minimize site fabrication.

B. Fabricate to allow for adjustments in field for proper anchoring and joining.

C. Form sections true to shape, accurate in size, square, and free from distortion or defects.

D. Fabricate cleats and starter strips interlockable with coping and counterflashing in accordance with SMACNA or NRCA recommendations.

E. Form pieces in longest possible lengths.

F. Hem exposed edges on underside 1/2 inch; miter and seam corners.

G. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

H. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

I. Fabricate vertical faces with bottom edge formed outward 3/4 inch and hemmed to form drip.

J. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.03 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.

B. Conform to standards set forth in the SMACNA Architectural Sheet Metal Manuals.

C. Coordinate installation of components of this section with installation of roofing membrane and base flashing.

D. Fabricate and install continuous cleats at all flashings, copings, and fascias.

E. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

F. Apply plastic cement compound between metal flashings and felt flashings.

G. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

H. Seal metal joints watertight.

I. Sheet metal joint covers shall be a minimum of 6 inches in width and set in two continuous beads of sealant.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.05 SCHEDULE

A. Through-Wall Flashing in Masonry:
   1. Material: Prefinished galvanized steel.
   2. Thickness: 24 ga.

3.06 FASCIA AND CORNICES:

A. Material: Prefinished galvanized steel.

B. Thickness: 24 ga. for fascias up to 8 inches and 20 ga. for fascias 8 inches and over.

C. Scuppers:
   1. Material: Prefinished galvanized steel
   2. Thickness: 22 ga.

D. Coping, Cap, Parapet, Sill and Ledge Flashings:
   1. Material: Prefinished galvanized steel.
   2. Thickness: 24 ga. minimum.

E. Counterflashings at Roofing Terminations (over roofing base flashings):
   1. Material: Prefinished galvanized steel.
   2. Thickness: 24 ga.

F. Counterflashings at Curb-Mounted Roof Items, including skylights and roof hatches:
   1. Material: Prefinished galvanized steel.
   2. Thickness: 24 ga.

G. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports:
   1. Material: Prefinished galvanized steel.

2. Thickness: 24 ga.

H. Continuous Cleats:
1. Material: Galvanized steel.
2. Thickness: 22 ga.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof hatches.

1.02 RELATED REQUIREMENTS

A. Section 07 53 00 - Elastomeric Membrane Roofing: Flashing for roof units.

B. Section 07 62 00 - Sheet Metal Flashing and Trim: Roof accessory items fabricated from sheet metal.

1.03 REFERENCE STANDARDS

A. 29 CFR 1910.23 - Guarding floor and wall openings and holes.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

D. UL (DIR) - Online Certifications Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.06 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Submit manufacturer's warranty. Ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 ROOF HATCHES AND VENTS

A. Roof Hatch Manufacturers:
   1. Acudor Products Inc: www.acudor.com/#sle.
   2. Bilco Company: www.bilco.com/#sle.
   3. Dur-Red Products: www.dur-red.com.
   4. Milcor, Inc: www.milcorinc.com.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Roof Hatches and Smoke Vents: Factory-assembled galvanized steel frame and cover, complete with operating and release hardware.
   1. Style: Provide flat metal covers unless otherwise indicated.
   2. Mounting: Provide frames and curbs suitable for mounting conditions as indicated on drawings.
   3. Size: Match existing; single-leaf style.

C. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
   1. Material: Galvanized steel, 14 gage, 0.0747 inch thick.
   2. Finish: Factory prime paint.
   3. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
   4. Curb Height: 12 inches from finished surface of roof, minimum.

D. Metal Covers: Flush, insulated, hollow metal construction.
   1. Capable of supporting 40 psf live load.
   2. Material: Galvanized steel; outer cover 14 gage, 0.0747 inch thick, liner 22 gage, 0.03 inch thick.
   3. Finish: Factory prime paint.
   4. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
   5. Gasket: Neoprene, continuous around cover perimeter.

E. Safety Railing System: Manufacturer's standard accessory safety rail system mounted directly to curb.
   1. Comply with 29 CFR 1910.23, with a safety factor of two.
   2. Posts and Rails: Aluminum tube.
   3. Gate: Same material as railing; automatic closing with latch.
   4. Finish: Manufacturer's standard, factory applied finish.
   5. Gate Hinges and Post Guides: ASTM B221 (ASTM B221M), 6063 alloy, T5 temper aluminum.
   6. Mounting Brackets: Hot dipped galvanized steel, 1/4 inch thick, minimum.
   7. Fasteners: Stainless steel, Type 316.

F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
   1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
   2. Hinges: Heavy duty pintle type.
   3. Hold open arm with vinyl-coated handle for manual release.
   4. Latch: Upon closing, engage latch automatically and reset manual release.
   5. Manual Release: Pull handle on interior.
   6. Locking: Padlock hasp on interior.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

A. Clean installed work to like-new condition.

B. Coordinate with installation of roofing system and related flashings for weathertight installation.

C. Adjust hinges for smooth operation.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated, whether indicated on drawings or not.

C. Sealing of all joints and penetrations in smoke-resistant assemblies whether indicated on drawings or not.

D. Perimeter Fire Barrier System between a rated floor and an exterior wall assembly.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Code-Required Special Inspections.

B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

C. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Cutting and patching.

D. Section 07 05 53 - Fire and Smoke Assembly Identification.

E. Section 03 30 00 - Cast-In-Place Concrete.

F. Section 04 20 00 - Unit Masonry.

G. Section 07 81 23 - Intumescent Mastic Fireproofing.

H. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

I. Section 21 00 00 - Fire Suppression.

J. Section 22 00 00 - Plumbing.

K. Section 23 00 00 - Heating, Ventilating, and Air-Conditioning (HVAC).

L. Section 26 00 00 - Electrical.

M. Section 27 00 00 - Communications.

1.03 DEFINITIONS

A. Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or construction joints between, fire rated wall and floor assemblies.

1.04 REFERENCE STANDARDS

A. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.

B. ASTM E1966 - Standard Test Method for Fire Resistive Joint Systems.

C. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus.

D. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies.

E. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

F. ITS (DIR) - Directory of Listed Products.

G. FM 4991 - Approval Standard for Firestop Contractors.

H. FM (AG) - FM Approval Guide.

I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168.

J. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems.

K. UL (DIR) - Online Certifications Directory.

L. UL (FRD) - Fire Resistance Directory.

M. NFPA 101 - Life Safety Code.

N. NFPA 70 - National Electrical Code.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of firestopping with other trades and construction.

B. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the start of the work of this section; require attendance by all affected trades.
   1. Review preparation and installation procedures and coordinating and scheduling required with related work.
   2. Review requirements for any code-required special inspections.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
   1. Product Data: Provide data on product characteristics, performance ratings, and limitations.
      a. Manufacturer's installation instructions indicating preparation and installation instructions.
      b. Manufacturer's certification that products meet or exceed specified requirements.

1.07 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

C. For this project, firestopping shall be installed by a single subcontractor specializing in firestopping regardless of craft responsible for penetration.

D. Firestop Systems do not reestablish the structural integrity of load bearing partitions/assemblies, or support live loads and traffic. Installer shall consult the structural engineer prior to penetrating any load bearing assembly.

E. Installer Qualifications: Company specializing in performing the work of this section who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install manufacturer's products per specified requirements and meeting at least one of the following qualifications:
   1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   2. UL Approved Contractor.
   3. Manufacturer Accredited Fire Stop Specialty Contractor.
   4. Verification of minimum three years documented experience installing work of this type.
   5. Verification of at least five satisfactorily completed projects of comparable size and type.
   6. Licensed by local authorities having jurisdiction (AHJ).

F. Single-Source Responsibility: Provide firestop systems for all conditions from a single manufacturer.

G. Proposed firestop materials and methods shall conform to applicable governing codes having local jurisdiction.

H. For those firestop applications that exist for which no qualified tested system is available through a manufacturer, an Engineering Judgement (EJ) derived from similar qualified tested system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineering judgement documents must follow requirements set forth by the International Firestop Council.
   1. Submit Manufacturer's engineering judgement identification number and drawing details when no qualified tested system is available for an application. Engineering judgement must include both project name and contractor's name who will install firestop system as described in document.

1.08 MOCK-UP

A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall or floor constructions, install one assembly for each different combination.
   2. Where firestopping is intended to fill a linear opening, install minimum of 1 linear ft.

B. Obtain approval of authority having jurisdiction or Architect before proceeding.

C. If accepted, mock-up will represent minimum standard for the Work.

D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.09 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide firestopping products containing no detectable asbestos, as determined by the method specified in 40 CFR Par 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

C. Firestopping shall be free of PCB's, ethylene glycol and lead.

D. Do not use any products containing solvents or that require hazardous waste disposal.

E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver material in the manufacturer's original, unopened containers or packages with manufacturers name, product identification, lot numbers, UL-Labels, and mixing and installation instructions, as applicable.

B. Store materials in the original, unopened containers or packages, and under conditions recommended by manufacturers.

C. Do not use damaged materials.

D. All Firestop materials shall be installed prior to expiration of shelf life.

E. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job site.

1.11 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

C. Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.

D. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.

E. Do not cover up firestopping installations until Architect or Authorities Having Jurisdiction have examined each installation.

F. Do not use damaged or expired materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop.
   2. Hilti, Inc; _____: www.us.hilti.com/#sle.
   3. Specified Technologies Inc: www.stifirestop.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

C. Mold and Mildew Resistance: Provide firestoppping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

E. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

F. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

G. Firestopping Materials are either "cast-in-place" or "post installed". Provide cast-in-place firestop devices prior to concrete placement.

H. Provide a round fire-rated cable management device whenever cables penetrate fire rated walls, where frequent cable changes and additions may occur.
   1. The fire-rated cable management device shall consist of a corrugated steel tube with zinc coating, contain and inner plastic housing, intumescent material rings, and inner fabric smoke seal membrane.
   2. The length of the sleeve shall be 12.4 inches.
   3. The fire-rated cable management device shall contain integrated intumescent firestop wrap strip materials sufficient to maintain the hourly rating of the barrier being penetrated. The fire-rated cable management device shall contain a smoke seal fabric membrane or intumescent firestop plugs sufficient to achieve the L-Rating requirements of the barrier type.
   4. Install device per the manufacturer’s published installation instructions.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.
   2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
   3. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.

B. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.
   2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
   3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
   4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
   1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
   2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
   3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
   4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.04 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.

B. Fire Ratings: Use any system listed by UL or FM or that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements.

2.05 MATERIALS

A. Intumescent Sealants: Single component, intumescent latex formulation, conforming to the following:
   1. Formulation: No-sag, non-halogen formula; fast drying, paintable.

B. Endothermic Sealant: Single component intumescent latex formulation, conforming to the following:
   1. Formulation: High flow rate, no-sag formula, low shrinkage, paintable.

C. Elastomeric Sealants: Single component latex formulations that upon cure do not re-emulsify during exposure to moisture and accommodate a minimum +/- 25 percent movement.

D. Silicone Firestop Sealant: One part, neutral curing silicone sealant, meeting the requirements of ASTM C920.

E. Firestop Devices: Factory-assembled steel collars lined with intumescent material capable of expanding a minimum 30 times sized to fit specific outside diameter of penetrating item.

F. Wall Opening Protective Materials: Intumescent, non-curing pads or inserts for protection of electrical switch and receptacle boxes.

G. Firestop Putty: One-part, 100% solids intumescent firestop compound which expands on exposure to surface heat gain; conforming to the following:
   1. Potential Expansion: Minimum 1000 percent.
   2. Formulation: Non-halogen, nontoxic synthetic elastomer formula.
   3. Durability and Longevity: Flexible, re-enterable.

H. Wrap Strip: Single component intumescent elastomeric sheet with foil one side, re-enterable, capable of expanding a minimum of 30 times.

I. Mortar: Portland cement based dry-mix product formulated for mixing with water at site to form a non-shrinking, water-resistant, homogenous mortar.

J. Silicone Foam: Multicomponent, silicone-based liquid elastomers, that when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

K. Firestopping Spray: Water based, capable of drying to a tough elastomeric coating, paintable.
   1. Compression/Extension Recovery: +/- 25% of original joint width.

L. Fiber Packing Material: Mineral wool fiber packing insulation; conforming to the following:
   1. Density: 4.0 lb/cu ft.
   2. Asbestos Content: None.
   3. Service Temperatures: Continuous to 1200F.

M. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and one-piece metal collar, with locking latch and bendable tabs to secure, intended to be installed after penetrating item has been installed; conforming to the following:

N. Firestop Devices - Cast-In Type: Sleeve and sealing material, intended to be cast in concrete floor forms or in concrete on metal deck, not requiring any additional materials to achieve penetration seal for use with non-combustible and combustible plastic pipe.

O. Reusable Firestopping: Self contained, highly intumescent, removable compressible shapes, pillows, or blocks specifically tested in removable configuration.

P. Perimeter Fire Barrier System: UL tested assembly of mineral wool and firestopping spray between a rated floor/roof and an exterior wall assembly; conforming to the following:
   1. Mineral Wool:
      a. Density: 4.0 lb/cu. ft.
      b. Asbestos Content: None.
      c. Moisture Absorption: <1%; inorganic.
      d. Service Temperature: Continuous t 1200 degrees F.
      e. Manufacturers:
         1) Thermafiber, Inc.; www.thermafiber.com
         2) Substitutions: See Section 01 60 00 - Product Requirements.
   2. Firestopping Spray: Water based, capable of drying to a tough elastomeric coating, paintable, meeting the following:
      a. Compression/Extension Recovery: +/- 25% of original joint width.
      b. Manufacturers:
         1) Hilti, Inc.; www.us.hilti.com
         2) Tremco; www.tremcosealants.com
         3) Substitutions: See Section 01 60 00 - Product Requirements.
   3. Impaling Clips: Provide impaling clips as required for fastening and holding mineral wool fiber packing material/fire proof insulation in place.

Q. Smoke and Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant meeting the following:
   1. Manufacturers:
      a. Hilti, Inc.; Hilti CP 506 Smoke and Acoustic Sealant: www.us.hilti.com
      b. Substitutions: See Section 01 60 00 - Product Requirements.

R. Smoke and Acoustical Spray: Manufacturer's standard sprayable latex material complying with ASTM C919 and the following:
   1. Manufacturers:
      a. Hilti, Inc.; Hilti CP 572 Smoke and Acoustic Spray.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

S. Labels: Red and white self-adhesive label.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

B. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
   1. Verify penetrations are properly sized and in suitable condition for application of materials.
   2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
   3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
   4. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
   5. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

3.03 COORDINATION

A. Coordinate location and proper selection of cast-in-place Firestop Devices with trade responsible for the work. Ensure device is installed before placement of concrete.

B. Responsible trades to provide adequate spacing of field run pipes to allow for installation of cast-in-place firestop devices without interferences.

C. Coordinate with plumbing, mechanical, electrical and other trades to assure that all pipe, conduit, cable and other items that penetrate fire rated construction have been permanently installed prior to installation of Firestops.

D. Schedule and sequence the work to assure that partitions and other construction is not erected prior to the installation of Firestops.

3.04 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.

C. Do not cover installed firestopping until inspected by authorities having jurisdiction.

D. Install labeling required by code.

E. At locations where firestop sealant will be exposed to exterior conditions or weather, use a silicone based firestop sealant that is water and UV resistant.

3.05 FIELD QUALITY CONTROL

A. Independent Testing Agency: Inspection agency employed and paid by Owner, may be retained to examine penetration firestopping in accordance with ASTM E2174, “Standard Practice for On-Site Inspection of Installed Fire Stops and ASTM E2393, “Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems.

B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

C. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

D. Keep areas of work accessible until inspection by applicable code authorities.

E. Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades or Owner.

F. Manufacturer’s Field Services: During Installation, provide periodic destructive testing inspections to assure proper installation/application. After installation is complete, submit findings in writing indicating whether or not the installation of the tested system identified was installed correctly.

3.06 THROUGH PENETRATION MARKING AND IDENTIFICATION

A. Through-Penetration Systems: Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include as a minimum the following information on labels:
   1. The Words: "Warning - Through Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage.
   2. Contractor's name, address, and phone number.
   3. Through-Penetration firestop system designation of applicable testing and inspecting agency.
   4. Date of installation.
   5. Through-Penetration firestop system manufacturer's name.
   6. Installer's Name.

3.07 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

A. See Section 07 05 33 - Fire and Smoke Assembly Identification

3.08 CLEANING

A. Clean adjacent surfaces of firestopping materials.

B. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

3.09 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations.

C. Repair or replace any deteriorated or damaged firestopping as required to produce firestopping complying with specified requirements and codes.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.

B. ASTM C1193 - Standard Guide for Use of Joint Sealants.

C. ASTM C1311 - Standard Specification for Solvent Release Sealants.

D. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data for Sealants and Accessory Products: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.
   6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   7. Sample product warranty.

C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience and approved by manufacturer.

1.06 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with wall under provisions of Section 01 40 00.

B. Construct mock-up with specified sealant types and with other components noted.

C. Locate where directed by Architect.

D. Mock-up may not remain as a part of the Work.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
   1. Bostik Inc: www.bostik-us.com.
   2. Dow Corning Corporation: www.dowcorning.com/construction.
   3. Hilti, Inc: www.us.hilti.com.
   4. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com/#sle.
   5. Pecora Corporation: www.pecora.com.
   6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
   7. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
      a. Wall expansion and control joints.
      b. Joints between door, window, and other frames and adjacent construction.
      c. Joints between different exposed materials.
      d. Openings below ledge angles in masonry.
      e. Other joints indicated below.
   2. Do not seal the following types of joints.
      a. Intentional weepholes in masonry.
      b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
      c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      d. Joints where installation of sealant is specified in another section.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.04 NONSAG JOINT SEALANTS

A. Polyurethane Sealant: 1, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Hoffman from manufacturer's standard range.
   4. Service Temperature Range: Minus 40 to 180 degrees F.

2.05 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
   1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.

2. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.05 CLEANING

A. Clean adjacent soiled surfaces.

3.06 PROTECTION

A. Protect sealants until cured.

3.07 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Fire-rated hollow metal doors and frames.

D. Thermally insulated hollow metal doors with frames.

E. Hollow metal borrowed lites glazing frames.

F. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

A. Section 04 05 11 - Masonry Mortaring and Grouting: Masonry grout fill for hollow metal frames.

B. Section 04 20 00 - Unit Masonry: Installation of frames in masonry.

C. Section 06 10 00 - Rough Carpentry.

D. Section 08 14 16 - Flush Wood Doors.

E. Section 08 71 00 - Door Hardware DO NOT USE.

F. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

G. Section 09 21 16 - Gypsum Board Assemblies.

H. Section 09 91 13 - Exterior Painting: Field painting.

I. Section 09 91 23 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

F. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

G. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames.

H. ICC A117.1 - Accessible and Usable Buildings and Facilities.

I. ITS (DIR) - Directory of Listed Products.

J. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames.

K. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames.

L. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames.

M. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames.

N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

O. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

P. UL (DIR) - Online Certifications Directory.

Q. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings: .
   1. Product Data Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
   2. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

D. Manufacturer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Hardware Coordination: Coordinate with hardware supplier for the proper placement and preparation for door hardware with door and frame fabrication. Secure necessary hardware templates and hardware information from hardware supplier.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Marking: Mark each item with appropriate heading and door number in accordance with drawings and approved shop drawings.

B. Inspection: Accept doors and frames on site in manufacturer's packaging. Inspect for damage. Minor damages may be repaired provided that the refinished items are equal in all respects to new work and acceptable to Architect, otherwise, remove and replace damaged items.

C. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   1. Store doors at building site under cover on minimum 4-inch high wood blocking.
   2. Avoid use of non-vented plastic or canvas shelters which would create a humidity chamber.
   3. If cardboard wrapper on door becomes wet, remove carton immediately. Provide minimum 1/4" spaces between stacked doors to promote air circulation.

D. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.
   1. Protect against damage in shipping.
   2. If wrapped in plastic, break plastic seals on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
   1. Correct defective Work within a one year period after Date of Substantial Completion.

C. Warranty shall include reinstallation labor which may be required due to repair or replacement of defective doors or frames where defect was not apparent prior to installation. Warranty shall also include finishing that may be required due to repair or replacement of defective doors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
   2. Pioneer Industries, Inc.
   3. Steelcraft, an Allegion brand: www.allegion.com/us.
   4. Curries, an Assa Abloy Group company: www.assaabloydss.com.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Manufacturers standard for application indicated.
   5. Typical Door Face Sheets: Flush.
   6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
   7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
      a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Hollow Metal Panels: Same construction, performance, and finish as doors.

C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gage, 0.032 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thermal Resistance: R-Value of 9.9, minimum, for installed thickness of polyisocyanurate.
   4. Door Thickness: 1-3/4 inch, nominal.
   5. Weatherstripping: Refer to Section 08 71 00.

C. Interior Doors, Non-Fire Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gage, 0.032 inch, minimum.
      e. Zinc Coating: Not required; ASTM A653/A653M.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inch, nominal.

D. Fire-Rated Doors:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gage, 0.032 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
   2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C ("positive pressure") with temperature rise ratings as required by code, tested in accordance with NFPA 252.
      a. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
      b. Provide units listed and labeled by UL (DIR) or ITS (DIR).
      c. Attach fire rating label to each fire rated unit.
   3. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
   4. Door Thickness: 1-3/4 inch, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Fully welded.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
   1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.
   2. Double back-bend type at drywall partitions. Allow throat depth 1/8" wider than wall thickness.

E. Door Frames, Fire-Rated: Full profile/continuously welded type.
   1. Fire Rating: Same as door, labeled.
   2. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.
   3. Double back-bend type at drywall partitions. Allow throat depth 1/8" wider than wall thickness.

F. Mullions for Pairs of Doors: Fixed, with profile similar to jambs.

G. Transom Bars: Fixed, of profile same as jamb and head.

H. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

I. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.

2.05 ACCESSORIES

A. Glazing: As specified in Section 08 80 00, factory installed.

B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

C. Astragals for Double Doors: Specified in Section 08 71 00.

D. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

G. Frame Anchors: Minimum of six wall anchors and two base anchors. Provide with an additional anchor for every 30 inches over 90 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

D. Notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80 and local code authority.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 71 00.

F. Comply with glazing installation requirements of Section 08 80 00.

G. Coordinate installation of electrical connections to electrical hardware items.

H. Touch up damaged factory finishes.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before date of Substantial Completion.

3.07 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; fire rated, non-rated, and acoustical.

1.02 RELATED REQUIREMENTS

A. Section 06 20 00 - Finish Carpentry: Wood door frames.

B. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES.

C. Section 08 71 00 - Door Hardware DO NOT USE.

D. Section 08 80 00 - Glazing.

E. Section 09 93 00 - Staining and Transparent Finishing: Field finishing of doors.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - American National Standard for Basic Hardboard.

B. ASTM E413 - Classification for Rating Sound Insulation.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards.

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0.

E. ICC (IBC) - International Building Code.

F. ICC (IBC) - International Building Code.

G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

H. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

I. UL 10B - Standard for Fire Tests of Door Assemblies.

J. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

K. WDMA I.S. 1A - Interior Architectural Wood Flush Doors.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings:
   1. Product Data: Indicate door core materials and construction; veneer species, type and characteristics, styles and edge banding.
      a. Manufacturer's Installation Instructions: Indicate special installation instructions.
   2. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
      a. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

C. Samples: Submit two samples of door veneer, 6 by 6 inch in size illustrating wood grain, stain color, and sheen.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

B. Obtain doors from a single manufacturer.

1.06 REGULATORY REQUIREMENTS

A. Fire Door and Panel Construction: Conform to NFPA 252.
   1. Listed and classified by UL as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with recommendations of WDMA - NWWDA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as manufacturer's instructions.

C. Accept doors on site in manufacturer's packaging. Inspect for damage.

D. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

E. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for doors, frames, and hardware, using temporary, removable markings.

F. Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with AWI quality standard including Section 100-S-3 "Moisture Content".

1.08 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty, executed in Owner's name for all doors provided by manufacturer for referenced project.

C. Interior Doors: Provide manufacturer's warranty for the life of the installation.

D. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

E. Warranty shall include reinstallation labor which may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Eggers Industries: www.eggersindustries.com/#sle.
   2. Oshkosh Door Company: www.oshkoshdoor.com.
   3. VT Industries.
   4. Marshfield DoorSystems, Inc: www.marshfielddoors.com.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 DOORS

A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Wood veneer facing for field transparent finish as indicated on drawings.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.
   2. Pairs: Pair match each pair; set match single and pairs within 10 feet of each other when doors are closed.

B. Facing Adhesive: Type I - waterproof.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails.

C. Fabricate fire rated doors in accordance with UL requirements. Attach fire rating label to door.

D. Provide solid blocks at lock edge and top of door for closer for hardware reinforcement.
   1. Provide solid blocking for other throughbolted hardware.

E. Vertical Exposed Edge of Stiles - Veneer Faces: Of same species as veneer facing. Minimum 5/16" thick

F. Fit door edge trim to edge of stiles after applying veneer facing.

G. Bond edge banding to cores.

H. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

I. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

J. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 5, Varnish, Conversion.
      b. Stain: As selected by Hoffman.
      c. Sheen: Satin.

B. Factory finish doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Install fire-rated doors in accordance with NFPA 80 requirements.

C. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

D. Adjust width of non-rated doors by cutting equally on both jamb edges.
   1. Trim fire-rated doors in strict compliance with fire rating limitations.

E. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).

F. Trim fire door height at bottom edge only, in accordance with fire rating requirements.

G. Use machine tools to cut or drill for hardware.

H. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

C. Maximum Diagonal Distortion (Warp): 1/8 inch measured with straight edge or taut string, corner to corner, over an imaginary 36 by 84 inches surface area.

D. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.

E. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE

A. Refer to Door and Frame Schedule appended to this section.

END OF SECTION

SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall and ceiling access door and frame units.

B. Access door and frame units, fire-rated and non-fire-rated, in wall and ceiling locations.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
   1. Manufacturer's Installation Instructions: Indicate installation requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Material: Steel.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   4. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

B. Wall-Mounted Units in Wet Areas:
   1. Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   4. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

C. Fire-Rated Wall-Mounted Units:
   1. Wall Fire-Rating: As indicated on drawings.
   2. Material: Steel.
   3. Size: 12 inch by 12 inch.

D. Ceiling-Mounted Units:
   1. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
   2. Size - Other Ceilings: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

E. Fire-Rated Ceiling-Mounted Units:
   1. Ceiling Fire-Rating: As indicated on drawings.
   2. Material: Steel.
   3. Size: 12 inch by 12 inch.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

2.02 WALL AND CEILING MOUNTED UNITS

A. Manufacturers:

1. ACUDOR Products Inc: www.acudor.com/#sle.
2. Karp Associates, Inc: www.karpinc.com.
3. Milcor, Inc: www.milcorinc.com.
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 32 23
SLIDING/FOLDING GLAZED DOORS/WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory fabricated sliding/folding glazed door/wall with frames and operating hardware.
   1. Aluminum panel frame system.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Rough opening framing.

B. Section 07 92 00 - Joint Sealants: Sealing joints between door frames and adjacent construction.

C. Section 08 71 00 - Door Hardware DO NOT USE: Cylinder locks.

D. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

B. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

C. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

D. ASTM E413 - Classification for Rating Sound Insulation.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide information on dimensions, frame and sill construction, glazing, and hardware.

C. Shop Drawings: Indicate opening dimensions, elevations of different types, and framed opening tolerances.

D. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in, and with not fewer than three years of experience, manufacturing products of the type specified.

B. Installer Qualifications: Company specializing in installation of products of the type specified, with not fewer than three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site and store in manufacturer's protective cartons until openings are ready for installation.

B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN - ALUMINUM PANEL FRAME

A. Floor Mounted; Non-thermally Broken, with Insulating Glazing:
   1. Basis of Design: Kawneer 1010 Series: www.kawneer.com.

B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below.
   1. C.R. Laurence Company, Inc; U.S. Aluminum: www.crl-arch.com/sle.
   2. DORMA USA, Inc: www.dorma.com.
   3. Modernfold, a DORMA Group Company: www.modernfold.com.
   4. NanaWall Systems, Inc: www.nanawall.com.

C. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.02 PERFORMANCE REQUIREMENTS

A. Acoustical Performance: Provide glass partitions and door assemblies tested by qualified testing agency, calculated in accordance with ASTM E413, tested in accordance with ASTM E90, and rated for not less than Sound Transmission Class (STC) indicated.
   1. Partition STC Rating: 45, minimum, for framed partition.

2.03 SLIDING/FOLDING GLAZED DOORS/WALLS

A. Aluminum Sliding/Folding Glazed Doors/Walls: Extruded aluminum sliding/folding and operable panel frames, factory fabricated; complete with, flashings, support and anchorage devices, and glazing.
   1. Configuration: As shown on drawings.
   2. Support System: Top hung.
   3. Standard Sill: Raised type, with sealant, shims and fasteners at necessary locations.
      a. Finish: To match the panel frame.
   4. Panel Rail Depth: 4 inch.
   5. Aluminum Frames: Factory finished; manufacturer's standard corner construction; thermally broken.
   6. Glass Stops: Same material and color as frame.
   7. Aluminum Frame Finish: Anodized coating in accordance with AAMA 611.
      a. Sheen: Matte.
      b. Interior Color: Clear anodized

2.04 FACTORY ASSEMBLY

A. Factory assemble sliding/folding operable panel frames as single unit, including head, jambs, and bottom sections; provide concealed fasteners.
   1. Sizes: Allow for tolerances of rough framed openings, clearances, and shims at perimeter of assemblies.
   2. Joints and Corners: Flush, hairline and waterproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   3. Glazing: Factory installed.

2.05 ACCESSORIES

A. Glazing: As specified in Section 08 80 00.

B. Sliding/Folding Hardware: Provide manufacturer's standard hardware including carriages with sealed ball bearing rollers, and top or bottom tracks.

C. Door Hardware: As specified in Section 08 71 00.

D. Exposed Hardware Finish: Brushed satin.

E. Locking Mechanisms: Minimum 2-point deadbolt locking of each panel; manufacturer's standard type.

F. Cylinder Locks: As specified in 08 71 00.

G. Anchors: Hot-dipped galvanized or stainless steel in accordance with project and manufacturer's installation requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings are ready to receive work and opening dimensions and clearances are as indicated on approved shop drawings.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit in coordination with air and vapor seal.

3.03 INSTALLATION

A. Install door/wall unit assembly in accordance with manufacturer's instructions.

B. Attach frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

C. Use anchorage devices to securely fasten assembly to adjacent construction without distortion or imposed stresses.

D. Install perimeter trim and interior closures.

3.04 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation from Plumb: 1/16 inch.

C. Maximum Variation from Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 foot straight edge.

3.05 ADJUSTING

A. Adjust hardware for smooth operation.

3.06 CLEANING

A. Remove protective material from factory finished surfaces.

B. Remove labels and visible markings.

C. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 33 23
OVERHEAD COILING DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead coiling doors, operating hardware, fire-rated, non-fire-rated, exterior, and interior, manual and electric operation.

B. Wiring from electric circuit disconnect to operator to control station.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 26 05 83 - Wiring Connections: Power to disconnect.

C. Section 28 46 00 - FIRE ALARM SYSTEM: Fire alarm interconnection.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

D. ITS (DIR) - Directory of Listed Products.

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

G. NEMA MG 1 - Motors and Generators.

H. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

I. UL (DIR) - Online Certifications Directory.

J. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide general construction, electrical equipment, and component connections and details.

1. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.
2. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.
3. Shop Drawings:
    a. Shop drawings for the fabrication and installation of curtains and frames.
    b. Include elevations, conditions at openings, and details of construction.
    c. Locations, installation requirements of finish hardware and reinforcements, and details of joints and connections.
    d. Advise the Architect in writing should any doors be ineligible for standard fire resistance labels due to door size, hardware, vision openings, or other features required by the Contract Documents.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

C. Furnish each overhead coiling door as a complete unit produced by one manufacturer, including hardware, accessories, mounting and installation components.

D. Provide exterior assemblies that withstand positive and negative wind loads of 20 psf, without undue deflection or damage to components.

E. Furnish inserts and anchoring devices that are to be installed in concrete or masonry for unit installation. Include setting drawings, templates, instructions, and directions for installing inserts.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated openings.

B. Provide products listed and labeled by UL as suitable for the purpose specified and indicated.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of fire rated units and operating hardware assembly.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products indoors and protect from moisture, construction traffic, and damage.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Submit 2 year manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Overhead Coiling Doors:
   1. Clopay Building Products: www.clopaydoor.com/#sle.
   2. Cornell Iron Works, Inc: www.cornelliron.com.
   3. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com/#sle.
   4. Raynor Rolling Doors.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Overhead Coiling Fire Doors:
   1. Clopay Building Products: www.clopaydoor.com/#sle.
   2. Cornell Iron Works, Inc: www.cornelliron.com/#sle.
   3. Wayne-Dalton, a Division of Overhead Door Corporation; ____: www.wayne-dalton.com/#sle.
   4. Raynor Rolling Doors.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 OVERHEAD COILING INSULATED SERVICE DOORS

A. Provide Model "T" Series Thermal Doors.
   1. Operation: Motor operator.
   2. Mounting: Interior face mounted on prepared opening.

B. Curtain and Bottom Bar:
   1. Slats: Type "T3" insulated slats; 2-5/8 inches high x 7/8 inch thick; U-value of 0.16; cold roll formed interlocking front and back slats, assembled in continuous lengths to form curtains.
   2. Slat material: ASTM A 653/A 653M galvanized steel; zinc coated.
   3. Slat finish: Powder coat colored finish on both sides of slat. Color: To be selected.

4. Slat gage: As required by width of opening and wind loading of 20 psf or 87 mph in the fully closed position, minimum 26 gage.
5. Insulation: Environmentally safe CFC-free polyurethane foam injected to fill all voids and to provide continuous insulation protection the full height of the slat, including slat interlocks; R-value of 6.25.
6. Endlocks: Each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and to maintain slat alignment, stamped steel.
7. Bottom Bar: Reinforce curtain bottom with angles, material to match curtain material, provide astragal weather seal.

C. Weatherstripping: Guide weatherstripping on both sides.

D. Hood:
1. Material: 24 gage galvanized steel.
2. Shape: Square.
3. Finish: Same as for curtain.
4. Weatherstripping: Neoprene hood baffle to minimize air infiltration.

E. Provide the following:
1. Stop lock bearing.

F. Locking:
1. Motor operated doors: Integral gearing of motor operator to provide locking for door.

2.03 OVERHEAD COILING FIRE DOORS

A. Provide Model "F" Series Rolling Fire Doors.
1. Ratings as indicated on the drawings and schedules.
2. Operation: Motor operator.
3. Mounting: Interior face mounted on prepared opening.

B. Curtain and Bottom Bar:
1. Slat material: ASTM A 653/A 653M galvanized steel, cold roll formed in continuous lengths to form curtains; zinc coated.
2. Slat finish: Powder coat colored finish on both sides of slat. Color: To be selected.
3. Slat shape: Flat slat.
4. Slat gage: Not less than 26 gage.
5. Endlocks: Each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and to maintain slat alignment.; stamped steel.
6. Bottom bar: Reinforce curtain bottom with angles, material to match curtain material. Lift handles on both sides of curtain.

C. Governor: Viscous speed governor.

D. Hood:
1. Material: 24 gage galvanized steel.
2. Shape: Square.
3. Finish: Same as for curtain.
4. Provide through-the-wall fuse link.

E. Locking:
1. Motor operated doors: Integral gearing of motor operator to provide locking for door.

F. Control/Release Devices:
1. "McCabe Fuse" links.
2. Ionization type smoke detectors in locations indicated.
3. Type "AR" magnetic holder: Release when current is applied on signal from detector or alarm system; adjustable time delay. 110 V AC.

2.04 COILING DOORS

A. Exterior Coiling Doors: Steel slat curtain.

1. Capable of withstanding positive and negative wind loads of 20 psf, without undue deflection or damage to components.
2. Sandwich slat construction with insulated core of foamed-in-place polyurethane insulation; minimum R-value of 8.1.
3. Nominal Slat Size: 2 inches wide x required length.
4. Finish: Factory painted, Selected from manufacturer's standard color.
5. Guides: Formed track; galvanized steel.
6. Hood Enclosure: Manufacturer's standard; primed steel.
7. Manual hand chain lift operation.
8. Mounting: Surface mounted.

B. Non-Fire-Rated Interior Coiling Doors: Steel slat curtain.
1. Single thickness slats.
2. Nominal Slat Size: 2 inches wide x required length.
3. Finish: Factory painted, color as selected.
4. Guides, Formed Sheet Metal: Galvanized steel.
5. Hood Enclosure: Manufacturer's standard; primed steel.
6. Manual hand chain lift operation.
7. Mounting: Surface mounted.

C. Fire-Rated Coiling Doors: Steel slat curtain; comply with NFPA 80.
1. 1-1/2 hour fire rating.
2. Provide products listed and labeled by ITS (DIR) or UL (DIR) as suitable for the purpose specified and indicated.
3. Oversized Openings: Provide certificate of compliance from authorities having jurisdiction indicating approval of fire rated units and operating hardware assembly.
4. Single thickness slats.
5. Nominal Slat Size: 2 inches wide by required length.
6. Finish: Factory painted, color as selected.
7. Guides, Formed Sheet Metal: Galvanized steel.
8. Hood Enclosure: Manufacturer's standard; primed steel.
9. Coiling Door Release Mechanism: Fire alarm system activated with automatically governed closing speed.
10. Manual hand chain lift operation.
11. Mounting: Surface mounted.

2.05 MATERIALS AND COMPONENTS

A. Curtain Construction: Interlocking slats.
1. Slat Ends: Each slat fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
3. Weatherstripping: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.

B. Steel Slats: Minimum thickness, 26 gage, 0.022 inch; ASTM A653/A653M galvanized steel sheet.
1. Galvanizing: Minimum G90 coating.

C. Guide Construction: Continuous, of profile to retain door in place, mounting brackets of same metal.

D. Guides - Sheet Metal: Formed from sheet metal, ___ gage, ___ inch thick; ___ inch wide.
1. Hot-Dip Galvanizing: Minimum G90 coating, in compliance with ASTM A653/A653M.

E. Hood Enclosure and Trim: Internally reinforced to maintain rigidity and shape.
1. Match finish for slats.

F. Lock Hardware:

1. Latching Mechanism: Inside mounted, adjustable keeper, spring activated latch bar feature to keep in locked or retracted position.
2. Latch Handle: Manufacturer's standard.
3. Slide Bolt: Provide on single-jamb side, extending into slot in guides, with padlock on one side.
4. Manual Chain Lift: Provide padlockable chain keeper on guide.

G. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.06 COMPONENTS

A. Overhead Counterbalances:
1. Counterbalance: Housed in a steel pipe of diameter and wall thickness to restrict maximum deflection to 0.03 inch per foot of width.
2. Springs: Helical torsion springs designed to include an overload factor of 25 percent and for optimum ease of operation; grease packed and mounted on a cold rolled steel inner shaft.
3. Spring tension: Adjustable from outside of end bracket plate, except on integral frame construction and smaller shutters.
4. Ball bearings: Sealed to minimize wear of pipe shaft rotation around inner shaft.
5. Motorized Doors: Very high cycle springs to satisfy in excess of 100,000 cycles.

B. Overhead Coiling Door Bracket Plates:
1. Bracket plates carrying pipe counterbalancing shaft: Not less than 1/4 inch thickness, square in shape; house ends of door coil.
2. Drive end bracket plate: Fitted with a sealed ball bearing.
3. Material: Galvanized steel.

C. Stop Lock Bearings: Prevent door/grille from falling completely to floor in event of damage to spring counterbalance or pipe shaft.

D. Overhead Hoods:
1. Laterally reinforced to prevent sag.
2. Intermediate hood supports: Furnish where door width exceeds 16 feet.

E. Primer for Galvanized Surfaces: Baked epoxy modified polyester primer, gray or tan.

2.07 ELECTRIC OPERATION

A. Electric Operators:
1. Mounting: Side mounted.
2. Motor Enclosure:
   a. Exterior Coiling Doors: NEMA MG 1, Type 4; open drip proof.
   b. Interior Coiling Doors: NEMA MG 1, Type 1; open drip proof.
3. Motor Rating: 1/3 hp; continuous duty.
4. Motor Voltage: 120 volts, single phase, 60 Hz.
5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
6. Controller Enclosure: NEMA 250, Type 1.
7. Opening Speed: 12 inches per second.
8. Brake: Adjustable friction clutch type, activated by motor controller.
9. Manual override in case of power failure.
10. Refer to Section 26 05 83 for electrical connections.

B. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
1. 24 volt circuit.
2. Surface mounted, at interior door jamb.
3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.

a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.

C. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

D. Fail Safe Control: Upon loss of continuity in circuit, open door and prevent motor operation until circuit/edge is repaired.

E. Panic Release Device: Allow emergency egress for motor operated units; comply with ADA requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes, tolerances and conditions are acceptable.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install fire-rated doors in accordance with NFPA 80.

C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

D. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

F. Coordinate installation of electrical service with Section 26 05 83.

G. Complete wiring from disconnect to unit components.

H. Complete wiring from fire alarm system.

I. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 90 05.

J. Install enclosure and perimeter trim.

3.03 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch.

C. Maximum Variation From Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 FIELD QUALITY CONTROL

A. Drop test rated units in the presence of the Architect after installation.

3.05 DEMONSTRATION

A. Instruct the Owner's personnel in proper operation and maintenance of units.

3.06 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.07 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, manually and electrically operated.

B. Operating hardware and supports.

C. Electrical controls.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Steel channel opening frame.

B. Section 06 10 00 - Rough Carpentry: Rough wood framing for door opening.

C. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

D. Section 08 71 00 - Door Hardware DO NOT USE: Lock cylinders.

E. Section 26 05 33.13 - Conduit for Electrical Systems: Empty conduit from control units to door operator.

F. Section 26 05 83 - Wiring Connections.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

C. DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

D. ITS (DIR) - Directory of Listed Products.

E. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

F. NEMA MG 1 - Motors and Generators.

G. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

H. NFPA 70 - National Electrical Code.

I. UL (DIR) - Online Certifications Directory.

J. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.04 PERFORMANCE REQUIREMENTS

A. Design and size components to withstand dead loads and positive and negative wind loads of design pressure of 20 lb/sq ft as measured in accordance with ASTM E 330.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
   1. Provide component construction and hardware.

C. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

D. Operation Data: Include normal operation, troubleshooting, and adjusting.

E. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, and spare part sources.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Comply with applicable code for motor and motor control requirements.

C. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction, as suitable for purpose specified.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS for warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

C. Correct defective Work within a one year period after Date of Substantial Completion.

D. Warranty: Include coverage for electric motor and transmission.

E. Provide two year manufacturer warranty for electric operating equipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sectional Doors:
   1. Clopay Building Products: www.clopaydoor.com/#sle.
   2. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com/#sle.
   3. Ceco/Windsor Door..
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 STEEL DOORS

A. Steel Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.
   2. Door Nominal Thickness: 2 inches thick.
   3. Exterior Finish: Factory finished with acrylic baked enamel; color as selected by Architect.
   4. Interior Finish: Factory finished with acrylic baked enamel; color as selected from manufacturers standard line.
   5. Electric Operation: Electric control station.

B. Door Panels: Flush steel construction; outer steel sheet of 0.058 inch thick, flat profile; inner steel sheet of 0.058 inch thick, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; insulated.

2.03 COMPONENTS

A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.

D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

I. Lock Cylinders: See Section 08 71 00.

2.04 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, stucco embossed surface.

B. Insulation: Foamed-in-place polyurethane, bonded to facing.
   1. Same thickness as core framing members.

2.05 ELECTRIC OPERATION

A. Electric Operators:
   1. Mounting: Side mounted on cross head shaft.
   2. Motor Enclosure:
   3. Motor Rating: 1/3 hp; continuous duty.
   4. Motor Voltage: 120 volts, single phase, 60 Hz.
   5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   6. Controller Enclosure: NEMA 250, Type 1.
   7. Opening Speed: 12 inches per second.
   8. Brake: Adjustable friction clutch type, activated by motor controller.
   9. Manual override in case of power failure.
   10. Refer to Section 26 05 83 for electrical connections.

B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

C. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
   1. 24 volt circuit.
   2. Surface mounted, at interior door jamb.
   3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.

D. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

E. Provide radio control antenna detector.

F. Hand Held Transmitter: Digital control, and resettable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

B. Apply primer to wood frame.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware.

E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.

G. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

B. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

SECTION 08 42 29
AUTOMATIC ENTRANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Operators for doors provided in other sections.

B. Controllers, actuators and safety devices.

1.02 RELATED REQUIREMENTS

A. Section 08 43 13 - Aluminum-Framed Storefronts: Aluminum doors and frames.

B. Section 26 05 83 - Wiring Connections.

C. Section 28 10 00 - Access Control: Connection to access control system; access control devices used as actuators.

D. Section 28 46 00 - FIRE ALARM SYSTEM: Connection to fire alarm system.

1.03 REFERENCE STANDARDS

A. BHMA A156.10 - American National Standard for Power Operated Pedestrian Doors.

B. BHMA A156.19 - American National Standard for Power Assist and Low Energy Power Operated Doors.

C. ITS (DIR) - Directory of Listed Products.

D. NFPA 70 - National Electrical Code.

E. NFPA 101 - Life Safety Code.

F. UL (DIR) - Online Certifications Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings:
   1. Shop Drawings: Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
      a. Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
   2. Product Data: Provide data on system components, sizes, features, and finishes.
      a. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.
      b. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.

C. Samples: Submit two samples of finish samples for color and finish.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Wrenches and other tools required for maintenance of equipment.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience, and a member of AAADM.

B. Source Limitations: Obtain automatic door operators through one source from a single manufacturer.

1.06 COORDINATION

A. Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic door operators to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of automatic door operators with connections to, power supplies, remote activation devices, and electric door latching hardware.

C. System Integration: Integrate automatic door operators with other systems as required for a complete working installation. Where required for proper operation, provide a time delay relay to signal automatic door operator to activate only after electric lock system is released.

1.07 PROJECT CONDITIONS

A. Field Measurements: Contractor shall verify openings to receive automatic door operators by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Mounting Surfaces: Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.

1.08 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Correct defective Work within a five year period after Date of Substantial Completion.

D. Provide two year manufacturer warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Door Operators for Swing Doors Specified in Other Sections:
   1. DORMA USA, Inc; ED100: www.dorma.com/#sle.
   2. record-usa; 6100 Series Low Energy Swing Door: www.record-usa.com.
   3. Stanley Access Technologies; Magic Access LE (Low Energy): www.stanleyaccess.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 POWER OPERATED DOORS

A. Power Operated Doors: Provide products that comply with NFPA 101 and requirements of authorities having jurisdiction; provide equipment selected for actual door weight and for light pedestrian traffic, unless otherwise indicated.
   1. Swinging Fire Door Operators: In addition to other requirements, provide equipment ITS (DIR) or UL (DIR) listed as a fire door operator with automatic closer.
   2. Swinging Door Operators: Fully adjustable for opening and closing speeds, checking speeds, and hold-open time; in the event of power failure, disengage operator allowing door to function as a door with a spring closer.
   3. Exterior Swinging Doors: Provide equipment capable of operating, closing, and holding doors closed under positive and negative differential pressure; if necessary, provide power closing.
   4. Exterior and Vestibule Doors: Provide equipment suitable for operating temperature range of minus 20 to plus 140 degrees F ambient.

B. Swinging Doors with Low-Energy Power Operators: Comply with BHMA A156.19; operator activated by pushing or pulling the door or by a manual actuator, not a sensor; safeties not required.

2.03 OPERATORS FOR SWINGING DOORS PROVIDED BY OTHERS

A. Door Operator: Electric, surface mounted overhead.
   1. Operation: Low-energy power open, spring close operation.
   2. Variable speed control for opening and closing cycles.
   3. "Push" Side Actuator: Push plate.
   4. "Pull" Side Actuator: Push plate.
   5. Pull-Side Safety: Door-mounted.

6. Hold Open: Toggle switch at inside head of doors.

B. Enclosure: Extruded aluminum header concealing all operating parts except arms and manual control switches.
   1. Provide bottom loading header for access to controls and removable components without removal of door or operator.
   2. No exposed fasteners.
   3. Finish of Exposed Headers: Anodized aluminum.
   4. Color: To match door.

C. Door Arms and Linkage Assembly: A combination of door arms and linkage shall provide positive control of door through entire swing; units shall permit use of butt hung, center pivot, and offset pivot-hung doors.

D. Signage: Provide signage in accordance with ANSI/BHMA A156.19.

2.04 CONTROLLERS, ACTUATORS, AND SAFETIES

A. Controller: Provide microprocessor operated controller for each door.

B. Comply with BHMA A156.10 for actuator and safety types and zones.

C. Push Plate Actuator: Standard wall mounted, surface mounted momentary contact type; satin stainless steel plate; 4 inches diameter; labeled PUSH.

D. Swinging Door Safety Device: Door-mounted proximity detector device arranged to prevent operation of door when persons or obstructions are in the swing zone.

2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics:
   1. 120 volts, single phase, 60 Hz.
   2. Refer to Section 26 05 83: Electrical connections.

B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

C. Disconnect Switch: Factory mount disconnect switch in control panel.

2.06 ACCESSORIES

A. Steel Clips, Supports, and Steel Anchors: Galvanized to 1.25 oz/sq ft.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.

B. Verify that electric power is available and is of the correct characteristics.

3.02 INSTALLATION

A. Install equipment in accordance with manufacturer's instructions.

B. Provide for thermal expansion and contraction of door and frame units and live and dead loads that may be transmitted to operating equipment.

C. Provide for dimensional distortion of components during operation.

D. Coordinate installation of components with related and adjacent work; level and plumb.

3.03 ADJUSTING

A. Adjust door equipment for correct function and smooth operation.

3.04 CLEANING

A. Remove temporary protection, clean exposed surfaces.

3.05 CLOSEOUT ACTIVITIES

A. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

END OF SECTION

SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors and frames.

C. Low-Energy Door Operators provided under this section.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing: Steel attachment members.

B. Section 07 84 00 - Firestopping: Firestop at system junction with structure.

C. Section 08 42 29 - Automatic Entrances.

D. Section 08 51 13 - Aluminum Windows: Operable sash within glazing system.

E. Section 08 71 00 - Door Hardware DO NOT USE: Hardware items other than specified in this section.

F. Section 08 80 00 - Glazing: Glass and glazing accessories.

G. Section 09 91 23 - Interior Painting: Field painting of interior surface of infill panels.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site.

B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

D. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

I. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

J. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

K. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details.
   1. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
      a. Include Design Engineer's stamp or seal on shop drawings for attachments and anchors.
      b. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
      c. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

C. Samples: Submit two samples 12 inches in size illustrating finished aluminum surface, glass, glazing materials.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Wisconsin.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

C. Installer: Company specializing in performing the work of this section with minimum three years of experience.

D. Source Limitations: Obtain each type of store front system from one source from a single manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

C. Store aluminum components in a clean dry location away from uncured masonry or concrete. Cover components with waterproof paper, tarpaulin or polyethylene sheeting in a manner to permit circulation of air.

D. Stack framing components in a manner that will prevent bending and avoid significant or permanent damage.

1.08 FIELD CONDITIONS

A. Field Measurements: Check openings by accurate field measurement prior to fabrication. Show recorded measurements on shop drawings.

B. Schedule: Coordinate fabrication schedule with construction progress to avoid delay of the Work.

C. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

C. Correct defective Work within a two year period after Date of Substantial Completion.

D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: See below under description of products.

B. Aluminum-Framed Storefront and Doors:
   1. Kawneer North America: www.kawneer.com/#sle.
   2. Curtainwall Systems.
   3. Special-Lite, Inc.
   4. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
   5. Tubelite, Inc: www.tubeliteinc.com/#sle.

C. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Glazing Position: Front-set.
   2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
   3. Finish: Superior performing organic coatings.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
   4. Finish Color: As selected by Architect from manufacturer's standard line.
   5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
   10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   11. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Performance Requirements:
   1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
      a. Design Wind Loads: Comply with requirements of ASCE 7.
      b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
   2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
   3. Air Leakage Laboratory Test: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.
   4. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Glazing Stops: Flush.
   3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: As specified in Section 08 80 00.

C. Accessories
   1. Provide thermal head and jamb fillers.
   2. Provide compatible extension clips as recommended by supplier for installation in wide cavity walls.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

C. Fasteners: Stainless steel or aluminum, non-magnetic, and warranted by the manufacturer to be noncorrosive and compatible with aluminum components, anchors and other components.

D. Exposed Flashings: Aluminum sheet, 20 gage, 0.032 inch minimum thickness; finish to match framing members.

E. Concealed Flashings: 0.018 inch thick stainless steel or 0.026 inch thick minimum extruded aluminum. Material shall be warranted by the manufacturer to be noncorrosive and compatible other components.

F. Glass: As specified in Section 08 80 00.

G. Concrete and Masonry Inserts: Cast iron, malleable iron, or hot-dip galvanized steel inserts complying with ASTM A 123.

H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

I. Glazing Accessories: As specified in Section 08 80 00.

J. Compression Weatherstripping: Standard replaceable compressible weatherstripping gaskets of molded neoprene complying with ASTM D 2000 or molded PVC complying with ASTM D 2287.

K. Sliding Weatherstripping: Standard replaceable weatherstripping of wool, polypropylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.

L. Shop and Touch-Up Primer for Steel Components: SSPC-Paint 25, zinc oxide, alkyd, linseed oil primer.

M. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.05 FINISHES

A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

B. Color: As selected by Hoffman from manufacturer's standard range.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.06 HARDWARE

A. Other Door Hardware: As specified in Section 08 71 00.

B. In general, finish on hardware shall match that of the aluminum storefront system regardless of the finish specified elsewhere in the project.

C. Automatic Door Operators and Actuators: As specified in Section 08 42 29.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Set thresholds in bed of sealant and secure.

K. Install hardware using templates provided. Installation includes wiring and terminating all electrical components.
   1. See Section 08 71 00 for hardware installation requirements.
   2. See Section 08 42 29 for operator and actuator installation requirements.

L. Install glass and infill panels in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.

M. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

3.05 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.06 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Remove excess sealant by method acceptable to sealant manufacturer.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Extruded aluminum windows with fixed sash, operating sash, and infill panels.

B. Factory glazing.

C. Operating hardware.

D. Insect screens.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Steel lintels.

B. Section 06 10 00 - Rough Carpentry: Rough opening framing.

C. Section 07 25 00 - WEATHER BARRIERS: Sealing frame to weather barrier installed on adjacent construction.

D. Section 07 92 00 - Joint Sealants: Sealing joints between window frames and adjacent construction.

E. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights.

B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site.

C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings: Provide component dimensions, information on glass and glazing, internal drainage details, and descriptions of hardware and accessories.
   1. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations, and installation requirements.
   2. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

C. Samples: Submit two samples, 1 x 4 inch in size illustrating finish colors for selection.

D. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
   1. Evidence of AAMA Certification.
   2. Evidence of WDMA Certification.
   3. Evidence of CSA Certification.
   4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

B. Provide aluminum window units from one source and produced by a single manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of AAMA CW-10.

B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.09 PROJECT CONDITIONS

A. Field Measurements: Check actual openings in field prior to fabrication. Coordinate fabrication tolerances to ensure a proper fit of window units.

1.10 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum Windows:
   1. TRACO: www.traco.com/#sle.
   2. Special-Lite; Product SL-450T.
   3. CRL US Aluminum; Product IT451.
   4. Oldcaste Building Envelope; Product HP-175
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 WINDOWS

A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
   1. Frame Depth: 4-1/2 inches.
   2. Operable Units: Double weatherstripped.
   3. Provide units factory glazed.
   4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
   5. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   6. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
   7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

8. Thermal Movement: Design to accommodate thermal movement caused by 180 degrees F surface temperature without buckling stress on glass, joint seal failure, damaging loads on structural elements, damaging loads on fasteners, reduction in performance or other detrimental effects.

B. Outswinging Awning Type:
   1. Construction: Thermally broken.
   2. Provide screens.
   3. Glazing: Double; clear; low-e, tempered.
   4. Exterior Finish: Class I natural anodized.
   5. Interior Finish: Class I natural anodized.

2.03 PERFORMANCE REQUIREMENTS

A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
   1. Performance Class (PC): R.

2.04 COMPONENTS

A. Frames: 2 inch wide x 4-1/2 inch deep profile; thermally broken with interior portion of frame insulated from exterior portion; flush glass stops of snap-on type.

B. Glazing: As specified in Section 08 80 00.

C. Reinforced Mullion: 2 inch profile of extruded aluminum with integral reinforcement of shaped steel structural section.

D. Insect Screens: Extruded aluminum frame with mitered and reinforced corners; screen mesh taut and secure to frame; secured to window with adjustable hardware allowing screen removal without use of tools.
   1. Hardware: Spring loaded steel pins; four per screen unit.
   2. Screen Mesh: Woven aluminum mesh, window manufacturer's 14/18 mesh.
   3. Frame Finish: Same as frame and sash.

E. Operable Sash Weatherstripping: Wool pile; permanently resilient, profiled to achieve effective weather seal.

F. Fasteners: Stainless steel.

G. Glazing Materials: As specified in Section 08 80 00.

H. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.
   1. Refer to Section 07 92 00 for additional requirements.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Concealed Steel Items: Profiled to suit mullion sections; galvanized in accordance with ASTM A123/A123M.

2.06 HARDWARE

A. Sash lock: Lever handle with cam lock.

B. Projecting Sash Arms: Cadmium plated steel, friction pivot joints with nylon bearings, removable pivot clips for cleaning.

C. Limit Stops: Resilient rubber.

2.07 FABRICATION

A. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

B. Prepare components to receive anchor devices.

C. Arrange fasteners and attachments to ensure concealment from view.

D. Prepare components with internal reinforcement for operating hardware.

E. Provide steel internal reinforcement in mullions as required to meet loading requirements.

2.08 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Finish Color: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install windows in accordance with manufacturer's instructions.

B. Install window assembly in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.

C. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

D. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

E. Install sill and sill end angles.

F. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

G. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.

H. Install operating hardware not pre-installed by manufacturer.

I. Install glass and infill panels in accordance with requirements specified in Section 08 80 00.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.04 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

A. Remove protective material from factory finished aluminum surfaces.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood, aluminum, hollow metal, and fiberglass doors.

B. Hardware for fire-rated doors.

C. Electrically operated and controlled hardware.

D. Lock cylinders for doors that hardware is specified in other sections.

E. Thresholds.

F. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealants for setting exterior door thresholds.

B. Section 08 06 71 - Door Hardware Schedule: Schedule of door hardware sets.

C. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES.

D. Section 08 14 16 - Flush Wood Doors.

E. Section 08 36 13 - Sectional Doors: Door hardware, except cylinders.

F. Section 08 43 13 - Aluminum-Framed Storefronts: Door hardware, except cylinders.

G. Section 28 10 00 - Access Control: Electronic access control devices.

H. Section 28 46 00 - FIRE ALARM SYSTEM: Electrical connection to release magnetic holders.

1.03 PRICE AND PAYMENT PROCEDURES

A. Allowances: See Section 01 21 00 - ALLOWANCES, for cash allowances affecting this section.

1.04 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. BHMA A156.1 - American National Standard for Butts and Hinges.

C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches.

D. BHMA A156.3 - American National Standard for Exit Devices.

E. BHMA A156.4 - American National Standard for Door Controls - Closers.

F. BHMA A156.6 - American National Standard for Architectural Door Trim.

G. BHMA A156.7 - American National Standard for Template Hinge Dimensions.

H. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders.

I. BHMA A156.14 - American National Standard for Sliding and Folding Door Hardware.

J. BHMA A156.15 - American National Standard for Release Devices - Closer Holder, Electromagnetic and Electromechanical.

K. BHMA A156.16 - American National Standard for Auxiliary Hardware.

L. BHMA A156.18 - American National Standard for Materials and Finishes.

M. BHMA A156.21 - American National Standard for Thresholds.

N. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems, Builders Hardware Manufacturers Association.

O. BHMA A156.26 - American National Standard for Continuous Hinges.

P. BHMA A156.28 - American National Standard for Recommended Practices for Mechanical Keying Systems.

Q. BHMA A156.31 - American National Standard for Electric Strikes and Frame Mounted Actuators.

R. BHMA A156.36 - American National Standard for Auxiliary Locks.

S. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames.

T. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames.

U. ICC A117.1 - Accessible and Usable Buildings and Facilities.

V. ITS (DIR) - Directory of Listed Products.

W. NFPA 70 - National Electrical Code.

X. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

Y. NFPA 101 - Life Safety Code.

Z. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives.

AA. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

AB. UL (DIR) - Online Certifications Directory.

AC. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
   1. Hoffman.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.
   4. Owner's Security Consultant.

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

E. Keying Requirements Meeting:
   1. Attendance Required:
      a. Owner.
      b. Hoffman.
      c. Installer's Architectural Hardware Consultant (AHC).
      d. Hardware Installer.
      e. Owner's Security Consultant.
   2. Agenda:
      a. Establish keying requirements.
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Hoffman, Owner, participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data / Shop Drawings: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

1. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
    a. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
    b. Provide complete description for each door listed.
    c. Provide manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
    d. Include account of abbreviations and symbols used in schedule.
2. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
    a. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
    b. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
    c. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.
3. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

C. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
    1. Bitting List: List of combinations as furnished.

D. Keying Schedule:
    1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

E. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
    1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
    2. Lock Cylinders: five for each master keyed group.
    3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.07 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Hoffman and Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least five years of documented experience and approved by manufacturer.

D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
   1. Closers: Five years, minimum.
   2. Exit Devices: Three years, minimum.
   3. Locksets and Cylinders: Three years, minimum.
   4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.
   3. Applicable provisions of NFPA 101.
   4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
   5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), testing firm acceptable to authorities having jurisdiction, or _____ as suitable for application indicated.
   6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
   7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
   8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
   1. Refer to Section 28 10 00 for additional access control system requirements.

E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. Refer to Section 08 06 71 for listing of hardware sets.

F. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
   3. Fire-Rated Applications: Comply with NFPA 80.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 HINGES

A. Manufacturers:
   1. McKinney; an Assa Abloy Group company: www.assaabloydss.com.
   2. Hager Companies: www.hagerco.com.
   3. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Hinges: Comply with BHMA A156.1, Grade 1.

1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
    a. Provide hinge width required to clear surrounding trim.
2. Continuous Hinges: Comply with BHMA A156.26.
3. Provide hinges on every swinging door.
4. Provide ball-bearing hinges at each door with closer.
5. Provide non-removable pins on exterior outswinging doors.
6. Provide following quantity of butt hinges for each door:
    a. Doors up to 60 inches High: Two hinges.
    b. Doors From 60 inches High up to 90 inches High: Three hinges.
    c. Doors 90 inches High up to 120 inches High: Four hinges.

2.03 TRACK AND HANGERS

A. Manufacturers:
1. Johnson Hardware: www.johnsonhardware.com.
2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Pocket Doors: Provide pocket door kit, including header assembly, split studs, hangers, door hanger plates, bumper, guides, floor plate, and end bracket.

C. Sliding and Bifolding Door Hardware: Comply with BHMA A156.14.
1. Provide track, hanger fasteners, guides, and pulls; size track and hangers in accordance with manufacturer's recommendations for weight of doors.
2. Provide one pull for each pair of panels hinged together.

D. Door Weight: Medium; medium frequency of use with 150 to 200 lbs door weight.

2.04 FLUSH BOLTS

A. Manufacturers:
1. Adams Rite or McKinney, an Assa Abloy Group company: www.assaabloydss.com.
2. Ives, an Allegion brand: www.allegion.com/us.
3. Rockwood: www.rockwoodmfg.com.
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
1. Flush Bolt Throw: 3/4 inch, minimum.
2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
    a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
4. Manual Flush Bolts: Provide lever extensions for top bolt at over-sized doors.
5. Self-Latching Flush Bolts: Automatically latch upon closing of door; manually retracted; located on inactive leaf of pair of doors.
6. Automatic Flush Bolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.05 EXIT DEVICES

A. Manufacturers:
1. Basis of Design: VonDuprin.
2. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
3. Von Duprin, an Allegion brand; 98/99 series: www.allegion.com/us.
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.

5. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes.
6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
7. For electrical options, provide quick connect plug-in pre-wired connectors.

2.06 ELECTRIC STRIKES

A. Manufacturers:
1. Adams Rite, HES, or Securitron; an Assa Abloy Group company: www.assaabloydss.com.
2. Von Duprin: www.allegion.com/us.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
2. Provide non-handed 12/24VDC electric strike suitable for door frame material and scheduled lock configuration.
3. Provide field selectable Fail Safe/Fail Secure modes.
4. Connect electric strikes into fire alarm where non-rated doors are scheduled to release with fire or sprinkler alarm condition.

2.07 CYLINDRICAL LOCKS

A. Manufacturers:
1. Basis of Design: Schlage.
2. Best, dormakaba Group: www.bestaccess.com.
3. Schlage, an Allegion brand; ND Series: www.allegion.com/us.
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
   a. Finish: To match lock or latch.

2.08 AUXILIARY LOCKS (DEADLOCKS)

A. Manufacturers:
1. Basis of Design: Schlage.
2. Best, dormakaba Group: www.bestaccess.com/#sle.
3. Schlage, an Allegion brand; B Series: www.allegion.com/us.
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 1.
1. Type: Bored (cylindrical).
2. Backset: 2-3/4 inch, unless otherwise indicated.
3. Bolt Throw: 1/2 inch, with latch made of hardened steel.
4. Provide strike that matches frame.

2.09 DOOR PULLS AND PUSH PLATES

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
2. Hager Companies: www.hagerco.com.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.

a. Edges: Beveled, unless otherwise indicated.
3. Material: Stainless steel, unless otherwise indicated.
4. On solid doors, provide matching door pull and push plate on opposite faces.
5. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.

2.10 DOOR PULLS AND PUSH BARS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
2. Hager Companies: www.hagerco.com/#sle.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Door Pulls and Push Bars: Comply with BHMA A156.6.
1. Bar Type: Bar set, unless otherwise indicated.
2. Material: Aluminum, unless otherwise indicated.

2.11 COORDINATORS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
2. Ives, an Allegion brand: www.allegion.com/us.

B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.
1. Type: Bar, unless otherwise indicated.
2. Material: Aluminum, unless otherwise indicated.
3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.12 CLOSERS

A. Manufacturers; Surface Mounted:
1. Basis of Design: LCN.
2. LCN, an Allegion brand; 4040 Series: www.allegion.com/us.
3. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com.

B. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.
3. Provide door closer on each fire-rated and smoke-rated door.
a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
4. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
5. At corridor entry doors, mount closer on room side of door.
6. At outswinging exterior doors, mount closer on interior side of door.

2.13 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
1. Rixson or Sargent; an Assa Abloy Group company: www.assaabloydss.com.
2. Glynn-Johnson, an Allegion brand: www.allegion.com/us.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.14 PROTECTION PLATES

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
2. Ives, an Allegion brand: www.allegion.com/us.

3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Protection Plates: Comply with BHMA A156.6.

C. Metal Properties: Stainless steel.
   1. Metal, Heavy Duty: Thickness 0.062 inch, minimum.

D. Edges: Beveled, on four sides unless otherwise indicated.

E. Fasteners: Countersunk screw fasteners.

2.15 KICK PLATES

A. Manufacturers:
   1. Ives, an Allegion brand: www.allegion.com/us.
   2. Rockwood: www.rockwoodmfg.com.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.16 ELECTROMAGNETIC DOOR HOLDERS

A. Manufacturers:
   1. DORMA USA, Inc; EM Series: www.dorma.com.
   2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Electromagnetic Door Holders: Comply with BHMA A156.15.
   1. Type: Wall mounted, single unit, standard duty, with strike plate attached to door.
   2. Holding Force, Standard Duty: 40 lbs-force, minimum.
   3. Voltage: 12/24VDC, and provide power supplies by same manufacturer as holders.
   4. Provide interface with fire detectors and fire-alarm system for fire-rated door assemblies.

2.17 WALL STOPS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide wall stops to prevent damage to wall surface upon opening door.
   2. Type: Bumper, concave, wall stop.
   3. Material: Stainless steel housing with rubber insert.

2.18 THRESHOLDS

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
   2. National Guard Products, Inc; _____: www.ngpinc.com/#sle.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at each exterior door, unless otherwise indicated.
   2. Type: Flat surface.
   3. Material: Aluminum.
   4. Threshold Surface: Thermally broken.
   5. Field cut threshold to profile of frame and width of door sill for tight fit.
   6. Provide non-corroding fasteners at exterior locations.

2.19 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company; _____: www.assaabloydss.com/#sle.

2. National Guard Products, Inc; _____: www.ngpinc.com/#sle.
3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide gasketing for smoke and draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
5. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .
6. Provide door bottom sweep on each exterior door, unless otherwise indicated.
7. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.20 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, gray color.

2.21 KEY CABINET

A. Key Cabinet: Sheet steel construction, piano hinged door with key lock; BHMA A156.28.
1. Mounting: Wall-mounted.
2. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
3. Size key hooks to hold 6 keys each.
4. Finish: Baked enamel, manufacturer's standard color.
5. Key cabinet lock to building keying system.

2.22 FIRE DEPARTMENT LOCK BOX

A. Manufacturers:
1. Knox Company; Knox-Box Rapid Entry System: www.knoxbox.com.
2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Fire Department Lock Box:
1. Coordinate type required with local authorities.
2. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
3. Capacity: Holds 10 keys.
4. Finish: Manufacturer's standard dark bronze.

2.23 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.
2. Exceptions:
a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
b. Hinges for Fire-Rated Doors: Steel base material with painted finish, in compliance with NFPA 80.
c. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.
d. Hardware for Aluminum Storefront Doors: Finished to match door panel finish, except at hand contact surfaces provide stainless steel with satin finish, unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

C. Install hardware for smoke and draft control doors in accordance with NFPA 105.

D. Use templates provided by hardware item manufacturer.

E. Do not install surface mounted items until application of finishes to substrate are fully completed.

F. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. Mounting heights in compliance with ADA Standards:
      a. Locksets: 40-5/16 inch.
      b. Push Plates/Pull Bars: 42 inch.
      c. Deadlocks (Deadbolts): 48 inch.
      d. Exit Devices: 40-5/16 inch.

G. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.02 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.03 ADJUSTING

A. Adjust work under provisions of Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.

B. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Glazed lites in doors and borrowed lites.

C. Section 08 14 16 - Flush Wood Doors: Glazed lites in doors.

D. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.

E. Section 08 51 13 - Aluminum Windows: Glazing furnished by window manufacturer.

F. Section 08 83 00 - Mirrors.

G. Section 10 28 00 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

D. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.

E. GANA (GM) - GANA Glazing Manual.

F. GANA (SM) - GANA Sealant Manual.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data on Insulating Glass Unit, Glazing Unit, Plastic Sheet Glazing Unit, and Plastic Film Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

1. Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

C. Samples: Submit two samples 12 by 12 inch in size of glass units.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning glazing components.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

D. Single-Source Responsibility: Obtain glass and glazing products from one source for each type of product specified.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Protect glazing materials in accordance with manufacturer's requirements and as needed to prevent damage to glass and glazing materials from condensation, sun exposure, temperature changes, or other causes.

1.08 FIELD CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.

B. Do not install glazing when ambient temperature is less than 50 degrees F.

C. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

D. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. AGC Glass Company North America, Inc: www.us.agc.com.
   2. Cardinal Glass Industries: www.cardinalcorp.com.
   3. Guardian Industries Corp: www.sunguardglass.com.
   4. Pilkington North America Inc: www.pilkington.com/na.
   5. PPG Industries, Inc: www.ppgideascapes.com.
   6. Oldcastle Building Envelope: www.obe.com.
   7. Substitutions: Refer to Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Laminated Glass Manufacturers:
   1. Cardinal Glass Industries: www.cardinalcorp.com.
   2. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com.
   3. Substitutions: Refer to Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 GLASS MATERIALS

A. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
   1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category II impact test requirements.

2.03 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Edge Blocks: Neoprene of hardness required to limit glass lateral movement (side walking).

D. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air barrier and vapor retarder seal; ____x____ inch size.

E. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

F. Glazing Clips: Manufacturer's standard type.

2.04 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

E. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)

A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.

B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

F. Carefully trim protruding tape with knife.

3.06 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.07 MANUFACTURER'S FIELD SERVICES

A. Glass and Glazing product manufacturer to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.08 CLEANING

A. See Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, for additional requirements.

B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

C. Remove non-permanent labels immediately after glazing installation is complete.

D. Clean glass and adjacent surfaces after sealants are fully cured.

E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.09 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

C. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

D. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, alkali deposits, or stains and remove as recommended by glass manufacturer.

E. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during the construction period.

END OF SECTION

SECTION 08 83 00
MIRRORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass mirrors.

1.02 RELATED REQUIREMENTS

A. Section 10 28 00 - Toilet, Bath, and Laundry Accessories: Metal mirror frames.

1.03 REFERENCE STANDARDS

A. ASTM C1036 - Standard Specification for Flat Glass.

B. ASTM C1193 - Standard Guide for Use of Joint Sealants.

C. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.

D. GANA (GM) - GANA Glazing Manual.

E. GANA (SM) - GANA Sealant Manual.

F. GANA (TIPS) - Mirrors: Handle with Extreme Care (Tips for the Professional on the Care and Handling of Mirrors).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning mirrors.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.

B. Provide products obtained from one source for each type of mirror indicated.

C. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

A. Do not install mirrors when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 MATERIALS

A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.

B. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
   1. Size: As scheduled.

2.03 ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness.

B. Glazing Clips: Manufacturer's standard type.

C. Mirror Attachment Accessories: Stainless steel clips.

D. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for mirrored glazing are correctly sized and within tolerance.

B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.

C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install mirrors in accordance with manufacturer's recommendations.

B. Set mirrors plumb and level, and free of optical distortion.

C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.

D. Installation in Frames:
   1. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
   2. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
   3. Rest mirrors on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
   4. Place glazing tape on free perimeter of mirrors in same manner described above.
   5. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
   6. Trim protruding tape edge.

3.04 CLEANING

A. Remove wet glazing materials from finish surfaces.

B. Remove labels after work is complete.

C. Clean mirrors and adjacent surfaces.

3.05 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

B. Protect mirrored glass from breakage and contaminating substances resulting from construction operations.

C. Wash glass by methods recommended in NAMM document and by manufacturer. Use water or glass cleaners free of deleterious substances capable of damaging mirror.

END OF SECTION

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in contract documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Broadloom carpet.
   3. Carpet tile.
   4. Thin-set ceramic tile and stone tile.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

1.02 RELATED REQUIREMENTS

A. Section 01 22 00 - Unit Prices: Bid pricing for remediation treatments if required.

B. Section 01 40 00 - Quality Requirements: Additional requirements relating to testing agencies and testing.

C. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.

D. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.

E. Section 03 54 00 - Cast Underlayment: Self-leveling underlayment applied as remediation treatment.

1.03 PRICE AND PAYMENT PROCEDURES

A. Unit Prices: See Section 01 22 00 - Unit Prices.

B. Unit Price for Alternate Flooring Adhesive: Do not include the cost of the alternate adhesive in the base bid; state on the bid form the unit price per square foot for using the alternate adhesive, in the event such remediation is required.
   1. Base the unit price on a total quantity calculated by assuming that only _____ of the flooring will require the alternate adhesive.

C. Unit Price for Remedial Floor Coating or Sheet Membrane: Do not include the cost of the floor coating or underlayment in the base bid; state on the bid form the unit price per square foot for the floor coating or underlayment, installed, in the event such remediation is required.
   1. Base the unit price on a total quantity calculated by assuming that only _____ of the flooring will require the alternate adhesive.

1.04 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens).

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.06 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report to Hoffman.
   7. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI (RWP).

F. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Manufacturer's qualification statement.
   2. Manufacturer's statement of compatibility with types of flooring applied over remedial product.
   3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
   4. Manufacturer's installation instructions.
   5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor may not perform adhesive and bond test with Contractor's own personnel, hire a testing agency.

C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

D. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.

2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
5. Notify Hoffman when specified ambient conditions have been achieved and when testing will start.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
         1) Asbestos-containing flooring to be removed by abatement contractor retained by the owner.
         2) Hoffman to coordinate this section with abatement contractor.
         3) Asbestos-containing mastic or adhesive to be mechanically removed; chemical abatement is prohibited.
   2. Preliminary cleaning.
   3. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Specified remediation, if required.
7. Patching, smoothing, and leveling, as required.
8. Other preparation specified.
9. Adhesive bond and compatibility test.
10. Protection.

B. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.

D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

E. Cementitious backing board.

F. Gypsum wallboard.

G. Joint treatment and accessories.

H. Tile backing panels.

I. Textured finish system.

J. Acoustical sealants.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 40 00 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.

C. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.

D. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

E. Section 07 25 00 - WEATHER BARRIERS: Water-resistive barrier over sheathing.

F. Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire rated walls.

G. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units.

B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

D. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.

E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.

H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

J. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base.

K. ASTM C1325 - Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

M. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.

N. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

O. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

P. ASTM E413 - Classification for Rating Sound Insulation.

Q. GA-216 - Application and Finishing of Gypsum Board.

R. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association.

S. GA-600 - Fire Resistance Design Manual.

T. UL (FRD) - Fire Resistance Directory.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   1. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.
   2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
   3. Indicate special details associated with fireproofing and acoustic seals.

C. Samples: Submit two samples of gypsum board finished with each proposed texture application, 24 x 24 inches square in size, illustrating finish color and texture.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of documented experience.

B. Single-Source Responsibility: Obtain finishing products from same manufacturer of gypsum board or panel products, or from a manufacturer acceptable to gypsum board manufacturer.

C. Comply with requirements of GA-600 for fire-rated assemblies.

1.07 DELIVERY, STORAGE AND PROTECTION

A. Deliver materials in original packages, containers, or bundles bearing the brand name and product identification of manufacturer.

B. Store materials inside under cover and keep dry. Neatly stack gypsum panels flat to prevent sagging of the ground or slab.

C. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

D. Stack gypsum board where directed by Hoffman. Space stacks across floor. Do not exceed live load capacity of floor system.

1.08 PROJECT CONDITIONS

A. Do not install or finish gypsum board unless environmental conditions comply with ASTM C840 or with gypsum board manufacturer's recommendations.

B. Ventilate spaces as required for drying joint and finish materials. Avoid drafts to prevent finishing materials from drying too rapidly.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.
   1. Gypsum Association File Numbers: Comply with requirements of GA-600 for the particular assembly.
   2. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
   2. Marino: www.marinoware.com.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Exception: The minimum metal thickness and section properties requirements of ASTM C645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
   2. Studs: "C" shaped with flat or formed webs with knurled faces.
   3. Runners: U shaped, sized to match studs.
   4. Ceiling Channels: C-shaped.
   5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
   6. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
      a. Products:
         1) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Georgia-Pacific Gypsum: www.gpgypsum.com.
   3. National Gypsum Company: www.nationalgypsum.com.
   4. USG Corporation: www.usg.com.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.

2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
    a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
    b. Mold resistant board is required at all toilet rooms, kitchens, and high humidity locations.
3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
    a. Note the use of Type C board where required by the UL assembly, particularly for horizontal applications.
4. Thickness:
    a. Ceilings: 5/8 inch.
5. Paper-Faced Products:
    a. CertainTeed Corporation; ProRoc Brand Gypsum Board.
    b. LaFarge North America Inc; Regular Drywall and Firecheck Type X and Type C.
    c. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
    d. USG Corporation; Sheetrock Brand Gypsum Panels.
    e. Georgia-Pacific Gypsum; ToughRock, ToughRock Fireguard X or C.
    f. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
6. Mold Resistant Paper Faced Products:
    a. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
    b. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Wallboard.
    c. Georgia-Pacific Gypsum; ToughRock Mold-Guard.
    d. National Gypsum Company; Gold Bond XP Gypsum Board.
    e. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.

C. Impact Resistant Wallboard:
1. Application: High-traffic areas indicated.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
7. Type: Fire resistance rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.

D. Backing Board For Wet Areas:
1. Application: Surfaces in wet areas including tub and shower surrounds, shower ceilings, and shower walls.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
    a. Thickness: 5/8 inch.
    b. Products:
        1) Custom Building Products; Wonderboard: www.custombuildingproducts.com/#sle.
        2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
        3) USG Corporation, Durock: www.usg.com.
        4) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

E. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: All toilet rooms except in wet areas.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Type X Thickness: 5/8 inch.
   5. Type C Thickness: 5/8 inch.
   6. Regular Board Thickness: 5/8 inch.
   7. Edges: Tapered.
   8. Products:
      a. Georgia-Pacific Gypsum; DensShield Tile Backer.
      b. National Gypsum Company; Gold Bond XP Gypsum Board.
      c. Lafarge North America Inc; Mold Defense Drywall.
      d. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
      e. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

F. Exterior Sheathing Board: As specified in Section 05 40 00.

G. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.

2.04 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Insulation - Interior Fire Rated Partition Walls: ASTM C665; preformed mineral fiber, friction fit type, unfaced rock wool similar to Thermafiber Sound Attenuation Fire Blanket (SAFB) as manufactured by Thermafiber, Inc.
   1. Density: 2.5 pcf (nominal).

B. Acoustic Insulation - Interior Partition Walls: ASTM C665; preformed mineral fiber, friction fit type, unfaced rock wool similar to Thermafiber FS 15 as manufactured by Thermafiber, Inc.
   1. Density: 3.0 pcf (nominal).

C. Acoustic Joint Sealant: Manufacturer's standard nonsag, paintable, non-staining latex sealant complying with ASTM C 834. Sealant shall effectively reduce airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
   1. Products:
      a. Grabber Construction Products: Acoustical Sealant GSC.
      b. Hilti, Inc; CP 506 Smoke and Acoustical Sealant: www.us.hilti.com/#sle.
      c. Hilti, Inc; CP 572 Smoke and Acoustical Spray Sealant: www.us.hilti.com/#sle.
      d. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
      e. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
      f. Specified Technologies, Inc.: Smoke N Sound Acoustical Sealant
      g. USG Corporation; Sheetrock Acoustical Sealant.
      h. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

D. Water-Resistive Barrier: As specified in Section 07 25 00.

E. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
   1. Corner Beads: Paper faced, similar to B1 series by USG.
   2. Corner Reinforcement: Galvanized steel, similar to Dur-A-Bead manufactured by USG.
   3. Control Joint: Bent zinc sheet formed with V shaped slot, covered with plastic tape, with perforated flanges and complying with ASTM C1047.
      a. Width: As required or detailed.
   4. Types: As detailed or required for finished appearance.
   5. Products:
      a. Same manufacturer as framing materials.

b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

F. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch wide, creased paper tape for joints and inside corners, except as otherwise indicated.
2. Joint Compound: Drying type, vinyl-based, ready-mixed.
a. Products:
1) National Gypsum ProForm All Purpose Joint Compound.
2) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.
3. Joint Compound: Setting type, field-mixed.
a. Products:
1) National Gypsum ProForm Quick Set Setting Compound.
2) Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

G. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

H. Textured Finish Materials: Latex-based compound; plain.

I. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.

J. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.

K. Hanger Wire: 8 gauge, galvanized wire.

L. Tie Wire: 18 gauge, galvanized wire.

M. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

N. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels directly to substrate.
1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.
1. Prepared surfaces are sized and located in accordance with drawings.
2. Framing, reinforcement, and anchoring devices are correct type and are located in accordance with shop drawings.

B. Installer's Examination:
1. Examine conditions under which installation is to be performed; submit written notification if such conditions are unacceptable.
2. Installation activities before unacceptable conditions have been corrected is prohibited.
3. Installation indicates installer's acceptance of conditions.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
1. Level ceiling system to a tolerance of 1/600.
2. Laterally brace entire suspension system.

C. Studs: Space studs at 16 inches on center.
1. Extend partition framing to structure in all locations.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
4. Extend stud framing through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
5. Extend stud framing to ceiling where indicated

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Standard Wall Furring: Install at concrete and masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
1. Orientation: Horizontal.
2. Spacing: At 16 inches on center unless otherwise noted.

F. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.

G. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
1. Place two beads continuously on substrate before installation of perimeter framing members.
2. Place continuous bead at perimeter of each layer of gypsum board.
3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
1. Single-Layer Fire-Rated: Install gypsum board vertically, with edges and ends occurring over firm bearing, unless otherwise indicated or required by fire-resistance-rated assembly.

E. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

F. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

G. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.

H. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

I. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Where partitions, furring, or column fireproofing abuts a structural element or dissimilar wall or ceiling (except floors).
   2. Ceiling or soffit abuts a structural element, dissimilar wall or partition, or other vertical penetration.
   3. Not more than 30 feet for walls and partitions.
   4. Not more than 50 feet in either direction for ceilings with perimeter relief, 30 feet without relief.
   5. At locations of control joints that occur in the building.
   6. Wings of "L", "U", and "T" shaped ceiling areas that are common or joined.
   7. Construction changes within the plane of a partition or ceiling.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with ready mixed, vinyl based joint compound and finish with ready mixed, vinyl based joint compound.
   1. Use a setting/hardening type compound where assemblies may be exposed to elevated humidity levels or moisture.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Areas to receive light-textured finishes and flat paints over light textures.
   3. Level 3: Walls to receive textured wall finish.
   4. Level 3: In utility areas, behind cabinetry.
   5. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
   6. Level 1: Ceiling plenum areas, concealed areas, and as indicated, unless a higher level of finish is required for fire resistive/rated or sound-rated assemblies.
   7. Level 0: Temporary partitions.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

D. Tape and finish wallboard for a minimum of 6 inches above finish ceiling elevation.

E. Apply joint tape over gypsum board joints except those with trim or accessories having concealed face flanges not requiring taping to prevent cracks from occuring.

F. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

G. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.07 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

B. Prevent texture finishes from coming in contact with surfaces not scheduled to receive texture finishes. Cover with visqueen or other masking agents as required.

C. Finish shall extend a minimum of 6 inches above ceiling elevation.

D. Immediately remove finish materials from surfaces not scheduled to received finish to prevent damage,

3.08 CLEANUP

A. Cleanup, remove from the site, and legally dispose of all materials related to work in this section.

3.09 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 30 00

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Stone thresholds.

D. Ceramic trim.

E. Safing.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete: Tile floor substrate.

B. Section 04 20 00 - Unit Masonry: Masonry substrate for tile.

C. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

D. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.

1.03 REFERENCE STANDARDS

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar.

B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.

C. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement.

D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive.

E. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.

F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy.

G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout.

H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout.

I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework.

J. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar.

K. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.

L. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.

M. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation.

N. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.

O. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile.

P. ANSI A137.1 - American National Standard Specifications for Ceramic Tile.

Q. ASTM C847 - Standard Specification for Metal Lath.

R. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.
   1. Require attendance of installation material manufacturer, tile supplier, tile installer and installers for related work.
   2. Review the following:
      a. Installation procedures and coordination required with related work.
      b. Surface preparation.
      c. Waterproofing techniques and locations.
      d. Crack isolation techniques and locations.
      e. Tile and installation material compatibility.
      f. Edge protection and transitions.
      g. Safing materials and details.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
   1. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

C. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

D. Samples: Provide tile and grout samples for color selection and/or confirmation.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than 10 of each type.
   3. Store in location as directed by Hoffman.
   4. Ensure materials are boxed and identified by manufacturer, type and color.

1.06 QUALITY ASSURANCE

A. Single Source Responsibility:
   1. Obtain each type and color tile material required from a single source.
   2. Obtain setting and grouting materials from one manufacturer to ensure compatibility.
   3. Obtain membrane from same manufacturer as setting material or from manufacturer approved by setting material manufacturer to ensure compatibility.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

C. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Labeling: Comply with ANSI A137.1.

B. Deliver materials in manufacturer's unopened containers, fully identified with name, brand, type and grade.

C. Protect materials from contamination, dampness, freezing, or overheating in accordance with manufacturer's instructions.

D. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

E. Broken, cracked, chipped, stained, or damaged tile will be rejected, whether built-in or not.

F. Protect mortar and grout materials against moisture, soiling, or staining.

1.08 FIELD CONDITIONS

A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Project Warranty: Submit a written warranty, executed by the Installer and Manufacturer, agreeing to repair or replace tile that fails in materials or workmanship within the specified warranty period.
   1. Warranty Period: 2 years after date of Substantial Completion.

PART 2 PRODUCTS

2.01 CERAMIC TILE

A. Manufacturers: All products by the same manufacturer.
   1. American Olean Corporation: www.americanolean.com/#sle.
   2. Dal-Tile Corporation: www.daltile.com/#sle.
   3. Summitville Tiles, Inc: www.summitville.com.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Quarry Tile, Type __: ANSI A137.1, standard grade.

C. Porcelain Tile: ANSI A137.1, standard grade.
   1. Edges: Cushioned.
   2. Surface Finish: Unglazed.
   3. Trim Units: Matching bullnose, surface bullnose, cove base, cove, and bead shapes in sizes coordinated with field tile.

2.02 PAVER TILE

2.03 TRIM AND ACCESSORIES

A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
   1. Manufacturers: Same as for tile.

B. Thresholds: Marble, white or gray, honed finish; 2 inches wide by full width of wall or frame opening; 1/2 inch thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.

2.04 SETTING MATERIALS

A. Epoxy Adhesive and Mortar Bond Coat: ANSI A118.3.
   1. Products:
      a. LATICRETE International, Inc; LATICRETE LATAPOXY 300 Adhesive: www.laticrete.com/#sle.
      b. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com/#sle.
      c. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Organic Adhesive: ANSI A136.1, thinset mastic type.
   1. Use Type I in areas subject to prolonged moisture exposure.
   2. Products:
      a. American Olean: www.americanolean.com.
      b. ARDEX Engineered Cements; ARDEX D14: www.ardexamericas.com/#sle.
      c. Bonsal American, IncNone - N/A: www.sakrete.com

d. Dal-Tile Corporation: www.daltile.com
e. Mapei.
f. Summitville Tiles, Inc: www.summitville.com.

2.05 GROUTS

A. Manufacturers:
1. Bostik Inc; ____: www.bostik-us.com/#sle.
2. Custom Building Products.
3. Mapei Corporation: www.mapei.com .
4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.06 MAINTENANCE MATERIALS

2.07 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
1. Thickness: 20 mils, maximum.
2. Crack Resistance: No failure at 1/16 inch gap, minimum.

B. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
1. Mortar Bonded Sheet Type:
a. Material: PVC sheet membrane, 40 mils, thick, minimum.

C. Metal Lath: ASTM C847, Flat diamond mesh, of weight to suit application, galvanized finish.

D. Waterproofing Membrane at Walls: Composite PVC sheet with laminated polyester fabric, each face, minimum 25 mil thickness, complying with ANSI A118.10 similar to Wall Seal as manufactured by The Noble Company.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 WATERPROOFING MEMBRANE

A. Install waterproofing in strict compliance with manufacturer's instructions.

B. Flash floor waterproofing up adjacent walls in accordance with manufacturer's details to a height of 6 inches.

C. Install wall waterproofing membrane at all corners for a height of 6'-0" for a minimum distance of 12 inches out from corners, with additional membrane as required by code(s).

D. Flood test waterproof membranes after fully curing.

E. Do not allow construction traffic on membrane.

3.04 INSTALLATION - GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install thresholds where indicated.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

K. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

M. Apply sealer to all cementitious grouts per manufacturer's instructions.

N. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

O. Leave finished tile work clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

3.05 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland cement grout.
   2. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F131.

3.06 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCNA (HB) Method F121.

B. Cleavage Membrane: Lap edges and ends.

C. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.07 INSTALLATION - WALL TILE

A. Over cementitious backer units install in accordance with TCNA (HB) Method W223, organic adhesive.

B. Over gypsum wallboard on wood or metal studs install in accordance with The Tile Council of North America Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.

C. Over interior concrete and masonry install in accordance with The Tile Council of North America Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

3.08 CLEANING

A. Clean tile and grout surfaces.

3.09 PROTECTION

A. Do not permit traffic over finished floor surface for 7 days after installation.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 21 13 00 - FIRE SUPPRESSION SPRINKLER SYSTEM: Sprinkler heads in ceiling system.

1.03 REFERENCE STANDARDS

A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on suspension system components and acoustical units.
   1. Manufacturer's Installation Instructions: Indicate special procedures

C. Samples: Submit two full size samples illustrating material and finish of acoustical units.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to the lesser of 5% percent of the project tile total or 10 cases of ceiling tile for each type of acoustical unit

1.06 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and fire protection systems.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.08 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Project Warranty: Submit a written warranty, executed by the Installer and Manufacturer, agreeing to repair or replace tile that fails in materials or workmanship within the specified warranty period.
   1. Sag Resistance: Provide Ten (10) Year Limited Warranty that products will be free from sagging and warpage
   2. Mold and Mildew Resistance: Provide Ten (10) Year Limited Warranty that products are free from growth of mold and mildew.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. USG: www.usg.com.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Suspension Systems:
   1. Same as for acoustical units.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustical Panels Type AT1: ASTM E1264 Type III, Painted mineral fiber, conforming to the following:
   1. Size: 24 by 24 inches.
   2. Thickness: 5/8 inches.
   3. Composition: Water felted.
   4. Light Reflectance: ____ percent, determined in accordance with ASTM E1264.
   5. NRC Range: ____ to ____, determined in accordance with ASTM E1264.
   6. Sag Resistance: Provide 10-year warranty.
   7. STC Range: 35 to 39.
   8. Edge: Square.
   9. Surface Color: White.
   10. Surface Pattern: Non-directional fissured.
   11. Suspension System: Exposed grid Type DX.

C. Acoustical Tile Type ____: Plastic faced mineral fiber, ASTM E1264 Type IV, with the following characteristics:
   1. Size: 24 x 24 inches.
   2. Thickness: 5/8 inches.
   3. Composition: Water felted.
   4. Light Reflectance: ____ percent, determined in accordance with ASTM E1264.
   5. NRC Range: ____ to ____, determined in accordance with ASTM E1264.
   6. STC Range: 35 to 39.
   7. Edge: Beveled tegular.
   8. Surface Color: White.
   9. Surface Pattern: Non-directional fissured.

10. Suspension System: Exposed grid Type DX.

D. Acoustical Panels Type AT3: ASTM E1264 Type IV,Vinyl faced gypsum, conforming to the following:
   1. Size: 24 by 24 inches.
   2. Thickness: 1/2 inches.
   3. Composition: Wet felted.
   4. Edge: Square.
   5. Surface Color: White.
   6. Surface Pattern: Embossed stipple pattern.
   7. Suspension System: Exposed grid Type DX.

2.03 SUSPENSION SYSTEM

A. Manufacturers:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. Chicago Metallic Corporation: www.chicagometallic.com.
   4. USG: www.usg.com.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Interior Exposed Steel Suspension System: Formed galvanized steel, commercial quality cold rolled; Intermediate-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Construction: Double web.
   3. Finish: White painted.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid or the ceiling system specified.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

C. Acoustical Insulation: Specified in Section 07 21 00.

D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

C. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendation.

3.02 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.

D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.
   2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Cut to fit irregular grid and perimeter edge trim.
   2. Make field cut edges of same profile as factory edges.
   3. Double cut and field paint exposed reveal edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

H. Install hold-down clips on panels within 20 ft of an exterior door.

3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.05 CLEAN UP

A. Remove cut-offs and carton waste to dumpster or as designated. Leave rooms clean.

B. Replace damaged and broken panels.

C. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to eliminate evidence of damage.

D. Deliver extra stock to Owner at close-out.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient sheet flooring.

B. Resilient base.

C. Resilient stair accessories.

D. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Restrictions on curing compounds for concrete slabs and floors.

C. Section 03 54 00 - Cast Underlayment.

1.03 REFERENCE STANDARDS

A. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing.

B. ASTM F1861 - Standard Specification for Resilient Wall Base.

C. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant; Federal Specifications and Standards.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
   1. Shop Drawings: Indicate seaming plans and floor patterns.

C. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

D. Selection Samples: Submit manufacturer's complete set of color samples for Hoffman's initial selection.

E. Concrete Sub-floor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Flooring Material: 10 square feet of each type and color.
   3. Extra Wall Base: 10 linear feet of each type and color.
   4. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Protect roll materials from damage by storing on end.

1.07 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.08 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

C. Provide Manufacturer's Warranty to include the following:
   1. Vinyl Sheet Flooring: Twelve years.
   2. Vinyl Tile Flooring: Fifteen years.
   3. PVC Free Flooring: Fifteen years.

PART 2 PRODUCTS

2.01 SHEET FLOORING

A. Vinyl Sheet Flooring: Color and pattern throughout wear layer thickness, with backing.
   1. Minimum Requirements: Comply with ASTM F1303, Type II, with Class A fibrous backing.
   2. Wear Layer Thickness: 0.050 inch minimum.
   3. Total Thickness: 0.080 inch minimum.
   4. Sheet Width: 72 inch minimum.
   5. Color: To be selected by Hoffman from manufacturer's full range.

2.02 STAIR COVERING

A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness.
   1. Minimum Requirements: Comply with FS RR-T-650 requirements corresponding to type specified.
   2. Nosing: Square.

B. Stair Risers: Full height and width of tread in one piece, matching treads in material and color.
   1. Thickness: 0.080 inch.

C. Stair Stringers: Full height in one piece and in maximum available lengths, matching treads in material and color.
   1. Nominal Thickness: 0.080 inch.

2.03 RESILIENT BASE

A. Resilient Base[]: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
   1. Height: 4 inch.
   2. Thickness: 0.125 inch.
   3. Finish: Satin.
   4. Length: 4 foot sections.
   5. Color: To be selected by Hoffman from manufacturer's full range.
   6. Accessories: Premolded external corners and internal corners.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer. Zero-VOC water-based acrylic spray adhesives, particularly non-toxic aerosol product, are preferable where applicable and approved by the flooring manufacturer.

C. Filler for Coved Base: Plastic.

D. Rubber landing and floor tile: Type and pattern to match stair treads

E. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
   1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

B. Prohibit traffic until filler is fully cured.

C. Clean substrate.

D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION - SHEET FLOORING

A. Lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns at seams.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units if available.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.06 INSTALLATION - STAIR COVERINGS

A. Install stair coverings in one piece for full width and depth of tread.

B. Install stringers configured tightly to stair profile.

C. Adhere over entire surface. Fit accurately and securely.

3.07 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.08 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 65 19

RESILIENT TILE FLOORING

PART 2 PRODUCTS

1.01 MANUFACTURERS

A. Basis of Design: Metroflor Corporation; Aspecta Five LVT: www.aspectaflooring.com/#sle.

B. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

1.02 RESILIENT TILE FLOORING

A. Luxury Vinyl Plank and Tile:
   1. Pattern: to be chosen by Hoffman by manufacturer full range.
   2. Color: to be chosen by Hoffman by manufacturer full range.
   3. Physical Properties:
      a. Construction: Phthalate-free solid plank and tile made from 100 percent virgin vinyl.
      b. Wear Layer Thickness: 28 mil.
      c. Total Thickness (Gauge): 0.126 inch.
      d. Finish: Urethane coating with ceramic bead particles.

1.03 ACCESSORIES

A. Moldings, Transition and Edge Strips: Same material as flooring.

B. Adhesives:
   1. VOC Content Limits: As specified in Section 01 61 16.
   2. Products:
      a. Metroflor Corporation; Prevail® 3100 Acrylic Spray Adhesive.
      b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Finishes and Cleaners:
   1. VOC Content Limits: As specified in Section 01 61 16.
   2. Products:
      a. Metroflor Corporation; Prevail® Matte Finish.
      b. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

PART 3 EXECUTION

2.01 EXAMINATION - SEE ALSO SECTION 01 7000.

A. Install flooring and accessories after other operations (including painting) have been completed.

B. Acceptance of Conditions: Carefully examine all installation areas with installer/applicator present, for compliance with requirements affecting work performance.
   1. Verify that field measurements, product, adhesives, substrates, surfaces, structural support, tolerances, levelness, temperature, humidity, moisture content level, pH, cleanliness and other conditions are as required by the manufacturer, and ready to receive work.

C. Verify that substrate is contaminant-free, including old adhesives and abatement chemicals.

D. Test substrates as required by manufacturer to verify proper conditions exist.

E. Verify that required floor-mounted utilities are in correct location.

2.02 PREPARATION

A. Flooring installation should not begin until all site conditions have been assessed, testing has been completed and subfloor conditions have been approved.

B. Prepare per manufacturer's written instructions, Section 01 70 00, and as follows:
   1. Prepare substrates to ensure proper adhesion of Luxury Vinyl Plank & Tile.
   2. Concrete Substrates: Prepare substrate per ASTM F710.
      a. Verify that subfloor is clean, flat, smooth, free of dirt, rust, paint, oil, wax or any contaminant that will interfere with adhesive bonding.

b. Mechanically remove substrate coatings that are not compatible with adhesives, such as sealers, curing, hardening or parting compounds, soap, wax, oil, etc.
    1) Do not use solvents or adhesive removers.
c. Expansion joints, isolation joints, or other moving joints must be honored and must not be filled with underlayment products or other materials, and floor coverings must not be laid over them. Expansion joint covering systems should be detailed by the architect or engineer, and based upon intended usage and aesthetic considerations.
d. Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities shall be filled or smoothed with high-quality Portland cement or calcium aluminate based patching or underlayment compound for filling or smoothing, or both.
    1) Do not skim-coat large areas with patching compound, especially slick power-troweled surfaces.
    2) Sand smooth per manufacturer's instructions.
e. Slick surfaces such as power-troweled concrete shall be profiled as needed to allow for a mechanical bond between the adhesive and subfloor.
f. Do not use gypsum-based underlayment products and do not skim coat concrete subfloors.
g. Self-Leveling Underlayments: Provide a dry and smoothly-sanded underlayment substrate ready for installation of Luxury Vinyl Plank & Tile. Underlayment compound shall be moisture-resistant, mildew-resistant, and alkali-resistant and must have a minimum of 3,000 psi compressive strength per ASTM C109/C109M.
h. Lightweight concrete shall have a compressive strength greater than 90 pounds per cubic foot with minimum compression strength of 2,500 psi or greater.

3. Existing and Other Substrates:
    a. Refer to manufacturer's professional installation guide and/or contact manufacturer, as special conditions may exist.

2.03 INSTALLATION

A. Installation per manufacturer's written instructions, Section 01 70 00, and as follows:
1. Layout shall be specified by Architect, Designer or End User.
2. Follow layout and ensure installation reference lines are square.
3. Field tiles shall be installed with directional arrows on back aligned in the same direction, or may be installed in quarter-turned fashion.
4. Check cartons for and do not mix dye lots.
5. Expansion Joints: Locate expansion, isolation, and other moving joints prior to installation.
    a. Do not fill expansion, isolation, and other moving joints with patching compound nor cover with resilient flooring.
    b. Install movement joint systems per manufacturer's instructions and per Section 07 92 00 and Section 07 95 13.
6. Adhesives: Adhere flooring to substrate using the full spread method resulting in a completed installation without gaps, voids, raised edges, bubbles or any other surface imperfections.
    a. Select appropriate adhesive, trowel and follow manufacturer's instructions.
    b. Periodically spot-check transfer of adhesive to back of tile during installation.
    c. Roll floor with a 100 pound roller to ensure proper transfer of adhesive and bonding.
    d. Protect floor from traffic per manufacturer's instructions.
    e. Do not wet mop floor until the adhesive has properly set per written instructions.

2.04 FIELD QUALTITY CONTROL

A. Site tests and inspections per Section 01 40 00 and as follows:
1. Inspect flooring installation for non-conforming work including (but not limited to) the following:
    a. Lack of adhesion.

b. Bubbles, loose tiles or raised edges.
c. Dirt and debris underneath flooring.
d. Excessive gaps.
e. Improper substrate preparation (as indicated by telegraphing).
f. Damage to tiles, including: dents/indentations, cuts, cracks, burns or punctures.

B. Non-conforming work per General Conditions and as follows:
1. Repair or replace damaged material if not acceptable to the Hoffman.

2.05 CLEANING

A. Waste Management per Section 01 70 00 and Section 01 74 19, and as follows:
1. Coordinate material reclamation program with manufacturer, if applicable.
a. Store and return cartons and pallets to manufacturer or recycler for reuse or recycling.

B. Provide progress cleaning per manufacturer's written instructions, Section 01 70 00, and as follows:
1. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.
a. Clean and protect completed construction until Date of Substantial Completion.
b. During installation, remove wet adhesive from surface of flooring per manufacturer's instructions.
2. Site: Maintain project site free of waste materials and debris.

C. Provide final cleaning immediately prior to Date of Substantial Completion inspection per manufacturer's written instructions and Section 01 70 00.
1. Protection: Remove manufacturer's and other installed protection immediately prior to Date of Substantial Completion inspection, unless required otherwise.
2. Clean floor with a neutral 6-8 pH cleaner.

2.06 MAINTENANCE

A. Initial maintenance per flooring manufacturer’s written instructions and as follows:
1. Allow the adhesive to cure for at least 48 hours prior to wet cleaning the floor.
2. Sweep, dust mop or vacuum the floor thoroughly to remove all loose dirt, dust, grit and debris. Do not use vacuums with a beater bar assembly.
3. Remove any dried adhesive residue from the surface with mineral spirits applied to a clean, lint-free cloth.
4. Damp mop the floor using a cleaner recommended by the flooring manufacturer.
5. If necessary, scrub the floor using an auto scrubber or rotary machine (300 rpm or less) with a cleaner recommended by the flooring manufacturer. Maintain the proper dilution ratio and use the appropriate scrubbing brush or pad.
6. Thoroughly rinse the entire floor with fresh, clean water. Remove the dirty residue with a wet-vacuum or clean mop and allow the floor to dry completely.

2.07 PROTECTION

A. Protect materials from construction operations until Date of Substantial Completion or Owner occupancy, whichever occurs first.
1. Protect finished floor from abuse and damage by using heavy non-staining kraft paper, drop cloths or equivalent. Use additional, non-damaging protective materials as needed.
2. Light foot traffic on a newly installed floor can be permitted after 24 hours.
3. Keep heavy traffic and rolling loads off the newly installed LVT flooring for 48 hours.
4. Protect the floor from rolling loads by covering with protective boards.

END OF SECTION

SECTION 09 65 66
RESILIENT ATHLETIC FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rubber sheet flooring, adhesively installed.

B. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Restrictions on curing compounds for concrete slabs and floors.

C. Section 09 65 00 - Resilient Flooring.

1.03 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

1.07 FIELD CONDITIONS

A. Maintain temperature in spaces to receive adhesively installed resilient flooring within range of 70 to 95 degrees F for not less than 48 hours before the beginning of installation and for not less than 48 hours after installation has been completed. Subsequently, do not allow temperature in installed spaces to drop below 50 degrees F or to go above 100 degrees F.

PART 2 PRODUCTS

2.01 PREFORMED ATHLETIC FLOORING

A. Manufacturers: All products by the same manufacturer.
   1. Burke Flooring; ____: www.burkeflooring.com/#sle.
   2. Dinoflex Group; ____: www.dinoflex.com/#sle.
   3. No Fault Sport Group; _____: www.nofault.com/#sle.
   4. Pawling Corporation; _____: www.pawling.com/#sle.
   5. Robbins Sports Surfaces; _____: www.robbinsfloor.com/#sle.
   6. Ultimate RB; ____: www.ultimaterb.com/#sle.
   7. U.S. Rubber Recycling, Inc; ____: www.usrubber.com/#sle.
   8. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Rubber Sheet Flooring: Recycled SBR (styrene butadiene rubber) and colored EPDM granules with urethane binder, lengths to avoid transverse seams.
   1. Thickness: Minimum 1/4 inch.
   2. Sheet Width: Minimum 48 inches.
   3. Tensile Strength: Minimum 150 psi, per ASTM D412.

4. Color: Black with speckles in color selected.

2.02 ACCESSORIES

A. Leveling Compound: Latex-modified cement formulation as recommended by flooring manufacturer for substrate conditions.

B. Adhesive: Water-resistant type recommended by flooring manufacturer for project conditions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of athletic flooring. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
   1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Concrete: Use leveling compound as necessary to achieve substrate flatness of plus or minus 1/8 inch within 10 ft radius.

B. Remove coatings that are incompatible with flooring adhesives, using methods recommended by flooring manufacturer.

C. Broom clean areas to receive athletic flooring immediately before beginning installation.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Resilient Sheet Flooring:
   1. Unroll flooring and allow to relax before beginning installation.
   2. Mix adhesive thoroughly and apply to substrate with notched trowel. Roll flooring into fresh adhesive, overlapping end seams and double cutting, butting factory edges and compression fitting.
   3. Roll entire flooring surface with steel roller to assure adhesion to substrate and eliminate air bubbles.
   4. Immediately remove any adhesive from flooring surface, using chemical recommended by flooring manufacturer.
   5. Weld seams using techniques and equipment recommended by manufacturer.
   6. Lay out game lines using tape and taping machine approved by flooring manufacturer. Apply game line paint with roller, and allow to dry before removing tape.
   7. Apply transparent top coat over flooring if recommended by manufacturer, to achieve a uniform finished appearance.

3.04 CLEANING

A. Clean flooring using methods recommended by manufacturer.

3.05 PROTECTION

A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.

END OF SECTION

SECTION 09 67 00
FLUID APPLIED FLOORING

PART 1 GENERAL

1.01 SCOPE

A. This specification section has USGBC LEED point ramifications. Contractor(s) will execute all work in full compliance to LEED requirements associated with this and related specification sections. The LEED project manual has been included as a part of the general and special requirements of this specification and applies to this and all other sections of the specification. Where discrepancies exist between specification references, the most stringent shall apply.

1.02 SECTION INCLUDES

A. Fluid-applied flooring and base.

1.03 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 30 00 - Cast-In-Place Concrete: Concrete substrate.

1.04 REFERENCE STANDARDS

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.

C. Samples: Submit two samples, ____by____ inch in size illustrating color and pattern for each floor material for each color specified.

D. Manufacturer's Installation Instructions: Indicate special procedures.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Supervisor Qualifications: Trained by product manufacturer, under direct full time supervision of manufacturer's own foreman.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store resin materials in a dry, secure area.

B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.08 FIELD CONDITIONS

A. Maintain minimum temperature in storage area of 55 degrees F.

B. Store materials in area of installation for minimum period of 24 hours prior to installation.

C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fluid-Applied Flooring:
   1. Crossfield Products Corp; _____: www.crossfieldproducts.com/#sle.
   2. Euclid Chemical Company.

3. Harris Specialty Chemicals, Inc.
4. Rust-Oleum, Britecast.
5. Dur-a-Flex; Dur-a-Quartz: www.dur-a-flex.com
6. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 FLUID-APPLIED FLOORING SYSTEMS

A. Fluid-Applied Flooring: Epoxy, two component, thermosetting, colored with mineral filler, with aggregate embedded in base coat.
   1. Base Coat: 1/8 inch thick; color as selected from standard colors.
      a. Tensile Strength: 2,000 psi at 7 days in accordance with ASTM C 307.
      b. Compressive Strength: 10,000 psi at 7 days in accordance with ASTM C 579.
      c. Water Absorption: 0.10 percent in accordance with ASTM C 413.
      d. Abrasion Resistance: Maximum weight loss of 0.1 g/1000 cycles, CS-17 wheel, in accordance with ASTM D 4060, Taber Abrader.
      e. Impact Resistance: No indentation, no cracking, chipping, or delamination when tested in accordance with MIL-D-3134J.
      f. Hardness: 85 in accordance with ASTM D 2240, Shore D.
      g. Flammability: Self-extinguishing in accordance with ASTM D 635.
      h.
      i. Bond Strength: Exceeding 400 psi (100% concrete failure) in accordance with ASTM D 4541.
      j. Modulus of Elasticity: 500,000 psi at 7 days in accordance with ASTM C 580.
      k. Flexural Strength: 3,100 psi at 7 days in accordance with ASTM C 580.
      l. Mildew Resistance: No growth.
   2. Aggregate: Small quartz chips, selected from standard color.
   3. Top Coat: Epoxy, two component, thermosetting, minimum 1/16 inch thickness; clear color.
      a. Tensile Strength: 3,900 psi at 7 days in accordance with ASTM D 638.
      b. Compressive Strength: 7,900 psi at 7 days in accordance with ASTM C 579.
      c. Water Absorption: 0.10 percent in accordance with ASTM C 413.
      d. Abrasion Resistance: Maximum weight loss of 0.3 g/1000 cycles, CS-17 wheel, in accordance with ASTM D 4060, Taber Abrader.
      e. Hardness: 85 in accordance with ASTM D 2240, Shore D.
      f. Flammability: Self-extinguishing in accordance with ASTM D 635.
      g. Bond Strength: Exceeding 400 psi (100% concrete failure) in accordance with ASTM D 4541.
      h. Flexural Strength: 3,700 psi at 7 days in accordance with ASTM D 790.
      i. Mildew Resistance: No growth.

2.03 ACCESSORIES

A. Cant Strips: Molded of flooring resin material.

B. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

C. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are ready for flooring installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by flooring materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

D. Apply primer to surfaces required by flooring manufacturer.

3.03 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply each coat to minimum thickness indicated.

C. Finish to smooth level surface.

D. Cove at vertical surfaces.

3.04 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Restrictions on curing compounds for concrete slabs and floors.

C. Section 09 68 16 - Sheet Carpeting: Broadloom carpet.

1.03 REFERENCE STANDARDS

A. CRI 104 - Standard for Installation of Commercial Carpet.

B. CRI (GLP) - Green Label Plus Testing Program - Certified Products; www.carpet-rug.org.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
   1. Manufacturer's Installation Instructions: Indicate special procedures.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Submit two, 12 inch long samples of edge strip, base cap, and stair nosing.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

C. Provide Manufacturer's Lifetime Warranty to include the following:
   1. Face fiber wear.
   2. Staining/Soiling Resistance.
   3. Color pattern permanency.
   4. Delamination of backing.
   5. Edge ravel and tuft bind.
   6. Floor compatibility.

7. Antistatic and cushion resiliency.
8. Antimicrobial protection when specified.
9. Flammability compliance at time of shipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. Interface, Inc; ____: www.interfaceinc.com/#sle.
   2. Lees Carpets; ____: www.leescarpets.com/#sle.
   3. Milliken & Company; ____: www.milliken.com/#sle.
   4. Tandus; ____: www.tandus.com/#sle.
   5. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Tile Carpeting, Type _____: Tufted, manufactured in one color dye lot.
   1. Tile Size: 18 by 18 inch, nominal.
   2. VOC Content: Provide CRI (GLP) certified product; in lieu of labeling, independent test report showing compliance is acceptable.
      a. Carpet: Documentation/product information maintaining total product VOC emission factor limit: 0.50 mg/m2/hr.
      b. Cushion: Documentation/product information maintaining total product VOC emission factor limit: 1.00 mg/m2/hr.

2.03 ACCESSORIES

A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Embossed aluminum, _____ color.

C. Adhesives:
   1. Acceptable to manufacturer and compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GLP) certified; in lieu of labeled product, independent test report showing compliance is acceptable.

D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

D. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.
   1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install carpet tile in accordance with manufacturer's instructions and CRI 104 (Commercial).

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Exposed surfaces of steel lintels and ledge angles.
   2. Steel ladders and stairs.
   3. Railings and bollards.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
   7. Marble, granite, slate, and other natural stones.
   8. Floors, unless specifically indicated.
   9. Ceramic and other types of tiles.
   10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 50 00 - Metal Fabrications: Shop-primed items.

C. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual.

E. SSPC-SP 1 - Solvent Cleaning.

F. SSPC-SP 2 - Hand Tool Cleaning.

G. SSPC-SP 6 - Commercial Blast Cleaning.

H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

C. Samples: Submit two paper chip samples, 6 by 6 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Maintenance Data: Submit data including product technical data sheets, care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

C. All materials, preparation and workmanship shall conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (MPI) (hereafter referred to as the MPI Painting Manual) as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.

D. All paint manufacturers and products used shall be as listed under the Approved Product List section of the MPI Painting Manual.

E. The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator / supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting any such work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

D. Where toxic and/or volatile, explosive, or flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings as required.

E. Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills.

F. Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Hoffman is obtained using the specified procedures for substitutions.

B. Paints:
   1. Diamond Vogel Paints: www.diamondvogel.com/#sle.
   2. PPG Paints: www.ppgpaints.com/#sle.
   3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Transparent Finishes:
   1. ICI Paints.
   2. Diamond Vogel Paints: www.diamondvogel.com.

D. Stains:
   1. Diamond Vogel Paints: www.diamondvogel.com.

E. Primer Sealers: Same manufacturer as top coats.

F. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   5. Supply each paint material in quantity required to complete entire project's work from a single production run.
   6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Hoffman from the manufacturer's full line.

E. Colors: As indicated on drawings.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
   1. Two top coats and one coat primer.

B. Paint GE-OP-3L - Exterior Gypsum Board and Exterior Plaster, Opaque, Latex, 3 Coat:
   1. One coat of latex primer sealer.
   2. Flat: Two coats of latex; enamel.

C. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
   1. One coat of latex primer.
   2. Gloss: Two coats of latex enamel.

D. Paint ME-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
   1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
   2. Gloss: Two coats of latex enamel.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Interior/Exterior Latex Block Filler; MPI #4.
   2. Water Based Primer for Galvanized Metal; MPI #134.
   3. Rust-Inhibitive Water Based Primer; MPI #107.
   4. Latex Primer for Exterior Wood; MPI #6.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Exterior Plaster and Stucco: 12 percent.
   2. Fiber Cement Siding: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

I. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

J. Exterior Gypsum Board: Fill minor defects with exterior filler compound. Spot prime defects after repair.

K. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

L. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

M. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

I. Spray paint door frames, brush applied coatings are not acceptable.

J. Do not paint over nameplates.

3.04 WALLS

A. Interior faces of all exterior concrete masonry and precast walls scheduled to be painted, are to be finished full height to bottom of decking. Finish to include block filler and specified second and third coats.

B. Interior walls scheduled to be painted are to be finished to a minimum height of 8 inches above finished ceiling elevation.

C. In areas where ceilings are not continuous, finish walls scheduled to receive paint full height to decking above.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

B. Painted surfaces shall be considered unacceptable if any of the following are evident under final lighting source, including daylight for interior surfaces:
   1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 39 inches.
   2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 39 inches.
   3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
   4. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 PROTECTION

A. Protect finishes until completion of project.

B. Protect work adjacent to painting operations from paint splatters and spills.

C. Immediately remove paint that falls on finished surfaces not scheduled to receive paint, using materials and techniques that will not damage affected surfaces.

D. Erect barriers or screens and post signs to provide warning as needed to direct traffic away or around work area.

E. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Elevator pit ladders.
   3. Steel ladders and stairs.
   4. Prime surfaces to receive wall coverings.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Ceramic and other tiles.
   7. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
   8. Glass.
   9. Acoustical materials, unless specifically indicated.
   10. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 05 50 00 - Metal Fabrications: Shop-primed items.

C. Section 07 05 53 - Fire and Smoke Assembly Identification.

D. Section 09 91 13 - Exterior Painting.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.

C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual.

E. SSPC-SP 1 - Solvent Cleaning.

F. SSPC-SP 2 - Hand Tool Cleaning.

G. SSPC-SP 6 - Commercial Blast Cleaning.

H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
   6. Manufacturer's Instructions: Indicate special surface preparation procedures.

C. Samples: Submit two paper chip samples, nominal 4 x 10 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Maintenance Data: Submit data including product technical data sheets, care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

C. All materials, preparation and workmanship shall conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (MPI) (hereafter referred to as the MPI Painting Manual) as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.

D. All paint manufacturers and products used shall be as listed under the Approved Product List section of the MPI Painting Manual.

E. The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator / supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting any such work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

D. Where toxic and/or volatile, explosive, or flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings as required.

E. Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills.

F. Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 30 ft candles measured mid-height at substrate surface.

F. Lead Paint: It is not expected that lead paint will be encountered in the Work.
   1. If suspected lead paint is encountered, do not disturb; immediately notify Architect and Owner.

G. Lead Paint: Lead paint is present in buildings and structures to be painted. A report on the presence of lead paint is on file for review and use. Examine report to become aware of locations where lead paint is present.
   1. Do not disturb lead paint or items suspected of containing hazardous materials except under procedures specified.
   2. Perform preparation for painting of substrates known to include lead paint in accordance with EPA Renovation, Repair and Painting Rule and additional requirements of authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Hoffman is obtained using the specified procedures for substitutions.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams.
   2. Diamond Vogel Paints: www.diamondvogel.com/#sle.
   3. PPG Paints: www.ppgpaints.com/#sle.
   4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Transparent Finishes:
   1. Diamond Vogel Paints: www.diamondvogel.com.
   2. ICI Paints.

D. Stains:
   1. Diamond Vogel Paints: www.diamondvogel.com.
   2. ICI Paints.

E. Primer Sealers: Same manufacturer as top coats.

F. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
5. Supply each paint material in quantity required to complete entire project's work from a single production run.
6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Hoffman from the manufacturer's full line.

E. Colors: Color selections per Architect and/or as indicated on drawings.
1. Extend colors to surface edges; colors may change at any edge as directed by Hoffman.

2.03 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, and galvanized steel.
1. Two top coats and one coat primer.
2. Top Coat Sheen:
3. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint I-TR -W - Transparent Finish on Wood.
1. 2 top coats over stain.

C. Paint WI-TR-VS - Wood, Transparent, Varnish, Stain:
1. One coat of stain; V.O.C. Compliant wiping stain.
2. One coat sealer.
3. Satin: Two coats of varnish; polyurethane.

D. Paint CI-OP-3L - Concrete/Masonry, Opaque, Latex, 3 Coat:
1. One coat of block filler.
2. Semi-gloss: Two coats of latex enamel.

E. Paint MI-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
1. One coat of alkyd primer.
2. Semi-gloss: Two coats of alkyd enamel.

F. Paint GI-OP-3LA - Gypsum Board/Plaster, Latex-Acrylic, 3 Coat:
1. One coat of alkyd primer sealer.
2. Semi-gloss: Two coats of latex-acrylic enamel.
3. Eggshell: Two coats of latex-acrylic enamel.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Interior Institutional Low Odor/VOC Primer Sealer; MPI #149.
2. Interior/Exterior Latex Block Filler; MPI #4.
3. Interior Latex Primer Sealer; MPI #50.
4. Latex Primer for Interior Wood; MPI #39.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Plaster and Stucco: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

I. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

J. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

L. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

M. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

N. Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.

O. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

I. Spray paint door frames, brush applied coatings are not acceptable.

J. Do not paint over nameplates.

3.04 WALLS

A. Interior faces of all exterior concrete masonry and precast walls scheduled to be painted, are to be finished full height to bottom of decking. Finish to include block filler and specified second and third coats.

B. Interior walls scheduled to be painted are to be finished to a minimum height of 8 inches above finished ceiling elevation.

C. In areas where ceilings are not continuous, finish walls scheduled to receive paint full height to decking above.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

B. Painted surfaces shall be considered unacceptable if any of the following are evident under final lighting source, including daylight for interior surfaces:
   1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 39 inches.
   2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 39 inches.
   3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
   4. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

C. Protect work adjacent to painting operations from paint splatters and spills.

D. Immediately remove paint that falls on finished surfaces not scheduled to receive paint, using materials and techniques that will not damage affected surfaces.

E. Erect barriers or screens and post signs to provide warning as needed to direct traffic away or around work area.

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Emergency evacuation maps.

B. Traffic signs.

1.02 RELATED REQUIREMENTS

A. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

B. Section 26 05 53 - Identification for Electrical Systems.

1.03 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities.

D. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
   1. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
   2. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
      a. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
      b. When content of signs is indicated to be determined later, request such information from Owner through Hoffman at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
      c. Submit for approval by Owner through Hoffman prior to fabrication.
   3. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

PART 2 PRODUCTS

2.01 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 _____, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Emergency Evacuation Maps:
   1. Allow for one map per elevator lobby.
   2. Map content to be provided by Owner.
   3. Use clear plastic panel silk-screened on reverse, in brushed aluminum frame, screw-mounted.

2.02 SIGN TYPES

A. Color and Font: Unless otherwise indicated:
   1. Character Font: Helvetica.
   2. Character Case: Upper case only.
   3. Background Color: As selected by Architect.
   4. Character Color: Contrasting color.

2.03 ACCESSORIES

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 10 21 13.13
METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal toilet compartments, floor-mounted, overhead braced.

B. Compartment door hardware.

C. Urinal screens, wall-mounted.

D. Installation hardware.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking and supports.

B. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. FS RR-P-1352 - Partitions, Toilet, Complete; Federal Specifications and Standard 1989.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on panel construction, hardware, and accessories.
   1. Shop Drawings:
      a. Dimensioned plans, indicating layout of toilet compartments.
      b. Dimensioned elevations indicating heights of doors, pilasters, separation partitions, and other components; indicate locations and sizes of openings in compartment separation partitions for toilet and bath accessories to be installed in partition; indicate floor and ceiling clearances.
      c. Details indicating anchoring components and methods for project conditions; indicate components required for installation, but not supplied by toilet compartment manufacturer.
      d. Samples: Provide color selection samples from manufacturers full range of standard colors.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store compartment components in unopened cartons in vertical position until installation, with adequate support to ensure flatness and to prevent damage to prefinished surfaces.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not deliver materials or begin construction activities of this section until building is enclosed, with complete protection from outside weather, and building temperature maintained at a minimum of 60 degrees F.

1.08 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Manufacturer's standard three (3) year warranty from date of substantial completion for coated steel products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Toilet Compartments:

1. Accurate Partitions Corp: www.accuratepartitions.com.
2. American Sanitary Partition Corporation.
3. Global Steel Products Corp: www.globalpartitions.com/#sle.
4. Substitutions: Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 MATERIALS

A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.03 COMPONENTS

A. Toilet Compartments: Powder coated steel, floor-mounted unbraced.

B. Doors, Panels, and Pilasters: Sheet steel faces, pressure bonded to sound deadening core, formed and closed edges; corners made with corner clips or mitered, welded, and ground smooth.
   1. Panel Faces: 20 gage, 0.0359 inch.
   2. Pilaster Faces: 20 gage, 0.0359 inch.
   3. Internal Reinforcement: Provide in areas of attached hardware and fittings. Mark locations of reinforcement for partition mounted washroom accessories.

C. Door and Panel Dimensions:
   1. Thickness: 1 inch.

D. Core: Kraft honeycomb, impregnated with water-resistant resins.

E. Pilasters: 1-1/4 inch thick, of sizes required to suit compartment width and spacing.

F. Urinal Screens: Wall mounted with two panel brackets, and floor-to-ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

2.04 ACCESSORIES

A. Pilaster Shoes: Formed chromed steel with polished finish, 3 inch high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow chrome-plated steel tube, 1 by 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.

C. Brackets: Polished chrome-plated non-ferrous cast metal.

D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
   1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

E. Hardware: Polished chrome plated non-ferrous cast metal:
   1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
   2. Thumb turn or sliding door latch with exterior emergency access feature.
   3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
   4. Coat hook with rubber bumper; one per compartment, mounted on door.
   5. Provide door pull for outswinging doors.

2.05 FINISHING

A. Powder Coated Steel Compartments: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat and two finish coats powder coat enamel.

B. Color: Single color as selected.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that field measurements are as indicated.

C. Verify correct spacing of and between plumbing fixtures.

D. Verify correct location of built-in framing, anchorage, and bracing.

E. Installer's Examination:
   1. Installer is to examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
   2. Transmit two copies of installer's report to Hoffman within 24 hours of receipt.
   3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
   4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

3.05 PROTECTION OF INSTALLED PRODUCTS

A. Prevent damage to product finishes by subsequent construction activities.

B. Repair damaged finishes; replace components having damaged finish if repair is not possible.

C. Remove factory protective coverings and clean finish surfaces in accordance with manufacturer's instructions before final inspection.

END OF SECTION

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SCOPE

A. This specification section has USGBC LEED point ramifications. Contractor(s) will execute all work in full compliance to LEED requirements associated with this and related specification sections. The LEED project manual has been included as a part of the general and special requirements of this specification and applies to this and all other sections of the specification. Where discrepancies exist between specification references, the most stringent shall apply.

1.02 SECTION INCLUDES

A. Urinal and vestibule screens.

1.03 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking and supports.

B. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.04 REFERENCE STANDARDS

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on panel construction, hardware, and accessories.
   1. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
   2. Samples: Submit two samples of partition panels, 24 by 24 inch in size illustrating panel finish, color, and sheen.
   3. Manufacturer's Installation Instructions: Indicate special procedures.

1.07 DELIVERY, STORAGE AND HANDLING

A. Store compartment components in unopened cartons in vertical position until installation, with adequate support to ensure flatness and to prevent damage to prefinished surfaces.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not deliver materials or begin construction activities of this section until building is enclosed, with complete protection from outside weather, and building temperature maintained at a minimum of 60 degrees F.

1.09 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Manufacturer's standard fifteen (15) year warranty from date of substantial completion for coated steel products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 ACCESSORIES

A. Pilaster Shoes: Formed chromed steel with polished finish, 3 inches high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
   2. Provide ceiling attachment using two adjustable hanging studs, attached to above-ceiling framing.

B. Head Rails: Hollow chrome plated steel tube, 1 x 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.

C. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
   1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 10 26 00
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Handrails.

B. Corner guards.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.

B. Section 08 71 00 - Door Hardware: Standard protection plates and trim.

C. Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.

C. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies.

F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

G. ICC A117.1 - Accessible and Usable Buildings and Facilities.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Stock Materials: One of each kind of minimum _____ inches long unit of covers for corner guards and handrails.

E. Maintenance Data: For each type of product . Include information regarding recommended and potentially detrimental cleaning materials and methods.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from moisture damage.

C. Protect work from UV light damage.

D. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in conformance with manufacturer's recommendations for each type of item.

E. Store products in either horizontal or vertical position, in conformance with manufacturer's instructions.

1.06 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Correct defective Work within a one year period after Date of Substantial Completion.

D. Provide manufacturer's limited lifetime warranty against material and manufacturing defects.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Protective Corridor Handrails and Corner Guards:
   1. Inpro: www.inprocorp.com/#sle.
   2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 PERFORMANCE CRITERIA

A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for conformance to applicable provisions of ASTM D256 and/or ASTM F476.

B. Chemical and Stain Resistance: Unless otherwise noted, provide protection products and assemblies with chemical and stain resistance conforming to applicable provisions of ASTM D543.

C. Fungal Resistance: Unless otherwise noted, provide protection products and assemblies which pass ASTM G21 testing.

2.03 PRODUCT TYPES

A. Corridor Handrails:
   1. Surface mounted IPC Style 800W with preformed end caps and internal and external corners.
   2. Comply with accessibility requirements of ICC A117.1 and ADA Standards.
   3. Performance of Installed Assembly:
      a. Support vertical live load of 100 lb/lineal ft with deflection not to exceed 1/50 of span between supports.
      b. Resist lateral force of 250 lbs at any point without damage or permanent set.
   4. Retainer: Continuous aluminum retainer, 0.080 inch thickness, fabricated from 6063-T5 aluminum with mill finish.
   5. Material: High impact vinyl, color as selected from manufacturer's standard colors.
   6. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   7. Fire Rating: 1 hour.
   8. Handrail: 5 1/2" h high x 1 1/2" gripping diameter extends 3 inches from wall. Handrail has full-wrap wood grain pattern snap on covers. Returns and corners include reveals.
   9. Mounting: Surface.
   10. Return rail to wall.
   11. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

B. Corner Guards - Surface Mounted:
   1. Surface mounted, IPC Style 150 BN BlueNose Corner Guards.
   2. Material: High impact vinyl with full height extruded aluminum retainer.
   3. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
   4. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   5. Fire Rating: 1 hour.

6. Width of Wings: 3 inches.
7. Corner: Radiused.
8. Color: As selected from manufacturer's standard colors.
9. Length: One piece.
10. Preformed end caps.
11. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

2.04 FABRICATION

A. Fabricate components with tight joints, corners and seams.

B. Pre-drill holes for attachment.

C. Form end trim closure by capping and finishing smooth.

2.05 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Provide wall and door protection systems of each type from a single source and manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

B. Verify that field measurements are as indicated on drawings.

C. Verify that substrate surfaces for adhered items are clean and smooth.

D. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

B. Position top of corridor hand rail 36 inches from finished floor.

C. Position corner guards above floor base.

D. Spacing of handrail brackets is to be a maximum of 32 inches and as recommended by handrail system manufacturer.

E. Terminate rails _____ inch short of door openings and intersecting walls.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

3.04 CLEANING

A. See Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, for additional requirements.

B. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

3.05 SCHEDULE

A. Provide corner guards at all gypsum board outside corners.

B. Provide handrails in all public corridors and as indicated on drawings.

END OF SECTION

SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Residential toilet, shower, and bath accessories.

C. Diaper changing stations.

D. Utility room accessories.

1.02 RELATED REQUIREMENTS

A. Section 10 21 13.13 - Metal Toilet Compartments.

B. Section 10 21 13.19 - Plastic Toilet Compartments.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

F. ASTM C1036 - Standard Specification for Flat Glass.

G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.

H. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration.

I. FS DD-M-411 - Mirrors, Glass; Federal Specifications and Standards; Revision C, 1990.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. ASI - American Specialties, Inc: www.americanspecialties.com.
   2. Bobrick Washroom Equipment, Inc.
   3. Bradley Corporation: www.bradleycorp.com/#sle.

B. Substitutions: Section 01 60 00 - PRODUCT REQUIREMENTS.

C. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Keys: Provide _____ keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

G. Adhesive: Two component epoxy type, waterproof.

H. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

C. Back paint components where contact is made with building finishes to prevent electrolysis.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

D. See Section 06 10 00 for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. Mirrors: Bottom of mirrors as indicated on drawings.
   2. Other Accessories: As indicated on drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

A. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.

B. NFPA 10 - Standard for Portable Fire Extinguishers.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.
   1. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
   2. Shop Drawings: Indicate locations of cabinets, cabinet physical dimensions, rough-in measurements for recessed cabinets, mounting measurements for wall bracket, installation procedures, and accessories required for complete installation.
   3. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

C. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Ansul, a Tyco Business: www.ansul.com/#sle.
   2. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by 1 for purpose specified and as indicated.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. UL rating: 4A-60B:C
   2. Finish: Baked polyester powder coat, color as selected.
   3. Temperature range: Minus 40 degrees F to ___ degrees F.

C. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: K type.
   2. Size and classification as scheduled.
   3. Finish: Polished stainless steel.
   4. Temperature range: Minus 20 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

B. Cabinet Construction: Non-fire rated.
   1. Formed primed steel sheet; 0.036 inch thick base metal.

C. Fire Rated Cabinet Construction: _____.
   1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.
   2. Provide fire rated cabinets at all fire rated walls.

D. Cabinet Configuration: Semi-recessed type.
   1. Size to accommodate accessories.
   2. Trim: Rolled Edge 2 1/2" Projection

E. Door: Manufacturer's standard thickness, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with continuous piano hinge. Provide roller type catch.

F. Door Glazing: Float glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.

G. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

H. Weld, fill, and grind components smooth.

I. Finish of Cabinet Exterior Trim and Door: Baked enamel, color as selected.

J. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated.

B. Graphic Identification: Silk Screen or Thermal Die Cut.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level in wall openings, ____ inches from finished floor to inside bottom of cabinet.

C. Secure rigidly in place.

D. Place extinguishers in cabinets.

3.03 SCHEDULES

A. See Plans for locations

END OF SECTION

SECTION 10 51 13
METAL LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal lockers.

B. Locker benches.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete base construction.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
   1. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
   2. Manufacturer's Installation Instructions: Indicate component installation assembly.

C. Samples: Submit two samples 3 by 3 inches in size showing color and finish of metal locker material.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect locker finish and adjacent surfaces from damage.

1.06 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Provide manufacturer's warranty against defects in materials or workmanship for a period of two from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Lockers:
   1. Lyon Workspace Products: www.lyonworkspace.com/#sle.
   2. Penco Products, Inc: www.pencoproducts.com/#sle.
   3. Republic Storage Systems Co: www.republicstorage.com/#sle.
   4. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 LOCKER APPLICATIONS

A. Locker Benches: Stationary type; bench top of laminated birch; painted steel pedestals.
   1. Accessibility: Comply with ICC A117.1 and ADA Standards.
   2. Benches: Manufacturer's standard 1-piece units top approximately 9-1/2 inches wide by 1-1/4 inches thick. Round all corners, sand smooth, and apply manufacturer's standard transparent sealer coating.

2.03 METAL LOCKERS

A. Accessibility: Comply with ICC A117.1 and ADA Standards.

B. Lockers: Factory assembled, made of formed sheet steel, ASTM A653/A653M SS Grade 33/230, with G60/Z180 coating, stretcher leveled; metal edges finished smooth without burrs; baked enamel finished inside and out.
   1. Where ends or sides are exposed, provide flush panel closures.

2. Provide filler strips where indicated, securely attached to lockers.
3. Color: To be selected by Hoffman; allow for contrasting colors for locker bodies and doors.

C. Locker Body: Formed and flanged; with steel stiffener ribs; electric spot welded.
1. Body and Shelves: 24 gage, 0.0239 inch.

D. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
1. Door Frame: 16 gage, 0.0598 inch, minimum.

E. Doors: Hollow double pan, sandwich construction with acoustic insulation fill, 1-3/16 inch thick; welded construction, channel reinforced top and bottom with intermediate stiffener ribs, grind and finish edges smooth.
1. Door Outer Face: 18 gage, 0.0478 inch, minimum.
2. Door Inner Face: 20 gage, 0.0359 inch, minimum.
3. Form recess for operating handle and locking device.

F. Hinges: Heavy duty, 7-knuckle type; two for doors under 42 inches high; three for doors over 42 inches high.

G. Sloped Top: 20 gage, 0.0359 inch, with closed ends.

H. Trim: 20 gage, 0.0359 inch.

I. Coat Hooks: Stainless steel or zinc-plated steel.

J. Number Plates: Provide oval shaped aluminum plates. Form numbers 1/2 inch high of block font style with ADA designation, in contrasting color.

K. Accessories For Each Locker: Three single prong wall hooks, hat shelf and rubber bumper.

2.04 FINISHING

A. Surface Preparation: Solvent-clean surfaces complying with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel complying with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC SP 8 (Pickling), and phosphatized.

B. Baked-Enamel Finish: Immediately after cleaning and pre treating, apply manufacturer's standard baked-enamel finish consisting of a thermosetting topcoat. Comply with paint manufacturer's instructions for application and baking to achieve a minimum dry film thickness of 1.1 mils (0.028 mm) on doors, frames, and legs, and 0.7 mil (0.018 mm) elsewhere.

C. Paint locker units as selected from standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared bases are in correct position and configuration.

B. Verify bases and embedded anchors are properly sized.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Place and secure on prepared base.

C. Install lockers plumb and square.

D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.

E. Bolt adjoining locker units together to provide rigid installation.

F. Install end panels, filler panels, and sloped tops.

G. Install fittings if not factory installed.

H. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interiors and exterior surfaces.

3.04 SCHEDULE

A. Locker Unit - Type L2:
   1. Size:
      a. Width: 12 inches.
      b. Depth: 12 inches.
      c. Height: 24 inches.
   2. Configuration: triple tier.
   3. Mounting: Surface mounted.
   4. Base: Fabricate for concrete base.
      a. Base Height: 4 inch.
   5. Top: Sloped metal with closures.
   6. Locking: Equipped for padlock hasps.
   7. Ventilation Method: Perforated.
   8. Class: Conventional.

B. Locker Unit - Type L3:
   1. Size:
      a. Width: 12 inches.
      b. Depth: 12 inches.
      c. Height: 12 inches.
   2. Configuration: triple tier.
   3. Mounting: Surface mounted.
   4. Base: Fabricate for wood base.
      a. Base Height: 4 inch.
   5. Top: Sloped metal with closures.
   6. Locking: Equipped for padlock hasps.
   7. Ventilation Method: Door louvers.
   8. Class: Conventional.

END OF SECTION

SECTION 10 51 26
PLASTIC LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic lockers.

B. Locker benches.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - CAST-IN-PLACE CONCRETE: Concrete base construction.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ICC A117.1 - Accessible and Usable Buildings and Facilities.

C. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's published data on locker construction, sizes and accessories.

C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect locker finish and adjacent surfaces from damage.

1.06 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Provide manufacturer's warranty against defects in materials or workmanship for a period of 25 years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 LOCKER APPLICATIONS

A. Locker Benches: Stationary type; bench top of solid high density polyethylene (HDPE); painted steel pedestals.
   1. Length: _____ inch.
   2. Depth: xxx inch.
   3. Thickeness: xxx inch.

2.03 SOLID PLASTIC LOCKERS

A. Accessibility: Comply with ICC A117.1 and ADA Standards.

B. Lockers: Factory assembled, made of solid plastic panels, tested in accordance with NFPA 286, homogenous color throughout.
   1. Material: Solid high density polyethylene (HDPE).
   2. Doors: Full overlay without frame.
   3. Locker Body Construction: Manufacturer's standard for selected product.
   4. Where locker ends or sides are exposed, provide same finish as fronts or provide extra panels to match fronts.
   5. Provide filler strips where indicated, securely attached to lockers.
   6. Door Color: To be selected by Hoffman.
   7. Body Color: Manufacturer's standard white or light color.

C. Component Thicknesses:
   1. Doors: 1/2 inch minimum thickness.

D. Hinges: Full height of locker, manufacturer's standard heavy duty type.

E. Number Plates: Provide rectangular shaped aluminum plates. Form numbers 1/2 inch high of block font style with ADA designation, in contrasting color.

F. Locks: Locker manufacturer's standard type indicated above.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared bases are in correct position and configuration.

B. Verify bases and embedded anchors are properly sized.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Place and secure on prepared base.

C. Install lockers plumb and square.

D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.

E. Install end panels, filler panels, and sloped tops.

F. Install fittings if not factory installed.

G. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interiors and exterior surfaces.

END OF SECTION

SECTION 10 56 17
WALL MOUNTED STANDARDS AND SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shelf standards, brackets, and accessories.

B. Closet rods for mounting on brackets.

C. Wood shelves and cleats.

D. See drawings for locations and configurations.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood blocking in walls for attachment of standards.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Manufacturer's Installation Instructions: Indicate component installation assembly.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - PRODUCT REQUIREMENTS, for additional provisions.
   2. Extra Brackets: Ten of each size of standard straight bracket.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products under cover and elevated above grade.

B. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Shelf Standards and Brackets:
   1. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

B. Shelves:

2.02 MATERIALS

A. Regular-Duty Shelf Standards and Brackets: Single-slotted channel standards for brackets adjustable in 1 inch increments along entire length of standard, drilled and countersunk for screws.
   1. Acceptable Product: KV 70.
   2. Load Capacity: Recommended by manufacturer for loading of 120 to 320 pounds per pair of standards.
   3. Material: 16 gage, 0.0598 inch sheet steel.
   4. Lengths: As indicated on drawings.
   5. Finish: Zinc coated.
   6. Brackets: 16 gage, 0.0598 inch sheet steel, reinforced, locking into slots; size to suit shelves; same finish as standards, 4" to 12" brackets.
   7. Brackets: 14 gage, 0.0747 inch sheet steel, locking into slots; size to suit shelves; same finish as standards
   8. Bracket Quantity: Provide one bracket for each 12 inches of standard length.

B. Shelf Standard Accessories:
   1. Provide other accessories as indicated.

C. Closet Rods: 1-1/2 inch diameter, clear, kiln-dried hardwood rod.
   1. Length: As required for application, up to 12 feet.
   2. Provide mounting fittings to suit application.

D. Wood Shelves: Solid board shelves, with edges sanded and eased.
   1. Species: S-P-F, B Select Grade.
   2. Thickness: 3/4 inch, nominal.
   3. Length: As indicated on drawings.
   4. Finish: Polyurethane varnish.

E. Fasteners: Screws as recommended by manufacturer for intended application or as otherwise required by project conditions.

F. Shelf Cleats: 3/4 x 3-1/2 inch boards, same species and grade indicated above for wood shelves.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Mount standards to solid backing capable of supporting intended loads.

C. Install brackets, shelving, and accessories.

D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch.

3.04 CLEANING

A. Clean shelves, hardware, fittings, and fixtures.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 10 57 23
WIRE STORAGE SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted wire closet shelving.

B. Laminated shelves associated with wire shelving.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking in walls for attachment of shelving.

B. Section 09 21 16 - Gypsum Board Assemblies: Blocking in metal stud walls for attachment of standards.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.
   1. Manufacturer's Installation Instructions: Indicate component installation assembly.
   2. Shop Drawings: Provide drawings prepared specifically for this project; show dimensions of shelving and attachment to substrates.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

C. Store flat to prevent warpage and bending.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wire Storage Shelving:
   1. ClosetMaid Corporation : www.closetmaid.com/#sle.
   2. RubberMaid Closet and Organization Products : www.rubbermaidcloset.com/#sle.
   3. Substitutions: See Section 01 60 00 - PRODUCT REQUIREMENTS.

2.02 SHELVING APPLICATIONS

A. Shelf Depth: 12 inches, unless otherwise indicated.

B. Coat Closets:
   1. Wall-to-wall shelf with integral hanger rod.

C. Storage Closets:
   1. Wall-to-wall storage shelves, close-mesh cross wire spacing, stacked at 13 inch vertically, not less than 12 inch deep.

2.03 MATERIALS

A. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with all components and connections required to produce a rigid structure that is free of buckling and warping.
   1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
   2. Coating: PVC or epoxy, applied after fabrication, covering all surfaces.

3. PVC Coating: 9 to 11 mils thick.
4. Color: To be selected.
5. Epoxy Coating: Non-toxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils thick.
6. Standard Mesh Shelves: Cross deck wires spaced at 1 inch.
7. Close-Mesh Shelves: Cross deck wires spaced at 1/2 inch.
8. Shelf and Rod Units: Integral hanging rod at front edge of shelf.

B. Laminated Shelves: Particleboard with thermal-fused melamine surface on top and bottom.
1. Edge Finish: Hot-melt PVC edge banding, matching color.
2. Substrate Thickness: 3/4 inch, nominal.
3. Color: White.

C. Hanging Rod: Tubular steel, 1 inch diameter, with end caps on open ends.
1. Finish: Epoxy powder coat.
2. Wall Thickness: 20 gage, 0.035 inch.
3. Provide corner hanging rods and hanging rod connectors where required.

D. Wall-Mounted Standards: Vertically slotted channel standards with double-tab cantilever brackets to suit shelving; factory finished to match shelving.

E. Mounting Hardware: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.

F. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect areas to receive shelving, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.

B. Verify appropriate fastening hardware.

C. Do not begin installation until substrates have been properly prepared.

D. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, with shelf surfaces level.

B. Cap exposed ends of cut wires.

C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.

D. Mounting Heights:
1. Single Hanging Rod Units: Install shelf at 68 inches above floor.
2. Double Hanging Rod Units: Install shelves at 42 inches and 84 inches above floor.

3.04 CLEANING

A. Clean soiled surfaces after installation.

3.05 PROTECTION

A. Protect installed work from damage.

B. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

END OF SECTION

SECTION 11 52 13
PROJECTION SCREENS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Front projection screen assemblies.

1.02 RELATED REQUIREMENTS

A. Section 09 51 00 - Acoustical Ceilings: Suspended panel ceilings for recessed screens.

B. Section 26 05 83 - Wiring Connections: Electrical supply, conduit, and wiring for electric motor operated projection screens.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Wiring diagrams for motor operators and actuators, and controls and switches.
   5. Shop Drawings: For custom installations, indicate dimensions, verified field measurements, mounting details, and interface with adjacent construction.

C. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver projection screens to project site in manufacturer's original unopened packaging, and inspect for damage and proper size before accepting delivery.

B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F, and stack in accordance with manufacturer's recommendations.

C. Acclimate screens to building temperatures for 24 hours prior to installation, in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

A. Maintain interior of building between 60 degrees F and __ degrees F during and after installation of projection screens.

1.07 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Provide one year manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.01 FRONT PROJECTION SCREENS

A. Front Projection Screens: Factory assembled unless otherwise indicated.
   1. Dimensions: As indicated on drawings.

B. Masking Borders: White, on four sides.

C. Extra Drops: White; 11 inch wide.

D. Exposed Screen Cases: Steel, with integral roller brackets.
   1. Finish: Baked enamel.
   2. Color: White.
   3. End Caps: Steel; finished to match case.
   4. Mounting: Wall.

E. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

2.02 ELECTRICAL COMPONENTS

A. Electrical Components: Listed and classified by UL as suitable for the purpose specified and indicated.

B. Motors: Direct drive, 110 V, 60 Hz.

C. Controls: Three (3) position control switch with plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate is finished and ready to accept screen installation.

B. If substrate preparation is the responsibility of another installer, notify Hoffman of unsatisfactory preparation before proceeding.

C. Verify type and location of electrical connections.

D. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.02 PREPARATION

A. Coordinate screen installation with installation of projection systems.

B. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.

B. Do not field cut screens.

C. Install screens in mountings as specified and as indicated on drawings.

D. Install plumb and level.

E. Install electrically operated screens ready for connection to power and control systems by others.

F. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.

G. Test electrical screens for proper working condition. Adjust as needed.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 12 32 00
MANUFACTURED WOOD CASEWORK

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking and nailers for anchoring casework.

B. Section 07 92 00 - Joint Sealants: Sealing joints between casework and countertops and adjacent walls, floors, and ceilings.

C. Section 09 22 16 - NON-LOADBEARING METAL FRAMING: Reinforcements in metal-framed partitions for anchoring casework.

D. Section 12 36 00 - Countertops: Additional requirements for countertops.

E. Section 22 40 00 - Plumbing Fixtures: Sinks and fittings installed in casework.

F. Section 26 27 26 - Wiring Devices: Switches, receptacles installed in casework.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards.

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0.

C. BHMA A156.9 - American National Standard for Cabinet Hardware.

D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material.

E. NEMA LD 3 - High-Pressure Decorative Laminates.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate casework types, sizes, and locations, using large scale plans, elevations, and cross sections. Include rough-in and anchors and reinforcements, placement dimensions and tolerances, clearances required, and keying information.

C. Samples for Finish Selection: Fully finished, for color selection. Minimum sample size: 2 inches by 3 inches.
   1. Plastic laminate samples, for color, texture, and finish selection.

D. Manufacturer's Qualification Statement.

E. Installer's Qualification Statement.

F. Maintenance Data: Manufacturer's recommendations for care and cleaning.

G. Finish touch-up kit for each type and color of materials provided.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect items provided by this section, including finished surfaces and hardware items during handling and installation. For metal surfaces, use polyethylene film or other protective material standard with the manufacturer.

B. Acceptance at Site:
   1. Do not deliver or install casework until the conditions specified under Part 3, Examination Article of this section have been met. Products delivered to sites that are not enclosed and/or improperly conditioned will not be accepted if warping or damage due to unsatisfactory conditions occurs.

C. Storage:
   1. Store casework in the area of installation. If necessary, prior to installation, temporarily store in another area, meeting the environmental requirements specified under Part 3, "Site Verification of Conditions" Article of this section.

1.06 WARRANTY

A. See Section 01 78 00 - CLOSEOUT SUBMITTALS, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion, at no additional cost to Owner. Defects include, but are not limited to:
   1. Ruptured, cracked, or stained finish coating.
   2. Discoloration or lack of finish integrity.
   3. Cracking or peeling of finish.
   4. Failure of hardware.

PART 2 PRODUCTS

2.01 CASEWORK, GENERAL

A. Quality Standard: AWI/AWMAC/WI (AWS), unless noted otherwise.

2.02 FABRICATION

A. Assembly: Shop assemble casework items for delivery to site in units easily handled and to permit passage through building openings.

B. Construction: As required for selected grade.

C. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

2.03 PLASTIC-LAMINATE-CLAD CASEWORK

A. Plastic-Laminate-Clad Casework: Solid wood and wood panel construction; each unit self-contained and not dependent on adjacent units or building structure for rigidity; in sizes necessary to avoid field cutting except for scribes and filler panels. Include adjustable levelers for base cabinets.
   1. Style: Flush overlay. Ease doors and drawer fronts slightly at edges.
   2. Cabinet Nominal Dimensions: Unless otherwise indicated, provide cabinets of widths and heights indicated on drawings, and with following front-to-back dimensions:
   3. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.
      a. Finish: Matte or suede, gloss rating of 5 to 20.
      b. Surface Color and Pattern: As selected by Hoffman from manufacturer's full line.
      c. Exposed Interior Surfaces: Thermally fused laminate.
         1) Color: White.
      d. Cap exposed plastic laminate finish edges with material of same finish and pattern.

2.04 COUNTERTOPS

A. Types: More than one type is required. See drawings for location of each type of countertop.

B. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Custom Grade, unless otherwise noted.

C. Plastic Laminate Countertops: High pressure decorative laminate sheet bonded to substrate.
   1. Manufacturer's standard configuration for exposed edges, back and end splashes.

D. Epoxy Resin Countertops: Filled epoxy resin molded into homogenous, non-porous sheets; no surface coating and color and pattern consistent throughout thickness; with integral or adhesively seamed components.
   1. Manufacturer's standard configuration for exposed edges, back and end splashes.
   2. Fabricate in accordance with manufacturer's standard requirements.

E. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
2. Manufacturer's standard configuration for exposed edges, back and end splashes.

2.05 CABINET HARDWARE

A. Manufacturer's standard types, styles and finishes.

2.06 ACCESSORIES

A. Concealed Joint Fasteners: Corrosion-resistant, standard with manufacturer.

B. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

C. Internal Light Fixtures: LED fixtures, with switch and heavy-duty cord and plug.
1. Length: 18 inches, nominal.
2. Illumination: _____ lumens, minimum.
3. Lens: Clear acrylic.
4. Finish: Baked enamel.
5. Color of Housing: Selected from manufacturer's standard range.

D. Sealant for Use in Casework Installation:
1. Manufacturer's recommended type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Environmental Conditions:
1. Do not deliver casework until the following conditions have been met:
a. Building has been enclosed (windows and doors sealed and weather-tight).
b. An operational HVAC system that maintains temperature and humidity at occupancy levels has been put in place.
c. Ceiling, overhead ductwork, piping, and lighting have been installed.
d. Installation areas do not require further “wet work” construction.

B. For Base Cabinets Installation: Examine floor levelness and flatness of installation space. Do not proceed with installation if encountered floor conditions required more than 1/2 inch leveling adjustment. When installation conditions are acceptable, for each space, establish the high point of the floor. Set and make level and plumb first cabinet in relation to this high point.

C. For Wall Cabinets Installation: Examine wall surfaces in installation space. Do not proceed with installation if the following conditions are encountered:
1. Maximum variation from plane of masonry wall exceeds 1/4 inch in 10 ft and 1/2 inch in 20 ft or more, and/or maximum variation from plumb exceeds 1/4 inchper story.
2. Maximum Variation of finished gypsum board surface from true flatness: 1/8 inch in 10 feet in any direction.

D. Verify adequacy of support framing and anchors.

E. Verify that service connections are correctly located and of proper characteristics.

3.02 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions.

B. Use anchoring devices to suit conditions and substrate materials encountered. Use concealed fasteners to the greatest degree possible. Use exposed fasteners only where allowed by approved shop drawings, or where concealed fasteners are impracticable.

C. Set casework items plumb and square, securely anchored to building structure.

D. Align cabinets to adjoining components, install filler and/or scribe panels where necessary to close gaps.

E. Fasten together cabinets in continuous runs, with joints flush, uniform and tight. Misalignment of adjacent units not to exceed 1/16 inch. In addition, do not exceed the following tolerances:
   1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet.
   2. Variation of Faces of Cabinets from a True Plane: 1/8 inch in 10 feet.
   3. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32 inch.
   4. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.

F. Base Cabinets: Fasten cabinets to service space framing and/or wall substrates, with fasteners spaced not more than 16 inches on center. Bolt adjacent cabinets together with joints flush, tight, and uniform.

G. Install hardware uniformly and precisely.

H. Countertops: Install countertops intended and furnished for field installation in one true plane, with ends abutting at hairline joints, and no raised edges.

I. Replace units that are damaged, including those that have damaged finishes.

3.03 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

B. Protect casework and countertops from ongoing construction activities. Prevent workmen from standing on, or storing tools and materials on casework or countertops.

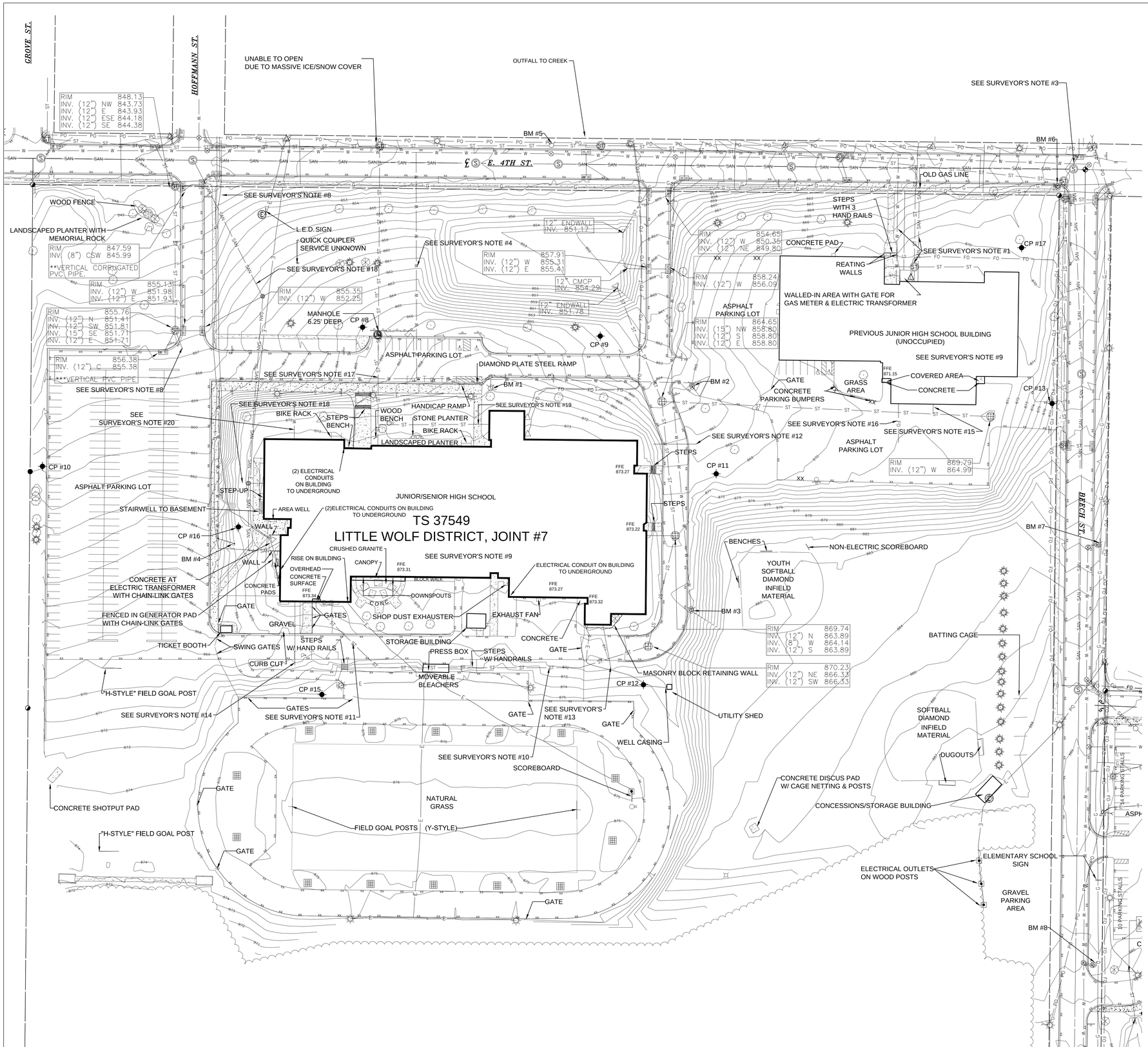
C. Repair damage, including to finishes, that occurs prior to Date of Substantial Completion, using methods prescribed by manufacturer; replace units that cannot be repaired to like-new condition.

END OF SECTION

Owner: School District of Manawa
Project Name: 18-268
Cost Estimate Summary
May 3, 2019

	Referendum Estimate	Schematic Design Estimate	Design Development Estimate	Increase/Decrease	Comments
Bid Package #1	**$2,516,075**	**$2,382,325**	**$1,694,417**	**($644,811)**	MES site work, re-roof at both schools, and masonry restoration at HS (GREEN = CONTRACTED WORK)
MES - Renovation/Maintenance	**$741,554**	**$738,875**	**$766,678**	**$27,803**	
HS - Renovations/Maintenance	**$3,586,358**	**$3,421,552**	**$3,397,451**	**($24,101)**	
HS - Additions	**$2,638,759**	**$2,948,000**	**$3,462,007**	**$514,007**	
Design Reimbursables	**$20,000**	**$20,000**	**$20,000**	**$0**	
Scheerer Construction Fee	**$0**	**$217,000**	**$80,000**	**($137,000)**	
Cost of Work Consultants	**Inc. Above**	**Inc. Above**	**$57,375**		Survey, Civil, Geotechnical, Commissioning
GC's and PR's	**$1,403,787**	**$1,403,787**	**$1,403,787**	**$0**	
Architectural Fee	**$556,952**	**$556,952**	**$556,952**	**$0**	
Construction Mgt Fee	**$376,683**	**$376,683**	**$376,683**	**$0**	
Total Construction Est. w/ fees	**$11,840,168**	**$12,065,174**	**$11,815,349**	**($249,825)**	
Furnishings and Equipment	**$200,000**	**$300,000**	**$250,000**	**($50,000)**	STEAM and FF&E Allowance-Including science tables (SD Added 50k in FF&E and Playground Equipment, DD Removed Playground Equipment)
Other Owner Costs	**$104,000**	**$105,350**	**$105,350**	**$0**	Moving and Abatement
Total Project Estimate	**$12,144,168**	**$12,470,524**	**$12,170,699**	**($299,825)**	

Scope Reduction Options			
BID	$	(132,000.00)	MES remains ballasted
BID	$	(26,500.00)	High School ballasted roofs remain ballasted
BID	$	(33,500.00)	Shingled roof over library
ESTIMATE	$	(300,000.00)	Interest earnings commited to projects
ESTIMATE	$	(50,000.00)	Reduce FF&E Allowance - reuse more existing furniture
ESTIMATE	$	25,000.00	Boiler Replacement - Heat and Power
Scope Reduction Total	**$**	**(517,000.00)**	



LEGEND

- LIGHT POLE
- POWER POLE
- GUY
- TELEPHONE PEDESTAL
- ELECTRICAL BOX
- TELEPHONE MANHOLE
- SANITARY MANHOLE
- WATER MANHOLE
- STORM MANHOLE
- UTILITY MANHOLE
- TRACK DRAINS
- CATCH BASIN
- CATCH BASIN
- WATER VALVE
- HYDRANT
- FENCE
- POWER OVERHEAD
- BURIED ELECTRIC
- BURIED GAS
- BURIED TELEPHONE
- WATERMAIN
- FIBER OPTICS
- EDGE OF BITUMINOUS
- FLAG POLE
- TREE
- CONIFEROUS TREE
- BUSH/SHRUB
- ELECTRIC METER
- GAS METER
- GAS VALVE
- 3/4" IRON BAR FOUND
- 1" IRON PIPE FOUND
- 1 1/4" IRON PIPE FOUND
- 1 1/2" IRON PIPE FOUND
- 2" IRON PIPE FOUND
- SECTION CORNER FOUND
- SANITARY SEWER
- STORM SEWER
- CONTOUR LINE
- SPOT ELEVATION
- SIGN
- CONTROL POINT
- ELECTRIC OUTLETS
- DISC GOLF BASKET
- PLAY EQUIPMENT
- BOLLARD (UNLESS NOTED)
- BENCH
- ROCKS
- SANITARY CLEANOUT
- BASKETBALL HOOP
- SWING
- IRRIGATION BOX
- WOODLINE
- CONCRETE SURFACE

SURVEYOR'S NOTES

1. 3" WATER MAIN, 6" SANITARY AND 12" STORM PER ELEMENTARY SITE PLAN DRAWING A-1 FROM THEO UTSCHIG & SON DATED JANUARY 30, 1973.
2. NATURAL GAS PER BRAY ASSOCIATES DRAWING SP1 PROJECT #2029 DATED MARCH 29, 1995.
3. STORM LATERAL PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
4. 6" WATER MAIN PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
5. 6" SANITARY STUBBED AND CAPPED. RUNS SOUTHEAST THROUGH THREE SEPTIC CLEANOUTS, WHICH ARE EACH COVERED BY A SOLID MANHOLE COVER ON ASPHALT SURFACE.
6. 12" STORM SEWER PER BRAY ASSOCIATES DRAWING SP2 PROJECT #2028 DATED OCTOBER 30, 1995.
7. 18" STORM SEWER PER R.H. RETTLER & ASSOCIATES, INC. DRAWING ST-1, DATED SEPTEMBER 10, 1998.
8. 6" SANITARY SEWER BASED FROM PLOT PLAN BY LAWRENCE BRAY & ASSOCIATES, JOB NO. 225, SHEET NO. P-1, DATED MARCH 28, 1968
9. CURRENT H.S. BUILDING: SANITARY AND WATER SERVICES TO BUILDING NOT LOCATED IN FIELD OR SHOWN ON AVAILABLE MAPPING. PREVIOUS H.S. BUILDING: ELECTRIC AND SANITARY SERVICES TO BUILDING NOT LOCATED IN FIELD OR SHOWN ON AVAILABLE MAPPING.
10. PROPOSED 10" STORM SEWER PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
11. PROPOSED 8" STORM SEWER PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
12. TWO 1" ELECTRICAL LINES UNDER BLACKTOP FOR FUTURE PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
13. TWO 1" AND ONE 3" CONDUIT STUBBED PAST BLACKTOP FOR FUTURE TELEPHONE AND LIGHTING PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
14. ABANDONED 4" ELECTRICAL LINE PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
15. 8" ROOF DRAIN. ACCORDING TO BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995, 8" X 12" X 12" FITTING WAS TO BE PROVIDED TO CONNECT FROM 12" STORM SEWER TO 8" ROOF DRAIN.
16. ONE 2" CONDUIT STUBBED PAST BLACKTOP FOR FUTURE CATV OR TELEPHONE PER BRAY ASSOCIATES DRAWING SP4 PROJECT #2029 DATED MARCH 29, 1995.
17. EXISTING 15" STORM SEWER PER BRAY ASSOCIATES DRAWING P1 PROJECT #2027 DATED APRIL 1, 1995. SHOWN ON PER PLOT PLAN BY LAWRENCE BRAY & ASSOCIATES, JOB NO. 225, SHEET NO. P-1,DATED MARCH 28, 1968.
18. EXISTING 6" SANITARY SEWER PER BRAY ASSOCIATES DRAWING P1 PROJECT #2027 DATED APRIL 1, 1995. STRUCTURE SHOWN ON PLANS NOT LOCATED IN FIELD.
19. 10" STORM LATERAL PER PLOT PLAN BY LAWRENCE BRAY & ASSOCIATES, JOB NO. 225, SHEET NO. P-1 DATED MARCH 28, 1968.
20. 4" WATERMAIN SERVICE PER PLOT PLAN BY LAWRENCE BRAY & ASSOCIATES, JOB NO. 225, SHEET NO. P-1 DATED MARCH 28, 1968.

SURVEY CONTROL POINTS

COORDINATE SYSTEM BASED ON: NAD83 (2011) WITH WAUPACA COUNTY COORDINATES USING WISCORS

CP #8 - CP SPIKE N: 379180.313 E: 581787.843 Z: 865.026	CP #11 - CP SPIKE N: 378994.460 E: 582235.884 Z: 868.820	CP #15 - CP SPIKE N: 378714.600 E: 581736.206 Z: 875.117	CP #18 - CP SPIKE N: 378390.120 E: 582797.579 Z: 885.879	CP #21 - CP SPIKE N: 378252.479 E: 583331.659 Z: 891.878
CP #9 - CP SPIKE N: 379169.026 E: 582088.972 Z: 864.664	CP #12 - CP SPIKE N: 378727.081 E: 582143.708 Z: 873.817	CP #16 - CP SPIKE N: 378927.144 E: 581630.457 Z: 870.343	CP #19 - CP SPIKE N: 378689.730 E: 583049.114 Z: 897.276	CP #22 - CP SPIKE N: 378138.212 E: 582979.949 Z: 887.414
CP #10 - CP SPIKE N: 379003.98 E: 581382.071 Z: 860.830	CP #13 - CP MAG N: 379083.665 E: 582661.619 Z: 876.813	CP #17 - CP SPIKE N: 379281.123 E: 582622.985 Z: 869.597	CP #20 - CP SPIKE N: 378437.435 E: 583343.286 Z: 892.780	CP #23 - CP SPIKE N: 378310.495 E: 582777.641 Z: 886.383

BENCH MARK

ELEVATIONS BASED ON NAVD 88 USING WISGEOID 12A:

BENCHMARK #1
BURY BOLT ON HYDRANT LOCATED NORTH OF JUNIOR/SENIOR HIGH SCHOOL BUILDING AND SOUTH OF SOUTH BACK OF CURB BY ADMINISTRATION PARKING LOT
ELEVATION: 871.95'

BENCHMARK #2
BURY BOLT ON HYDRANT LOCATED SOUTHWESTERLY OF THE FAR SOUTHWEST UNOCCUPIED BUILDING CORNER.
ELEVATION: 867.99'

BENCHMARK #3
BURY BOLT ON HYDRANT LOCATED BY EAST BACK OF CURB OF SCHOOL DRIVEWAY AND THE WEST DOWNSLOPE FROM YOUTH SOFTBALL DIAMOND.
ELEVATION: 873.11'

BENCHMARK #4
NORTH BOLT ARROWHEAD ON HYDRANT LOCATED SOUTHWEST OF STAIRWELL TO JUNIOR/SENIOR HIGH SCHOOL BUILDING BASEMENT.
ELEVATION: 870.53'

BENCHMARK #5
BURY BOLT ON HYDRANT LOCATED OFF NORTH BACK OF CURB OF 4TH STREET AND NORTH OF RETENTION POND IN FRONT OF JUNIOR/SENIOR HIGH SCHOOL BUILDING.
ELEVATION: 853.02'

BENCHMARK #6
BURY BOLT ON HYDRANT LOCATED BY NORTHWEST CORNER OF SIDEWALK RAMP AND SOUTHWEST CORNER OF 4TH AND BEECH STREET INTERSECTION.
ELEVATION: 871.75'

ELEVATIONS BASED ON NAVD 88 USING WISGEOID 12A:

BENCHMARK #7
BURY BOLT ON HYDRANT LOCATED OFF EAST BACK OF CURB OF BEECH STREET AND NORTH OF NORTHERNMOST ELEMENTARY SCHOOL ASPHALT DRIVEWAY.
ELEVATION: 884.80'

BENCHMARK #8
BURY BOLT ON HYDRANT LOCATED OFF EAST BACK OF CURB OF BEECH STREET AND SOUTHWEST OF MAIN ELEMENTARY SCHOOL ASPHALT PARKING LOT.
ELEVATION: 887.46'

BENCHMARK #9
BURY BOLT ON HYDRANT LOCATED OFF NORTH EDGE OF ASPHALT SURFACE AND NORTHERLY OF NORTH ELEMENTARY SCHOOL BUILDING FACE.
ELEVATION: 887.08'

BENCHMARK #10
BURY BOLT ON HYDRANT LOCATED NORTHERLY OF ELEMENTARY SCHOOL PLAYGROUND AREA.
ELEVATION: 887.80'

BENCHMARK #11
BURY BOLT ON HYDRANT LOCATED SOUTH OF GRAVEL WALKING PATH AND SOUTH OF ELEMENTARY SCHOOL OFF EAST BACK OF CURB OF BEECH STREET.
ELEVATION: 884.77'

UNDERGROUND UTILITIES

THESE RECORD DRAWINGS HAVE BEEN PREPARED IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. THE SURVEYOR AND ARCHITECT WILL NOT BE HELD RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT AS A RESULT.

PRIVATE UTILITIES HAVE BEEN LOCATED BY PRIVATE LINES, INC.

FIELD VERIFY SANITARY AND STORM SEWER PIPE SIZES AND THEIR LOCATIONS.

UNDERGROUND UTILITIES SHOWN ON THIS MAP ARE BASED IN PART ON MARKINGS BY DIGGERS HOTLINE. (TICKET #20184501004, #20184501027, #20184501073, #20184501110, #20184501134, #20184501187, #20184501200.)

DESCRIPTION

PART OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER AND PART OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 22, TOWNSHIP 23 NORTH, RANGE 13 EAST, CITY OF MANAWA, WAUPACA COUNTY, WISCONSIN.

N

0' 50' 100' 150'

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:
RETTLER corporation
2317 Business Park Drive, Stevens Point, WI 54482
Telephone: 715 - 341 - 2833, Fax: 715 - 341 - 0431
email: info @ rettler.com, website: www.rettler.com

MANAWA

MANAWA SCHOOL DISTRICT
MANAWA HIGH / MIDDLE SCHOOL
SITE ALTERATIONS
515 East 4th Street
Manawa, WI 54949-8664

MARK	DATE
ISSUED:	5-2-19
PROJECT NO:	XXXXX
CAD DWG FILE:	
DRAWN BY:	RETTLER
CHECKED BY:	RETTLER

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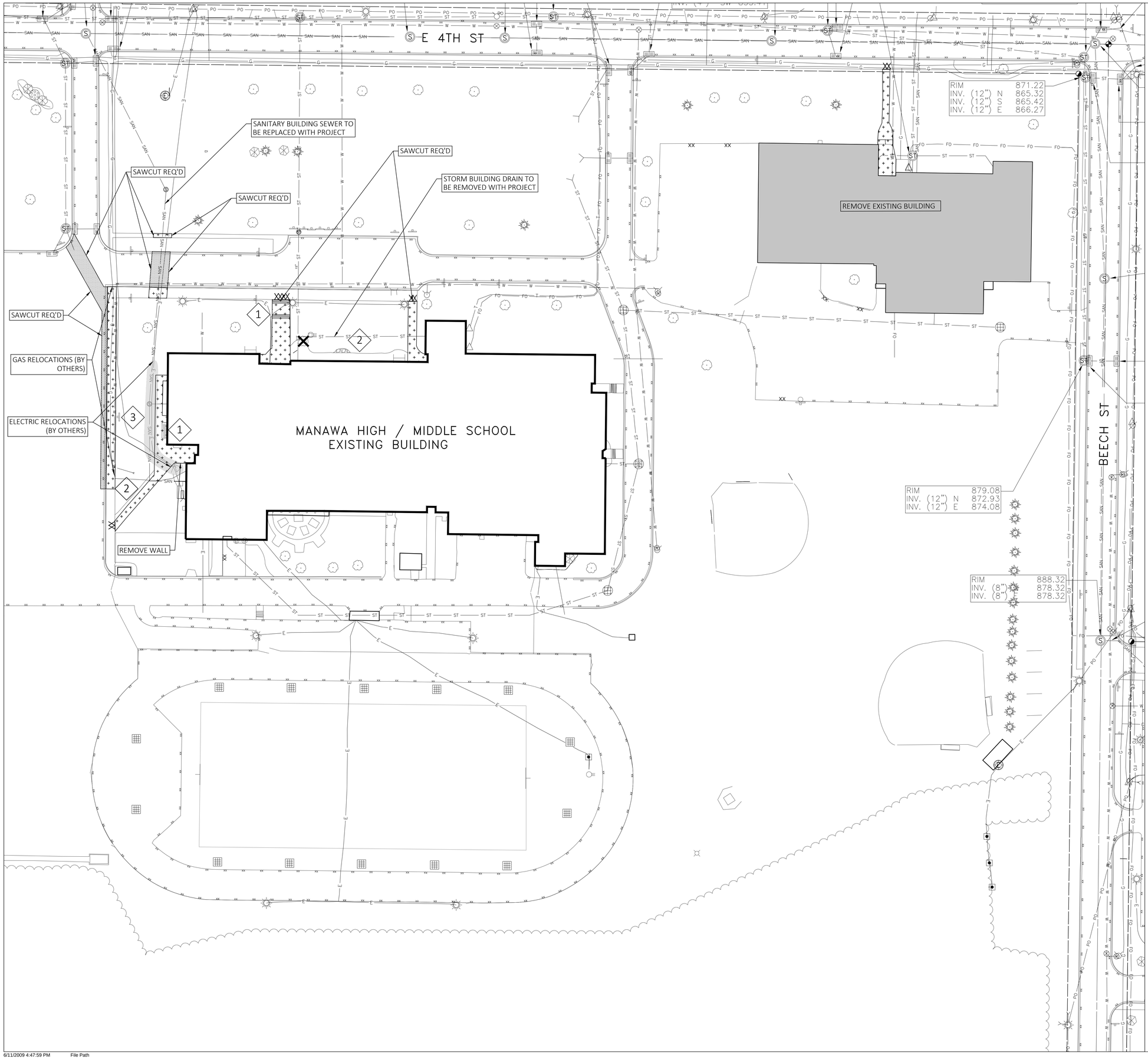
SHEET TITLE:
EXISTING CONDITIONS SURVEY

SHEET NUMBER:
C-100



DEMOLITION NOTES:

A. ALL FIELD SURVEY, UTILITY, AND BASEMAPPING DATA PROVIDED BY OTHERS. GREMMER & ASSOCIATES IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THIS DATA. SEE EXISTING CONDITIONS SURVEY FOR MORE INFORMATION.

B. CLEARING AND GRUBBING TO BE APPROVED BY HOFFMAN PRIOR TO REMOVAL.

C. SIDEWALK REMOVALS IN AREAS WHERE ADJACENT SIDEWALK WILL REMAIN SHALL BE TO THE NEAREST APPROPRIATE EXISTING JOINT. EXISTING CONCRETE SIDEWALK REMOVAL LIMITS SHALL BE REVIEWED AND APPROVED BY HOFFMAN PRIOR TO ANY REMOVALS. CONTRACTOR SHALL PROTECT AND PRESERVE ALL CONCRETE AREAS REMAINING.

D. PROTECT AND PRESERVE EXISTING TREES TO REMAIN.

E. SEE GEOTECHNICAL ENGINEERING SERVICES REPORT FOR EXISTING PAVEMENT AND BASE THICKNESSES.

LEGEND (DEMO PLAN):

- REMOVE ASPHALT PAVEMENT AND CONCRETE CURB AND GUTTER
- REMOVE BUILDING STRUCTURE
- REMOVE CONCRETE PAVEMENT
- CLEARING AND GRUBBING

KEYNOTES (DEMO PLAN):

1. REMOVE CONCRETE STEPS AND RAILING
2. REMOVE PLANTER / LANDSCAPING
3. REMOVE SIGN

0 40 80
SCALE: 1" = 40'
(30"x42" SHEET)

N

4/26/2019

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CONSULTANT:
GREMMER & ASSOCIATES, INC.
CONSULTING ENGINEERS
Engineering • Surveying • Land Development
120 Wallace Boulevard North • Stevens Point, WI 54481
(715) 344-4063 • Fax (715) 344-4066

MANAWA

MANAWA SCHOOL DISTRICT
MANAWA HIGH / MIDDLE SCHOOL
SITE ALTERATIONS
515 East 4th Street
Manawa, WI 54949-8664

MARK	DATE
ISSUED:	4-26-19
PROJECT NO:	XXXXX
CAD DWG FILE:	
DRAWN BY:	DLG
CHECKED BY:	DDK

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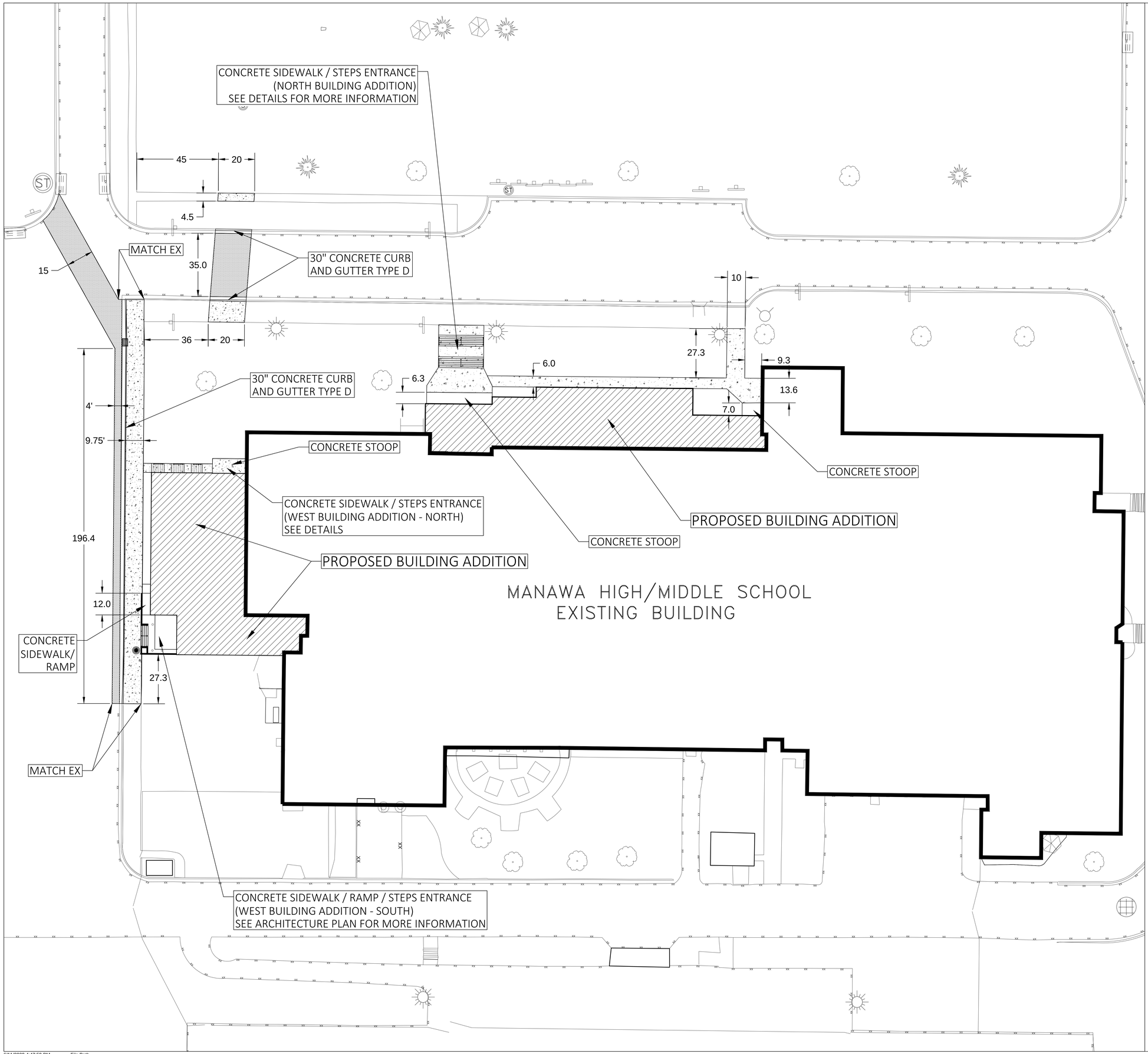
SHEET TITLE:
SITE DEMOLITION PLAN

SHEET NUMBER:
C-101

WISCONSIN
DAVID L. GLODOWSKI
E-31571
STEVENS POINT
WI
PROFESSIONAL ENGINEER



SITE NOTES:

A. ALL FIELD SURVEY, UTILITY, AND BASEMAPPING DATA PROVIDED BY OTHERS. GREMMER & ASSOCIATES IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THIS DATA. SEE EXISTING CONDITIONS SURVEY FOR MORE INFORMATION.

LEGEND (SITE PLAN):

BUILDING ADDITION

4" CONCRETE SIDEWALK
(UNLESS NOTED OTHERWISE)

PAVEMENT RESTORATION
3.5" HMA PAVEMENT
- 1.75" UPPER LAYER 4LT58-28S (12.5MM)
- 1.75" LOWER LAYER 4LT58-28S (12.5MM)
10" BASE AGGREGATE DENSE 1 1/4-INCH

0 20 40
SCALE: 1" = 20'
(30"x42" SHEET)

N

4/26/2019

WISCONSIN
DAVID L. GLODOWSKI
E-31571
STEVENS POINT
WI
PROFESSIONAL ENGINEER

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MANAWA HIGH / MIDDLE SCHOOL
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515 East 4th Street
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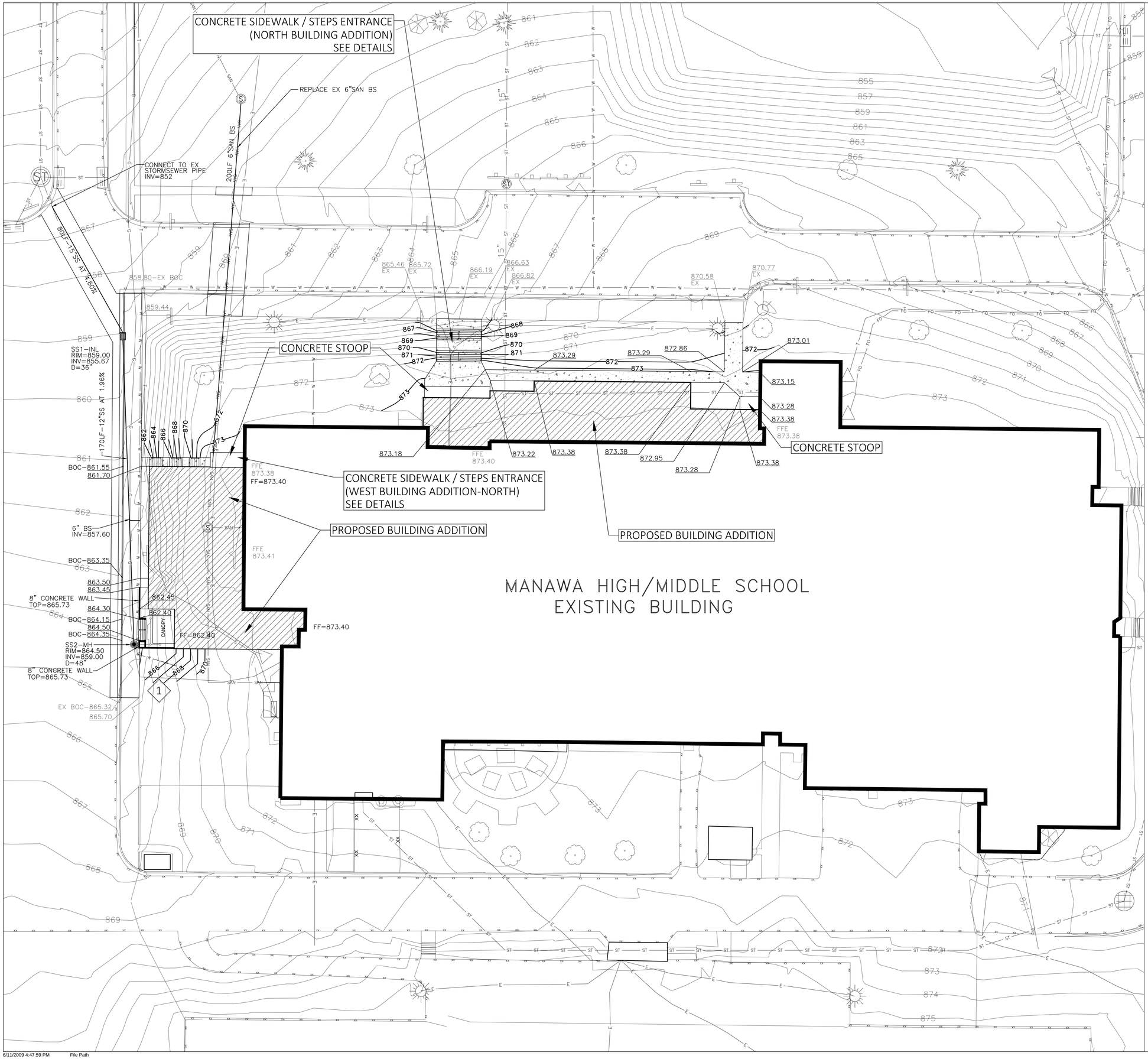
SHEET TITLE:
SITE
LAYOUT

SHEET NUMBER:
C-102

6/11/2009 4:47:59 PM File Path



GRADING NOTES:

A. ALL FIELD SURVEY, UTILITY, AND BASEMAPPING DATA PROVIDED BY OTHERS. GREMMER & ASSOCIATES IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THIS DATA. SEE EXISTING CONDITIONS SURVEY FOR MORE INFORMATION.

B. ALL GRASS SLOPES ARE 4:1 OR FLATTER, UNLESS NOTED.

C. CONTACT DIGGERS BEFORE EXCAVATING (811 OR 1-800-242-8511).

D. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE

E. ALL PROPOSED SIDEWALK SHALL HAVE A 1.5% CROSS SLOPE, TYP.

LEGEND (GRADING PLAN):

889.60 PROPOSED SPOT ELEVATION

890 PROPOSED CONTOUR

PROPOSED 2X3-FT INLET

PROPOSED 3-FT MANHOLE

EROSION CONTROL NOTES / KEYNOTES:

A. ALL EROSION CONTROL ITEMS SHALL BE INSTALLED IN ACCORDANCE WITH WDNR - TECHNICAL STANDARDS. ALL EROSION CONTROL MATERIALS SHALL BE ON WDOT PAL LIST.

B. ALL AREAS DISTURBED BY CONSTRUCTION AND OUTSIDE PROPOSED PAVEMENT AREAS SHALL RECEIVE 6" TOPSOIL, SEED, FERTILIZER, AND MULCH.

C. ANY SEDIMENTS FROM EROSION OR TRACKING THAT ENTERS PROPERTY NOT OWNED BY THE PROJECT OWNER SHALL BE COMPLETELY REMOVED/CLEANED UP WITHIN 24 HOURS OF THE OCCURRENCE.

D. STOCKPILES SHALL BE LOCATED WITHIN THE SITE TO PREVENT ANY EROSION OR SEDIMENTS LEAVING THE PROPERTY.

EROSION CONTROL KEYNOTES:

1 EROSION MAT CLASS I TYPE B

0 20 40

SCALE: 1" = 20'
(30"x42" SHEET)

N

4/26/2019

WISCONSIN
DAVID L. GLODOWSKI
E-31571
STEVENS POINT
WI
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SITE ALTERATIONS
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MARK	DATE
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PROJECT NO:	XXXXX
CAD DWG FILE:	
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CHECKED BY:	DDK

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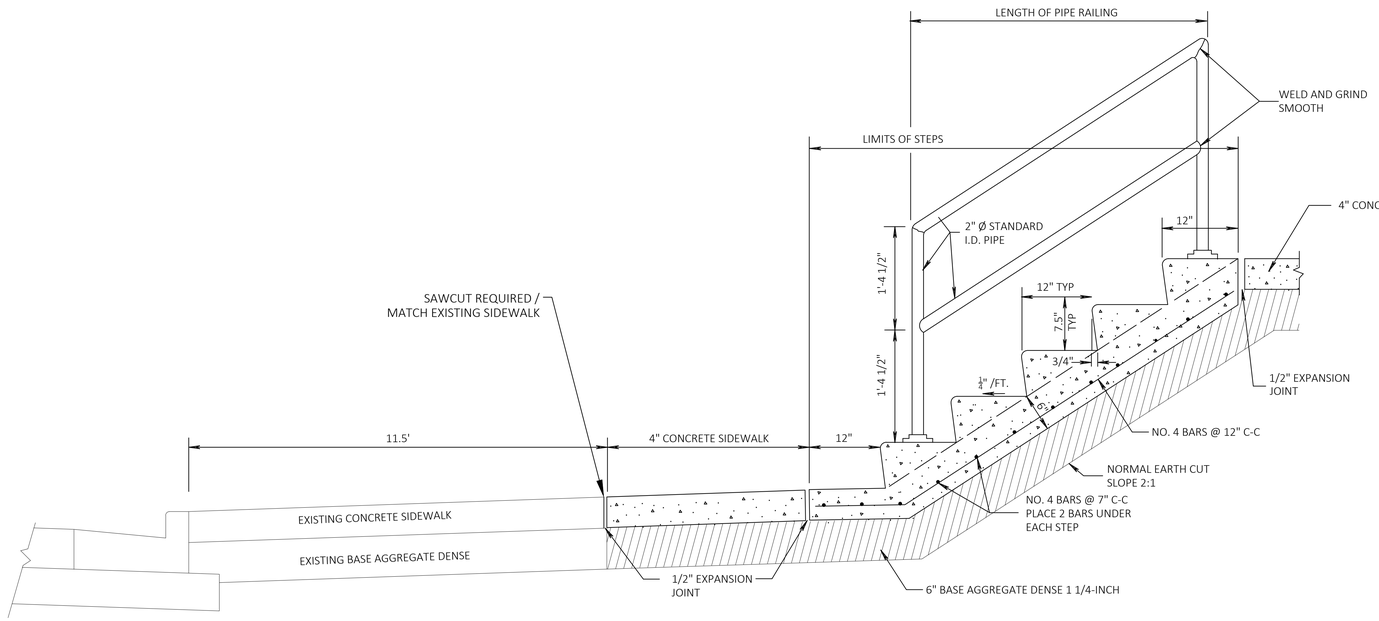
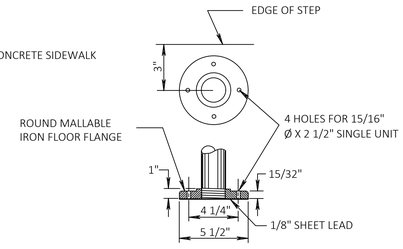
SHEET TITLE:
SITE GRADING / DRAINAGE / EROSION CONTROL PLAN

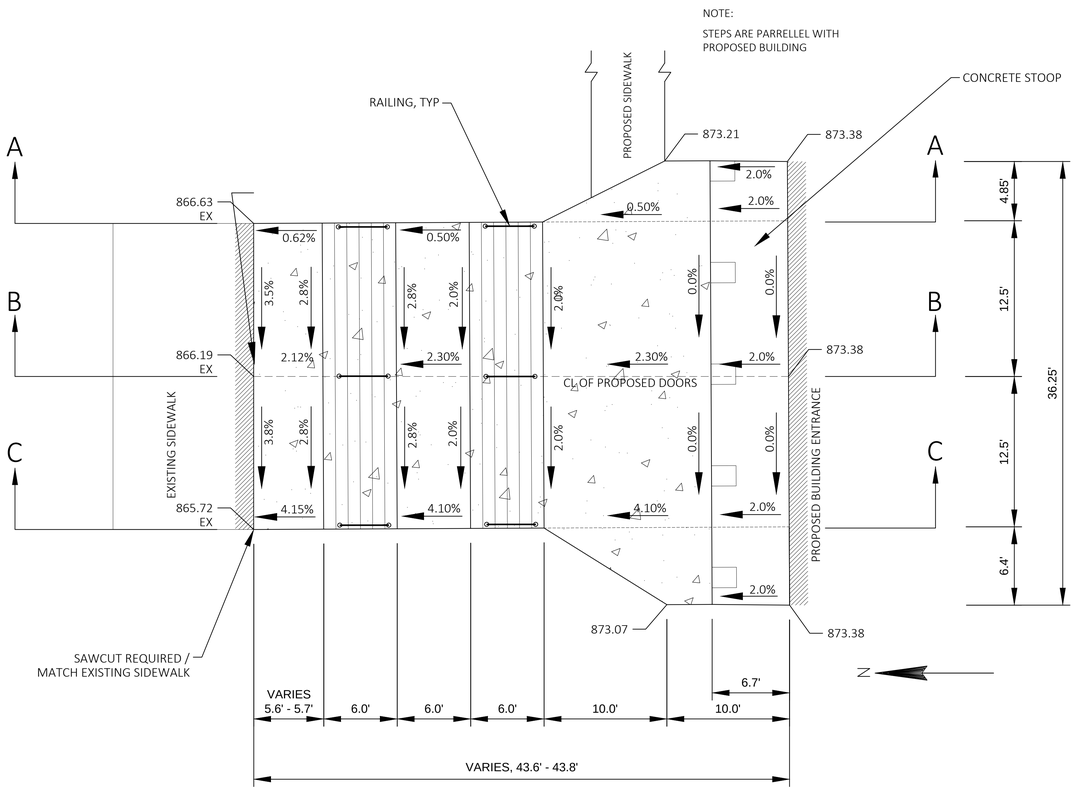
SHEET NUMBER:
C-103



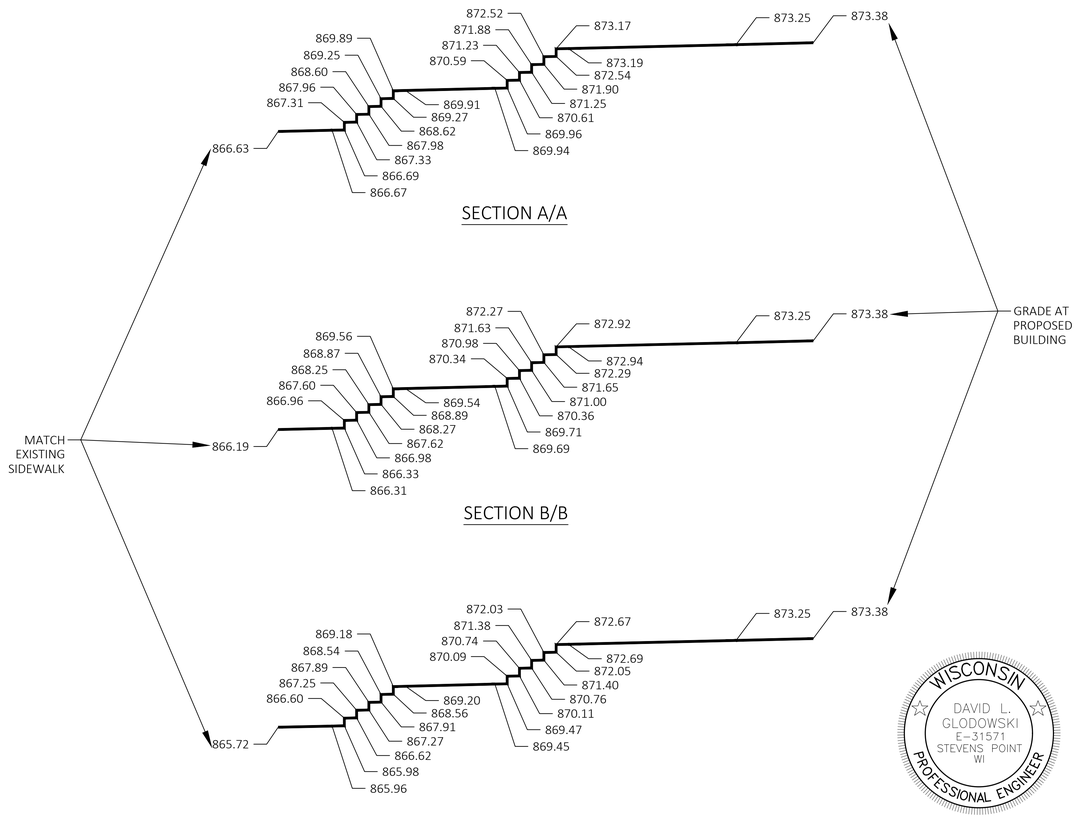


FLANGE DETAIL

CONCRETE STEPS / RAILING DETAIL



PLAN VIEW
CONCRETE SIDEWALK / STEPS ENTRANCE DETAIL (NORTH BUILDING ADDITION)



SECTION A/A

SECTION B/B

SECTION C/C

WISCONSIN
DAVID L. GLODOWSKI
E-31571
STEVENS POINT
WI
PROFESSIONAL ENGINEER

4/26/2019

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MANAWA

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MANAWA HIGH / MIDDLE SCHOOL
SITE ALTERATIONS
515 East 4th Street
Manawa, WI 54949-8664

MARK	
ISSUED:	4-26-19
PROJECT NO:	XXXXX
CAD DWG FILE:	
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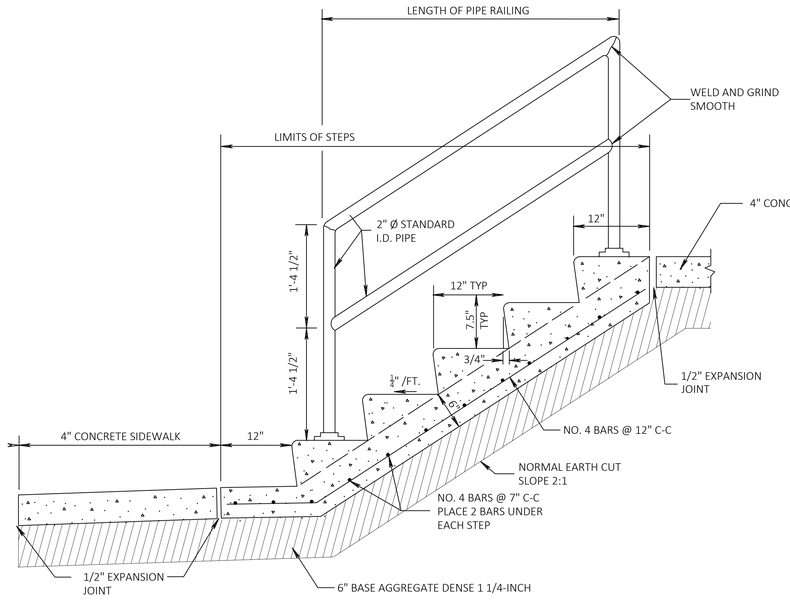
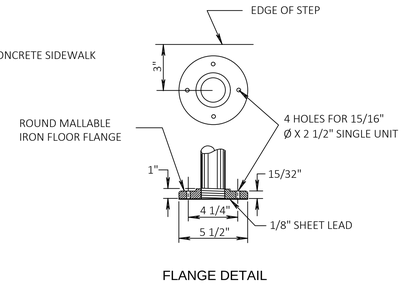
SHEET TITLE: SITE DETAILS

SHEET NUMBER: C-104



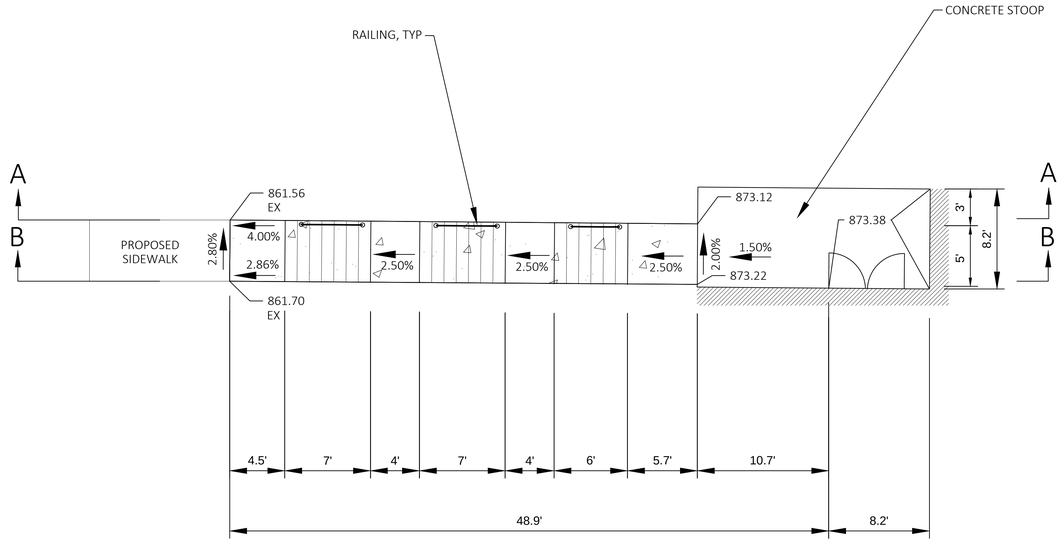


FLANGE DETAIL

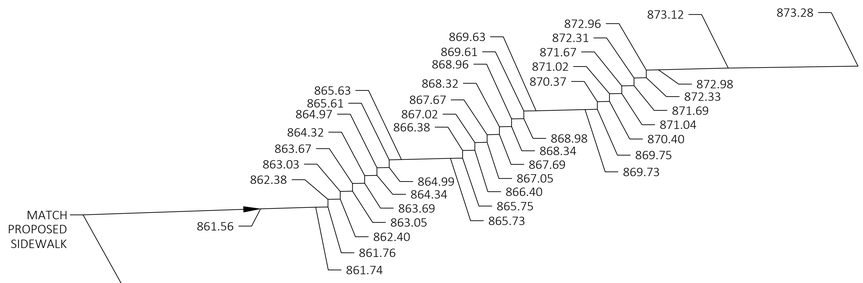
CONCRETE STEPS / RAILING DETAIL
(NUMBER OF STEPS VARIES)

NOTE:

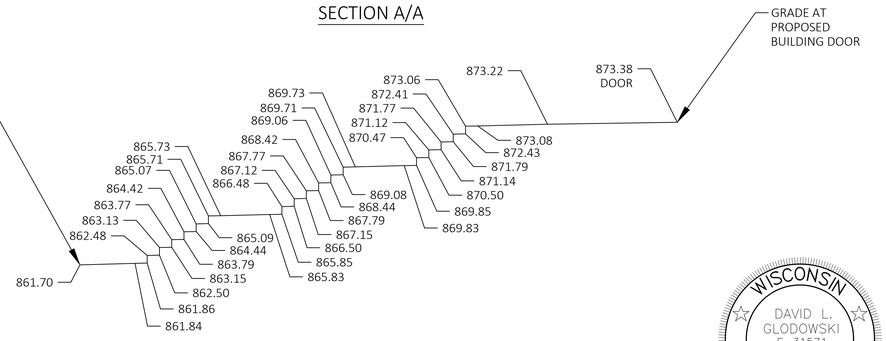
STEPS ARE PARRELLEL WITH PROPOSED BUILDING



PLAN VIEW
CONCRETE SIDEWALK / STEPS ENTRANCE DETAIL (WEST BUILDING ADDITION - NORTH)



SECTION A/A



SECTION B/B

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4/26/2019

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MANAWA SCHOOL DISTRICT
MANAWA HIGH / MIDDLE SCHOOL
SITE ALTERATIONS
515 East 4th Street
Manawa, WI 54949-8664

MARK	
ISSUED:	5-2--19
PROJECT NO:	XXXXX
CAD DWG FILE:	
DRAWN BY:	DLG
CHECKED BY:	DDK

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SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
C-105

LUMINAIRE SYMBOLS

- RECESSED LUMINAIRE
- RECESSED TROFFER
- RECESSED LINEAR
- SURFACE ROUND LUMINAIRE
- SURFACE SQUARE LUMINAIRE
- SURFACE LINEAR
- SURFACE INDUSTRIAL
- SURFACE COVE STRIP
- PENDANT ROUND LUMINAIRE
- PENDANT SQUARE LUMINAIRE
- PENDANT LINEAR
- PENDANT INDUSTRIAL
- (#) TRACK (# INDICATES NUMBER TRACK HEADS)
- WALL SURFACE BRACKET
- WALL RECESSED BRACKET
- WALL SURFACE LINEAR
- WALL RECESSED LINEAR
- CEILING MOUNTED EXIT SIGN
- WALL MOUNTED EXIT SIGN
- WALL MOUNTED COMBINATION EXIT SIGN/EBU
- ARROW DENOTES EXIT SIGN CHEVRON
- EMERGENCY BATTERY UNIT
- RECESSED EMERGENCY BATTERY UNIT
- WALL WASH MODIFIER
- EMERGENCY SHADING MODIFIER

LUMINAIRE CIRCUITRY & CONTROL KEY:

A1 — LUMINAIRE TYPE
1Ra
2Nd
- LOWER CASE LETTER INDICATES SWITCHLEG CONTROL
- "R" INDICATES LIGHTING CONTROL PANEL
- CONSULT TO LIGHTING CONTROL PANEL SCHEDULE
- NUMBER INDICATES BRANCH PANEL CIRCUIT NUMBER

LUMINAIRE CONTROL SYMBOLS

- (XS X) OCCUPANCY SENSOR CEILING MOUNT (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- (DS X) DAYLIGHT SENSOR (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- (XS X) DAYLIGHT SENSOR CEILING MOUNT (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- TC ELECTRONIC TIME CLOCK
- PE PHOTO ELECTRIC CONTROL (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- LC LIGHTING CONTACTOR
- LCP X LIGHTING CONTROL PANEL (X REPRESENTS PANEL DESIGNATION)
- PT UL 924 LISTED EMERGENCY LIGHTING BYPASS CONTROL UNIT
- PP POWER PACK USED IN CONJUNCTION WITH OCCUPANCY SENSORS OR DAYLIGHT SENSORS
- PS REMOTE POWER SUPPLY OR DRIVER
- DR DIMMER RACK
- D DIMMER CONTROL STATION MULTI-PRESET MODULAR DIMMING SYSTEM

DIMMER NOTATIONS:
MCS DENOTES MASTER CONTROL STATION
RS DENOTES REMOTE STATION
ES ENTRY STATION
PS PARTITION STATION

- L LOW VOLTAGE SWITCH * DENOTES SWITCH NAME, SEE LIGHTING CONTROL PANEL & SWITCH SCHEDULE.
- S SINGLE POLE SWITCH

SWITCH NOTATIONS:
3 DENOTES 3-WAY SWITCH
4 DENOTES 4-WAY SWITCH
C MAINTAINED CONTACT, THREE POSITION, CENTER OFF
D DENOTES WALL BOX DIMMER SWITCH
F FAN SPEED CONTROL SWITCH
K DENOTES KEY SWITCH
M MOMENTARY CONTACT SWITCH
OSX DENOTES OCCUPANCY SENSOR (X REPRESENTS SCHEDULE DESIGNATION)
P DENOTES PILOT SWITCH
PB PUSH BUTTON
T DENOTES TIMER SWITCH
VSX DENOTES VACANCY SENSOR (X REPRESENTS SCHEDULE DESIGNATION)
WL DENOTES WET LOCATION SWITCH
X1 DENOTES EXPLOSION PROOF CLASS 1 DIVISION 1 SWITCH
X2 DENOTES EXPLOSION PROOF CLASS 1 DIVISION 2 SWITCH

- SS SWITCHES, FOR MULTI-LEVEL SWITCHING. REFER TO FLOOR PLANS AND FIXTURE SCHEDULE FOR EXACT CONTROL INTENT.
- SWBK SWITCHBANK

SERVICE & DISTRIBUTION SYMBOLS

- GAP GENERATOR ANNUNICATOR PANEL
- EPO EMERGENCY POWER OFF
- PFC POWER FACTOR CORRECTION CAPACITOR
- AHF ACTIVE HARMONIC FILTER
- GROUND ACCESS WELL
- GROUND ROD
- GR STATIC GROUND RECEPTACLE
- LIGHTNING ROD
- GROUNDING CONDUCTOR
- EGB EQUIPMENT GROUND BUS
- FEEDER BUS DUCT
- PANELBOARD
- C CONTACTOR
- P PUSH BUTTON
- EMERGENCY SHADING MODIFIER

RECEPTACLE SYMBOLS

- 60" DUPLEX RECEPTACLE TEXT INDICATES MOUNTING HEIGHT
- DOUBLE DUPLEX RECEPTACLE
- ABOVE COUNTER DUPLEX RECEPTACLE
- SIMPLEX RECEPTACLE
- SPLIT WIRED DUPLEX RECEPTACLE
- SPECIFIC USE RECEPTACLE. NEMA CONFIGURATIONAS NOTED ON DRAWINGS AND/OR SCHEDULE.
- F FLOOR BOX
- P POKE THRU
- C CEILING MOUNTED DUPLEX RECEPTACLE
- C CEILING MOUNTED DOUBLE DUPLEX RECEPTACLE
- C CEILING MOUNTED SPECIFIC USE RECEPTACLE. NEMA CONFIGURATIONAS NOTED ON DRAWINGS AND/OR SCHEDULE.
- E CORD REEL
- SURFACE METAL RACEWAY - REFER TO DRAWINGS AND/OR SPECIFICATIONS, MOUNTED 6" ABOVE COUNTER OR AT HEIGHT AS INDICATED.
- A MULTI-OUTLET RACEWAY - OUTLETS ON CENTER AS INDICATED ON DRAWINGS AND IN THE SPECIFICATIONS, MOUNTED 6" ABOVE COUNTER OR AT HEIGHT AS INDICATED.

MULTI-OUTLET RACEWAY NOTATIONS:
A DENOTES 2'-0" LENGTH, RECEPTACLES 6" O.C.
B DENOTES 3'-0" LENGTH, RECEPTACLES 6" O.C.
C DENOTES 5'-0" LENGTH, RECEPTACLES 6" OR 12" O.C.
D DENOTES 6'-0" LENGTH, RECEPTACLES 6", 12", 18" OR 24" O.C.
F DENOTES X'-X" LENGTH, RECEPTACLES X" O.C.

- P DATA/POWER POLE
- EMERGENCY SHADING MODIFIER

RECEPTACLE NOTATIONS:
a DENOTES SWITCH LEG FOR SWITCHED OUTLETS
D DENOTES DEDICATED OUTLETS
EWC DENOTES ELECTRIC WATER COOLER OUTLETS
GFCI DENOTES GROUND FAULT INTERRUPTER OUTLETS
IG DENOTES ISOLATED GROUND OUTLETS
H DENOTES HORIZONTALLY MOUNTED OUTLETS
TR DENOTES TAMPER RESISTANT SAFETY OUTLETS
USB DENOTES COMBINATION DUPLEX/USB OUTLETS
WP DENOTES WEATHER PROOF OUTLETS
X1 DENOTES EXPLOSION PROOF CLASS 1 DIVISION 1 OUTLETS
X2 DENOTES EXPLOSION PROOF CLASS 1 DIVISION 2 OUTLETS

RACEWAY SYMBOLS

- SURFACE MOUNTED CONDUIT
- CONCEALED CONDUIT IN CEILING OR WALL
- WIREWAY, SIZE AND TYPE AS INDICATED ON DRAWINGS
- CABLE TRAY, SIZE AND TYPE AS INDICATED ON DRAWINGS
- UNDERFLOOR DUCT
- J JUNCTION BOX - CEILING MOUNTED
- J JUNCTION BOX - WALL MOUNTED
- H HANDHOLE
- M MANHOLE

MOTOR & EQUIPMENT CONNECTION SYMBOLS

- ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC. COORDINATE REQUIREMENTS WITH CONTRACTOR FURNISHING MOTOR OR EQUIPMENT. REFER TO SPECIFICATIONS AND EQUIPMENT WIRING SCHEDULE FOR ADDITIONALWORK ASSOCIATED WITH MOTOR OR EQUIPMENT.
- COMBINATION MAGNETIC CONTROLLER
- M INTERGRAL HORSEPOWER MANUAL CONTROLLER
- SS COMBINATION REDUCED VOLTAGE SOLID STATE CONTROLLER
- SS REDUCED VOLTAGE SOLID STATE CONTROLLER
- VFD VARIABLE FREQUENCY MOTOR CONTROLLER
- MAGNETIC CONTROLLER - FULL VOLTAGE, ACROSS THE LINE, ELECTRICALLY HELD
- NON-FUSIBLE DISCONNECT SWITCH
- FUSIBLE DISCONNECT SWITCH
- DOUBLE THROW SWITCH
- S_{FS} FUSED SINGLE POLE SWITCH
- S_{MS} MOTOR STARTING SWITCH WITH OVERLOADS
- S_{MX} MOTOR STARTING SWITCH WITHOUT OVERLOADS
- RVS REDUCED VOLTAGE MAGNETIC CONTROLLER
- RVS COMBINATION REDUCED VOLTAGE MAGNETIC CONTROLLER
- MS MULTI SPEED MAGNETIC CONTROLLER
- MS COMBINATION MULTI SPEED MAGNETIC CONTROLLER
- ATS AUTOMATIC TRANSFER SWITCH
- MTS MANUAL TRANSFER SWITCH
- ENCLOSED CIRCUIT BREAKER
- EMERGENCY SHADING MODIFIER

FIRE ALARM SYMBOLS

- FACP FIRE ALARM CONTROL PANEL
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- FSS FIRE SUPPRESSION SYSTEM PANEL
- KNOX CABINET FOR HOLDING FIRE DEPARTMENT DOCUMENTS & KEYS WITH INTEGRAL TAMPER SWITCH. KNOX BRAND # 4400 OR APPROVED EQUAL. SEE DRAWING ##.
- FIRE ALARM PULL STATION
- H FIRE ALARM HORN
- S FIRE ALARM SPEAKER
- ## H FIRE ALARM HORN/STROBE, (##) IS CANDELA RATING
- ## S FIRE ALARM SPEAKER/STROBE, (##) IS CANDELA RATING
- S SUPERVISED FIRE ALARM HORN LOUDSPEAKER
- ## FIRE ALARM STROBE, (##) IS CANDELA RATING
- B FIRE ALARM BELL
- Z INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR
- Z_{ER} INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR FOR ELEVATOR RECALL
- Z_{SD} INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR FOR SMOKE DAMPER CONTROL
- H INTELLIGENT 135ºF FIXED & RATE OF RISE HEAT DETECTOR (15ºF/M), (20ºF/M), UNLESS NOTED ON DRAWINGS
- HF HEAT DETCTOR, [190], [194] OR [200]ºF FIXED TEMP 2 WIRE OPERATION. [PROVIDE ADDRESSIBLE CONTROL MODULE]
- HX EXPLOSION PROOF HEAT DETCTOR, COMBINATION RATE OF RISE AND 135ºF FIXED TEMPERATURE, 2-WIRE OPERATION. [PROVIDE ADDRESSIBLE CONTROL MODULE.] HAZARDOUS CLASSIFICATION: [CLASS-I], [CLASS-II], [GROUP C], [GROUP D], [GROUP E], [GROUP F], AND [GROUP G].
- DS INTELLIGENT PHOTOELECTRIC DUCT SMOKE DETECTOR
- CO CARBON MONOXIDE DETECTOR
- ## CEILING MOUNTED FIRE ALARM STROBE, (##) IS CANDELA RATING
- ## CEILING MOUNTED FIRE ALARM SPEAKER/STROBE, (##) IS CANDELA RATING
- CEILING MOUNTED FIRE ALARM SPEAKER
- ## CEILING MOUNTED FIRE ALARM HORN/STROBE, (##) IS CANDELA RATING
- CEILING MOUNTED FIRE ALARM HORN
- MM MONITOR MODULE
- CM CONTROL MODULE
- IM ISOLATOR MODULE
- DH MAGNETIC DOOR HOLDER
- ES ELECTRIC DOOR STRIKE
- FIRE FIGHTERS TELEPHONE
- FIRE FIGHTERS TELEPHONE JACK
- FS FLOW SWITCH FOR SPRINKLER SYSTEM SUPERVISORY FLOW ALARM, NORMALLY OPEN DRY CONTACTS FOR FIRE ALARM INTERFACE, FURNISHED BY MC, WIRED BY EC.
- TS MONITOR SWITCH (TAMPER SWITCH) FOR SPRINKLER SYSTEM SUPERVISORY TROUBLE NOTIFICATION, NORMALLY OPEN DRY CONTACTS FOR FIRE ALARM INTERFACE, FURNISHED BY MC, WIRED BY EC.
- PE PRESSURE SWITCH
- PS PRE-ACTION SOLENOID
- RTS/I REMOTE TEST SWITCH WITH INDICATOR
- PM POST INDICATOR SWITCH (PROVIDE ADDRESSIBLE CONTROL MODULE).
- HDS ELEVATOR HOISTWAY DAMPER SWITCH
- HA HALON AUDIBLE ALARM
- HP FIRE HALON PULL STATION
- HS HALON STROBE
- NAC FIRE ALARM NOTIFICATION APPLIANCE EXTENDER PANEL

MASS NOTIFICATION SYMBOLS

- FMCP FIRE & MASS NOTIFICATION CONTROL PANEL
- # M MASS NOTIFICATION SPEAKER/STROBE, WALL MOUNTED (#) IS CANDELA RATING
- M MASS NOTIFICATION SPEAKER, WALL MOUNTED
- M MASS NOTIFICATION STROBE, WALL MOUNTED
- # MASS NOTIFICATION SPEAKER/STROBE, CEILING MOUNTED (#) IS CANDELA RATING
- MASS NOTIFICATION SPEAKER, CEILING MOUNTED
- M MASS NOTIFICATION STROBE, CEILING MOUNTED

SITE SYMBOLS

- GROUND MOUNTED LIGHT (ABOVE & BELOW GRADE MOUNTING)
- E ELECTRIC HANDHOLE
- HH HANDHOLE, GENERIC
- E ELECTRIC MANHOLE
- M ELECTRIC METER
- ELECTRIC SERVICE PANEL
- TRANS ELECTRIC TRANSFORMER
- ELECTRIC PEDESTAL BOX
- FLOOD LIGHT POLE
- BOLLARD LIGHT
- DOUBLE LIGHT POLE
- LIGHT POLE
- POWER POLE
- DOUBLE POWER POLE
- POWER POLE WITH LIGHT

GENERAL SYMBOLS

- #/E-### DETAIL NUMBER / SHEET NUMBER
- 9.### KEYED NOTE, USED TO DESCRIBE ADDITIONAL INFORMATION OF WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL IT IS SHOWN WITH.
- # KITCHEN EQUIPMENT TAG. # REFERS TO CORRESPONDING NUMBER IN KITCHEN EQUIPMENT SCHEDULE.

LINE TYPE KEY

- NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
- EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK DASHED LINE)
- EXISTING TO REMAIN WORK (THIN SOLID LINE)
- NEW WORK UNDER FLOOR BY THIS CONTRACTOR
- ONE-LINE EQUIPMENT ENCLOSURE
- PANEL DIVISION LINES
- CON SITE UNDERGROUND CONDUIT
- //CON// SITE REMOVED UNDERGROUND CONDUIT
- E SITE UNDERGROUND ELECTRIC
- OHE SITE OVERHEAD ELECTRIC
- //OHE// SITE REMOVED OVERHEAD ELECTRIC
- //E// SITE REMOVED UNDERGROUND ELECTRIC

PANEL DESIGNATION KEY

2 L N L 1

- FLOOR
- TYPE
- SYSTEM/SOURCE
- VOLTAGE
- SEQUENCE NUMBER OR LETTER

- NUMBER OR LETTER IN SEQUENCE I.E. 1,2,3 OR A,B,C
- L - 208Y/120V
- H - 480Y/277V
- N - NORMAL BRANCH
- U - UNINTERRUPTIBLE SOURCE
- E - EMERGENCY BRANCH (NEC 700)
- X - LEGALLY REQUIRED STANDBY BRANCH (NEC 701)
- O - OPTIONAL STANDBY BRANCH (NEC 702)
- L - LIGHTING PANELBOARD
- D - DISTRIBUTION PANELBOARD
- P - POWER/EQUIPMENT PANELBOARD
- R - RECEPTACLE PANELBOARD
- MSB - MAIN SWITCHBOARD
- MCC - MOTOR CONTROL CENTER
- G - GROUND FLOOR
- B - BASEMENT FLOOR
- 1 - FIRST FLOOR
- P - PENTHOUSE
- M - MEZZANINE

ELECTRICAL ABBREVIATIONS

3R	NEMA 3R RATING
4X	NEMA 4X RATING
A	AMPERES
A/E	ARCHITECT / ENGINEER
AAC	ABOVE ACCESSIBLE CEILING
ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
APE	AIRCRAFT PROCESS EQUIPMENT
ATS	AUTOMATIC TRANSFER SWITCH
BLDG	BUILDING
BRKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CEB	CONCRETE EQUIPMENT BASE
CF	CIRCULATION FAN
CH	CHILLER
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CP	CIRCULATION PUMP
CRAC	COMPUTER ROOM AIR CONDITIONER
CRP	CONDENSATION RETURN
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
DC	DROP CORD
DDC	DIGITAL CONTROL PANEL
DH	DUCT HEATER
DISC	DISCONNECT
DO	DOOR OPERATOR
DWG	DRAWING
E/O	ELECTRICAL-TO-OPTICAL CONVERTER
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ERL	EXISTING TO BE RELOCATED
ERLD	EXISTING - RELOCATED LOCATION
ES	EQUIPMENT SUPPLIER
ETR	EXISTING TO REMAIN
EWC	ELECTRICAL WATER COOLER
EWH	ELECTRICAL WATER HEATER
F	FUSED
FA	FIRE ALARM
FAF	FORCED AIR FURNACE
FCU	FAN COIL UNIT
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GWH	GAS WATER HEATER
HD	HAND DRYER
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWB	HOT WATER BOILER
HWP	HOT WATER PUMP
IEWH	INSTANTANEOUS ELECTRIC WATER HEATER
IH	INFRARED HEATER
IMC	INTERMEDIATE METALLIC CONDUIT
IWH	INSTANTANEOUS WATER HEATER
J-BOX	JUNCTION BOX
LBS	POUNDS
LFS	LIGHTING FIXTURE SCHEDULE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MIN.	MINIMUM
MNS	MASS NOTIFICATION SYSTEM
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NL/EL	NIGHT LIGHT AND EMERGENCY LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RCP	RADIANT CEILING PANEL
RECPT	RECEPTACLE
REF	REFRIGERATOR
REQ'D	REQUIRED
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL CONDUIT MAY ALSO BE REFERENCED AS RMC OR GRC
RMC	RIGID METAL CONDUIT
RTU	ROOF TOP UNIT
S/N	SOLID NEUTRAL
SE	SERVICE ENTRANCE
SEC-P	SECURITY PANEL
SF	SUPPLY FAN
SP	SUMP PUMP
SS	STAINLESS STEEL
SW	SWITCH
SWBK	SWITCH BANK
TBR	TO BE REMOVED
TCP	TEMPERATURE CONTROL PANEL
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UC	UNIT COOLER
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATER
V	VOLTS
VER	VEHICLE EXHAUST REEL
VFD	VARIABLE FREQUENCY DRIVE
VS	VERSUS
W	WATTS
WCC	WATER COOLED CONDENSER
WFE	WELDING FUME EXTRACTOR
WH	WATER HEATER
WL	WET LOCATION LISTED
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

GENERAL NOTES:

1. REFER TO THE G SERIES DRAWINGS FOR CODE ANALYSIS PLANS, INFORMATION AND NOTES.
2. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE DETAILS OF WORK, VERIFY DIMENSIONS IN THE FIELD, AND ADVISE THE [ARCHITECT/ENGINEER] [CONTRACTING OFFICER] OF ANY DISCREPANCY BEFORE PERFORMING ANY WORK.
3. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND ABA (ARCHITECTURAL BARRIERS ACT).
4. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS AND FLOORS. MAKE RATED PENETRATIONS AS REQUIRED. SEAL ALL RATED PENETRATIONS AS IDENTIFIED IN DIVISION 1 REQUIREMENTS.
5. FLUSH MOUNT ALL TOGGLE SWITCHES, RECEPTACLE , FIRE ALARM PULL STATIONS AND FIRE ALARM NOTIFICATION DEVICES AT HEIGHTS ABOVE FINISHED FLOOR AS SHOWN IN THE DEVICE MOUNTING HEIGHT DETAIL, EXCEPT WHERE OTHERWISE NOTED. DEVICES MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED.
6. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL SCHEDULES PROVIDED. BALANCE THE LOAD ON PANELS AS EVENLY AS POSSIBLE BETWEEN EACH PHASE. COMMON NEUTRALS MAY **[NOT]** BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
7. CIRCUITS SERVING EMERGENCY AND EXIT LUMINAIRES SHALL BE RUN IN SEPARATE RACEWAY FROM ALL OTHER CIRCUITS.
8. A #12 GREEN INSULATED GROUND CONDUCTOR SHALL BE INSTALLED WITH CIRCUIT CONDUCTORS TO ALL RECEPTACLES.
9. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILING, ETC. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT IN MECHANICAL ROOMS, AND STORAGE ROOMS WITHOUT CEILINGS MAY BE EXPOSED ON BUILDING STRUCTURE. WHERE RACEWAY IS REQUIRED ON EXISTING CONCRETE AND MASONRY WALLS, SURFACE RACEWAY MAY BE USED IN LIEU OF CHANNELING WALLS TO ALLOW CONCEALED ROUTING. THE RACEWAY SHALL BE SINGLE CHANNEL STYLE TYPE WITH IVORY FINISH. THIS APPLIES FOR BRANCH CIRCUIT CONDUITS UP TO 3/4" SIZE. CONDUITS LARGER THAN 3/4" MAY BE ROUTED EXPOSED, BUT INSTALLED PARALLEL AND/OR PERPENDICULAR TO BUILDING LINES AND RUN AS UNOBTRUSIVELY AS POSSIBLE.
10. BOXES LOCATED ON OPPOSITE SIDES OF NON-RATED WALLS SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY. "THRU-THE-WALL" BOXES SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.
11. COORDINATE AND CO-LOCATE WALL MOUNTED RECEPTACLE LOCATIONS WITH TECHNOLOGY (VOICE/DATA;CATV,FIDS, ETC) OUTLETS SHOWN ON THE T-SERIES DRAWINGS UNLESS OTHERWISE NOTED. EACH TECHNOLOGY OUTLET SHALL BE LOCATED WITHIN 24"OF ITS ASSOCIATED RECEPTACLE. ASSOCIATED RECEPTACLE SHALL BE DEFINED AS THE RECEPTACLE NEAREST THE LOCATION OF, AND AT THE SAME HEIGHT AS,THE TECHNOLOGY OUTLET WHEN MULTIPLE RECEPTACLES ARE SHOWN ON A WALL.
12. DUPLEX RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) SHALL BE CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED.
13. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL DETECTORS WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE.
14. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS PRIOR TO ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
15. ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
16. CONTRACTOR TO PROVIDE SUITABLE MECHANICAL PROTECTION AROUND ALL CONDUITS STUBBED OUT FROM FLOORS, WALLS OR CEILINGS DURING CONSTRUCTION TO PREVENT BENDING OR DAMAGING OF STUB OUTS DUE TO CARELESSNESS WITH CONSTRUCTION EQUIPMENT.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
18. DRAWINGS INDICATE THE EXTENT OF HAZARDOUS OR WET LOCATIONS. INSTALLATION MEANS AND METHODS SHALL BE SUITABLY RATED FOR THE ENVIRONMENT INDICATED ON THE DRAWINGS.
19. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
20. ALL INTERLOCKING REQUIRED BY THE DRIVE MANUFACTURER BETWEEN THE VARIABLE FREQUENCY DRIVE AND THE DISCONNECT SWITCHES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
21. SCCR RATINGS LISTED FOR EQUIPMENT ARE MINIMUM REQUIREMENTS FOR BUS BRACING AND DEVICE RATING. ALL EQUIPMENT SHALL BE FULLY RATED UNLESS SPECIFICALLY NOTED AS SERIES RATED.

DEMOLITION GENERAL NOTES:

1. THE INFORMATION SHOWN IS BASED ON EXISTING DRAWINGS AND SITE OBSERVATIONS TO ASSIST CONTRACTOR IN BIDDING. THE ELECTRICAL DRAWINGS INDICATE EXISTING ELECTRICAL ITEMS TO BE REMOVED. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS. REFER TO SPECIFICATION SECTION 26 05 02 FOR ADDITIONAL REQUIREMENTS.
2. DASHED WALLS ON THE FLOOR PLANS INDICATE EXISTING WALLS BEING DEMOLISHED. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR THE EXACT EXTENT OF WORK REQUIRED BY THIS PROJECT. REMOVE ALL DEVICES ON DASHED WALLS NOT SHOWN ON THE CONTRACT DRAWINGS. REFER TO DEMOLITION DRAWINGS OF OTHER TRADES. WHERE MOTORS CONTROL PANELS, AND OTHER LOADS OR APPARATUS THAT HAVE ELECTRICAL CONNECTION ARE BEING REMOVED, INCLUDE DISCONNECTION AND REMOVAL OF ALL ASSOCIATED CONDUIT, WIRING, ETC.
3. ELECTRICAL ITEMS (i.e., LIGHTING FIXTURES, PANELBOARDS, DISCONNECTS, MOTOR CONTROLLERS , ETC.) REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER TO THE OWNER, IN A STORAGE AREA TO BE DESIGNATED BY THE OWNER. EQUIPMENT BEING REMOVED SHALL BE HANDLED SO AS NOT TO FURTHER REDUCE ITS VALUE TO THE OWNER. THE CONTRACTOR SHALL DISPOSE OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
4. WHERE LIGHTS, SWITCHES, RECEPTACLES, ETC., ARE BEING REMOVED ALL ASSOCIATED CONDUIT AND WIRE BACK TO THE PANELBOARD OR FEEDER JUNCTION BOX SERVING THE DEVICE SHALL ALSO BE REMOVED, UNLESS THE CONDUIT CAN BE REUSED FOR NEW CONDUCTORS. THE CONTRACTOR SHALL DISPOSE OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
5. ALL BOXES THAT REMAIN IN PLACE IN EXISTING MASONRY WALLS THAT ARE TO REMAIN SHALL BE PROVIDED WITH A BLANK COVERPLATE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH TYPE AND ATTACHMENT.
6. ALL CONDUIT SHALL BE REMOVED WHERE WALLS ARE BEING REMOVED. WHERE CONDUIT IS IN THE CONCRETE SLAB, CUT OFF FLUSH, PULL OUT WIRE, AND PLUG. WHERE CONDUIT IS RUN EXPOSED, ALL ASSOCIATED CLAMPS, SUPPORTS, HANGERS, ETC., SHALL ALSO BE REMOVED. CONDUIT CONCEALED IN WALL CONSTRUCTION MAY BE ABANDONED IN PLACE IF NOT AFFECTED BY OTHER CONSTRUCTION.
7. THIS CONTRACTOR SHALL COORDINATE ALL HIS WORK, INCLUDING PHASING WITH OTHER CONTRACTORS AT THE JOB SITE BEFORE REMOVING EXISTING ELECTRICAL AND INSTALLING NEW ITEMS.
8. EXISTING CONDUIT IN GOOD CONDITION, MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED. BONDING CONDUCTORS SHALL BE INSTALLED IN ALL REUSED CONDUIT TO ASSURE PROPER GROUND PATH.
9. MAINTAIN CIRCUIT CONTINUITY OF DEVICES LOCATED OUTSIDE OF CONSTRUCTION AREA. DEVICE AND EQUIPMENT REMOVAL IN CERTAIN LOCATIONS MAY REQUIRE THE INSTALLATION OF A JUNCTION BOX TO RECONNECT CIRCUITS THAT REMAIN IN OPERATION. EXTEND CONDUIT AND WIRING AS REQUIRED TO MAINTAIN POWER TO REMAINING EQUIPMENT.
10. BALLASTS MANUFACTURED PRIOR TO 1980 CONTAIN PCBs AND SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATIONS.
11. HID AND FLUORESCENT LAMPS CONTAIN MERCURY AND SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATIONS.
12. CONTRACTOR SHALL REMOVE AND INSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
13. PROVIDE REVISED TYPED CIRCUIT DIRECTORY IN PANELBOARDS THAT HAVE CIRCUITS REMOVED OR ADDED CIRCUITS.
14. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT RACEWAY FLUSH WITH WALLS AND FLOORS, PATCH SURFACES TO MATCH EXISTING. REMOVE ALL ASSOCIATED CLAMPS, HANGERS, SUPPORTS, ETC. ASSOCIATED WITH RACEWAY REMOVAL.
15. DISCONNECT AND REMOVE ABANDONED LUMINAIRES, INCLUDING BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.
16. DISCONNECT AND REMOVED ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION

Hoff

TRUE NORTH PLAN NORTH

FIRST FLOOR POWER DEMOLITION PLAN - AREA C

1/8" = 1'-0"

KEYED NOTES

9.004 REMOVE EXISTING DUPLEX RECEPTACLE AND ASSOCIATED WIRING BACK TO THE NEAREST JUNCTION BOX, SPLICE AS REQUIRED TO MAINTAIN CONTINUITY OF EXISTING CIRCUIT.

9.005 DISCONNECT AND REMOVE ABOVE COUNTER DUPLEX RECEPTACLES. PULL WIRING BACK TO SOURCE.

9.006 DISCONNECT AND REMOVE ALL CONNECTIONS INCLUDING WALL SWITCH AND OUTLETS FOR GARBAGE DISPOSAL, MICROWAVE AND ELECTRIC RANGE. PULL WIRING BACK TO SOURCE.

9.007 RE-CONNECT EXISTING OUTLETS AS REQUIRED TO MAINTAIN EXISTING CIRCUIT CONTINUITY.

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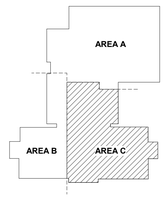
NOT FOR CONSTRUCTION
2019-04-16



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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

MARK	DATE
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PROJECT NO:	18268
CAD DWG FILE:	
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SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA C

SHEET NUMBER:
1-EPD-103

TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA C

1/8" = 1'-0"

KEYED NOTES

9.001 REMOVE EXISTING SWITCH AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE CEILING.

9.002 REMOVE EXISTING SWITCHES AND PROVIDE BLANK COVER PLATE. REMOVE ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE CEILING.

9.003 EXISTING SWITCHES SHALL REMAIN. MAINTAIN CONTINUITY OF THE EXISTING BRANCH CIRCUIT. SEE NEW CONSTRUCTION SHEET 1-EE-402 FOR FURTHER INFORMATION.

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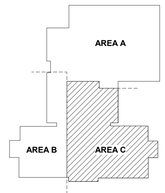

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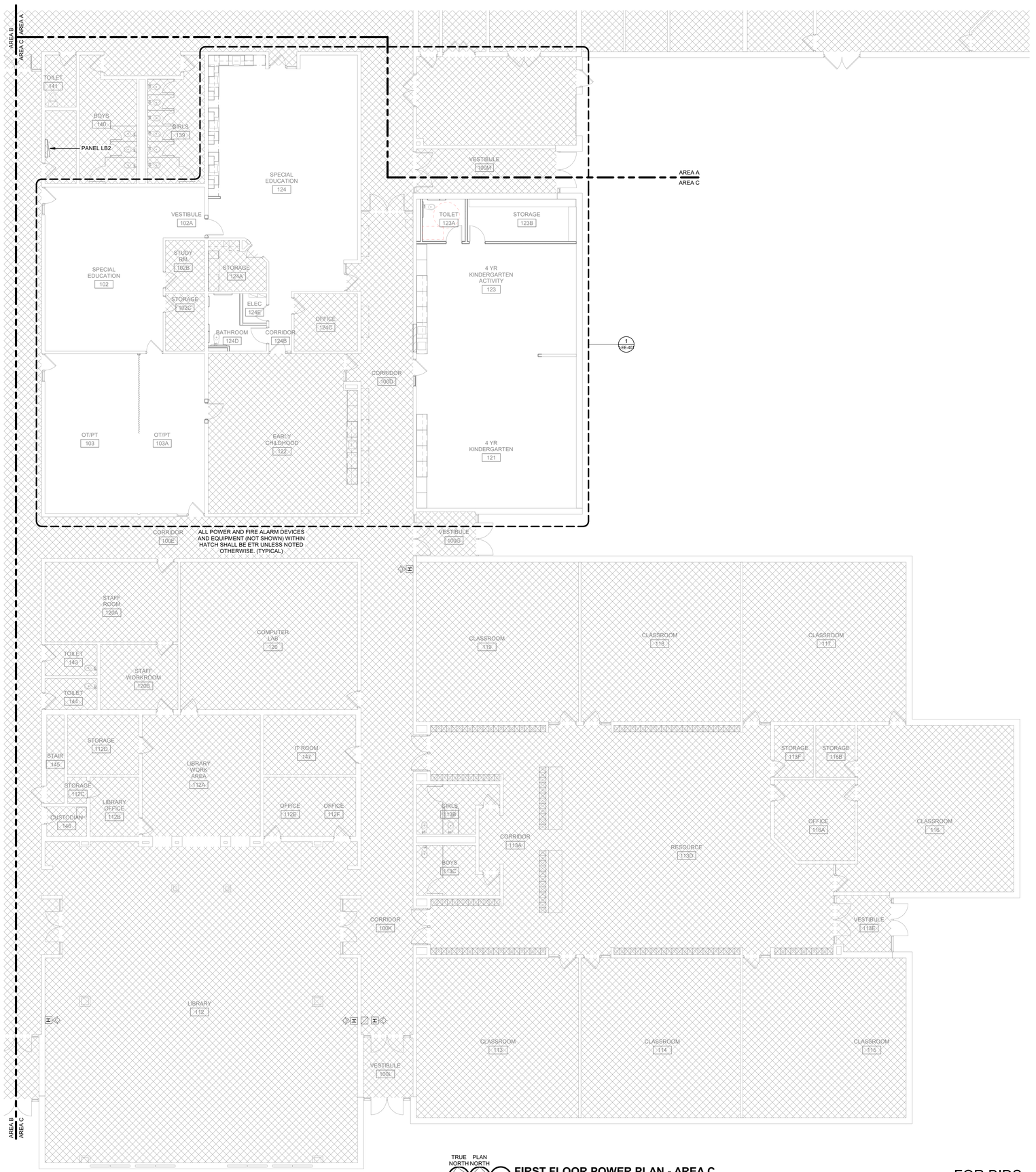

TRUE NORTH PLAN NORTH

FIRST FLOOR POWER PLAN - AREA C

1/8" = 1'-0"

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POWER GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

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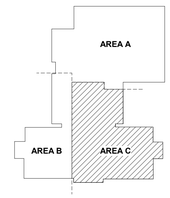

KEY PLAN

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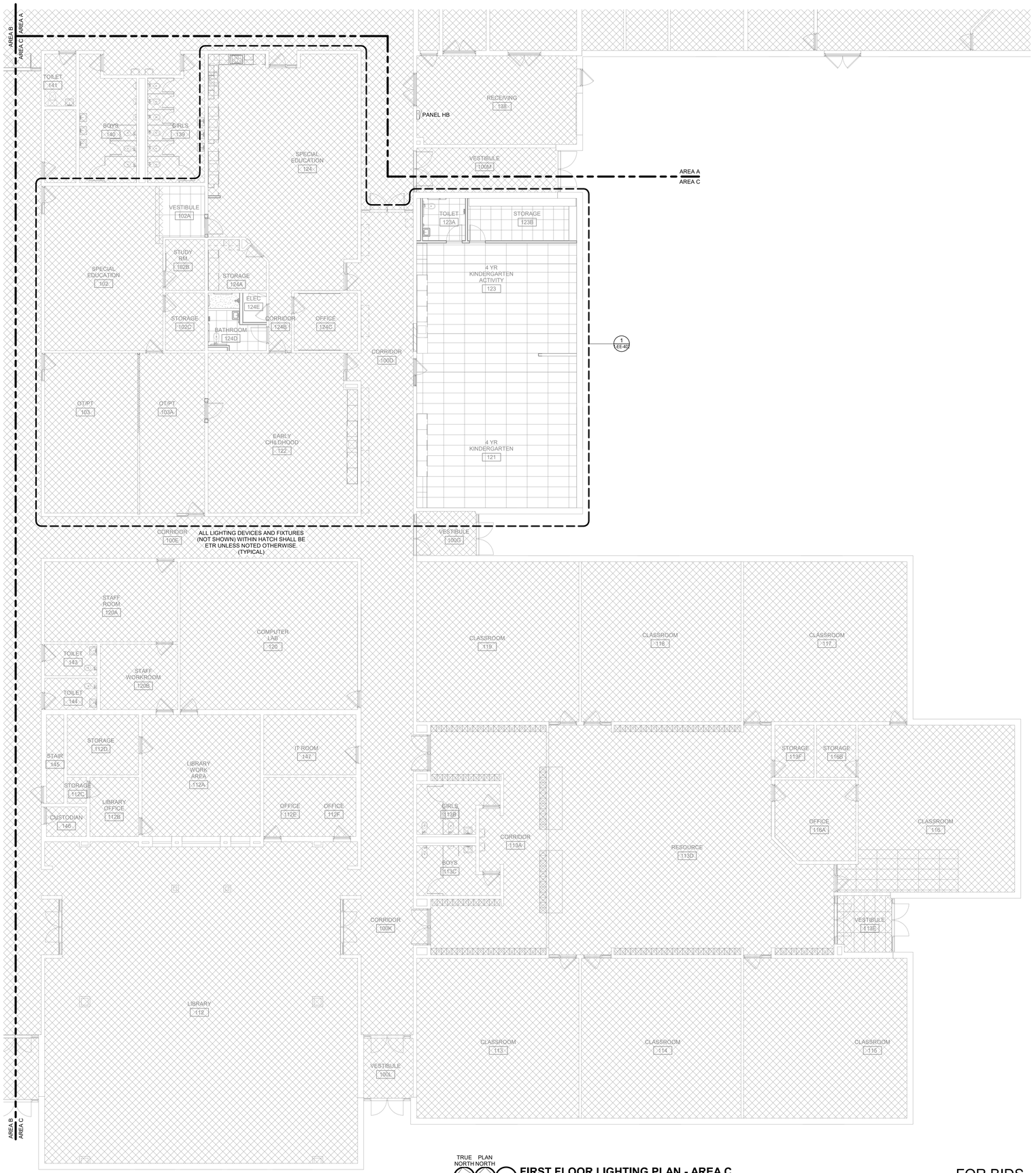
1-EP-103



TRUE NORTH PLAN NORTH

1 **FIRST FLOOR LIGHTING PLAN - AREA C**

1/8" = 1'-0"

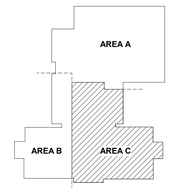
LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

FOR BIDS
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16



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SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA C

SHEET NUMBER:
1-EL-103

KEYED NOTES

9.301 UPDATE PANEL DIRECTORY UPON PROJECT COMPLETION.

9.302 UTILIZE (1) 120V CIRCUIT FROM PANEL 'LF' BECOMING AVAILABLE UPON DEMOLITION. PROVIDE 2#12, 1#12G. IN 1/2"C. FOR EACH GROUPING OF RECEPTACLES NOTED.

9.305 UTILIZE SURFACE WIREMOLD 700 FOR NEW INSTALLATION ON THE EXISTING MASONRY WALL.

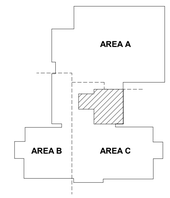
TRUE NORTH PLAN NORTH

1 ENLARGED PARTIAL FLOOR POWER PLAN - AREA C

1/4" = 1'-0"

FOR BIDS
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16



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SHEET TITLE:
ENLARGED PLANS

SHEET NUMBER:
1-EE-401

KEYED NOTES

9.223 RECONNECT EXISTING FIXTURES AS REQUIRED. UTILIZE SURFACE WIREMOLD 700 FOR NEW INSTALLATION ON THE EXISTING MASONRY WALL.

9.224 UTILIZE EXISTING 277V LIGHTING CIRCUIT FOR NEW FIXTURE INSTALLATION.

9.225 RE-INSTALL EXISTING RELOCATED FIXTURE ON THE NEW CEILING AND RE-WIRE AS REQUIRED TO MAINTAIN EXISTING DUAL-LEVEL SWITCHING CONTROL.

9.237 WIRE INBOARD / OUTBOARD BALLASTS FOR SINGLE SWITCH OPERATION. UTILIZE EXISTING 277V LIGHTING CIRCUIT FOR NEW FIXTURE INSTALLATION.

TRUE NORTH PLAN NORTH

1 ENLARGED PARTIAL FLOOR LIGHTING PLAN - AREA C

1/4" = 1'-0"

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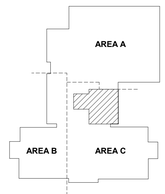
2019-04-16



KEY PLAN

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	MRF
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SHEET TITLE:
ENLARGED PLANS

SHEET NUMBER:
1-EE-402

OCCUPANCY/VACANCY/PHOTO SENSOR SCHEDULE

SENSOR ID	VOLTAGE	TECHNOLOGY		PATTERN	COVERAGE AREA	DESCRIPTION	MOUNTING	KEYED NOTE (TO BE SELECTED AS NEEDED)
		PIR	MICRO					
WS	120/277	X	X	180	UP TO 800 SF	SINGLE-POLE, WALL MOUNT SWITCH TYPE OCCUPANCY SENSOR. CAT# WSX PDT AUTO-ON OR VACANCY	WALL	1, 3
OS10	12-24V	X	X	360	UP TO 500 SF	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY; HIGH HUMIDITY AND WET LOCATION LISTED	CEILING	4, 5, 6

GENERAL NOTES:

1. COLOR OF DEVICES SHALL BE COORDINATED/MATCHING COLOR OF RECEPTACLES AND SWITCHES AS IDENTIFIED IN SPECIFICATION SECTION 26 27 26
2. PROVIDE ADEQUATE SUPPORT FOR CONTROL WIRING, REFER TO WIRING DIAGRAMS SUPPLIED WITH SELECTED DEVICES. FOLLOW MANUFACTURER INSTRUCTIONS
3. FOR ADDITIONAL INFORMATION REFER TO SPECIFICATION SECTION 26 09 42.23.
4 ALL LOW VOLTAGE SENSORS SHALL BE PROVIDED WITH 20A RATED POWER PACKS WITH ZERO CROSS SWITCHING TECHNOLOGY AND MANUAL ON MODE
5 PROVIDE 8' OF ADDITIONAL WIRING ABOVE ACCESSIBLE CEILING.
6 ALL POWER PACKS AND SLAVE PACKS SHALL BE INSTALLED IN APPROVED ENCLOSURES RATED FOR THE ENVIROMENTAL SPACES WHERE THEY ARE INSTALLED
7 WHERE OCCUPANCY SENSORS CONTROLLING LIGHTS OF A DIFFERENT VOLTAGES A SEPARATE POWER/SLAVE PACK SHALL BE PROVIDED.
8 POWER PACKS ARE NOT SHOWN ON THE PLANS, IT SHALL BE CONTRACTOR/SUPPLIER RESPONSIBIILTY TO VERIFY AND COORDINATE ALL REQURIED QUANTITIES.
9 WHERE DAYLIGHT HARVESTING IS SELECTED - PROVIDE ALL REQUIRED LABOR TO SET UP DAYTIME AND NIGHT TIME TRESHOLDS PER MANUFACTURER RECOMMENDATIONS
10. SENSOR SWITCH MANUFACTURER CAT # /SERIES ARE SHOWN IN THIS SCHEDULE AS A BASIS OF DESIGN - REFER TO SPECIFICATION SECTION 26 09 23 FOR ACCEPTABLE SUBSTITUTIONS.

KEYED NOTES:

1. SMALL MOTION DETECTION
2. INTEGRATED PHOTOCELL OPTION
3. INTEGRATED PHOTOCELL IS DISABLED, REFER TO LIGHTING PLANS FOR DAYLIGHT HARVESTING INTENT AND ENABLE PHOTOCELL OPERATION AS INDICATED
4. OCCUPANCY CONTROLLED DIMMING
5. INTEGRATED PHOTOCELL WITH DIMMING CAPABILITY
6. PROVIDE WITH AUXILLARY RELAY
7. INSTALL WITHIN 3'-4" FROM THE WINDOW, PROVIDE WITH POWER PACK.
8. EXTERIOR PHOTOCELL WIRED VIA LOW VOLTAGE LIGHTING CONTROL PANEL LCP AND/OR DIMMER RACK PANEL. REFER TO RESPECTIVE LIGHTING CONTROL SCHEDULES FOR COORDINATION.

LUMINAIRE SCHEDULE

NOTE: SEE SPECIFICATION FOR ADDITIONAL INFORMATION REGARDING LUMINAIRE AND INSTALLATION REQUIREMENTS. PROVIDE OPTIONS AND ACCESSORIES REFERENCED BY THE COLUMN TITLED " OPTIONS/ACCESSORIES". MANUFACTURERS LISTED ACCEPTABLE SHALL MEET ALL REQUIREMENTS AND FEATURES INDICATED. ACCEPTABLE MANUFACTURERS MUST MEET THE PHOTOMETRIC PERFORMANCE OF THE LISTED UNIT.

ABBREVIATIONS: GWB = GYPSUM WALL BOARD; ES = EXPOSED STRUCTURE; LG = LAY-IN GRID; P = PENDANT; PLAS = PLASTER; PL = POLE MOUNTED; R = RECESSED; S = SURFACE; UNV = UNIVERSAL VOLTAGE; V = VARIES; W = WALL MOUNTED

DES.	MANUFACTURER	CATALOG SERIES	DESCRIPTION	LAMP DATA	VOLTAGE	BALLAST/ DRIVER	MOUNT	CEILING TYPE	FIXTURE DEPTH	LED SYSTEM INPUT WATTAGE	LED DELIVERED LUMENS	OPTIONS / ACCESSORIES	ACCEPTABLE MANUFACTURERS	KEYED NOTE
BF	METALUX	22FP3250C	2' X 2' LED FLAT PANEL	LED, 5000K	UNV	A	R	LG	1-3/4"	29.5	3,150			
D5	HALO	H457-TAT-E010-EL406-9-40-TL402SNS	4" DIAMETER LED DOWNLIGHT (SHOWER RATED)	LED, 4000K	UNV	D	R	GWB	5-1/2"	11	1,000	13		
S4E	METALUX	4SNLED-LD5-41SL-LC-UNV-EL14W-L850-CD1-U-AY C-CHAIN/SET	SAME AS TYPE 'S4' EXCEPT WITH INTEGRAL BATTERY OPTION	LED, 5000K	UNV	A	V	V	3-11/16"	31	4,269			

OPTIONS/ACCESSORIES CODE LISTING:

13 DAMP LOCATION LISTED
38 WET LOCATION LISTED

BALLAST/DRIVER CODE LISTING: (SEE SPECIFICATIONS)

A LED DIMMABLE POWER SUPPLY (0-10V, 10%).
B LED DIMMABLE POWER SUPPLY (0-10V, 1%).
C LED DIMMABLE POWER SUPPLY (0-10V, 5%).
D LED DIMMABLE POWER SUPPLY (0-10V).
E LED DIMMABLE POWER SUPPLY (TRAILING EDGE).
F LED DIMMABLE POWER SUPPLY 1% DIMMING LUTRON HI LUME OR EQUAL.
G LED DIMMABLE POWER SUPPLY ADVANCE XITANIUM OR EQUAL.
H LED NON-DIMMABLE POWER SUPPLY.

GENERAL NOTES:

1. ALL LED REPLACEMENT LAMPS SHALL BE TESTED FOR DIMMING COMPATABILITY WITH DIMMING SYSTEM BEING SUPPLIED. CONTRACTOR SHALL PROVIDE MINIMUM OF (4) FOUR LAMPS OF EACH TYPE LISTED IN THIS SCHEDULE OR ANY SUBSTITUTE TO BE SUPPLIES TO DIMMING SYSTEMS/DEVICE MANUFACTURER FOR TESTING TO VERIFY LAMP PERFORMANCE.
2. EC SHALL VERIFY AND COORDINATE ALL LUMINAIRE TRIMS/FLANGES WITH RESPECTIVE CEILING TYPES SCHEDULED AND/OR SUBMITTED BY THE GC PRIOR TO ORDERING OF THE LUMINAIRES. SCHEDULE INDICATES TRIM TYPES BASED ON THE GENERIC CEILING INFORMATION AVAILABLE AT THE TIME BIDDING DOCUMENTS WERE ISSUED AND DOES NOT REFLECT ACTUAL THICKNESS OF GYPSUM WALL BOARD OR PLASTER CEILING OR EXACT GRID TYPE SPECIFIED BY THE ARCHITECT.

KEYED NOTES:

1.

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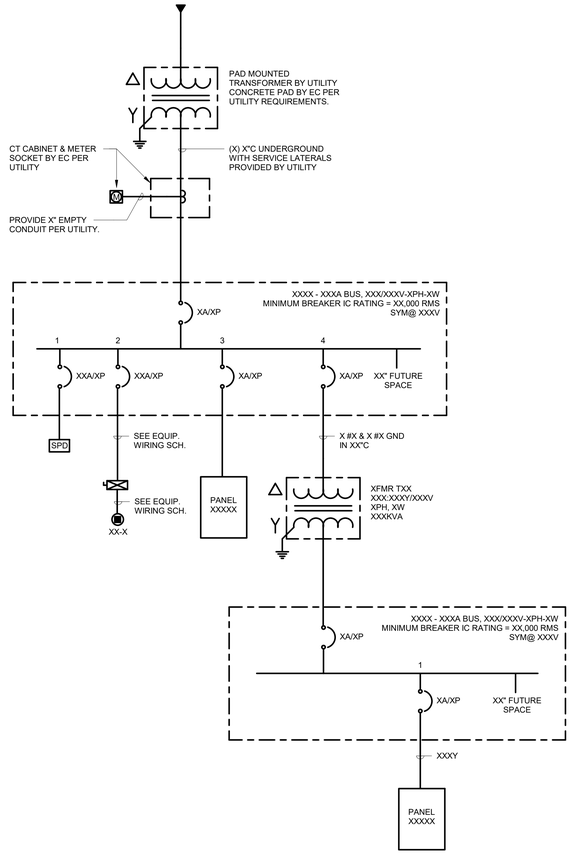
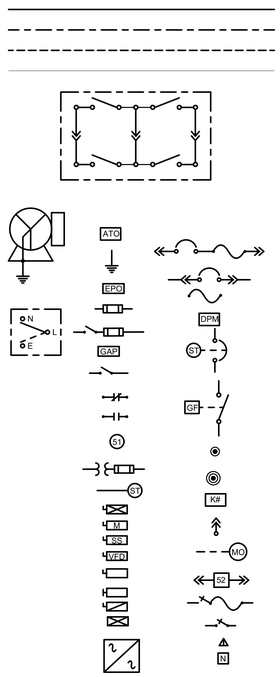
SHEET TITLE: SCHEDULES

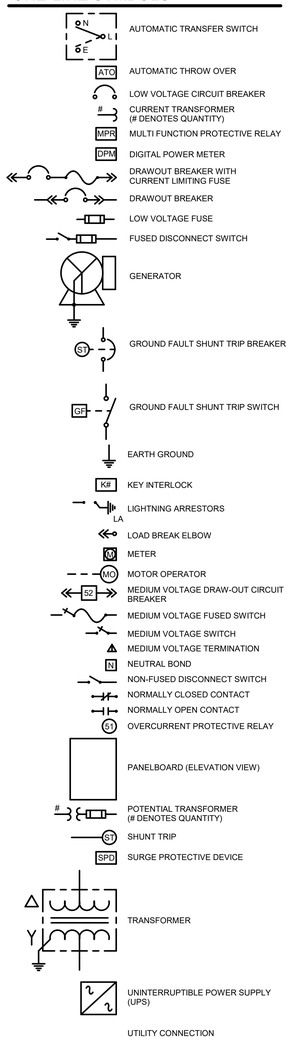
SHEET NUMBER: 1-EE-601



1 ONE-LINE POWER DIAGRAM
NO SCALE



ONE-LINE SYMBOLS



ONE-LINE GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

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SHEET TITLE:
ONE-LINE DIAGRAM

SHEET NUMBER:
1-EE-901

LUMINAIRE SYMBOLS

- RECESSED LUMINAIRE
- RECESSED TROFFER
- RECESSED LINEAR
- SURFACE ROUND LUMINAIRE
- SURFACE SQUARE LUMINAIRE
- SURFACE LINEAR
- SURFACE INDUSTRIAL
- SURFACE COVE STRIP
- PENDANT ROUND LUMINAIRE
- PENDANT SQUARE LUMINAIRE
- PENDANT LINEAR
- PENDANT INDUSTRIAL
- (#) TRACK (# INDICATES NUMBER TRACK HEADS)
- WALL SURFACE BRACKET
- WALL RECESSED BRACKET
- WALL SURFACE LINEAR
- WALL RECESSED LINEAR
- CEILING MOUNTED EXIT SIGN
- WALL MOUNTED EXIT SIGN
- WALL MOUNTED COMBINATION EXIT SIGN/EBU
- ARROW DENOTES EXIT SIGN CHEVRON
- EMERGENCY BATTERY UNIT
- RECESSED EMERGENCY BATTERY UNIT
- WALL WASH MODIFIER
- EMERGENCY SHADING MODIFIER

LUMINAIRE CIRCUITRY & CONTROL KEY:

- A1 LUMINAIRE TYPE
- ↑Ra LOWER CASE LETTER INDICATES SWITCHLEG CONTROL "R" INDICATES LIGHTING CONTROL PANEL REFER TO LIGHTING CONTROL PANEL SCHEDULE
- NUMBER INDICATES BRANCH PANEL CIRCUIT NUMBER

LUMINAIRE CONTROL SYMBOLS

- (XS) OCCUPANCY SENSOR CEILING MOUNT (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- (DS) DAYLIGHT SENSOR (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- (XS) DAYLIGHT SENSOR CEILING MOUNT (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- TC ELECTRONIC TIME CLOCK
- PE PHOTO ELECTRIC CONTROL (X REPRESENTS OCCUPANCY/PHOTO SENSOR SCHEDULE DESIGNATION)
- LC LIGHTING CONTACTOR
- LCP X LIGHTING CONTROL PANEL (X REPRESENTS PANEL DESIGNATION)
- PT UL 924 LISTED EMERGENCY LIGHTING BYPASS CONTROL UNIT
- PP POWER PACK USED IN CONJUNCTION WITH OCCUPANCY SENSORS OR DAYLIGHT SENSORS
- PS REMOTE POWER SUPPLY OR DRIVER
- DR DIMMER RACK
- D DIMMER CONTROL STATION MULTI-PRESET MODULAR DIMMING SYSTEM

DIMMER NOTATIONS:

MCS DENOTES MASTER CONTROL STATION
RS DENOTES REMOTE STATION
ES ENTRY STATION
PS PARTITION STATION

- S SINGLE POLE SWITCH

SWITCH NOTATIONS:

3 DENOTES 3-WAY SWITCH
4 DENOTES 4-WAY SWITCH
C MAINTAINED CONTACT, THREE POSITION, CENTER OFF
D DENOTES WALL BOX DIMMER SWITCH
K DENOTES KEY SWITCH
OSX DENOTES OCCUPANCY SENSOR (X REPRESENTS SCHEDULE DESIGNATION)
P DENOTES PILOT SWITCH
T DENOTES TIMER SWITCH
VSX DENOTES VACANCY SENSOR (X REPRESENTS SCHEDULE DESIGNATION)
WL DENOTES WET LOCATION SWITCH

SERVICE & DISTRIBUTION SYMBOLS

- GAP GENERATOR ANNUNICATOR PANEL
- EPO EMERGENCY POWER OFF
- GROUND ROD
- EGB EQUIPMENT GROUND BUS
- PANELBOARD
- C CONTACTOR
- P PUSH BUTTON

RECEPTACLE SYMBOLS

- 60" DUPLEX RECEPTACLE TEXT INDICATES MOUNTING HEIGHT
- DOUBLE DUPLEX RECEPTACLE
- ABOVE COUNTER DUPLEX RECEPTACLE
- SIMPLEX RECEPTACLE
- SPLIT WIRED DUPLEX RECEPTACLE
- SPECIFIC USE RECEPTACLE. NEMA CONFIGURATIONAS NOTED ON DRAWINGS AND/OR SCHEDULE.
- F FLOOR BOX
- P POKE THRU
- C CEILING MOUNTED DUPLEX RECEPTACLE
- C CEILING MOUNTED DOUBLE DUPLEX RECEPTACLE
- C CEILING MOUNTED SPECIFIC USE RECEPTACLE. NEMA CONFIGURATIONAS NOTED ON DRAWINGS AND/OR SCHEDULE.
- (E) CORD REEL
- SURFACE METAL RACEWAY - REFER TO DRAWINGS AND/OR SPECIFICATIONS, MOUNTED 6" ABOVE COUNTER OR AT HEIGHT AS INDICATED.
- A MULTI-OUTLET RACEWAY - OUTLETS ON CENTER AS INDICATED ON DRAWINGS AND IN THE SPECIFICATIONS, MOUNTED 6" ABOVE COUNTER OR AT HEIGHT AS INDICATED.

MULTI-OUTLET RACEWAY NOTATIONS:

A DENOTES 2'-0" LENGTH, RECEPTACLES 6" O.C.
B DENOTES 3'-0" LENGTH, RECEPTACLES 6" O.C.
C DENOTES 5'-0" LENGTH, RECEPTACLES 6" OR 12" O.C.
D DENOTES 6'-0" LENGTH, RECEPTACLES 6", 12", 18" OR 24" O.C.
F DENOTES X'-X" LENGTH, RECEPTACLES X" O.C.

- P DATA/POWER POLE

RECEPTACLE NOTATIONS:

EWC DENOTES ELECTRIC WATER COOLER OUTLETS
GFCI DENOTES GROUND FAULT INTERRUPTER OUTLETS
H DENOTES HORIZONTALLY MOUNTED OUTLETS
TR DENOTES TAMPER RESISTANT SAFETY OUTLETS
USB DENOTES COMBINATION DUPLEX/USB OUTLETS
WP DENOTES WEATHER PROOF OUTLETS

RACEWAY SYMBOLS

- CABLE TRAY, SIZE AND TYPE AS INDICATED ON DRAWINGS
- J JUNCTION BOX - CEILING MOUNTED
- J JUNCTION BOX - WALL MOUNTED
- H HANDHOLE

MOTOR & EQUIPMENT CONNECTION SYMBOLS

- ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZED PER NEC. COORDINATE REQUIREMENTS WITH CONTRACTOR FURNISHING MOTOR OR EQUIPMENT. REFER TO SPECIFICATIONS AND EQUIPMENT WIRING SCHEDULE FOR ADDITIONALWORK ASSOCIATED WITH MOTOR OR EQUIPMENT.
- COMBINATION MAGNETIC CONTROLLER
- VFD VARIABLE FREQUENCY MOTOR CONTROLLER
- NON-FUSIBLE DISCONNECT SWITCH
- FUSIBLE DISCONNECT SWITCH
- S_{MS} MOTOR STARTING SWITCH WITH OVERLOADS
- S_{MX} MOTOR STARTING SWITCH WITHOUT OVERLOADS
- ENCLOSED CIRCUIT BREAKER

FIRE ALARM SYMBOLS

- FMCP FIRE AND MASS NOTIFICATION CONTROL PANEL
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- KNOX CABINET FOR HOLDING FIRE DEPARTMENT DOCUMENTS & KEYS WITH INTEGRAL TAMPER SWITCH. KNOX BRAND # 4400 OR APPROVED EQUAL. SEE DRAWING ##.
- FIRE ALARM PULL STATION
- H FIRE ALARM HORN
- S FIRE ALARM SPEAKER
- H## FIRE ALARM HORN/STROBE, (##) IS CANDELA RATING
- S## FIRE ALARM SPEAKER/STROBE, (##) IS CANDELA RATING
- S SUPERVISED FIRE ALARM HORN LOUDSPEAKER
- ## FIRE ALARM STROBE, (##) IS CANDELA RATING
- B FIRE ALARM BELL
- 2 INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR
- 2ER INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR FOR ELEVATOR RECALL
- H INTELLIGENT 135ºF FIXED & RATE OF RISE HEAT DETECTOR (15ºF/M), (20ºF/M), UNLESS NOTED ON DRAWINGS
- DS INTELLIGENT PHOTOELECTRIC DUCT SMOKE DETECTOR
- CO CARBON MONOXIDE DETECTOR
- ## CEILING MOUNTED FIRE ALARM STROBE, (##) IS CANDELA RATING
- ## CEILING MOUNTED FIRE ALARM SPEAKER/STROBE, (##) IS CANDELA RATING
- CEILING MOUNTED FIRE ALARM SPEAKER
- ## CEILING MOUNTED FIRE ALARM HORN/STROBE, (##) IS CANDELA RATING
- CEILING MOUNTED FIRE ALARM HORN
- MM MONITOR MODULE
- CM CONTROL MODULE
- DH MAGNETIC DOOR HOLDER
- RTS/I REMOTE TEST SWITCH WITH INDICATOR

SITE SYMBOLS

- E ELECTRIC HANDHOLE
- M ELECTRIC METER
- ELECTRIC SERVICE PANEL
- TRANS ELECTRIC TRANSFORMER

GENERAL SYMBOLS

- #/E-#### DETAIL NUMBER / SHEET NUMBER
- 9.### KEYED NOTE, USED TO DESCRIBE ADDITIONAL INFORMATION OF WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL IT IS SHOWN WITH.

LINE TYPE KEY

- NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
- EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK DASHED LINE)
- EXISTING TO REMAIN WORK (THIN SOLID LINE)
- NEW WORK UNDER FLOOR BY THIS CONTRACTOR
- ONE-LINE EQUIPMENT ENCLOSURE
- PANEL DIVISION LINES

ELECTRICAL ABBREVIATIONS

3R	NEMA 3R RATING
4X	NEMA 4X RATING
A	AMPERES
A/E	ARCHITECT / ENGINEER
AAC	ABOVE ACCESSIBLE CEILING
ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
APE	AIRCRAFT PROCESS EQUIPMENT
ATS	AUTOMATIC TRANSFER SWITCH
BLDG	BUILDING
BRKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CEB	CONCRETE EQUIPMENT BASE
CF	CIRCULATION FAN
CH	CHILLER
CHWP	CHILLED WATER PUMP
CKT	CIRCUIT
CP	CIRCULATION PUMP
CRAC	COMPUTER ROOM AIR CONDITIONER
CRP	CONDENSATION RETURN
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
DC	DROP CORD
DDC	DIGITAL CONTROL PANEL
DH	DUCT HEATER
DISC	DISCONNECT
DO	DOOR OPERATOR
DWG	DRAWING
E/O	ELECTRICAL-TO-OPTICAL CONVERTER
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ERL	EXISTING TO BE RELOCATED
ERLD	EXISTING - RELOCATED LOCATION
ES	EQUIPMENT SUPPLIER
ETR	EXISTING TO REMAIN
EWC	ELECTRICAL WATER COOLER
EWH	ELECTRICAL WATER HEATER
F	FUSED
FA	FIRE ALARM
FAF	FORCED AIR FURNACE
FCU	FAN COIL UNIT
GC	GENERAL CONTRACTOR
GD	GARBAGE DISPOSAL
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GWH	GAS WATER HEATER
HD	HAND DRYER
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWB	HOT WATER BOILER
HWP	HOT WATER PUMP
IEWH	INSTANTANEOUS ELECTRIC WATER HEATER
IH	INFRARED HEATER
IMC	INTERMEDIATE METALLIC CONDUIT
IWH	INSTANTANEOUS WATER HEATER
J-BOX	JUNCTION BOX
LBS	POUNDS
LFS	LIGHTING FIXTURE SCHEDULE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MIN.	MINIMUM
MNS	MASS NOTIFICATION SYSTEM
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NL/EL	NIGHT LIGHT AND EMERGENCY LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RCP	RADIANT CEILING PANEL
RECPT	RECEPTACLE
REF	REFRIGERATOR
REQ'D	REQUIRED
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL CONDUIT MAY ALSO BE REFERENCED AS RMC OR GRC
RMC	RIGID METAL CONDUIT
RTU	ROOF TOP UNIT
S/N	SOLID NEUTRAL
SE	SERVICE ENTRANCE
SEC-P	SECURITY PANEL
SF	SUPPLY FAN
SP	SUMP PUMP
SS	STAINLESS STEEL
SW	SWITCH
SWBK	SWITCH BANK
TBR	TO BE REMOVED
TCP	TEMPERATURE CONTROL PANEL
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UC	UNIT COOLER
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATER
V	VOLTS
VER	VEHICLE EXHAUST REEL
VFD	VARIABLE FREQUENCY DRIVE
VS	VERSUS
W	WATTS
WCC	WATER COOLED CONDENSER
WFE	WELDING FUME EXTRACTOR
WH	WATER HEATER
WL	WET LOCATION LISTED
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

GENERAL NOTES:

1. REFER TO THE G SERIES DRAWINGS FOR CODE ANALYSIS PLANS, INFORMATION AND NOTES.
2. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE DETAILS OF WORK, VERIFY DIMENSIONS IN THE FIELD, AND ADVISE THE [ARCHITECT/ENGINEER] [CONTRACTING OFFICER] OF ANY DISCREPANCY BEFORE PERFORMING ANY WORK.
3. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND ABA (ARCHITECTURAL BARRIERS ACT).
4. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS AND FLOORS. MAKE RATED PENETRATIONS AS REQUIRED. SEAL ALL RATED PENETRATIONS AS IDENTIFIED IN DIVISION 1 REQUIREMENTS.
5. FLUSH MOUNT ALL TOGGLE SWITCHES, RECEPTACLE , FIRE ALARM PULL STATIONS AND FIRE ALARM NOTIFICATION DEVICES AT HEIGHTS ABOVE FINISHED FLOOR AS SHOWN IN THE DEVICE MOUNTING HEIGHT DETAIL, EXCEPT WHERE OTHERWISE NOTED. DEVICES MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED.
6. CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL SCHEDULES PROVIDED. BALANCE THE LOAD ON PANELS AS EVENLY AS POSSIBLE BETWEEN EACH PHASE. COMMON NEUTRALS **[NOT]** BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
7. CIRCUITS SERVING EMERGENCY AND EXIT LUMINAIRES SHALL BE RUN IN SEPARATE RACEWAY FROM ALL OTHER CIRCUITS.
8. A #12 GREEN INSULATED GROUND CONDUCTOR SHALL BE INSTALLED WITH CIRCUIT CONDUCTORS TO ALL RECEPTACLES.
9. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILING, ETC. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT IN MECHANICAL ROOMS, AND STORAGE ROOMS WITHOUT CEILINGS MAY BE EXPOSED ON BUILDING STRUCTURE. WHERE RACEWAY IS REQUIRED ON EXISTING CONCRETE AND MASONRY WALLS, SURFACE RACEWAY MAY BE USED IN LIEU OF CHANNELING WALLS TO ALLOW CONCEALED ROUTING. THE RACEWAY SHALL BE SINGLE CHANNEL STYLE TYPE WITH IVORY FINISH. THIS APPLIES FOR BRANCH CIRCUIT CONDUITS UP TO 3/4" SIZE. CONDUITS LARGER THAN 3/4" MAY BE ROUTED EXPOSED, BUT INSTALLED PARALLEL AND/OR PERPENDICULAR TO BUILDING LINES AND RUN AS UNOBTRUSIVELY AS POSSIBLE.
10. BOXES LOCATED ON OPPOSITE SIDES OF NON-RATED WALLS SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY. "THRU-THE-WALL" BOXES SHALL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.
11. COORDINATE AND CO-LOCATE WALL MOUNTED RECEPTACLE LOCATIONS WITH TECHNOLOGY (VOICE/DATA,CATV,FIDS, ETC) OUTLETS SHOWN ON THE T-SERIES DRAWINGS UNLESS OTHERWISE NOTED, EACH TECHNOLOGY OUTLET SHALL BE LOCATED WITHIN 24"OF ITS ASSOCIATED RECEPTACLE. ASSOCIATED RECEPTACLE SHALL BE DEFINED AS THE RECEPTACLE NEAREST THE LOCATION OF, AND AT THE SAME HEIGHT AS,THE TECHNOLOGY OUTLET WHEN MULTIPLE RECEPTACLES ARE SHOWN ON A WALL.
12. DUPLEX RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) SHALL BE CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED.
13. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL DETECTORS WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE.
14. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
15. ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF, OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
16. CONTRACTOR TO PROVIDE SUITABLE MECHANICAL PROTECTION AROUND ALL CONDUITS STUBBED OUT FROM FLOORS, WALLS OR CEILINGS DURING CONSTRUCTION TO PREVENT BENDING OR DAMAGING OF STUB OUTS DUE TO CARELESSNESS WITH CONSTRUCTION EQUIPMENT.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
18. DRAWINGS INDICATE THE EXTENT OF HAZARDOUS OR WET LOCATIONS. INSTALLATION MEANS AND METHODS SHALL BE SUITABLY RATED FOR THE ENVIRONMENT INDICATED ON THE DRAWINGS.
19. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
20. ALL INTERLOCKING REQUIRED BY THE DRIVE MANUFACTURER BETWEEN THE VARIABLE FREQUENCY DRIVE AND THE DISCONNECT SWITCHES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
21. SCCR RATINGS LISTED FOR EQUIPMENT ARE MINIMUM REQUIREMENTS FOR BUS BRACING AND DEVICE RATING. ALL EQUIPMENT SHALL BE FULLY RATED UNLESS SPECIFICALLY NOTED AS SERIES RATED.

DEMOLITION GENERAL NOTES:

1. THE INFORMATION SHOWN IS BASED ON EXISTING DRAWINGS AND SITE OBSERVATIONS TO ASSIST CONTRACTOR IN BIDDING. THE ELECTRICAL DRAWINGS INDICATE EXISTING ELECTRICAL ITEMS TO BE REMOVED. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS. REFER TO SPECIFICATION SECTION 26 05 02 FOR ADDITIONAL REQUIREMENTS.
2. DASHED WALLS ON THE FLOOR PLANS INDICATE EXISTING WALLS BEING DEMOLISHED. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR THE EXACT EXTENT OF WORK REQUIRED BY THIS PROJECT. REMOVE ALL DEVICES ON DASHED WALLS NOT SHOWN ON THE CONTRACT DRAWINGS. REFER TO DEMOLITION DRAWINGS OF OTHER TRADES. WHERE MOTORS CONTROL PANELS, AND OTHER LOADS OR APPARATUS THAT HAVE ELECTRICAL CONNECTION ARE BEING REMOVED, INCLUDE DISCONNECTION AND REMOVAL OF ALL ASSOCIATED CONDUIT, WIRING, ETC.
3. ELECTRICAL ITEMS (i.e., LIGHTING FIXTURES, PANELBOARDS, DISCONNECTS, MOTOR CONTROLLERS , ETC.) REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER TO THE OWNER, IN A STORAGE AREA TO BE DESIGNATED BY THE OWNER. EQUIPMENT BEING REMOVED SHALL BE HANDLED SO AS NOT TO FURTHER REDUCE ITS VALUE TO THE OWNER. THE CONTRACTOR SHALL DISPOSE OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
4. WHERE LIGHTS, SWITCHES, RECEPTACLES, ETC. , ARE BEING REMOVED ALL ASSOCIATED CONDUIT AND WIRE BACK TO THE PANELBOARD OR FEEDER JUNCTION BOX SERVING THE DEVICE SHALL ALSO BE REMOVED, UNLESS THE CONDUIT CAN BE REUSED FOR NEW CONDUCTORS. THE CONTRACTOR SHALL DISPOSE OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
5. ALL BOXES THAT REMAIN IN PLACE IN EXISTING MASONRY WALLS THAT ARE TO REMAIN SHALL BE PROVIDED WITH A BLANK COVERPLATE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH TYPE AND ATTACHMENT.
6. ALL CONDUIT SHALL BE REMOVED WHERE WALLS ARE BEING REMOVED. WHERE CONDUIT IS IN THE CONCRETE SLAB, CUT OFF FLUSH, PULL OUT WIRE, AND PLUG. WHERE CONDUIT IS RUN EXPOSED, ALL ASSOCIATED CLAMPS, SUPPORTS, HANGERS, ETC., SHALL ALSO BE REMOVED. CONDUIT CONCEALED IN WALL CONSTRUCTION MAY BE ABANDONED IN PLACE IF NOT AFFECTED BY OTHER CONSTRUCTION.
7. THIS CONTRACTOR SHALL COORDINATE ALL HIS WORK, INCLUDING PHASING WITH OTHER CONTRACTORS AT THE JOB SITE BEFORE REMOVING EXISTING ELECTRICAL AND INSTALLING NEW ITEMS.
8. EXISTING CONDUIT IN GOOD CONDITION, MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED. BONDING CONDUCTORS SHALL BE INSTALLED IN ALL REUSED CONDUIT TO ASSURE PROPER GROUND PATH.
9. MAINTAIN CIRCUIT CONTINUITY OF DEVICES LOCATED OUTSIDE OF CONSTRUCTION AREA. DEVICE AND EQUIPMENT REMOVAL IN CERTAIN LOCATIONS MAY REQUIRE THE INSTALLATION OF A JUNCTION BOX TO RECONNECT CIRCUITS THAT REMAIN IN OPERATION. EXTEND CONDUIT AND WIRING AS REQUIRED TO MAINTAIN POWER TO REMAINING EQUIPMENT.
10. BALLASTS MANUFACTURED PRIOR TO 1980 CONTAIN PCBs AND SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATIONS.
11. HID AND FLUORESCENT LAMPS CONTAIN MERCURY AND SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATIONS.
12. CONTRACTOR SHALL REMOVE AND INSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
13. PROVIDE REVISED TYPED CIRCUIT DIRECTORY IN PANELBOARDS THAT HAVE CIRCUITS REMOVED OR ADDED CIRCUITS.
14. REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT RACEWAY FLUSH WITH WALLS AND FLOORS, PATCH SURFACES TO MATCH EXISTING. REMOVE ALL ASSOCIATED CLAMPS, HANGERS, SUPPORTS, ETC. ASSOCIATED WITH RACEWAY REMOVAL.
15. DISCONNECT AND REMOVE ABANDONED LUMINAIRES, INCLUDING BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.
16. DISCONNECT AND REMOVED ELECTRICAL DEVICES AND EQUIPMENT SERVING UTILIZATION EQUIPMENT THAT HAS BEEN REMOVED.
17. EC SHALL PROVIDE ALL REQUIRED LABOR AND MATERIALS ASSOCIATED WITH DISCONNECTION AND TEMPORARY REMOVAL OF LIGHT FIXTURES, OCCUPANCY SENSORS, SPEAKERS, TELECOMMUNICATION OUTLETS AND ETC AS DEEMED NECESSARY TO ACCOMODATE THE INSTALLATION OF THE NEW DUCTWORK AND PIPING OF ALL OTHER TRADES IN THE AREAS OUTSIDE OF THIS PROJECT CONSTRUCTION SCOPE/BOUNDARIES. REFER TO THE RESPECTIVE ARCHITECTURAL DEMOLITION PLANS FOR COORDINATION AND ADDITIONAL INFORMATION. NOTE, THAT THESE DOCUMENTS ONLY ADDRESS DEMOLITION SCOPE WITHIN PROJECT BOUNDARY. EC SHALL ALSO INCLUDE COST ASSOCIATED WITH RE-INSTALLATION AND RE-CONNECTION OF THE ABOVE MENTIONED FIXTURES AND DEVICES BACK IN THEIR SPACES UPON WORK OF OTHER TRADES IS COMPLETED AND ASSURE PROPER OPERATION OF ALL DEVICES.

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO: 18268
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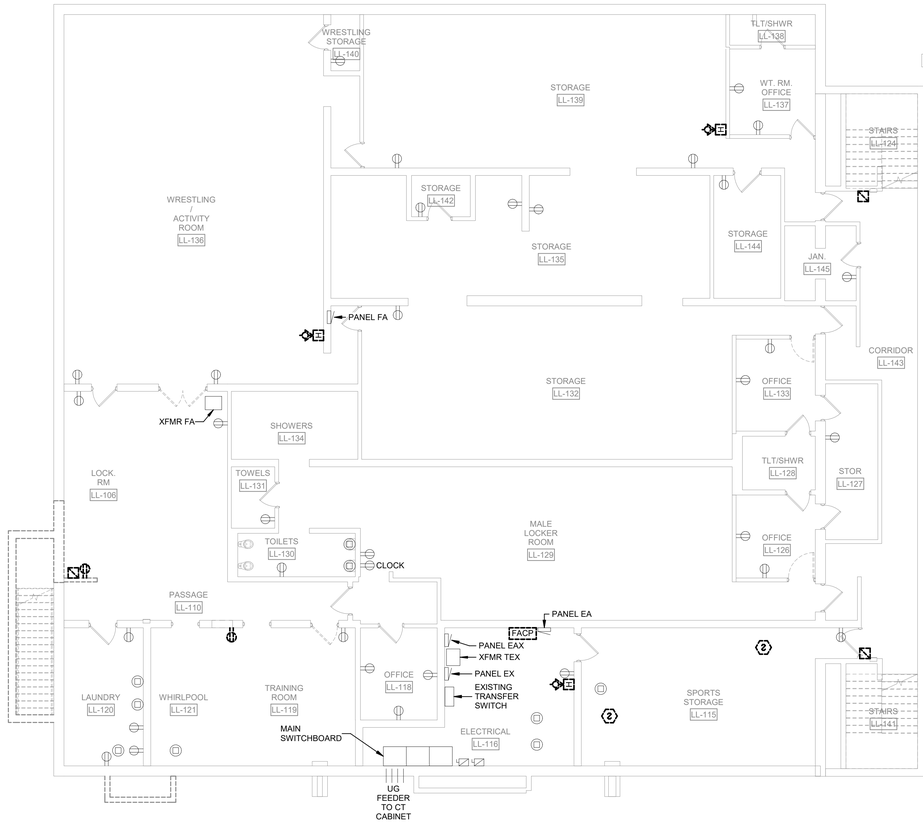
SHEET TITLE:
NOTES, SYMBOLS & ABBREVIATIONS

SHEET NUMBER:
2-EE-001

KEYED NOTES



TRUE NORTH PLAN NORTH

LOWER LEVEL POWER & FA DEMOLITION PLAN

1/8" = 1'-0"

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NOT FOR CONSTRUCTION
2019-04-16

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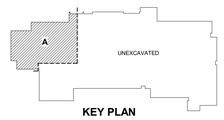

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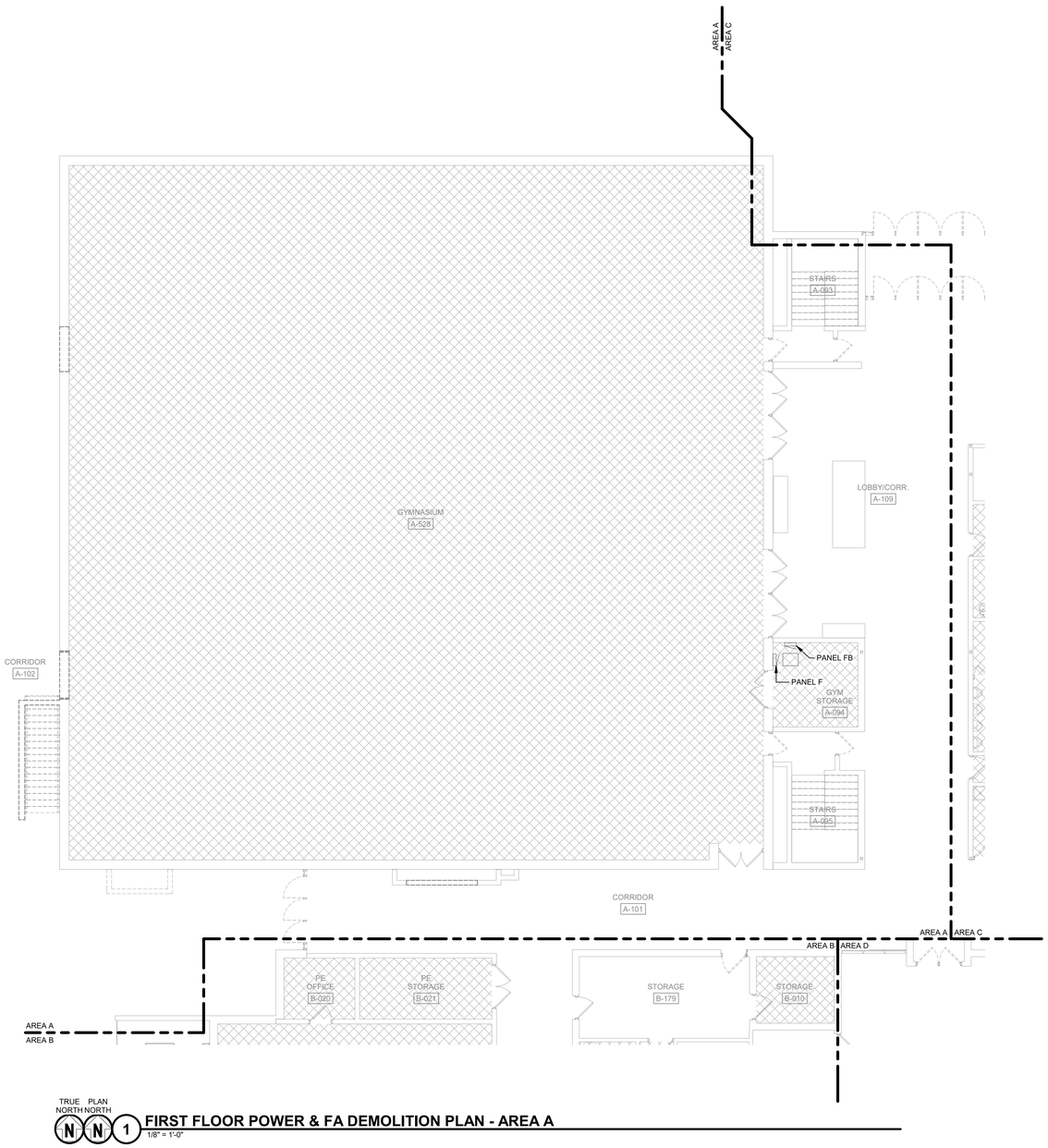
SHEET TITLE:
LOWER LEVEL POWER & FA DEMOLITION PLAN

SHEET NUMBER:
2-EPD-101

KEYED NOTES



TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA A

1/8" = 1'-0"

PRELIMINARY
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2019-04-16

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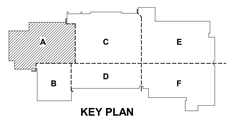

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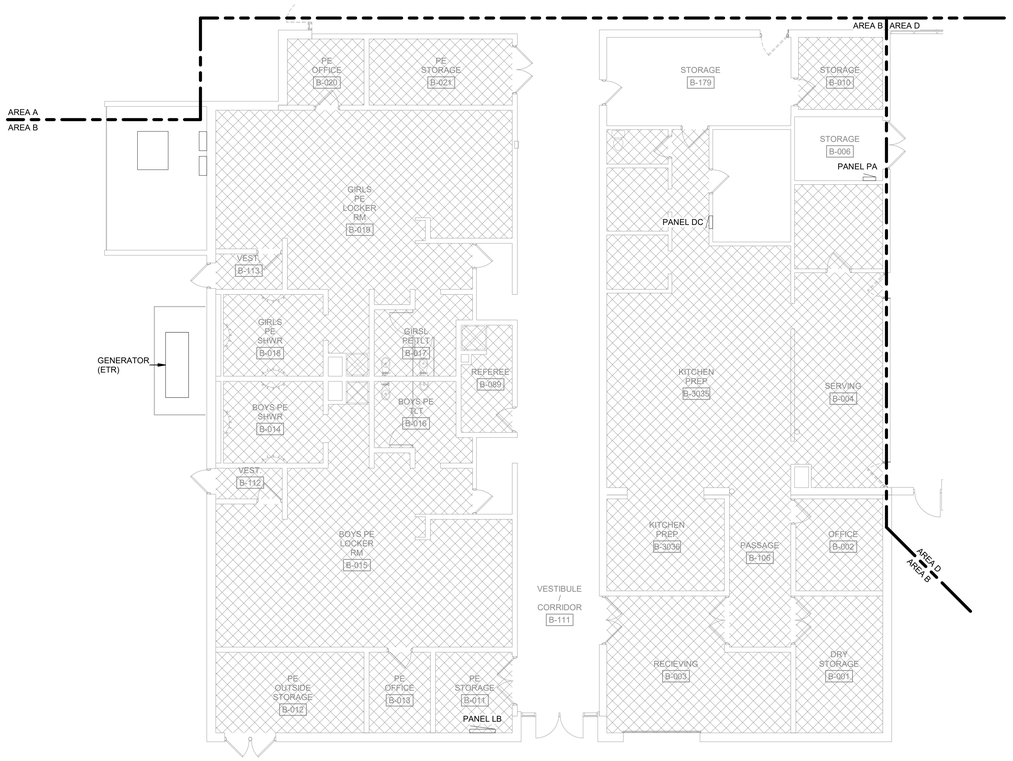
SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA A

SHEET NUMBER:
2-EPD-102

KEYED NOTES



TRUE NORTH PLAN NORTH

1 FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

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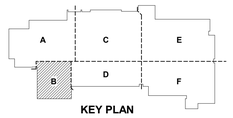

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SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA B

SHEET NUMBER:
2-EPD-103

KEYED NOTES

9.024 REMOVE EXISTING RECEPTACLE AND WIRING BACK TO NEAREST JUNCTION BOX. EXISTING CONDUIT IN FLOOR SHALL REMAIN FOR RE-USE.

9.026 DE-ENERGIZE AND DISCONNECT POWER TO EXISTING FUME HOOD FOR FUME HOOD RELOCATION. EXISTING BRANCH CIRCUIT SHALL REMAIN FOR RE-USE.

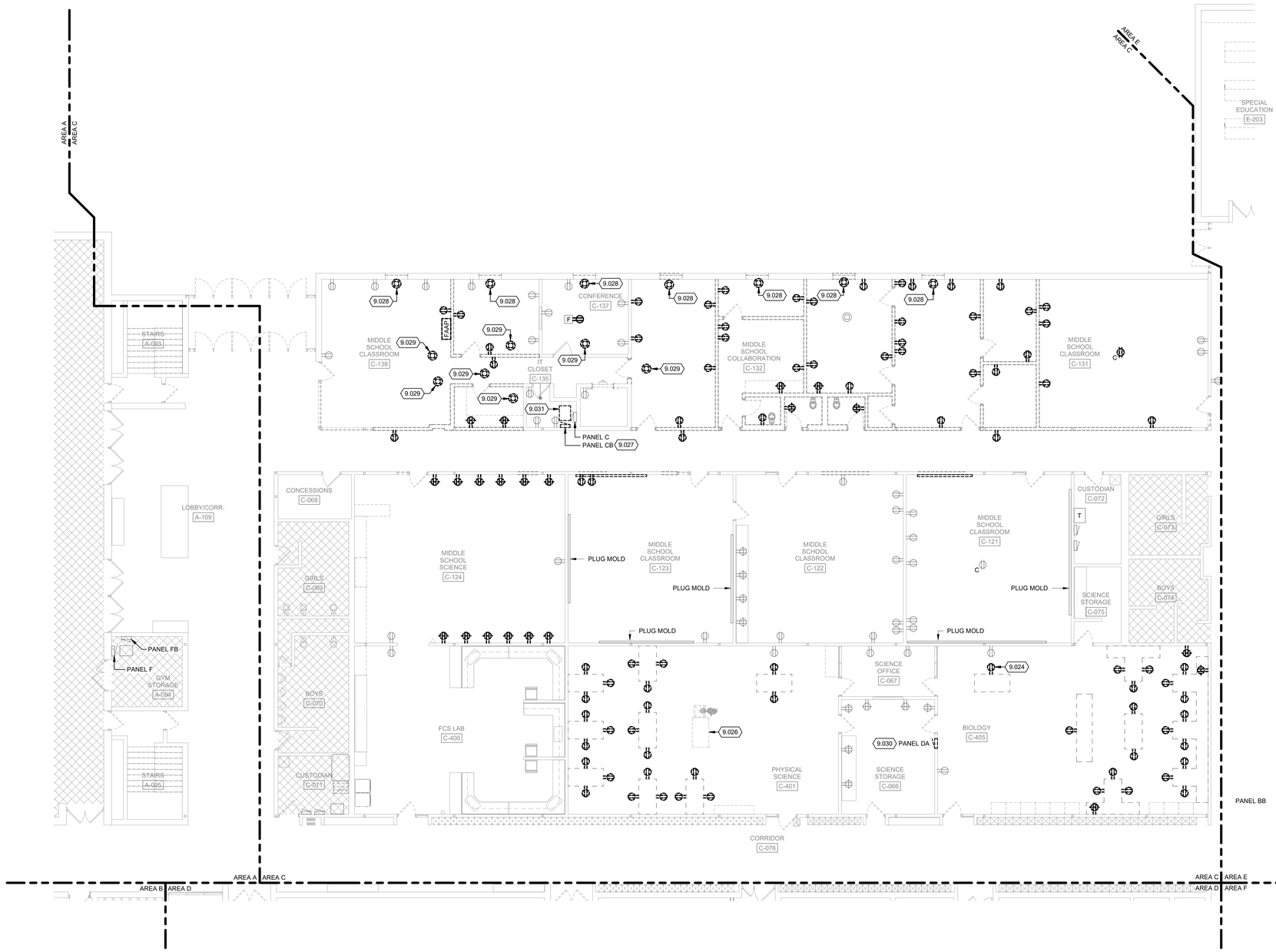
9.027 DE-ENERGIZE AND DISCONNECT EXISTING PANELBOARD CB. EXISTING BRANCH CIRCUITS SHALL REMAIN FOR RE-TERMINATION ON NEW PANELBOARD UNLESS NOTED OTHERWISE. FOR BIDDING PURPOSES ASSUME THE DISCONNECTION AND RE-TERMINATION OF TWENTY (20) - 20A/1P CIRCUITS, (1) - 30A/1P CIRCUIT, (2) - 30A/2P CIRCUITS, AND (4) - 20A/2P CIRCUITS.

9.028 REMOVE EXISTING ELECTRIC BASEBOARD HEATER AND CONTROLS, INCLUDING ALL WIRING AND CONDUIT BACK TO SOURCE.

9.029 DISCONNECT AND REMOVE EXISTING BRANCH CIRCUIT ASSOCIATED WITH HVAC EQUIPMENT BACK TO SOURCE. REFER TO M-SERIES SHEETS FOR EXACT EQUIPMENT LOCATIONS.

9.030 DE-ENERGIZE AND DISCONNECT EXISTING PANELBOARD DA. REMOVE INTERNAL COMPONENTS OF PANELBOARD. FLUSH MOUNTED PANELBOARD BACKBOX SHALL REMAIN AS SPLICE BOX FOR EXISTING TO REMAIN BRANCH CIRCUITS. EXISTING BRANCH CIRCUITS REMAINING SHALL BE INTERCEPTED, EXTENDED AND RE-TERMINATED ON NEW PANELBOARD UNLESS NOTED OTHERWISE. FOR BIDDING PURPOSES ASSUME THE DISCONNECTION, EXTENSION, AND RE-TERMINATION OF THIRTY (30) - 20A/1P CIRCUITS. EXISTING BRANCH CIRCUITS SHARE COMMON NEUTRAL. COMMON NEUTRAL BRANCH CIRCUITS SHALL BE TERMINATED ON MULTI-POLE CIRCUIT BREAKERS. FIELD VERIFY EXACT QUANTITY OF MULTI-POLE CIRCUIT BREAKERS REQUIRED PRIOR TO FINAL CIRCUIT BREAKER INSTALLATION. MULTI-POLE CIRCUIT BREAKERS LISTED FOR EXISTING CIRCUITS IN PANEL SCHEDULE DA ARE FOR BIDDING PURPOSES ONLY.

9.031 DE-ENERGIZE AND DISCONNECT EXISTING WALL MOUNTED TRANSFORMER FOR RELOCATION. REMOVE PRIMARY AND SECONDARY FEEDERS BACK TO SOURCE. REFER TO SHEET 2-EP-104 FOR RELOCATED TRANSFORMER LOCATION.



TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA C

1/8" = 1'-0"

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2019-04-16

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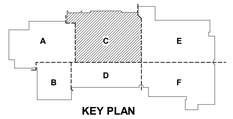

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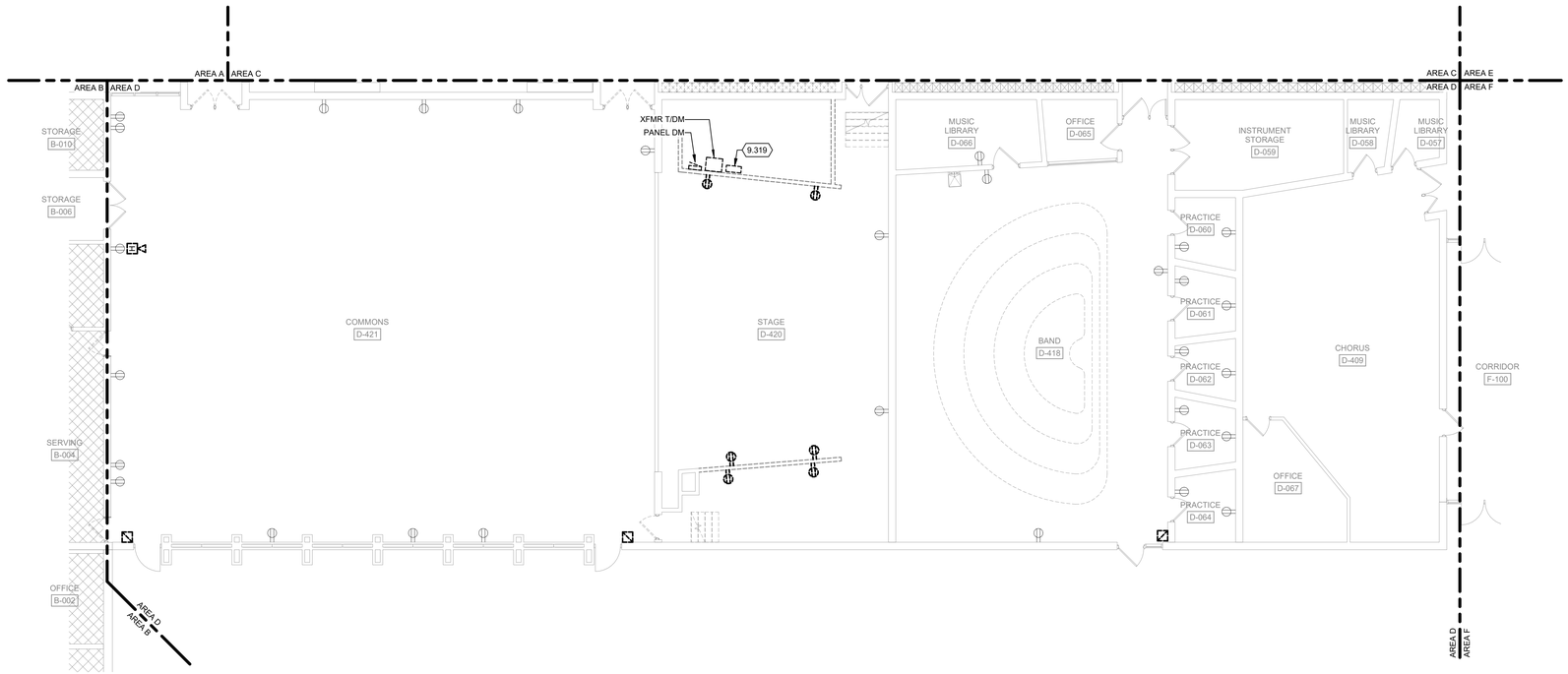
SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA C

SHEET NUMBER:
2-EPD-104

KEYED NOTES

9.319 REMOVE EXISTING DIMMER EQUIPMENT AND ASSOCIATED BACKBOX.



TRUE NORTH PLAN NORTH

1 **FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA D**

1/8" = 1'-0"

PRELIMINARY
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2019-04-16

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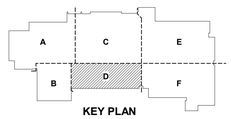

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SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA D

SHEET NUMBER:
2-EPD-105

KEYED NOTES

TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA E

1/8" = 1'-0"

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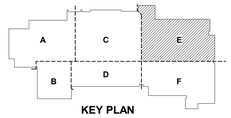

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SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA E

SHEET NUMBER:
2-EPD-106

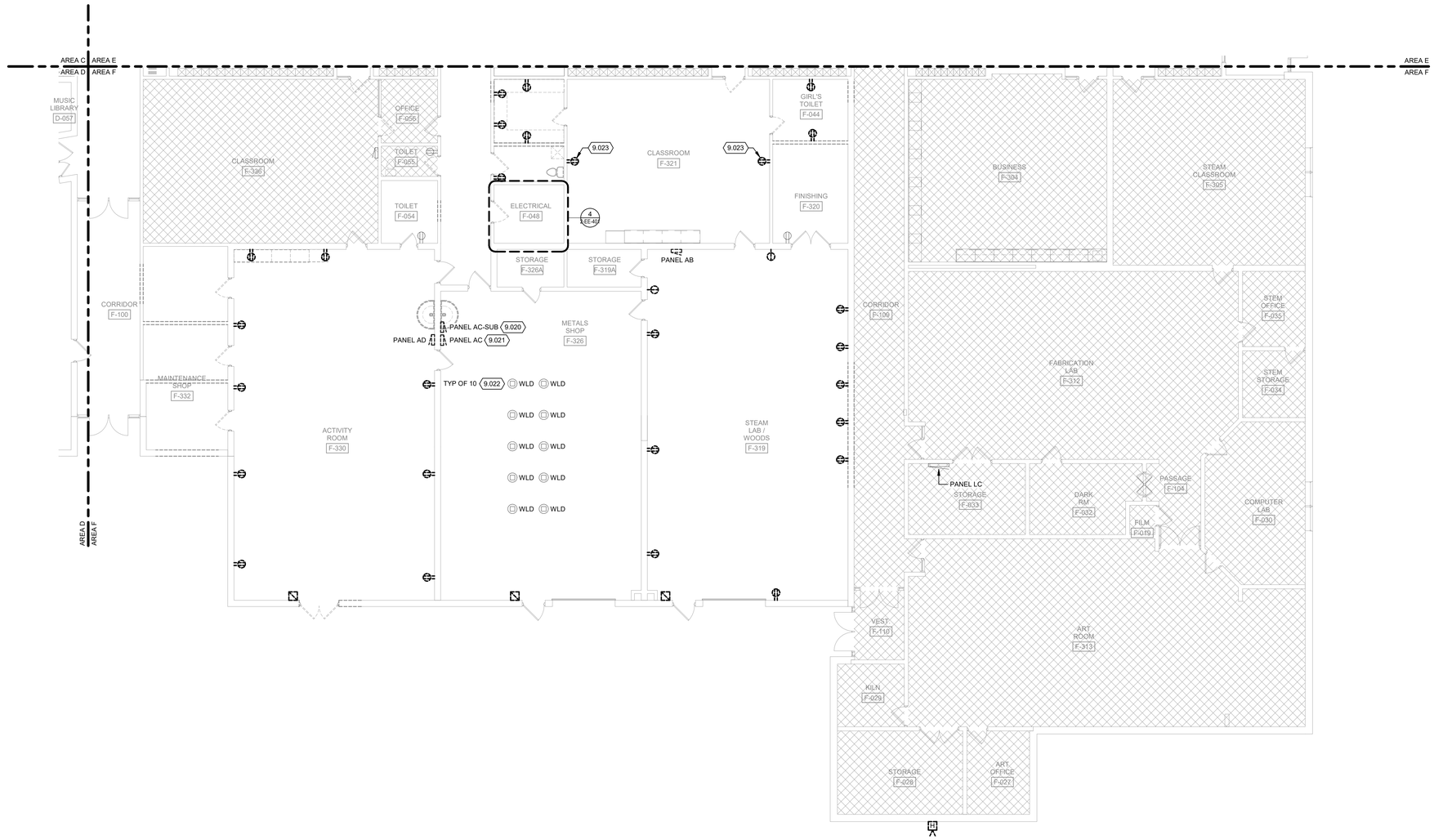
KEYED NOTES

9.020 DE-ENERGIZE AND REMOVE PANELBOARD AC-SUB AND ASSOCIATED BRANCH CIRCUIT CONDUITS UP TO CEILING TO ALLOW FOR INTERCEPTION AND EXTENSION OF CONDUITS TO NEW PANELBOARD AC LOCATION. ALL BRANCH CIRCUIT WIRING SHALL BE REMOVED BETWEEN DEVICE AND PANELBOARD. FOR BIDDING PURPOSES ASSUME THE INTERCEPTION AND EXTENSION OF CONDUITS ASSOCIATED WITH (1) - 40A/3P CIRCUIT AND (4) - 40A/2P CIRCUITS TO NEW PANEL AC. SEE SHEET 2-EE-401 FOR NEW PANELBOARD LOCATION.

9.021 DE-ENERGIZE AND REMOVE PANELBOARD AC AND ASSOCIATED BRANCH CIRCUIT CONDUITS UP TO CEILING TO ALLOW FOR INTERCEPTION AND EXTENSION OF CONDUITS TO NEW PANELBOARD AC LOCATION. ALL BRANCH CIRCUIT WIRING SHALL BE REMOVED BETWEEN DEVICES AND PANELBOARD. FOR BIDDING PURPOSES ASSUME THE INTERCEPTION AND EXTENSION OF (1) - 40A/3P CIRCUIT, (7) - 40A/2P CIRCUITS, (6) - 20A/3P CIRCUITS, AND (1) - 20A/2P CIRCUIT TO NEW PANEL AC. SEE SHEET 2-EE-401 FOR NEW PANELBOARD LOCATION.

9.022 EXISTING WELDER 'SO' CORDS SHALL REMAIN FOR REUSE. REMOVE BRANCH CIRCUIT WIRING BACK TO SOURCE. EXISTING CONDUITS AND CEILING MOUNTED JUNCTION BOXES TO REMAIN.

9.023 REMOVE EXISTING RECEPTACLE, BRANCH CIRCUIT SHALL REMAIN FOR RE-USE.



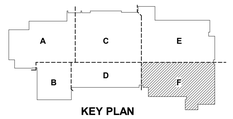
TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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MANAWA, WI 54949

MARK	DATE
ISSUED:	Issue Date
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	MRF
CHECKED BY:	IMR

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SHEET TITLE:
FIRST FLOOR POWER & FA DEMOLITION PLAN - AREA F

SHEET NUMBER:
2-EPD-107

KEYED NOTES

9.010 DISCONNECT AND REMOVE EXISTING, LIGHT FIXTURES, LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX AT ACCESSIBLE CEILING. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

9.011 DISCONNECT AND REMOVE EXISTING SWITCH. MAINTAIN EXISTING BACKBOX AND CONDUIT FOR NEW SWITCH INSTALLATION WHEREVER FEASIBLE. PROVIDE BLANK COVER PLATE ON THE UN-USED EXISTING SWITCH BACK BOXES. TYPICAL FOR ALL SWITCHES SHOWN ON THIS PLAN BEING REMOVED, UNLESS NOTED OTHERWISE. REFER TO NEW LIGHTING PLANS FOR FURTHER INFORMATION.

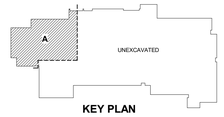
TRUE NORTH PLAN NORTH

LOWER LEVEL LIGHTING DEMOLITION PLAN

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
LOWER LEVEL LIGHTING DEMOLITION PLAN

SHEET NUMBER:
2-ELD-101

KEYED NOTES

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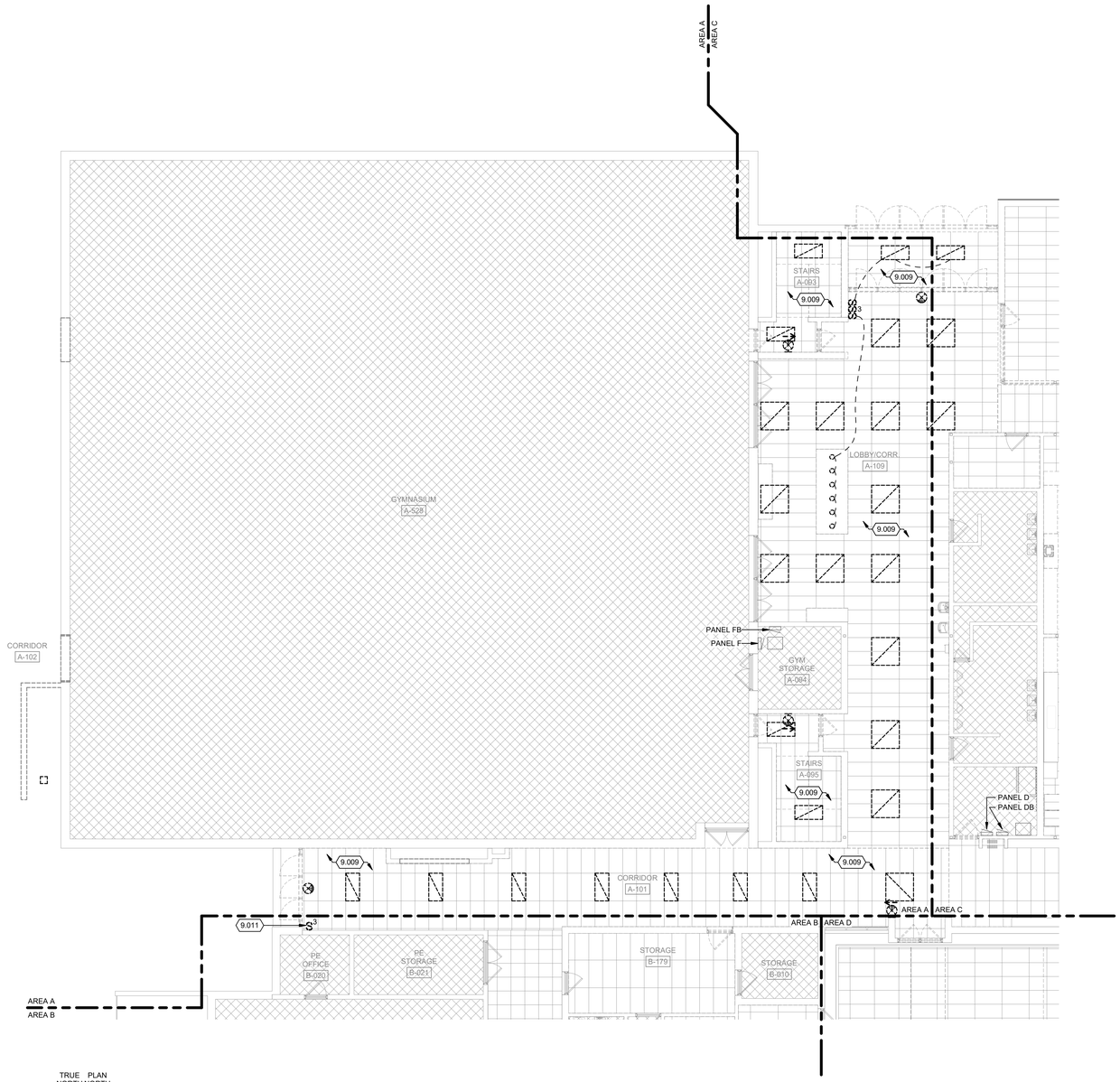


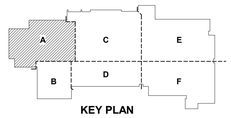
TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA A

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA A

SHEET NUMBER:
2-ELD-102

KEYED NOTES

9.009 DISCONNECT AND REMOVE EXISTING LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE ACCESSIBLE CEILING. EXISTING LIGHTING CONTROL BACKBOX AND RACEWAY SHALL REMAIN FOR RE-USE. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED WIRING BETWEEN LIGHT FIXTURES AND NEAREST BACKBOX, UNLESS NOTED OTHERWISE. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

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9.012 REMOVE EXISTING 12" SQUARE RECESSED HID FIXTURE. RETAIN EXISTING BACK BOX AND CIRCUIT FOR NEW FIXTURE INSTALLATION.

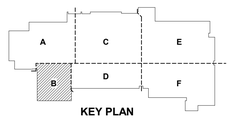
TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA B

SHEET NUMBER:
2-ELD-103

KEYED NOTES

9.009 DISCONNECT AND REMOVE EXISTING LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE ACCESSIBLE CEILING. EXISTING LIGHTING CONTROL BACKBOX AND RACEWAY SHALL REMAIN FOR RE-USE. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED WIRING BETWEEN LIGHT FIXTURES AND NEAREST BACKBOX, UNLESS NOTED OTHERWISE. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

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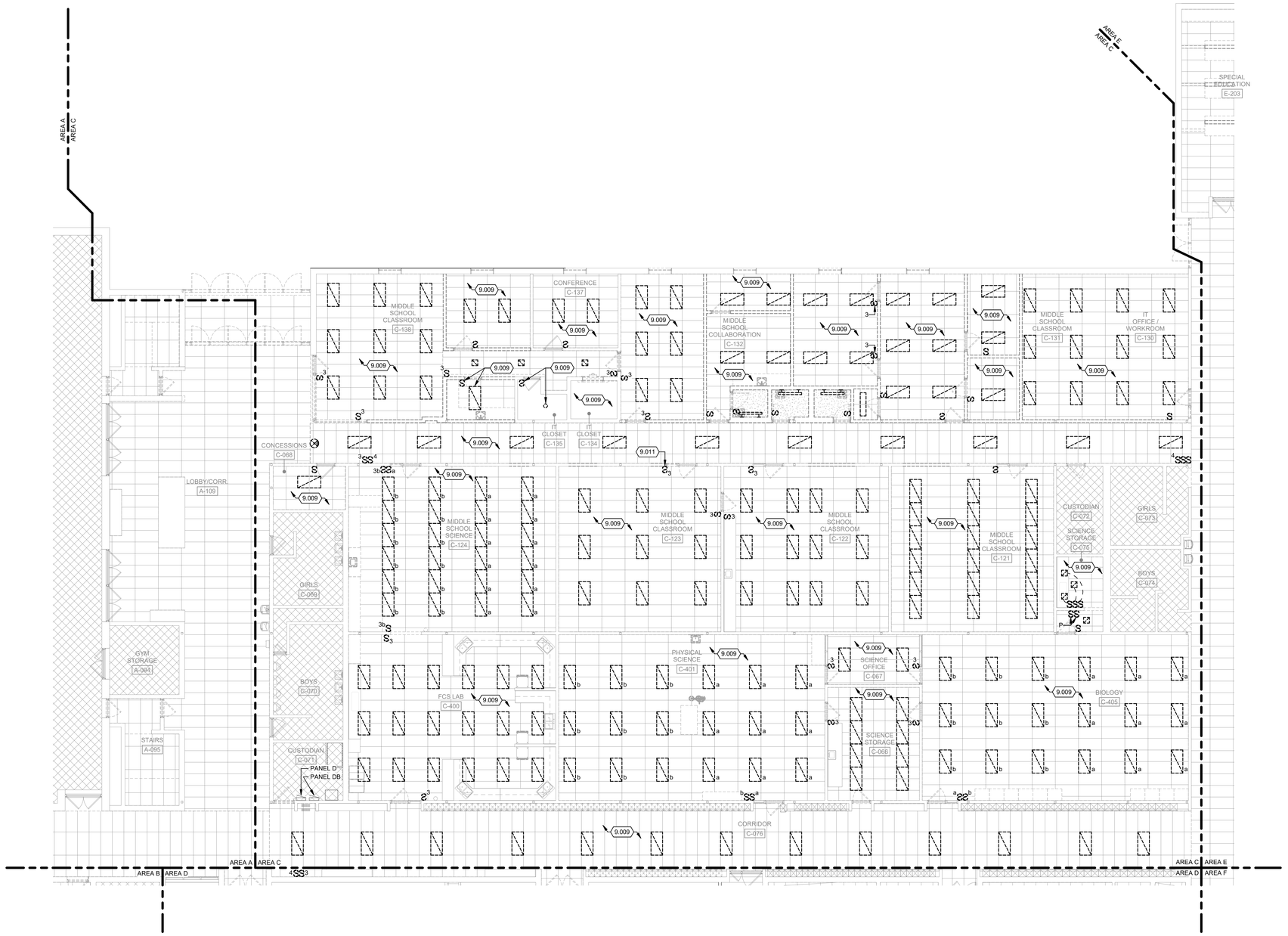


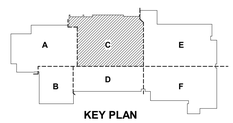
TRUE NORTH PLAN NORTH

1 FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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MANAWA, WI 54949

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CHECKED BY:	IMR

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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA C

SHEET NUMBER:
2-ELD-104

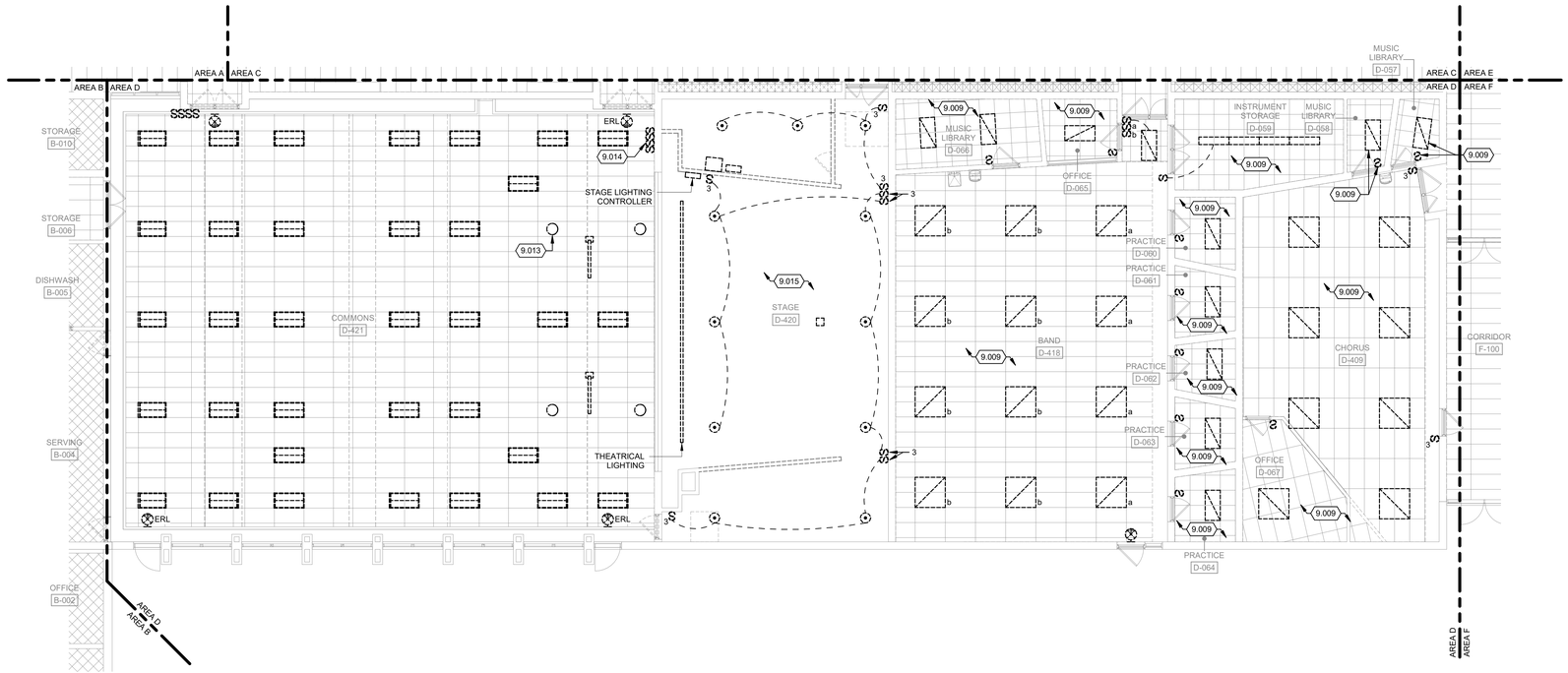
KEYED NOTES

9.009 DISCONNECT AND REMOVE EXISTING LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE ACCESSIBLE CEILING. EXISTING LIGHTING CONTROL BACKBOX AND RACEWAY SHALL REMAIN FOR RE-USE. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED WIRING BETWEEN LIGHT FIXTURES AND NEAREST BACKBOX, UNLESS NOTED OTHERWISE. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

9.013 REMOVE ALL EXISTING CYLINDERS LOCATED ABOVE EXISTING ACT CEILING AND ASSOCIATED WIRING AND CONDUIT BACK TO SOURCE OF ORIGIN.

9.014 AT THIS LOCATION THERE ARE (2) MOMENTARY CONTACT SWITCHES UNDER COMMON COVER PLATE AND (2) SEPARATE SINGLE GANG MOMENTARY CONTACT SWITCHES. (1) SWITCH BACK BOX SHALL REMAIN TO SERVE NEW CONSTRUCTION. ALL OTHERS SHALL BE REMOVED AND PROVIDED WITH A BLANK COVER PLATE.

9.015 UPON REMOVAL OF EXISTING THEATRICAL INSTRUMENTS BY OWNER, EC SHALL REMOVE ALL ASSOCIATED WIRING AND CONDUITS BACK THEIR SOURCE OF ORIGIN.



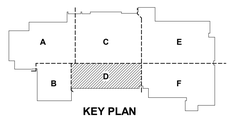
TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA D

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
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DRAWN BY:	MRF
CHECKED BY:	IMR

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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA D

SHEET NUMBER:
2-ELD-105

KEYED NOTES

9.009 DISCONNECT AND REMOVE EXISTING LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE ACCESSIBLE CEILING. EXISTING LIGHTING CONTROL BACKBOX AND RACEWAY SHALL REMAIN FOR RE-USE. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED WIRING BETWEEN LIGHT FIXTURES AND NEAREST BACKBOX, UNLESS NOTED OTHERWISE. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

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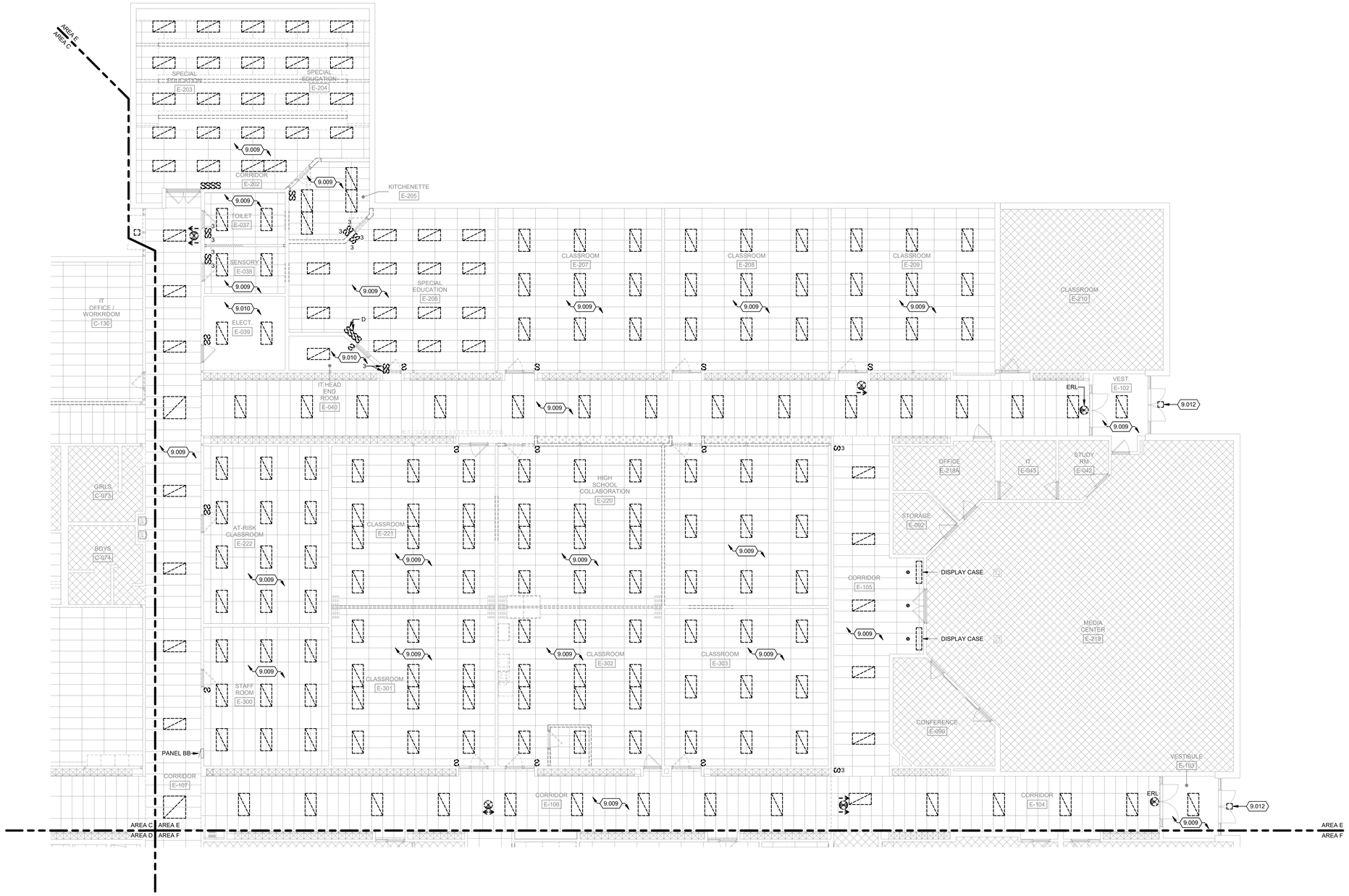
9.012 REMOVE EXISTING 12" SQUARE RECESSED HID FIXTURE. RETAIN EXISTING BACK BOX AND CIRCUIT FOR NEW FIXTURE INSTALLATION.



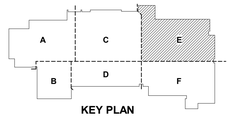
TRUE NORTH PLAN NORTH

1 FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA E

SHEET NUMBER:
2-ELD-106

KEYED NOTES

9.009 DISCONNECT AND REMOVE EXISTING LIGHTING CONTROL DEVICE(S) AND ASSOCIATED WIRING BACK TO NEAREST JUNCTION BOX LOCATED ABOVE ACCESSIBLE CEILING. EXISTING LIGHTING CONTROL BACKBOX AND RACEWAY SHALL REMAIN FOR RE-USE. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES AND ASSOCIATED WIRING BETWEEN LIGHT FIXTURES AND NEAREST BACKBOX, UNLESS NOTED OTHERWISE. EXISTING LIGHTING CIRCUIT(S) SHALL REMAIN REMAIN FOR RE-USE. REFER TO NEW LIGHTING PLANS FOR NEW WORK REQUIREMENTS IN THIS ROOM.

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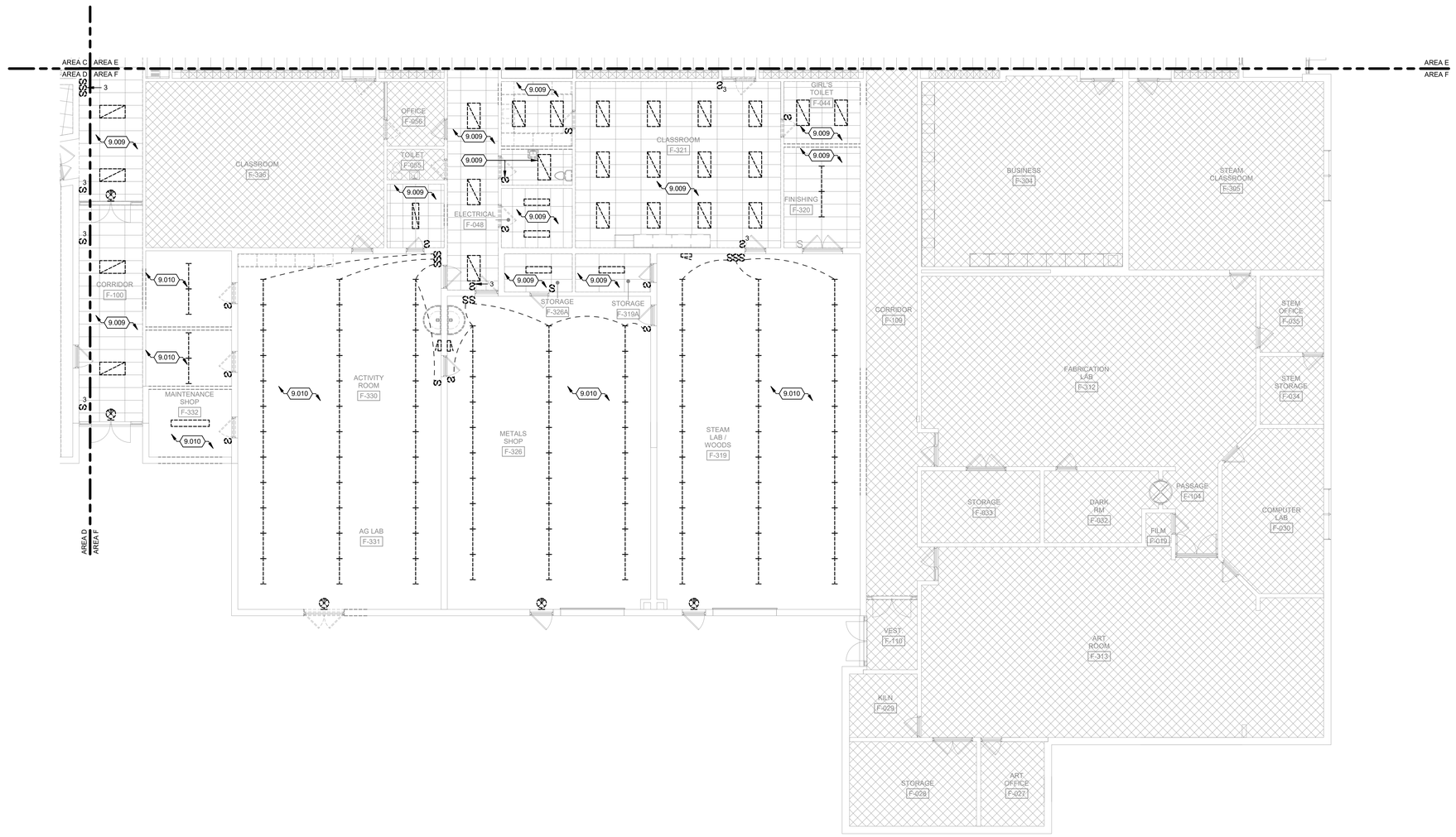
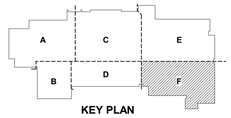


TRUE NORTH PLAN NORTH

1 FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16



KEY PLAN

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SHEET TITLE:
FIRST FLOOR LIGHTING DEMOLITION PLAN - AREA F

SHEET NUMBER:
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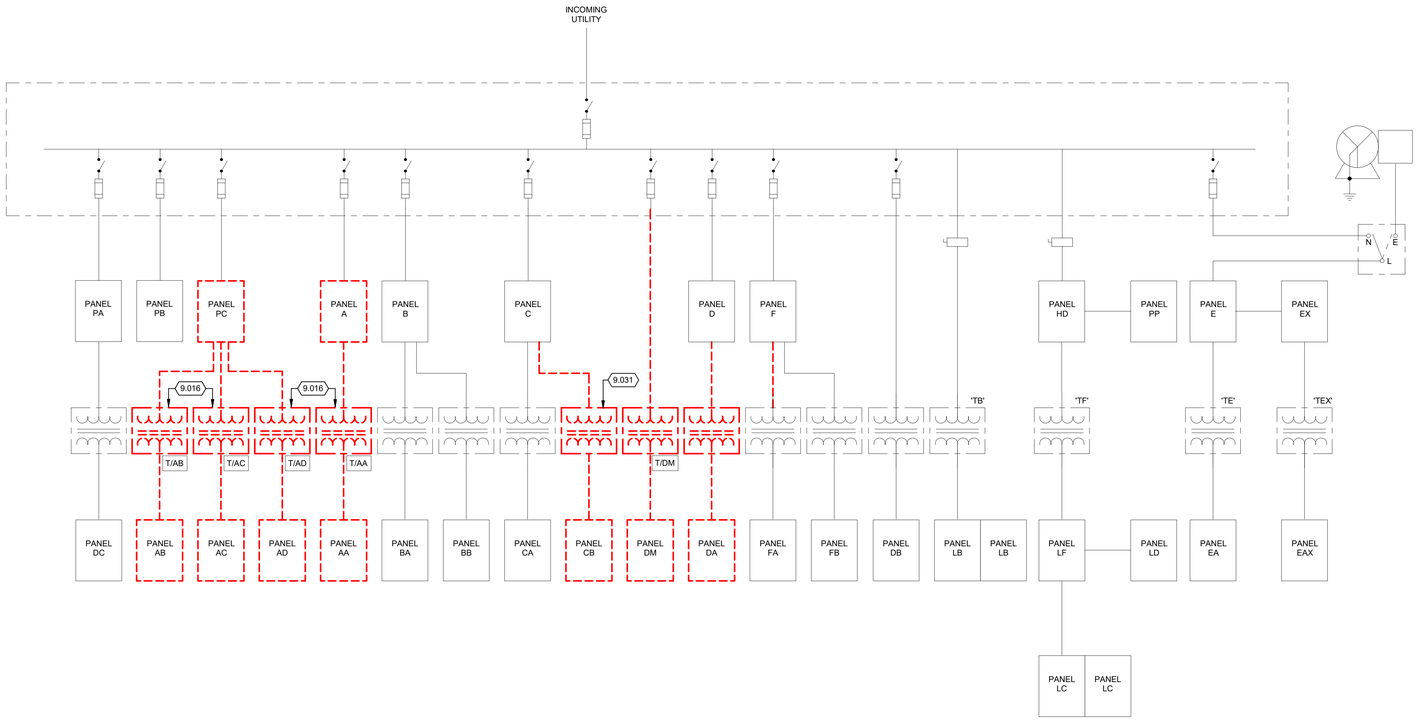

1 **ONE-LINE POWER DIAGRAM**
1" = 1'-0"

FOR BIDS
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

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SHEET TITLE:
ONE-LINE DIAGRAM - DEMOLITION

SHEET NUMBER:
2-EPD-901

POWER GENERAL NOTES:

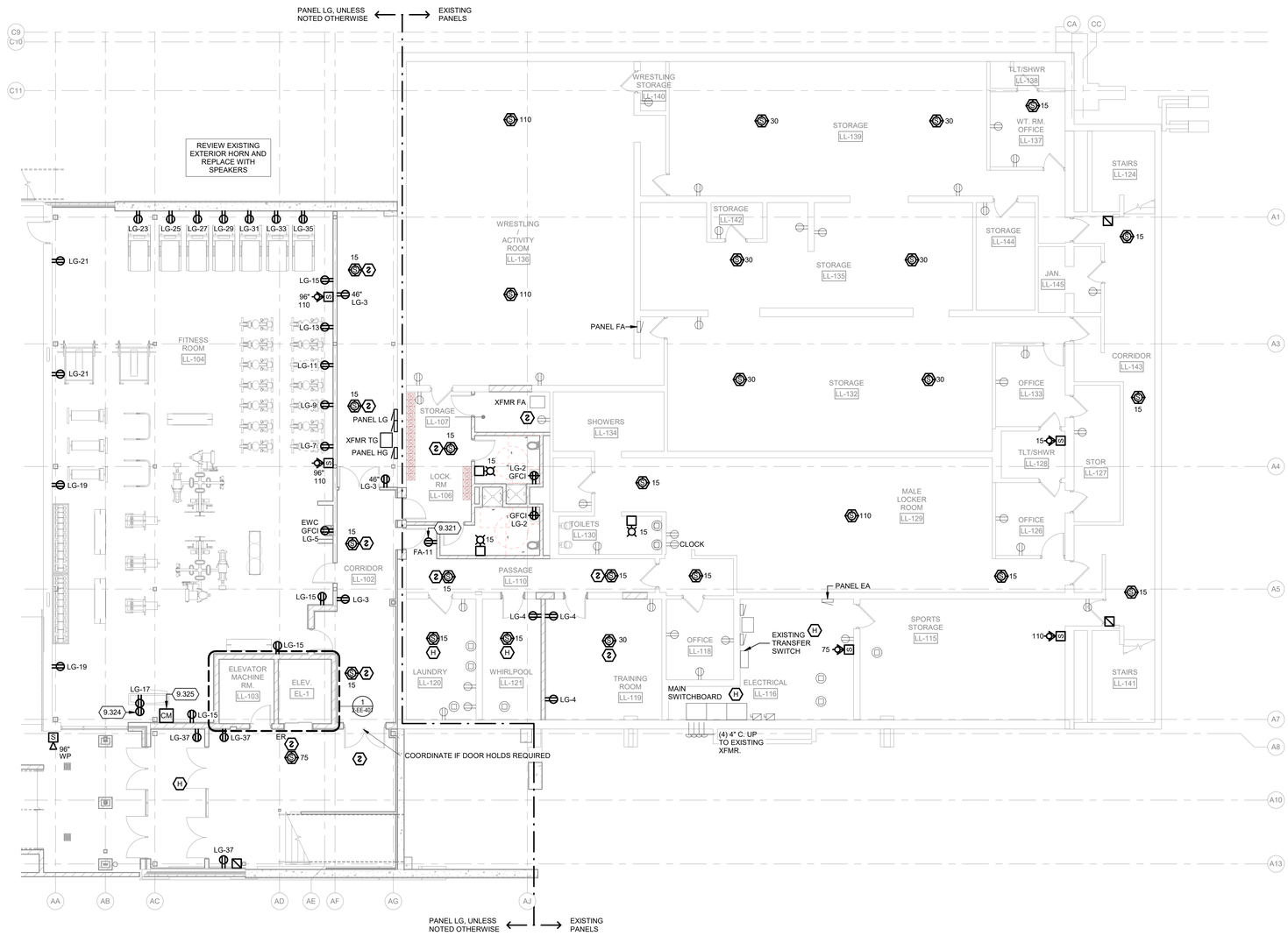
1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.321 INTERCEPT EXISTING CIRCUITS WHICH BECAME AVAILABLE UPON DEMOLITION AND EXTEND TO NEW RECEPTACLES. FIELD VERIFY EXISTING BRANCH CIRCUIT NUMBERS. CIRCUITING INFORMATION SHOWN IS BASED OF EXISTING DRAWINGS.

9.324 COORDINATE INSTALLATION OF RECEPTACLE WITH MILLWORK CONTRACTOR PRIOR TO ROUGH-IN.

9.325 PROVIDE FIRE ALARM INTERFACE INTO NEW SOUND SYSTEM TO SHUT DOWN SYSTEM UPON ACTIVATION OF FIRE ALARM SYSTEM. COORDINATE LOCATION WITH AV CONTRACTOR.



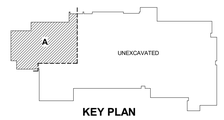
TRUE NORTH PLAN NORTH

1 LOWER LEVEL POWER & FA PLAN

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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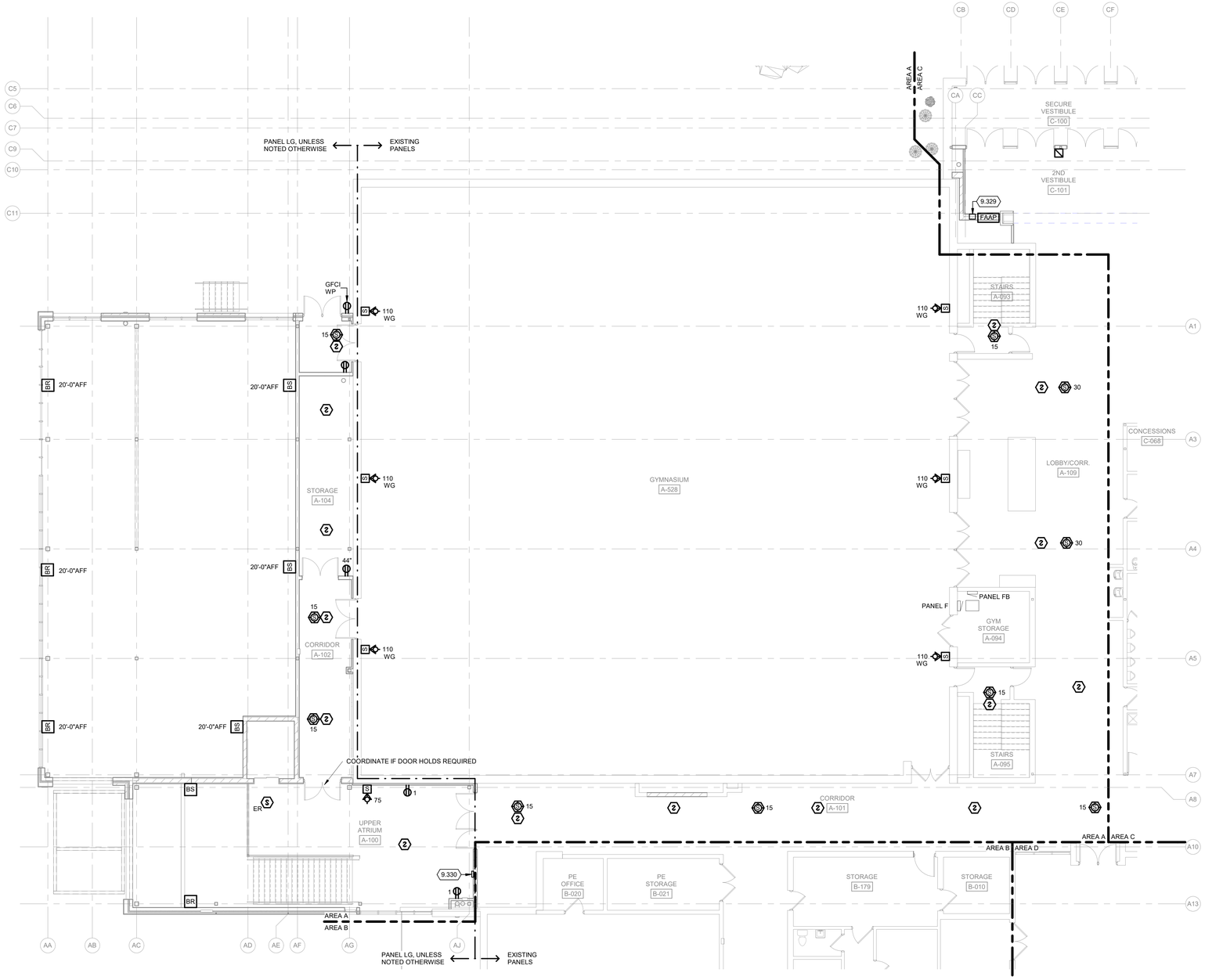
SHEET TITLE:
LOWER LEVEL POWER & FA PLAN

SHEET NUMBER:
2-EP-101



TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA PLAN - AREA A

1/8" = 1'-0"

POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.329 4-ZONE (2-WAY COMMUNICATION) CALL SYSTEM ANNUNCIATOR PANEL. REFER TO SPECIFICATION SECTION 26 32 02 FOR ADDITIONAL INFORMATION. POWER SUPPLY SHALL BE LOCATED ABOVE ACCESSIBLE CEILING.

9.330 2-WAY COMMUNICATION CALL STATION. REFER TO SPECIFICATION SECTION 26 32 02 FOR ADDITIONAL INFORMATION. REFER TO SHEET E-161 FOR LOCATION OF CALL SYSTEM ANNUNCIATOR PANEL.

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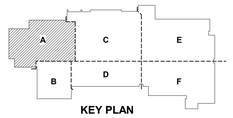
2019-04-16



KEY PLAN

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MANAWA, WI 54949

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CHECKED BY:	IMR

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SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA A

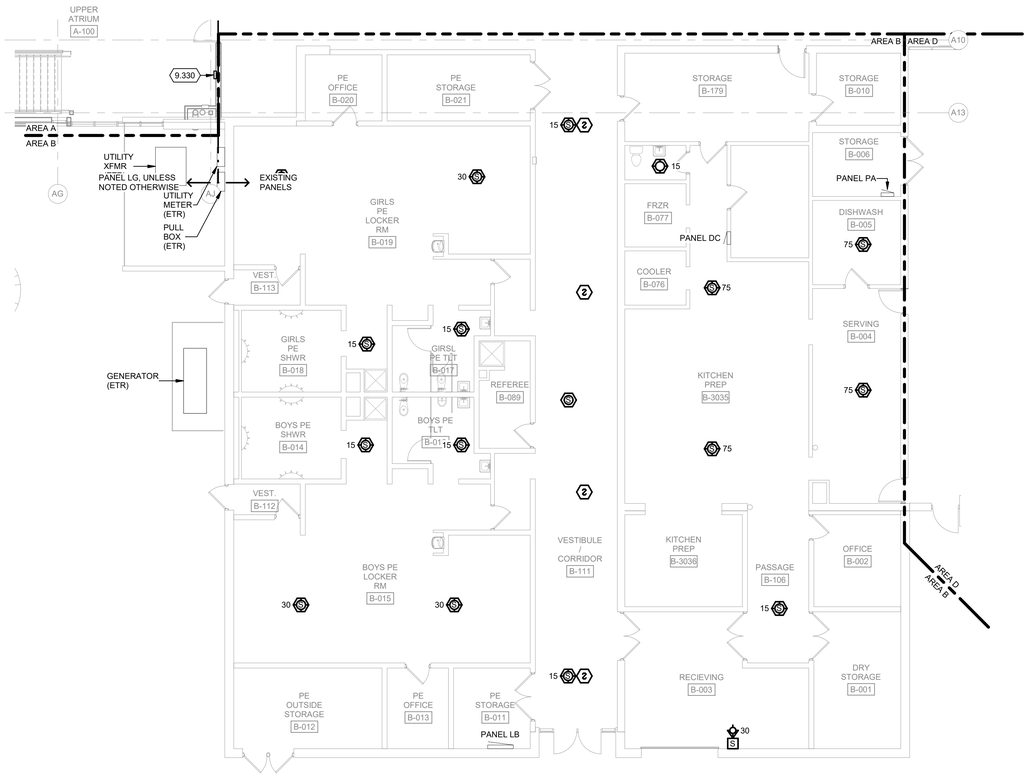
SHEET NUMBER:
2-EP-102

POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.330 2-WAY COMMUNICATION CALL STATION. REFER TO SPECIFICATION SECTION 26 32 02 FOR ADDITIONAL INFORMATION. REFER TO SHEET E-161 FOR LOCATION OF CALL SYSTEM ANNUNCIATOR PANEL.



TRUE NORTH PLAN NORTH

1 **FIRST FLOOR POWER & FA PLAN - AREA B**

1/8" = 1'-0"

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2019-04-16

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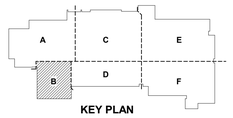

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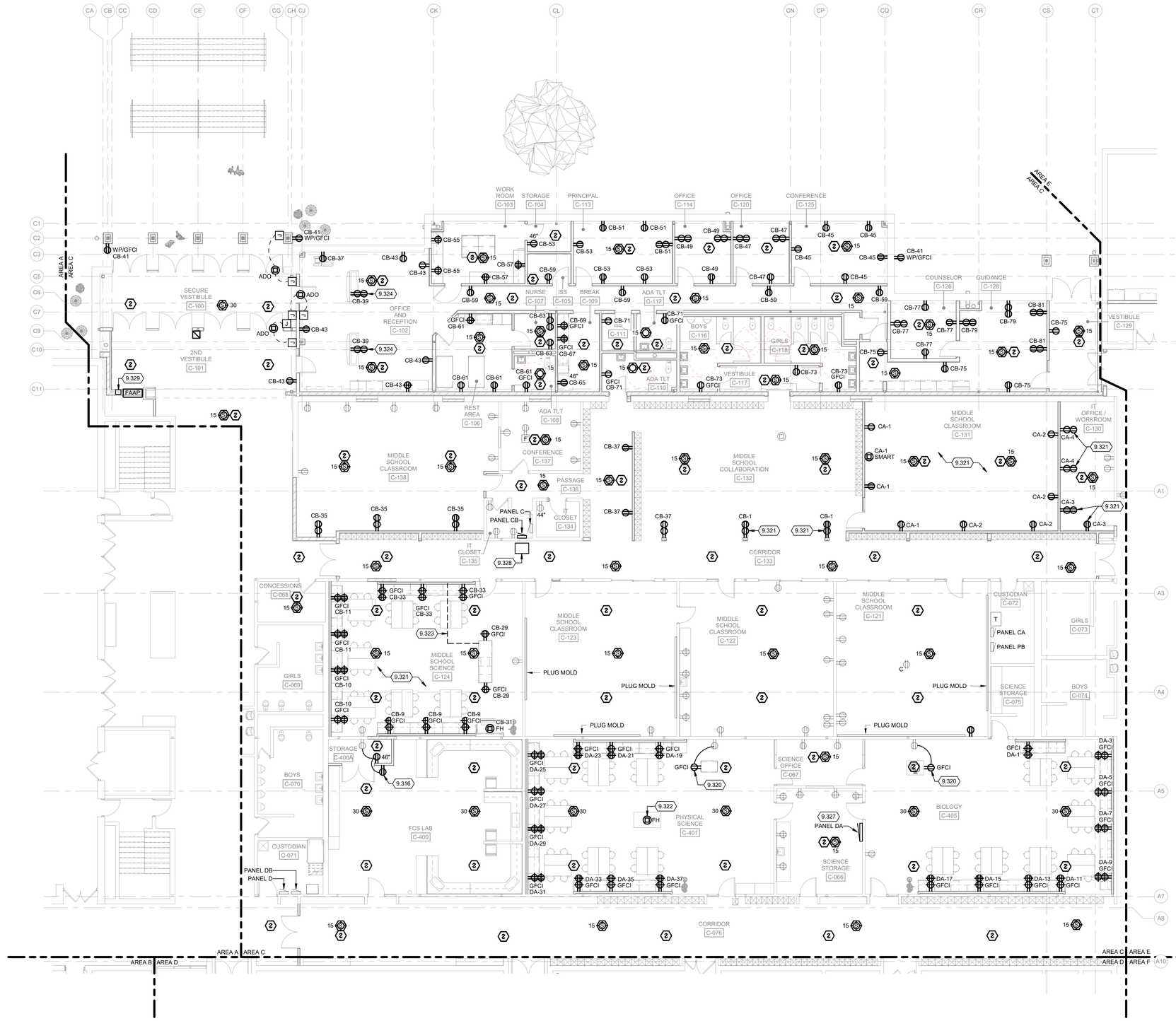
SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA B

SHEET NUMBER:
2-EP-103



TRUE NORTH PLAN NORTH

1 FIRST FLOOR POWER & FA PLAN - AREA C

1/8" = 1'-0"

POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.316 INTERCEPT EXISTING CIRCUIT AND EXTEND TO NEW RECEPTACLE.

9.320 COORDINATE INSTALLATION OF RECEPTACLE WITH MILLWORK CONTRACTOR. INTERCEPT EXISTING BRANCH CIRCUIT AND EXTEND VIA EXISTING UNDERGROUND CONDUIT PATH TO NEW RECEPTACLE.

9.321 INTERCEPT EXISTING CIRCUITS WHICH BECAME AVAILABLE UPON DEMOLITION AND EXTEND TO NEW RECEPTACLES. FIELD VERIFY EXISTING BRANCH CIRCUIT NUMBERS. CIRCUITING INFORMATION SHOWN IS BASED OF EXISTING DRAWINGS.

9.322 INTERCEPT EXISTING DISCONNECT FUME HOOD CIRCUIT AND EXTEND TO NEW FUME HOOD LOCATION.

9.323 INSTALL NEW BRANCH CIRCUIT TO DEMONSTRATION WORKSTATION IN SAME TRENCH AS PLUMBING PIPE. COORDINATE INSTALLATION OF RECEPTACLES WITH MILLWORK CONTRACTOR. COORDINATE INSTALLATION WITH PLUMBING CONTRACTOR.

9.324 COORDINATE INSTALLATION OF RECEPTACLE WITH MILLWORK CONTRACTOR PRIOR TO ROUGH-IN.

9.327 NEW PANELBOARD SHALL BE SURFACE MOUNTED OVER EXISTING FLUSH MOUNTED BACKBOX. REFER TO KEYED NOTE 9.030 ON SHEET 2-EPD-104 FOR ADDITIONAL INFORMATION.

9.328 TRAPEZE MOUNT RELOCATED TRANSFORMER ABOVE EXISTING CEILING.

9.329 4-ZONE (2-WAY COMMUNICATION) CALL SYSTEM ANNUNCIATOR PANEL. REFER TO SPECIFICATION SECTION 26 32 02 FOR ADDITIONAL INFORMATION. POWER SUPPLY SHALL BE LOCATED ABOVE ACCESSIBLE CEILING.

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2019-04-16

FOR BIDS
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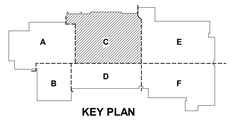
KEY PLAN



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SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA C

SHEET NUMBER:
2-EP-104

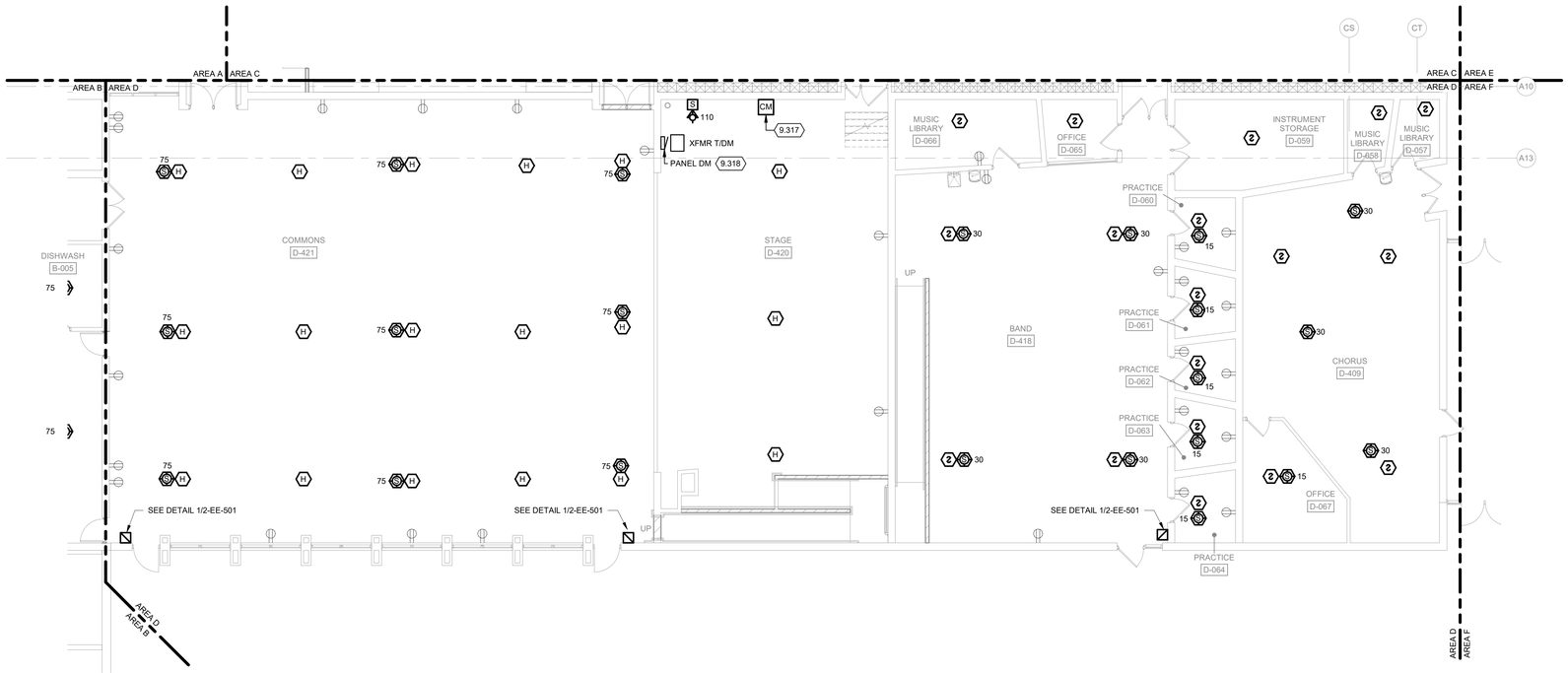
POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.317 PROVIDE FIRE ALARM INTERFACE INTO EXISTING SOUND SYSTEM TO SHUT DOWN SYSTEM UPON ACTIVATION OF FIRE ALARM SYSTEM.

9.318 DIMMING PANEL FURNISHED BY THEATRICAL EQUIPMENT INSTALLER, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. PANEL WILL BE ETC SENSOR IQ RACK (48 BREAKERS) WITH MAIN CIRCUIT BREAKER.



TRUE NORTH PLAN NORTH

FIRST FLOOR POWER & FA PLAN - AREA D

1/8" = 1'-0"

PRELIMINARY
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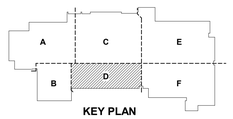
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA D

SHEET NUMBER:
2-EP-105

POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.302 UTILIZE (1) 120V CIRCUIT FROM PANEL 'LF' BECOMING AVAILABLE UPON DEMOLITION. PROVIDE 2#12, 1#12G. IN 1/2"C. FOR EACH GROUPING OF RECEPTACLES NOTED.

9.308 FOR BIDDING PURPOSES ASSUME NEMA 14-50R AND 3#6, 1#10G IN 1"C. COORDINATE FINAL INSTALLATION REQUIREMENTS OF ELECTRIC RANGE WITH OWNER.

9.309 PROVIDE SINGLE CHANNEL, STEEL SURFACE MOUNTED RACEWAY (WIREMOLD 700 OR EQUAL). PROVIDE RECEPTACLES AS INDICATED.

9.314 PROVIDE NEMA 14-30R FOR DRYER (COORDINATE WITH OWNER). PROVIDE 3#10, 1#10G IN 3/4" C BETWEEN RECEPTACLE AND PANEL LF-58,60. PROVIDE NEW 30A/2P (10KAIC) CIRCUIT BREAKER IN EXISTING SQUARE D PANELBOARD.

9.315 PROVIDE RED, LOCKABLE CIRCUIT BREAKER IN PANEL LF.

9.316 INTERCEPT EXISTING CIRCUIT AND EXTEND TO NEW RECEPTACLE.

TRUE NORTH PLAN NORTH

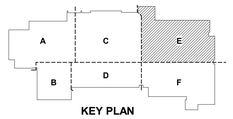
1 FIRST FLOOR POWER & FA PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION

KEY PLAN



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SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA E

SHEET NUMBER:
2-EP-106

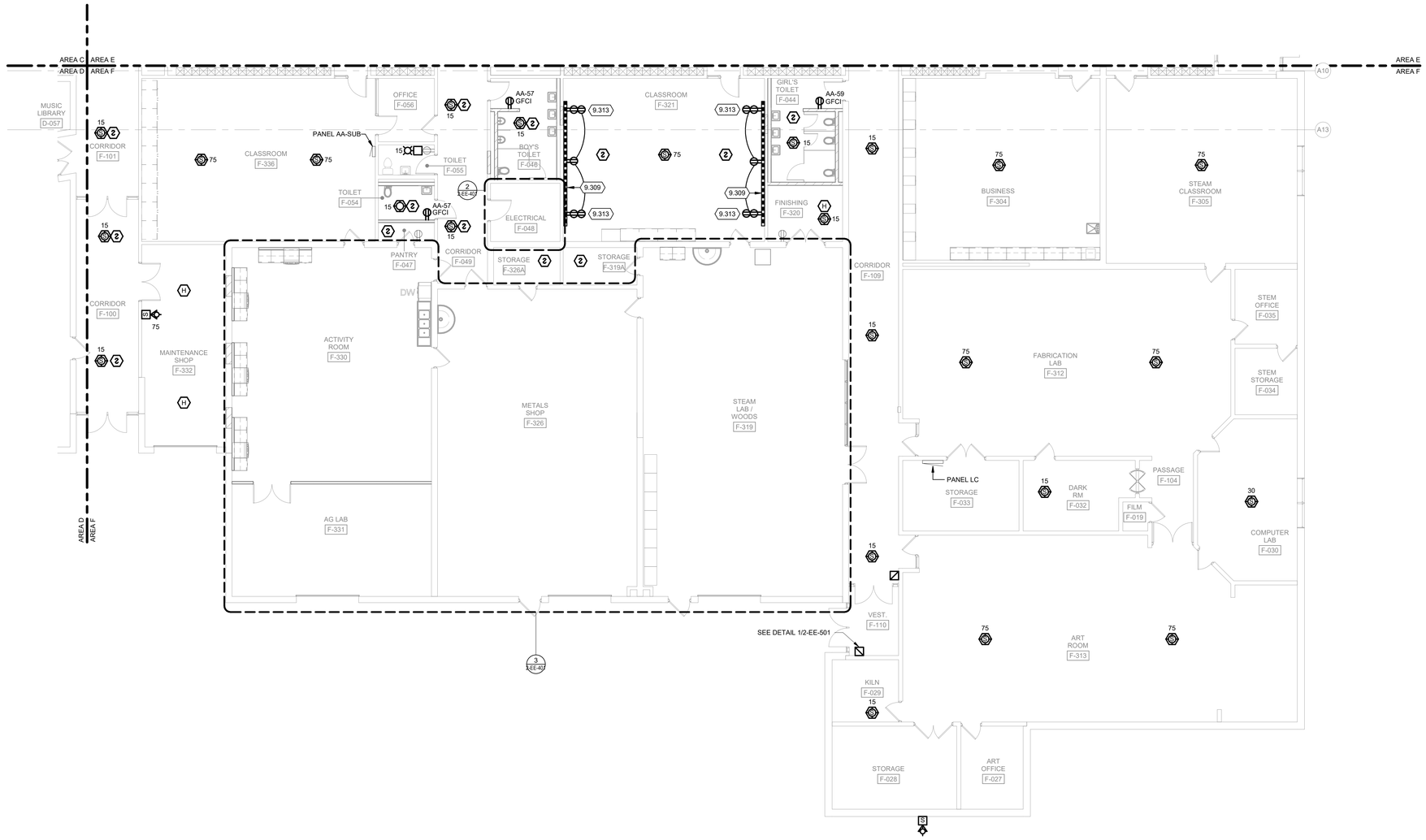
POWER GENERAL NOTES:

1. PROVIDE WIREMOLD 700 SERIES FOR NEW SURFACE MOUNTED FIRE ALARM DEVICES, UNLESS NOTED OTHERWISE. PAINT TO MATCH EXISTING WALL SURFACE/COLOR.
2. NOTES START HERE.

KEYED NOTES

9.309 PROVIDE SINGLE CHANNEL, STEEL SURFACE MOUNTED RACEWAY (WIREMOLD 700 OR EQUAL). PROVIDE RECEPTACLES AS INDICATED.

9.313 UTILIZE EXISTING BRANCH CIRCUIT TO SERVE NEW RECEPTACLES. INTERCEPT AND EXTEND AS REQUIRED.



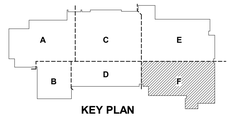
TRUE NORTH PLAN NORTH

1 FIRST FLOOR POWER & FA PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR POWER & FA PLAN - AREA F

SHEET NUMBER:
2-EP-107

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.201 MOUNT FIXTURE AT 9'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.202 MOUNT FIXTURE AT 8'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.203 MOUNT FIXTURE AT 44" ABOVE ELEVATOR PIT FLOOR MEASURED FROM BOTTOM OF FIXTURE.

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.

TRUE NORTH PLAN NORTH

LOWER LEVEL LIGHTING PLAN

1/8" = 1'-0"

PRELIMINARY
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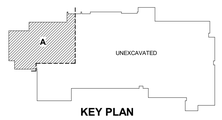
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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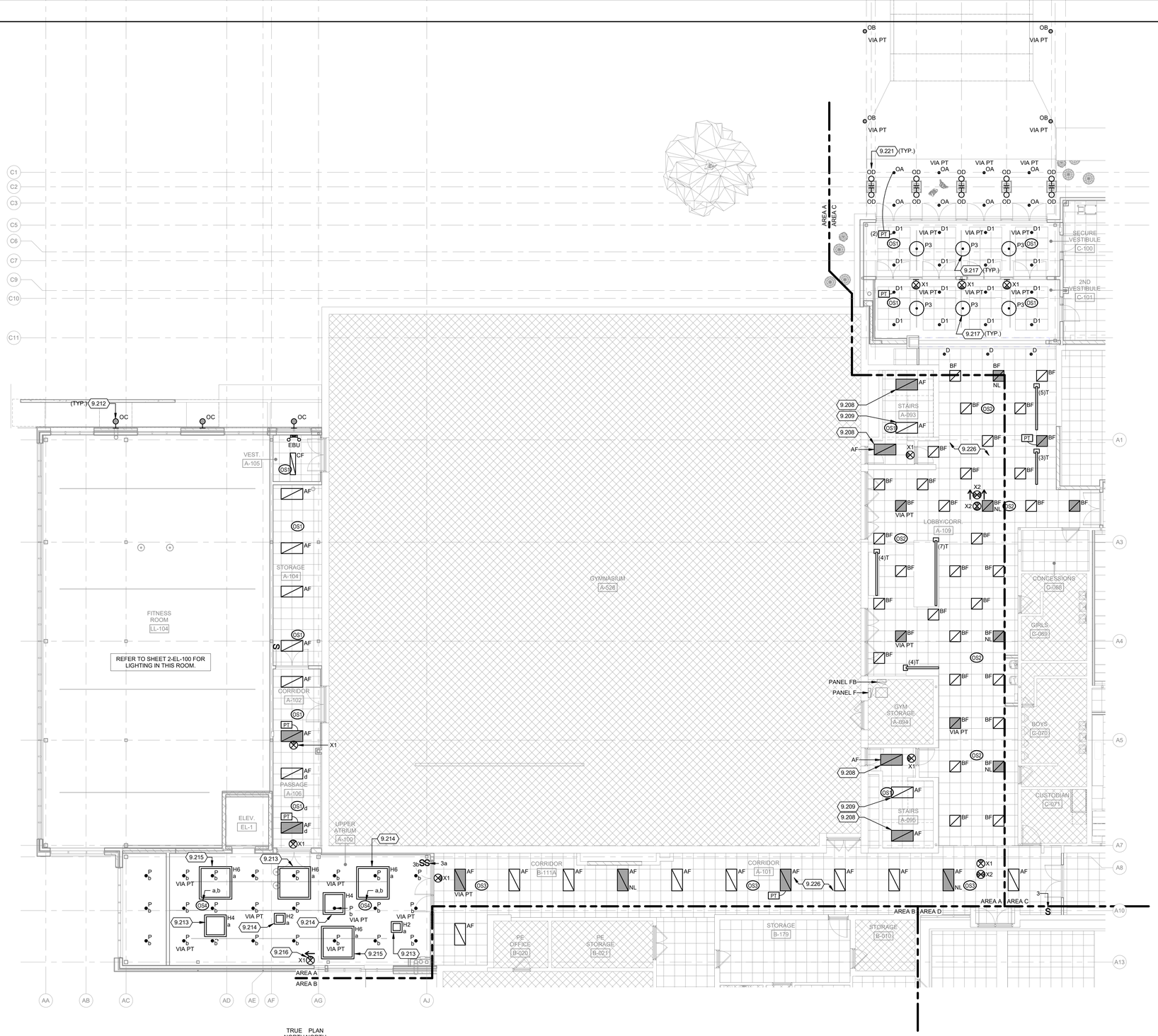
SHEET TITLE:
LOWER LEVEL LIGHTING PLAN

SHEET NUMBER:
2-EL-101



TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING PLAN - AREA A

1/8" = 1'-0"

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.208 RE-CONNECT TO EXISTING EMERGENCY LIGHTING CIRCUIT BECOMING AVAILABLE UPON DEMOLITION OF EXISTING LIGHT FIXTURES.

9.209 EXTEND NEAREST UN-SWITCHED LIGHTING CIRCUIT TO NEW FIXTURE.

9.212 MOUNT FIXTURE AT 9'-0" AFG MEASURED FROM BOTTOM OF FIXTURE.

9.213 MOUNT FIXTURE 4'-0" BELOW EXPOSED CEILING MEASURED FROM BOTTOM OF FIXTURE.

9.214 MOUNT FIXTURE 5'-0" BELOW EXPOSED CEILING MEASURED FROM BOTTOM OF FIXTURE.

9.215 MOUNT FIXTURE 6'-0" BELOW EXPOSED CEILING MEASURED FROM BOTTOM OF FIXTURE.

9.216 EXIT SIGN SHALL BE PENDANT MOUNTED SO THAT BOTTOM OF FIXTURE IS AT 9'-6" AFF.

9.217 MOUNT FIXTURE AT 14'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.221 MOUNT FIXTURE 2'-2" BELOW CANOPY MEASURED FROM BOTTOM OF FIXTURE.

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

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SHEET TITLE: FIRST FLOOR LIGHTING PLAN - AREA A

SHEET NUMBER: 2-EL-102

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION

KEY PLAN

LIGHTING GENERAL NOTES:

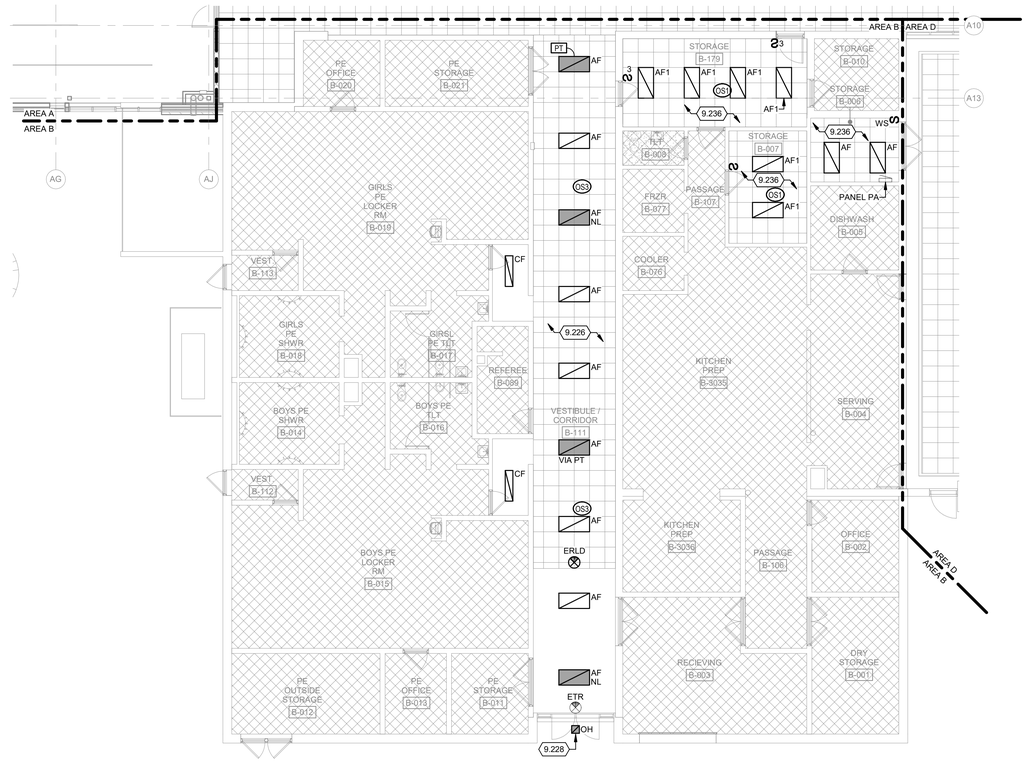
1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.228 INSTALL IN EXISTING OPENING AND RE-WIRE TO EXISTING BRANCH CIRCUIT.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.



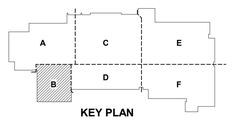
TRUE NORTH N PLAN NORTH N 1

FIRST FLOOR LIGHTING PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA B

SHEET NUMBER:
2-EL-103

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.201 MOUNT FIXTURE AT 9'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.202 MOUNT FIXTURE AT 8'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.222 MOUNT FIXTURE AT 10'-0" AFG MEASURED FROM BOTTOM OF FIXTURE.

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.

TRUE NORTH PLAN NORTH

1 FIRST FLOOR LIGHTING PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
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PROJECT NO: 18268	
CAD DWG FILE:	
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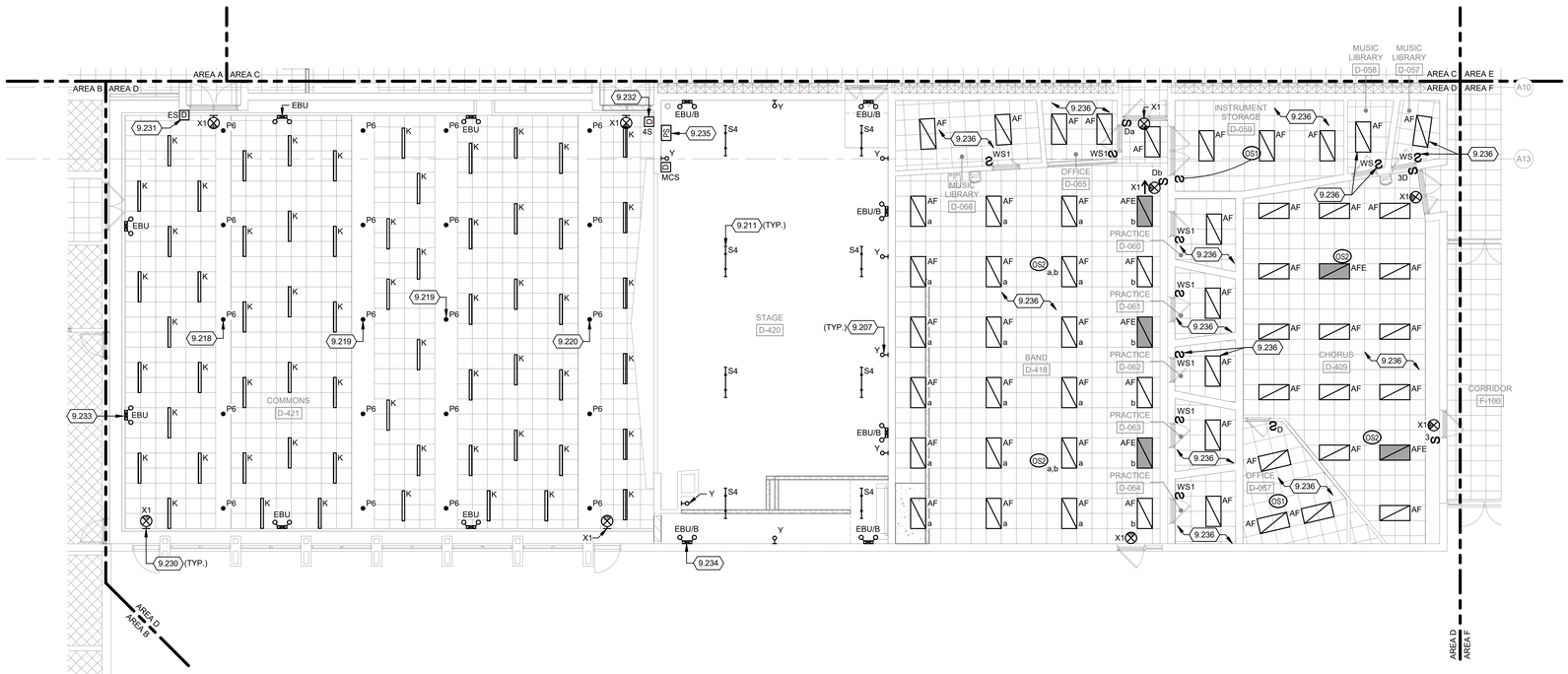
SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA C

SHEET NUMBER:
2-EL-104



TRUE NORTH PLAN NORTH

1 FIRST FLOOR LIGHTING PLAN - AREA D

1/8" = 1'-0"

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.207 MOUNT FIXTURE AT 20'-0" AFF MEASURED FROM BOTTOM OF FIXTURE. FIXTURE SHALL BE MOUNTED ON SURFACE MOUNTED, PAINTED BLACK CONDUIT. PROVIDE WITH ONE-ZONE POWER SUPPLY AND INSTALL POWER SUPPLY NEAR NEW DIMMER RACK PANEL.

9.211 MOUNT FIXTURE AT 15'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.218 MOUNT FIXTURE AT 14'-9" AFF MEASURED FROM BOTTOM OF FIXTURE. TYPICAL FOR ALL 'P6' PENDANTS IN THIS ROW.

9.219 MOUNT FIXTURE AT 16'-1" AFF MEASURED FROM BOTTOM OF FIXTURE. TYPICAL FOR ALL 'P6' PENDANTS IN THIS ROW.

9.220 MOUNT FIXTURE AT 16'-6" AFF MEASURED FROM BOTTOM OF FIXTURE. TYPICAL FOR ALL 'P6' PENDANTS IN THIS ROW.

9.230 RE-CONNECT TO THE EXISTING EMERGENCY LIGHTING CIRCUITING.

9.231 UTILIZE EXISTING BOX TO INSTALL NEW PRE-SET STATION. PROVIDE BLANK COVER PLATE FOR THE REMAINDER OF THE EXISTING BOX.

9.232 UTILIZE EXISTING BOX TO INSTALL NEW PRE-SET STATION. PROVIDE BLANK COVER PLATES FOR THE REMAINDER OF THE OPEN BOXES.

9.233 INSTALL UNITS ON THE VALANCE FASCIA, WIRE TO THE UN-SWITCHED LEG OF THE LIGHTING CIRCUIT SERVING WORK LIGHTS ON STAGE (TYPE S4). TYPICAL FOR ALL EBU'S LOCATED IN COMMONS D-421.

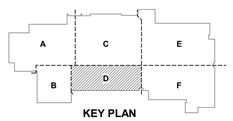
9.234 MOUNT FIXTURE AT 9'-6" AFF MEASURED FROM BOTTOM OF FIXTURE. TYPICAL FOR ALL EBU'S LOCATED IN STAGE D-420.

9.235 POWER SUPPLY FOR TYPE 'Y' FIXTURES. INSTALL AT 60" AFF. COORDINATE EXACT LOCATION IN FIELD.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA D

SHEET NUMBER:
2-EL-105

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.201 MOUNT FIXTURE AT 9'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.227 UTILIZE EXISTING NORMAL AND EMERGENCY LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.228 INSTALL IN EXISTING OPENING AND RE-WIRE TO EXISTING BRANCH CIRCUIT.

9.229 TRACK LIGHTS SHALL BE INSTALLED STAGGERED AT VARIOUS HEIGHTS, BUT NOT LOWER THAN 7'-2" AFF. CABLES ARE FIELD ADJUSTABLE. CONTRACTOR TO INSTALL PENDANTS RANDOMLY AND ALLOW TIME FOR FINAL ADJUSTMENT.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.

TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING PLAN - AREA E

1/8" = 1'-0"

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2019-04-16

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SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA E

SHEET NUMBER:
2-EL-106

LIGHTING GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES

9.201 MOUNT FIXTURE AT 9'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

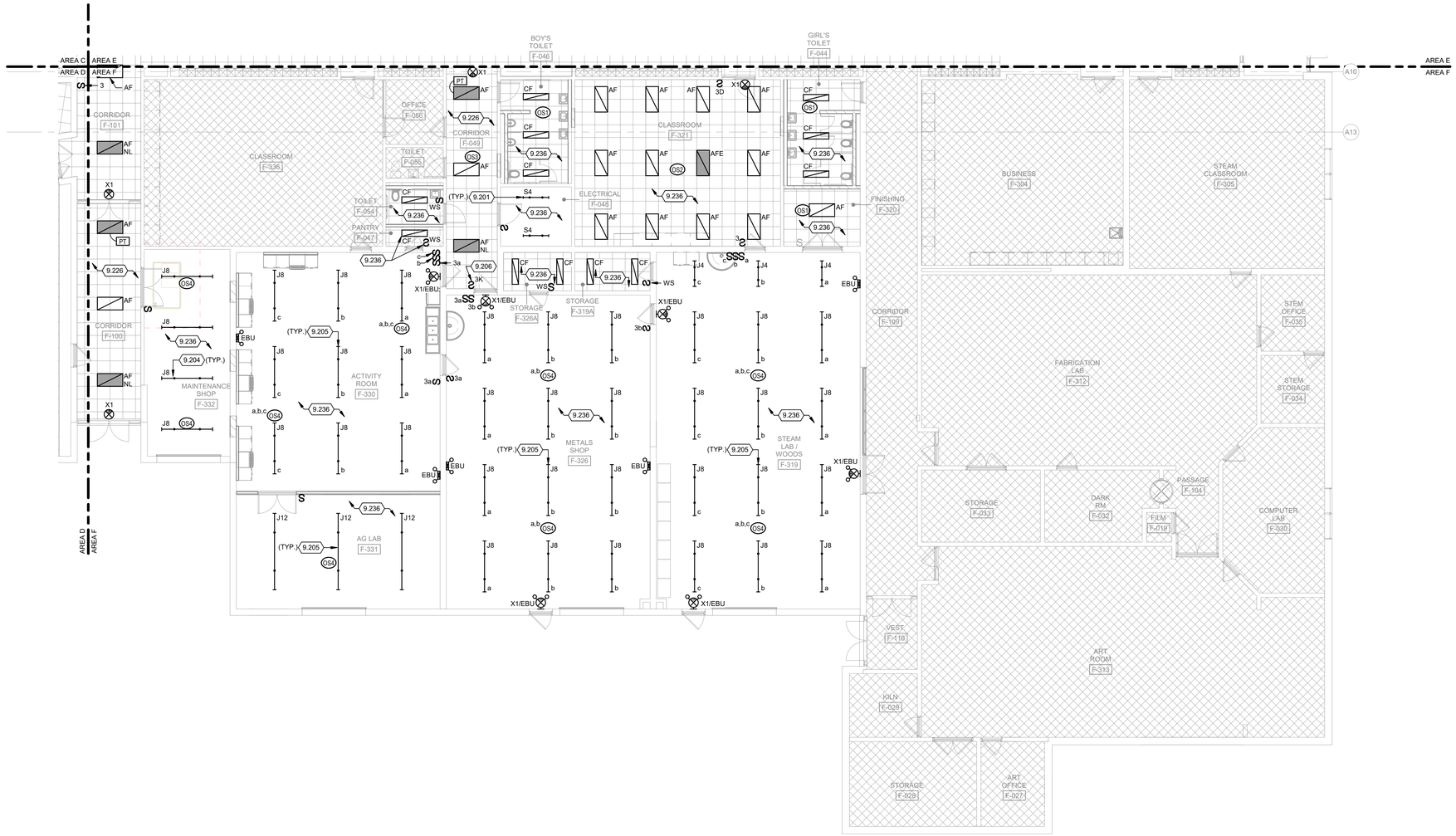
9.204 MOUNT FIXTURE AT 10'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.205 MOUNT FIXTURE AT 14'-0" AFF MEASURED FROM BOTTOM OF FIXTURE.

9.206 KEYED SWITCH SHALL BE LOCKED IN THE "ON" POSITION.

9.226 UTILIZE EXISTING NORMAL AND EMERGENCY BRANCH LIGHTING CIRCUITS IN PLACE. RE-ROUTE AND EXTEND AS REQUIRED TO SERVE NEW LIGHTING. PROVIDE AND PT DEVICE TO ALLOW EMERGENCY LIGHTS TO BE SWITCHED ALONG WITH NORMAL LIGHTS. FIXTURES DESIGNATED WITH "NL" SHALL BE WIRED TO THE EMERGENCY LIGHTING CIRCUIT.

9.236 ALL WIRING BETWEEN NEW LIGHTING CONTROL DEVICES AND LIGHT FIXTURES SHALL BE NEW. EXISTING BRANCH CIRCUIT SHALL BE EXTENDED FROM ABOVE CEILING JUNCTION BOX TO THE NEW LIGHT FIXTURES. REFER TO DEMOLITION LIGHTING PLANS FOR DEMOLITION REQUIREMENTS IN THIS ROOM.



TRUE NORTH PLAN NORTH

FIRST FLOOR LIGHTING PLAN - AREA F

1/8" = 1'-0"

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2019-04-16

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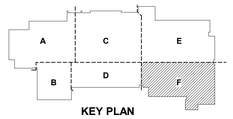

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SHEET TITLE:
FIRST FLOOR LIGHTING PLAN - AREA F

SHEET NUMBER:
2-EL-107

KEYED NOTES

9.016 REMOVE EXISTING TRAPEZE MOUNTED TRANSFORMER.

9.017 DE-ENERGIZE AND DISCONNECT EXISTING PANELBOARD AA. EXISTING BRANCH CIRCUITS SHALL REMAIN FOR RE-TERMINATION ON NEW PANELBOARD UNLESS NOTED OTHERWISE. FOR BIDDING PURPOSES ASSUME THE DISCONNECTION AND RE-TERMINATION OF TWENTY (20) - 20A/1P CIRCUITS, (1) - 40A/2P CIRCUIT, AND (1) - 60A/2P CIRCUIT.

9.018 DE-ENERGIZE AND DISCONNECT EXISTING PANELBOARD PC. EXISTING BRANCH CIRCUITS SHALL REMAIN FOR RE-TERMINATION ON NEW PANELBOARD UNLESS NOTED OTHERWISE. FOR BIDDING PURPOSES ASSUME THE DISCONNECTION AND RE-TERMINATION OF (9) - 15A/3P CIRCUITS, (1) - 30A/3P CIRCUIT, AND (2) - 60A/3P CIRCUIT.

9.019 DE-ENERGIZE AND DISCONNECT EXISTING PANELBOARD A. EXISTING BRANCH CIRCUITS SHALL REMAIN FOR RE-TERMINATION ON NEW PANELBOARD UNLESS NOTED OTHERWISE. FOR BIDDING PURPOSES ASSUME THE DISCONNECTION AND RE-TERMINATION OF TWENTY (20) - 20A/1P CIRCUITS

9.304 CONTROL MODULES SHALL BE FOR ELEVATOR PRIMARY RECALL, SECONDARY RECALL AND FIREFIGHTERS HAT OPERATION.

9.306 ENGRAVE SWITCH WALLPLATE WITH "DISHWASHER".

9.307 COORDINATE INSTALLATION OF RECEPTACLES AND CONDUIT ROUTING WITH MILLWORK CONTRACTOR. PROVIDE (2) TWO - 1" CONDUITS ROUTED OVERHEAD FROM PANEL INTO CHASE BEHIND CABINETS TO SERVE ELECTRIC RANGE, EXHAUST HOOD/LIGHT AND WORKSTATION ABOVE COUNTER RECEPTACLES.

9.308 FOR BIDDING PURPOSES ASSUME NEMA 14-50R AND 3#6, 1#10G IN 1"C. COORDINATE FINAL INSTALLATION REQUIREMENTS OF ELECTRIC RANGE WITH OWNER.

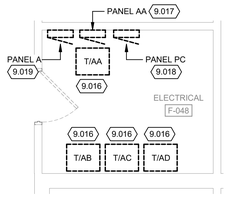
9.309 PROVIDE SINGLE CHANNEL, STEEL SURFACE MOUNTED RACEWAY (WIREMOLD 700 OR EQUAL). PROVIDE RECEPTACLES AS INDICATED.

9.310 INTERCEPT EXISTING CIRCUITS INDICATED IN KEYED NOTE 9.017 (SHEET 2-EE-401) AND EXTEND TO NEW PANELBOARD AA LOCATION. PROVIDE WIREWAY ON WALL (SIZED AS REQUIRED).

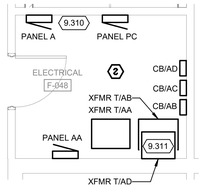
9.311 WALL MOUNTED TRANSFORMER 'T/AD' ABOVE TRANSFORMER 'T/AB'.

9.312 PROVIDE NEW WIRING BETWEEN PANEL AC AND WELDING OUTLETS. TERMINATE NEW WIRING ON EXISTING SO CORDS AT CEILING IN EXISTING JUNCTION BOXES. INTERCEPT EXISTING CONDUIT AT CEILING AND EXTEND TO NEW PANEL AC LOCATION.

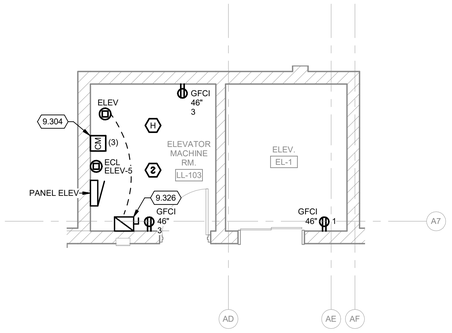
9.326 PROVIDE 2#12, 1#12G IN 1/2"C. BETWEEN PANEL IN THIS ROOM AND SHUNT TRIP COIL IN ELEVATOR DISCONNECT.



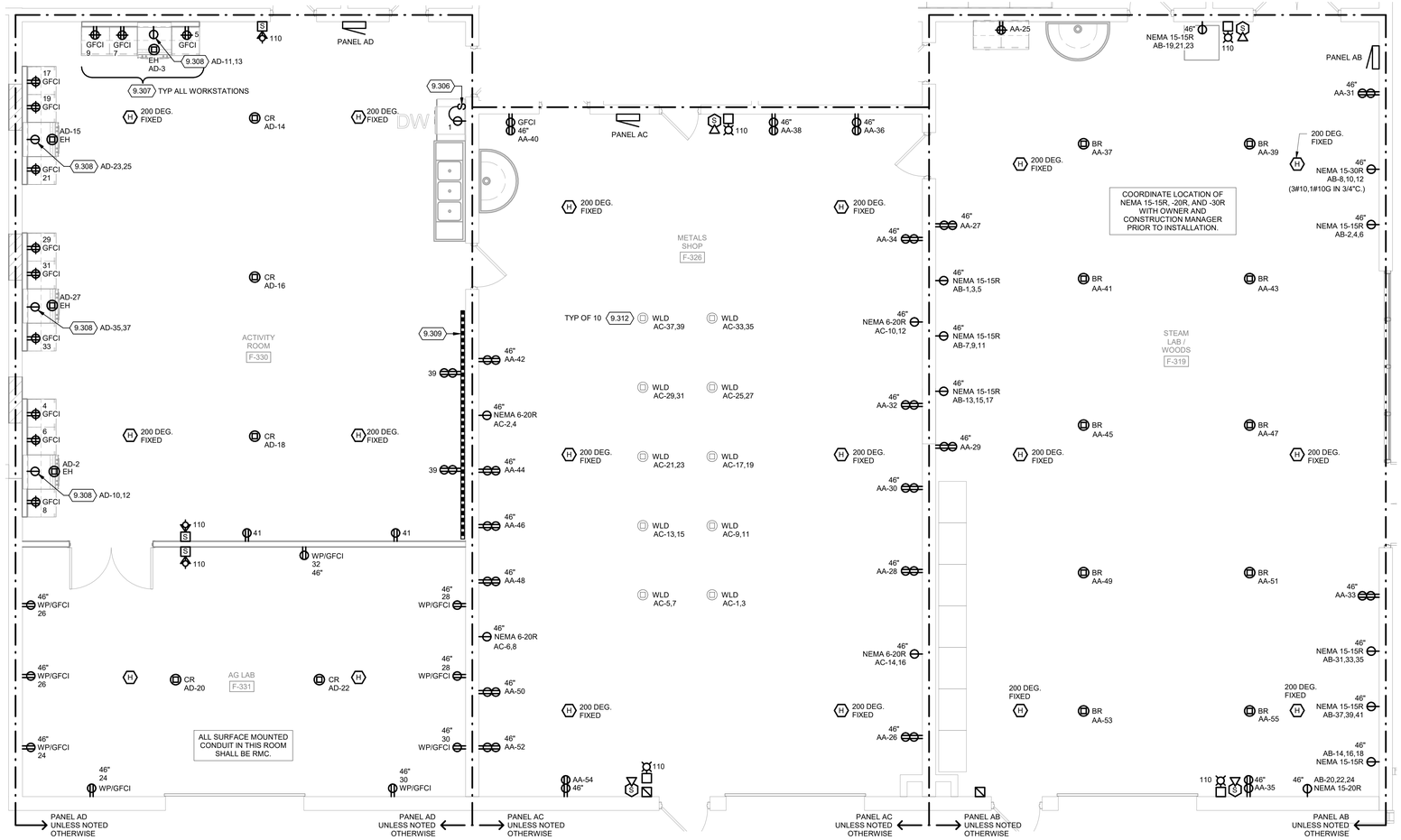
4 ENLARGED ELECTRICAL F-048 DEMOLITION
1/4" = 1'-0"



2 ENLARGED ELECTRICAL F-048
1/4" = 1'-0"



1 ENLARGED PLAN - ELEVATOR MACHINE RM LL-103
1/4" = 1'-0"



3 ENLARGED LABS
1/4" = 1'-0"

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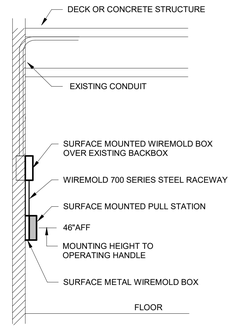
SHEET TITLE:
ENLARGED PLAN

SHEET NUMBER:
2-EE-401



1 PULL STATION MOUNTING - SURFACE - MECH SPACES
NO SCALE

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2019-04-16

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SHEET TITLE:
DETAILS

SHEET NUMBER:
2-EE-501

OCCUPANCY/VACANCY/PHOTO SENSOR SCHEDULE

SENSOR ID	VOLTAGE	TECHNOLOGY		PATTERN	COVERAGE AREA	DESCRIPTION	MOUNTING	KEYED NOTE (TO BE SELECTED AS NEEDED)
		PIR	MICRO					
WS	120/277	X	X	180	UP TO 800 SF	SINGLE-POLE, WALL MOUNT SWITCH TYPE OCCUPANCY SENSOR. CAT# WSX PDT AUTO-ON OR VACANCY	WALL	1, 3
WS1	120/277	X	X	180	UP TO 800 SF	SINGLE-POLE, WALL MOUNT SWITCH TYPE DIMMING OCCUPANCY SENSOR. CAT# WSX D; 0-10 VOLT,1% ELDO DRIVER COMPATIBLE	WALL	1, 2
OS1	12-24V	X	X	360	UP TO 500 SF	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY; CAT # CM PDT, SMALL MOTION	CEILING	4, 5, 6
OS2	12-24V	X	X	360	UP TO 2000 SF	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY; CAT # CM PDT, LARGE MOTION	CEILING	4, 5, 6
OS3	12-24V	X	X	360	UP TO 28' @9' MH ; UP TO 36' @ 15' MH	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY, CAT#CM PDT, HALLWAYS	CEILING	2, 6
OS4	12-24V	X		360	UP TO 20' @ 15' MH; UP TO 30' @ 45' MH	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY, CAT#CM 6, HIGH BAY	CEILING	6
OS5	12-24V	X	X	120	8'-10' MH	WIDE VIEW CORNER MOUNTED WITH BRACKET, CAT # WV VR PDT 16 - LARGE MOTION UP TO 70'	WALL/ CORNER	2, 6
OS6	12-24V	X	X	120	8'-10' MH	WIDE VIEW CORNER MOUNTED WITH BRACKET, CAT # WV VR PDT 16 - SMALL MOTION UP TO 40'	WALL/ CORNER	2, 6
OS7	12-24V	X	X	120	8'-10' MH	SAME AS OS5 EXCEPT WITH CEILING CORNER BRACKET	CEILING/ CORNER	2, 6
OS8	12-24V	X	X	120	8'-10' MH	SAME AS OS6 EXCEPT WITH CEILING CORNER BRACKET	CEILING/ CORNER	2, 6
OS9	12-24V	X	X	360	UP TO 500 SF	SAME AS OS EXCEPT FAIL-ON	CEILING	4, 5, 6
OS10	12-24V	X	X	360	UP TO 500 SF	CEILING MOUNTED PROGRAMMABLE WITH ADJUSTABLE TIME DELAY; HIGH HUMIDITY AND WET LOCATION LISTED	CEILING	4, 5, 6
DS	12-24V	N/A	N/A	N/A		SINGLE ZONE DAYLIGHT SENSOR WITH SELECTABLE ON/OFF OR DIMMING APPLICATION, CAT # CM PC ADC	CEILING	7
PE	12-24V	N/A	N/A	N/A		0 FC (MIN) TO 50-750 FC (MAX) OUTDOOR PHOTOCELL INSTALLED IN APPROPRIATELY RATED ENCLOSURE	ROOF	8

GENERAL NOTES:

1. COLOR OF DEVICES SHALL BE COORDINATED/MATCHING COLOR OF RECEPTACLES AND SWITCHES AS IDENTIFIED IN SPECIFICATION SECTION 26 27 26
2. PROVIDE ADEQUATE SUPPORT FOR CONTROL WIRING, REFER TO WIRING DIAGRAMS SUPPLIED WITH SELECTED DEVICES. FOLLOW MANUFACTURER INSTRUCTIONS
3. FOR ADDITIONAL INFORMATION REFER TO SPECIFICATION SECTION 26 09 42.23.
4 ALL LOW VOLTAGE SENSORS SHALL BE PROVIDED WITH 20A RATED POWER PACKS WITH ZERO CROSS SWITCHING TECHNOLOGY AND MANUAL ON MODE
5 PROVIDE 8' OF ADDITIONAL WIRING ABOVE ACCESSIBLE CEILING.
6 ALL POWER PACKS AND SLAVE PACKS SHALL BE INSTALLED IN APPROVED ENCLOSURES RATED FOR THE ENVIROMENTAL SPACES WHERE THEY ARE INSTALLED
7 WHERE OCCUPANCY SENSORS CONTROLLING LIGHTS OF A DIFFERENT VOLTAGES A SEPARATE POWER/SLAVE PACK SHALL BE PROVIDED.
8 POWER PACKS ARE NOT SHOWN ON THE PLANS, IT SHALL BE CONTRACTOR/SUPPLIER RESPONSIBIILTY TO VERIFY AND COORDINATE ALL REQURIED QUANTITIES.
9 WHERE DAYLIGHT HARVESTING IS SELECTED - PROVIDE ALL REQUIRED LABOR TO SET UP DAYTIME AND NIGHT TIME TRESHOLDS PER MANUFACTURER RECOMMENDATIONS
10. SENSOR SWITCH MANUFACTURER CAT # /SERIES ARE SHOWN IN THIS SCHEDULE AS A BASIS OF DESIGN - REFER TO SPECIFICATION SECTION 26 09 23 FOR ACCEPTABLE SUBSTITUTIONS.

KEYED NOTES:

1. SMALL MOTION DETECTION
2. INTEGRATED PHOTOCELL OPTION
3. INTEGRATED PHOTOCELL IS DISABLED, REFER TO LIGHTING PLANS FOR DAYLIGHT HARVESTING INTENT AND ENABLE PHOTOCELL OPERATION AS INDICATED
4. OCCUPANCY CONTROLLED DIMMING
5. INTEGRATED PHOTOCELL WITH DIMMING CAPABILITY
6. PROVIDE WITH AUXILLARY RELAY
7. INSTALL WITHIN 3'-4' FROM THE WINDOW, PROVIDE WITH POWER PACK.
8. EXTERIOR PHOTOCELL WIRED VIA LOW VOLTAGE LIGHTING CONTROL PANEL LCP AND/OR DIMMER RACK PANEL. REFER TO RESPECTIVE LIGHTING CONTROL SCHEDULES FOR COORDINATION.

LUMINAIRE SCHEDULE

NOTE: SEE SPECIFICATION FOR ADDITIONAL INFORMATION REGARDING LUMINAIRE AND INSTALLATION REQUIREMENTS. PROVIDE OPTIONS AND ACCESSORIES REFERENCED BY THE COLUMN TITLED " OPTIONS/ACCESSORIES". MANUFACTURERS LISTED ACCEPTABLE SHALL MEET ALL REQUIREMENTS AND FEATURES INDICATED. ACCEPTABLE MANUFACTURERS MUST MEET THE PHOTOMETRIC PERFORMANCE OF THE LISTED UNIT.

ABBREVIATIONS: GWB = GYPSUM WALL BOARD; ES = EXPOSED STRUCTURE; LG = LAY-IN GRID; P = PENDANT; PLAS = PLASTER; PL = POLE MOUNTED; R = RECESSED; S = SURFACE; UNV = UNIVERSAL VOLTAGE; V = VARIES; W = WALL MOUNTED

DES.	MANUFACTURER	CATALOG SERIES	DESCRIPTION	LAMP DATA	VOLTAGE	BALLAST/ DRIVER	MOUNT	CEILING TYPE	FIXTURE DEPTH	LED SYSTEM INPUT WATTAGE	LED DELIVERED LUMENS	OPTIONS / ACCESSORIES	ACCEPTABLE MANUFACTURERS	KEYED NOTE
A	METALUX	24CZ2-50-S-UNV-GL-L850-CD1-U	2' X 4' VOLUMETRIC TROFFER	LED, 5000K	UNV	B	R	LG	3-1/4"	48.6	5,340			
AF	METALUX	24FP4750C	2' X 4' LED FLAT PANEL	LED, 5000K	UNV	A	R	LG	1-3/4"	40.3	5,005			
AFE	METALUX	24FP4750C-EL14W	SAME AS TYPE 'AF' EXCEPT WITH EMERGENCY BATTERY OPTION	LED, 5000K	UNV	A	R	LG	1-3/4"	40.3	5,005			
AF1	METALUX	24FP4750C-IPX5	SAME AS TYPE 'AF' EXCEPT IP5X RATED	LED, 5000K	UNV	A	R	LG	1-3/4"	40.3	5,005			
B	METALUX	22CZ2-44-S-UNV-GL-L840-CD1-U	2' X 2' VOLUMETRIC TROFFER	LED, 5000K	UNV	B	R	LG	3-1/4"	42.7	4,711			
BE	METALUX	22CZ2-44-S-UNV-GL-EL14W-L840-CD1-U	SAME AS TYPE 'B' EXCEPT WITH EMERGENCY BATTERY OPTION	LED, 5000K	UNV	B	R	LG	3-1/4"	42.7	4,711			
BF	METALUX	22FP3250C	2' X 2' LED FLAT PANEL	LED, 5000K	UNV	A	R	LG	1-3/4"	29.5	3,150			
CF	METALUX	14FP4250C	1' X 4' LED FLAT PANEL	LED, 5000K	UNV	A	R	LG	1-3/4"	38.9	4,521			
D	PORTFOLIO	LD4B-15-D010-EU4B-1020-80-40-4LB-M1-H	4" DIAMETER LED DOWNLIGHT	LED, 4000K	UNV	B	R	LG	5-1/2"	15.5	1,500			
D1	PORTFOLIO	LD4B-20-D010-EU4B-1020-80-40-4LB-M1-H	SAME AS TYPE 'D' EXCEPT LUMEN OUTPUT	LED, 4000K	UNV	B	R	LG	5-1/2"	21.2	2,000			
D4	PORTFOLIO	LD4B-20-D010TR-EU4B-1020-80-40-LWW-1IH-HB26	4" DIAMETER LED DOWNLIGHT WALLWASH	LED, 4000K	UNV	C	R	LG	5-1/2"	21.2	2,000			
D5	HALO	H457-TAT-E010-EL406-9-40-TL402SNS	4" DIAMETER LED DOWNLIGHT (SHOWER RATED)	LED, 4000K	UNV	D	R	GWB	5-1/2"	11	1,000	13		
F4	LF ILLUMINATION	GSA-05L-9040-LN-48"-WW	0.79" X 4' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F10	LF ILLUMINATION	GSA-05L-9040-LN-60"-WW	0.79" X 10' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F12	LF ILLUMINATION	GSA-05L-9040-LN-144"-WW	0.79" X 12' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F14	LF ILLUMINATION	GSA-05L-9040-LN-168"-WW	0.79" X 14' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F16	LF ILLUMINATION	GSA-05L-9040-LN-192"-WW	0.79" X 16' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F22A	LF ILLUMINATION	GSA-05L-9040-LN-96"-168"-WW-2WY	0.79" X 22' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
F24	LF ILLUMINATION	GSA-05L-9040-LN-288"-WW	0.79" X 24' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
G	METALUX	LHB-18-UNV-L850-CD-U-LHB-PMK	12-5/8" X 2' LINEAR LED HIGH BAY	LED, 5000K	UNV	D	P	ES	3-5/8"	132	18,000			
H2	LF ILLUMINATION	GSA-05L-9040-LN-024-WW-2WY	2' X 2' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
H4	LF ILLUMINATION	GSA-05L-9040-LN-048-WW-2WY	4' X 4' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
H6	LF ILLUMINATION	GSA-05L-9040-LN-072-WW-2WY	6' X 6' LINEAR LED PENDANT	LED, 4000K	UNV	D	P	LG	2-1/4"	5 / FT	400 / FT			
J4	METALUX	4VT3-8-W-UNV-L850-CD1-SSL-VT3-SS-VBK-U	5-7/8" X 4' LED INDUSTRIAL VAPORTITE PENDANT	LED, 5000K	UNV	D	P	ES	3-5/8"	70	9,552	38		
J8	METALUX	4VT3-8-W-UNV-L850-CD1-SSL-VT3-SS-VBK-U	5-7/8" X 8' LED INDUSTRIAL VAPORTITE PENDANT	LED, 5000K	UNV	D	P	ES	3-5/8"	70 / 4FT	9,552 / 4FT	38		
J12	METALUX	4VT3-8-W-UNV-L850-CD1-SSL-VT3-SS-VBK-U	5-7/8" X 12' LED INDUSTRIAL VAPORTITE PENDANT	LED, 5000K	UNV	D	P	ES	3-5/8"	70 / 4FT	9,552 / 4FT	38		
K	AXIS LIGHTING	MBSLED-500-80-S-4'-W-120-DP-1	2-3/8" X 4' LINEAR LED	LED, 4000K	120	B	S	LG	4-11/16"	4.54 / FT	500 / FT			
P	LUMINIS	AR168-L1L40-38W-4018-80-4000K-277V-WHT-STM	6" DIAMETER CYLINDER LED PENDANT (12" STEM LENGTH)	LED, 4000K	277	B	P	ES	12.1"	38	4,018			
P1R	TECH LIGHTING	700-FIRF-MO-R-S-LEDS930	4.5" DIAMETER DECORATIVE RED GLASS LED PENDANT	LED, 3000K	UNV	D	P	TRACK	7.3"	8	300			1
P1W	TECH LIGHTING	700-FIRF-MO-W-S-LEDS930	4.5" DIAMETER DECORATIVE WHITE GLASS LED PENDANT	LED, 3000K	UNV	D	P	TRACK	7.3"	8	300			1
P3	LF ILLUMINATION	RINGER-32L-8030-DMU-SS	32" DIAMTER LED RING PENDANT	LED, 3000K	UNV	D	P	ES	2"	32	2,560			
P6	LUMINIS	AR168-L1L40-38W-4018-80-4000K-277V-DGT-DMX/RDM-DSPG	6" DIAMETER CYLINDER LED PENDANT	LED, 4000K	277	DMX	P	ES	12.1"	38	4,018			3
S4	METALUX	4SNLED-LD5-41SL-LC-UNV-L850-CD1-U-AYC-CHAIN/SET	3" X 4' LINEAR LED STRIP	LED, 5000K	UNV	A	V	V	3-11/16"	31	4,269			
S4E	METALUX	4SNLED-LD5-41SL-LC-UNV-EL14W-L850-CD1-U-AYC-CHAIN/SET	SAME AS TYPE 'S4' EXCEPT WITH INTEGRAL BATTERY OPTION	LED, 5000K	UNV	A	V	V	3-11/16"	31	4,269			
T	HALO	L-806SM-NF-80-40-P	ADJUSTABLE LED TRACK HEAD SYSTEM	LED, 4000K	UNV	D	S	TRACK	4.52"	12	1,073			2
Y	ETC	BS-D-B-F	BLUE DOME LUMINAIRE	LED	UNV	DMX	W	-	1.42"	3	-			

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SHEET TITLE:
SCHEDULES

SHEET NUMBER:
2-EE-601

LUMINAIRE SCHEDULE

NOTE: SEE SPECIFICATION FOR ADDITIONAL INFORMATION REGARDING LUMINAIRE AND INSTALLATION REQUIREMENTS. PROVIDE OPTIONS AND ACCESSORIES REFERENCED BY THE COLUMN TITLED " OPTIONS/ACCESSORIES". MANUFACTURERS LISTED ACCEPTABLE SHALL MEET ALL REQUIREMENTS AND FEATURES INDICATED. ACCEPTABLE MANUFACTURERS MUST MEET THE PHOTOMETRIC PERFORMANCE OF THE LISTED UNIT.

ABBREVIATIONS:
GWB = GYPSUM WALL BOARD; ES = EXPOSED STRUCTURE; LG = LAY-IN GRID; P = PENDANT; PLAS = PLASTER; PL = POLE MOUNTED; R = RECESSED; S = SURFACE; UNV = UNIVERSAL VOLTAGE; V = VARIES; W = WALL MOUNTED

DES.	MANUFACTURER	CATALOG SERIES	DESCRIPTION	LAMP DATA	VOLTAGE	BALLAST/ DRIVER	MOUNT	CEILING TYPE	FIXTURE DEPTH	LED SYSTEM INPUT WATTAGE	LED DELIVERED LUMENS	OPTIONS / ACCESSORIES	ACCEPTABLE MANUFACTURERS	KEYED NOTE
Z	FAIL-SAFE	HVSL4-LD4-2-STD-50-UNV-EDC1-ALHA	4" X 4' LED VANDAL RESISTANT LINEAR	LED, 5000K	UNV	H	W	-	3.31"	67.6	6,541			
OA	LF ILLUMINATION	5911-1AA-T-13C-8040-M-DMU-SS	5" DIAMETER EXTERIOR LED DOWNLIGHT	LED, 4000K	UNV	D	R	PLAS	7.36"	13	1,506	38		
OB	FC LIGHTIING	FCB8C-UNV-39-LED-4K-1464-BZ-LD	7.87" DIAMETER LED EXTERIOR BOLLARD	LED, 4000K	UNV	A	S	-	39-1/2"	30	1,610	38		
OC	RAB LIGHTING	WPLED26N	EXTERIOR LED WALL PACK	LED, 4000K	UNV	A	W	-	9-1/4"	26	3,527	38		
OD	AMETRIX	ASYX-WM-S-L-OD-U-W-1-UNV-Z-C-STD-FM	EXTERIOR LED INDERIECT WALL PACK	LED, 4000K	UNV	A	W	-	12-3/4"	28	3,355	38		
OH	BARRON LIGHTING	TLED-RC-20-VS-LG-WW	16" X 16" RECESSED DOWNLIGHT	LED, 4000K	UNV	D	R	PLAS	3.45"	23	2,320	38		
EBU	SURE-LITES	APLEL	EMERGENCY BATTERY UNIT	LED	UNV	-	W	-	2-5/8"	2.5	125 / HEAD	15		
EBU/B	SURE-LITES	SEL-50-BK-SD	EMERGENCY BATTERY UNIT (BLACK HOUSING)	LED	UNV	-	W	-	1-3/4"	2.5	219 / HEAD			
X1	SURE-LITES	APXH7-R	SINGLE FACE LED EXIT SIGN	LED	UNV	-	V	V	7-5/8"	2.5	-			
X2	SURE-LITES	APXH7-R	DOUBLE FACE LED EXIT SIGN	LED	UNV	-	V	V	7-5/8"	2.5	-			
X1/EBU	SURE-LITES		COMBINATION SINGLE FACE LED EXIT SIGN / EMERGENCY BATTERY UNIT	LED	UNV	-	W	-	8-1/4"	2.5	125 / HEAD			

OPTIONS/ACCESSORIES CODE LISTING:

13	DAMP LOCATION LISTED
38	WET LOCATION LISTED

BALLAST/DRIVER CODE LISTING: (SEE SPECIFICATIONS)

A	LED DIMMABLE POWER SUPPLY (0-10V, 10%).
B	LED DIMMABLE POWER SUPPLY (0-10V, 1%).
C	LED DIMMABLE POWER SUPPLY (0-10V, 5%).
D	LED DIMMABLE POWER SUPPLY (0-10V).
E	LED DIMMABLE POWER SUPPLY (TRAILING EDGE).
F	LED DIMMABLE POWER SUPPLY 1% DIMMING LUTRON HI LUME OR EQUAL.
G	LED DIMMABLE POWER SUPPLY ADVANCE XITANIUM OR EQUAL.
H	LED NON-DIMMABLE POWER SUPPLY.

GENERAL NOTES:

1. ALL LED REPLACEMENT LAMPS SHALL BE TESTED FOR DIMMING COMPATABILITY WITH DIMMING SYSTEM BEING SUPPLIED. CONTRACTOR SHALL PROVIDE MINIMUM OF (4) FOUR LAMPS OF EACH TYPE LISTED IN THIS SCHEDULE OR ANY SUBSTITUTE TO BE SUPPLIES TO DIMMING SYSTEMS/DEVICE MANUFACTURER FOR TESTING TO VERIFY LAMP PERFORMANCE.
2. EC SHALL VERIFY AND COORDINATE ALL LUMINAIRE TRIMS/FLANGES WITH RESPECTIVE CEILING TYPES SCHEDULED AND/OR SUBMITTED BY THE GC PRIOR TO ORDERING OF THE LUMINAIRES. SCHEDULE INDICATES TRIM TYPES BASED ON THE GENERIC CEILING INFORMATION AVAILABLE AT THE TIME BIDDING DOCUMENTS WERE ISSUED AND DOES NOT REFLECT ACTUAL THICKNESS OF GYPSUM WALL BOARD OR PLASTER CEILING OR EXACT GRID TYPE SPECIFIED BY THE ARCHITECT.

KEYED NOTES:

1. PROVIDE WITH TECH LIGHTING MONORAIL SINGLE CIRCUIT TRACK WITH 4" ROUND SATIN NICKEL POWER FEED CANOPY. TRACK SHALL BE SURFACE MOUNTED AND PROVIDE SATIN NICKEL RIGID STANDOFFS AS REQUIRED TO ALLOW ROUND TRACK SYSTEMS TO OVERLAP AS SHOWN ON THE LIGHTING PLANS. FIELD VERIFY AND PROVIDE EXACT LENGTH OF TRACK AND CURRENT LIMITER REQUIRED TO ACCOMMODATE THE DESIGNED LOCATION AND LENGTH SHOWN ON LIGHTING PLANS. PROVIDE ALL ACCESSORIES REQUIRED TO CREATE A COMPLETE AND OPERATIONAL SYSTEM.
2. PROVIDE WITH HALO LAZER SINGLE CIRCUIT TRACK. TRACK WILL BE SURFACE MOUNTED. FIELD VERIFY AND PROVIDE EXACT LENGTH OF TRACK AND CURRENT LIMITER REQUIRED TO ACCOMMODATE THE DESIGNATED LOCATION AND LENGTH SHOWN ON LIGHTING PLANS. PROVIDE ALL ACCESSORIES REQUIRED TO CREATE A COMPLETE AND OPERATIONAL SYSTEM.
3. PROVIDE STEM LENGTH AS REQUIRED TO ALLOW FIXTURE TO BE MOUNTED AT THE HEIGHTS SHOWN ON THE LIGHTING PLANS.

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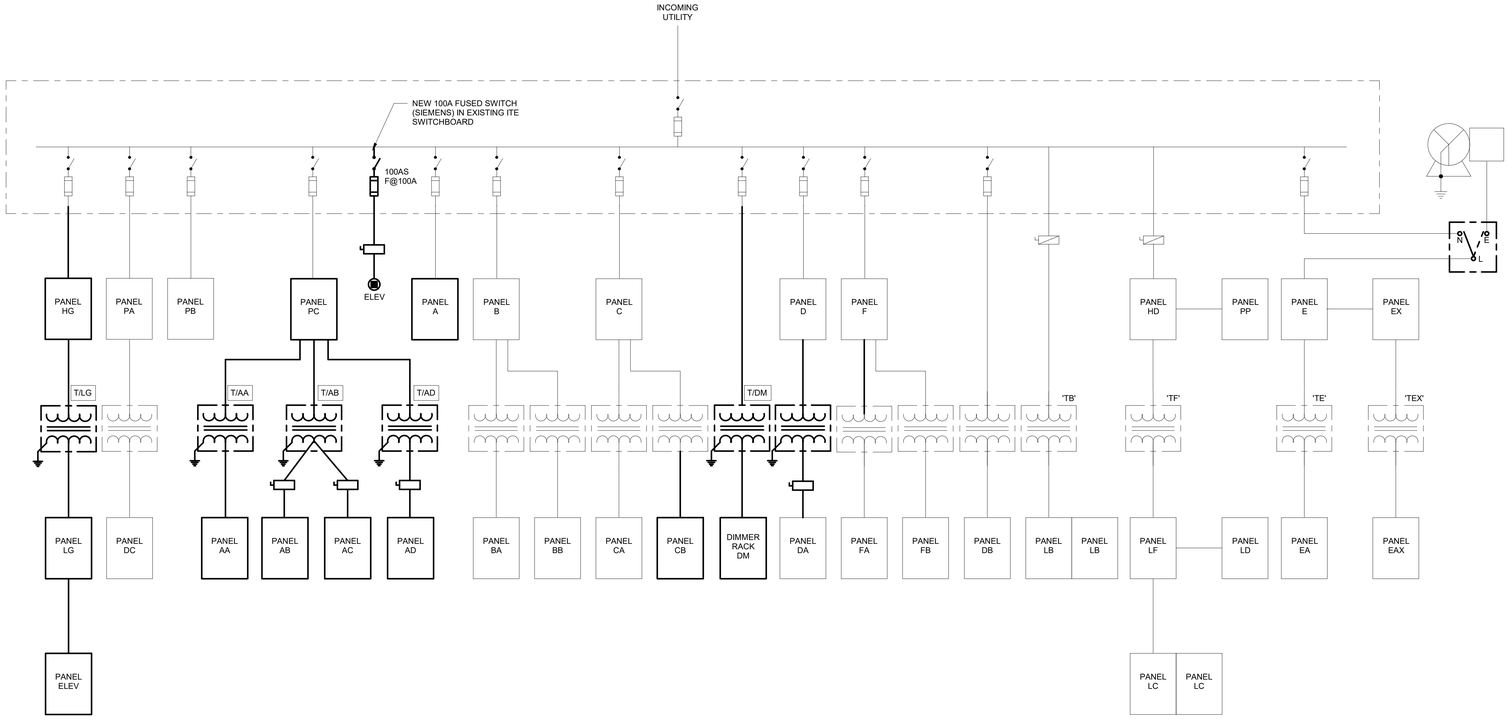
SHEET TITLE: SCHEDULES

SHEET NUMBER: 2-EE-602

ONE-LINE GENERAL NOTES:

1. NOTES START HERE.
2. NOTES START HERE.

KEYED NOTES



1 ONE-LINE POWER DIAGRAM
NO SCALE

TRANSFORMER TAG	SIZE	PRIMARY VOLTAGE	SECONDARY VOLTAGE	MOUNTING
T/AA	45KVA	480V, 3PH	208Y/120V, 3PH, 4W	FLOOR
T/AB	75KVA	480V, 3PH	240V, 3PH, 3W	FLOOR
T/AD	45KVA	480V, 3PH	208Y/120V, 3PH, 4W	WALL
T/DM	45KVA	480V, 3PH	208Y/120V, 3PH, 4W	WALL
T/LG	45KVA	480V, 3PH	208Y/120V, 3PH, 4W	WALL

ONE-LINE SYMBOLS

- AUTOMATIC TRANSFER SWITCH
- ATO — AUTOMATIC THROW OVER
- LOW VOLTAGE CIRCUIT BREAKER
- # — CURRENT TRANSFORMER (# DENOTES QUANTITY)
- MPR — MULTI FUNCTION PROTECTIVE RELAY
- DPM — DIGITAL POWER METER
- DRAWOUT BREAKER WITH CURRENT LIMITING FUSE
- DRAWOUT BREAKER
- LOW VOLTAGE FUSE
- FUSED DISCONNECT SWITCH
- GENERATOR
- ST — GROUND FAULT SHUNT TRIP BREAKER
- GF — GROUND FAULT SHUNT TRIP SWITCH
- EARTH GROUND
- K# — KEY INTERLOCK
- LA — LIGHTNING ARRESTORS
- LOAD BREAK ELBOW
- M — METER
- MO — MOTOR OPERATOR
- 52 — MEDIUM VOLTAGE DRAW-OUT CIRCUIT BREAKER
- MEDIUM VOLTAGE FUSED SWITCH
- MEDIUM VOLTAGE SWITCH
- MEDIUM VOLTAGE TERMINATION
- N — NEUTRAL BOND
- NON-FUSED DISCONNECT SWITCH
- NORMALLY CLOSED CONTACT
- NORMALLY OPEN CONTACT
- 51 — OVERCURRENT PROTECTIVE RELAY
- PANELBOARD (ELEVATION VIEW)
- # — POTENTIAL TRANSFORMER (# DENOTES QUANTITY)
- ST — SHUNT TRIP
- SPD — SURGE PROTECTIVE DEVICE
- TRANSFORMER
- UNINTERRUPTIBLE POWER SUPPLY (UPS)
- UTILITY CONNECTION

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ONE-LINE DIAGRAM

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TECHSYS ABBREVIATIONS

&	AND
3R	NEMA 3R RATED
4X	NEMA 4X RATED
@	AT
A/E	ARCHITECT / ENGINEER
ACS	ACCESS CONTROL SYSTEM
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISH GRADE
ALT	ALTERNACE
ANT	ANTENNA
AP	(WIRELESS) ACCESS POINT
AV	AUDIO VISUAL
BET	BUILDING ENTRANCE TERMINAL
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CATV	COMMUNITY ANTENNA TELEVISION
CL	CENTERLINE
CLG	CEILING
COAX	COAXIAL
COMM	COMMUNICATIONS
DO	DOOR OPERATOR
DSS	DIGITAL SATELLITE SERVICE
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
ETR	EXISTING TO REMAIN
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FO	FIBER OPTIC
FPD	FLAT-PANEL DISPLAY
GC	GENERAL CONTRACTOR
GND	GROUND
GRC	GALVINIZED RIGID CONDUIT
GRS	GALVANIZED RIGID STEEL
HH	HAND HOLE
HPC	HIGH PAIR COUNT
HVAC	HEATING, VENTILATION, AIR CONDITIONING
IDF	INTERMEDIATE DISTRIBUTION FRAME
IDS	INFORMATION DISPLAY SYSTEM x DENOTES SUBSYSTEM (F, B, T, G)
IDS	INTRUSION DETECTION SYSTEM
IMC	INTERMEDIATE METALLIC CONDUIT
IT	INFORMATION TECHNOLOGY
ITS	INFORMATION TRANSPORT SYSTEMS
JB	JUNCTION BOX
MAX	MAXIMUM
MDF	MAIN DISTRIBUTION FRAME
MH	MAN HOLE
MIN	MINIMUM
MMFO	MULTIMODE FIBER OPTIC
MNS	MASS NOTIFICATION SYSTEM
MON	MONITOR
MTD	MOUNTED
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NTWK	NETWORK (DATA)
OC	ON CENTER
PA	PUBLIC ADDRESS
PROJ	PROJECTOR
PTZ	PAN - TILT - ZOOM
PVC	POLYVINYL CHLORIDE
RCV	RECEIVER
REQ'D	REQUIRED
SCHED	SCHEDULE
SE	SERVICE ENTRANCE
SMFO	SINGLEMODE FIBER OPTIC
SS	STAINLESS STEEL
SYS	SYSTEM
TBR	TO BE REMOVED
TC	TECHNOLOGY CONTRACTOR
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TO	TELECOMMUNICATIONS OUTLET
TSE	TELEPHONE SERVICE EQUIPMENT
TV	TELEVISION
TYP	TYPICAL
UF	UNDER FLOOR
UG	UNDERGOUND
UNO	UNLESS NOTED OTHERWISE
UTP	UNSHIELDED TWISTED PAIR
VSS	VIDEO SURVEILLANCE SYSTEM
WL	WET LOCATION LISTED
WP	WEATHERPROOF
WS	WORKSTATION

DEMOLITION GENERAL NOTES

1. THE INFORMATION SHOWN IS BASED ON EXISTING DRAWINGS AND SITE OBSERVATIONS TO ASSIST THE CONTRACTOR IN BIDDING. THE CONTRACTOR SHOULD VISIT THE SITE TO VERIFY EXISTING CONDITIONS. THE TECHNOLOGY SYSTEMS DRAWINGS INDICATE EXISTING TECHNOLOGY SYSTEMS ITEMS TO BE REMOVED. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY DEVICE, BOX, CONDUIT, WIRE OR CABLE THAT MUST BE REMOVED.
2. DASHED WALLS ON THE FLOOR PLANS INDICATE EXISTING WALLS BEING DEMOLISHED. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR THE EXACT EXTENT OF WORK REQUIRED BY THIS PROJECT. REMOVE ALL DEVICES ON DASHED WALLS NOT SHOWN ON THE CONTRACT DRAWINGS. REFER TO DEMOLITION DRAWINGS OF OTHER TRADES. WHERE CONTROL PANELS AND APPURTENANCES THAT HAVE TECHNOLOGY SYSTEMS CONNECTIONS ARE BEING REMOVED, INCLUDE DISCONNECTION AND REMOVAL OF ALL ASSOCIATED CONDUIT, WIRING AND CABLING.
3. TECHNOLOGY SYSTEMS ITEMS (E.G. TELECOMMUNICATIONS OUTLETS, SECURITY SYSTEMS DEVICES, AUDIO DEVICES) THAT ARE REMOVED AND NOT RELOCATED SHALL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
4. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER BEFORE TURNING OFF POWER TO TECHNOLOGY SYSTEMS EQUIPMENT OR DEVICES. COORDINATE ALL OUTAGES WITH THE OWNER. CONDUIT CONCEALED IN WALL CONSTRUCTION MAY BE ABANDONED IN PLACE IF NOT AFFECTED BY OTHER CONSTRUCTION.
5. ALL BOXES THAT REMAIN IN PLACE IN EXISTING MASONRY WALLS THAT ARE TO REMAIN SHALL BE PROVIDED WITH A BLANK COVER PLATE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH TYPE AND ATTACHMENT.
6. ALL CONDUIT SHALL BE REMOVED WHERE WALLS ARE BEING REMOVED. WHERE CONDUIT IS IN THE CONCRETE SLAB, CUT OFF FLUSH, PULL OUT WIRE OR CABLE AND PLUG. WHERE CONDUIT IS RUN EXPOSED, ALL ASSOCIATED CLAMPS, SUPPORTS, HANGERS, ETC. SHALL ALSO BE REMOVED.
7. THIS CONTRACTOR SHALL COORDINATE ALL HIS WORK WITH OTHER CONTRACTORS AT THE JOB SITE BEFORE REMOVING EXISTING TECHNOLOGY SYSTEMS ITEMS AND INSTALLING NEW ITEMS.
8. EXISTING CONDUIT IN GOOD CONDITION, MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED.

GENERAL NOTES

1. WORK PERFORMED INCLUDES ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO INSTALL COMPLETE TECHNOLOGY SYSTEMS AS INDICATED ON THESE DRAWINGS AND AS SPECIFIED.
2. ALL TELECOMMUNICATIONS OUTLETS SHALL BE MOUNTED AT HEIGHTS ABOVE FINISHED FLOOR AS SHOWN IN THE DEVICE MOUNTING HEIGHT DETAIL U.N.O.
3. SEE ELECTRICAL SPECIFICATIONS FOR LOCATIONS WHERE GRS CONDUIT SHALL BE USED, OR WHERE IMC, EMT, OR PVC CONDUIT MAY BE USED.
4. BOXES LOCATED ON OPPOSITE SIDES OF NON-RATED WALLS SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY. BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE OFFSET A MINIMUM OF 24" HORIZONTALLY. THRU-THE-WALL BOXES SHALL NOT BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.
5. CONTRACTOR SHALL VERIFY ALL EQUIPMENT SIZES AND POWER REQUIREMENTS FOR EQUIPMENT SUPPLIED BY OTHERS PRIOR TO INSTALLATION OF CONDUIT.
6. TECHNOLOGY SYSTEMS EQUIPMENT/DEVICES SHALL BE MOUNTED SO AS TO ALLOW ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF TECHNOLOGY SYSTEMS EQUIPMENT/DEVICES ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR SHALL BE COORDINATED WITH AND APPROVED BY THAT CONTRACTOR IN ADVANCE OF INSTALLATION.
7. ALL ELECTRICAL CONDUITS AND JUNCTION BOXES SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE WITH THE OTHER TRADES AND USE CHASES AND CEILING SPACES PROVIDED. WHERE BOXES AND CONDUIT ARE NOTED TO BE INSTALLED EXPOSED, THEY SHALL BE PAINTED TO MATCH THE SURFACE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS. PENETRATIONS THROUGH FLOORS AND FIRE-RATED WALLS SHALL BE FIRESTOPPED IN A MANNER THAT MAINTAINS THE RATING OF THE FLOOR OR WALL PENETRATED.
9. ALL TRENCHING AND BACKFILL FOR BURIED ELECTRICAL CONDUITS SHALL BE BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
10. PROVIDE METALLIC TAPE ABOVE BURIED PVC CONDUIT FOR FUTURE LOCATING.
11. CONDUIT ROUTED UNDER THE BUILDING SHALL BE MINIMUM 18" BELOW SLAB.
12. ALL TELEPHONE AND DATA JACKS SHALL BE TERMINATED WITH ALL 4 PAIRS TO ALLOW FOR INTERCHANGEABILITY.
13. ALL TELEPHONE AND DATA CABLES SHALL BE INSTALLED IN CONDUIT OR CABLE TRAY.
14. ALL 'FPD' (FLAT-PANEL DISPLAY) LOCATIONS ARE INDICATED FOR ROUGH-IN ONLY; ROUGH-IN SHALL INCLUDE BACKBOX, CONDUIT STUB, COMMUNICATIONS CABLE AND TERMINATIONS. DISPLAYS, MOUNTS INTERFACES AND HEAD-END EQUIPMENT FOR FLIGHT/GATE INFORMATION DISPLAYS AND/OR ELECTRONIC ADVERTISING DISPLAYS ARE NOT INCLUDED.
15. ALL CONDUIT STUBS SHALL HAVE PLASTIC OR NYLON BUSHINGS INSTALLED PRIOR TO THE INSTALLATION OF CABLES.

TECHNOLOGY SCOPE RESPONSIBILITY MATRIX

ITEM	SHOWN ON	FURNISHED BY	INSTALLED BY	NOTES
UNDERGROUND CONDUITS IN/OUT OF BUILDING, INCLUDING ASSOCIATED HANDHOLES	T-SERIES	EC	EC	1
FLOOR BOX ROUGH-IN, INCLUDING FLOOR BOXES AND CONDUITS	E AND T-SERIES	EC	EC	2
TECHNOLOGY SYSTEMS ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS, CONDUIT AND SLEEVES	T-SERIES	EC	EC	3
CABLE TRAY, INCLUDING ALL REQUIRED SUPPORT HARDWARE AND FITTINGS	T-SERIES	EC OR TC	EC OR TC	4
EQUIPMENT ROOM FITTINGS (PER SPECIFICATION SECTION 271100)	T-SERIES	TC	TC	
EQUIPMENT ROOM POWER RECEPTACLES	E-SERIES (PWR)	EC	EC	
GROUND BARS (TMGB, TGB) AND ELECTRICAL SERVICE BONDING	T-SERIES	EC	EC	
GROUNDING OF CABLE TRAY AND EQUIPMENT ROOM COMPONENTS	T-SERIES	TC	TC	
BACKBONE CABLING, TERMINATION COMPONENTS (e.g. WALL-FIELDS), TERMINATION, TESTING AND LABELING	T-SERIES	TC	TC	
PATCH PANELS	T-SERIES	TC	TC	
TELECOMMUNICATIONS OUTLET (TO) FACEPLATES AND JACKS	T-SERIES	TC	TC	
HORIZONTAL CABLING, TERMINATIONS, TESTING AND LABELING	T-SERIES	TC	TC	
FLOOR BOX AND TELECOMMUNICATION OUTLET (TO) ASSOCIATED POWER RECEPTACLES	E-SERIES (PWR)	EC	EC	5
EQUIPMENT ROOM PLYWOOD WALL COVERINGS	T-SERIES	GC	GC	6
ROOF PENETRATION CONDUITS	T-SERIES	EC	EC	7
PA SYSTEM ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
PA SYSTEM COMPONENTS (HEAD-END, MICROPHONES, SPEAKERS/HORNS, VOLUME CONTROLS) AND CABLING	T-SERIES	TC	TC	
INFORMATION DISPLAY SYSTEM AND TV ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
INFORMATION DISPLAY AND TV LOCATION BLOCKING FOR DISPLAY MOUNT ATTACHMENT/SUPPORT	T-SERIES	GC	GC	8
INFORMATION DISPLAY SYSTEM AND TV OUTLETS, MOUNTS, DISPLAYS AND CABLING	T-SERIES	TC	TC	
INFORMATION DISPLAY SYSTEM HEAD-END COMPONENTS AND MONITOR INTERFACES	T-SERIES	OWNER	OWNER	
TV SERVICE, DISTRIBUTION EQUIPMENT AND RECEIVERS	N/A	OWNER	OWNER	
SECURITY SYSTEMS (ACS, VSS) ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
ACS FIELD DEVICES (e.g. CARD READERS, STATUS SENSORS, REX) AND CABLING	T-SERIES	TC	TC	
ACS DOOR HARDWARE INCLUDING ELECTRIC STRIKES, MAGNETIC LOCKS AND ASSOCIATED POWER SUPPLIES	T-SERIES	GC	GC / EC / TC	9
VSS HEAD-END, CAMERAS, MOUNTS AND CABLING	T-SERIES	TC	TC	

TECHNOLOGY SYSTEMS RESPONSIBILITY MATRIX NOTES:
1. UNDERGROUND CONDUITS IN/OUT OF BUILDING ARE SHOWN FOR INTENT ONLY. ACTUAL LOCATIONS SHALL BE COORDINATED IN THE FIELD WITH OTHER UNDERGROUND WORK (STORM, SEWER, POWER, ETC).
2. FLOOR BOX LOCATIONS SHALL BE COORDINATED WITH THE LOCATION(S) OF ASSOCIATED MILLWORK AND FURNITURE.
3. PENETRATIONS THROUGH FLOORS AND FIRE-RATED WALLS WHERE APPLICABLE SHALL BE FIRESTOPPED IN A MANNER THAT MAINTAINS THE RATING OF THE FLOOR OR WALL PENETRATED. REFER TO ARCHITECTURAL SPECIFICATIONS.
4. CABLE TRAY INDICATED ON DRAWINGS IS SHOWN FOR INTENT, AND THE INSTALLATION OF THE CABLE TRAY SHALL BE COORDINATED WITH OTHER TRADES (MECHANICAL, PLUMBING).
5. LOCATIONS OF TECHNOLOGY SYSTEMS ROUGH-IN SHALL BE COORDINATED WITH ASSOCIATED POWER RECEPTACLES.
6. PLYWOOD WALL COVERINGS SHALL BE AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.
7. ROOF PENETRATIONS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS AND SHALL BE SEALED AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.
8. BLOCKING FOR ALL TV AND IDS (FPD) LOCATIONS SHALL BE AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS OR AS INDICATED ON ARCHITECTURAL DRAWINGS.
9. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ACCESS CONTROL SYSTEM COMPONENTS WITH DOOR AND DOOR HARDWARE VENDOR.
10. ALL DEVICES TO BE INSTALLED IN LOCATIONS APPROVED BY AUTHORITY HAVING JURISDICTION (AHJ).

SECURITY SYSTEM SYMBOLS

C	CARDREADER
N	CARDREADER-PINPAD
K	KEY PAD
M	MOTION DETECTOR
S	STATUS SENSOR / MONITOR
A	AUDIBLE ALARM
L	MAGNETIC LOCK
Y	KEY SHUNT
E	ELECTRIC STRIKE
DL	DELAY EGRESS SYSTEM
P	PUSH BUTTON
H	PANIC HARDWARE
I	INTERCOM STATION
B	BIOMETRIC CARDREADER
ACS	ACCESS CONTROL SYSTEM
CL	COM LOCK
D	DURESS PUSHBUTTON
GO	GATE OPERATOR
G	GLASS BREAK SENSOR
O	LOOP DETECTOR
PL	PAD LOCK
PCU	PREMISES CONTROL UNIT
SPC	SECURITY COMPUTER
VS	VIBRATION SENSOR
KP	OVERRIDE KEYPAD
ACP	COMMUNICATION CABINET
SL	STROBE LIGHT
DC	DOOR CONTACT
REX	REQUEST TO EXIT

VIDEO SURVEILLANCE SYMBOLS

VIDEO SURVEILLANCE CAMERA

DIRECTION OF VIEW
= APPROX. ANGLE OF VIEW

CAMERA NUMBER
CAMERA TYPE (PTZ OR FIXED)

ABBREVIATIONS
F FIXED
PTZ PAN-TILT-ZOOM

V VANDAL-RESISTANT
E ENVIRONMENTAL CONFIG (WEATHERPROOF, HEATER, FAN)

VIDEO MONITORING LOCATION;
"X" DESIGNATES LOCATION IF MORE THAN 1

SITE SYMBOLS

HH	HANDHOLE, GENERIC
C	CABLE MARKER
CTV	CTV PEDISTAL BOX
FO	FIBER OPTIC MANHOLE

LINE TYPE KEY

———	NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
– – – –	EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK DASHED LINE)
———	EXISTING TO REMAIN WORK (THIN SOLID LINE)
— —	NEW WORK UNDER FLOOR BY THIS CONTRACTOR
—CON—	SITE UNDERGROUND CONDUIT
—//CON//—	SITE REMOVED UNDERGROUND CONDUIT
—FOC—	SITE UNDERGROUND FIBER OPTIC
—//FOC//—	SITE REMOVED UNDERGROUND FIBER OPTIC
—T—	SITE UNDERGROUND TELEPHONE
—OHT—	SITE OVERHEAD TELEPHONE
—//T//—	SITE REMOVED TELEPHONE
—TV—	SITE UNDERGROUND TV CABLE

GENERAL SYMBOLS

#/T-###	DETAIL NUMBER / SHEET NUMBER
9.###	KEYED NOTE, USED TO DESCRIBE ADDITIONAL INFORMATION OF WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL IT IS SHOWN WITH.

TELECOMMUNICATION OUTLET SYMBOLS

#	VOICE OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
#	DATA OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
WAP	DATA OUTLET FOR WIRELESS ACCESS POINT (WAP) (# = QTY. CONNECTORS IF OTHER THAN 1). WAP BY OWNER UNO.
#/#	VOICE/DATA OUTLET (#/# = QTY. V/D CONNECTORS IF OTHER THAN 1)
	VOICE OUTLET FOR WALL MOUNTED TELEPHONE
	PAY PHONE OUTLET
#	FLOOR MOUNTED VOICE OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
#	FLOOR MOUNTED DATA OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
#/#	FLOOR MOUNTED VOICE/DATA OUTLET (#/# = QTY. V/D CONNECTORS IF OTHER THAN 1)
TSE	TELEPHONE SERVICE ENTRANCE PROTECTION DEVICE
BET	BUILDING ENTRANCE TERMINAL
PB	COMMUNICATIONS PUNCH BLOCK
PP	COMMUNICATIONS PATCH PANEL
COM	COMMUNICATIONS CABINET
FO	WALL MOUNTED FIBER OPTIC CABINET
TGB	COMMUNICATIONS GROUND BUS BAR
	FIBER OPTIC LINK
	FIBER OPTIC CONVERTER E/O = ELECTRICAL TO OPTICAL O/E = OPTICAL TO ELECTRICAL
	CLOCK
	ANTENNA
	EQUIPMENT RACK
	SURFACE RACEWAY - REFER TO KEYED NOTES & SPECIFICATIONS FOR TYPES

AUDIO VISUAL SYMBOLS

TV	TELEVISION DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
MON	MONITOR DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
RCV	VIDEO RECEIVER OUTLET
PROJ	PROJECTOR. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
FPD	FLAT PANEL DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
ID	INFORMATION DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
S	LOUDSPEAKER (HORN TYPE)
S	CEILING MOUNTED SPEAKER
S	WALL MOUNTED SPEAKER
S	CEILING MOUNTED STROBE
S	WALL MOUNTED STROBE
S	CEILING MOUNTED SPEAKER & STROBE
S	WALL MOUNTED SPEAKER & STROBE
S	PENDANT MOUNTED SPEAKER
V	VOLUME CONTROL
SP	SOUND AND PAGING CABINET
PS	PAGING STATION
SM	AMBIENT NOISE SENSOR
ID	INTERCOM - DOOR STATION
IM	INTERCOM - MASTER STATION
IC	INTERCOM - CONTROLLER
DB	DOOR BELL PUSHBUTTON
B	DOOR BELL SOUNDER

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: PRELIMINARY
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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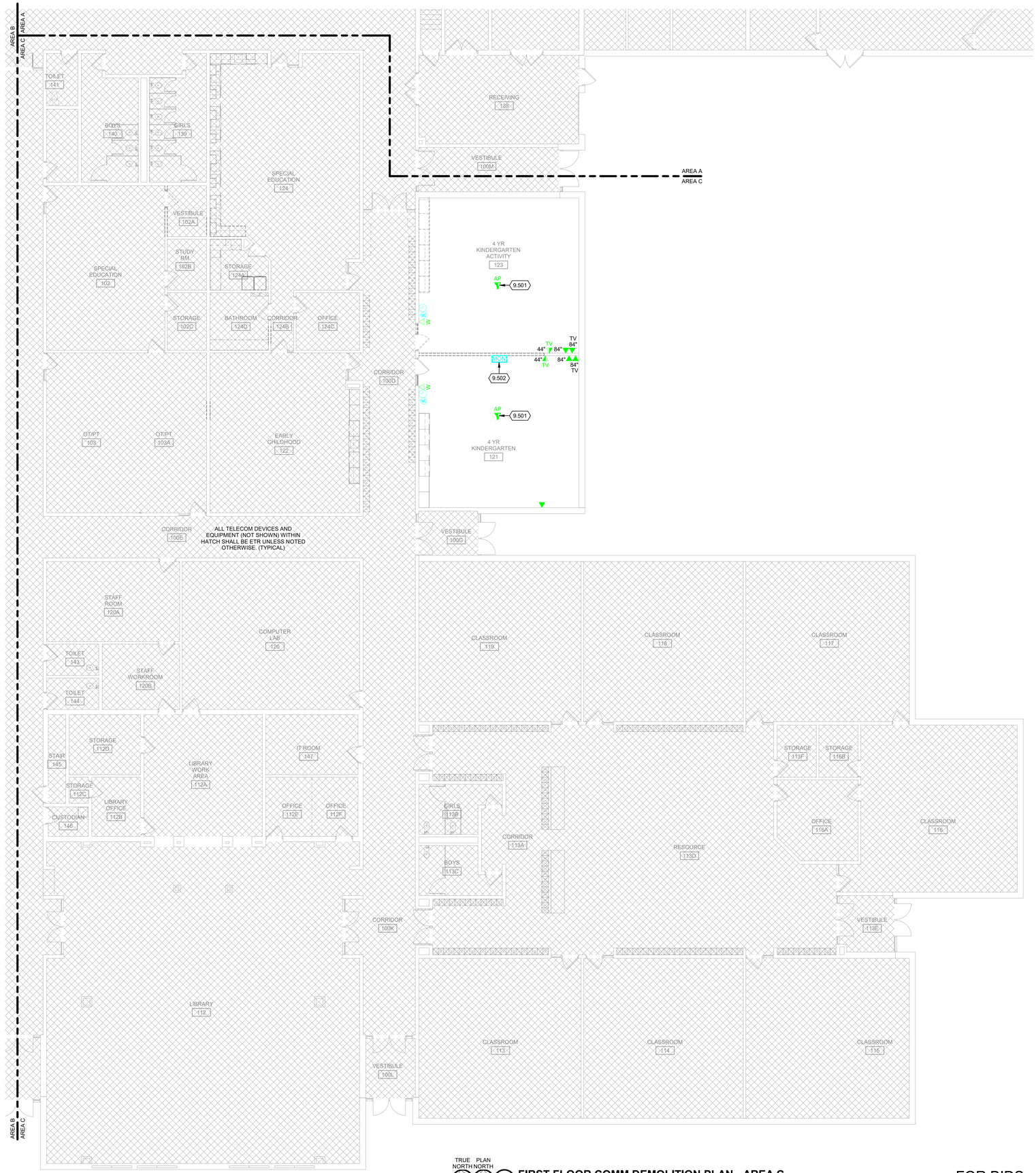
SHEET TITLE:
NOTES, SYMBOLS & ABBREVIATIONS

SHEET NUMBER:
1-TE-001



TRUE NORTH PLAN NORTH

1 FIRST FLOOR COMM DEMOLITION PLAN - AREA C

1/8" = 1'-0"

KEYED NOTES

9.501 ACCESS POINT TO BE REMOVED BY OWNER AND RE-INSTALLED AFTER DURATION OF THE PROJECT. RE-USE EXISTING CABLES.

9.502 REMOVE SMARTBOARD AND RE-INSTALL ON SOUTH WALL. REFER TO 1/1-1A-103.

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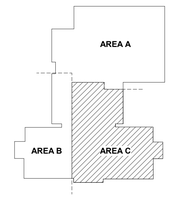
2019-04-16



KEY PLAN

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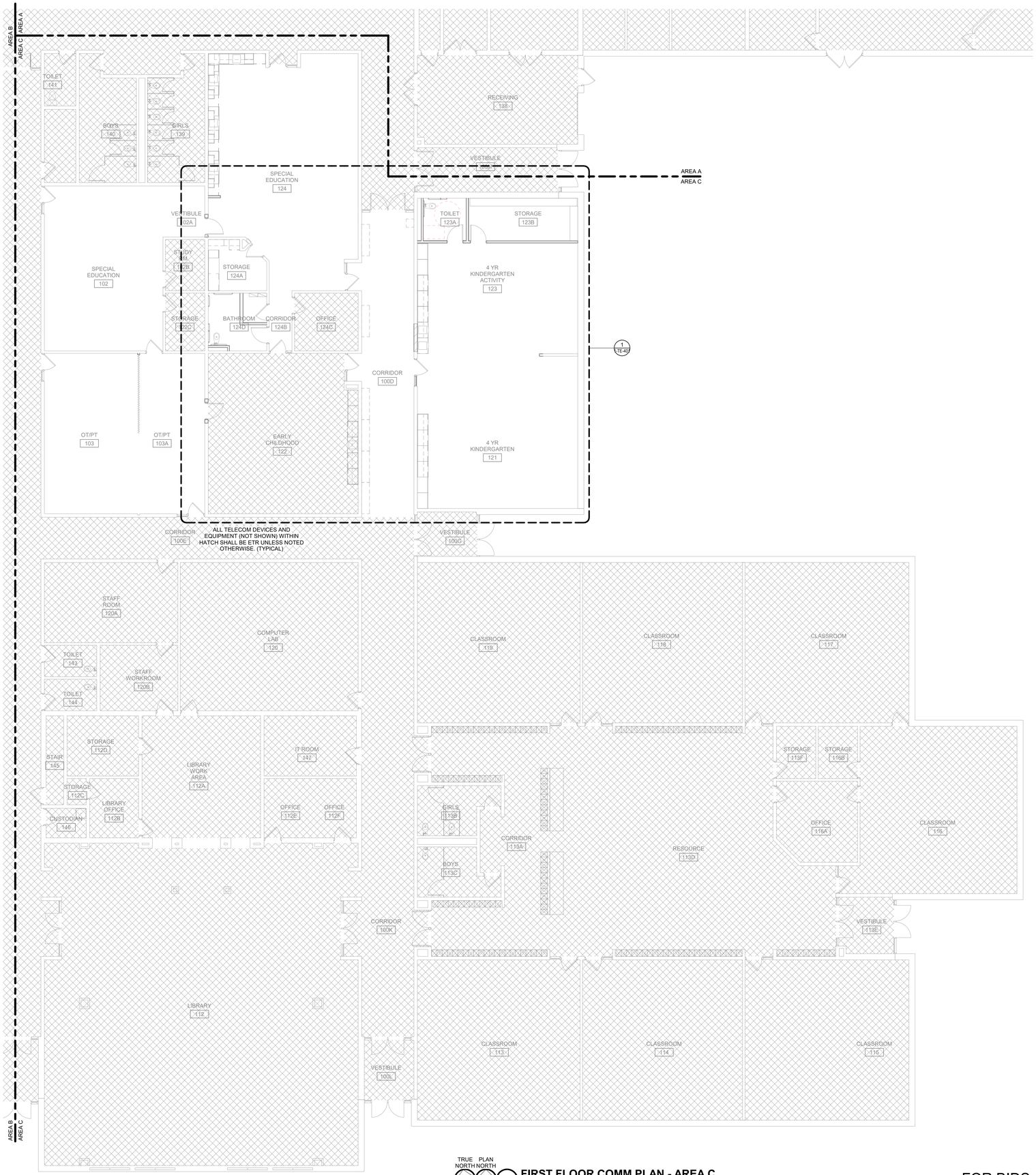
SHEET TITLE:
FIRST FLOOR COMM DEMOLITION PLAN - AREA C

SHEET NUMBER:
1-TD-103

KEYED NOTES



TRUE NORTH PLAN NORTH

FIRST FLOOR COMM PLAN - AREA C

1/8" = 1'-0"

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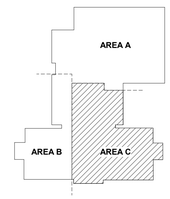
2019-04-16



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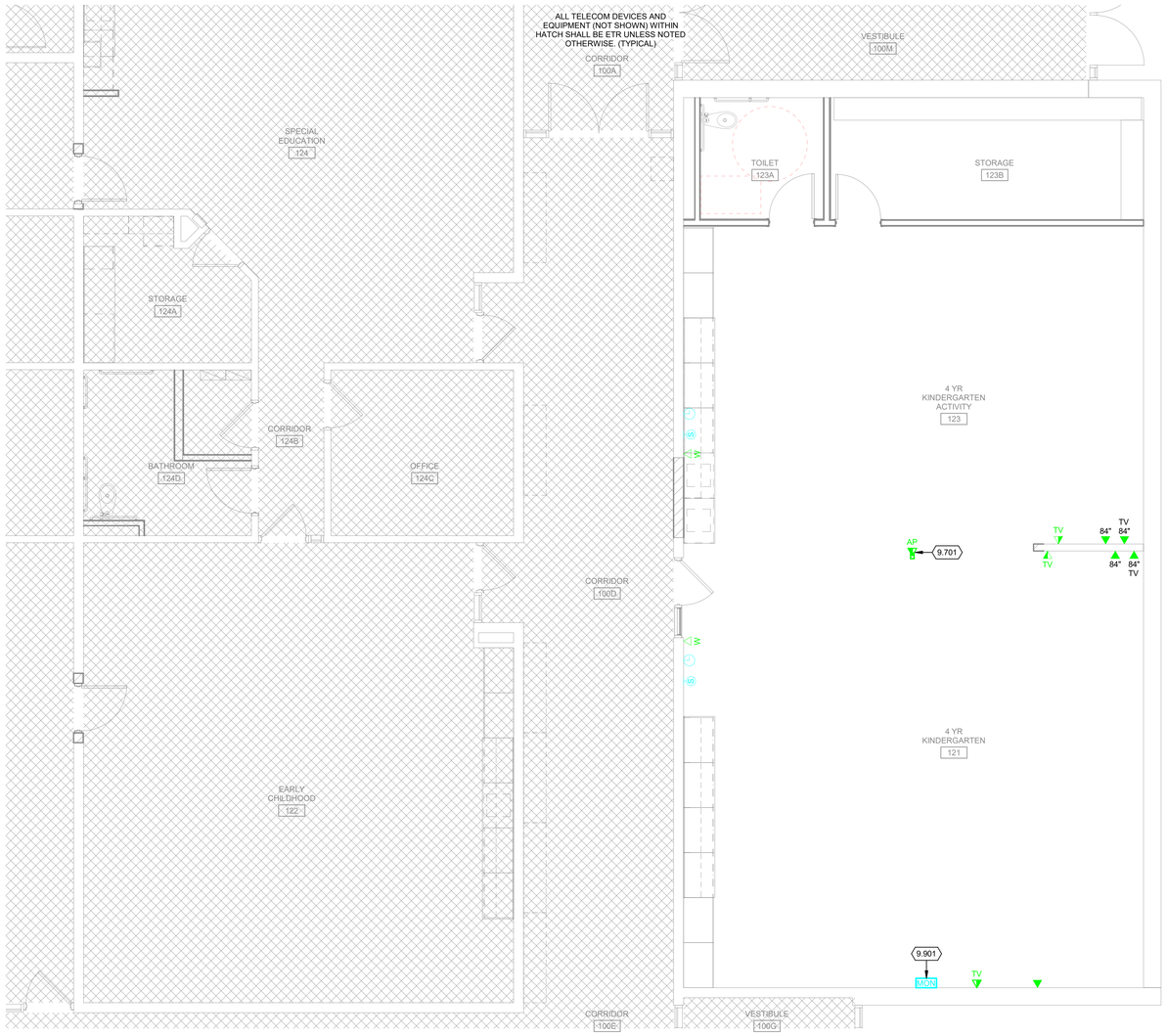
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA C

SHEET NUMBER:
1-TA-103

KEYED NOTES

9.701 RELOCATE CABLES FROM EXISTING WIRELESS ACCESS POINT TO THIS LOCATION.

9.901 RE-INSTALL SMARTBOARD ON SOUTH WALL.



TRUE NORTH PLAN NORTH

N N 1 **ENLARGED PARTIAL FLOOR COMM PLAN - AREA C**

1/4" = 1'-0"

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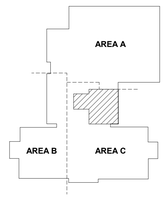
2019-04-16



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SHEET TITLE:
ENLARGED PLANS, ELEVATIONS & SECTIONS

SHEET NUMBER:
1-TE-401

TECHSYS ABBREVIATIONS

&	AND
3R	NEMA 3R RATED
4X	NEMA 4X RATED
@	AT
A/E	ARCHITECT / ENGINEER
ACS	ACCESS CONTROL SYSTEM
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISH GRADE
ALT	ALTERNACE
ANT	ANTENNA
AP	(WIRELESS) ACCESS POINT
AV	AUDIO VISUAL
BET	BUILDING ENTRANCE TERMINAL
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CATV	COMMUNITY ANTENNA TELEVISION
CL	CENTERLINE
CLG	CEILING
COAX	COAXIAL
COMM	COMMUNICATIONS
DO	DOOR OPERATOR
DSS	DIGITAL SATELLITE SERVICE
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
ETR	EXISTING TO REMAIN
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FO	FIBER OPTIC
FPD	FLAT-PANEL DISPLAY
GC	GENERAL CONTRACTOR
GND	GROUND
GRC	GALVINIZED RIGID CONDUIT
GRS	GALVANIZED RIGID STEEL
HH	HAND HOLE
HPC	HIGH PAIR COUNT
HVAC	HEATING, VENTILATION, AIR CONDITIONING
IDF	INTERMEDIATE DISTRIBUTION FRAME
IDS	INFORMATION DISPLAY SYSTEM x DENOTES SUBSYSTEM (F, B, T, G)
IDS	INTRUSION DETECTION SYSTEM
IMC	INTERMEDIATE METALLIC CONDUIT
IT	INFORMATION TECHNOLOGY
ITS	INFORMATION TRANSPORT SYSTEMS
JB	JUNCTION BOX
MAX	MAXIMUM
MDF	MAIN DISTRIBUTION FRAME
MH	MAN HOLE
MIN	MINIMUM
MMFO	MULTIMODE FIBER OPTIC
MNS	MASS NOTIFICATION SYSTEM
MON	MONITOR
MTD	MOUNTED
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NTWK	NETWORK (DATA)
OC	ON CENTER
PA	PUBLIC ADDRESS
PROJ	PROJECTOR
PTZ	PAN - TILT - ZOOM
PVC	POLYVINYL CHLORIDE
RCV	RECEIVER
REQ'D	REQUIRED
SCHED	SCHEDULE
SE	SERVICE ENTRANCE
SMFO	SINGLEMODE FIBER OPTIC
SS	STAINLESS STEEL
SYS	SYSTEM
TBR	TO BE REMOVED
TC	TECHNOLOGY CONTRACTOR
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TO	TELECOMMUNICATIONS OUTLET
TSE	TELEPHONE SERVICE EQUIPMENT
TV	TELEVISION
TYP	TYPICAL
UF	UNDER FLOOR
UG	UNDERGOUND
UNO	UNLESS NOTED OTHERWISE
UTP	UNSHIELDED TWISTED PAIR
VSS	VIDEO SURVEILLANCE SYSTEM
WL	WET LOCATION LISTED
WP	WEATHERPROOF
WS	WORKSTATION

DEMOLITION GENERAL NOTES

1. THE INFORMATION SHOWN IS BASED ON EXISTING DRAWINGS AND SITE OBSERVATIONS TO ASSIST THE CONTRACTOR IN BIDDING. THE CONTRACTOR SHOULD VISIT THE SITE TO VERIFY EXISTING CONDITIONS. THE TECHNOLOGY SYSTEMS DRAWINGS INDICATE EXISTING TECHNOLOGY SYSTEMS ITEMS TO BE REMOVED. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY DEVICE, BOX, CONDUIT, WIRE OR CABLE THAT MUST BE REMOVED.
2. DASHED WALLS ON THE FLOOR PLANS INDICATE EXISTING WALLS BEING DEMOLISHED. REFER TO THE ARCHITECTURAL DEMOLITION PLANS FOR THE EXACT EXTENT OF WORK REQUIRED BY THIS PROJECT. REMOVE ALL DEVICES ON DASHED WALLS NOT SHOWN ON THE CONTRACT DRAWINGS. REFER TO DEMOLITION DRAWINGS OF OTHER TRADES. WHERE CONTROL PANELS AND APPURTENANCES THAT HAVE TECHNOLOGY SYSTEMS CONNECTIONS ARE BEING REMOVED, INCLUDE DISCONNECTION AND REMOVAL OF ALL ASSOCIATED CONDUIT, WIRING AND CABLING.
3. TECHNOLOGY SYSTEMS ITEMS (E.G. TELECOMMUNICATIONS OUTLETS, SECURITY SYSTEMS DEVICES, AUDIO DEVICES) THAT ARE REMOVED AND NOT RELOCATED SHALL REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.
4. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER BEFORE TURNING OFF POWER TO TECHNOLOGY SYSTEMS EQUIPMENT OR DEVICES. COORDINATE ALL OUTAGES WITH THE OWNER. CONDUIT CONCEALED IN WALL CONSTRUCTION MAY BE ABANDONED IN PLACE IF NOT AFFECTED BY OTHER CONSTRUCTION.
5. ALL BOXES THAT REMAIN IN PLACE IN EXISTING MASONRY WALLS THAT ARE TO REMAIN SHALL BE PROVIDED WITH A BLANK COVER PLATE. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH TYPE AND ATTACHMENT.
6. ALL CONDUIT SHALL BE REMOVED WHERE WALLS ARE BEING REMOVED. WHERE CONDUIT IS IN THE CONCRETE SLAB, CUT OFF FLUSH, PULL OUT WIRE OR CABLE AND PLUG. WHERE CONDUIT IS RUN EXPOSED, ALL ASSOCIATED CLAMPS, SUPPORTS, HANGERS, ETC. SHALL ALSO BE REMOVED.
7. THIS CONTRACTOR SHALL COORDINATE ALL HIS WORK WITH OTHER CONTRACTORS AT THE JOB SITE BEFORE REMOVING EXISTING TECHNOLOGY SYSTEMS ITEMS AND INSTALLING NEW ITEMS.
8. EXISTING CONDUIT IN GOOD CONDITION, MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED.

GENERAL NOTES

1. WORK PERFORMED INCLUDES ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO INSTALL COMPLETE TECHNOLOGY SYSTEMS AS INDICATED ON THESE DRAWINGS AND AS SPECIFIED.
2. ALL TELECOMMUNICATIONS OUTLETS SHALL BE MOUNTED AT HEIGHTS ABOVE FINISHED FLOOR AS SHOWN IN THE DEVICE MOUNTING HEIGHT DETAIL U.N.O.
3. SEE ELECTRICAL SPECIFICATIONS FOR LOCATIONS WHERE GRS CONDUIT SHALL BE USED, OR WHERE IMC, EMT, OR PVC CONDUIT MAY BE USED.
4. BOXES LOCATED ON OPPOSITE SIDES OF NON-RATED WALLS SHALL BE OFFSET A MINIMUM OF 6" HORIZONTALLY. BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE OFFSET A MINIMUM OF 24" HORIZONTALLY. 'THRU-THE-WALL' BOXES SHALL NOT BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER.
5. CONTRACTOR SHALL VERIFY ALL EQUIPMENT SIZES AND POWER REQUIREMENTS FOR EQUIPMENT SUPPLIED BY OTHERS PRIOR TO INSTALLATION OF CONDUIT.
6. TECHNOLOGY SYSTEMS EQUIPMENT/DEVICES SHALL BE MOUNTED SO AS TO ALLOW ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF TECHNOLOGY SYSTEMS EQUIPMENT/DEVICES ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR SHALL BE COORDINATED WITH AND APPROVED BY THAT CONTRACTOR IN ADVANCE OF INSTALLATION.
7. ALL ELECTRICAL CONDUITS AND JUNCTION BOXES SHALL BE CONCEALED. CONTRACTOR SHALL COORDINATE WITH THE OTHER TRADES AND USE CHASES AND CEILING SPACES PROVIDED. WHERE BOXES AND CONDUIT ARE NOTED TO BE INSTALLED EXPOSED, THEY SHALL BE PAINTED TO MATCH THE SURFACE.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS. PENETRATIONS THROUGH FLOORS AND FIRE-RATED WALLS SHALL BE FIRESTOPPED IN A MANNER THAT MAINTAINS THE RATING OF THE FLOOR OR WALL PENETRATED.
9. ALL TRENCHING AND BACKFILL FOR BURIED ELECTRICAL CONDUITS SHALL BE BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
10. PROVIDE METALLIC TAPE ABOVE BURIED PVC CONDUIT FOR FUTURE LOCATING.
11. CONDUIT ROUTED UNDER THE BUILDING SHALL BE MINIMUM 18" BELOW SLAB.
12. ALL TELEPHONE AND DATA JACKS SHALL BE TERMINATED WITH ALL 4 PAIRS TO ALLOW FOR INTERCHANGEABILITY.
13. ALL TELEPHONE AND DATA CABLES SHALL BE INSTALLED IN CONDUIT OR CABLE TRAY.
14. ALL 'FPD' (FLAT-PANEL DISPLAY) LOCATIONS ARE INDICATED FOR ROUGH-IN ONLY; ROUGH-IN SHALL INCLUDE BACKBOX, CONDUIT STUB, COMMUNICATIONS CABLE AND TERMINATIONS. DISPLAYS, MOUNTS INTERFACES AND HEAD-END EQUIPMENT FOR FLIGHT/GATE INFORMATION DISPLAYS AND/OR ELECTRONIC ADVERTISING DISPLAYS ARE NOT INCLUDED.
15. ALL CONDUIT STUBS SHALL HAVE PLASTIC OR NYLON BUSHINGS INSTALLED PRIOR TO THE INSTALLATION OF CABLES.

TECHNOLOGY SCOPE RESPONSIBILITY MATRIX

ITEM	SHOWN ON	FURNISHED BY	INSTALLED BY	NOTES
UNDERGROUND CONDUITS IN/OUT OF BUILDING, INCLUDING ASSOCIATED HANDHOLES	T-SERIES	EC	EC	1
FLOOR BOX ROUGH-IN, INCLUDING FLOOR BOXES AND CONDUITS	E AND T-SERIES	EC	EC	2
TECHNOLOGY SYSTEMS ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS, CONDUIT AND SLEEVES	T-SERIES	EC	EC	3
CABLE TRAY, INCLUDING ALL REQUIRED SUPPORT HARDWARE AND FITTINGS	T-SERIES	EC OR TC	EC OR TC	4
EQUIPMENT ROOM FITTINGS (PER SPECIFICATION SECTION 271100)	T-SERIES	TC	TC	
EQUIPMENT ROOM POWER RECEPTACLES	E-SERIES (PWR)	EC	EC	
GROUND BARS (TMGB, TGB) AND ELECTRICAL SERVICE BONDING	T-SERIES	EC	EC	
GROUNDING OF CABLE TRAY AND EQUIPMENT ROOM COMPONENTS	T-SERIES	TC	TC	
BACKBONE CABLING, TERMINATION COMPONENTS (e.g. WALL-FIELDS), TERMINATION, TESTING AND LABELING	T-SERIES	TC	TC	
PATCH PANELS	T-SERIES	TC	TC	
TELECOMMUNICATIONS OUTLET (TO) FACEPLATES AND JACKS	T-SERIES	TC	TC	
HORIZONTAL CABLING, TERMINATIONS, TESTING AND LABELING	T-SERIES	TC	TC	
FLOOR BOX AND TELECOMMUNICATION OUTLET (TO) ASSOCIATED POWER RECEPTACLES	E-SERIES (PWR)	EC	EC	5
EQUIPMENT ROOM PLYWOOD WALL COVERINGS	T-SERIES	GC	GC	6
ROOF PENETRATION CONDUITS	T-SERIES	EC	EC	7
PA SYSTEM ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
PA SYSTEM COMPONENTS (HEAD-END, MICROPHONES, SPEAKERS/HORNS, VOLUME CONTROLS) AND CABLING	T-SERIES	TC	TC	
INFORMATION DISPLAY SYSTEM AND TV ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
INFORMATION DISPLAY AND TV LOCATION BLOCKING FOR DISPLAY MOUNT ATTACHMENT/SUPPORT	T-SERIES	GC	GC	8
INFORMATION DISPLAY SYSTEM AND TV OUTLETS, MOUNTS, DISPLAYS AND CABLING	T-SERIES	TC	TC	
INFORMATION DISPLAY SYSTEM HEAD-END COMPONENTS AND MONITOR INTERFACES	T-SERIES	OWNER	OWNER	
TV SERVICE, DISTRIBUTION EQUIPMENT AND RECEIVERS	N/A	OWNER	OWNER	
SECURITY SYSTEMS (ACS, VSS) ROUGH-IN, INCLUDING BACKBOXES, TRIM RINGS AND CONDUIT	T-SERIES	EC	EC	
ACS FIELD DEVICES (e.g. CARD READERS, STATUS SENSORS, REX) AND CABLING	T-SERIES	TC	TC	
ACS DOOR HARDWARE INCLUDING ELECTRIC STRIKES, MAGNETIC LOCKS AND ASSOCIATED POWER SUPPLIES	T-SERIES	GC	GC / EC / TC	9
VSS HEAD-END, CAMERAS, MOUNTS AND CABLING	T-SERIES	TC	TC	

TECHNOLOGY SYSTEMS RESPONSIBILITY MATRIX NOTES:
1. UNDERGROUND CONDUITS IN/OUT OF BUILDING ARE SHOWN FOR INTENT ONLY. ACTUAL LOCATIONS SHALL BE COORDINATED IN THE FIELD WITH OTHER UNDERGROUND WORK (STORM, SEWER, POWER, ETC).
2. FLOOR BOX LOCATIONS SHALL BE COORDINATED WITH THE LOCATION(S) OF ASSOCIATED MILLWORK AND FURNITURE.
3. PENETRATIONS THROUGH FLOORS AND FIRE-RATED WALLS WHERE APPLICABLE SHALL BE FIRESTOPPED IN A MANNER THAT MAINTAINS THE RATING OF THE FLOOR OR WALL PENETRATED. REFER TO ARCHITECTURAL SPECIFICATIONS.
4. CABLE TRAY INDICATED ON DRAWINGS IS SHOWN FOR INTENT, AND THE INSTALLATION OF THE CABLE TRAY SHALL BE COORDINATED WITH OTHER TRADES (MECHANICAL, PLUMBING).
5. LOCATIONS OF TECHNOLOGY SYSTEMS ROUGH-IN SHALL BE COORDINATED WITH ASSOCIATED POWER RECEPTACLES.
6. PLYWOOD WALL COVERINGS SHALL BE AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.
7. ROOF PENETRATIONS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS AND SHALL BE SEALED AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS.
8. BLOCKING FOR ALL TV AND IDS (FPD) LOCATIONS SHALL BE AS SPECIFIED IN ARCHITECTURAL SPECIFICATIONS OR AS INDICATED ON ARCHITECTURAL DRAWINGS.
9. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ACCESS CONTROL SYSTEM COMPONENTS WITH DOOR AND DOOR HARDWARE VENDOR.
10. ALL DEVICES TO BE INSTALLED IN LOCATIONS APPROVED BY AUTHORITY HAVING JURISDICTION (AHJ).

SECURITY SYSTEM SYMBOLS

- C — CARDREADER
- N — CARDREADER-PINPAD
- K — KEY PAD
- M — MOTION DETECTOR
- S — STATUS SENSOR / MONITOR
- A — AUDIBLE ALARM
- L — MAGNETIC LOCK
- Y — KEY SHUNT
- E — ELECTRIC STRIKE
- DL — DELAY EGRESS SYSTEM
- P — PUSH BUTTON
- H — PANIC HARDWARE
- I — INTERCOM STATION
- B — BIOMETRIC CARDREADER
- ACS — ACCESS CONTROL SYSTEM
- CL — COM LOCK
- D — DURESS PUSHBUTTON
- GO — GATE OPERATOR
- G — GLASS BREAK SENSOR
- O — LOOP DETECTOR
- PL — PAD LOCK
- PCU — PREMISES CONTROL UNIT
- SPC — SECURITY COMPUTER
- VS — VIBRATION SENSOR
- KP — OVERRIDE KEYPAD
- ACP — COMMUNICATION CABINET
- SL — STROBE LIGHT
- DC — DOOR CONTACT
- REX — REQUEST TO EXIT

VIDEO SURVEILLANCE SYMBOLS

VIDEO SURVEILLANCE CAMERA

DIRECTION OF VIEW. # = APPROX. ANGLE OF VIEW

C ##XX

CAMERA NUMBER

CAMERA TYPE (PTZ OR FIXED)

ABBREVIATIONS
F FIXED
PTZ PAN-TILT-ZOOM

V VANDAL-RESISTANT
E ENVIRONMENTAL CONFIG (WEATHERPROOF, HEATER, FAN)

VM — VIDEO MONITORING LOCATION; "X" DESIGNATES LOCATION IF MORE THAN 1

SITE SYMBOLS

- HH — HANDHOLE, GENERIC
- C — CABLE MARKER
- CTV — CTV PEDISTAL BOX
- FO — FIBER OPTIC MANHOLE

LINE TYPE KEY

- NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
- EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK DASHED LINE)
- EXISTING TO REMAIN WORK (THIN SOLID LINE)
- NEW WORK UNDER FLOOR BY THIS CONTRACTOR
- CON — SITE UNDERGROUND CONDUIT
- //CON// — SITE REMOVED UNDERGROUND CONDUIT
- FOC — SITE UNDERGROUND FIBER OPTIC
- //FOC// — SITE REMOVED UNDERGROUND FIBER OPTIC
- T — SITE UNDERGROUND TELEPHONE
- OHT — SITE OVERHEAD TELEPHONE
- //T// — SITE REMOVED TELEPHONE
- TV — SITE UNDERGROUND TV CABLE

GENERAL SYMBOLS

- #/T-### — DETAIL NUMBER / SHEET NUMBER
- 9.### — KEYED NOTE, USED TO DESCRIBE ADDITIONAL INFORMATION OF WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL IT IS SHOWN WITH.

TELECOMMUNICATION OUTLET SYMBOLS

- # — VOICE OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
- # — DATA OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
- WAP — DATA OUTLET FOR WIRELESS ACCESS POINT (WAP) (# = QTY. CONNECTORS IF OTHER THAN 1). WAP BY OWNER UNO.
- #/# — VOICE/DATA OUTLET (#/# = QTY. V/D CONNECTORS IF OTHER THAN 1)
- VOICE OUTLET FOR WALL MOUNTED TELEPHONE
- PAY PHONE OUTLET
- # — FLOOR MOUNTED VOICE OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
- # — FLOOR MOUNTED DATA OUTLET (# = QTY. CONNECTORS IF OTHER THAN 1)
- #/## — FLOOR MOUNTED VOICE/DATA OUTLET (#/# = QTY. V/D CONNECTORS IF OTHER THAN 1)
- TSE — TELEPHONE SERVICE ENTRANCE PROTECTION DEVICE
- BET — BUILDING ENTRANCE TERMINAL
- PB — COMMUNICATIONS PUNCH BLOCK
- PP — COMMUNICATIONS PATCH PANEL
- COM — COMMUNICATIONS CABINET
- FO — WALL MOUNTED FIBER OPTIC CABINET
- TGB — COMMUNICATIONS GROUND BUS BAR
- FIBER OPTIC LINK
- FIBER OPTIC CONVERTER
  E/O = ELECTRICAL TO OPTICAL
  O/E = OPTICAL TO ELECTRICAL
- CLOCK
- ANTENNA
- EQUIPMENT RACK
- SURFACE RACEWAY - REFER TO KEYED NOTES & SPECIFICATIONS FOR TYPES

AUDIO VISUAL SYMBOLS

- TV — TELEVISION DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
- MON — MONITOR DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
- RCV — VIDEO RECEIVER OUTLET
- PROJ — PROJECTOR. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
- FPD — FLAT PANEL DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
- ID — INFORMATION DISPLAY. REFER TO DISPLAY SCHEDULE ON SHEET T-60X.
- S — LOUDSPEAKER (HORN TYPE)
- S — CEILING MOUNTED SPEAKER
- S — WALL MOUNTED SPEAKER
- CEILING MOUNTED STROBE
- WALL MOUNTED STROBE
- S — CEILING MOUNTED SPEAKER & STROBE
- S — WALL MOUNTED SPEAKER & STROBE
- S — PENDANT MOUNTED SPEAKER
- V — VOLUME CONTROL
- SP — SOUND AND PAGING CABINET
- PS — PAGING STATION
- SM — AMBIENT NOISE SENSOR
- ID — INTERCOM - DOOR STATION
- IM — INTERCOM - MASTER STATION
- IC — INTERCOM - CONTROLLER
- DB — DOOR BELL PUSHBUTTON
- B — DOOR BELL SOUNDER

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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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MANAWA, WI 54949

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SHEET TITLE:
NOTES, SYMBOLS & ABBREVIATIONS

SHEET NUMBER:
2-TE-001

COMM DEMOLITION NOTES:

1. WIRELESS ACCESS POINTS TO BE REMOVED AND STORED BY OWNER. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. WIRELESS ACCESS POINTS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
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5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES

TRUE NORTH PLAN NORTH

1 **LOWER LEVEL COMM DEMOLITION PLAN**

1/8" = 1'-0"

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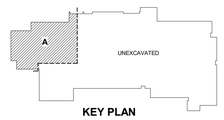
2019-04-16



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SHEET TITLE:
LOWER LEVEL COMM DEMOLITION PLAN

SHEET NUMBER:
2-TD-101

COMM DEMOLITION NOTES:

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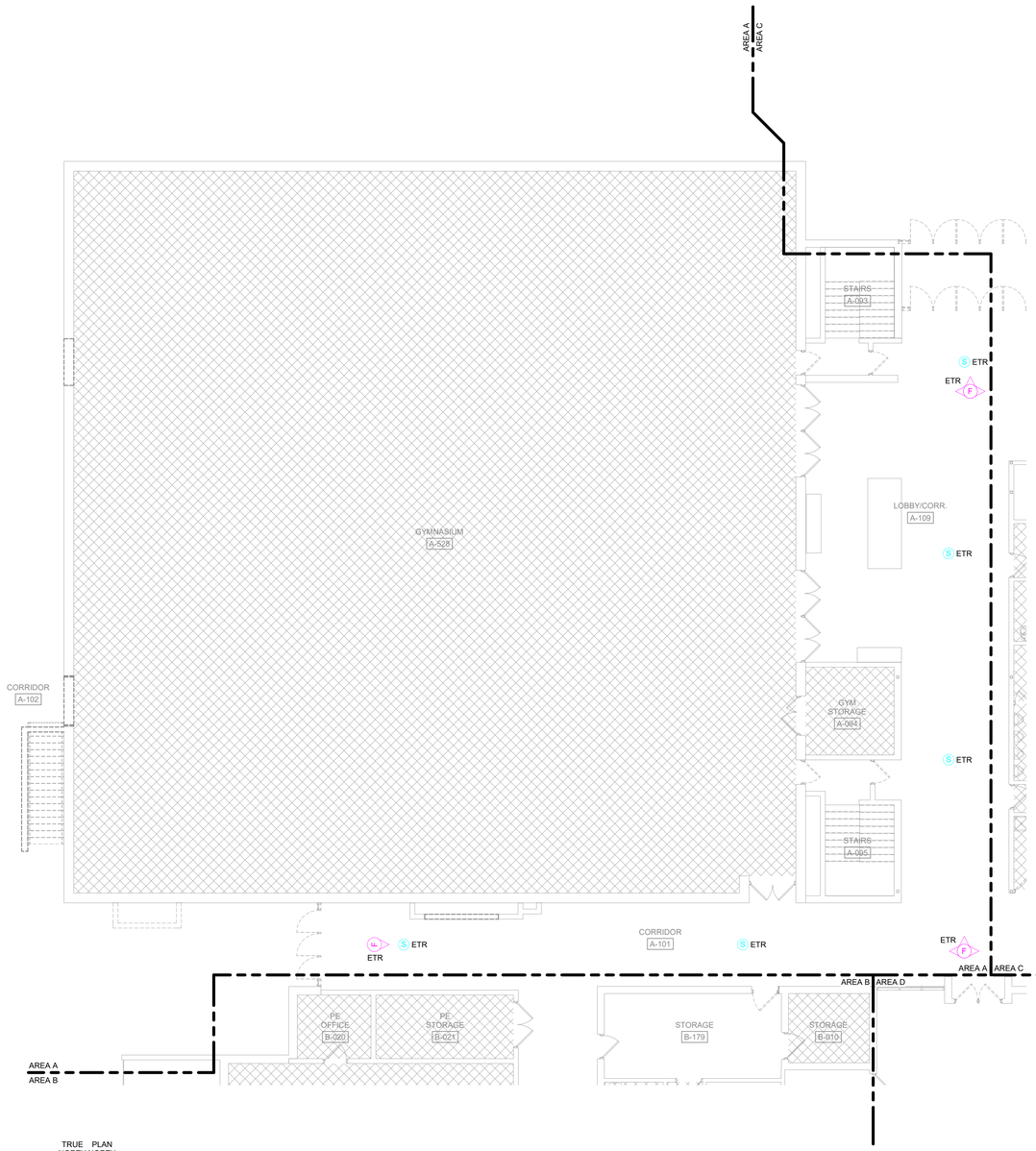
KEYED NOTES



TRUE NORTH PLAN NORTH

1 FIRST FLOOR COMM DEMOLITION PLAN - AREA A

1/8" = 1'-0"

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2019-04-16

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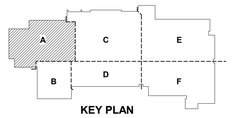

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SHEET TITLE:
FIRST FLOOR COMM DEMOLITION PLAN - AREA A

SHEET NUMBER:
2-TD-102

COMM DEMOLITION NOTES:

1. WIRELESS ACCESS POINTS TO BE REMOVED AND STORED BY OWNER. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. WIRELESS ACCESS POINTS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
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5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES

TRUE NORTH PLAN NORTH

1 **FIRST FLOOR COMM DEMOLITION PLAN - AREA B**

1/8" = 1'-0"

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2019-04-16

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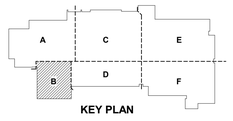

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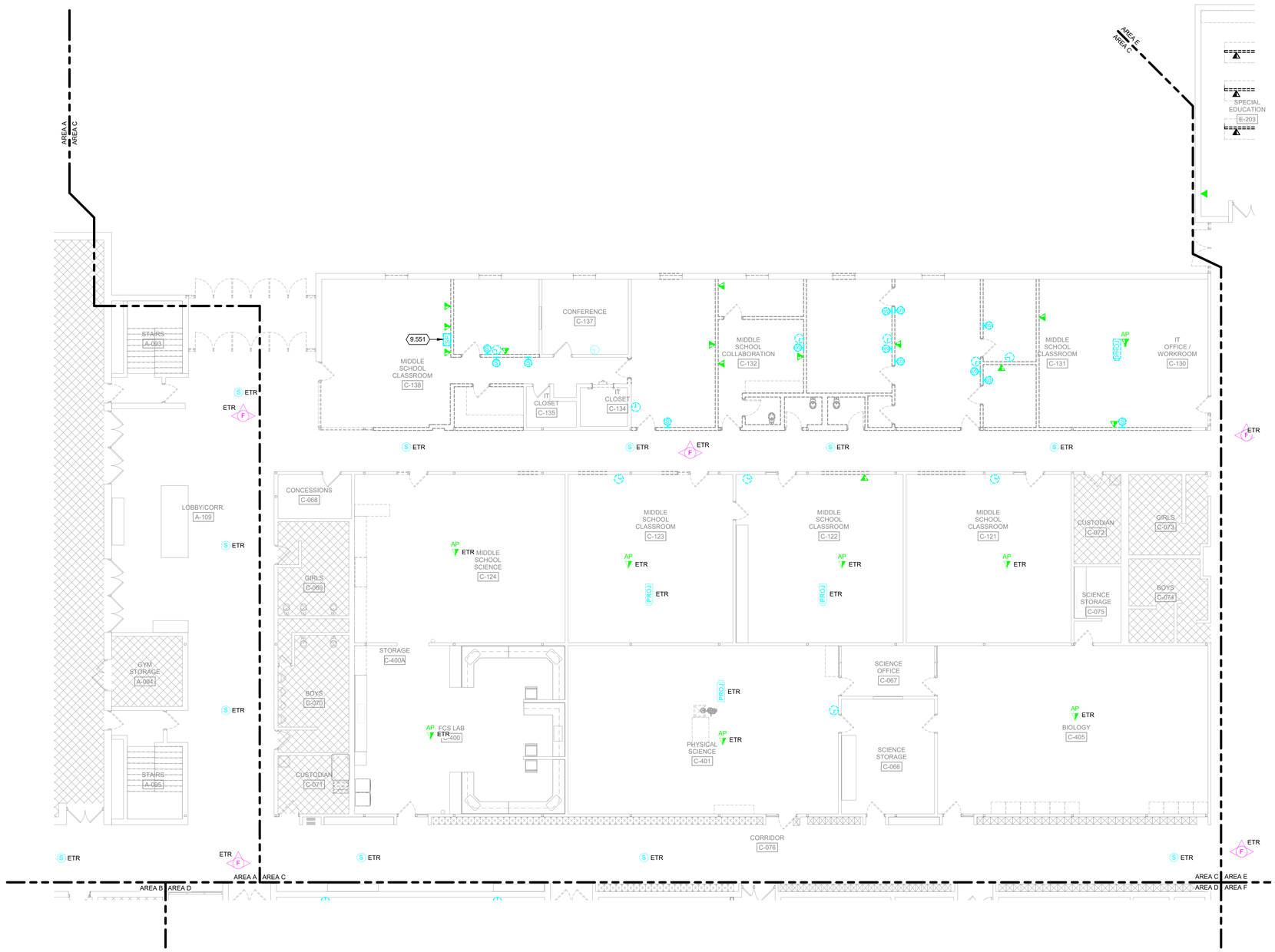

TRUE NORTH PLAN NORTH

FIRST FLOOR COMM DEMOLITION PLAN - AREA C

1/8" = 1'-0"

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5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES

9.551 EXISTING PAGING CABINET. CABINET AND EQUIPMENT TO BE RELOCATED TO ROOM C-134. CABLES TO BE PULLED BACK TO ROOM C-134 AND RECONNECTED TO EXISTING SYSTEM.

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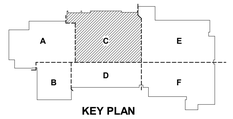
2019-04-16



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SHEET TITLE:
FIRST FLOOR COMM DEMOLITION PLAN - AREA C

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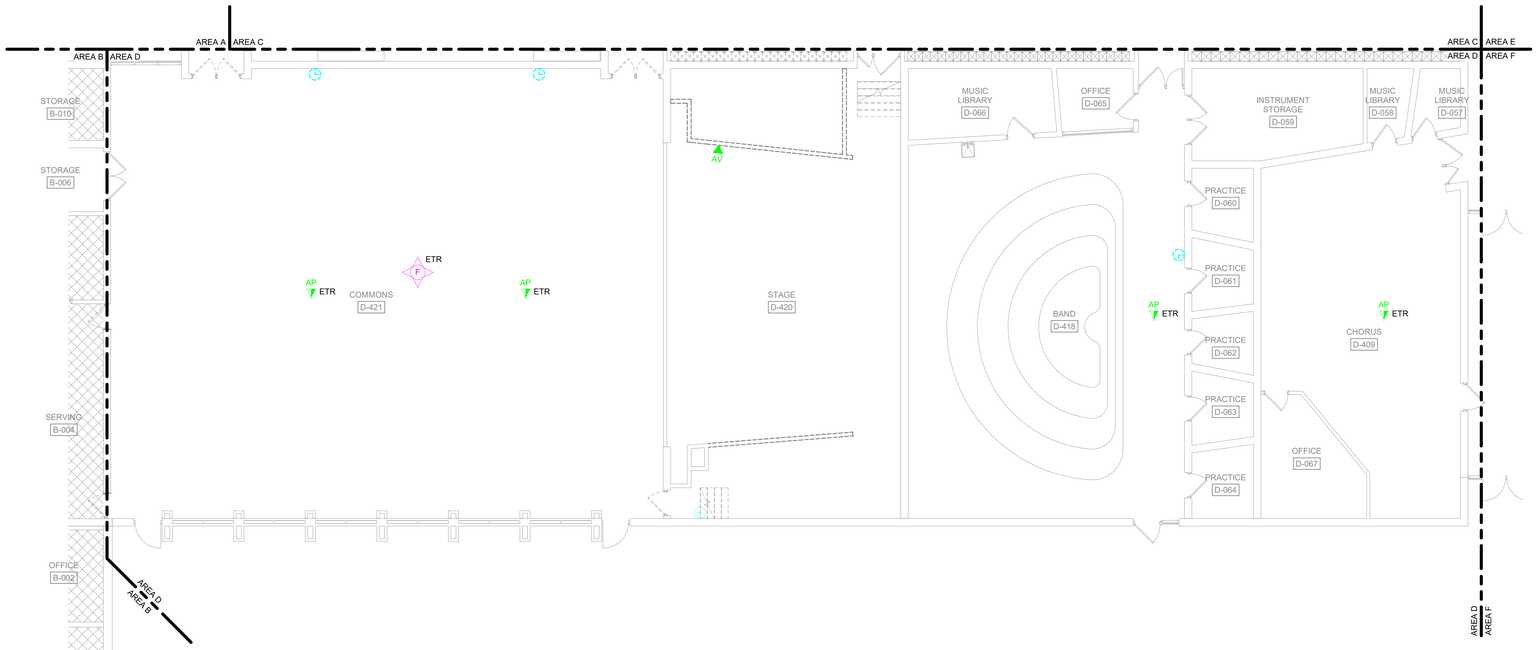
2-TD-104



TRUE NORTH PLAN NORTH

FIRST FLOOR COMM DEMOLITION PLAN - AREA D

1/8" = 1'-0"

COMM DEMOLITION NOTES:

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5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES

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FIRST FLOOR COMM DEMOLITION PLAN - AREA D

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2-TD-105

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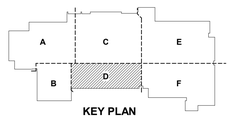
2019-04-16



KEY PLAN

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COMM DEMOLITION NOTES:

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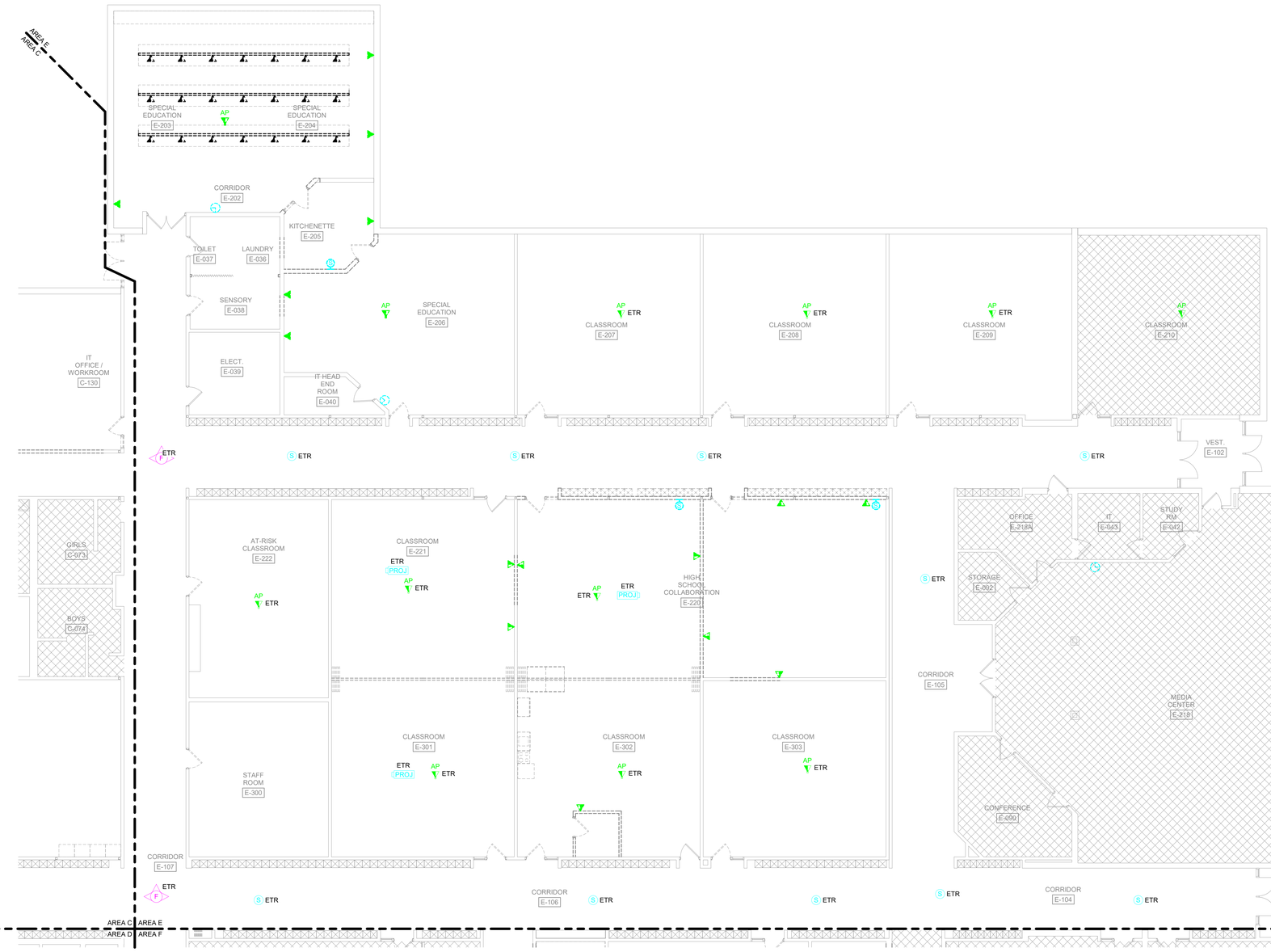
4. CAMERAS TO BE REMOVED BY CONTRACTOR AND GIVEN TO OWNER TO STORE. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. CAMERAS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES



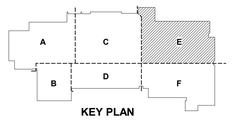
TRUE NORTH PLAN NORTH

FIRST FLOOR COMM DEMOLITION PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:
Mead & Hunt, Inc.
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Middleton, WI 53562
phone: 608-273-6380
meadhunt.com

MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO.:	18268
CAD DWG FILE:	
DRAWN BY:	Author
CHECKED BY:	Checker

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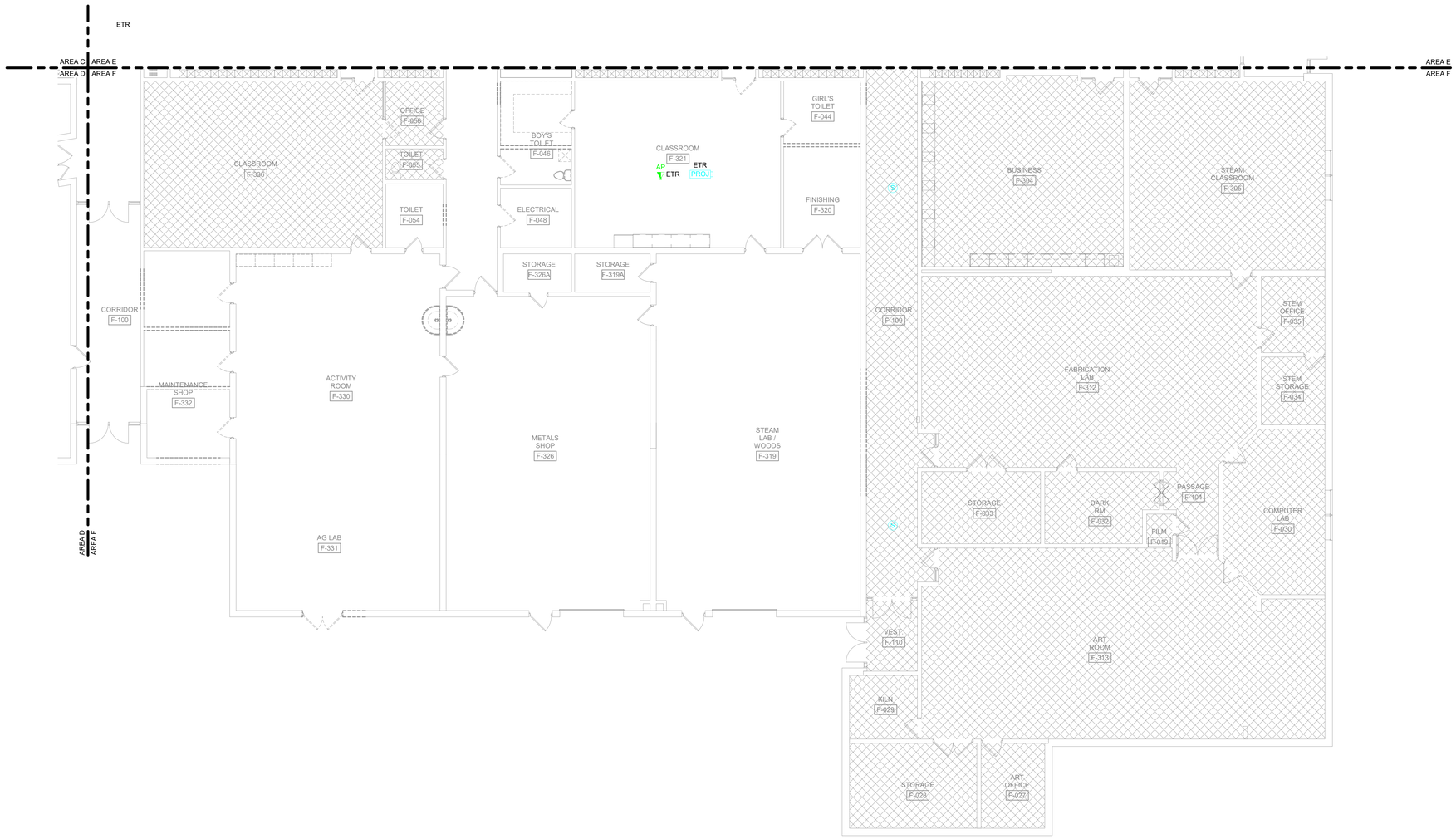
SHEET TITLE:
FIRST FLOOR COMM DEMOLITION PLAN - AREA E

SHEET NUMBER:
2-TD-106

COMM DEMOLITION NOTES:

1. WIRELESS ACCESS POINTS TO BE REMOVED AND STORED BY OWNER. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. WIRELESS ACCESS POINTS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
2. PROJECTORS TO BE REMOVED AND STORED BY OWNER. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. PROJECTORS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
3. SPEAKERS TO BE REMOVED AND STORED BY CONTRACTOR. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. SPEAKERS TO BE REINSTALLED BY CONTRACTOR.
4. CAMERAS TO BE REMOVED BY CONTRACTOR AND GIVEN TO OWNER TO STORE. LOCATIONS LABELED ETR ARE EXISTING TO REMAIN. CABLE SHALL BE COILED UP AND PROTECTED FOR DURATION OF PROJECT TO BE RE-USED. CAMERAS TO BE REINSTALLED BY OWNER AT CONCLUSION OF PROJECT.
5. DEVICES LABELED FOR DEMO SHALL BE REMOVED AND GIVEN TO OWNER. CABLES TO BE REMOVED BACK TO SOURCE.

KEYED NOTES



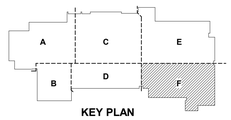
TRUE NORTH PLAN NORTH

1 **FIRST FLOOR COMM DEMOLITION PLAN - AREA F**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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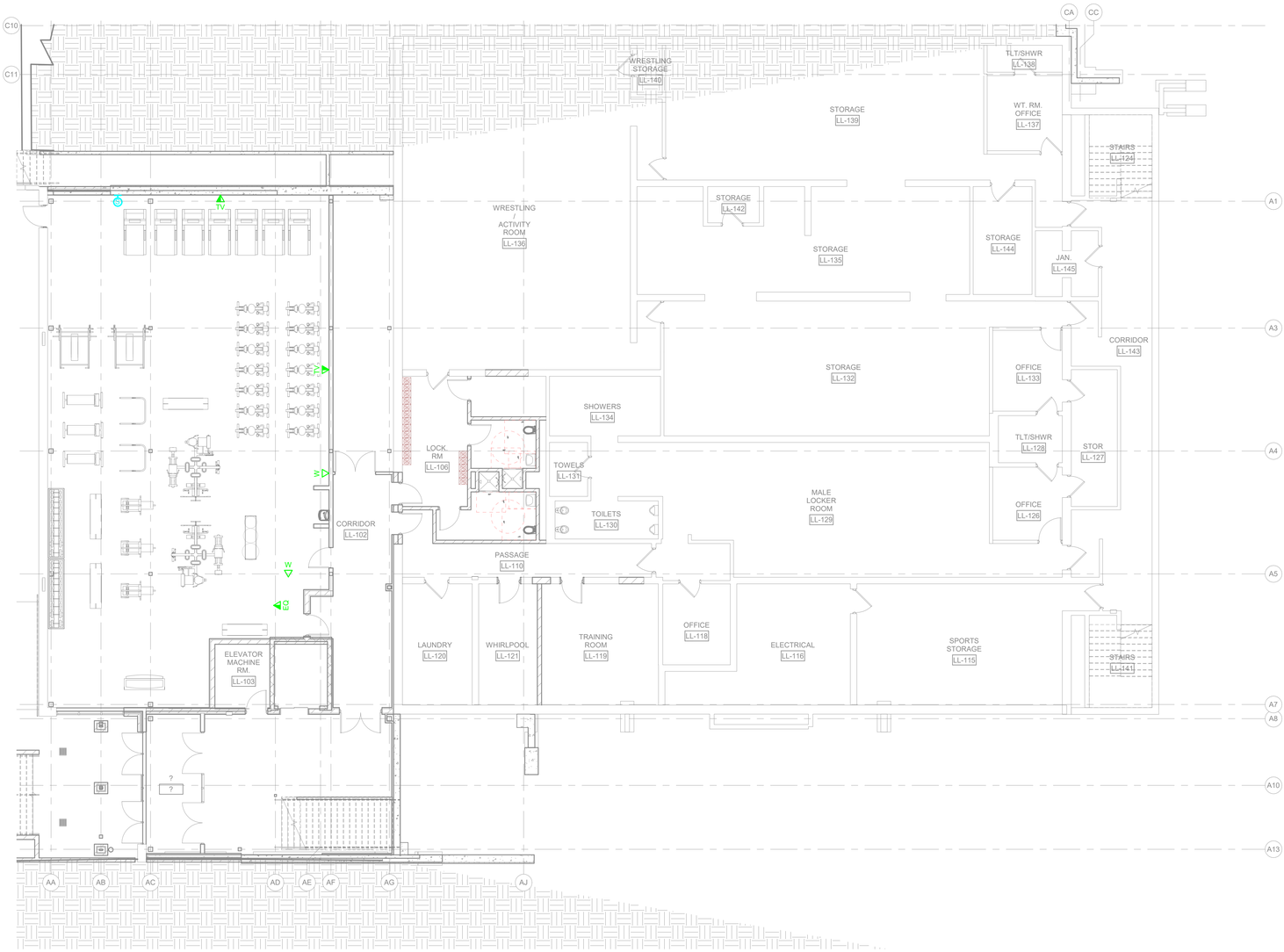
SHEET TITLE:
FIRST FLOOR COMM DEMOLITION PLAN - AREA F

SHEET NUMBER:
2-TD-107

KEYED NOTES



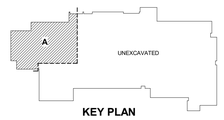
TRUE NORTH PLAN NORTH

1 LOWER LEVEL COMM PLAN

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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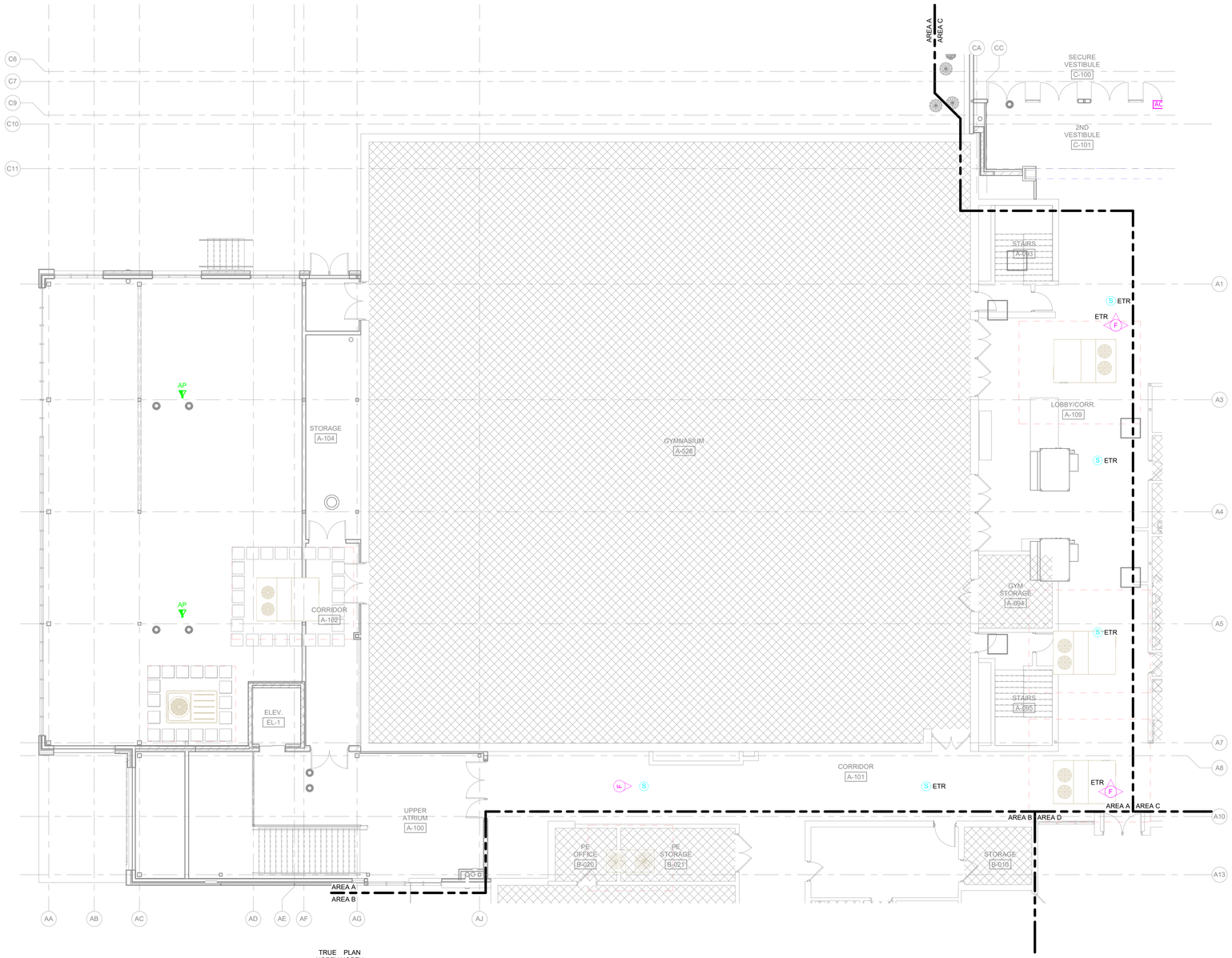
SHEET TITLE:
LOWER LEVEL COMM PLAN

SHEET NUMBER:
2-TA-101

KEYED NOTES



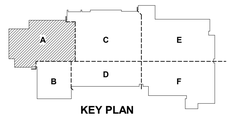
TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR COMM PLAN - AREA A**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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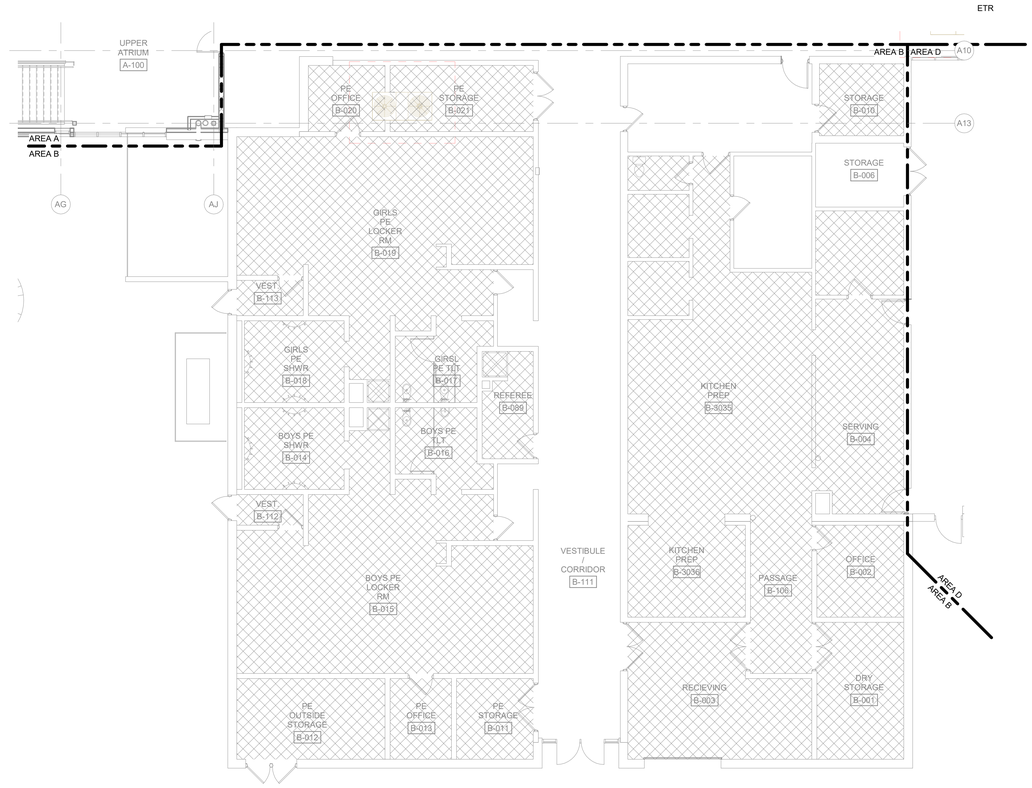
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA A

SHEET NUMBER:
2-TA-102

KEYED NOTES



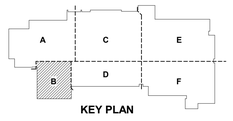
TRUE NORTH PLAN NORTH

1 FIRST FLOOR COMM PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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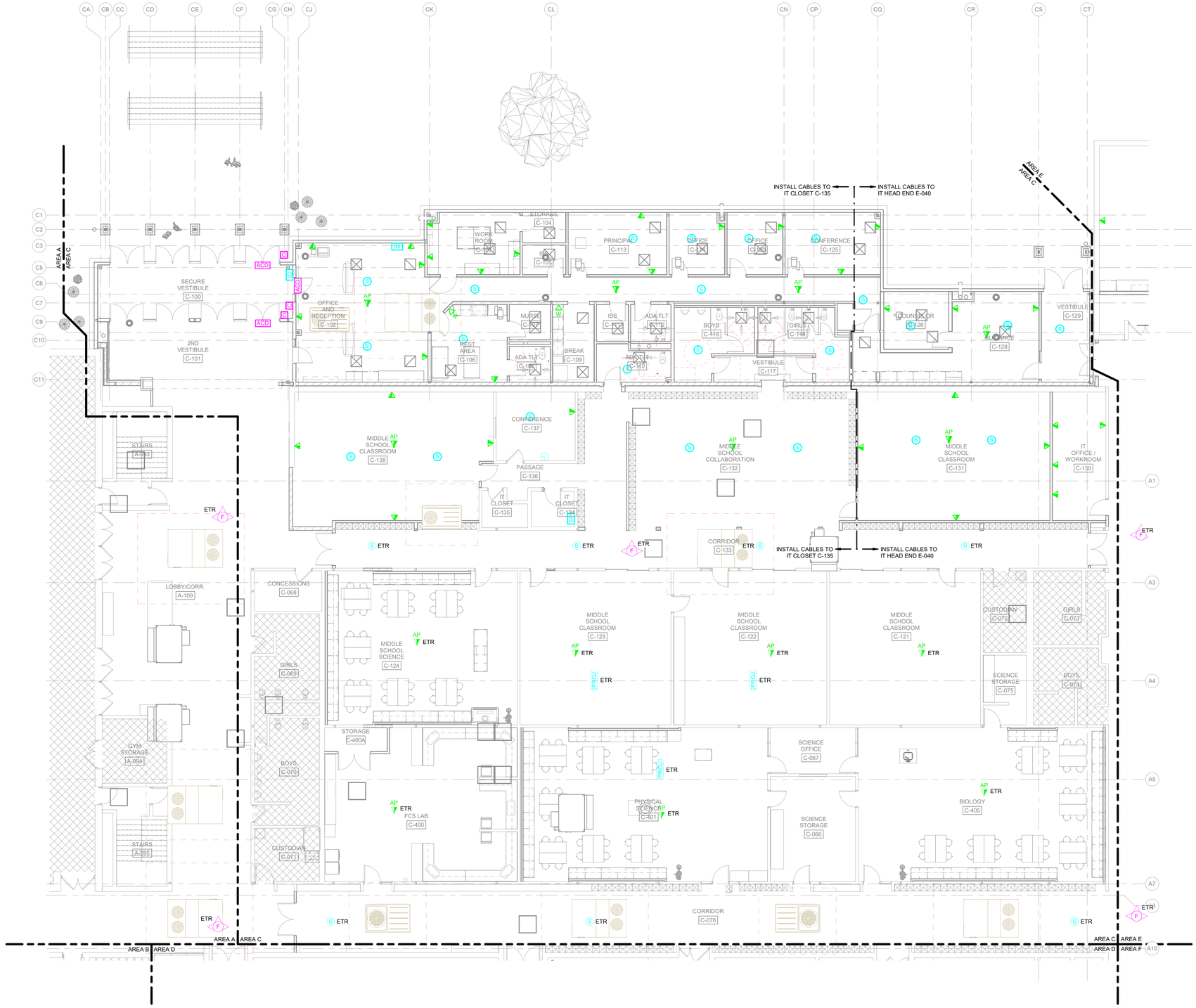
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA B

SHEET NUMBER:
2-TA-103

KEYED NOTES



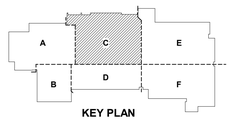
TRUE NORTH PLAN NORTH

1 FIRST FLOOR COMM PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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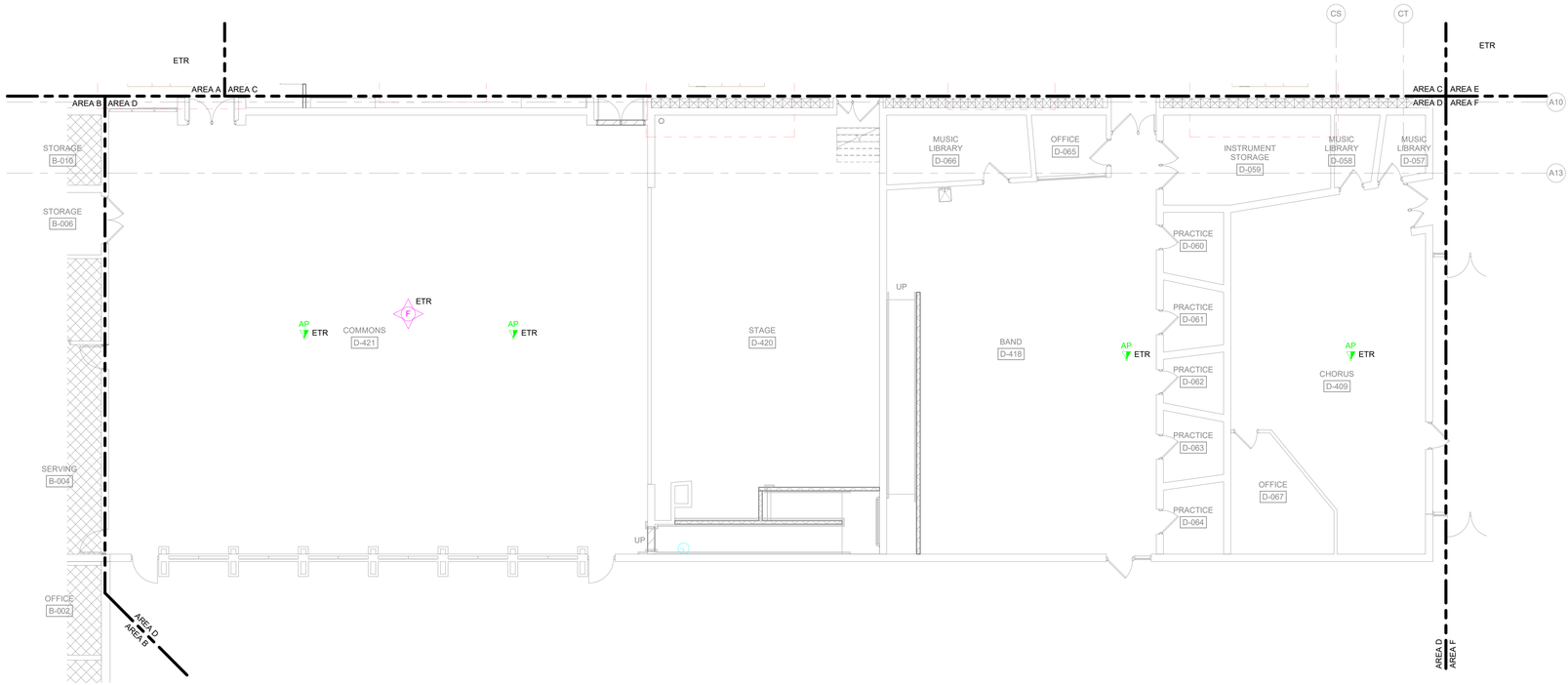
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA C

SHEET NUMBER:
2-TA-104

KEYED NOTES



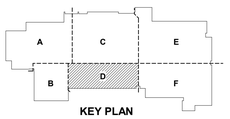
TRUE NORTH PLAN NORTH

1 **FIRST FLOOR COMM PLAN - AREA D**

1/8" = 1'-0"

FOR BIDS
NOT FOR CONSTRUCTION

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16



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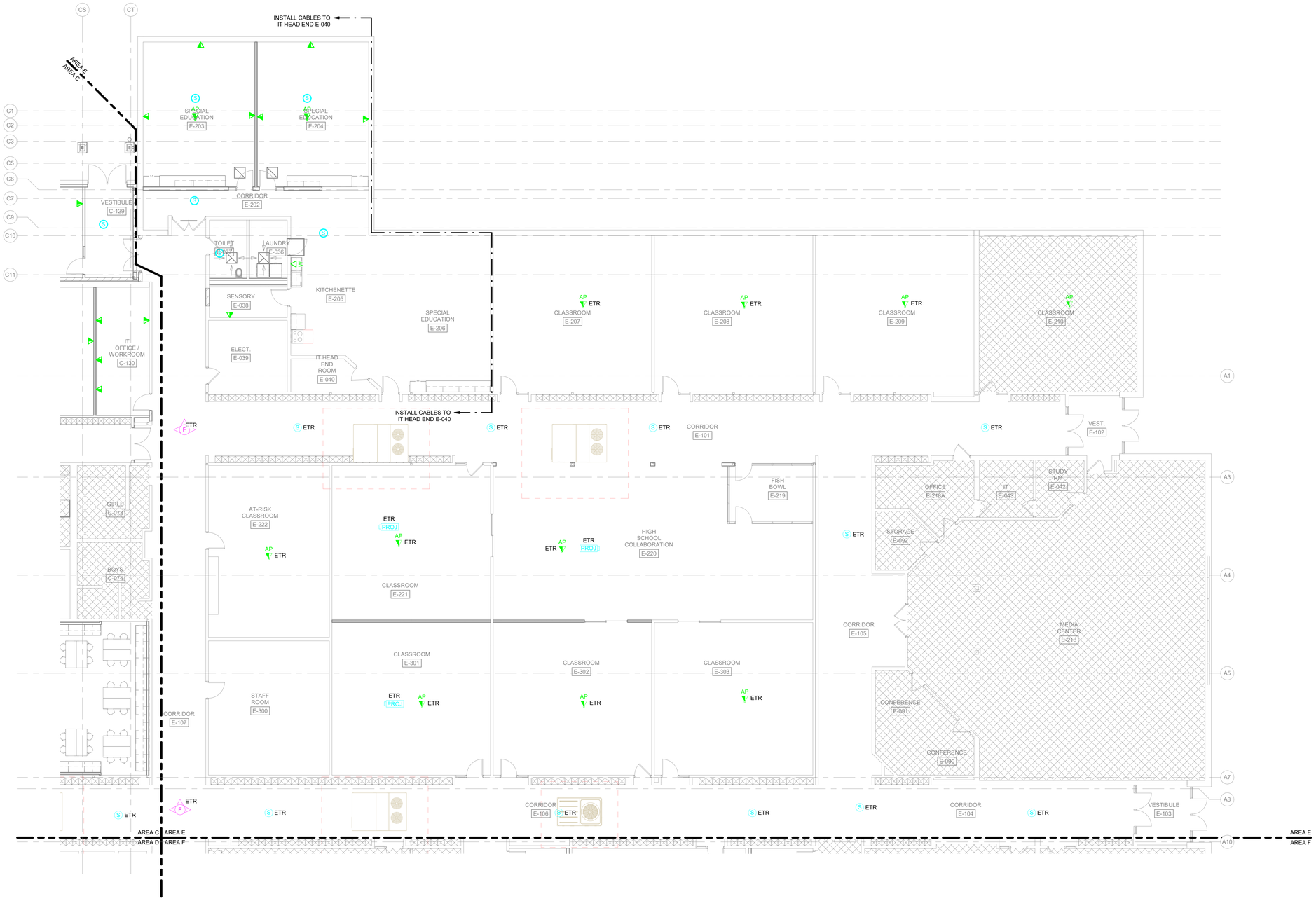
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA D

SHEET NUMBER:
2-TA-105

KEYED NOTES



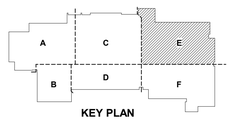
TRUE NORTH PLAN NORTH

FIRST FLOOR COMM PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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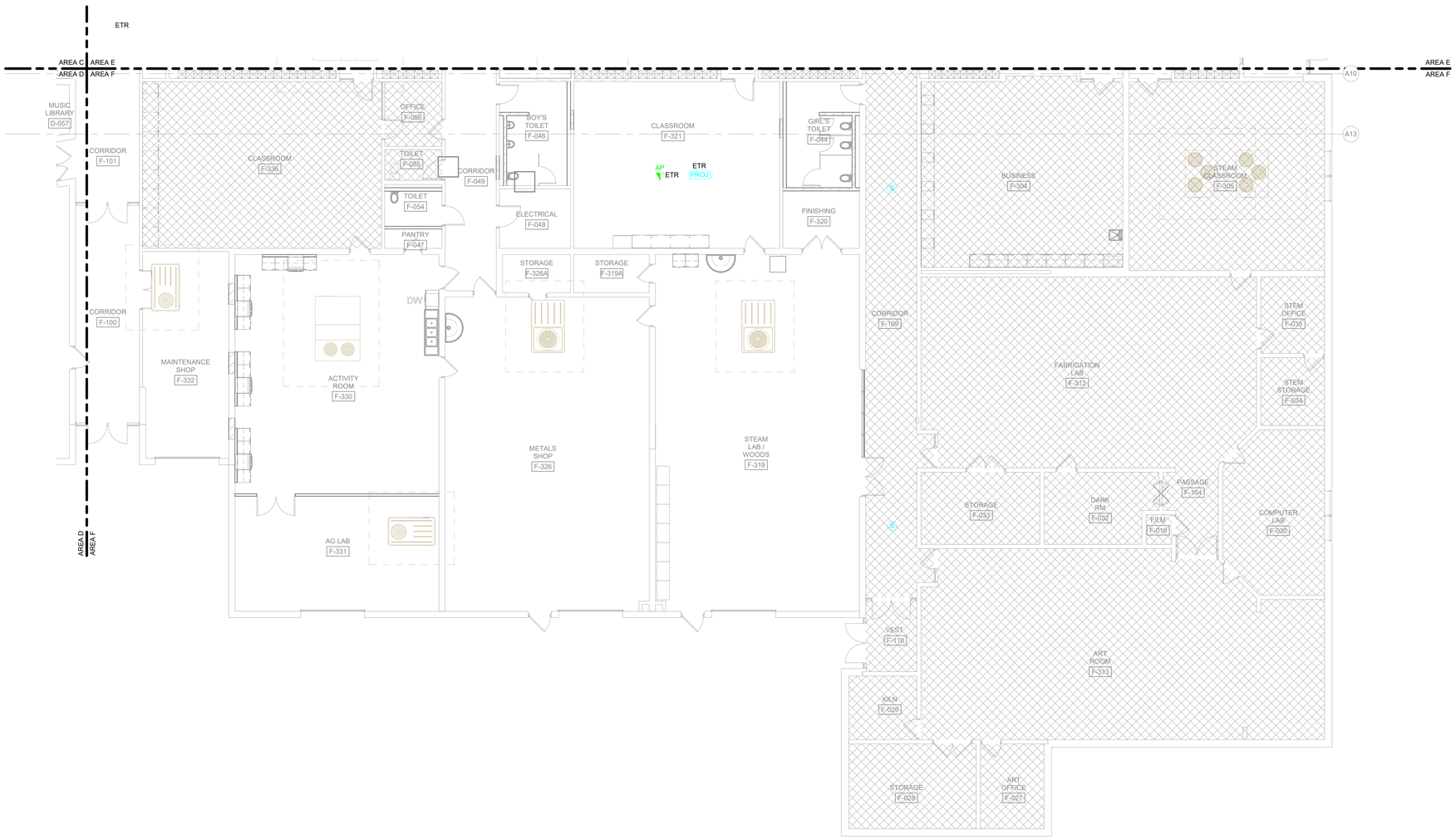
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA E

SHEET NUMBER:
2-TA-106

KEYED NOTES



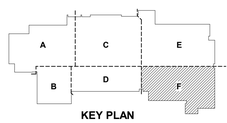
TRUE NORTH PLAN NORTH

1 FIRST FLOOR COMM PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
NOT FOR CONSTRUCTION



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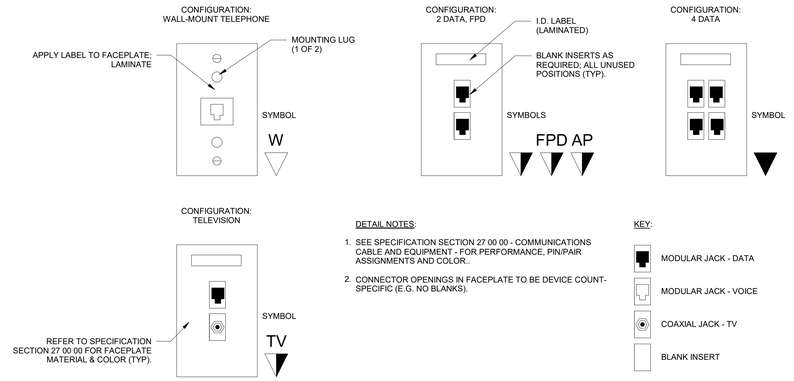
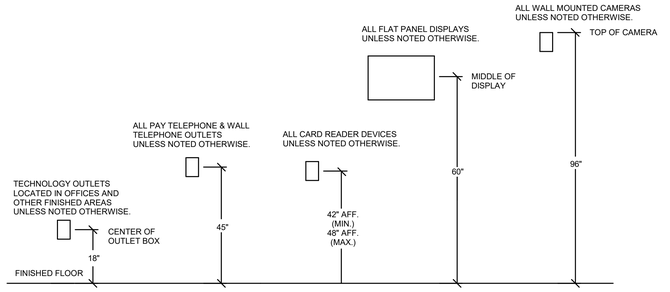
SHEET TITLE:
FIRST FLOOR COMM PLAN - AREA F

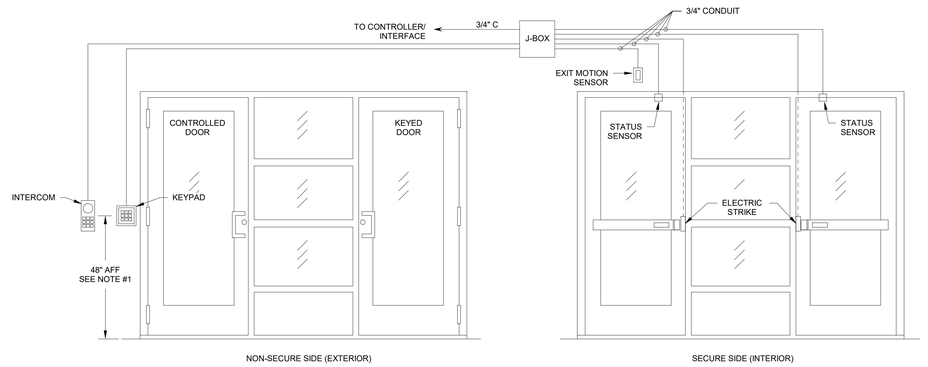
SHEET NUMBER:
2-TA-107



1 TELECOMMUNICATIONS OUTLET LAYOUTS
NO SCALE

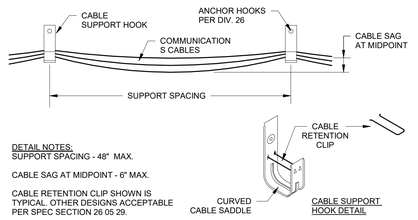


2 DEVICE MOUNTING HEIGHTS DETAIL
NO SCALE



NOTES:
1. POSITION KEYPAD IN STUD-WALL ADJACENT TO DOOR. CONFIRM BEST LOCATION WITH OWNER.
2. SYSTEM TO FAIL "SECURE" IN THE EVENT OF LOSS-OF-POWER.
3. REPAIR ALL SURFACES AFFECTED BY INSTALLATION TO ORIGINAL CONDITIONS GROMMETS ON ALL PENETRATIONS TO PREVENT CABLE DAMAGE.

3 DOOR ELEVATION - DOUBLE
NO SCALE



DETAIL NOTES:
SUPPORT SPACING - 48" MAX.

CABLE SAG AT MIDPOINT - 6" MAX.

CABLE RETENTION CLIP SHOWN IS TYPICAL. OTHER DESIGNS ACCEPTABLE PER SPEC SECTION 26 05 29.

4 TO PATHWAY - J-HOOKS
NO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-16

FOR BIDS
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SHEET TITLE:
DETAILS

SHEET NUMBER:
2-TE-501

HVAC SYMBOLS

- AIRFLOW (SUPPLY/OUTSIDE AIR)
- AIRFLOW (RETURN/EXHAUST)
- DG — DOOR GRILLE
- DCO — 3/4" DOOR UNDERCUT
- SUPPLY OR OUTDOOR AIR
- RETURN OR TRANSFER
- EXHAUST
- SUPPLY DUCT TURNED AWAY
- SUPPLY DUCT TURNED TOWARD
- 12x12 — RECTANGLE DUCT SIZE (FIRST FIGURE IS SIDE SHOWN)
- 12ø — ROUND DUCT (RIGID)
- INDICATES PERFORATED DUCT
- 12/12ø — OVAL DUCT
- S — SMOKE DETECTOR
- FLEXIBLE CONNECTION
- DUCT (FLEXIBLE ROUND)
- TURNING VANES
- TRANSITION (SQUARE-TO-ROUND)
- BD — BACKDRAFT DAMPER
- VOLUME DAMPER
- AD / FD — FIRE DAMPER & ACCESS DOOR
- AD / SD — SMOKE DAMPER & ACCESS DOOR
- AD / FSD — COMBINATION FIRE/SMOKE DAMPER & ACCESS DOOR
- MOD — MOTOR OPERATED DAMPER
- AP — CEILING MOUNTED ACCESS PANEL
- A / 100 — AIR OUTLET/INLET TYPE (CFM)

MECHANICAL PIPING

- A — COMPRESSED AIR
- BFW — BOILER FEED WATER
- BSD — BOILER SURFACE BLOW DOWN
- BBD — BOILER BOTTOM BLOW DOWN
- CF — CHEMICAL FEED
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- CD — CONDENSATE DRAIN
- GWS — GLYCOL WATER SUPPLY
- GWR — GLYCOL WATER RETURN
- HPCR — HIGH PRESSURE CONDENSATE RETURN
- HPS — HIGH PRESSURE STEAM
- HWS — HOT WATER SUPPLY
- HWR — HOT WATER RETURN
- IWS — ICE WATER SUPPLY
- IWR — ICE WATER RETURN
- LP — LIQUID PETROLEUM
- LPS — LOW PRESSURE STEAM
- LPCR — LOW PRESSURE CONDENSATE RETURN
- MPS — MEDIUM PRESSURE STEAM
- MPCR — MEDIUM PRESSURE CONDENSATE RETURN
- G — NATURAL GAS
- PCR — PUMPED CONDENSATE RETURN
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- RHG — REFRIGERANT HOT GAS
- SV — STEAM VENT
- TWS — TOWER WATER SUPPLY
- TWR — TOWER WATER RETURN
- VAC — VACUUM

PIPING SYMBOLS

- PIPE TURNED TOWARD
- PIPE TURNED AWAY
- PIPE TURNED AWAY
- PIPE TURNED TOWARD
- FLEXIBLE CONNECTOR
- UNION
- FLANGES
- REDUCER (CONCENTRIC)
- REDUCER (ECCENTRIC)
- PIPE CAP/CLEAN OUT
- PIPE PLUG
- FLUID FLOW DIRECTION
- PG — PIPE GUIDE
- PA — PIPE ANCHOR
- PITCH — PIPE PITCH DIRECTION
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- WATER HAMMER ARRESTOR
- AV — AIR VENT (AUTO)
- HMV — AIR VENT (MANUAL)
- AUTOMATIC CONTROL VALVE (2-WAY)
- AUTOMATIC CONTROL VALVE (3-WAY)
- BALL VALVE
- BALANCING VALVE
- BUTTERFLY VALVE
- BACKFLOW PREVENTION VALVE
- CHECK VALVE
- EQUIPMENT DRAIN VALVE
- FILTER
- FLOW MEASUREMENT STATION
- GATE VALVE
- GAUGE CONNECTION
- GLOBE ANGLE VALVE
- GLOBE VALVE
- ISOLATION/SHUT-OFF/MANUAL VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- PRESSURE REGULATING VALVE
- RELIEF VALVE
- S — SOLENOID VALVE ONE-WAY (ELECTRIC)
- STRAINER
- STRAINER WITH BLOW OFF VALVE AND NIPPLE
- THROTTLING VALVE
- VACUUM BREAKER
- PUMP
- FS — FLOW SENSOR
- LS — LEVEL SENSOR
- PS — PRESSURE SENSOR
- TS — TEMPERATURE SENSOR

GENERAL SYMBOLS

- CO — CARBON MONOXIDE (CO) SENSOR
- CO2 — CARBON DIOXIDE (CO2) SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- NO2 — NITROGEN DIOXIDE (NO2) SENSOR
- RS — ROOM SENSOR
- SP — STATIC PRESSURE SENSOR
- H — HUMIDISTAT
- TS — TEMPERATURE SENSOR
- T — THERMOSTAT
- T — INSULATED BASE THERMOSTAT
- $ — SWITCH
- NEW CONNECTION TO EXISTING
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW TO BE INSTALLED

GENERAL NOTES

1. THE MECHANICAL CONTRACTOR SHALL EXAMINE ALL CONTRACT DOCUMENTS AND IS REQUIRED TO DO ALL WORK WHICH IS SHOWN ON THE DRAWINGS, STATED IN THE SPECIFICATIONS, OR REASONABLY IMPLIED AS NECESSARY TO COMPLETE THEIR DIVISION OF WORK FOR THIS PROJECT REGARDLESS OF WHERE IN THE CONTRACT DOCUMENTS THE WORK IS REPRESENTED. MECHANICAL CONTRACTOR TO COORDINATE WORK WITH ALL OTHER TRADES. ALL OTHER TRADE DOCUMENTS ARE TO BE CONSIDERED PART OF THIS CONTRACTORS DOCUMENTS WITH RESPECT TO COORDINATION OF WORK BETWEEN TRADES OF WORK.
2. ABBREVIATIONS AND SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL ABBREVIATIONS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.
3. THESE DRAWINGS ARE DESIGN DRAWINGS AND ARE DIAGRAMMATIC, THEY MAY NOT SHOW ALL PHYSICAL ARRANGEMENTS, OFFSETS, BENDS, OR ELBOWS WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF VARIOUS MATERIALS, EQUIPMENT, PIPING AND DUCTWORK SYSTEMS IN ALLOTTED SPACES. EXAMINE THESE AND OTHER AVAILABLE DRAWINGS TO DETERMINE SPACE LIMITATIONS AND INTERFERENCES. MAKE ANY MINOR CHANGES IN LOCATIONS OF EQUIPMENT, PIPING, AND DUCTWORK FROM THAT SHOWN ON DRAWINGS AND FOR ALL PHYSICAL DETAILS REQUIRED FOR INSTALLATION. COST FOR ADAPTING WORK TO JOB SITE CONDITIONS SHALL NOT BE CONSIDERED AS BASIS OF AN EXTRA COST TO CONTRACT.
4. ELEVATION OF PIPING AND DUCTWORK INDICATED ON THESE DRAWINGS ARE TO BE USED AS GUIDELINES TO ASSIST WITH INSTALLATIONS. MINOR CHANGES TO THESE ELEVATIONS MAY BE NECESSARY TO ELIMINATE UNFORESEEN INTERFERENCES. ANY CHANGE IN ELEVATION SHALL BE APPROVED PRIOR TO CHANGE.
5. ANY AND ALL INFORMATION SHOWN ON THESE DRAWINGS WITH RESPECT TO EXISTING STRUCTURES, UTILITIES, AND MECHANICAL SYSTEMS, IS AS EXACT AS COULD BE SECURED. THE INFORMATION IS NOT WARRANTED NOR GUARANTEED ACCURATE, FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK.
6. ACCURATE AND LEGIBLE AS-BUILT DRAWING MARKUPS SHALL BE MAINTAINED AT THE JOB SITE, AND BE SUBMITTED PRIOR TO FINAL PAYMENT FOR THE CREATION OF FINAL RECORD DRAWINGS.
7. ALL NEW AND EXISTING ROOFING SYSTEMS SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
8. TEMPORARILY PATCH ALL ROOF OPENINGS WATERTIGHT UNTIL FINAL CLOSURE CAN BE MADE.
9. VERIFY ALL EQUIPMENT LOCATIONS AND PIPE AND DUCT ROUTING WITH OWNER PRIOR TO INSTALLATION.
10. SEQUENCE OF WORK AND/OR PLACE OF COMMENCEMENT OF WORK SHALL BE APPROVED PRIOR TO WORK BEING STARTED. SCHEDULED SHUTDOWNS SHALL BE CLOSELY COORDINATED WITH EXISTING OPERATIONS.
11. MAINTAIN 3'-0" CLEAR HORIZONTALLY IN FRONT OF ALL ELECTRICAL EQUIPMENT.
12. COORDINATE POWER REQUIREMENTS FOR ALL POWER TO MECHANICAL EQUIPMENT INCLUDING CONTROL SYSTEM WITH ELECTRICAL CONTRACTOR AND INSURE ALL COSTS ASSOCIATED WITH SUCH ARE INCLUDED IN THE PROJECT BID COST. PROVIDE ELECTRICAL POWER, TRANFORMERS, RELAYS, ETC. AS NECESSARY TO ALL HVAC AND MECHANICAL CONTROLS.
13. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES ON ALL EQUIPMENT.

ABBREVIATIONS

A	AMPS
ABI	ALTERNATE BID ITEM
AC	DUCTLESS SPLIT SYSTEM
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACH	AIR COOLED CHILLER
ACOMP	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
ACV	AUTOMATIC CONTROL VALVE
AD	AIR DROP
AF	AIR FILTER OR AIR FOIL
AFC	AFTER COOLER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMD	AIR MIXING DEVICE
ANG	AIR NATIONAL GUARD
APPROX	APPROXIMATELY
AS	AIR SEPARATOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AT	AIR TERMINAL
AWC	ABSORPTION CHILLER
BC	BOOSTER COIL
BH	BOOSTER HUMIDIFIER
BHP	BRAKE HORSEPOWER
BHR	CONTINUOUS BLOWDOWN HEAT RECOVERY SYSTEM
BI	BACKWARD INCLINED
BLD	BOILER BLOWDOWN SEPARATOR
BPD	BACKFLOW PREVENTION DEVICE
BRS	BRASS
BRZ	BRONZE
BS	BLACK (MILD) STEEL
BSB	BRANCH SELECTOR BOX
BTU	BUFFER TANK
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BW	BUTTWELD
BZ	BRONZE
C	CONVECTOR
CA	COMBUSTION AIR
CAD	COMPRESSED AIR DRYER
CAF	COMPRESSED AIR FILTER
CC	COOLING COIL OR CONTROLS CONTRACTOR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
COMP	COMPRESSOR
COND	CONDENSATE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRP	CONDENSATE RETURN PUMP
CS	CENTRIFUGAL SEPARATOR
CT	COOLING TOWER
CTCLG	CLOSE TO CEILING
CTCLM	CLOSE TO COLUMN
CTW	CLOSE TO WALL
CU	COPPER
CUH	CABINET UNIT HEATER
DAC	DOOR AIR CURTAIN
DBA	DECIBELS, BAND A
DC	DUST COLLECTOR
DCVA	DOUBLE CHECK VALVE ASSEMBLY BPD
DDC	DIRECT DIGITAL CONTROL
DDH	DESICCANT DEHUMIDIFIER
DEMO	DEMOLISH
DF	DESTRATIFICATION FAN
DFD	DIVISION OF FACILITIES DEVELOPMENT
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DMPR	DAMPER
DN	DOWN
DOD	DEPARTMENT OF DEFENSE
DRC	DRY COOLER
DWG	DRAWING
DX	DIRECT EXPANSION
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBH	ELECTRIC BASEBOARD HEATER
EC	EVAPORATIVE COOLER OR ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EFT	ENTERING FLUID TEMPERATURE
EG	EXHAUST GRILLE
EGLY	ETHYLENE GLYCOL
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
EOM	END OF MAIN
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
ERV	AIR-TO-AIR HEAT EXCHANGER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WALL HEATER
EWT	ENTERING WATER TEMPERATURE
°F	FAHRENHEIT
FAF	FORCED AIR FURNACE
FC	FLUID COOLER
FCU	FAN COIL UNIT
FE	FUME EXTRACTOR
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FOP	FUEL OIL PUMP
FPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FLASH TANK OR FEET
FTC	FINNED TUBE CONVECTOR
FTWC	FEET WATER COLUMN PRESSURE
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GFT	GLYCOL FILL TANK
GPM	GALLONS PER MINUTE
GS	GALVANIZED STEEL
H	HEIGHT
HB	HUMIDIFICATION BOILER
HC	HEATING COIL
HD	HEAD (FT)
HDB	HYDROSTATIC DESIGN BASIS
HP	HEAT PUMP OR HORSEPOWER
HPC	ERV HEAT PUMP COIL
HR	HOSE REEL
HRW	ROTARY AIR-TO-AIR EXCHANGER
HUM	HUMIDIFIER
HWB	HOT WATER BOILER
HX	FLUID HEAT EXCHANGER
HZ	HERTZ
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCH
INHG	INCHES MERCURY PRESSURE
INWC	INCHES WATER COLUMN PRESSURE
IR	INFRARED HEATER
KH	KITCHEN HOOD
KW	KILOWATT
L	LOUVER OR LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LD	LINEAR DIFFUSER
LFT	LEAVING FLUID TEMPERATURE
LPG	LIQUIFIED PETROLEUM GAS
LS	LEVEL SWITCH
LWT	LEAVING WATER TEMPERATURE
MADP	MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE
MAU	MAKE-UP AIR UNIT
MAWP	MAXIMUM ALLOWABLE WORKING PRESSURE
MAX	MAXIMUM
MBH	THOUSANDS BTU'S PER HOUR
MC	MECHANICAL CONTRACTOR OR MECHANICAL COUPLING
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MMBH	MILLION BTU PER HOUR
MOCP	MINIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED CONTROL DAMPER
MSS	MANUFACTURERS STANDARDIZATION SOCIETY
MTL	MATERIAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NH	NO-HUB
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
P	HYDRONIC PUMP OR PRESSURE
PC	PLUMBING CONTRACTOR
PCP	PRESSURE POWERED CONDENSATE PUMP
PD	PRESSURE DROP/DIFFERENTIAL
PG	PROPYLENE GLYCOL
PH	PHASE
PPH	POUND PER HOUR
PROP	PROPELLER
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSID	PSI DIFFERENTIAL
PSIG	PSI GAGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PTHP	PACKAGED TERMINAL HEAT PUMP
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RDH	REFRIGERATED DEHUMIDIFIER
RG	RETURN GRILLE
RH	RELIEF HOOD
RPM	REVOLUTIONS PER MINUTE
RTD	RESISTIVE THERMAL DEVICE
RTU	ROOF TOP UNIT
RZ	RADIANT FLOOR HEATING ZONE
SA	SUPPLY AIR
SAD	SOUND ATTENUATING DEVICE
SB	SECURITY BARRIER
SCFM	STANDARD CFM
SCH	SCHEDULE
SD	SLOT DIFFUSER/SOLDER
SF	STEAM FILTER OR SUPPLY FAN
SG	SUPPLY GRILLE
SHT	SHEET
SMLS	SEAMLESS
SMS	SNOW MELTING SYSTEM DISTRIBUTION MANIFOLD
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SQ	SQUARE
SRV	SAFETY RELIEF VALVE
SS	STAINLESS STEEL
ST	STEAM TRAP
STD	STANDARD
STL	STEEL
SV	SOLVENT WELD
SW	SOCKET WELD
T	TEMPERATURE
TA	TRANSFER AIR
TCP	TEMPERATURE CONTROL PANEL
TDH	TOTAL DEVELOPED HEAD
TDS	TOTAL DISSOLVED SOLIDS
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TH	THREADED
TMC	TECHNOLOGY MANAGEMENT CENTER
TMV	THERMOSTATIC MIXING VALVE
TONR	TONS COOLING
TYP	TYPICAL
UC	UNIT COOLER
UFC	UNIFIED FACILITIES CRITERIA
UGD	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR OR ULTRAVIOLET
V	VOLTS
VA	VENT AIR
VER	VEHICLE EXHAUST REEL
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATORS
VLV	VALVE
VRF	VARIABLE REFRIGERANT FLOW
W	WATTS OR WIDTH
WC	WATER COLUMN
WCC	WATER COOLED CONDENSER
WCH	WATER COOLED CHILLER
WF	WATER FILTER
WIV	WATER INLET VALVE
WHA	WATER HAMMER ARRESTOR

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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	April 16, 2019
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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SHEET TITLE:
NOTES, SYMBOLS AND ABBREVIATIONS

SHEET NUMBER:
2-MS-001

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

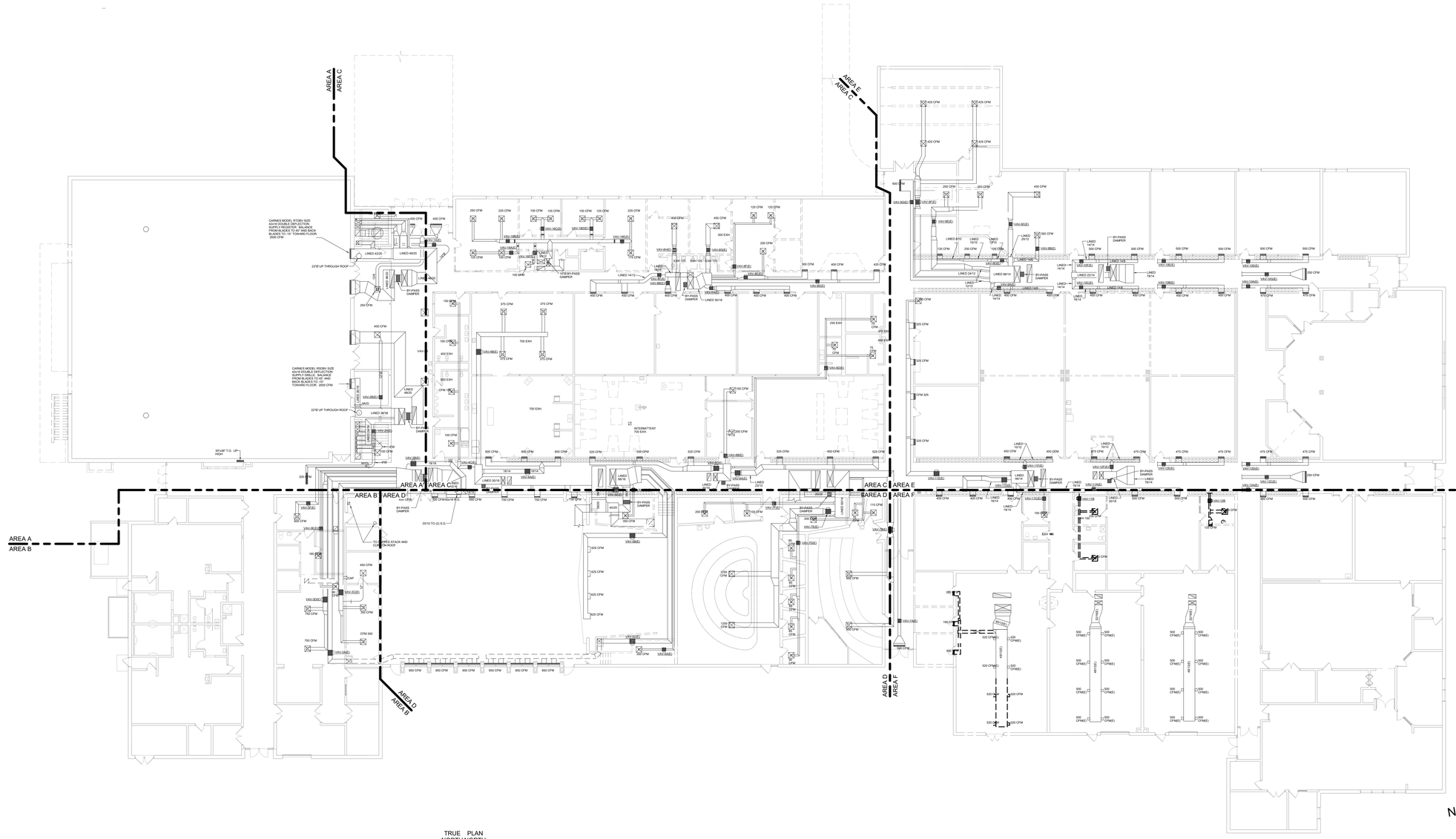
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE, PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.

4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.

5. INSTALL TEMPORARY COVERS OVER EXISTING EXTERIOR ENVELOPE OPENINGS CREATED BY REMOVED EQUIPMENT/DUCT. COVER SHALL BE WATERTIGHT, AND MEET OSHA AND OWNER REQUIREMENTS. COMPLETELY REMOVE TEMPORARY COVER WHEN OPENINGS ARE PATCHED TO FINAL CONDITION. REPAIR ANY DAMAGE TO EXISTING BUILDING COMPONENTS CAUSED BY TEMPORARY COVER.

6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES


AREA A
AREA B
AREA C
AREA D
AREA E
AREA F
AREA A / AREA C
AREA B / AREA D
AREA C / AREA E
AREA D / AREA F
AREA E / AREA C
AREA D / AREA B
CARNES MODEL RTORV SIZE 40x48 DOUBLE DEFLECTION SUPPLY REGISTER. BALANCE FROM BLADES TO 45° AND BLADES TO 10° TOWARD FLOOR. 2000 CFM
CARNES MODEL RSORV SIZE 40x48 DOUBLE DEFLECTION SUPPLY GRILLE. BALANCE FROM BLADES TO 45° AND BLADES TO 10° TOWARD FLOOR. 3500 CFM
2270 UP THROUGH ROOF
30"x30" T.O. UP HIGH
20"X10 TO (2) S.G.
TO GRADE STACK AND CAP ON ROOF
INTERMITTENT 700 EXH.
700 EXH.
800 EXH.
400 EXH.
300 EXH.
250 EXH.
BY-PASS DAMPER
VAV-1B(GE)
VAV-2A(GE)
VAV-2B(GE)
VAV-3A(GE)
VAV-3B(GE)
VAV-4A(GE)
VAV-4B(GE)
VAV-5A(GE)
VAV-5B(GE)
VAV-6A(GE)
VAV-6B(GE)
VAV-7A(GE)
VAV-7B(GE)
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VAV-8B(GE)
VAV-9A(GE)
VAV-9B(GE)
VAV-10A(GE)
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VAV-17A(GE)
VAV-17B(GE)
VAV-18A(GE)
VAV-18B(GE)
VAV-19A(GE)
VAV-19B(GE)
VAV-20A(GE)
VAV-20B(GE)
VAV-21A(GE)

GENERAL HVAC DEMOLITION NOTES:

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2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

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4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.

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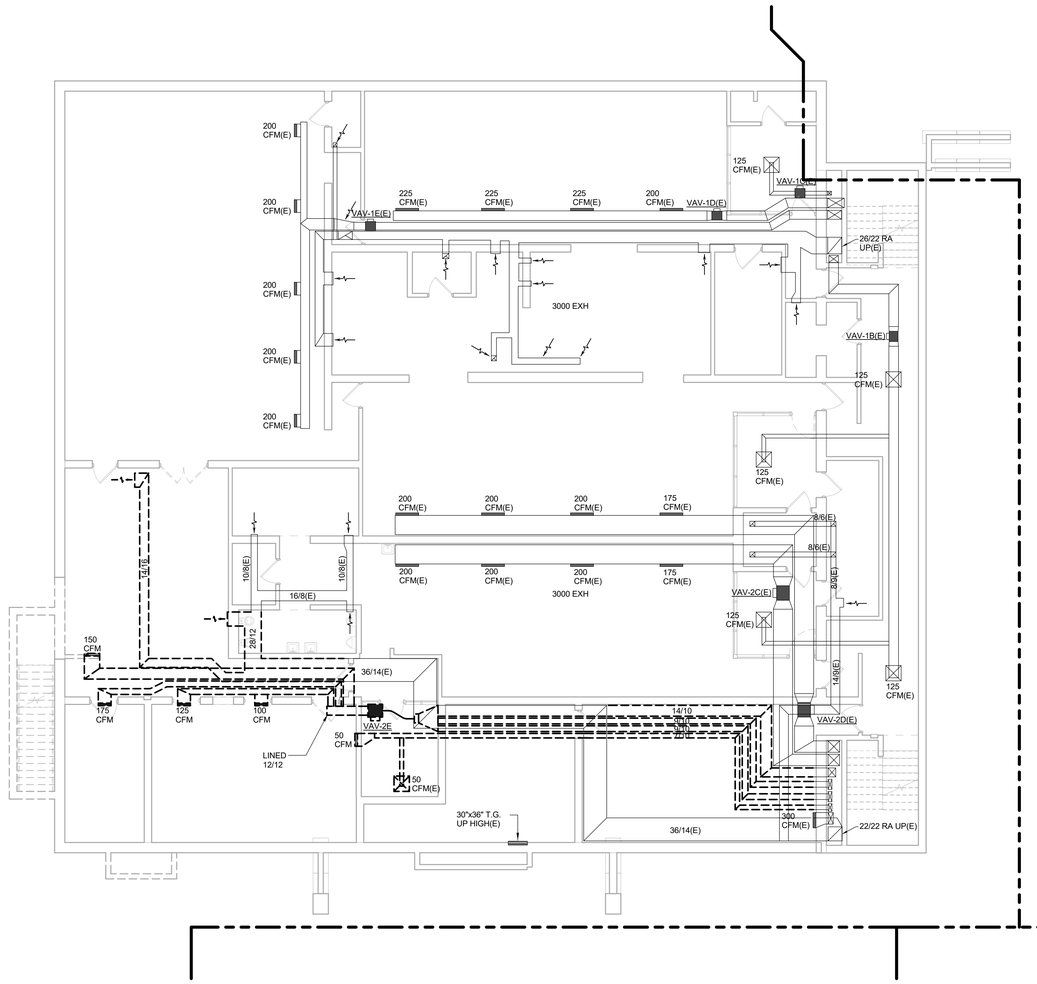
6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES



TRUE NORTH PLAN NORTH

N N 1 **LOWER LEVEL HVAC DEMOLITION PLAN**

1/8" = 1'-0"

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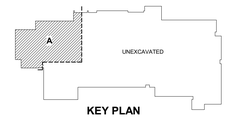
2019-04-



KEY PLAN

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL

515 E. 4th STREET
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SHEET TITLE:
LOWER LEVEL HVAC DEMOLITION PLAN

SHEET NUMBER:
2-MHD-101

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
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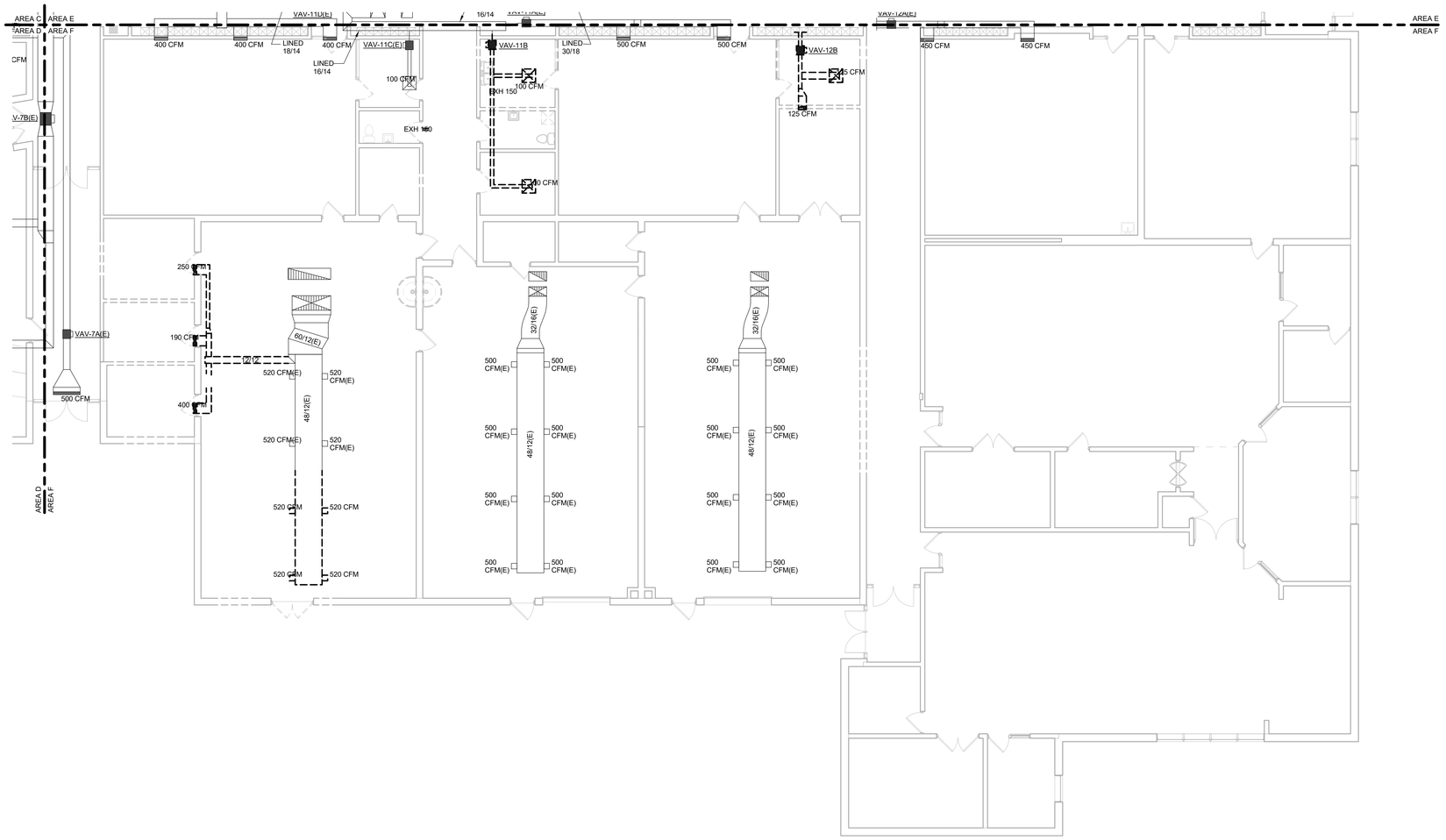

TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR HVAC DEMOLITION PLAN - AREA F**

1/8" = 1'-0"

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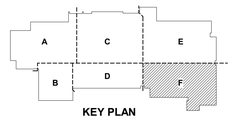
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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CONSULTANT:
Mead & Hunt, Inc.
2440 Deming Way
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phone: 608-273-6380
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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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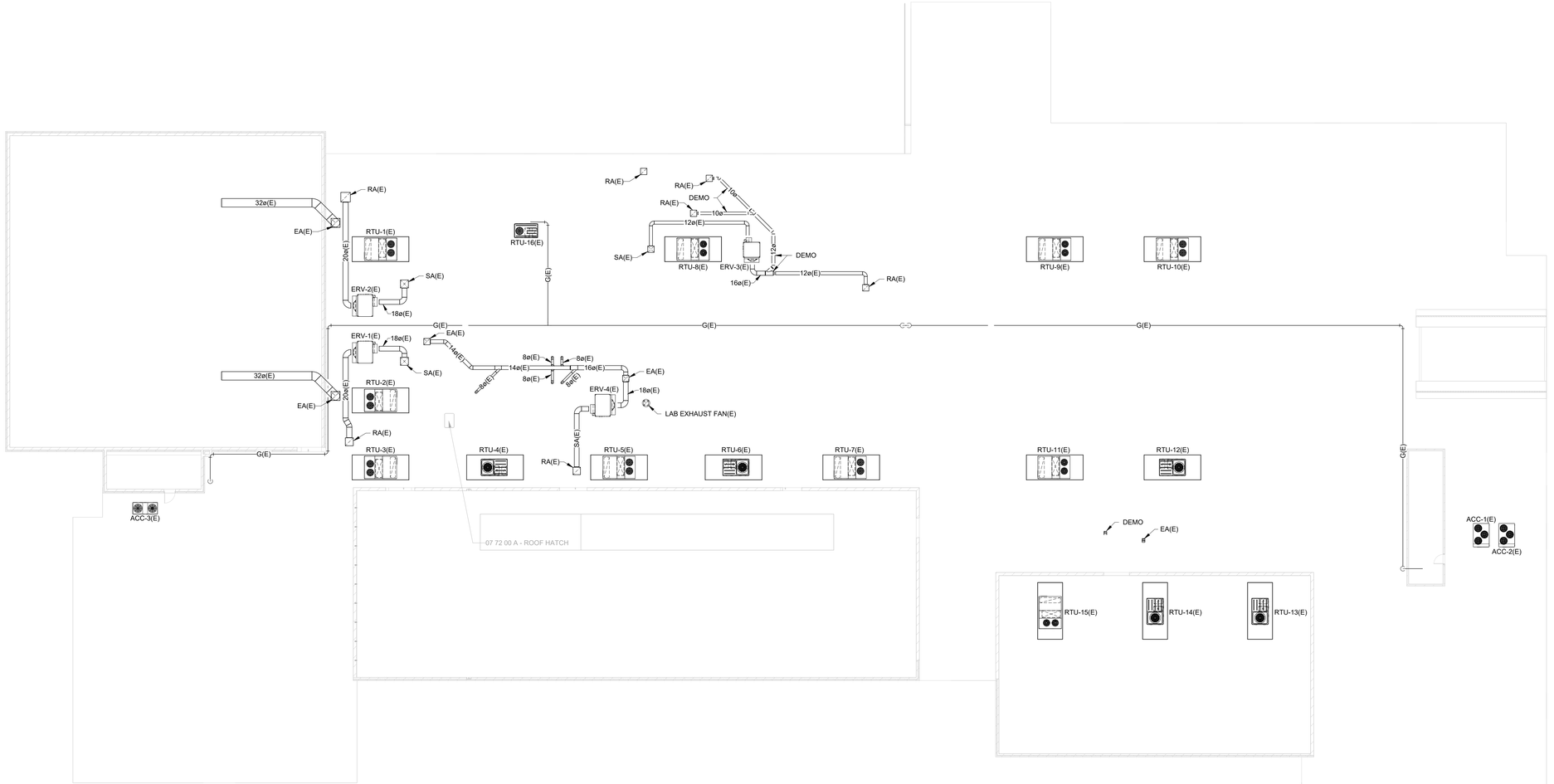
SHEET TITLE:
FIRST FLOOR HVAC DEMOLITION PLAN - AREA F

SHEET NUMBER:
2-MHD-107

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE, PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.
4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.
5. INSTALL TEMPORARY COVERS OVER EXISTING EXTERIOR ENVELOPE OPENINGS CREATED BY REMOVED EQUIPMENT/DUCT. COVER SHALL BE WATERTIGHT, AND MEET OSHA AND OWNER REQUIREMENTS. COMPLETELY REMOVE TEMPORARY COVER WHEN OPENINGS ARE PATCHED TO FINAL CONDITION. REPAIR ANY DAMAGE TO EXISTING BUILDING COMPONENTS CAUSED BY TEMPORARY COVER.
6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES

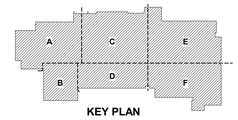


TRUE NORTH PLAN NORTH

1 OVERALL ROOF HVAC DEMOLITION PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-



KEY PLAN

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SHEET TITLE:
OVERALL ROOF HVAC DEMOLITION PLAN

SHEET NUMBER:
2-MHD-108

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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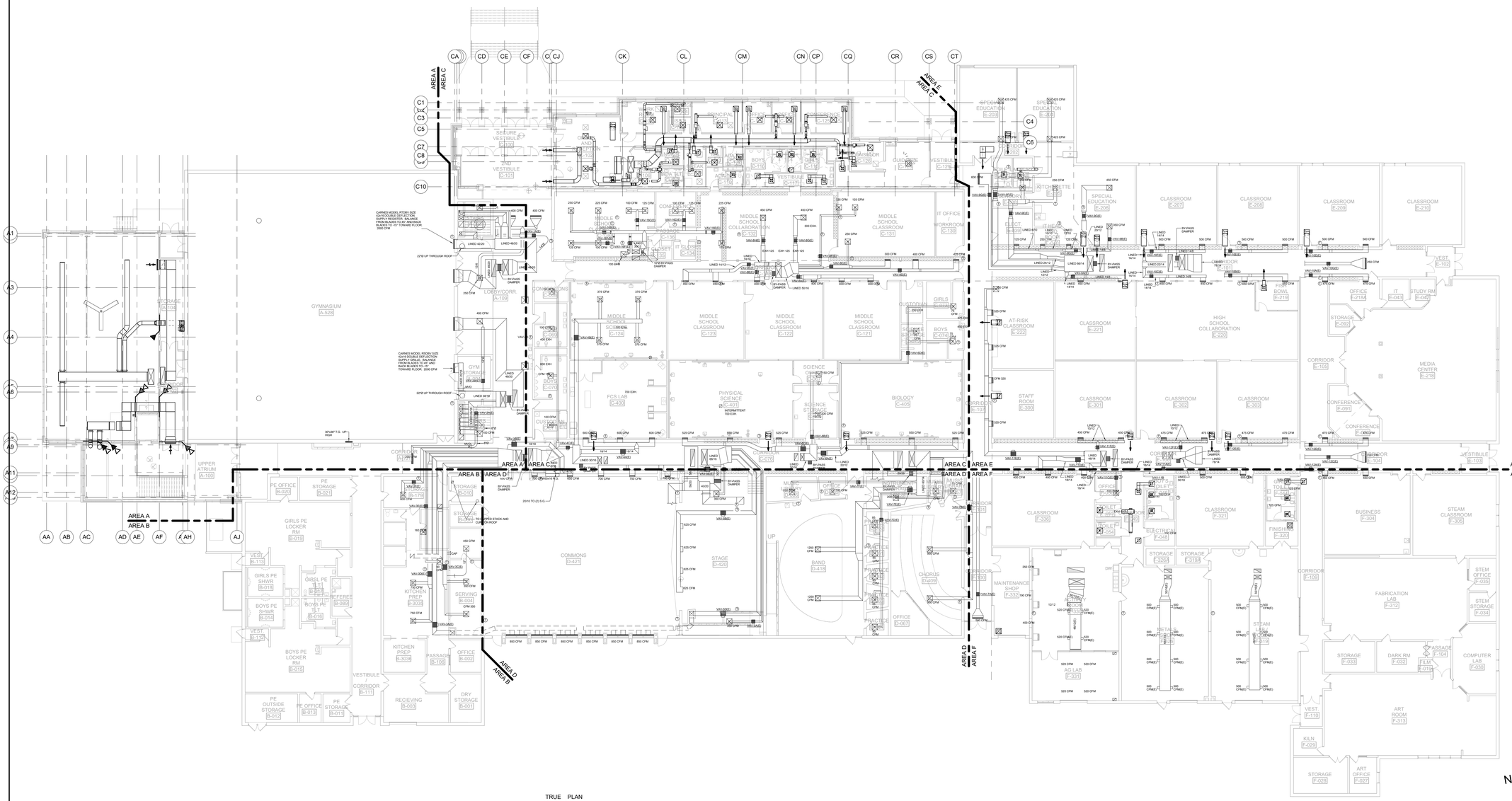
4. DUCT SIZE TO DIFFUSERS, REGISTERS, AND GRILLES SHALL BE SAME AS NECK SIZE UNLESS NOTED OR DETAILED OTHERWISE.
5. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN.
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



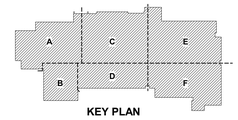
TRUE NORTH PLAN NORTH

N N 1 **OVERALL FIRST FLOOR HVAC PLAN**

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
OVERALL FIRST FLOOR HVAC PLAN

SHEET NUMBER:
2-MH-100

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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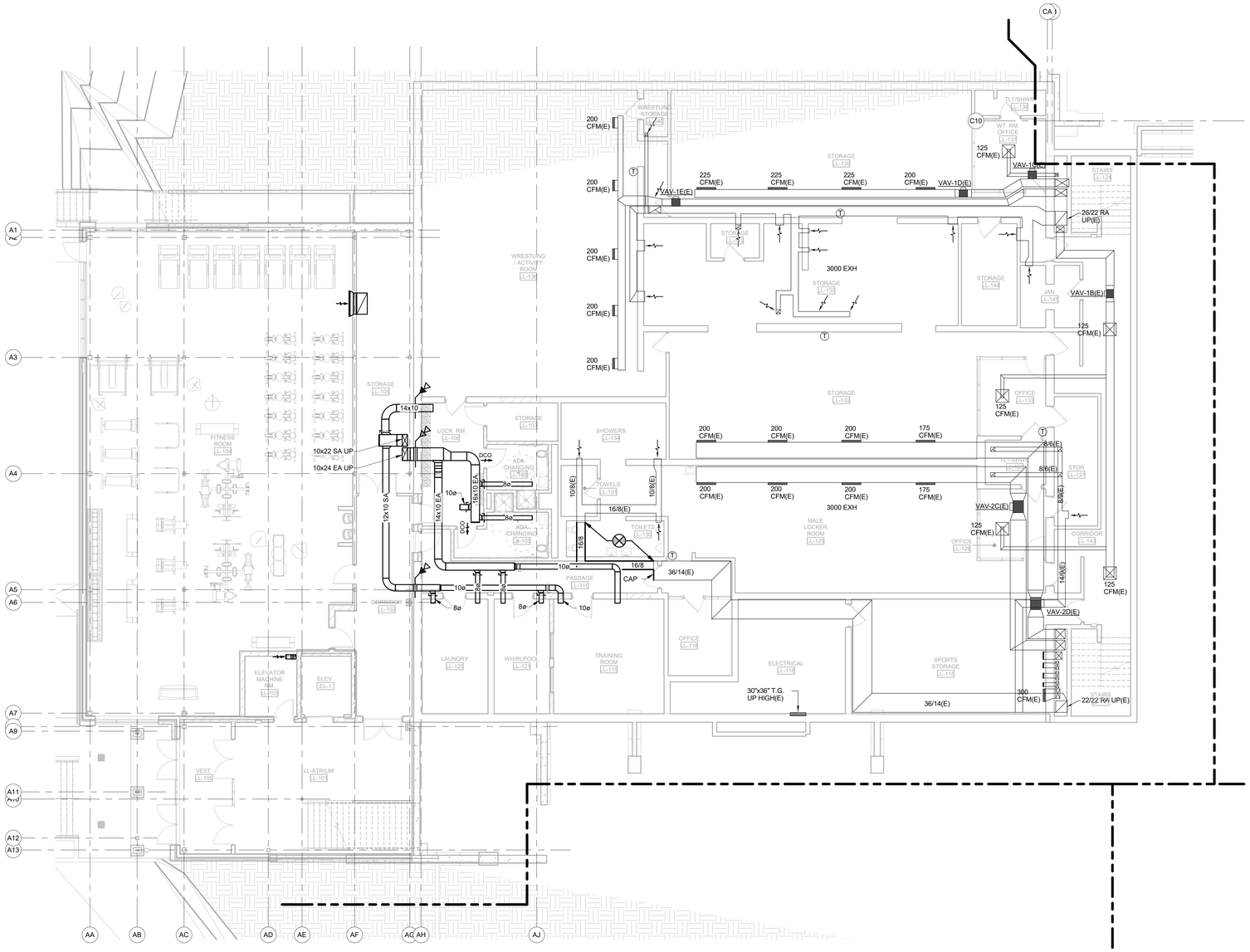
KEYED NOTES



TRUE NORTH PLAN NORTH

1 LOWER LEVEL HVAC PLAN

1/8" = 1'-0"

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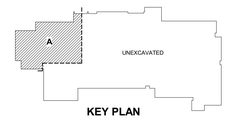
PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-



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SHEET TITLE:
LOWER LEVEL HVAC PLAN

SHEET NUMBER:
2-MH-101

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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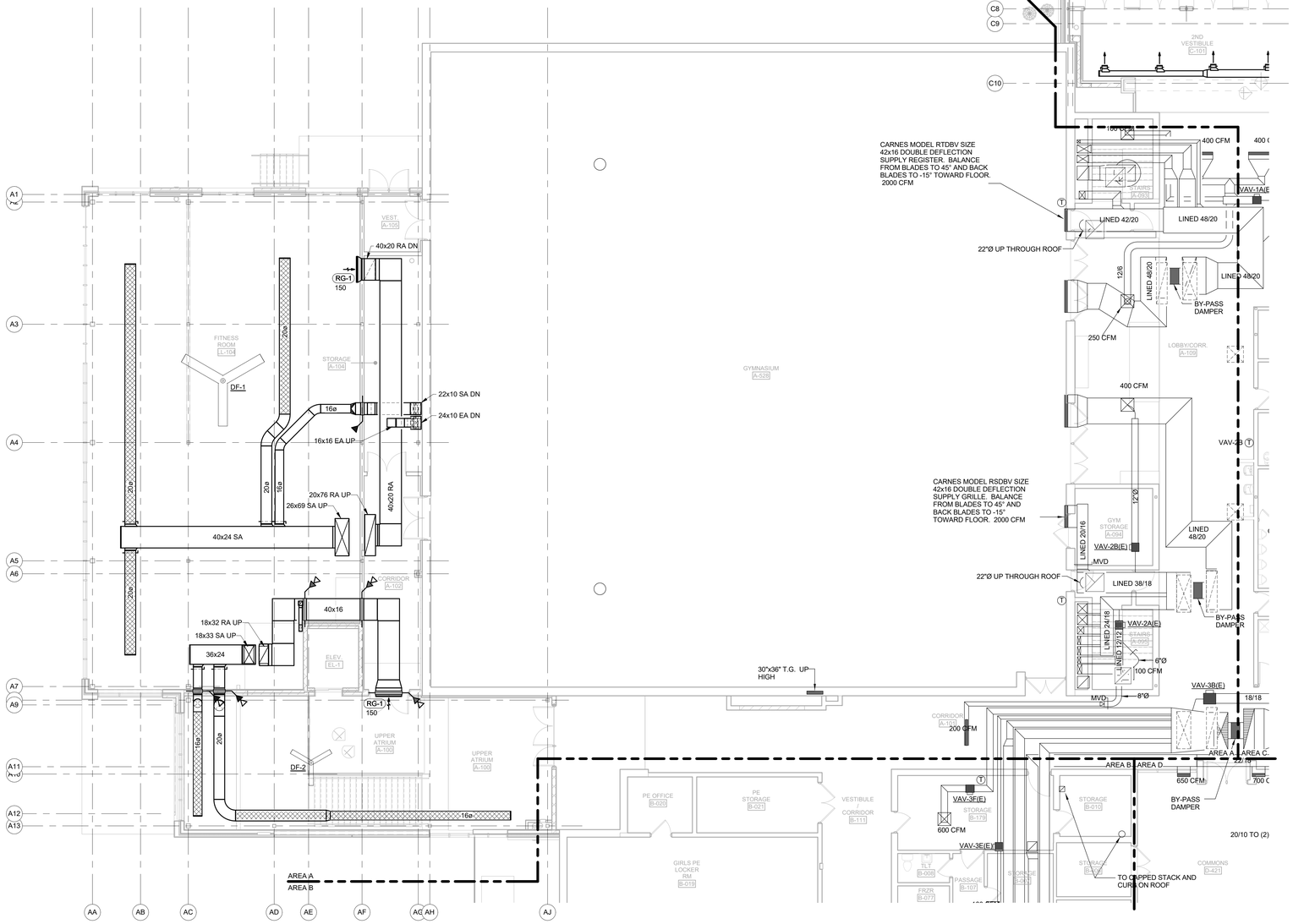
KEYED NOTES



TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA A

1/8" = 1'-0"

PRELIMINARY
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2019-04-

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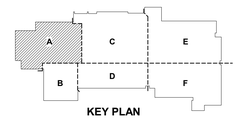

KEY PLAN

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SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA A

SHEET NUMBER:
2-MH-102

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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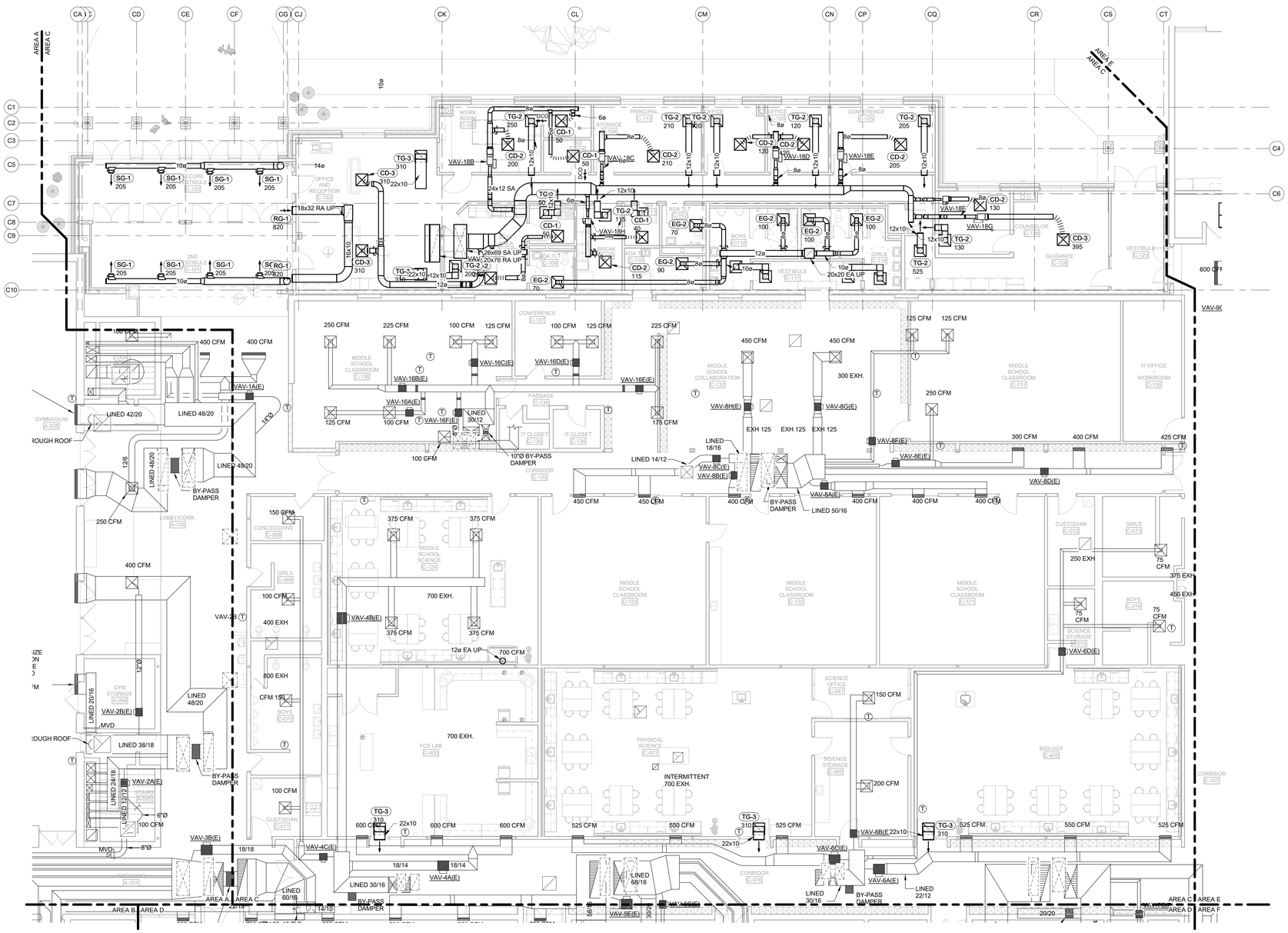


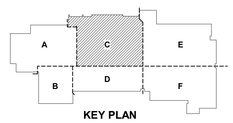
TRUE NORTH PLAN NORTH

1 FIRST FLOOR HVAC PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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CHECKED BY:	DJG

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SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA C

SHEET NUMBER:
2-MH-104

GENERAL HVAC NOTES:

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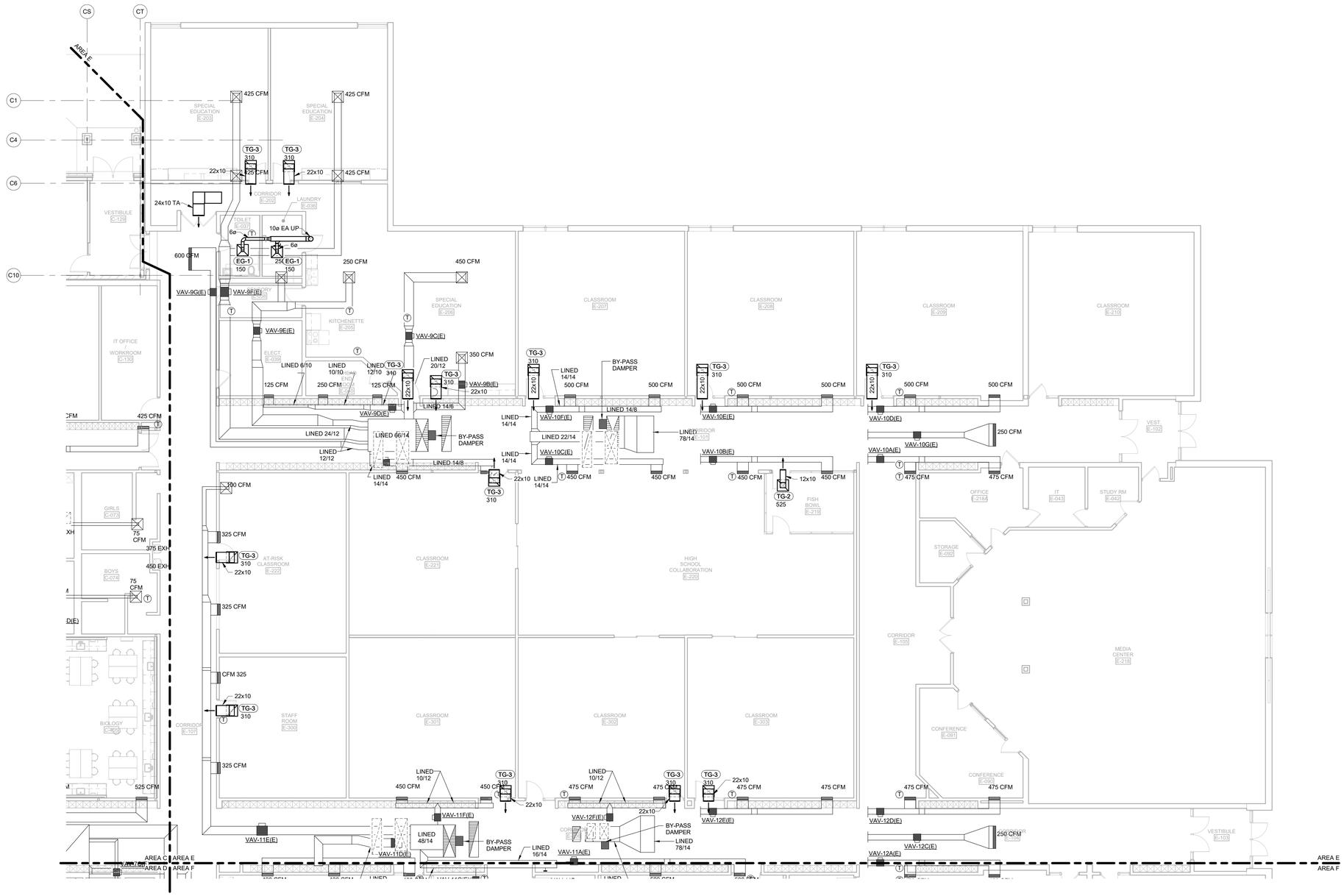
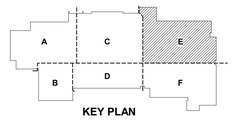


FIRST FLOOR HVAC PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA E

SHEET NUMBER:
2-MH-106

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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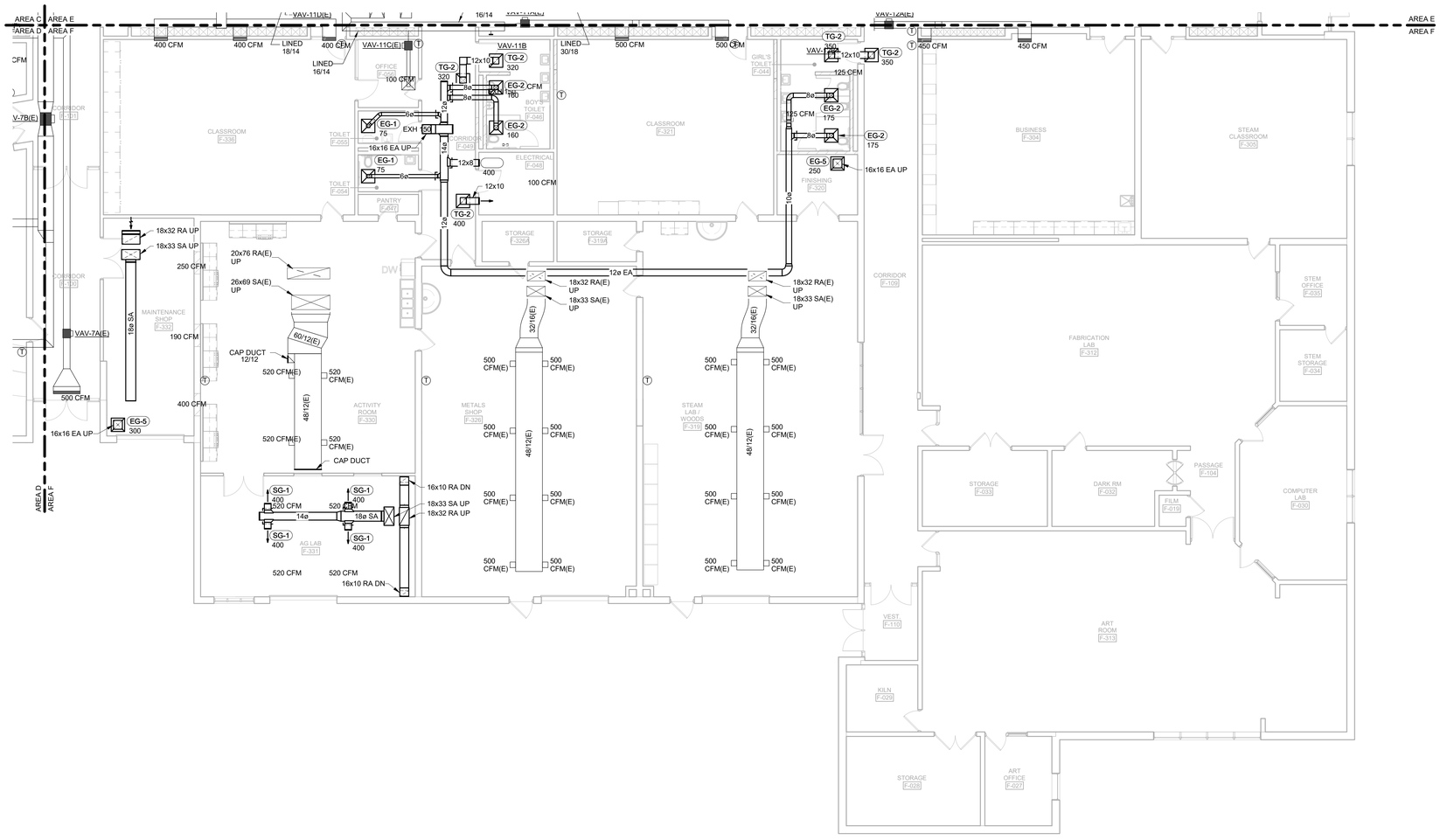


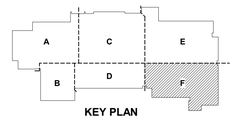
TRUE NORTH PLAN NORTH

1 **FIRST FLOOR HVAC PLAN - AREA F**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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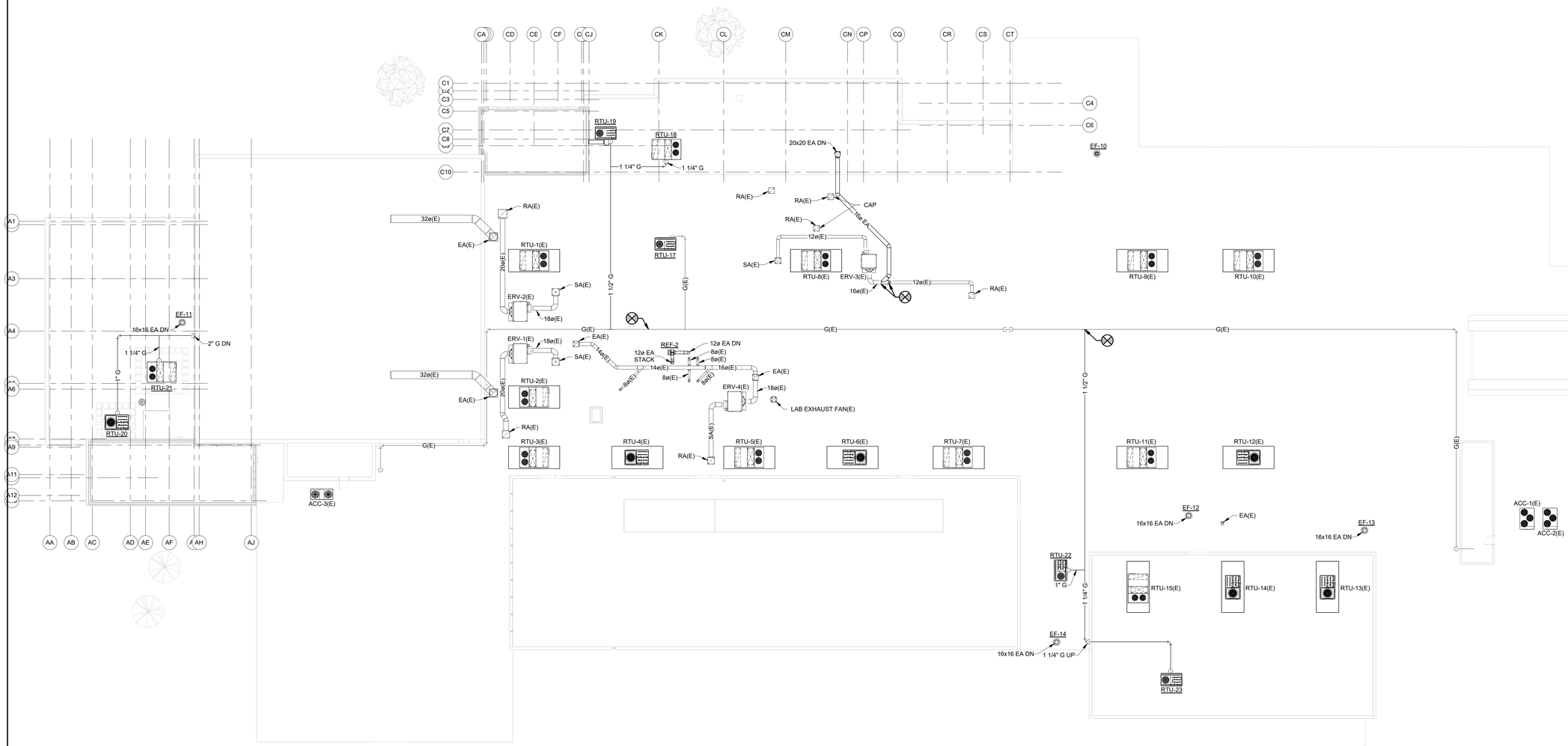
SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA F

SHEET NUMBER:
2-MH-107

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
2. DUCTWORK DOWNSTREAM OF AIR TERMINAL BOXES TO BE INTERNALLY LINED FOR A MINIMUM OF 6'-0" FOR SOUND ATTENUATION. OUTLET DUCT SIZES TO MATCH AIR TERMINAL BOX OUTLET UNLESS NOTED OTHERWISE.
3. PROVIDE MANUAL BALANCE DAMPER AT EACH DIFFUSER, GRILLE, AND BRANCH TAKE-OFF IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK EXCEPT KITCHEN GREASE EXHAUST DUCT. LOCATE BALANCE DAMPER AS CLOSE TO BRANCH TAKE-OFF AS POSSIBLE.
4. DUCT SIZE TO DIFFUSERS, REGISTERS, AND GRILLES SHALL BE SAME AS NECK SIZE UNLESS NOTED OR DETAILED OTHERWISE.
5. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN.
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



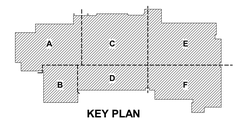
TRUE NORTH PLAN NORTH

1 OVERALL ROOF HVAC PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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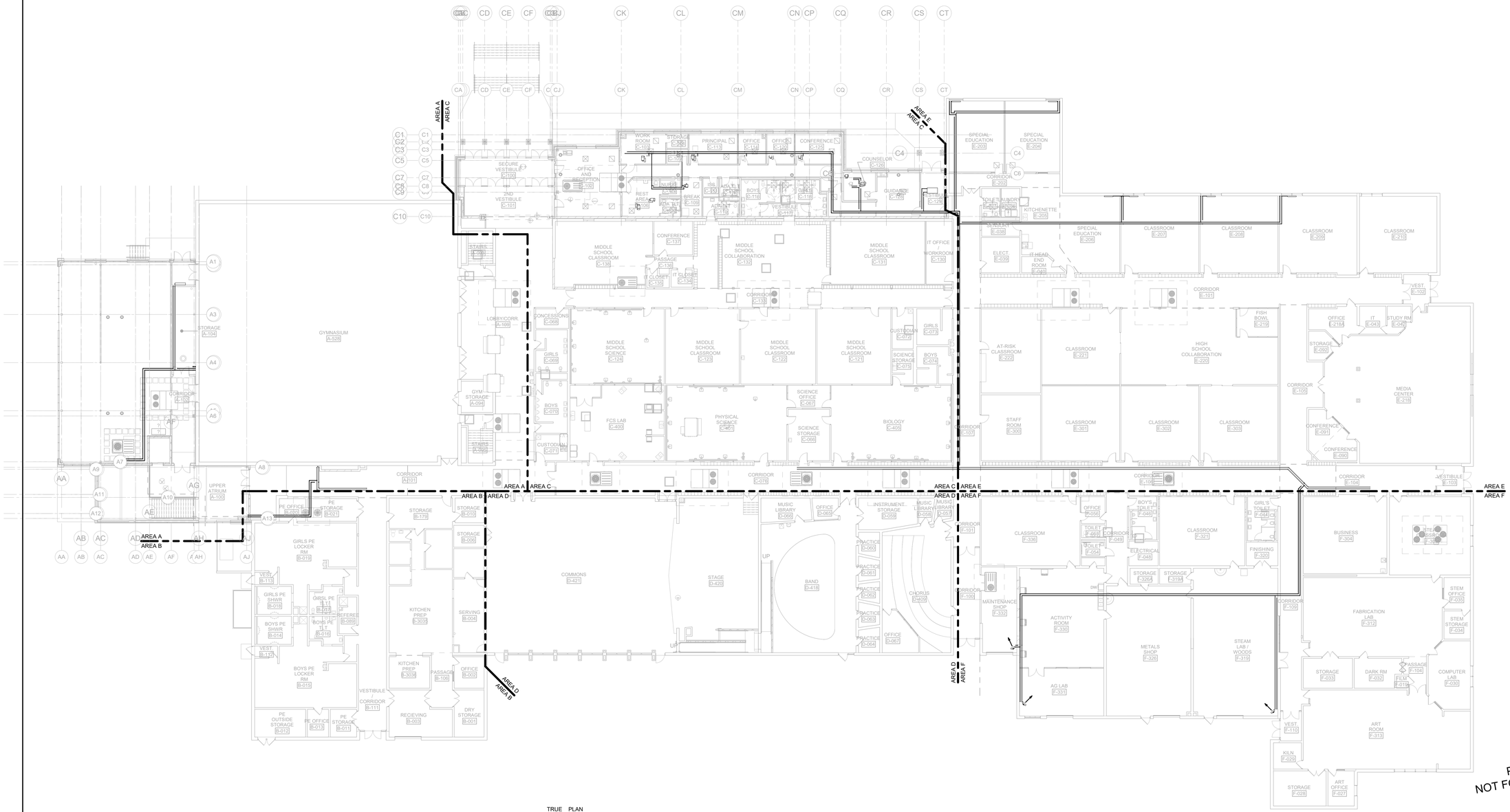
SHEET TITLE:
OVERALL ROOF HVAC PLAN

SHEET NUMBER:
2-MH-108

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
4. INSTALL PIPING FREE OF SAGS AND BENDS.
5. LOCATE ALL VALVES FOR EASY ACCESS. INSTALL VALVES WITH STEM UP OR HORIZONTAL.
6. INSTALL DRAIN VALVES AT ALL LOW POINTS IN PIPING SYSTEM AND ELSEWHERE AS REQUIRED FOR SYSTEM DRAINAGE. INSTALL MANUAL AIR VENTS AT ALL HIGH POINTS IN PIPING, AT HEAT-TRANSFER COILS, AND ELSEWHERE AS REQUIRED FOR SYSTEM AIR VENTING.

KEYED NOTES



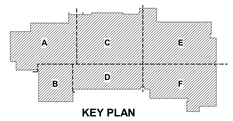
TRUE NORTH PLAN NORTH

1 OVERALL FIRST FLOOR HVAC PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
OVERALL FIRST FLOOR PIPING PLAN

SHEET NUMBER:
2-MP-100

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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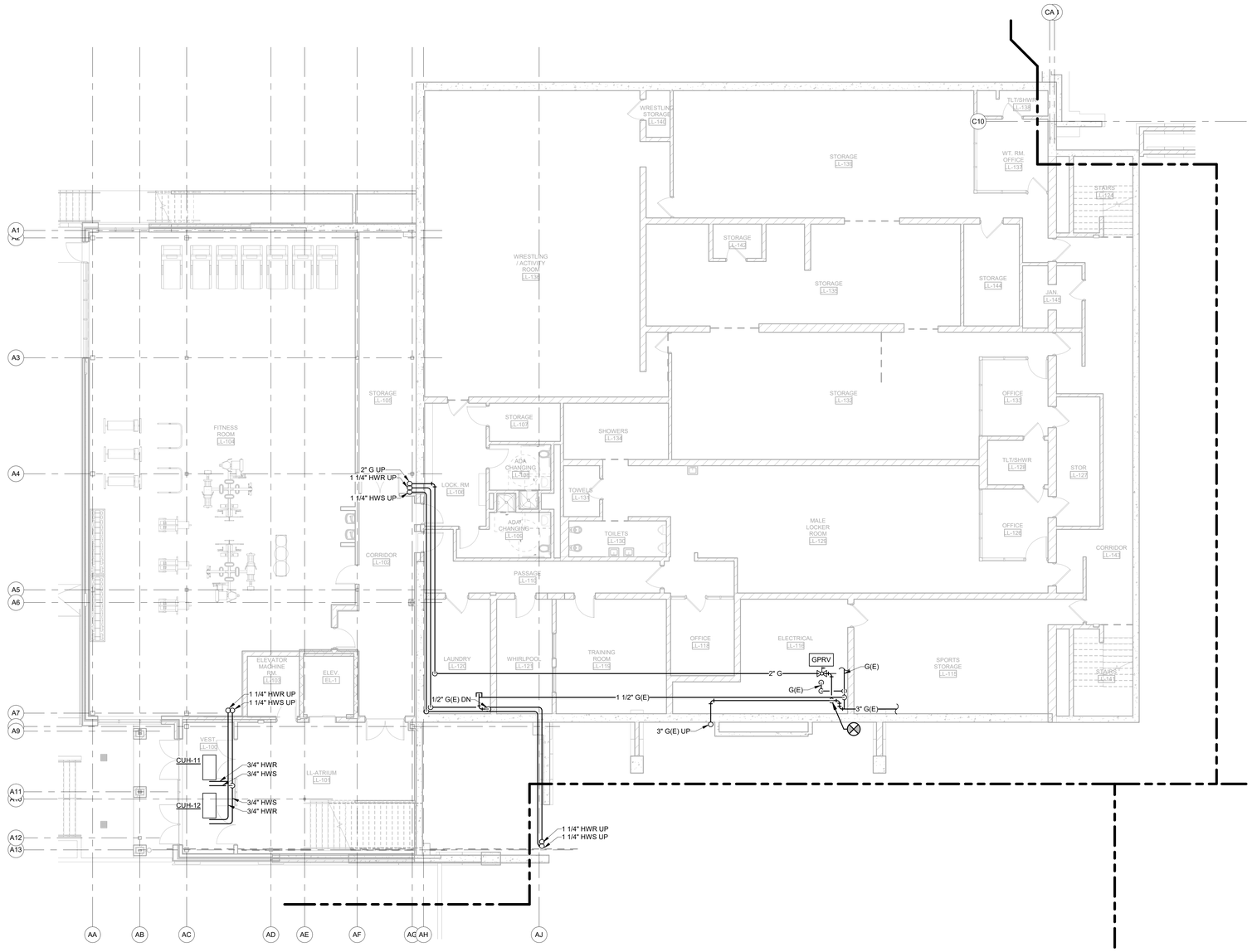
KEYED NOTES



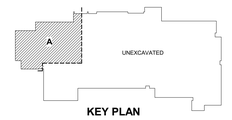
TRUE NORTH PLAN NORTH

LOWER LEVEL HVAC PLAN

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
LOWER LEVEL PIPING PLAN

SHEET NUMBER:
2-MP-101

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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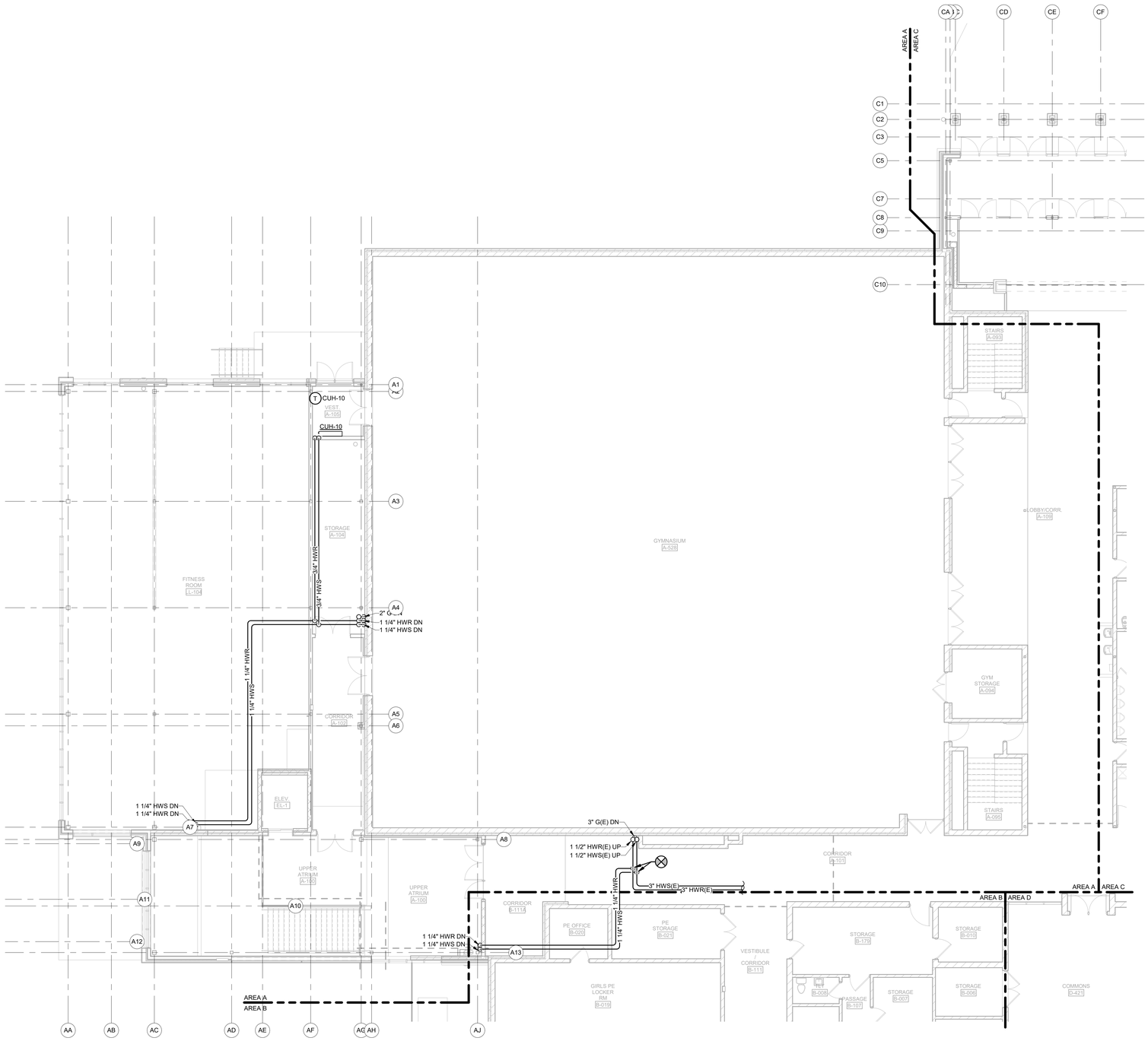
KEYED NOTES

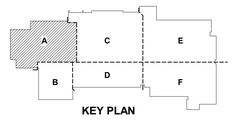


TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR HVAC PLAN - AREA A**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA A

SHEET NUMBER:
2-MP-102

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
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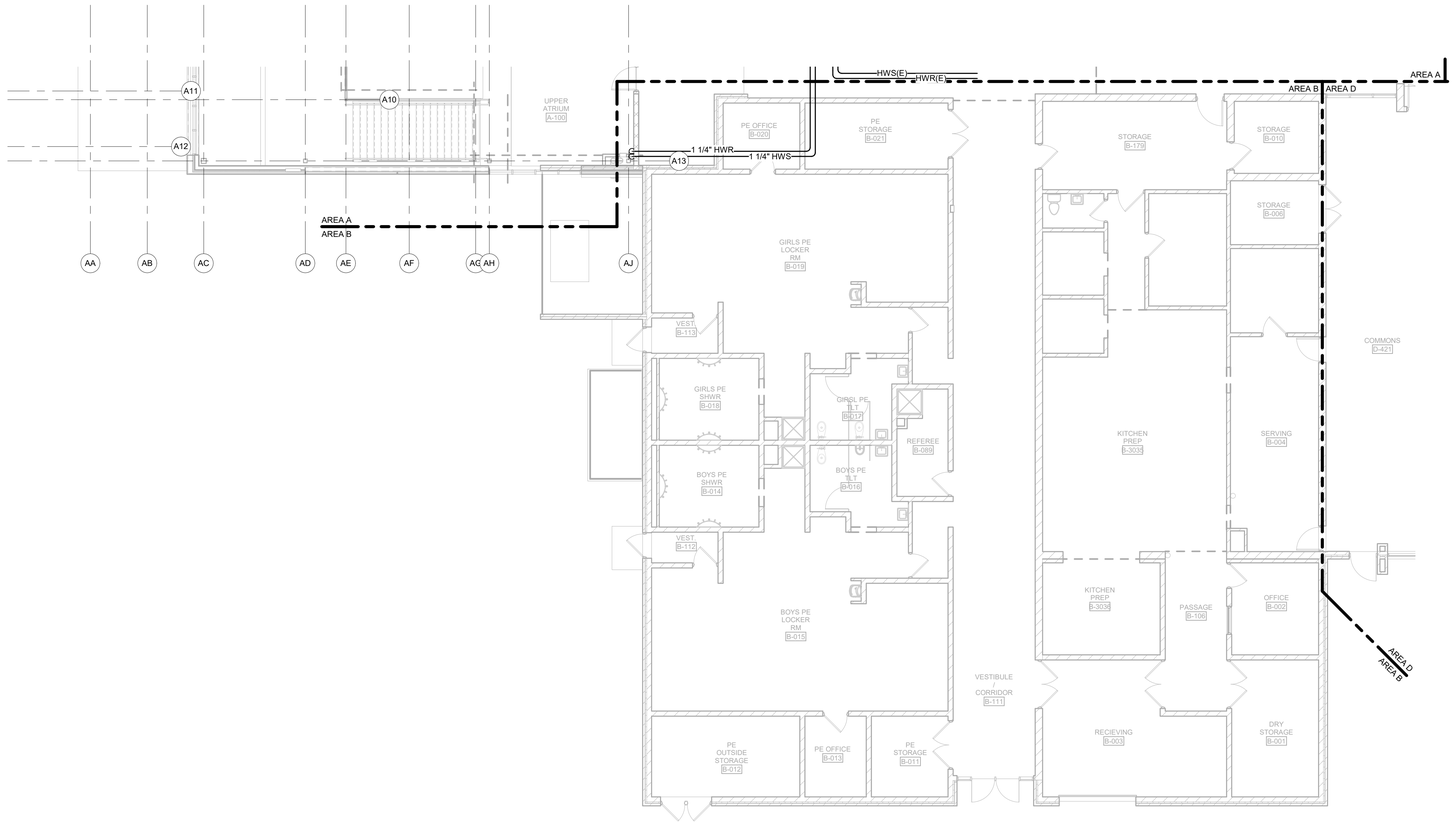
KEYED NOTES



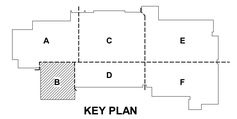
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA B

SHEET NUMBER:
2-MP-103

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
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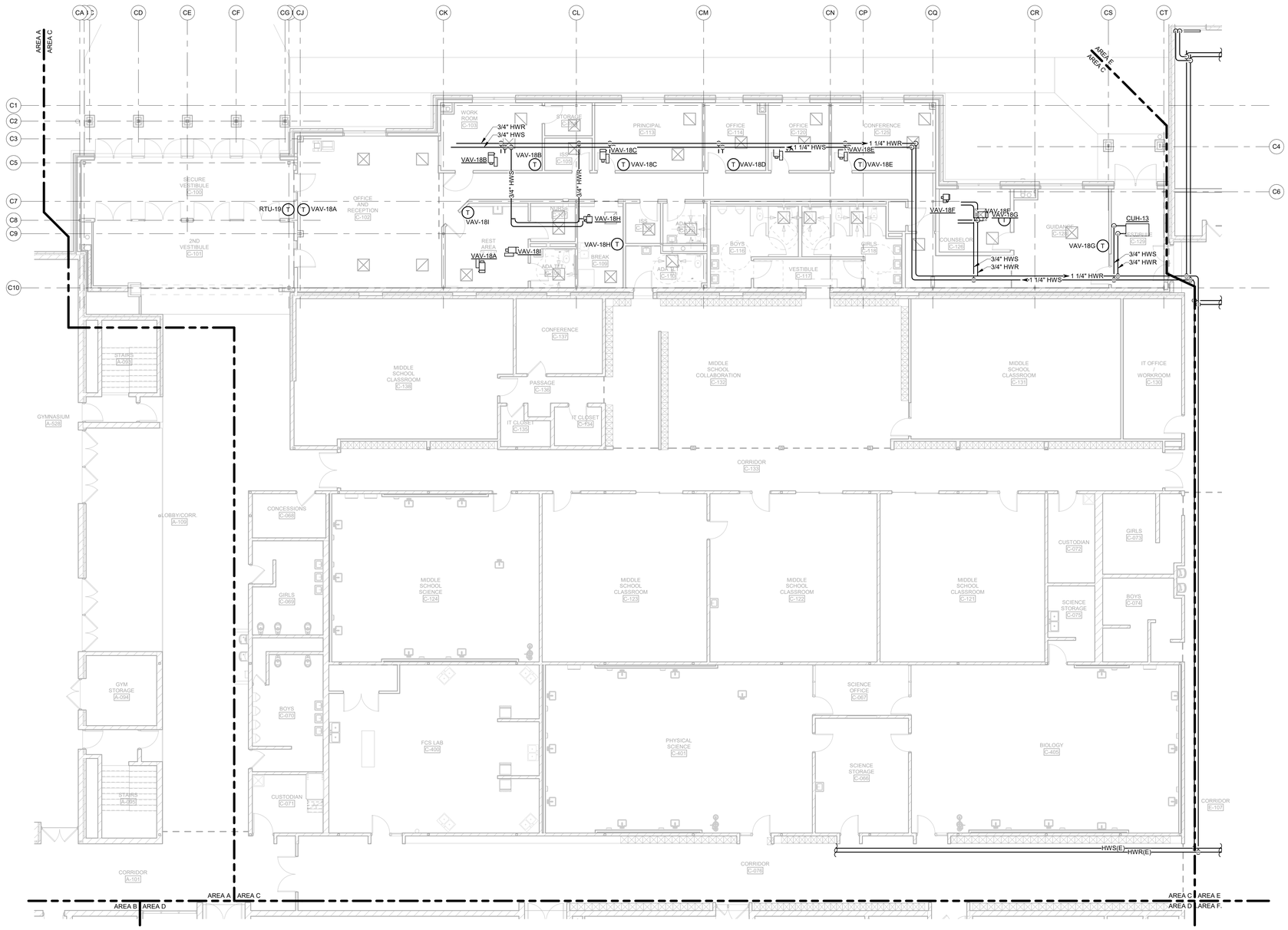
KEYED NOTES



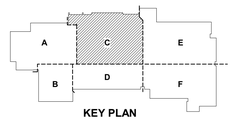
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA C

SHEET NUMBER:
2-MP-104

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
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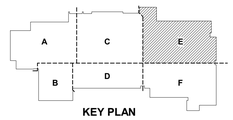
KEYED NOTES

TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA E

SHEET NUMBER:
2-MP-106

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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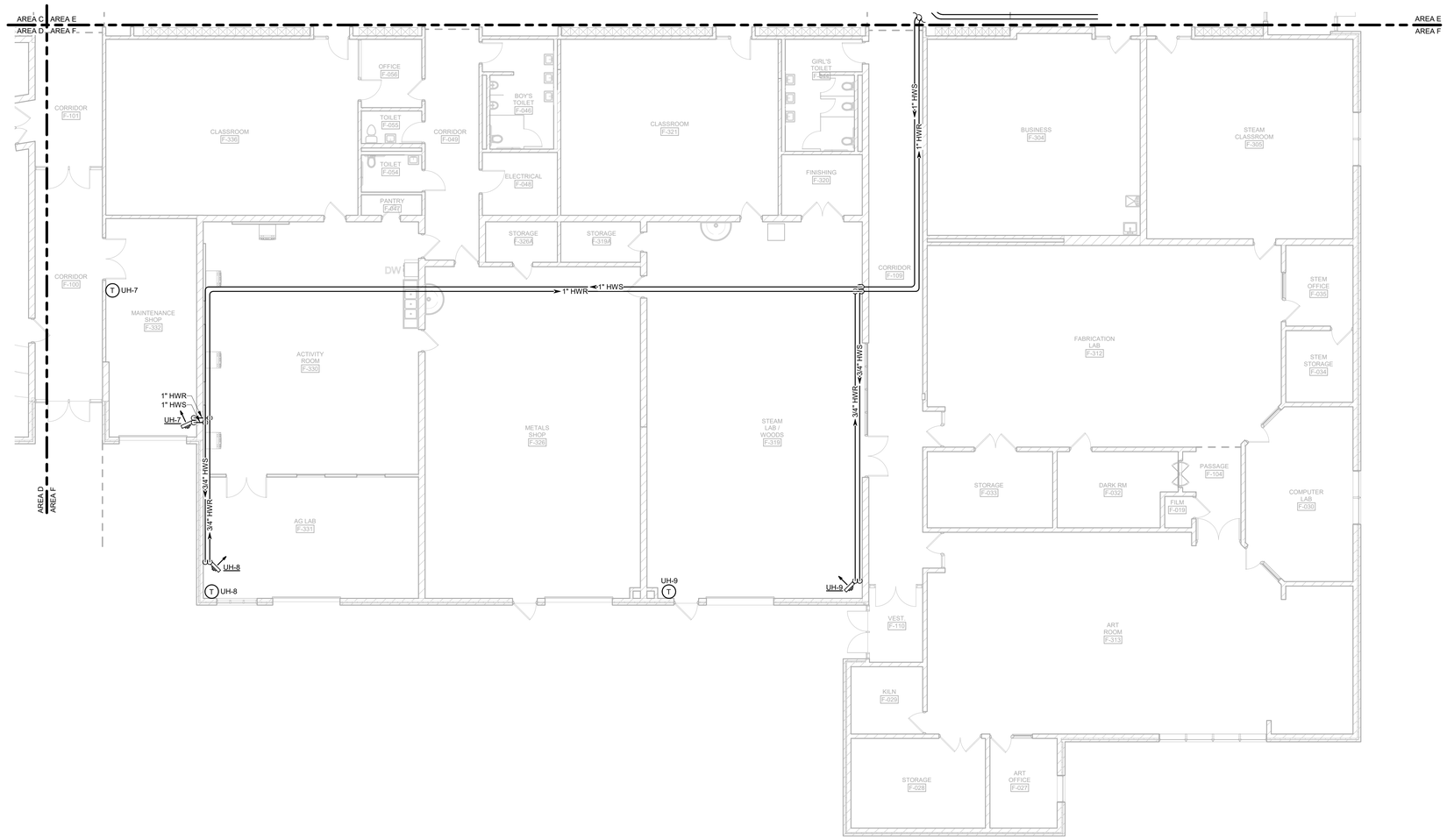
KEYED NOTES

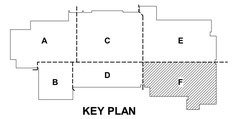


TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-



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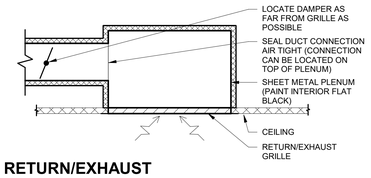
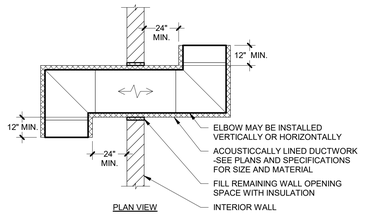
SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA F

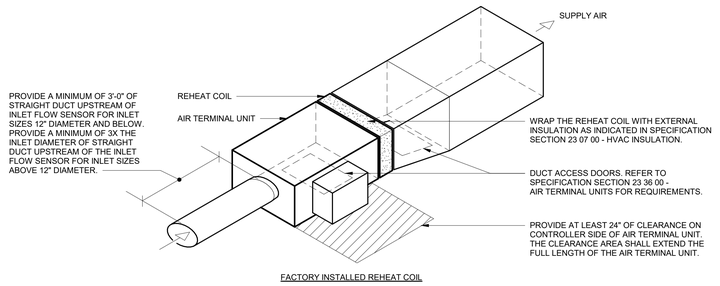
SHEET NUMBER:
2-MP-107



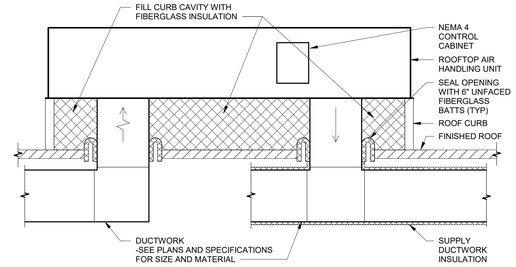
14 RETURN/EXHAUST GRILLE DUCT CONNECTION
NO SCALE



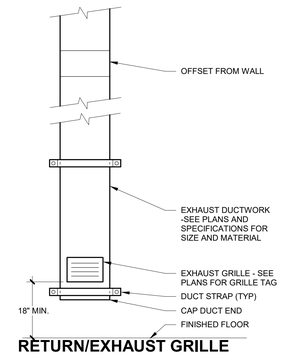
10 TRANSFER DUCT DETAIL
NO SCALE



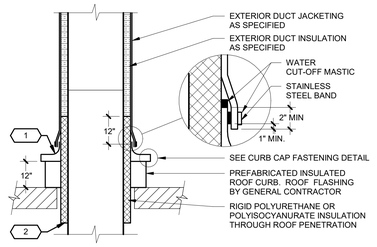
6 SUPPLY AIR TERMINAL UNIT WITH REHEAT COIL
NO SCALE



1 ROOFTOP UNIT (RTU) SECTION
NO SCALE



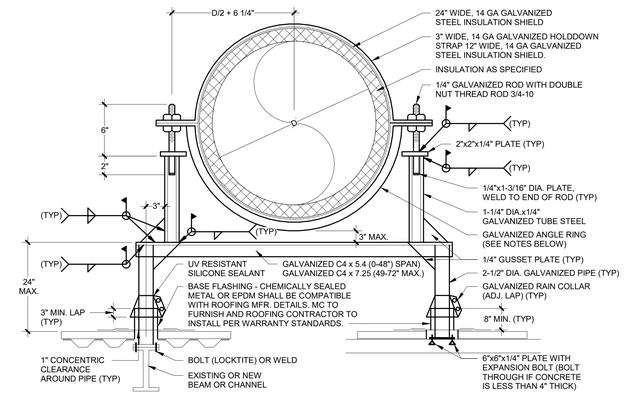
15 RETURN/EXHAUST GRILLE DUCT CONNECTION AT FLOOR
NO SCALE



KEYED NOTES:

1. CURB CAP SIZED TO FIT CURB AND DUCT SHALL BE PROVIDED BY ROOF CURB MANUFACTURER.
2. FOR UNINSULATED DUCTWORK IN INTERIOR SPACES, TERMINATE INSULATION AT ROOF LINE.

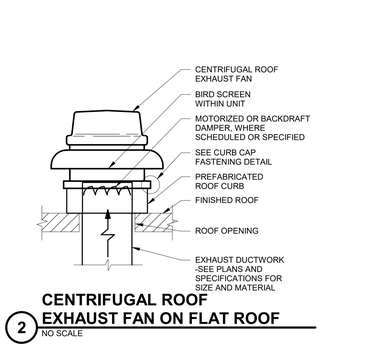
11 ROOF DUCT PENETRATION
NO SCALE



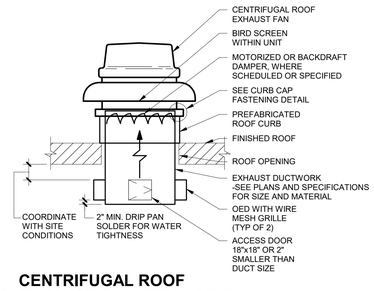
NOTES:

1. PAINT ALL FIELD WELDED GALVANIZED COMPONENTS WITH ZINC PAINT AFTER WELDING.
2. USE 2"x2"x1/4" ANGLE FOR 25" - 40" DUCT.
3. USE 2 1/2"x2 1/2"x1/4" ANGLE FOR 41" DUCT AND LARGER.

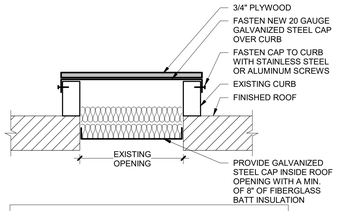
7 ROUND DUCT ROOF SUPPORT
NO SCALE



2 CENTRIFUGAL ROOF EXHAUST FAN ON FLAT ROOF
NO SCALE

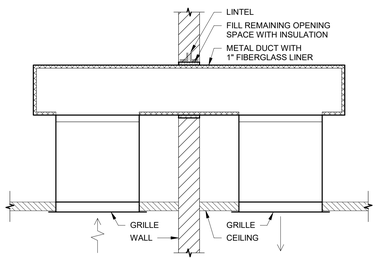


3 CENTRIFUGAL ROOF EXHAUST FAN WITH DRIP PAN
NO SCALE

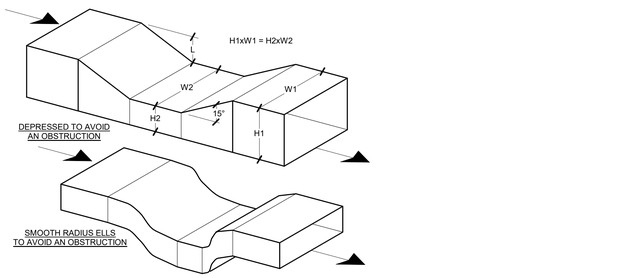


NOTE:
1. REMOVE EQUIPMENT AS NOTED ON PLANS AND CAP OPENINGS.

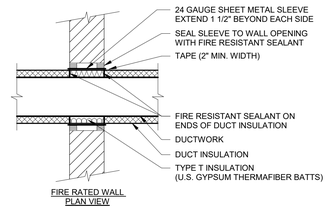
16 CURB CAP DETAIL
NO SCALE



12 TRANSFER DUCT WITH BOTTOM CONNECTION
NO SCALE

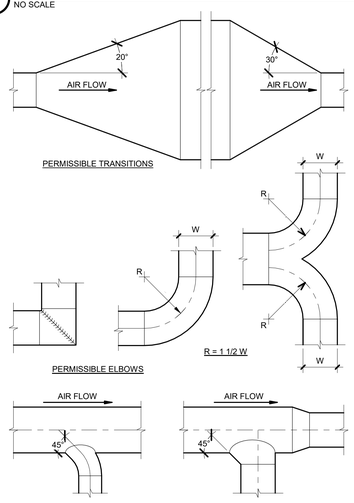


8 TYPICAL DUCT OFFSET
NO SCALE

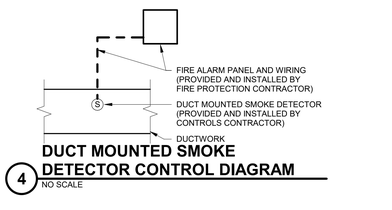


NOTE:
THIS DETAIL APPLIES ONLY FOR INSULATED DUCTS REQUIRING CONTINUOUS INSULATION THROUGH WALL, AND DUCTS NOT REQUIRING FIRE DAMPERS.

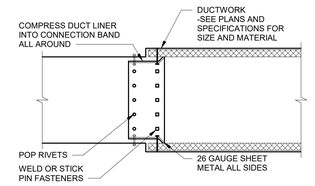
13 DUCT PENETRATION THROUGH INTERIOR WALL
NO SCALE



9 TYPICAL DUCT TRANSITIONS
NO SCALE



4 DUCT MOUNTED SMOKE DETECTOR CONTROL DIAGRAM
NO SCALE



5 DUCT SOUND LINING TERMINATION
NO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	April 16, 2019
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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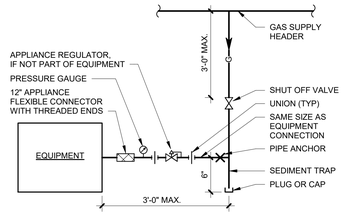
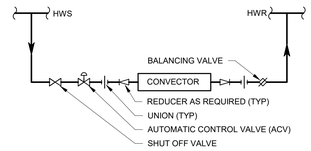
SHEET TITLE:
HVAC DETAILS

SHEET NUMBER:
2-MS-501



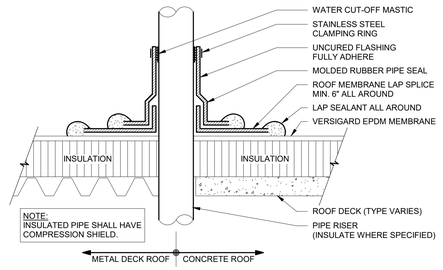
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

6 EQUIPMENT GAS CONNECTION (TYP)
NO SCALE



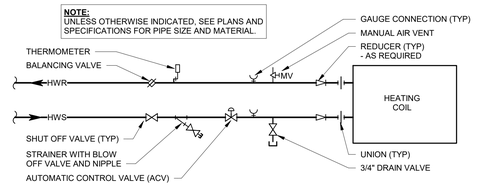
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIALS.

1 HOT WATER FIN TUBE CONVECTOR PIPING
NO SCALE

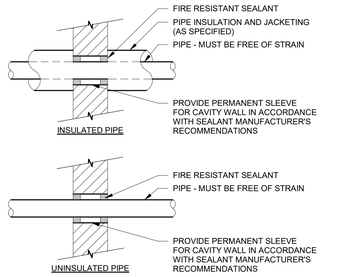


NOTE:
INSULATED PIPE SHALL HAVE COMPRESSION SHIELD.

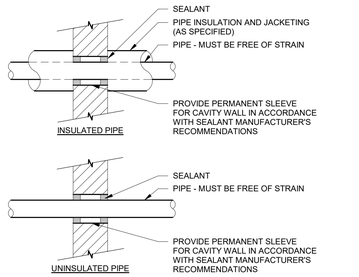
7 ROOF PIPE PENETRATION - RUBBER SEAL (ALT)
NO SCALE



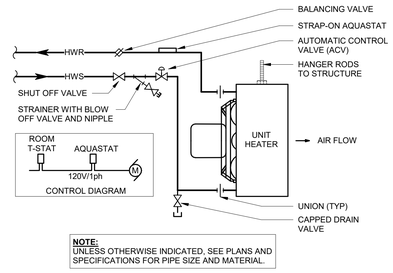
2 HOT WATER REHEAT COIL PIPING
NO SCALE



8 FIRE RATED INTERIOR WALL PIPE PENETRATION
NO SCALE

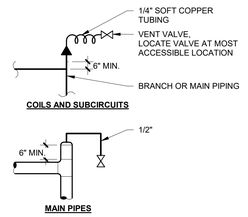


9 NON-RATED INTERIOR WALL PIPE PENETRATION
NO SCALE



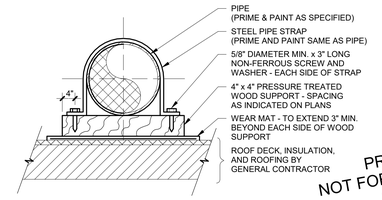
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

3 HOT WATER UNIT HEATER PIPING WITH TEMPERATURE CONTROL AND ACV
NO SCALE



NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

4 AIR VENT PIPING
NO SCALE



5 ROOF WOOD PIPE SUPPORT
NO SCALE

PRELIMINARY
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2019-04-

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MANAWA

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MARK	DATE
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PROJECT NO:	18268
CAD DWG FILE:	
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CHECKED BY:	DJG

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SHEET TITLE:
PIPING DETAILS

SHEET NUMBER:
2-MS-511

DESTRATIFICATION FAN (DF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIRFLOW RATE (CFM)	MOTOR (HP)	MOTOR (W)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	(1) MOUNTING HEIGHT	MAX. SOUND (DB)	WEIGHT (LB)	LOCATION	REMARKS
DF-1	GREENHECK, DS-14 SERIES	CEILING	90,000	0.75	664	IP 54	97	DIRECT	460 / 3	22'-5"	45	170	AREA A	(1)(3)(4)(5)(6)
DF-2	GREENHECK, DS-8 SERIES	CEILING	28,600	0.75	249	IP 40	142	DIRECT	460 / 3	22'-5"	50	167	AREA A	(1)(3)(4)(5)(6)

REMARKS:

(1) PROVIDE MOUNTING HARDWARE AND DROP TUBE.

(2) MOUNTING HEIGHT IS FROM FINISHED FLOOR TO BOTTOM OF FAN IN FEET.

(3) PROVIDE WITH WALL MOUNTED REMOTE CONTROL FOR ON/OFF AND SPEED CONTROL. PROVIDE VARIABLE FREQUENCY DRIVE.

VARIABLE FREQUENCY DRIVE (VFD) SCHEDULE

MARK	MODEL, MANUFACTURER NUMBER	SERVES	MOTOR (HP)	VOLTS / PHASE	ENCLOSURE	ACCESSORIES: INTEGRAL DISCONNECT	ACCESSORIES: MANUAL BYPASS	LOCATION	REMARKS
VFD-1	DANFOSS	RTU-17	3	460 /3	NEMA 1	YES	NO	ROOF	
VFD-2	DANFOSS	RTU-18	5	460 /3	NEMA 1	YES	NO	ROOF	
VFD-3	DANFOSS	RTU-19	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-4	DANFOSS	RTU-20	3	460 /3	NEMA 1	YES	NO	ROOF	
VFD-5	DANFOSS	RTU-21	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-6	DANFOSS	RTU-22	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-7	DANFOSS	RTU-23	3	460 /3	NEMA 1	YES	NO	ROOF	

REMARKS:

(1)

HVAC DUCT SCHEDULE

SYSTEM		DUCT MATERIAL: TYPE	DUCT MATERIAL: REFERENCE STANDARD	DUCT MATERIAL: FINISH	PRESS. CLASS (IN WC)	SEAL CLASS	LEAKAGE CLASS: RECT.	LEAKAGE CLASS: ROUND	COMMENTS
SUPPLY AIR	DUCT CONNECTED TO TERMINAL UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO CONSTANT VOLUME AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO VARIABLE AIR VOLUME AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO VARIABLE VOLUME ROOFTOP UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
RETURN AIR	DUCT CONNECTED TO CEILING PLENUM	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	2	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO ROOFTOP UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
EXHAUST AIR	DUCT CONNECTED TO EXHAUST FANS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO FANS EXHAUSTING LABORATORY AIR - EXPOSED TO VIEW	304 SS	ASTM A 480	NO. 4	3	A	12	6	
	DUCT CONNECTED TO FANS EXHAUSTING LABORATORY AIR - CONCEALED	304 SS	ASTM A 480	NO. 2 [NO. 4]	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO DUST COLLECTOR FAN	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	10	A	12	6	
	DRYER EXHAUST	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	1	B	12	6	
OUTSIDE AIR	DUCT CONNECTED TO TERMINAL UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
TRANSFER DUCTS		G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	1	B	12	6	1/2" THICK ACOUSTICAL LINER.

FITTINGS

RECTANGULAR DUCT ELBOWS (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2, "RECTANGULAR ELBOWS.")
- RADIUS TYPE RE 1 WITH MINIMUM 1.5 RADIUS-TO-DIAMETER RATIO.
- RADIUS TYPE RE 3 WITH MINIMUM 1.0 RADIUS-TO-DIAMETER RATIO AND TWO VANES.
- MITERED TYPE RE 2 WITH VANES COMPLYING WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-3, "VANES AND VANE RUNNERS," AND FIGURE 2-4, "VANE SUPPORT IN ELBOWS."

ROUND DUCT ELBOWS (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-3, "ROUND DUCT ELBOWS.")
- RADIUS TO DIAMETER RATIO: 1.5
- ROUND ELBOWS, 12 INCHES AND SMALLER IN DIAMETER: STAMPED OR PLEATED
- ROUND ELBOWS, 14 INCHES AND LARGER IN DIAMETER: WELDED

RECTANGULAR BRANCH DUCT CONFIGURATION (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-6, "BRANCH CONNECTIONS.")
- RECTANGULAR MAIN TO RECTANGULAR BRANCH: 45° ENTRY
- RECTANGULAR MAIN TO ROUND BRANCH: SPIN IN

ROUND BRANCH DUCT CONFIGURATION (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-4, "90 DEGREE TEES AND LATERALS," AND FIGURE 3-5, "CONICAL TEES." SADDLE TAPS ARE PERMITTED IN EXISTING DUCT)
- VELOCITY 1500 FT/MIN AND LOWER: CONICAL TAP
- VELOCITY GREATER THAN 1500 FT/MIN: 45° LATERAL

REMARKS:

(1) PROVIDE PAINT GRIP TYPE DUCT WHERE DUCT IS EXPOSED AND INDICATED TO BE PAINTED.

(2) INSTALL DUCT ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.

(3) INTERMEDIATE REINFORCEMENT MATERIAL SHALL MATCH DUCT MATERIAL.

(4) SUPPLY AIR DUCTS PASSING THROUGH UNCONDITIONED OR OUTDOOR SPACES SHALL BE SEAL CLASS A (ASHRAE 90.1 - 2007).

(5) RETURN AIR DUCTS PASSING THROUGH OUTDOOR SPACES SHALL BE SEAL CLASS A (ASHRAE 90.1 - 2007).

(6) SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.

(7) LINED DUCTWORK MUST STILL BE WRAPPED TO MEET TOTAL INSULATING VALUE PER INSULATION SPECIFICATION AND SCHEDULE.

EXHAUST FAN (EF) AND SUPPLY FAN (SF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIR FLOW RATE (CFM)	ESP (IN WC)	MOTOR (HP)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	(2) MTG. HEIGHT (IN)	MAXIMUM SOUND (3) (DB)	MAXIMUM SOUND (4) SONES	MAXIMUM SOUND INSTALL. TYPE	(1) INTERLOCK WITH	OPENING (IN) LENGTH	OPENING (IN) WIDTH	ACCESSORIES	WEIGHT (LB)	LOCATION	REMARKS
EF-10	GREENHECK, G-085-VG	6	300	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-9	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	
EF-11	GREENHECK, G-123-VG	6	1,400	1.50	1/2	ECM	1554	DIRECT	115 / 1	18	-	12.8	C	RTU-21	14.5	14.5	2, 8, 9, 20, 23	75	ROOF	
EF-12	GREENHECK, G-123-VG	6	1,210	1.25	1/2	ECM	1448	DIRECT	115 / 1	18	-	12.1	C	RTU-11	14.5	14.5	2, 8, 9, 20, 23	75	ROOF	
EF-13	GREENHECK, G-085-VG	6	250	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-13	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	
EF-14	GREENHECK, G-085-VG	6	300	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-22	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	

FAN TYPE: CENTRIFUGAL		FAN TYPE: AXIAL	
1	SIDEWALL	8	ROOFTOP DOWNBLAST
2	INLINE	9	SIDEWALL PROPELLER
3	UTILITY	10	TUBE AXIAL
4	CABINET	11	VANE AXIAL
5	ROOFTOP UPBLAST	12	MIXED FLOW
6	ROOFTOP HOODED	13	ROOFTOP FRP UPBLAST
7	ROOFTOP FILTERED SUPPLY		

MOTOR TYPE	
ODP	OPEN DRIP PROOF
TEFC	TOTALLY ENCLOSED FAN COOLED
XPL	EXPLOSION PROOF
INV	INVERTER DUTY
TEAO	TOTALLY ENCLOSED AIR OVER
ECM	ELECTRONIC COMMUTATED

INSTALLATION TYPE	
A	FREE INLET, FREE OUTLET
B	FREE INLET, DUCTED OUTLET
C	DUCTED INLET, FREE OUTLET
D	DUCTED INLET, DUCTED OUTLET

ACCESSORIES			
1	GRAVITY BACKDRAFT DAMPER	11	OUTLET WIRE GUARD
2	MOTORIZED BACKDRAFT DAMPER	12	INLET FILTER GUARD
3	WEATHERHOOD	13	MOTOR COVER
4	WALL COLLAR	14	HOUSING INSULATION
5	MOTOR WIRE GUARD	15	BELT (OSHA) WIRE GUARD
6	MOTOR (OSHA) WIRE GUARD	16	INLET BELL
7	SHUTTER GUARD	17	INLET/OUTLET FLANGES
8	FAN SPEED CONTROLLER	18	INLET VANE DAMPER
9	NON-FUSED DISCONNECT SWITCH	19	EXTENDED LUBE LINES
10	INLET WIRE GUARD	20	MFR. ROOF CURB
		21	HOODED WALL CAP
		22	HOODED ROOF CAP
		23	HINGED ROOF CURB
		24	INLET GRILLE
		25	BASE MOUNTED VIBRATION ISOLATORS
		26	DUCT ADAPTOR
		27	HANGING SPRING ISOLATORS
		28	HANGING NEOPRENE ISOLATORS
		29	FACTORY INSULATED ANGLED FILTER BOX

REMARKS:

(1) SEE SPECIFICATION SECTION 230993 - HVAC SEQUENCE OF OPERATION.

(2) MOUNTING HEIGHT IS FROM FINISHED FLOOR LEVEL OF INDICATED ROOM, TO TOP OF FAN OR WALL OPENING.

(3) SOUND POWER LEVEL RATING PER AMCA 301.

(4) LOUDNESS VALUES AT 5 FT IN A HEMISPHERICAL FREE FIELD PER AMCA 301.

ROOF EXHAUST FAN (REF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIR FLOW RATE (CFM)	ESP (IN WC)	MOTOR (HP)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	MTG. HEIGHT (FT)	MAXIMUM SOUND (DB)	MAXIMUM SOUND SONE	MAXIMUM SOUND INSTALL. TYPE	INTERLOCK WITH	OPENING (IN) LENGTH	OPENING (IN) WIDTH	ACCESSORIES	WEIGHT (LB)	LOCATION	REMARKS
REF-2	GREENHECK,	3	700	2.0	1	ODP	1857	DIRECT	460 / 3	1'-6"	-	22.0	B	W. SWITCH	-	-	1, 9,13,20,25	1,000	ROOF	(1)

FAN TYPE: CENTRIFUGAL		FAN TYPE: AXIAL	
1	SIDEWALL	8	ROOFTOP DOWNBLAST
2	INLINE	9	SIDEWALL PROPELLER
3	UTILITY - FUME EXHAUST	10	TUBE AXIAL
4	CABINET	11	VANE AXIAL
5	ROOFTOP UPBLAST	12	MIXED FLOW
6	ROOFTOP HOODED	13	ROOFTOP FRP UPBLAST
7	ROOFTOP FILTERED SUPPLY		

MOTOR TYPE	
ODP	OPEN DRIP PROOF
TEFC	TOTALLY ENCLOSED FAN COOLED
XPL	EXPLOSION PROOF
INV	INVERTER DUTY
TEAO	TOTALLY ENCLOSED AIR OVER

INSTALLATION TYPE	
A	FREE INLET, FREE OUTLET
B	FREE INLET, DUCTED OUTLET
C	DUCTED INLET, FREE OUTLET
D	DUCTED INLET, DUCTED OUTLET

ACCESSORIES			
1	GRAVITY BACKDRAFT DAMPER	11	OUTLET WIRE GUARD
2	MOTORIZED BACKDRAFT DAMPER	12	INLET FILTER GUARD
3	WEATHERHOOD	13	MOTOR COVER
4	WALL COLLAR	14	HOUSING INSULATION
5	MOTOR WIRE GUARD	15	BELT (OSHA) WIRE GUARD
6	MOTOR (OSHA) WIRE GUARD	16	INLET BELL
7	SHUTTER GUARD	17	INLET/OUTLET FLANGES
8	FAN SPEED CONTROLLER	18	INLET VANE DAMPER
9	NON-FUSED DISCONNECT SWITCH	19	EXTENDED LUBE LINES
10	INLET WIRE GUARD	20	MFR. ROOF CURB
		21	HOODED WALL CAP
		22	HOODED ROOF CAP
		23	HINGED ROOF CURB
		24	INLET GRILLE
		25	BASE MOUNTED VIBRATION ISOLATORS
		26	DUCT ADAPTOR
		27	HANGING SPRING ISOLATORS
		28	HANGING NEOPRENE ISOLATORS
		29	FACTORY INSULATED ANGLED FILTER BOX

REMARKS:

(1) FUME EXHAUST ULTITY SET FAN WITH EXHAUST STACK.

FOR BIDS
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PRELIMINARY
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2019-04-

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
CHECKED BY: DJG

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SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
2-MS-601

AIR TERMINAL (VAV) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	AIR FLOW (CFM)			(1) MAX. PD (IN. WC)	(2) HOT WATER REHEAT COIL								INLET SIZE (IN)	OUTLET			WEIGHT (LB)	ACCESSORIES	LOCATION	REMARKS
			MAX.	MIN.	HEATING		CAP. (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	PD (FT)	NO. OF ROWS		WIDTH (IN)	DEPTH (IN)	QTY.				
VAV-18A	TRANE, VCWF	1	620	120	308	1.0	13.4	55	105	180	150	1.3	5.0	2	8			-		3, 7	C-102	
VAV-18B	TRANE, VCWF	1	300	60	149	1.0	6.5	55	105	180	150	0.6	5.0	2	6			-		3, 7	C-103	
VAV-18C	TRANE, VCWF	1	210	40	104	1.0	4.5	55	105	180	150	0.5	5.0	2	5			-		3, 7	C-113	
VAV-18D	TRANE, VCWF	1	240	50	119	1.0	5.2	55	105	180	150	0.5	5.0	2	6			-		3, 7	C-114	
VAV-18E	TRANE, VCWF	1	310	60	154	1.0	6.7	55	105	180	150	0.7	5.0	2	6			-		3, 7	C-125	
VAV-18F	TRANE, VCWF	1	130	30	64	1.0	2.8	55	105	180	150	0.3	5.0	2	4			-		3, 7	C-126	
VAV-18G	TRANE, VCWF	1	400	80	199	1.0	8.6	55	105	180	150	0.9	5.0	2	7			-		3, 7	C-128	
VAV-18H	TRANE, VCWF	1	160	30	79	1.0	3.0	55	90	180	150	0.3	5.0	2	4			-		3, 7	C-111	
VAV-18I	TRANE, VCWF	1	250	50	124	1.0	4.7	55	90	180	150	0.5	5.0	2	5			-		3, 7	C-107	

TYPE				ACCESSORIES					
1	PRESSURE...	5	SERIES FAN POWERED	1	ELECTRIC HEAT	5	2-WAY TWO-POSITION VALVE	9	FACTORY MOUNTED TRANSFORMER
2	PRESSURE DEPENDENT	6	PARALLEL FAN POWERED	2	FUSE	6	3-WAY TWO-POSITION VALVE	10	FACTORY MOUNTED DISCONNECT...
3	SINGLE DUCT	7	BYPASS	3	DDC CONTROLS	7	2-WAY PROPORTIONAL VALVE		
4	DUAL DUCT			4	PNEUMATIC CONTROLS	8	3-WAY PROPORTIONAL VALVE		

REMARKS:

(1) MAXIMUM STATIC PRESSURE DROP BASED ON MAXIMUM RATED AIR FLOW.

(2) HEATING CAPACITY OF REHEAT COIL BASED ON MINIMUM RATED AIR FLOW, UNLESS OTHERWISE NOTED.

AIR FILTER (AF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	AIR FLOW RATE (CFM)	PRESSURE DROP (IN WG)		FAN TSP & AIR BALANCE PD (IN WG)	(1) MIN. EFF. (%)	MERV RATING	MEDIA LENGTH (IN)	MIN. FACE AREA (FT2)	SERVES	LOCATION	REMARKS
				INITIAL	FINAL								
AF-17	AAF INTERNATIONAL, PREpleat M13	PRE	3,550	0.3	1.0	0.65	80-90	13	2		RTU-17	ROOF	
AF-18	AAF INTERNATIONAL, PREpleat M13	PRE	6,000	0.3	1.0	0.65	80-90	13	2		RTU-18	ROOF	
AF-19	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.3	1.0	0.65	80-90	13	2		RTU-19	ROOF	
AF-20	AAF INTERNATIONAL, PREpleat M13	PRE	3,550	0.2	1.0	0.65	80-90	13	2		RTU-20	ROOF	
AF-21	AAF INTERNATIONAL, PREpleat M13	PRE	6,000	0.2	1.0	0.65	80-90	13	2		RTU-21	ROOF	
AF-22	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.2	1.0	0.65	80-90	13	2		RTU-22	ROOF	
AF-23	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.2	1.0	0.65	80-90	13	2		RTU-23	ROOF	

REMARKS:

(1) DUST SPOT EFFICIENCY MINIMUM FOR MERV 13 FILTERS.

HVAC DUCT INSULATION SCHEDULE

INDOOR OR OUTDOOR	CONCEALED OR EXPOSED	DUCT SHAPE	DUCT SERVICE	INSULATION			REMARKS
				TYPE	THICKNESS (IN)	JACKETING TYPE	
INDOOR	CONCEALED	SQUARE	SUPPLY AIR	D1, D2	1 1/2	J1	-
			RETURN AIR	D1, D2	1 1/2	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
			EXHAUST AIR	D1, D2	1	J1	(1)
		ROUND	SUPPLY AIR	D1	1 1/2	J1	-
			RETURN AIR	D1	1 1/2	J1	-
			OUTSIDE AIR	D1	3	J1	-
			EXHAUST AIR	D1	1	J1	(1)
	EXPOSED	SQUARE	SUPPLY AIR	D1, D2	1 1/2	J1	-
			RETURN AIR	D1, D2	1 1/2	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
			EXHAUST AIR	D1, D2	1	J1	(1)
		ROUND	SUPPLY AIR	D1	1 1/2	J1	-
			RETURN AIR	D1	1 1/2	J1	-
			OUTSIDE AIR	D1	3	J1	-
			EXHAUST AIR	D1	1	J1	(1)
OUTDOOR	CONCEALED	SQUARE	SUPPLY AIR	D1, D2	3	J1	-
			RETURN AIR	D1, D2	3	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
		ROUND	SUPPLY AIR	D1	3	J1	-
			RETURN AIR	D1	3	J1	-
			OUTSIDE AIR	D1	3	J1	-
	EXPOSED	SQUARE	SUPPLY AIR	D1, D2	3	J9	-
			RETURN AIR	D1, D2	3	J9	-
			OUTSIDE AIR	D1, D2	3	J9	-
		ROUND	SUPPLY AIR	D1	3	J9	-
			RETURN AIR	D1	3	J9	-
			OUTSIDE AIR	D1	3	J9	-

INSULATION TYPE		JACKETING TYPE	
D1	MINERAL FIBER BLANKET (ASTM C 553 TYPE II) (ASTM C 1290 TYPE III) AVAIL. MFR'S: CERTAINTEED CORP; DUCT WRAP JOHNS MANVILLE; MICROLITE. KNAUF INSULATION; DUCT WRAP OWENS CORNING; ALL-SERVICE DUCT WRAP	J1	FACTORY APPLIED FSK
		J2	FACTORY APPLIED FSP
		J3	FACTORY APPLIED VINYL
		J4	FACTORY APPLIED ASJ-SSL
D2	MINERAL FIBER BOARD (ASTM C 612 TYPE 1A OR 1B) AVAIL. MFR'S: CERTAINTEED CORP.; COMMERCIAL BOARD. JOHNS MANVILLE; 800 SERIES SPIN-GLAS KNAUF INSULATION; INSULATION BOARD. OWENS CORNING; FIBERGLAS 700 SERIES.	J5	PVC, 30 MIL THICK, WHITE, UVC RESISTANT, ASTM D 1784 CLASS 16354-C, AVAIL. MFR'S: JOHNS MANVILLE; ZESTON P.I.C. PLASTICS, INC.; FG SERIES PROTO PVC CORP; LOSMOKE SPEEDLINE CORPORATION; SMOKESAFE
D3	RIGID POLYISOCYANURATE (ASTM C 591) AVAIL. MFR'S: DOW CHEMICAL COMPANY (THE); TRYMER. APACHE PRODUCTS COMPANY; ISO-25. DUNA USA INC.; CORAFOAM. ELLIOTT COMPANY; ELFOAM.	J6	ALUMINUM, 0.016" THICK, EMBOSSED, ASTM B 209, ALLOY 3003, 3005, 3105, OR 5005, TEMPER H-14, FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
D4	HIGH TEMPERATURE MINERAL FIBER BLANKET (ASTM C 553 TYPE V) AVAIL. MFR'S: JOHNS MANVILLE, HTB 23 SPIN-GLAS OWNES CORNING; HIGH TEMP FLEXIBLE BATT	J7	STAINLESS STEEL, 304 [316] , 0.016" THICK, SMOOTH, 2B OR 4 FINISH, ASTM A 167 OR ASTM A 240 FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
D5	HIGH TEMPERATURE MINERAL FIBER BOARD (ASTM C 612 TYPE III) AVAIL. MFR'S: JOHNS MANVILLE, HTB 23 SPIN-GLAS OWNES CORNING; HIGH TEMP FLEXIBLE BATT		
D6	[1] [2] HR FIRE RATED BLANKET (ASTM C 591) AVAIL. MFR'S: CERTAINTEED CORP.; FLAMECHEK JOHNS MANVILLE; FIRETEMP WRAP 3M; FIRE BARRIER WRAP PRODUCTS. THERMAL CERAMICS; FIREMASTER DUCT WRAP	J8	PVDC (DOW CHEMICAL; SARAN 540 OR 560) (USDA & FDA COMPLIANT)
		J9	VENTURETAPE; VENTURECLAD 1577CW-E (NATURAL ALUMINUM EMBOSSED FINISH)

REMARKS:

(1) EXHAUST DUCT ONLY NEEDS TO BE INSULATED FROM THE DAMPER TO THE OUTSIDE WALL OR ROOF.

DUST COLLECTOR (DC) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	SERVICE	AIR FLOW RATE (CFM)	EXTERNAL SP (IN WC)	VEL. (FPM)	FAN SPEED (RPM)	FILTER PD (IN WG)	MOTOR		LOCATION	REMARKS
								POWER (HP)	VOLT / PH		
DC-1	DONALDSON/TORIT, 20-5	WOOD	2,315	7.0	6,000	3,500	1.0	5	460 / 3	ON-GRADE	

REMARKS:

(1)

AIR OUTLET AND INLET SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	APPLICATION	(1) MAX AIRFLOW (CFM)	OUTLET / INLET	TYPE	MOUNTING SYSTEM	(2) DAMPER	(3) FACE SIZE (IN)	NECK SIZE (IN)	(4) MAX NOISE LEVEL (NC)	PATTERN	MAX SP (IN WG)	FINISH	MATERIAL	(5) MOUNTING HEIGHT (IN)	ACCESSORIES	LOCATION	REMARKS
CD-1	TITUS, OMNI	SUPPLY	110	1	7	1	NONE	24x24	6	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-2	TITUS, OMNI	SUPPLY	225	1	7	1	NONE	24x24	8	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-3	TITUS, OMNI	SUPPLY	400	1	7	1	NONE	24x24	10	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-4	TITUS, OMNI	SUPPLY	575	1	7	1	NONE	24x24	12	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-5	TITUS, OMNI	SUPPLY	750	1	7	1	NONE	24x24	14	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
SG-1	TITUS, 272RS	SUPPLY	155	3	2		NONE	9x9	6x6	20	-	0.1	W	STEEL				(6)
SG-2	TITUS, 272RS	SUPPLY	255	3	2		NONE	13x9	10x6	20	-	0.1	W	STEEL				(6)
SG-3	TITUS, 272RS	SUPPLY	305	3	2		NONE	15x9	12x6	20	-	0.1	W	STEEL				(6)
SG-4	TITUS, 272RS	SUPPLY	400	3	2		NONE	15x11	12x8	20	-	0.1	W	STEEL				(6)
SG-5	TITUS, 272RS	SUPPLY	415	3	2		NONE	13x13	10x10	20	-	0.1	W	STEEL				(6)
SG-6	TITUS, 272RS	SUPPLY	440	3	2		NONE	21x9	18x6	20	-	0.1	W	STEEL				(6)
SG-7	TITUS, 272RS	SUPPLY	500	3	2		NONE	15x13	12x10	20	-	0.1	W	STEEL				(6)
SG-8	TITUS, 272RS	SUPPLY	580	3	2		NONE	15x15	12x12	20	-	0.1	W	STEEL				(6)
SG-9	TITUS, 272RS	SUPPLY	710	3	2		NONE	21x13	18x10	20	-	0.1	W	STEEL				(6)
SG-10	TITUS, 272RS	SUPPLY	780	3	2		NONE	17x17	14x14	20	-	0.1	W	STEEL				(6)
SG-11	TITUS, 272RS	SUPPLY	845	3	2		NONE	21x15	18x12	20	-	0.1	W	STEEL				(6)
RG/EG-1	TITUS, 350RL	RETURN/EXHAUST	95	3	3		NONE	8x8	6x6	20	-	0.1	W	STEEL				(10)
RG/EG-2	TITUS, 350RL	RETURN/EXHAUST	125	3	3		NONE	12x8	10x6	20	-	0.1	W	STEEL				(10)
RG/EG-3	TITUS, 350RL	RETURN/EXHAUST	140	3	3		NONE	14x8	12x6	20	-	0.1	W	STEEL				(10)
RG/EG-4	TITUS, 350RL	RETURN/EXHAUST	160	3	3		NONE	14x10	12x8	20	-	0.1	W	STEEL				(10)
RG/EG-5	TITUS, 350RL	RETURN/EXHAUST	175	3	3		NONE	12x12	10x10	20	-	0.1	W	STEEL				(10)
RG/EG-6	TITUS, 350RL	RETURN/EXHAUST	190	3	3		NONE	20x8	18x6	20	-	0.1	W	STEEL				(10)
RG/EG-7	TITUS, 350RL	RETURN/EXHAUST	200	3	3		NONE	14x12	12x10	20	-	0.1	W	STEEL				(10)
RG/EG-8	TITUS, 350RL	RETURN/EXHAUST	275	3	3		NONE	16x16	14x14	20	-	0.1	W	STEEL				(10)
RG/EG-9	TITUS, 350RL	RETURN/EXHAUST	275	3	3		NONE	24x12	22x10	20	-	0.1	W	STEEL				(10)
RG/EG-10	TITUS, 350RL	RETURN/EXHAUST	300	3	3		NONE	20x16	18x14	20	-	0.1	W	STEEL				(10)
RG/EG-11	TITUS, 350RL	RETURN/EXHAUST	375	3	3		NONE	20x20	18x18	20	-	0.1	W	STEEL				(10)
RG/EG-12	TITUS, 350RL	RETURN/EXHAUST	410	3	3		NONE	26x18	24x16	20	-	0.1	W	STEEL				(10)
RG/EG-13	TITUS, 350RL	RETURN/EXHAUST	470	3	3		NONE	26x22	24x20	20	-	0.1	W	STEEL				(10)
RG/EG-14	TITUS, 50F	RETURN/EXHAUST	575	3	8	1	NONE	15x15	12x12	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
RG/EG-15	TITUS, 50F	RETURN/EXHAUST	975	3	8	1	NONE	19x19	16x16	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
RG/EG-16	TITUS, 50F	RETURN/EXHAUST	1725	3	8	1	NONE	24x24	22x22	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-1	TITUS, 350RL	TRANSFER	115	3	3		NONE	12x12	10x10	15	-	0.05	W	STEEL				(10)
TG-2	TITUS, 350RL	TRANSFER	140	3	3		NONE	14x12	12x10	15	-	0.05	W	STEEL				(10)
TG-3	TITUS, 350RL	TRANSFER	160	3	3		NONE	20x16	18x14	15	-	0.05	W	STEEL				(10)
TG-4	TITUS, 350RL	TRANSFER	200	3	3		NONE	26x14	24x12	15	-	0.05	W	STEEL				(10)
TG-5	TITUS, 350RL	TRANSFER	255	3	3		NONE	22x22	20x20	15	-	0.05	W	STEEL				(10)
TG-6	TITUS, 50F	RETURN/EXHAUST	575	3	8	1	NONE	15x15	12x12	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-7	TITUS, 50F	RETURN/EXHAUST	975	3	8	1	NONE	19x19	16x16	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-8	TITUS, 50F	RETURN/EXHAUST	1725	3	8	1	NONE	24x24	22x22	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		

OUTLET/INLET		TYPE				MOUNTING SYSTEM		DAMPER		FINISH	
1	DIFFUSER	1	SINGLE DEFLECTION	9	LOUVERED	1	T-BAR CEILING	N	NONE	M	MILL
2	REGISTER	2	DOUBLE DEFLECTION	10	HOODED	2	PLASTER/CONCRETE CEILING	BF	BUTTERFLY	W	MFR. STANDARD WHITE
3	GRILLE	3	FIXED BLADE	11	DOOR TRANSFER	3	PLASTER/MASONRY WALL	G	GRAVITY	S	MFR. SPECIAL COLOR
4	LOUVER	4	PERFORATED	12	BRICK	4	EXPOSED DUCTWORK	MP	MOTORIZED PNEUMATIC	A	ANODIZED ALUMINUM
5	PENTHOUSE	5	LINEAR	13	PUNKAH	5	METAL PANEL WALL	ME	MOTORIZED ELECTRIC	P	PRIME COAT (FINAL COAT BY GC)
6	VENT	6	PLENUM SLOT	14	LAMINAR	6	FLOOR	OB	OPPOSED BLADE	O	OTHER (SEE SPECIFICATIONS)
		7	PLAQUE	15	DRUM	7	ROOF	PB	PARALLEL BLADE		
		8	EGGCRATE			8	EXTERIOR STUD WALL	LL	LOW LEAKAGE, INSUL.		

REMARKS:

(1) SEE PLANS FOR ACTUAL INDIVIDUAL AIR QUANTITIES OF EACH DEVICE.

(2) IF DAMPER IS SCHEDULED 'NONE', EACH SUPPLY, RETURN, AND EXHAUST DEVICE TO HAVE A BALANCE DAMPER IN THE DUCT BRANCH TAKE-OFF UNLESS AN ASSOCIATED VAV BOX SERVES A SINGLE DEVICE.

(3) BORDER TYPES SHALL BE COMPATIBLE WITH CEILING OR WALL TYPES WHERE AIR DEVICE IS LOCATED. REFER TO ARCHITECTURAL PLANS AND ALL OTHER TRADES.

(4) ALL GRILLES AND DIFFUSERS SHALL NOT EXCEED NOISE CRITERIA LISTED (BASED ON 10 DB ROOM ATTENUATION) AND AT THE SCHEDULED MAXIMUM STATIC PRESSURE DROP.

(5) MOUNTING HEIGHT SHALL BE FROM FINISHED FLOOR TO BOTTOM OF OPENING.

(6) INDIVIDUALLY ADJUSTABLE AIRFOIL BLADE WITH 3/4" SPACING. FRONT BLADES PARALLEL TO THE SHORT DIMENSION. INITIALLY SET BLADES FOR APPROXIMATELY 30 DEGREE THROW.

(7) EXTERNALLY INSULATE PLENUM SLOT DIFFUSERS.

(8) PENCIL-PROOF GRILLE DESIGN, 7/32" BARS WITH 7/16" SPACING.

(9) 1/8" BARS WITH 1/4" SPACING.

(10) BLADES PARALLEL TO THE LONG DIMENSION WITH FIXED 30 DEGREE DEFLECTION AND 3/4" SPACING.

(11) AIRFOIL BLADES PARALLEL TO THE LONG DIMENSION WITH FIXED 45 DEGREE DEFLECTION AND 3/4" SPACING.

(12) INSULATE THE TOP OF THE DIFFUSER WHEN THE SUPPLY AIR TEMPERATURE IS 50 DEGREES OR LESS.

(13) RE-BALANCE EXISTING OUTLET/INLET TO INDICATED AIR FLOW.

PACKAGED ROOFTOP UNIT (RTU) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	NOM. CAP. (TON)	SUPPLY FAN			MIN. OUTDOOR AIR FLOW (CFM)	COOLING COIL								GAS HEATER - NAT. GAS					
			AIR FLOW (CFM)	ESP (IN WC)	TSP (IN WC)		EAT (°F)		LAT (°F)		NO. OF STAGES	TOTAL CAP. (MBH)	SENS. CAP. (MBH)		EAT (°F)	LAT (°F)	NO. OF STAGES	CAPACITY (MBH)		GAS PRESS. (IN WC)	MIN. AFUE (%)
							DB	WB	DB	WB								INPUT	OUTPUT		
RTU-17	TRANE YHC	10	3,550	1.25	1.5	TBD	80.0	67.0	58.0	57.0	2	116.0	90.0		70	122	2	250	200	7	80
RTU-18	TRANE YHD	15	6,000	1.50	2.0	TBD	80.0	67.0	60.0	58.0	2	181.0	138.0		70	115	MOD	350	284	7	80
RTU-19	TRANE YHC	5	1,650	1.00	1.5	TBD	80.0	67.0	57.0	56.0	2	57.3	33.7		70	105	1	130	104	7	80
RTU-20	TRANE YHC	7.5	3,550	1.25	1.5	TBD	80.0	67.0	58.0	57.0	2	93.0	58.0		70	122	2	250	200	7	80
RTU-21	TRANE YHD	15	6,000	1.50	2.0	TBD	80.0	67.0	60.0	58.0	2	181.0	138.0		70	115	MOD	350	284	7	80
RTU-22	TRANE YHC	5	1,650	1.00	1.5	TBD	80.0	67.0	57.0	56.0	2	57.3	33.6		70	105	1	120	96	7	80
RTU-23	TRANE YHC	7.5	1,650	0.75	1.5	TBD	80.0	67.0	57.0	56.0	2	81.3	44.6		70	105	2	150	120	7	80

MARK	ELECTRIC...		FILTER TAG	REFRIG. TYPE	CONDENSER			RETURN/EXHAUST FAN		ELECTRICAL				ACCESSORIES	WEIGHT WITH CURB (LB)	LOCATION	REMARKS
	CAP. (KW)	NO. OF STAGES			AMB. TEMP. (°F)		MIN. EER	AIR FLOW (CFM)	ESP (IN WC)	TSP (IN WC)	VOLTS	PHASE	MCA	MOCP				
					MIN.	MAX.												
RTU-17	-	-	AF-17	R-410A	40	95	10.9	3,550	0.5	1.0	460	3	-	15	1,3,4,5,6,7,11	800	ROOF	MIDDLE SCHOOL
RTU-18	-	-	AF-18	R-410A	40	95	10.9	6,000	0.5	1.0	460	3	-	50	1,3,4,5,6,7,11	2,800	ROOF	ADMINISTRATION
RTU-19	-	-	AF-19	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	1,200	ROOF	VESTIBULE
RTU-20	-	-	AF-20	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	1,800	ROOF	FITNESS
RTU-21	-	-	AF-21	R-410A	40	95	10.9	6,000	0.5	1.0	460	3	-	50	1,3,4,5,6,7,11	2,800	ROOF	VESTBULE
RTU-22	-	-	AF-22	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	15	1,4,5,6,7,11	800	ROOF	MAINTENANCE
RTU-23	-	-	AF-23	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	800	ROOF	AG LAB

ACCESSORIES			
1	DRY BULB ECONOMIZER CONTROL	7	STANDARD ROOF CURB
2	ENTHALPY ECONOMIZER CONTROL	8	VIBRATION ISOLATION ROOF CURB
3	POWER EXHAUST	9	SEISMIC ROOF CURB
4	DISCONNECT SWITCH	10	SUPPLY AIR SMOKE DETECTOR
5	CONDENSER COIL GUARDS	11	RETURN AIR SMOKE DETECTOR
6	15A GFI CONVENIENCE OUTLET		

REMARKS:

(1)

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2019-04-

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
CHECKED BY: DJG

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SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
2-MS-602

MECHANICAL PIPING & VALVE SCHEDULE

SYSTEM MARK	SERVICE	ROOM TYPE	PIPING SIZE (IN)	PIPING: MATERIAL TYPE	WALL THICKNESS	ASME PIPING: STD	GRADE	TYPE	PRESS. CLASS	FITTING TYPE	ENDS	JOINT TYPE	VALVE: TYPE	CHECK VALVES	PRESS. CLASS	CONNECTION TYPE	BODY MATERIAL	TRIM MATERIAL	VALVE EQUAL TO: [MANUFACTURER, MODEL]	REMARKS
G	NATURAL GAS	OUTDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	MI	PLAIN	TH	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	- LOW PRESSURE (2 PSIG OR <)	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	-	INDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	MI	PLAIN	TH	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	-	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	NATURAL GAS	OUTDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	WS	PLAIN	SW	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	- HIGH PRESSURE (> 2 PSIG)	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	-	INDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	WS	PLAIN	SW	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	-	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
HWS/R	HEATING WATER SUPPLY/RETURN	ALL AREAS	3/4 TO 2	Cu	L	B 88	-	-	-	WCu	PLAIN	SD	2BV	SWING	125#	THREADED	BRONZE	SS	APOLLO 70-100/200 SERIES	-
-	- (HVAC)		2 1/2 OR MORE	BS	SCH 40	A 53	A or B	E or S	150#	WS,WC,FS	BEVELED	BW	1BV	SWING	125#	FLANGED	DUCTILE	SS	AMERICAN VALVE BALL VALVE	-
CD	HVAC CONDENSATE DRAIN	INDOORS	3/4 TO 2	BS	SCH 40	A 53	B	-	-	WW	PLAIN	BW	-	-	-	-	-	-	-	-
-	-		3/4 TO 2	PVC	SCH 40	D 1785	-	-	-	PS	PLAIN	SV	-	-	-	-	-	-	-	-
RL/RS	REFRIGERANT	ALL AREAS	ALL SIZES	Cu	ACR	B 280	-	-	-	WCu	PLAIN	BZ	-	-	-	-	-	-	-	-

MATERIAL TYPE		JOINT TYPE	
BS	BLACK STEEL	BW	BUTT WELD
SS	STAINLESS STEEL	SW	SOCKET WELD
GS	GALVANIZED STEEL	TH	THREADED
PE	POLYETHYLENE	FL	FLANGED
CU	COPPER	SF	SOCKET FUSION
PVC	PVC	BF	BUTT FUSION
		SD	SOLDERED
		BZ	BRAZED
		SV	SOLVENT WELD

FITTING TYPE			
CI	CAST IRON (THREADED) (ASME B16.4 FOR IRON, ASME A 351 FOR SS) (FLANGED) (ASME B16.1)	WC	WROUGHT CAST (FLANGES, ASME B16.5)
MI	MALLEABLE IRON (THREADED) (ASME B16.3)	FS	FORGED STEEL (FLANGES, ASME B16.5)
WS	WROUGHT STEEL (ASTM A 234 FOR STEEL, ASTM A 403 FOR SS)	PS	PVC SOCKET
PE	POLYETHYLENE (ASTM D 2683 (SOCKET) OR ASTM D 3261 (BUTT))	WCu	WROUGHT COPPER (ASME B 16.22)
WW	WELDED WROUGHT STEEL (ASTM A 774 FOR SS)		

ASME PIPING TYPE	
S	SEAMLESS
E	ELECTRIC RESISTANCE WELDED
F	FURNACE BUTT WELDED

VALVE TYPE	
1BV	ONE PIECE FULL PORT BALL VALVE
2BV	TWO PIECE FULL PORT BALL VALVE
3BV	THREE PIECE FULL PORT BALL VALVE
SBV	STEEL BODY BALL VALVE
NGV	NON-RISING STEM GATE VALVE
RGV	RISING STEM GATE VALVE
OGV	OSY GATE VALVE
BFV	BUTTERFLY VALVE
PV	PLUG VALVE

PIPING SYSTEM JOINING MATERIALS

1. PIPE-FLANGE GASKET MATERIALS: SUITABLE FOR CHEMICAL AND THERMAL CONDITIONS OF PIPING SYSTEM CONTENTS.
2. PIPE FLANGE GASKETS: ASME B16.21, NONMETALLIC, FLAT, ASBESTOS-FREE, 1/8IN MAXIMUM THICKNESS UNLESS SPECIFIED OTHERWISE.
   A. FULL-FACE TYPE: FOR FLAT-FACE, CLASS 125, CAST-IRON AND CAST-BRONZE FLANGES.
   B. NARROW-FACE TYPE: FOR RAISED-FACE, CLASS 250, CAST-IRON AND STEEL FLANGES.
3. FLANGE BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL, UNLESS OTHERWISE INDICATED.
4. PLASTIC, PIPE-FLANGE GASKET, BOLTS, AND NUTS: TYPE AND MATERIAL RECOMMENDED BY PIPING SYSTEM MANUFACTURER, UNLESS OTHERWISE INDICATED.
5. SOLDER FILLER METALS: ASTM B 32, LEAD-FREE ALLOYS. INCLUDE WATER-FLUSHABLE FLUX ACCORDING TO ASTM B 813.
6. GENERAL DUTY BRAZING FILLER METALS: AWS A5.8, BCUP SERIES, COPPER-PHOSPHORUS ALLOYS UNLESS OTHERWISE INDICATED.
7. REFRIGERANT PIPING BRAZING FILLER METALS: AWS A5.8, BAG1, SILVER ALLOY UNLESS OTHERWISE INDICATED.
8. WELDING FILLER METALS: AWS D10.12 FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE.
9. SOLVENT CEMENTS FOR JOINING PLASTIC PIPING: CPVC PIPING: ASTM F 493, PVC PIPING: ASTM D 2564. INCLUDE PRIMER ACCORDING TO ASTM F 656.

REMARKS:

(1) FITTING MATERIAL SHALL MATCH PIPING MATERIAL (EXCEPTION: MI FITTINGS SHALL BE USED FOR BS PIPING WHERE INDICATED).
(2) PRESS. CLASS LISTED IS MIN. REQUIRED. PROVIDE GREATER PRESS. CLASS VALVE AND PIPE SYSTEM IF PRESS. CLASS INDICATED IS NOT AVAILABLE FOR GIVEN VALVE AND PIPE TYPE.
(3) FLANGES SHALL BE RAISED FACE WITH SPOT FACED BOLT HOLES.
(4) AIR VENT, VACUUM BREAKER, AND SAFETY VALVE PIPING SHALL BE THE SAME AS THE CONNECTED SERVICE PIPING.
(5) PROVIDE GEAR OPERATORS FOR VALVES LARGER THAN 6" IN SIZE.

UNIT HEATER (UH) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	CAPACITY (MBH)	AIR FLOW (CFM)	AIR FLOW HOR. or VER.	AIR THROW (FT)	MOTOR (HP)	ELECTRICAL (VOLTS/PH)	EAT (°F)	LAT (°F)	STEAM: PRESS. (PSI)	STEAM: COND. (LB/H)	WATER: FLOW (GPM)	WATER: PD (FT)	WATER: EWT (°F)	WATER: LWT (°F)	FUEL FIRED: FUEL TYPE	FUEL FIRED: INPUT (MBH)	FUEL FIRED: OUTPUT (MBH)	FUEL FIRED: VENT TYPE	ACCESSORIES	(1) MTG. HEIGHT (FT)	WEIGHT (LB)	LOCATION	REMARKS
UH-7	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	
UH-8	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	
UH-9	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	

TYPE				VENT TYPE		ACCESSORIES	
HYD	HYDRONIC	XPL	EXPLOSION PROOF	GV	GRAVITY VENT	1	CONCENTRIC VENT ASSEMBLY
STM	STEAM	WD	WASH DOWN	PV	POWER VENT	2	DOWN TURN AIR NOZZLE
GF	GAS-FIRED			SC	SEPARATED COMBUSTION	3	STAINLESS STEEL HEAT EXCHANGER
EL	ELECTRIC					4	STAINLESS STEEL BURNER
						5	MANUFACTURER SUPPLIED MOUNTING HARDWARE
						6	INTEGRAL THERMOSTAT
						7	REMOTE THERMOSTAT
						8	DISCONNECT SWITCH

REMARKS:

(1) MOUNTING HEIGHT SHALL BE FROM FINISHED FLOOR TO BOTTOM OF UNIT.

CABINET UNIT HEATER (CUH) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	AIR FLOW (CFM)	EAT (°F)	LAT (°F)	HEATING: MEDIA TYPE	HEATING: CAPACITY (MBH)	HEATING: CAPACITY (KW)	HEATING: FLOW RATE (GPM)	HEATING: FLOW RATE (LB/HR)	HEATING: EWT (°F)	HEATING: LWT (°F)	ELECTRICAL (VOLTS/PH)	FAN MOTOR (HP)	FAN MOTOR (RPM)	CABINET SIZE (IN): D	CABINET SIZE (IN): L	CABINET SIZE (IN): H	(1) MOUNTING: HEIGHT (FT)	(1) MOUNTING: ORIENT.	(1) MOUNTING: TYPE	INLET LOCATION	OUTLET LOCATION	LOCATION	REMARKS
CUH-10	MC QUAY, F-CHF-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	43	25	*-	VERT.	F	FRONT	FRONT	AREA A	WALL PLATE
CUH-11	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-6"	HORIZ.	C, R	FRONT	FRONT	AREA A	WALL PLATE
CUH-12	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-6"	HORIZ.	C, R	FRONT	FRONT	AREA A	WALL PLATE
CUH-13	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-0"	HORIZ.	C, R	FRONT	FRONT	AREA C	WALL PLATE

MOUNTING TYPE	
C	CEILING
SR	SEMI-RECESSED
R	RECESSED
FS	FLOOR STANDING
W	WALL

REMARKS:

(1) MOUNTING HEIGHT IS FROM BOTTOM OF UNIT TO FINISHED FLOOR.

MECHANICAL PIPE & EQUIPMENT INSULATION SCHEDULE

MARK	SERVICE	PIPE SIZES (IN)	All EXCEPT, INSULATION TYPE	All EXCEPT, THICKNESS (IN)	All EXCEPT, JACKETING TYPE	OUTDOORS: INSULATION TYPE	OUTDOORS: THICKNESS (IN)	OUTDOORS: JACKETING TYPE	PIPE/EQUIP LABEL (Y/N)	HEAT TRACE	REMARKS
HWS/R	HEATING HOT WATER SUPPLY & RETURN	3/4 TO 1 1/4	I2	1 1/2	-	I2	2	J3	Y	NONE	-
	(141ºF - 200ºF)	1 1/2 OR MORE	I2	2	-	I2	3	J3	Y	NONE	-
RS / RL	REFRIGERANT SUCTION & LIQUID	ALL SIZES	I5	1		I2	1	J3	N	NONE	-
CD	COOLING COIL CONDENSATE DRAIN	ALL SIZES	I2	1	-	-	-	-	-	NONE	-

INSULATION TYPE	
I1	RIGID MOLDED HYDROUS CALCIUM SILICATE (ASTM C 533, TYPE I) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 AVAIL. MFR'S: JOHNS MANVILLE: THERMO-12 GOLD
I2	MINERAL FIBER, PRE-FORMED PIPE (ASTM C 547, Type I, Grade A) INCLUDING SSL-ASJ WITH PREFORMED FITTING JACKETS AVAIL. MFR'S: JOHNS MANVILLE: MICRO-LOK KNAUF INSULATION: 1000 PIPE INSULATION OWENS CORNING: FIBERGLAS PIPE INSULATION
I3	EXTRUDED POLYSTYRENE (ASTM C 578, TYPE IV or TYPE XIII) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 AVAIL. MFR'S: DOW CHEMICAL COMPANY; STYROFOAM. KNAUF INSULATION; KNAUF POLYSTYRENE
I4	RIGID POLYISOCYANURATE (ASTM C 591, TYPE I OR TYPE IV) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 INCLUDING SSL-ASJ WITH PREFORMED FITTING JACKETS AVAIL. MFR'S: DOW CHEMICAL COMPANY (THE); TRYMER APACHE PRODUCTS COMPANY; ISO-25
I5	FLEXIBLE ELASTOMERIC (COMPLY WITH ASTM C 534, TYPE I FOR TUBE AND TYPE II FOR SHEET) AVAIL. MFR'S: AEROFLEX USA INC.; AEROCEL ARMACELL LLC; AP ARMAFLEX
I6	MINERAL FIBER PIPE & TANK (ASTM C 1393, TYPE II OR TYPE IIIA CATEGORY 2) INCLUDING ASJ AVAIL. MFR'S: CERTAINTEED CORP.; CRIMPWRAP JOHNS MANVILLE; MICROFLEX KNAUF INSULATION; PIPE AND TANK INSULATION OWENS CORNING; FIBERGLAS PIPE AND TANK INSULATION

JACKETING TYPE (FIELD APPLIED)	
J1	PVC, 30 MIL THICK, WHITE,,, ASTM D 1784 CLASS 16354-C, AVAIL. MFR'S: JOHNS MANVILLE; ZESTON P.I.C. PLASTICS, INC.; FG SERIES PROTO PVC CORP; LOSMOKE SPEEDLINE CORPORATION; SMOKESAFE
J2	PVC, 30 MIL THICK, COLORED
J3	ALUMINUM, 0.016" THICK, EMBOSSED, ASTM B 209, ALLOY 3003, 3005, 3105, OR 5005, TEMPER H-14, FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
J4	STAINLESS STEEL, 304, 0.016" THICK, SMOOTH, 2B OR 4 FINISH, ASTM A 167 OR ASTM A 240 FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE

REMARKS:

CONVECTOR (C) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TOTAL CAP. (MBH)	EAT (°F)	MEDIA TYPE	EWT (°F)	LWT (°F)	MEDIA FLOW RATE (GPM)	MEDIA FLOW RATE (FT HD)	CABINET SIZE (IN): D	CABINET SIZE (IN): L	CABINET SIZE (IN): H	TOP STYPE	MTG. TYPE	(1) MTG. HEIGHT (IN)	FINISH	LOCATION	REMARKS
C-1	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-2	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-3	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-4	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-5	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-6	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	

MOUNTING TYPE		TOP STYLE		FINISH		MEDIA TYPE	
W	WALL	F	FLAT	W	MFR. STANDARD COLOR	WTR	WATER
F	FLOOR	S	SLOPED	P	PRIME COAT (PAINT BY GC)	XX% EG	XX% ETHYLENE GLYCOL
		R	RECESSED UNIT	S	MFR SPECIAL COLOR	XX% PG	XX% PROPYLENE GLYCOL

REMARKS:

(1) MOUNTING HEIGHT IS TO BOTTOM OF CONVECTOR CABINET.
(2) SUBMIT MANUFACTURER'S STANDARD COLOR CHART TO ARCHITECT FOR COLOR SELECTION.

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SHEET TITLE:
PIPING SCHEDULES

SHEET NUMBER:
2-MS-611

HVAC SYMBOLS

- AIRFLOW (SUPPLY/OUTSIDE AIR)
- AIRFLOW (RETURN/EXHAUST)
- DG — DOOR GRILLE
- DO — 3/4" DOOR UNDERCUT
- SUPPLY OR OUTDOOR AIR
- RETURN OR TRANSFER
- EXHAUST
- SUPPLY DUCT TURNED AWAY
- SUPPLY DUCT TURNED TOWARD
- 12x12 — RECTANGLE DUCT SIZE (FIRST FIGURE IS SIDE SHOWN)
- 12ø — ROUND DUCT (RIGID)
- 12/12ø — OVAL DUCT
- S — SMOKE DETECTOR
- FLEXIBLE CONNECTION
- DUCT (FLEXIBLE ROUND)
- TURNING VANES
- TRANSITION (SQUARE-TO-ROUND)
- BD — BACKDRAFT DAMPER
- VOLUME DAMPER
- AD / FD — FIRE DAMPER & ACCESS DOOR
- AD / SD — SMOKE DAMPER & ACCESS DOOR
- AD / FSD — COMBINATION FIRE/SMOKE DAMPER & ACCESS DOOR
- MOD — MOTOR OPERATED DAMPER
- AP — CEILING MOUNTED ACCESS PANEL
- A / 100 — AIR OUTLET/INLET TYPE (CFM)

MECHANICAL PIPING

- A — COMPRESSED AIR
- BFW — BOILER FEED WATER
- BSD — BOILER SURFACE BLOW DOWN
- BBD — BOILER BOTTOM BLOW DOWN
- CF — CHEMICAL FEED
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- CD — CONDENSATE DRAIN
- GWS — GLYCOL WATER SUPPLY
- GWR — GLYCOL WATER RETURN
- HPCR — HIGH PRESSURE CONDENSATE RETURN
- HPS — HIGH PRESSURE STEAM
- HWS — HOT WATER SUPPLY
- HWR — HOT WATER RETURN
- IWS — ICE WATER SUPPLY
- IWR — ICE WATER RETURN
- LP — LIQUID PETROLEUM
- LPS — LOW PRESSURE STEAM
- LPCR — LOW PRESSURE CONDENSATE RETURN
- MPS — MEDIUM PRESSURE STEAM
- MPCR — MEDIUM PRESSURE CONDENSATE RETURN
- G — NATURAL GAS
- PCR — PUMPED CONDENSATE RETURN
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- RHG — REFRIGERANT HOT GAS
- SV — STEAM VENT
- TWS — TOWER WATER SUPPLY
- TWR — TOWER WATER RETURN
- VAC — VACUUM

PIPING SYMBOLS

- PIPE TURNED TOWARD
- PIPE TURNED AWAY
- PIPE TURNED AWAY
- PIPE TURNED TOWARD
- FLEXIBLE CONNECTOR
- UNION
- FLANGES
- REDUCER (CONCENTRIC)
- REDUCER (ECCENTRIC)
- PIPE CAP/CLEAN OUT
- PIPE PLUG
- PG — FLUID FLOW DIRECTION
- PIPE GUIDE
- PA — PIPE ANCHOR
- PITCH — PIPE PITCH DIRECTION
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- WATER HAMMER ARRESTOR
- AV — AIR VENT (AUTO)
- MV — AIR VENT (MANUAL)
- AUTOMATIC CONTROL VALVE (2-WAY)
- AUTOMATIC CONTROL VALVE (3-WAY)
- BALL VALVE
- BALANCING VALVE
- BUTTERFLY VALVE
- BACKFLOW PREVENTION VALVE
- CHECK VALVE
- EQUIPMENT DRAIN VALVE
- FILTER
- FLOW MEASUREMENT STATION
- GATE VALVE
- GAUGE CONNECTION
- GLOBE ANGLE VALVE
- GLOBE VALVE
- ISOLATION/SHUT-OFF/MANUAL VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- PRESSURE REGULATING VALVE
- RELIEF VALVE
- SOLENOID VALVE ONE-WAY (ELECTRIC)
- STRAINER
- STRAINER WITH BLOW OFF VALVE AND NIPPLE
- THROTTLING VALVE
- VACUUM BREAKER
- PUMP
- FS — FLOW SENSOR
- LS — LEVEL SENSOR
- PS — PRESSURE SENSOR
- TS — TEMPERATURE SENSOR

GENERAL SYMBOLS

- CO — CARBON MONOXIDE (CO) SENSOR
- CO2 — CARBON DIOXIDE (CO2) SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- NO2 — NITROGEN DIOXIDE (NO2) SENSOR
- RS — ROOM SENSOR
- SP — STATIC PRESSURE SENSOR
- H — HUMIDISTAT
- TS — TEMPERATURE SENSOR
- T — THERMOSTAT
- T — INSULATED BASE THERMOSTAT
- $ — SWITCH
- NEW CONNECTION TO EXISTING
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW TO BE INSTALLED

GENERAL NOTES

1. THE MECHANICAL CONTRACTOR SHALL EXAMINE ALL CONTRACT DOCUMENTS AND IS REQUIRED TO DO ALL WORK WHICH IS SHOWN ON THE DRAWINGS, STATED IN THE SPECIFICATIONS, OR REASONABLY IMPLIED AS NECESSARY TO COMPLETE THEIR DIVISION OF WORK FOR THIS PROJECT REGARDLESS OF WHERE IN THE CONTRACT DOCUMENTS THE WORK IS REPRESENTED. MECHANICAL CONTRACTOR TO COORDINATE WORK WITH ALL OTHER TRADES. ALL OTHER TRADE DOCUMENTS ARE TO BE CONSIDERED PART OF THIS CONTRACTORS DOCUMENTS WITH RESPECT TO COORDINATION OF WORK BETWEEN TRADES OF WORK.
2. ABBREVIATIONS AND SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL ABBREVIATIONS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.
3. THESE DRAWINGS ARE DESIGN DRAWINGS AND ARE DIAGRAMMATIC, THEY MAY NOT SHOW ALL PHYSICAL ARRANGEMENTS, OFFSETS, BENDS, OR ELBOWS WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF VARIOUS MATERIALS, EQUIPMENT, PIPING AND DUCTWORK SYSTEMS IN ALLOTTED SPACES. EXAMINE THESE AND OTHER AVAILABLE DRAWINGS TO DETERMINE SPACE LIMITATIONS AND INTERFERENCES. MAKE ANY MINOR CHANGES IN LOCATIONS OF EQUIPMENT, PIPING, AND DUCTWORK FROM THAT SHOWN ON DRAWINGS AND FOR ALL PHYSICAL DETAILS REQUIRED FOR INSTALLATION. COST FOR ADAPTING WORK TO JOB SITE CONDITIONS SHALL NOT BE CONSIDERED AS BASIS OF AN EXTRA COST TO CONTRACT.
4. ELEVATION OF PIPING AND DUCTWORK INDICATED ON THESE DRAWINGS ARE TO BE USED AS GUIDELINES TO ASSIST WITH INSTALLATIONS. MINOR CHANGES TO THESE ELEVATIONS MAY BE NECESSARY TO ELIMINATE UNFORESEEN INTERFERENCES. ANY CHANGE IN ELEVATION SHALL BE APPROVED PRIOR TO CHANGE.
5. ANY AND ALL INFORMATION SHOWN ON THESE DRAWINGS WITH RESPECT TO EXISTING STRUCTURES, UTILITIES, AND MECHANICAL SYSTEMS, IS AS EXACT AS COULD BE SECURED. THE INFORMATION IS NOT WARRANTED NOR GUARANTEED ACCURATE, FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK.
6. ACCURATE AND LEGIBLE AS-BUILT DRAWING MARKUPS SHALL BE MAINTAINED AT THE JOB SITE, AND BE SUBMITTED PRIOR TO FINAL PAYMENT FOR THE CREATION OF FINAL RECORD DRAWINGS.
7. ALL NEW AND EXISTING ROOFING SYSTEMS SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
8. TEMPORARILY PATCH ALL ROOF OPENINGS WATERTIGHT UNTIL FINAL CLOSURE CAN BE MADE.
9. VERIFY ALL EQUIPMENT LOCATIONS AND PIPE AND DUCT ROUTING WITH OWNER PRIOR TO INSTALLATION.
10. SEQUENCE OF WORK AND/OR PLACE OF COMMENCEMENT OF WORK SHALL BE APPROVED PRIOR TO WORK BEING STARTED. SCHEDULED SHUTDOWNS SHALL BE CLOSELY COORDINATED WITH EXISTING OPERATIONS.
11. MAINTAIN 3'-0" CLEAR HORIZONTALLY IN FRONT OF ALL ELECTRICAL EQUIPMENT.
12. COORDINATE POWER REQUIREMENTS FOR ALL POWER TO MECHANICAL EQUIPMENT INCLUDING CONTROL SYSTEM WITH ELECTRICAL CONTRACTOR AND INSURE ALL COSTS ASSOCIATED WITH SUCH ARE INCLUDED IN THE PROJECT BID COST. PROVIDE ELECTRICAL POWER, TRANFORMERS, RELAYS, ETC. AS NECESSARY TO ALL HVAC AND MECHANICAL CONTROLS.
13. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES ON ALL EQUIPMENT.

ABBREVIATIONS

A	AMPS
ABI	ALTERNATE BID ITEM
AC	DUCTLESS SPLIT SYSTEM
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACH	AIR COOLED CHILLER
ACOMP	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
ACV	AUTOMATIC CONTROL VALVE
AD	AIR DROP
AF	AIR FILTER OR AIR FOIL
AFC	AFTER COOLER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMD	AIR MIXING DEVICE
ANG	AIR NATIONAL GUARD
APPROX	APPROXIMATELY
AS	AIR SEPARATOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AT	AIR TERMINAL
AWC	ABSORPTION CHILLER
BC	BOOSTER COIL
BH	BOOSTER HUMIDIFIER
BHP	BRAKE HORSEPOWER
BHR	CONTINUOUS BLOWDOWN HEAT RECOVERY SYSTEM
BI	BACKWARD INCLINED
BLD	BOILER BLOWDOWN SEPARATOR
BPD	BACKFLOW PREVENTION DEVICE
BRS	BRASS
BRZ	BRONZE
BS	BLACK (MILD) STEEL
BSB	BRANCH SELECTOR BOX
BTU	BUFFER TANK
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BW	BUTTWELD
BZ	BRONZE
C	CONVECTOR
CA	COMBUSTION AIR
CAD	COMPRESSED AIR DRYER
CAF	COMPRESSED AIR FILTER
CC	COOLING COIL OR CONTROLS CONTRACTOR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
COMP	COMPRESSOR
COND	CONDENSATE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRP	CONDENSATE RETURN PUMP
CS	CENTRIFUGAL SEPARATOR
CT	COOLING TOWER
CTCLG	CLOSE TO CEILING
CTCLM	CLOSE TO COLUMN
CTW	CLOSE TO WALL
CU	COPPER
CUH	CABINET UNIT HEATER
DAC	DOOR AIR CURTAIN
DBA	DECIBELS, BAND A
DC	DUST COLLECTOR
DCVA	DOUBLE CHECK VALVE ASSEMBLY BPD
DDC	DIRECT DIGITAL CONTROL
DDH	DESICCANT DEHUMIDIFIER
DEMO	DEMOLISH
DF	DESTRATIFICATION FAN
DFD	DIVISION OF FACILITIES DEVELOPMENT
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DMPR	DAMPER
DN	DOWN
DOD	DEPARTMENT OF DEFENSE
DRC	DRY COOLER
DWG	DRAWING
DX	DIRECT EXPANSION
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBH	ELECTRIC BASEBOARD HEATER
EC	EVAPORATIVE COOLER OR ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EFT	ENTERING FLUID TEMPERATURE
EG	EXHAUST GRILLE
EGLY	ETHYLENE GLYCOL
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
EOM	END OF MAIN
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
ERV	AIR-TO-AIR HEAT EXCHANGER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WALL HEATER
EWT	ENTERING WATER TEMPERATURE
°F	FAHRENHEIT
FAF	FORCED AIR FURNACE
FC	FLUID COOLER
FCU	FAN COIL UNIT
FE	FUME EXTRACTOR
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FOP	FUEL OIL PUMP
FPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FLASH TANK OR FEET
FTC	FINNED TUBE CONVECTOR
FTWC	FEET WATER COLUMN PRESSURE
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GFT	GLYCOL FILL TANK
GPM	GALLONS PER MINUTE
GS	GALVANIZED STEEL
H	HEIGHT
HB	HUMIDIFICATION BOILER
HC	HEATING COIL
HD	HEAD (FT)
HDB	HYDROSTATIC DESIGN BASIS
HP	HEAT PUMP OR HORSEPOWER
HPC	ERV HEAT PUMP COIL
HR	HOSE REEL
HRW	ROTARY AIR-TO-AIR EXCHANGER
HUM	HUMIDIFIER
HWB	HOT WATER BOILER
HX	FLUID HEAT EXCHANGER
HZ	HERTZ
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCH
INHG	INCHES MERCURY PRESSURE
INWC	INCHES WATER COLUMN PRESSURE
IR	INFRARED HEATER
KH	KITCHEN HOOD
KW	KILOWATT
L	LOUVER OR LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LD	LINEAR DIFFUSER
LFT	LEAVING FLUID TEMPERATURE
LPG	LIQUIFIED PETROLEUM GAS
LS	LEVEL SWITCH
LWT	LEAVING WATER TEMPERATURE
MADP	MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE
MAU	MAKE-UP AIR UNIT
MAWP	MAXIMUM ALLOWABLE WORKING PRESSURE
MAX	MAXIMUM
MBH	THOUSANDS BTU'S PER HOUR
MC	MECHANICAL CONTRACTOR OR MECHANICAL COUPLING
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MMBH	MILLION BTU PER HOUR
MOCP	MINIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED CONTROL DAMPER
MSS	MANUFACTURERS STANDARDIZATION SOCIETY
MTL	MATERIAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NH	NO-HUB
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
P	HYDRONIC PUMP OR PRESSURE
PC	PLUMBING CONTRACTOR
PCP	PRESSURE POWERED CONDENSATE PUMP
PD	PRESSURE DROP/DIFFERENTIAL
PG	PROPYLENE GLYCOL
PH	PHASE
PPH	POUND PER HOUR
PROP	PROPELLER
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSID	PSI DIFFERENTIAL
PSIG	PSI GAGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PTHP	PACKAGED TERMINAL HEAT PUMP
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RDH	REFRIGERATED DEHUMIDIFIER
RG	RETURN GRILLE
RH	RELIEF HOOD
RPM	REVOLUTIONS PER MINUTE
RTD	RESISTIVE THERMAL DEVICE
RTU	ROOF TOP UNIT
RZ	RADIANT FLOOR HEATING ZONE
SA	SUPPLY AIR
SAD	SOUND ATTENUATING DEVICE
SB	SECURITY BARRIER
SCFM	STANDARD CFM
SCH	SCHEDULE
SD	SLOT DIFFUSER/SOLDER
SF	STEAM FILTER OR SUPPLY FAN
SG	SUPPLY GRILLE
SHT	SHEET
SMLS	SEAMLESS
SMS	SNOW MELTING SYSTEM DISTRIBUTION MANIFOLD
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SQ	SQUARE
SRV	SAFETY RELIEF VALVE
SS	STAINLESS STEEL
ST	STEAM TRAP
STD	STANDARD
STL	STEEL
SV	SOLVENT WELD
SW	SOCKET WELD
T	TEMPERATURE
TA	TRANSFER AIR
TCP	TEMPERATURE CONTROL PANEL
TDH	TOTAL DEVELOPED HEAD
TDS	TOTAL DISSOLVED SOLIDS
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TH	THREADED
TMC	TECHNOLOGY MANAGEMENT CENTER
TMV	THERMOSTATIC MIXING VALVE
TONR	TONS COOLING
TYP	TYPICAL
UC	UNIT COOLER
UFC	UNIFIED FACILITIES CRITERIA
UGD	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR OR ULTRAVIOLET
V	VOLTS
VA	VENT AIR
VER	VEHICLE EXHAUST REEL
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATORS
VLV	VALVE
VRF	VARIABLE REFRIGERANT FLOW
W	WATTS OR WIDTH
WC	WATER COLUMN
WCC	WATER COOLED CONDENSER
WCH	WATER COOLED CHILLER
WF	WATER FILTER
WIV	WATER INLET VALVE
WHA	WATER HAMMER ARRESTOR

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
CHECKED BY: DJG

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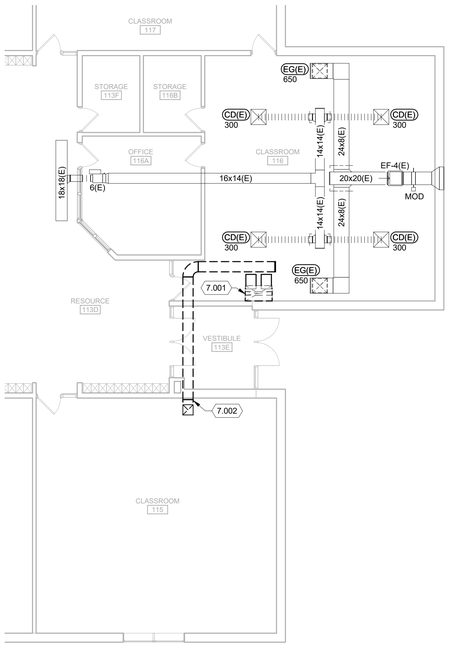
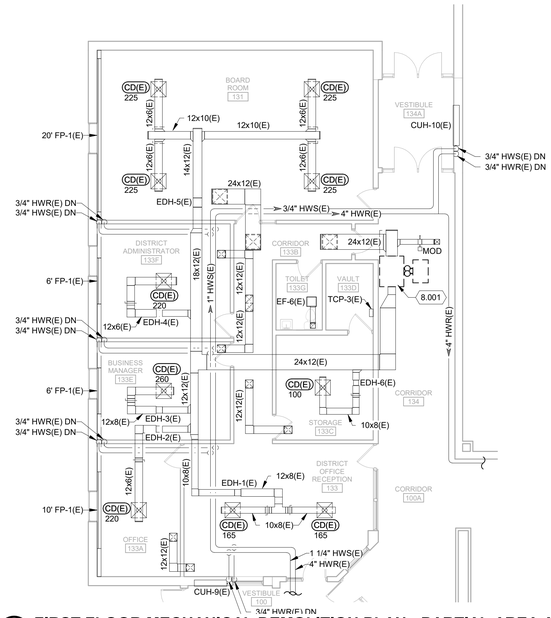
SHEET TITLE:
NOTES, SYMBOLS AND ABBREVIATIONS

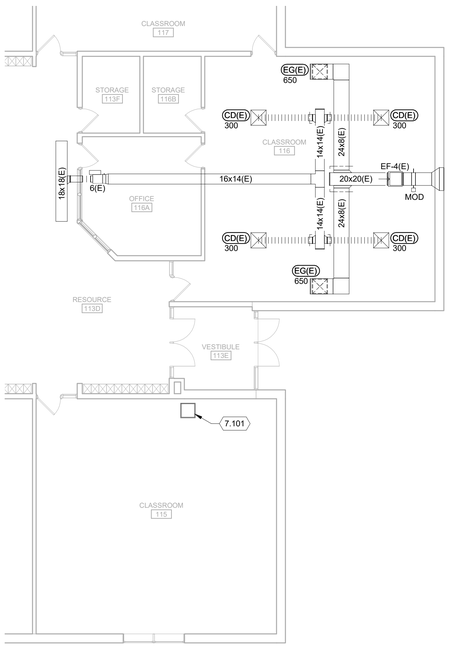
SHEET NUMBER:
1-MS-001



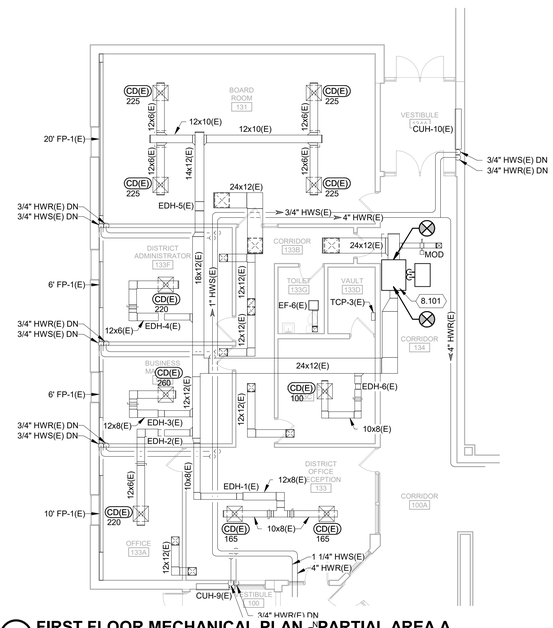
N 3 **FIRST FLOOR MECHANICAL DEMOLITION PLAN - PARTIAL AREA C**
1/8" = 1'-0"



N 1 **FIRST FLOOR MECHANICAL DEMOLITION PLAN - PARTIAL AREA A**
1/8" = 1'-0"



N 4 **FIRST FLOOR MECHANICAL PLAN - PARTIAL AREA C**
1/8" = 1'-0"



N 2 **FIRST FLOOR MECHANICAL PLAN - PARTIAL AREA A**
1/8" = 1'-0"

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE. PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.
4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.
5. INSTALL TEMPORARY COVERS OVER EXISTING EXTERIOR ENVELOPE OPENINGS CREATED BY REMOVED EQUIPMENT/DUCT. COVER SHALL BE WATERTIGHT, AND MEET OSHA AND OWNER REQUIREMENTS. COMPLETELY REMOVE TEMPORARY COVER WHEN OPENINGS ARE PATCHED TO FINAL CONDITION. REPAIR ANY DAMAGE TO EXISTING BUILDING COMPONENTS CAUSED BY TEMPORARY COVER.
6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES

7.001 CAREFULLY REMOVE EXISTING FUME HOOD. TO BE RELOCATED AND INSTALLED IN HIGH SCHOOL.

7.002 DEMOLISH EXISTING DUCTWORK AND PRV-16 LOCATED ON ROOF ASSOCIATED WITH FUME HOOD REMOVAL.

7.101 CAP REMAINING ROOF CURB LEFT BYPRV-16 REMOVAL.

8.001 DEMOLISH EXISTING AHU-7, ACCU-2 LOCATED ON ROOF AND ASSOCIATED REFRIGERANT PIPING AND VALVES.

8.101 INSTALL NEW AHU-7 IN THIS LOCATION, ACCU-2 ON EXISTING RAIL MOUNTS AND ASSOCIATED REFRIGERANT PIPING AND VALVING.

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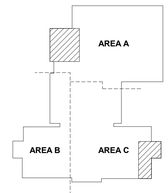

KEY PLAN

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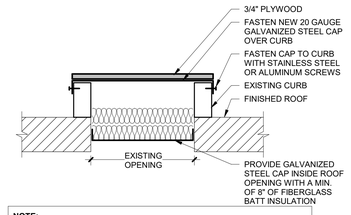
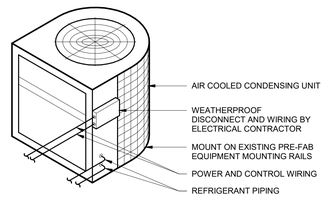
SHEET TITLE:
FIRST FLOOR MECHANICAL PLANS - AREAS A & C

SHEET NUMBER:
1-MH-101

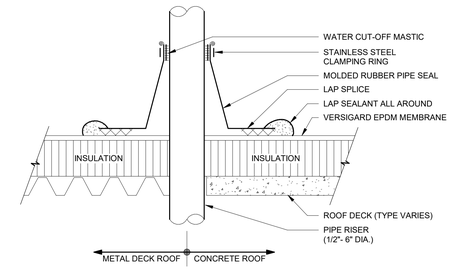


NOTE:
1. REMOVE EXISTING EQUIPMENT AND DUCTWORK AS NOTED ON PLANS THEN CAP OPENING AS SHOWN.

1 CURB CAP DETAIL
NO SCALE



2 CONDENSING UNIT
NO SCALE



3 ROOF PIPE PENETRATION - RUBBER SEAL
NO SCALE

AIR COOLED CONDENSING UNIT (ACCU) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	NOM. CAP. (TON)	MIN. EER	MIN. SEER	REF. TYPE	SST (°F)	HOT GAS BYPASS	NO. OF STAGES	AMB. AIR TEMP. (°F)		COMPRESSORS		ELECTRICAL				(2) MAX. SOUND (DB)	MATCHING EQUIPMENT COOLING COIL	WEIGHT (LB)	LOCATION	REMARKS
									MINIMUM	MAXIMUM	QTY.	TYPE	VOLTS	PHASE	MCA	MOCP					
ACCU-1																					

COMPRESSOR TYPE	
RCP	RECIPROCATING
SCR	SCROLL
SCW	SCREW

REMARKS:
(1) MANUFACTURER SHALL SIZE REFRIGERANT PIPING, VALVES, AND ACCESSORIES FOR PROPER OPERATION OF SYSTEM.
(2) PER ARI STANDARD 320 "SOUND RATING OF LARGE OUTDOOR REFRIGERATING AND AIR-CONDITIONING EQUIPMENT".

(1) AIR HANDLING UNIT (AHU) AND MAKE-UP AIR UNIT (MAU) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	AIR FLOW (CFM)			SUPPLY FAN				RETURN FAN					ELECTRICAL			(2) ACCESSORIES
			SUPPLY	OUTDOOR	MINIMUM	FAN TYPE	ESP (IN WC)	POWER (HP)	SPEED (RPM)	FAN TYPE	AIR FLOW (CFM)	ESP (IN WC)	POWER (HP)	SPEED (RPM)	(VOLTS/PH)	MCA	MOCP (A)	
AHU-1																		
AHU-2																		
MAU-1																		
MAU-2																		

MARK	FUEL FIRED UNITS					(3) MTG. HEIGHT (FT)	PRE-FILTER MARK	FINAL-FILTER MARK	HEAT WHEEL MARK	HEATING COIL MARK	COOLING COIL MARK	WEIGHT (LB)	LOCATION	UNIT SECTIONS IN DIRECTION OF AIR FLOW	REMARKS
	FUEL TYPE	INPUT (MBH)	OUTPUT (MBH)	EAT (°F)	LAT (°F)										
AHU-1															
AHU-2															
MAU-1															
MAU-2															

TYPE				ACCESSORIES		SECTION TYPES					
CS	CENTRAL STATION	I	INDOOR	1	INTAKE HOOD	RF	RETURN FAN	HC	HEATING COIL	SF	SUPPLY FAN
PR	PACKAGED ROOFTOP	O	OUTDOOR	2	INLET DAMPER	EC	ECONOMIZER	AC	ACCESS	DP	DISCHARGE PLENUM
C	CUSTOM	D	DOWNFLOW	3	DISCHARGE DAMPER	MB	MIXING BOX	H	HUMIDIFIER	WH	WEATHER HOOD
IF	INDIRECT FIRED	H	HORIZONTAL	4	ROOF CURB	AB	AIR BLENDER	CC	COOLING COIL	D	DAMPER
DF	DIRECT FIRED	U	UPFLOW	5	DOUBLE WALL	BL	BLANK	ML	MOISTURE ELIMINATOR	B	BURNER
				6	COIL GUARDS	F	FILTER	ER	ENERGY RECOVERY		

FAN TYPE	
AF	AIR FOIL
BI	BACKWARD INCLINED
FC	FORWARD CURVED
P	PLENUM/PLUG

REMARKS:
(1) EXISTING UNIT(S) SHALL BE RE-BALANCED TO SCHEDULED CAPACITIES.
(2) SEE SPECIFICATION SECTIONS 237300 (CUSTOM AHU), 237313 (AHU), 237433 (MAU) FOR ANY ADDITIONAL ACCESSORIES.
(3) MOUNTING HEIGHT SHALL BE FROM FINISHED FLOOR TO TOP OF UNIT.

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
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SHEET TITLE:
HVAC DETAILS & SCHEDULES

SHEET NUMBER:
1-MS-501

HVAC SYMBOLS

- AIRFLOW (SUPPLY/OUTSIDE AIR)
- AIRFLOW (RETURN/EXHAUST)
- DG — DOOR GRILLE
- DCO — 3/4" DOOR UNDERCUT
- SUPPLY OR OUTDOOR AIR
- RETURN OR TRANSFER
- EXHAUST
- SUPPLY DUCT TURNED AWAY
- SUPPLY DUCT TURNED TOWARD
- 12x12 — RECTANGLE DUCT SIZE (FIRST FIGURE IS SIDE SHOWN)
- 12ø — ROUND DUCT (RIGID)
- INDICATES PERFORATED DUCT
- 12/12ø — OVAL DUCT
- S — SMOKE DETECTOR
- FLEXIBLE CONNECTION
- DUCT (FLEXIBLE ROUND)
- TURNING VANES
- TRANSITION (SQUARE-TO-ROUND)
- BD — BACKDRAFT DAMPER
- VOLUME DAMPER
- AD / FD — FIRE DAMPER & ACCESS DOOR
- AD / SD — SMOKE DAMPER & ACCESS DOOR
- AD / FSD — COMBINATION FIRE/SMOKE DAMPER & ACCESS DOOR
- MOD — MOTOR OPERATED DAMPER
- AP — CEILING MOUNTED ACCESS PANEL
- A / 100 — AIR OUTLET/INLET TYPE (CFM)

MECHANICAL PIPING

- A — COMPRESSED AIR
- BFW — BOILER FEED WATER
- BSD — BOILER SURFACE BLOW DOWN
- BBD — BOILER BOTTOM BLOW DOWN
- CF — CHEMICAL FEED
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- CD — CONDENSATE DRAIN
- GWS — GLYCOL WATER SUPPLY
- GWR — GLYCOL WATER RETURN
- HPCR — HIGH PRESSURE CONDENSATE RETURN
- HPS — HIGH PRESSURE STEAM
- HWS — HOT WATER SUPPLY
- HWR — HOT WATER RETURN
- IWS — ICE WATER SUPPLY
- IWR — ICE WATER RETURN
- LP — LIQUID PETROLEUM
- LPS — LOW PRESSURE STEAM
- LPCR — LOW PRESSURE CONDENSATE RETURN
- MPS — MEDIUM PRESSURE STEAM
- MPCR — MEDIUM PRESSURE CONDENSATE RETURN
- G — NATURAL GAS
- PCR — PUMPED CONDENSATE RETURN
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- RHG — REFRIGERANT HOT GAS
- SV — STEAM VENT
- TWS — TOWER WATER SUPPLY
- TWR — TOWER WATER RETURN
- VAC — VACUUM

PIPING SYMBOLS

- PIPE TURNED TOWARD
- PIPE TURNED AWAY
- PIPE TURNED AWAY
- PIPE TURNED TOWARD
- FLEXIBLE CONNECTOR
- UNION
- FLANGES
- REDUCER (CONCENTRIC)
- REDUCER (ECCENTRIC)
- PIPE CAP/CLEAN OUT
- PIPE PLUG
- FLUID FLOW DIRECTION
- PG — PIPE GUIDE
- PA — PIPE ANCHOR
- PITCH — PIPE PITCH DIRECTION
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- WATER HAMMER ARRESTOR
- AV — AIR VENT (AUTO)
- HMV — AIR VENT (MANUAL)
- AUTOMATIC CONTROL VALVE (2-WAY)
- AUTOMATIC CONTROL VALVE (3-WAY)
- BALL VALVE
- BALANCING VALVE
- BUTTERFLY VALVE
- BACKFLOW PREVENTION VALVE
- CHECK VALVE
- EQUIPMENT DRAIN VALVE
- FILTER
- FLOW MEASUREMENT STATION
- GATE VALVE
- GAUGE CONNECTION
- GLOBE ANGLE VALVE
- GLOBE VALVE
- ISOLATION/SHUT-OFF/MANUAL VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- PRESSURE REGULATING VALVE
- RELIEF VALVE
- S — SOLENOID VALVE ONE-WAY (ELECTRIC)
- STRAINER
- STRAINER WITH BLOW OFF VALVE AND NIPPLE
- THROTTLING VALVE
- VACUUM BREAKER
- PUMP
- FS — FLOW SENSOR
- LS — LEVEL SENSOR
- PS — PRESSURE SENSOR
- TS — TEMPERATURE SENSOR

GENERAL SYMBOLS

- CO — CARBON MONOXIDE (CO) SENSOR
- CO2 — CARBON DIOXIDE (CO2) SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- NO2 — NITROGEN DIOXIDE (NO2) SENSOR
- RS — ROOM SENSOR
- SP — STATIC PRESSURE SENSOR
- H — HUMIDISTAT
- TS — TEMPERATURE SENSOR
- T — THERMOSTAT
- T — INSULATED BASE THERMOSTAT
- $ — SWITCH
- NEW CONNECTION TO EXISTING
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW TO BE INSTALLED

GENERAL NOTES

1. THE MECHANICAL CONTRACTOR SHALL EXAMINE ALL CONTRACT DOCUMENTS AND IS REQUIRED TO DO ALL WORK WHICH IS SHOWN ON THE DRAWINGS, STATED IN THE SPECIFICATIONS, OR REASONABLY IMPLIED AS NECESSARY TO COMPLETE THEIR DIVISION OF WORK FOR THIS PROJECT REGARDLESS OF WHERE IN THE CONTRACT DOCUMENTS THE WORK IS REPRESENTED. MECHANICAL CONTRACTOR TO COORDINATE WORK WITH ALL OTHER TRADES. ALL OTHER TRADE DOCUMENTS ARE TO BE CONSIDERED PART OF THIS CONTRACTORS DOCUMENTS WITH RESPECT TO COORDINATION OF WORK BETWEEN TRADES OF WORK.
2. ABBREVIATIONS AND SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL ABBREVIATIONS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.
3. THESE DRAWINGS ARE DESIGN DRAWINGS AND ARE DIAGRAMMATIC, THEY MAY NOT SHOW ALL PHYSICAL ARRANGEMENTS, OFFSETS, BENDS, OR ELBOWS WHICH MAY BE REQUIRED FOR PROPER INSTALLATION OF VARIOUS MATERIALS, EQUIPMENT, PIPING AND DUCTWORK SYSTEMS IN ALLOTTED SPACES. EXAMINE THESE AND OTHER AVAILABLE DRAWINGS TO DETERMINE SPACE LIMITATIONS AND INTERFERENCES. MAKE ANY MINOR CHANGES IN LOCATIONS OF EQUIPMENT, PIPING, AND DUCTWORK FROM THAT SHOWN ON DRAWINGS AND FOR ALL PHYSICAL DETAILS REQUIRED FOR INSTALLATION. COST FOR ADAPTING WORK TO JOB SITE CONDITIONS SHALL NOT BE CONSIDERED AS BASIS OF AN EXTRA COST TO CONTRACT.
4. ELEVATION OF PIPING AND DUCTWORK INDICATED ON THESE DRAWINGS ARE TO BE USED AS GUIDELINES TO ASSIST WITH INSTALLATIONS. MINOR CHANGES TO THESE ELEVATIONS MAY BE NECESSARY TO ELIMINATE UNFORESEEN INTERFERENCES. ANY CHANGE IN ELEVATION SHALL BE APPROVED PRIOR TO CHANGE.
5. ANY AND ALL INFORMATION SHOWN ON THESE DRAWINGS WITH RESPECT TO EXISTING STRUCTURES, UTILITIES, AND MECHANICAL SYSTEMS, IS AS EXACT AS COULD BE SECURED. THE INFORMATION IS NOT WARRANTED NOR GUARANTEED ACCURATE, FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH WORK.
6. ACCURATE AND LEGIBLE AS-BUILT DRAWING MARKUPS SHALL BE MAINTAINED AT THE JOB SITE, AND BE SUBMITTED PRIOR TO FINAL PAYMENT FOR THE CREATION OF FINAL RECORD DRAWINGS.
7. ALL NEW AND EXISTING ROOFING SYSTEMS SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.
8. TEMPORARILY PATCH ALL ROOF OPENINGS WATERTIGHT UNTIL FINAL CLOSURE CAN BE MADE.
9. VERIFY ALL EQUIPMENT LOCATIONS AND PIPE AND DUCT ROUTING WITH OWNER PRIOR TO INSTALLATION.
10. SEQUENCE OF WORK AND/OR PLACE OF COMMENCEMENT OF WORK SHALL BE APPROVED PRIOR TO WORK BEING STARTED. SCHEDULED SHUTDOWNS SHALL BE CLOSELY COORDINATED WITH EXISTING OPERATIONS.
11. MAINTAIN 3'-0" CLEAR HORIZONTALLY IN FRONT OF ALL ELECTRICAL EQUIPMENT.
12. COORDINATE POWER REQUIREMENTS FOR ALL POWER TO MECHANICAL EQUIPMENT INCLUDING CONTROL SYSTEM WITH ELECTRICAL CONTRACTOR AND INSURE ALL COSTS ASSOCIATED WITH SUCH ARE INCLUDED IN THE PROJECT BID COST. PROVIDE ELECTRICAL POWER, TRANFORMERS, RELAYS, ETC. AS NECESSARY TO ALL HVAC AND MECHANICAL CONTROLS.
13. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES ON ALL EQUIPMENT.

ABBREVIATIONS

A	AMPS
ABI	ALTERNATE BID ITEM
AC	DUCTLESS SPLIT SYSTEM
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACH	AIR COOLED CHILLER
ACOMP	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
ACV	AUTOMATIC CONTROL VALVE
AD	AIR DROP
AF	AIR FILTER OR AIR FOIL
AFC	AFTER COOLER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMD	AIR MIXING DEVICE
ANG	AIR NATIONAL GUARD
APPROX	APPROXIMATELY
AS	AIR SEPARATOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AT	AIR TERMINAL
AWC	ABSORPTION CHILLER
BC	BOOSTER COIL
BH	BOOSTER HUMIDIFIER
BHP	BRAKE HORSEPOWER
BHR	CONTINUOUS BLOWDOWN HEAT RECOVERY SYSTEM
BI	BACKWARD INCLINED
BLD	BOILER BLOWDOWN SEPARATOR
BPD	BACKFLOW PREVENTION DEVICE
BRS	BRASS
BRZ	BRONZE
BS	BLACK (MILD) STEEL
BSB	BRANCH SELECTOR BOX
BTU	BUFFER TANK
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BW	BUTTWELD
BZ	BRONZE
C	CONVECTOR
CA	COMBUSTION AIR
CAD	COMPRESSED AIR DRYER
CAF	COMPRESSED AIR FILTER
CC	COOLING COIL OR CONTROLS CONTRACTOR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
COMP	COMPRESSOR
COND	CONDENSATE
COR	CONTRACTING OFFICER'S REPRESENTATIVE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRP	CONDENSATE RETURN PUMP
CS	CENTRIFUGAL SEPARATOR
CT	COOLING TOWER
CTCLG	CLOSE TO CEILING
CTCLM	CLOSE TO COLUMN
CTW	CLOSE TO WALL
CU	COPPER
CUH	CABINET UNIT HEATER
DAC	DOOR AIR CURTAIN
DBA	DECIBELS, BAND A
DC	DUST COLLECTOR
DCVA	DOUBLE CHECK VALVE ASSEMBLY BPD
DDC	DIRECT DIGITAL CONTROL
DDH	DESICCANT DEHUMIDIFIER
DEMO	DEMOLISH
DF	DESTRATIFICATION FAN
DFD	DIVISION OF FACILITIES DEVELOPMENT
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DMPR	DAMPER
DN	DOWN
DOD	DEPARTMENT OF DEFENSE
DRC	DRY COOLER
DWG	DRAWING
DX	DIRECT EXPANSION
E	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBH	ELECTRIC BASEBOARD HEATER
EC	EVAPORATIVE COOLER OR ELECTRICAL CONTRACTOR
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EFT	ENTERING FLUID TEMPERATURE
EG	EXHAUST GRILLE
EGLY	ETHYLENE GLYCOL
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
EOM	END OF MAIN
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
ERV	AIR-TO-AIR HEAT EXCHANGER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WALL HEATER
EWT	ENTERING WATER TEMPERATURE
°F	FAHRENHEIT
FAF	FORCED AIR FURNACE
FC	FLUID COOLER
FCU	FAN COIL UNIT
FE	FUME EXTRACTOR
FLA	FULL LOAD AMPS
FLR	FLOOR
FM	FLOW METER
FOP	FUEL OIL PUMP
FPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FLASH TANK OR FEET
FTC	FINNED TUBE CONVECTOR
FTWC	FEET WATER COLUMN PRESSURE
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GFT	GLYCOL FILL TANK
GPM	GALLONS PER MINUTE
GS	GALVANIZED STEEL
H	HEIGHT
HB	HUMIDIFICATION BOILER
HC	HEATING COIL
HD	HEAD (FT)
HDB	HYDROSTATIC DESIGN BASIS
HP	HEAT PUMP OR HORSEPOWER
HPC	ERV HEAT PUMP COIL
HR	HOSE REEL
HRW	ROTARY AIR-TO-AIR EXCHANGER
HUM	HUMIDIFIER
HWB	HOT WATER BOILER
HX	FLUID HEAT EXCHANGER
HZ	HERTZ
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INTAKE HOOD
IN	INCH
INHG	INCHES MERCURY PRESSURE
INWC	INCHES WATER COLUMN PRESSURE
IR	INFRARED HEATER
KH	KITCHEN HOOD
KW	KILOWATT
L	LOUVER OR LENGTH
LAT	LEAVING AIR TEMPERATURE
LB	POUNDS
LD	LINEAR DIFFUSER
LFT	LEAVING FLUID TEMPERATURE
LPG	LIQUIFIED PETROLEUM GAS
LS	LEVEL SWITCH
LWT	LEAVING WATER TEMPERATURE
MADP	MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE
MAU	MAKE-UP AIR UNIT
MAWP	MAXIMUM ALLOWABLE WORKING PRESSURE
MAX	MAXIMUM
MBH	THOUSANDS BTU'S PER HOUR
MC	MECHANICAL CONTRACTOR OR MECHANICAL COUPLING
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MMBH	MILLION BTU PER HOUR
MOCP	MINIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED CONTROL DAMPER
MSS	MANUFACTURERS STANDARDIZATION SOCIETY
MTL	MATERIAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NH	NO-HUB
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOM	NOMINAL
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NPSH AVAILABLE
NPSHR	NPSH REQUIRED
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
P	HYDRONIC PUMP OR PRESSURE
PC	PLUMBING CONTRACTOR
PCP	PRESSURE POWERED CONDENSATE PUMP
PD	PRESSURE DROP/DIFFERENTIAL
PG	PROPYLENE GLYCOL
PH	PHASE
PPH	POUND PER HOUR
PROP	PROPELLER
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSID	PSI DIFFERENTIAL
PSIG	PSI GAGE
PTAC	PACKAGED TERMINAL AIR CONDITIONER
PTHP	PACKAGED TERMINAL HEAT PUMP
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RDH	REFRIGERATED DEHUMIDIFIER
RG	RETURN GRILLE
RH	RELIEF HOOD
RPM	REVOLUTIONS PER MINUTE
RTD	RESISTIVE THERMAL DEVICE
RTU	ROOF TOP UNIT
RZ	RADIANT FLOOR HEATING ZONE
SA	SUPPLY AIR
SAD	SOUND ATTENUATING DEVICE
SB	SECURITY BARRIER
SCFM	STANDARD CFM
SCH	SCHEDULE
SD	SLOT DIFFUSER/SOLDER
SF	STEAM FILTER OR SUPPLY FAN
SG	SUPPLY GRILLE
SHT	SHEET
SMLS	SEAMLESS
SMS	SNOW MELTING SYSTEM DISTRIBUTION MANIFOLD
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SQ	SQUARE
SRV	SAFETY RELIEF VALVE
SS	STAINLESS STEEL
ST	STEAM TRAP
STD	STANDARD
STL	STEEL
SV	SOLVENT WELD
SW	SOCKET WELD
T	TEMPERATURE
TA	TRANSFER AIR
TCP	TEMPERATURE CONTROL PANEL
TDH	TOTAL DEVELOPED HEAD
TDS	TOTAL DISSOLVED SOLIDS
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TH	THREADED
TMC	TECHNOLOGY MANAGEMENT CENTER
TMV	THERMOSTATIC MIXING VALVE
TONR	TONS COOLING
TYP	TYPICAL
UC	UNIT COOLER
UFC	UNIFIED FACILITIES CRITERIA
UGD	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR OR ULTRAVIOLET
V	VOLTS
VA	VENT AIR
VER	VEHICLE EXHAUST REEL
VFD	VARIABLE FREQUENCY DRIVE
VI	VIBRATION ISOLATORS
VLV	VALVE
VRF	VARIABLE REFRIGERANT FLOW
W	WATTS OR WIDTH
WC	WATER COLUMN
WCC	WATER COOLED CONDENSER
WCH	WATER COOLED CHILLER
WF	WATER FILTER
WIV	WATER INLET VALVE
WHA	WATER HAMMER ARRESTOR

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NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
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SHEET TITLE:
NOTES, SYMBOLS AND ABBREVIATIONS

SHEET NUMBER:
2-MS-001

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

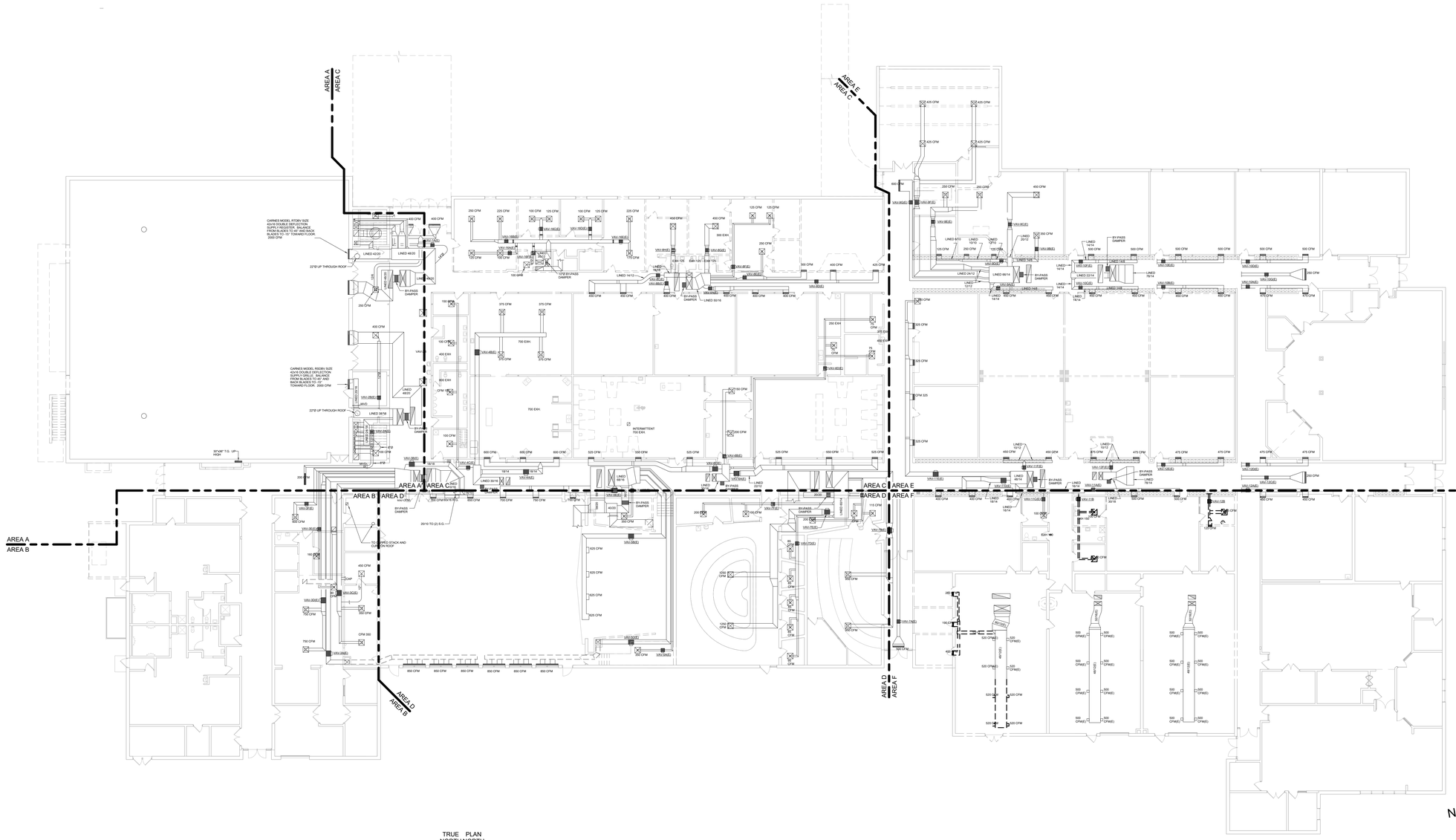
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE, PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.

4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.

5. INSTALL TEMPORARY COVERS OVER EXISTING EXTERIOR ENVELOPE OPENINGS CREATED BY REMOVED EQUIPMENT/DUCT. COVER SHALL BE WATERTIGHT, AND MEET OSHA AND OWNER REQUIREMENTS. COMPLETELY REMOVE TEMPORARY COVER WHEN OPENINGS ARE PATCHED TO FINAL CONDITION. REPAIR ANY DAMAGE TO EXISTING BUILDING COMPONENTS CAUSED BY TEMPORARY COVER.

6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES



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2019-04-09

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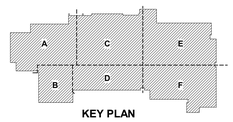

KEY PLAN

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MANAWA

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SHEET TITLE:
OVERALL FIRST FLOOR HVAC DEMOLITION PLAN

SHEET NUMBER:
2-MHD-100

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
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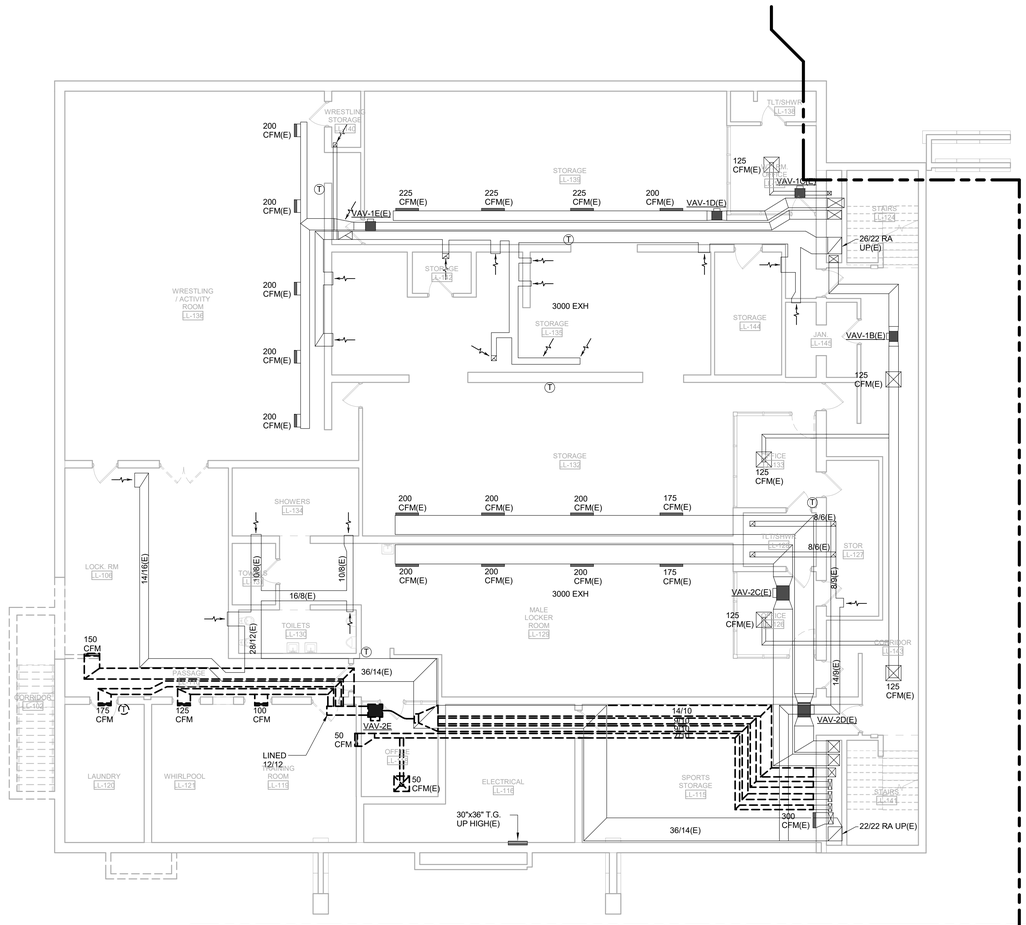
6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES



TRUE NORTH PLAN NORTH

N N 1 LOWER LEVEL HVAC DEMOLITION PLAN

1/8" = 1'-0"

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2019-04-09

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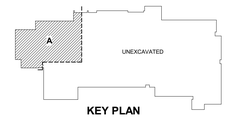
NOT FOR CONSTRUCTION



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SHEET TITLE: LOWER LEVEL HVAC DEMOLITION PLAN

SHEET NUMBER: 2-MHD-101

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.

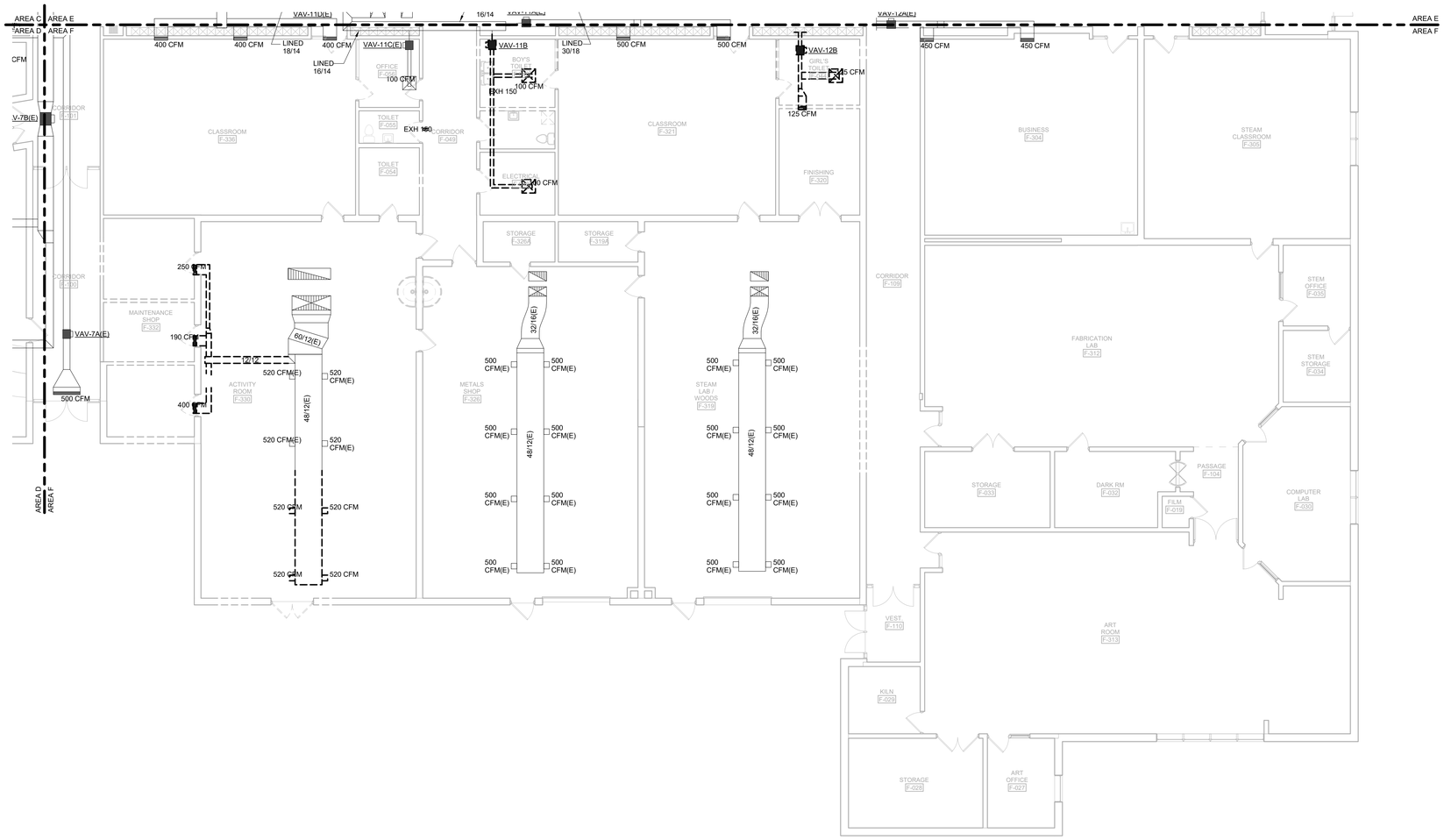
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE, PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.

4. REINSTALL INDICATED EQUIPMENT, SAME AS NEW WORK, IN NEW LOCATION WHERE INDICATED. COMPLETELY CLEAN AND RESTORE EQUIPMENT TO GOOD OPERATING CONDITION.

5. INSTALL TEMPORARY COVERS OVER EXISTING EXTERIOR ENVELOPE OPENINGS CREATED BY REMOVED EQUIPMENT/DUCT. COVER SHALL BE WATERTIGHT, AND MEET OSHA AND OWNER REQUIREMENTS. COMPLETELY REMOVE TEMPORARY COVER WHEN OPENINGS ARE PATCHED TO FINAL CONDITION. REPAIR ANY DAMAGE TO EXISTING BUILDING COMPONENTS CAUSED BY TEMPORARY COVER.

6. WHERE BRANCH DUCTWORK IS SHOWN TO BE DEMOLISHED BACK TO THE MAIN DUCT AND THE EXISTING MAIN DUCT OPENING IS NOT TO BE RE-USED, CAP AND SEAL THE MAIN DUCT BRANCH OPENING AIRTIGHT.

KEYED NOTES



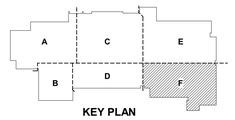
TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR HVAC DEMOLITION PLAN - AREA F**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

Hoffman
Planning, Design & Construction, Inc.
800.236.2370 | hoffman.net

CONSULTANT:
Mead & Hunt, Inc.
2440 Deming Way
Middleton, WI 53562
phone: 608-273-6380
meadhunt.com

MANAWA
MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	April 16, 2019
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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SHEET TITLE:
FIRST FLOOR HVAC DEMOLITION PLAN - AREA F

SHEET NUMBER:
2-MHD-107

GENERAL HVAC DEMOLITION NOTES:

1. COMPLETELY DEMOLISH ALL EXISTING DUCTWORK AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGER SUPPORTS, ETC. FOR REMAINING DUCT SYSTEM. PLUG OR CAP ALL OPENINGS CREATED BY DUCT DEMOLITION. TEST DUCTWORK AS SPECIFIED, AND INSULATE OR PAINT SAME AS NEW WORK. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
2. COMPLETELY DEMOLISH ALL EXISTING EQUIPMENT AS SHOWN WITH BOLD DASHED LINES, INCLUDING ALL ABANDONED AND UNUSED ACCESSORIES, INSULATION, HANGERS, SUPPORTS, BASES, CONTROLS, ETC. PATCH EXISTING WALLS, ROOFS, CEILINGS, AND FLOORS DISTURBED BY DEMOLITION TO ORIGINAL CONDITION.
3. DELIVER INDICATED EQUIPMENT TO OWNER'S DESIGNATED STORAGE SPACE ON SITE, PLUG OR CAP ALL EQUIPMENT OPENINGS TO PREVENT DIRT AND MOISTURE FROM ENTERING EQUIPMENT.
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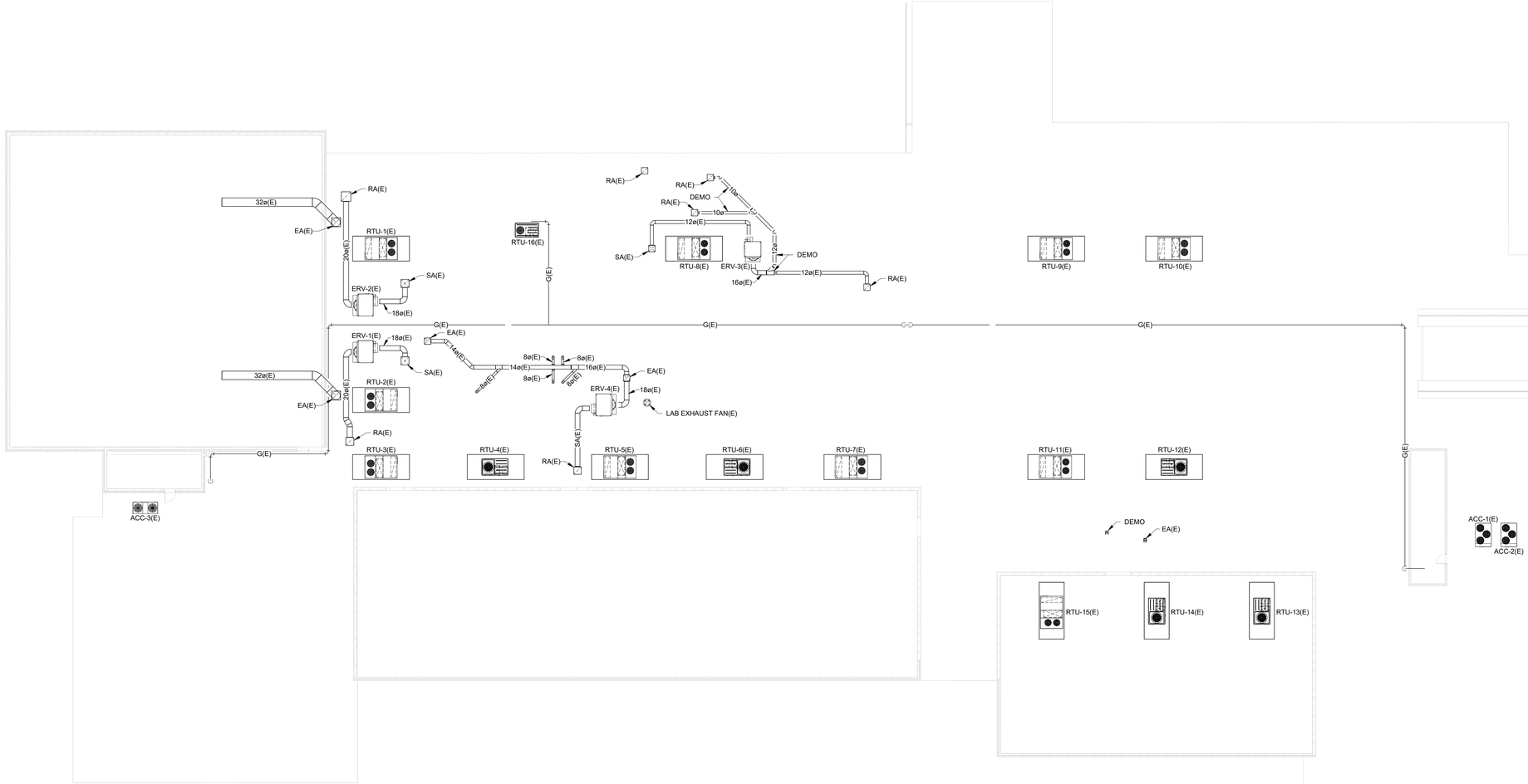
KEYED NOTES

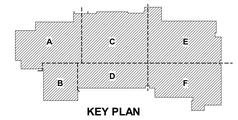


TRUE NORTH PLAN NORTH

1 OVERALL ROOF HVAC DEMOLITION PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09



KEY PLAN

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MANAWA, WI 54949

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CHECKED BY: DJG

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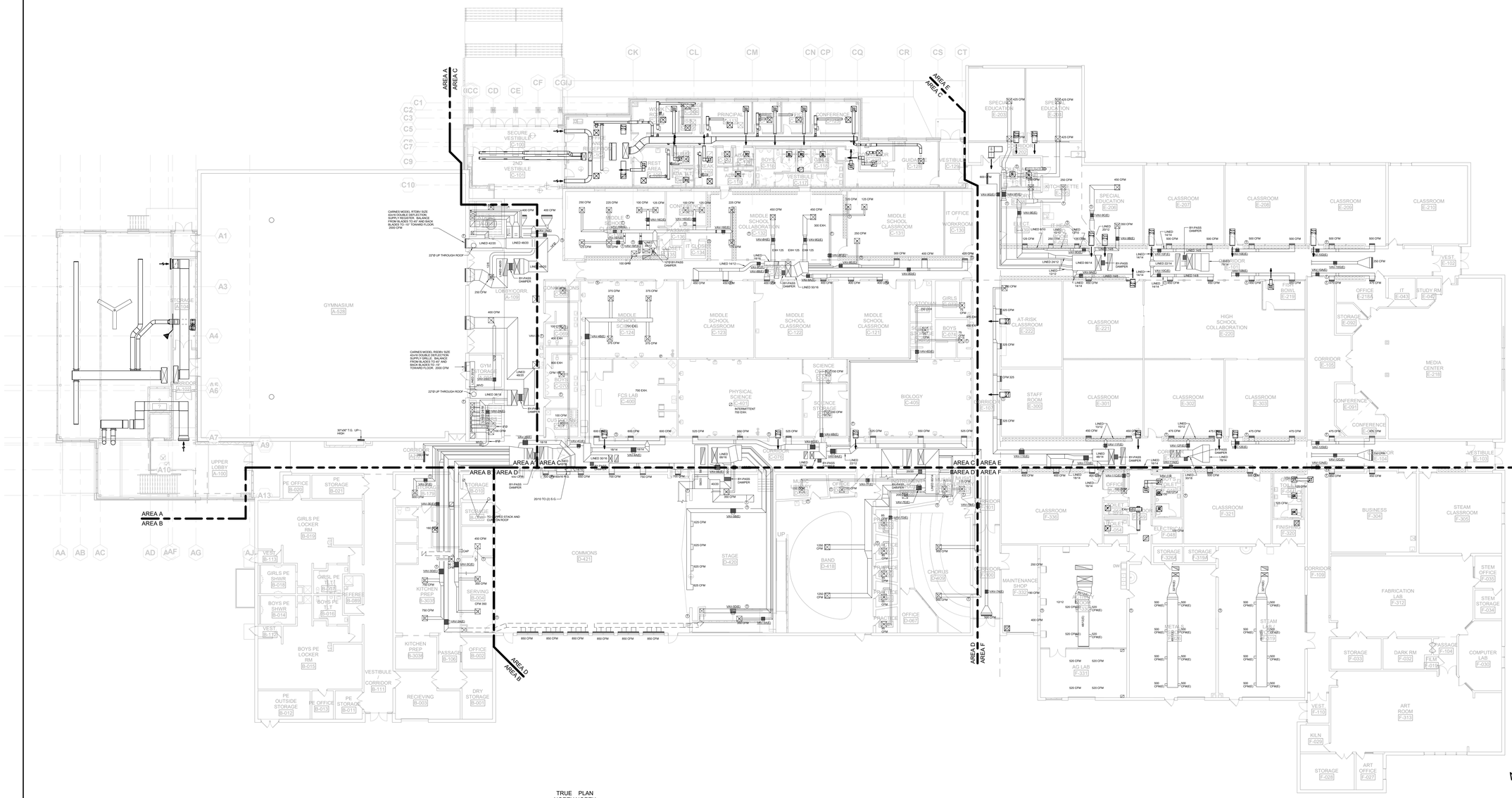
SHEET TITLE:
OVERALL ROOF HVAC DEMOLITION PLAN

SHEET NUMBER:
2-MHD-108

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
2. DUCTWORK DOWNSTREAM OF AIR TERMINAL BOXES TO BE INTERNALLY LINED FOR A MINIMUM OF 6'-0" FOR SOUND ATTENUATION. OUTLET DUCT SIZES TO MATCH AIR TERMINAL BOX OUTLET UNLESS NOTED OTHERWISE.
3. PROVIDE MANUAL BALANCE DAMPER AT EACH DIFFUSER, GRILLE, AND BRANCH TAKE-OFF IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK EXCEPT KITCHEN GREASE EXHAUST DUCT. LOCATE BALANCE DAMPER AS CLOSE TO BRANCH TAKE-OFF AS POSSIBLE.
4. DUCT SIZE TO DIFFUSERS, REGISTERS, AND GRILLES SHALL BE SAME AS NECK SIZE UNLESS NOTED OR DETAILED OTHERWISE.
5. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN.
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



TRUE NORTH PLAN NORTH

1 OVERALL FIRST FLOOR HVAC PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION

KEY PLAN

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CHECKED BY:	DJG

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SHEET TITLE:
OVERALL FIRST FLOOR HVAC PLAN

SHEET NUMBER:
2-MH-100

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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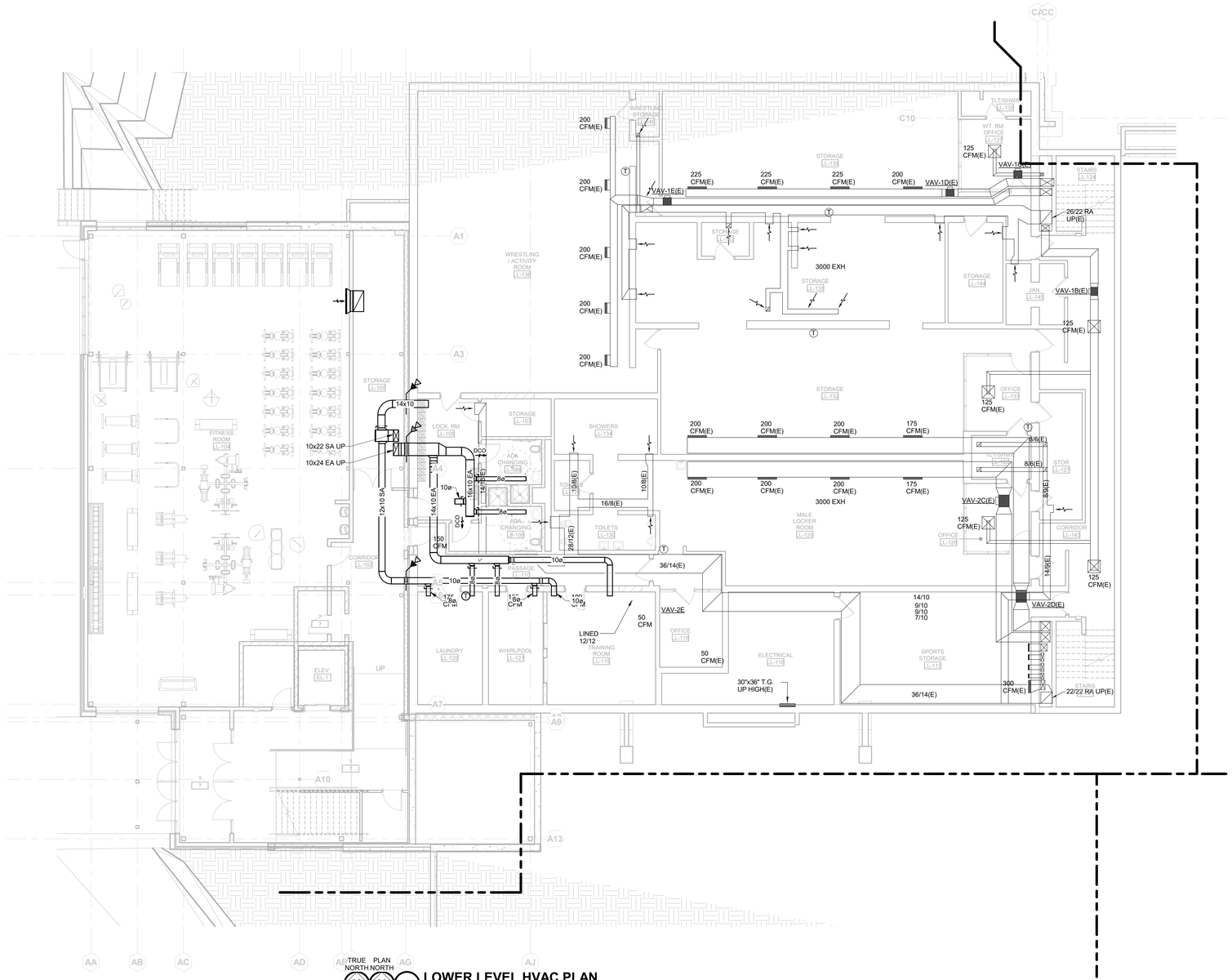
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



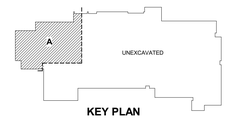
TRUE NORTH PLAN NORTH

N1 LOWER LEVEL HVAC PLAN

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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CHECKED BY:	DJG

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SHEET TITLE:
LOWER LEVEL HVAC PLAN

SHEET NUMBER:
2-MH-101

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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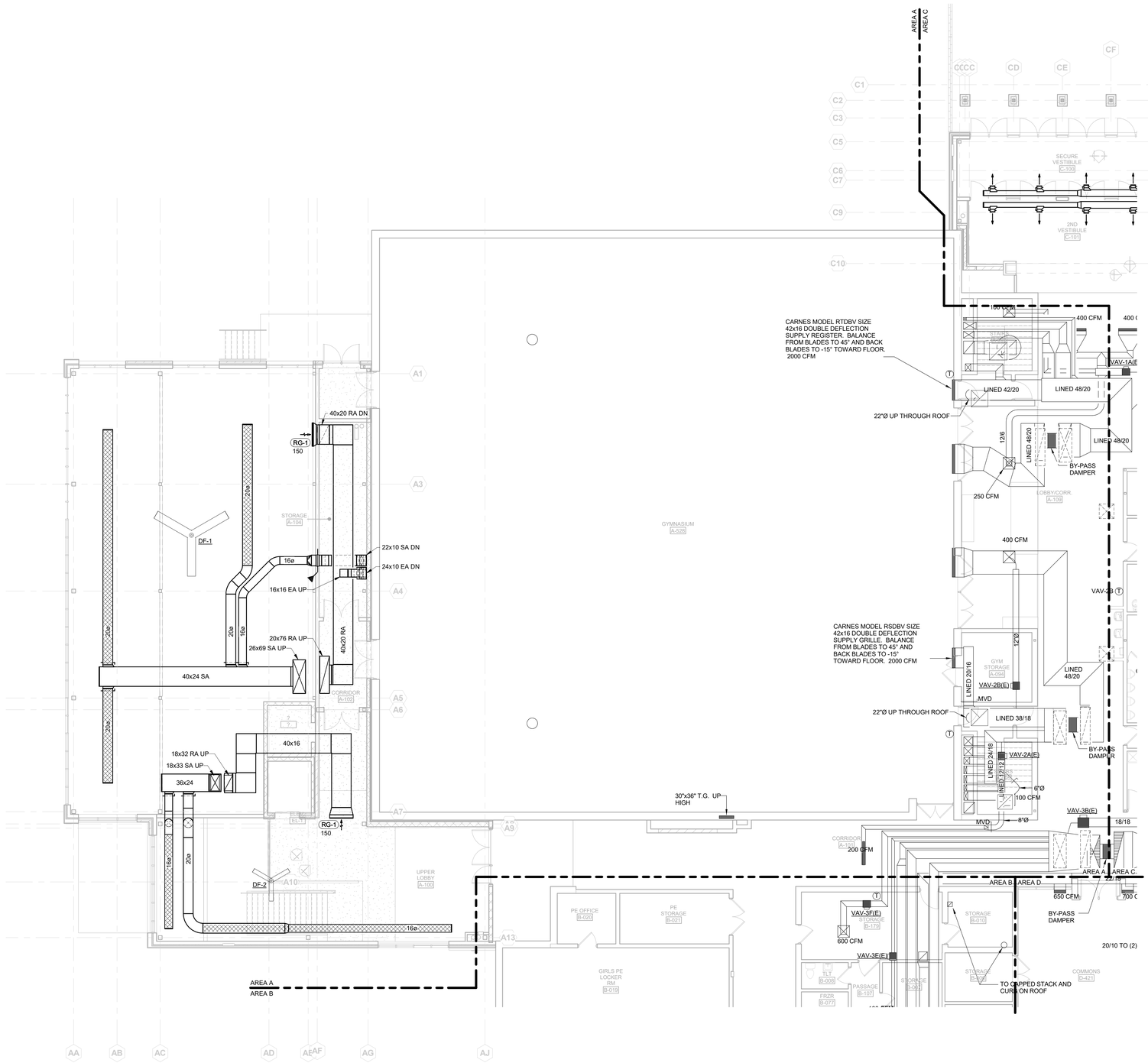
KEYED NOTES



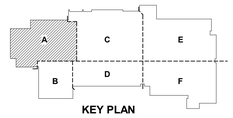
TRUE NORTH PLAN NORTH

1 **FIRST FLOOR HVAC PLAN - AREA A**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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CHECKED BY:	DJG

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SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA A

SHEET NUMBER:
2-MH-102

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
2. DUCTWORK DOWNSTREAM OF AIR TERMINAL BOXES TO BE INTERNALLY LINED FOR A MINIMUM OF 6'-0" FOR SOUND ATTENUATION. OUTLET DUCT SIZES TO MATCH AIR TERMINAL BOX OUTLET UNLESS NOTED OTHERWISE.
3. PROVIDE MANUAL BALANCE DAMPER AT EACH DIFFUSER, GRILLE, AND BRANCH TAKE-OFF IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK EXCEPT KITCHEN GREASE EXHAUST DUCT. LOCATE BALANCE DAMPER AS CLOSE TO BRANCH TAKE-OFF AS POSSIBLE.
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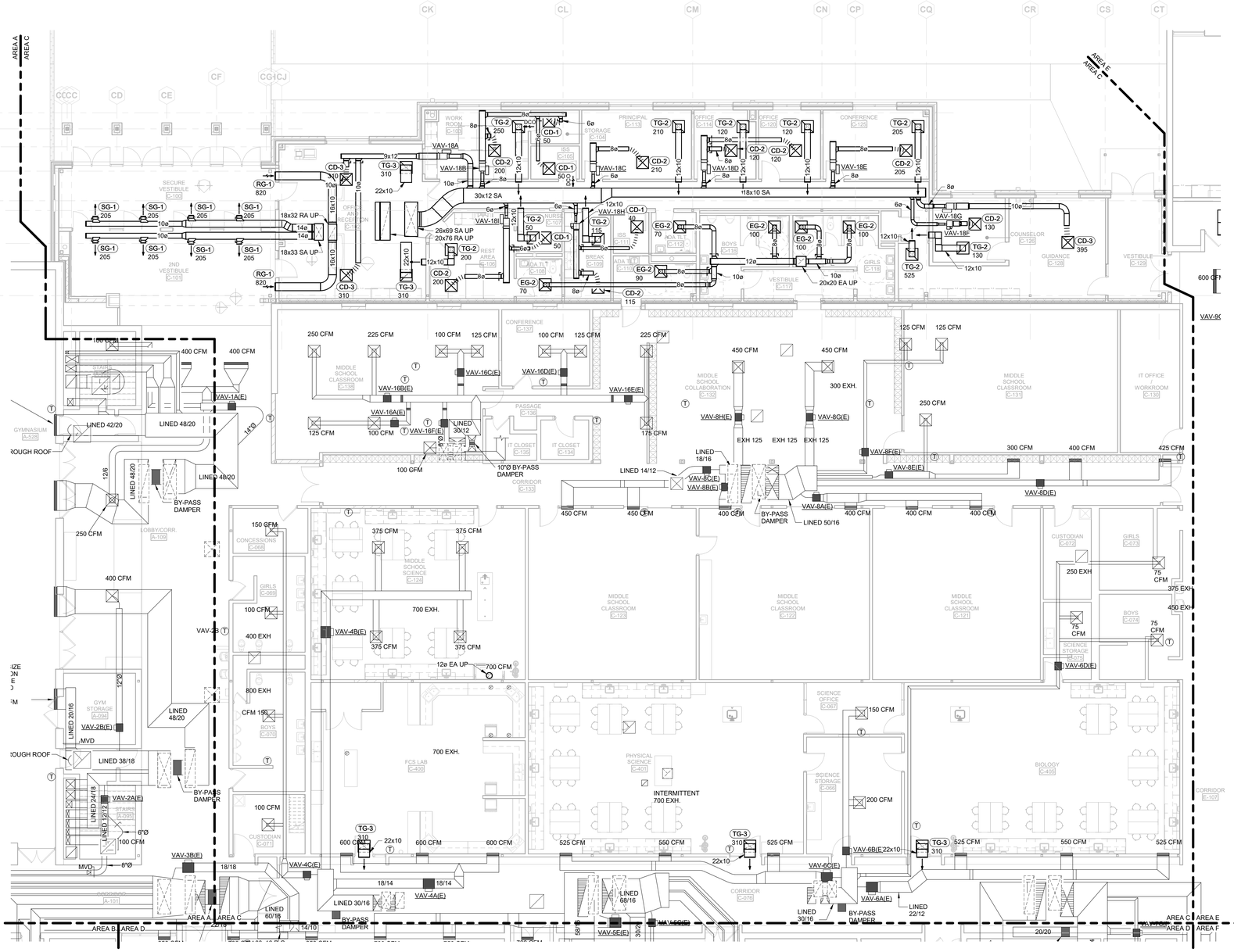
KEYED NOTES



TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR HVAC PLAN - AREA C**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION

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MANAWA

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

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PROJECT NO.:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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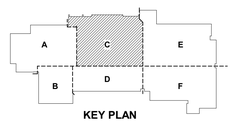
SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA C

SHEET NUMBER:
2-MH-104



KEY PLAN

GENERAL HVAC NOTES:

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3. PROVIDE MANUAL BALANCE DAMPER AT EACH DIFFUSER, GRILLE, AND BRANCH TAKE-OFF IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK EXCEPT KITCHEN GREASE EXHAUST DUCT. LOCATE BALANCE DAMPER AS CLOSE TO BRANCH TAKE-OFF AS POSSIBLE.
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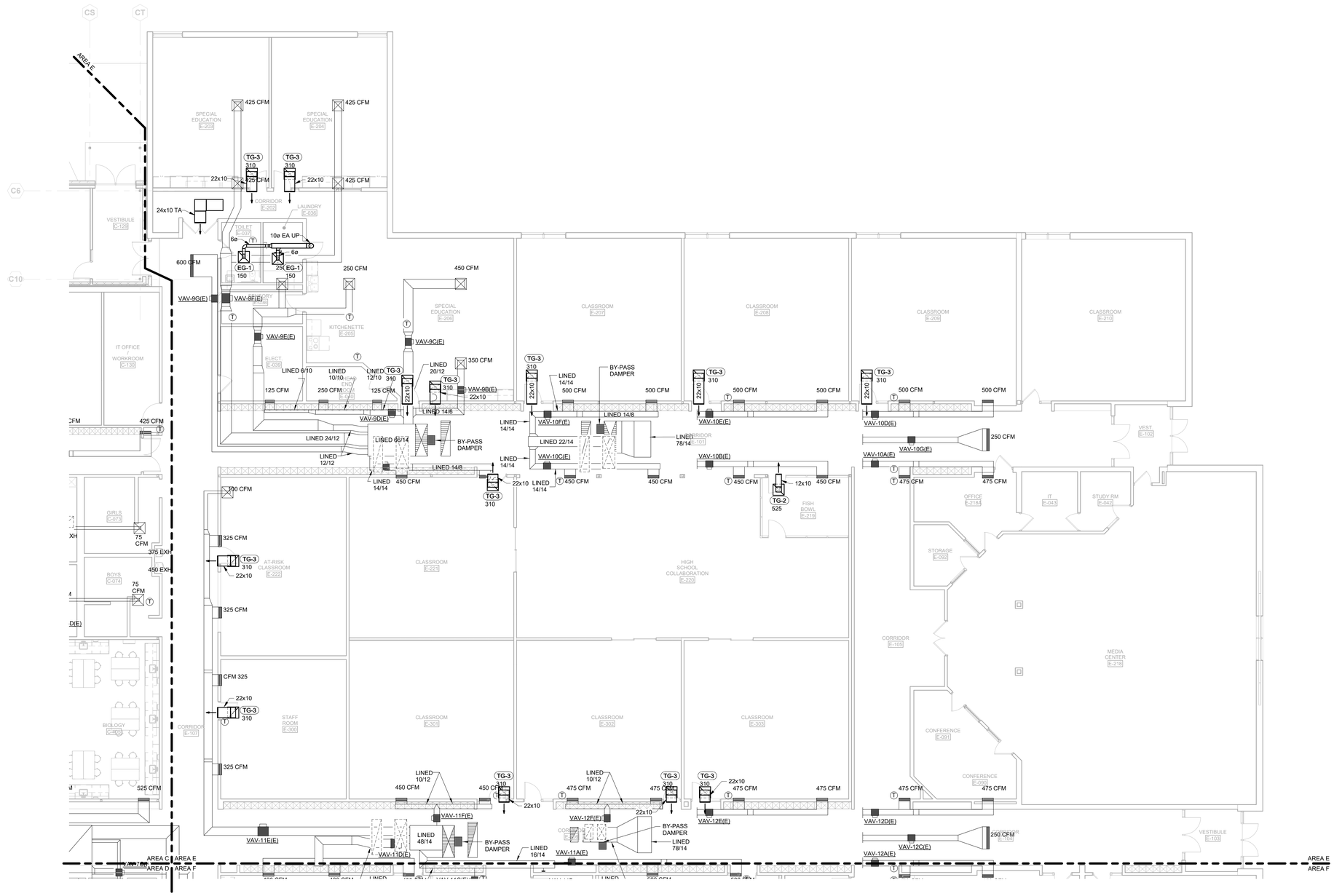


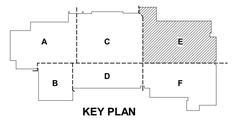
TRUE NORTH / PLAN NORTH

1 FIRST FLOOR HVAC PLAN - AREA E

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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CHECKED BY:	DJG

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SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA E

SHEET NUMBER:
2-MH-106

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
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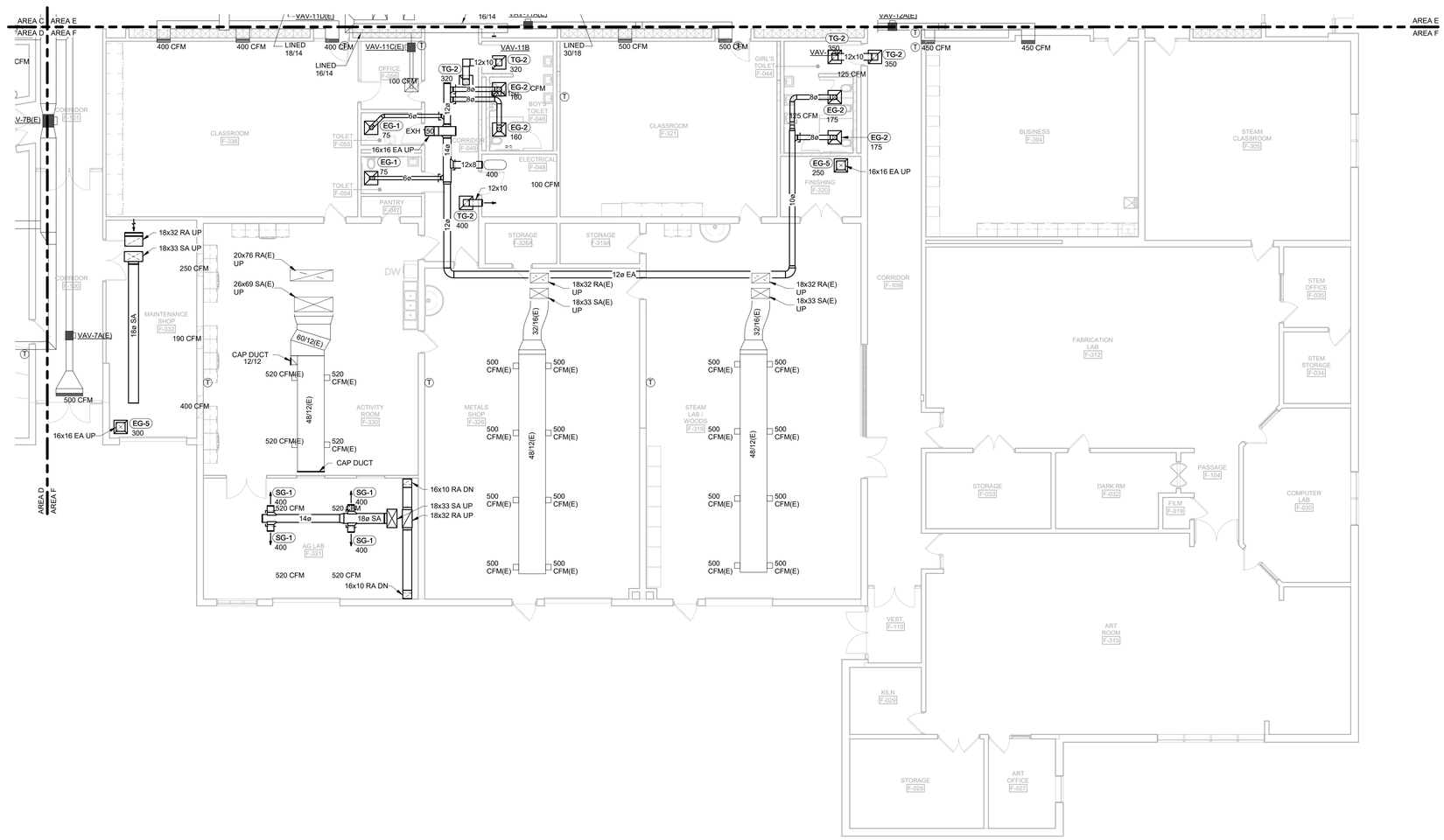
4. DUCT SIZE TO DIFFUSERS, REGISTERS, AND GRILLES SHALL BE SAME AS NECK SIZE UNLESS NOTED OR DETAILED OTHERWISE.
5. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN.
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



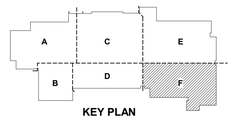
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



KEY PLAN

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	April 16, 2019
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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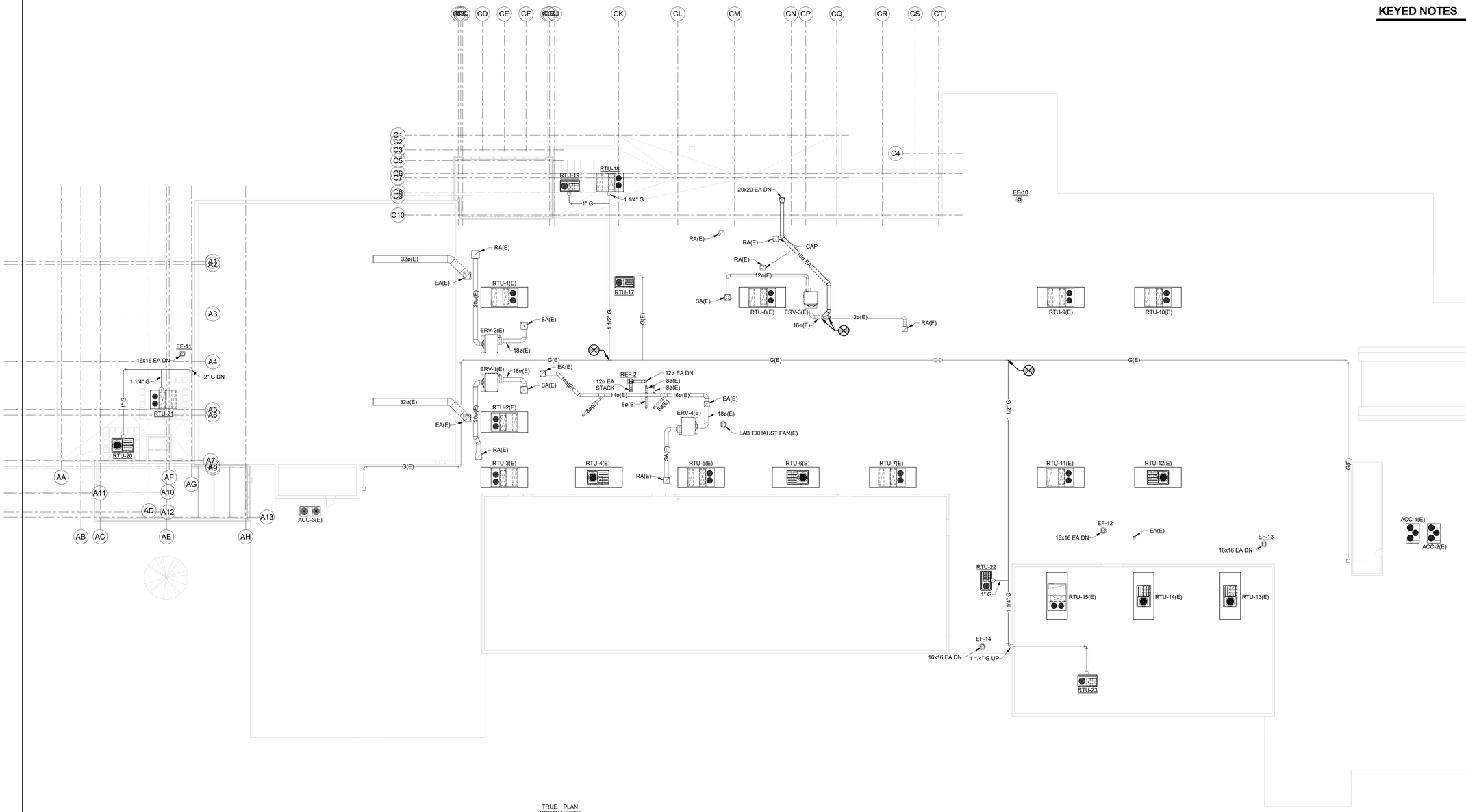
SHEET TITLE:
FIRST FLOOR HVAC PLAN - AREA F

SHEET NUMBER:
2-MH-107

GENERAL HVAC NOTES:

1. INLET DUCT SIZE TO AIR TERMINAL DEVICES SHALL BE SAME AS INLET SIZE UNLESS OTHERWISE NOTED. IF RUNOUT TO AIR TERMINAL BOX IS GREATER THAN 6 FEET IN LENGTH, SIZE RUNOUT ONE EVEN INCREMENT SIZE LARGER (MINIMUM 2" LARGER) UNLESS OTHERWISE NOTED TO WITHIN 3 FEET OF BOX BEFORE REDUCING TO BOX INLET SIZE.
2. DUCTWORK DOWNSTREAM OF AIR TERMINAL BOXES TO BE INTERNALLY LINED FOR A MINIMUM OF 6'-0" FOR SOUND ATTENUATION. OUTLET DUCT SIZES TO MATCH AIR TERMINAL BOX OUTLET UNLESS NOTED OTHERWISE.
3. PROVIDE MANUAL BALANCE DAMPER AT EACH DIFFUSER, GRILLE, AND BRANCH TAKE-OFF IN ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK EXCEPT KITCHEN GREASE EXHAUST DUCT. LOCATE BALANCE DAMPER AS CLOSE TO BRANCH TAKE-OFF AS POSSIBLE.
4. DUCT SIZE TO DIFFUSERS, REGISTERS, AND GRILLES SHALL BE SAME AS NECK SIZE UNLESS NOTED OR DETAILED OTHERWISE.
5. COORDINATE DIFFUSER, REGISTER, AND GRILLE LOCATIONS WITH REFLECTED CEILING PLAN.
6. PROVIDE FLEXIBLE DUCTWORK FOR FINAL CONNECTIONS TO SUPPLY AIR DIFFUSERS UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS. FLEXIBLE DUCT SIZE SHALL BE SAME AS NECK SIZE OF DIFFUSER AND SHALL NOT EXCEED 5 FEET IN LENGTH.
7. PROVIDE PLENUM RATED INSULATION AND WIRING IN RETURN AIR CEILING PLENUM. MATERIALS WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME AND SMOKE SPREAD INDEX OF NOT MORE THAN 25/50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.

KEYED NOTES



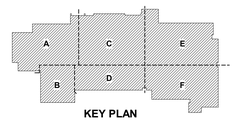
TRUE NORTH PLAN NORTH

1 OVERALL ROOF HVAC PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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CHECKED BY:	DJG

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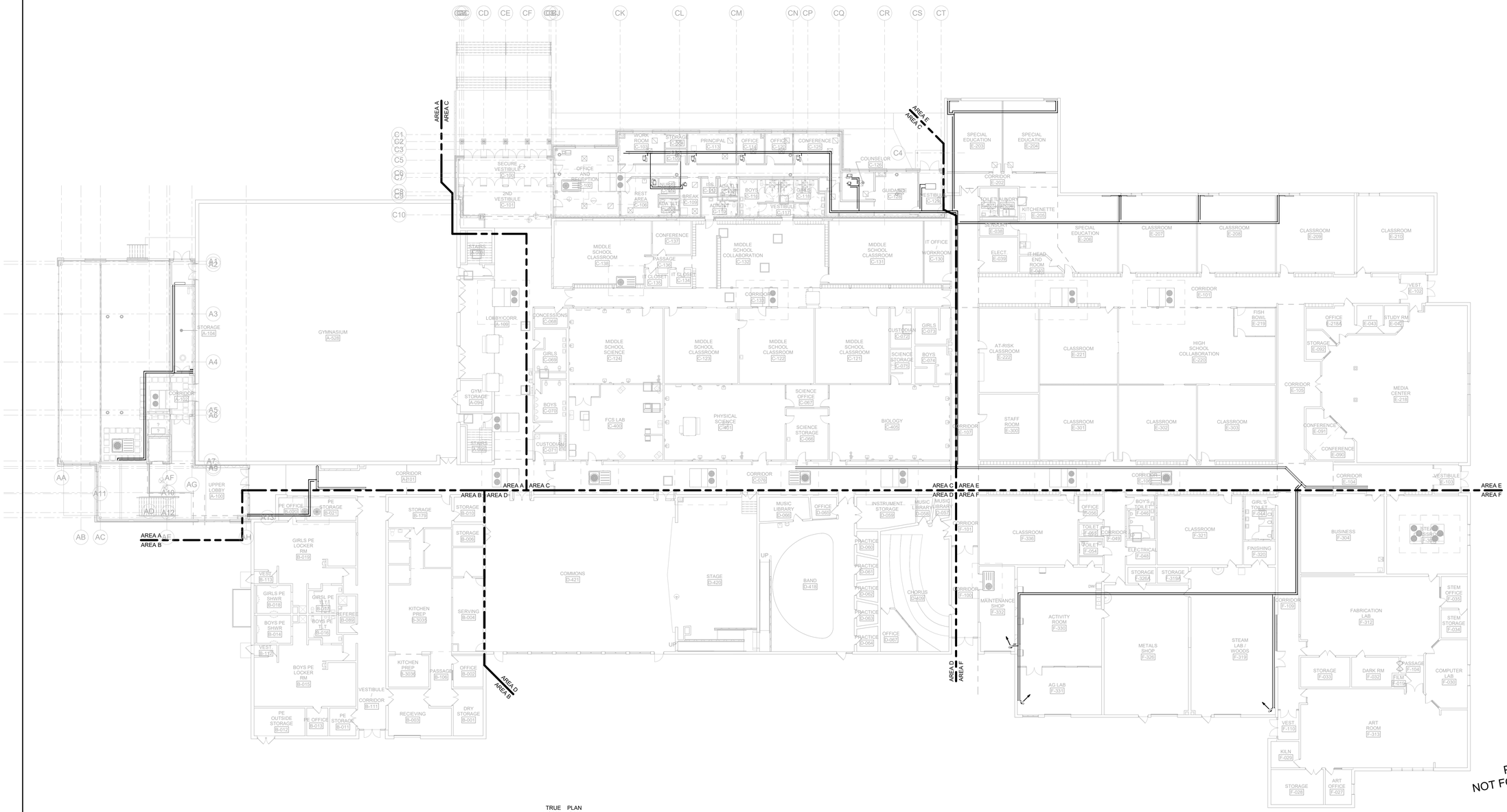
SHEET TITLE:
OVERALL ROOF HVAC PLAN

SHEET NUMBER:
2-MH-108

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
4. INSTALL PIPING FREE OF SAGS AND BENDS.
5. LOCATE ALL VALVES FOR EASY ACCESS. INSTALL VALVES WITH STEM UP OR HORIZONTAL.
6. INSTALL DRAIN VALVES AT ALL LOW POINTS IN PIPING SYSTEM AND ELSEWHERE AS REQUIRED FOR SYSTEM DRAINAGE. INSTALL MANUAL AIR VENTS AT ALL HIGH POINTS IN PIPING, AT HEAT-TRANSFER COILS, AND ELSEWHERE AS REQUIRED FOR SYSTEM AIR VENTING.

KEYED NOTES



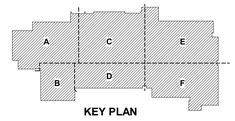
TRUE NORTH PLAN NORTH

1 OVERALL FIRST FLOOR HVAC PLAN

1/16" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
OVERALL FIRST FLOOR PIPING PLAN

SHEET NUMBER:
2-MP-100

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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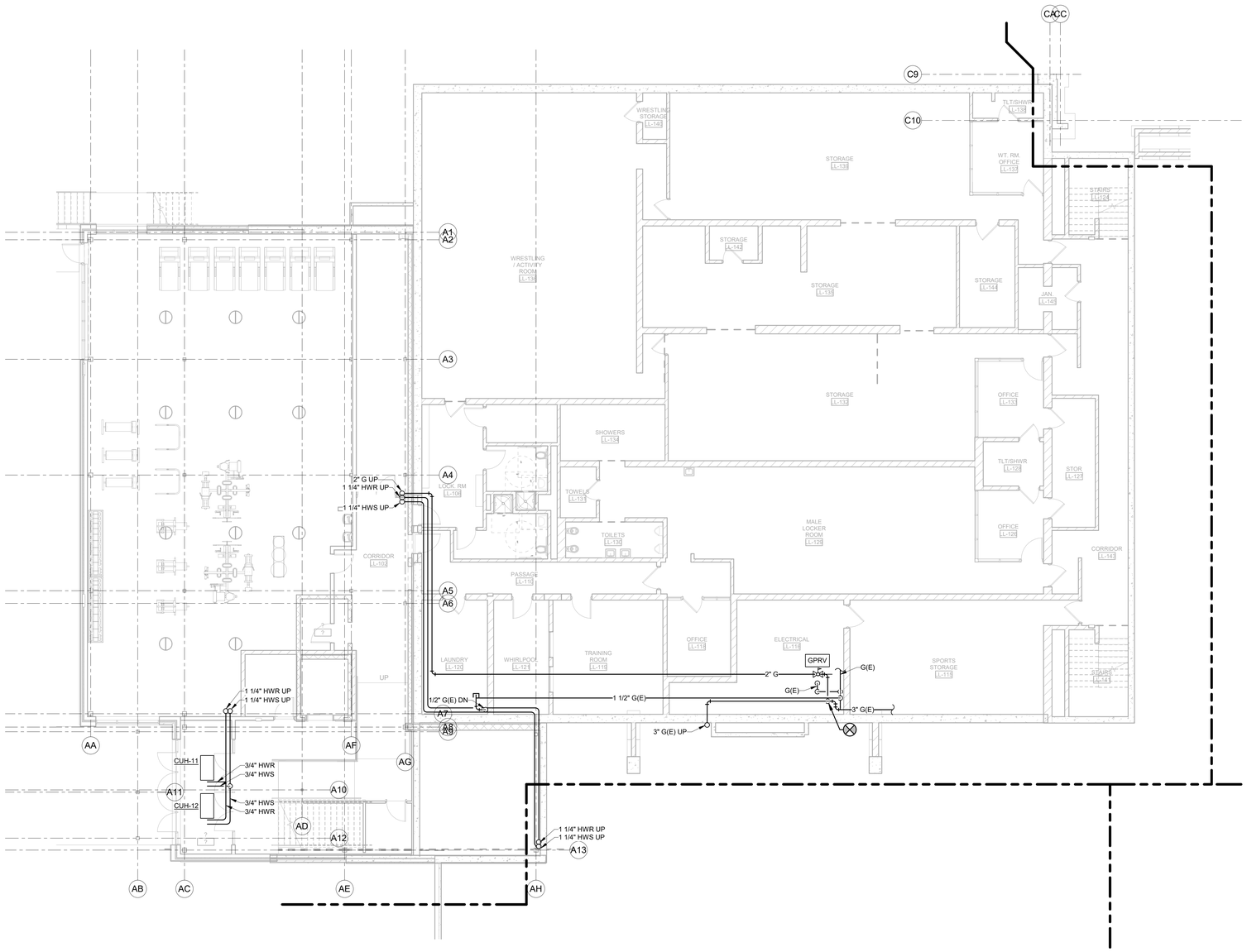
KEYED NOTES



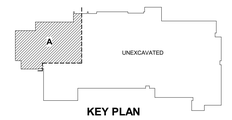
TRUE NORTH PLAN NORTH

N N 1 **LOWER LEVEL HVAC PLAN**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
LOWER LEVEL PIPING PLAN

SHEET NUMBER:
2-MP-101

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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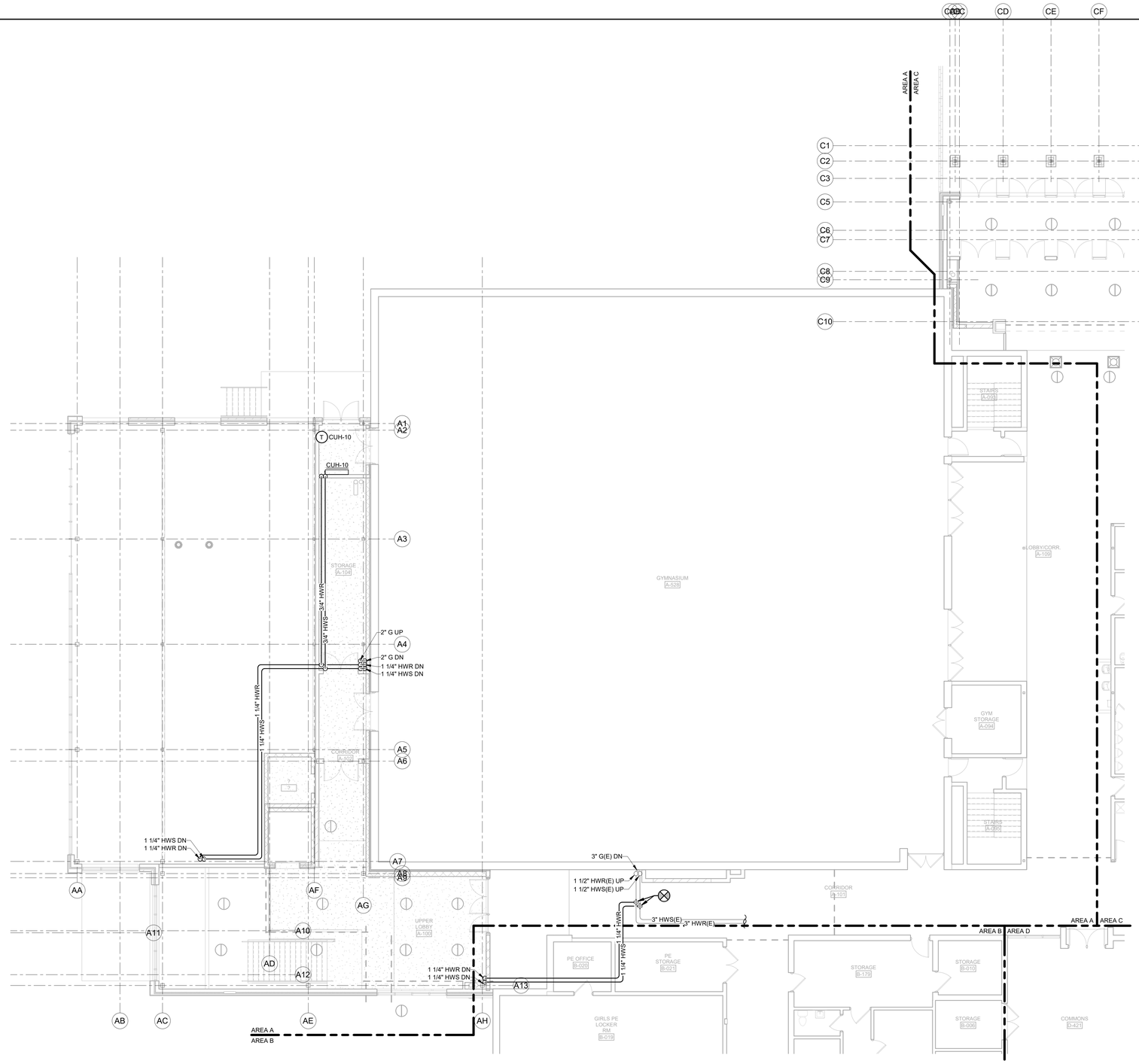
KEYED NOTES



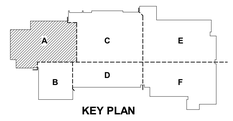
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA A

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA A

SHEET NUMBER:
2-MP-102

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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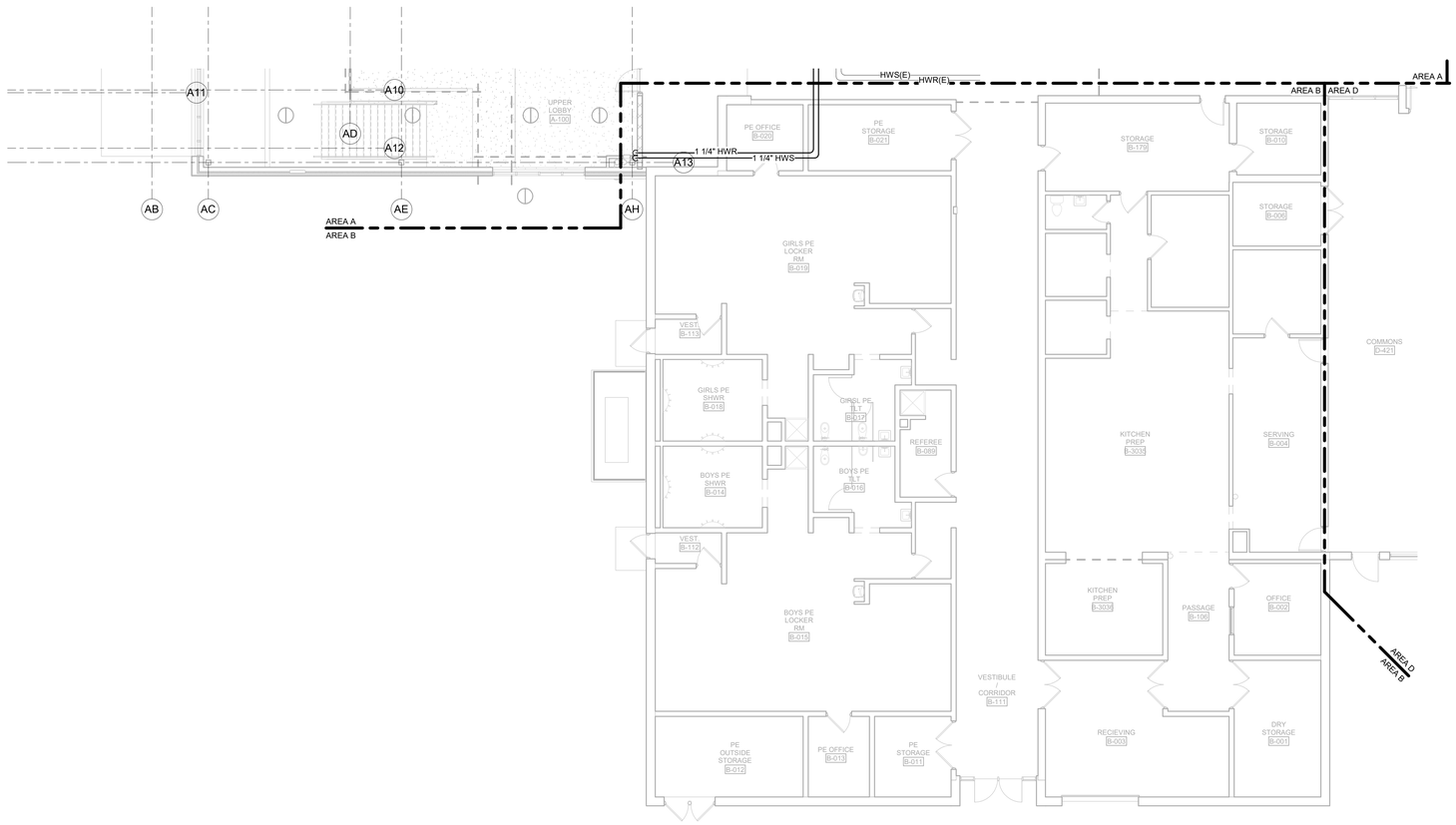
KEYED NOTES



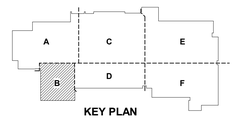
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA B

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA B

SHEET NUMBER:
2-MP-103

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
3. INSTALL DIELECTRIC FITTINGS WHERE PIPING OF DIFFERENT MATERIALS IS JOINED.
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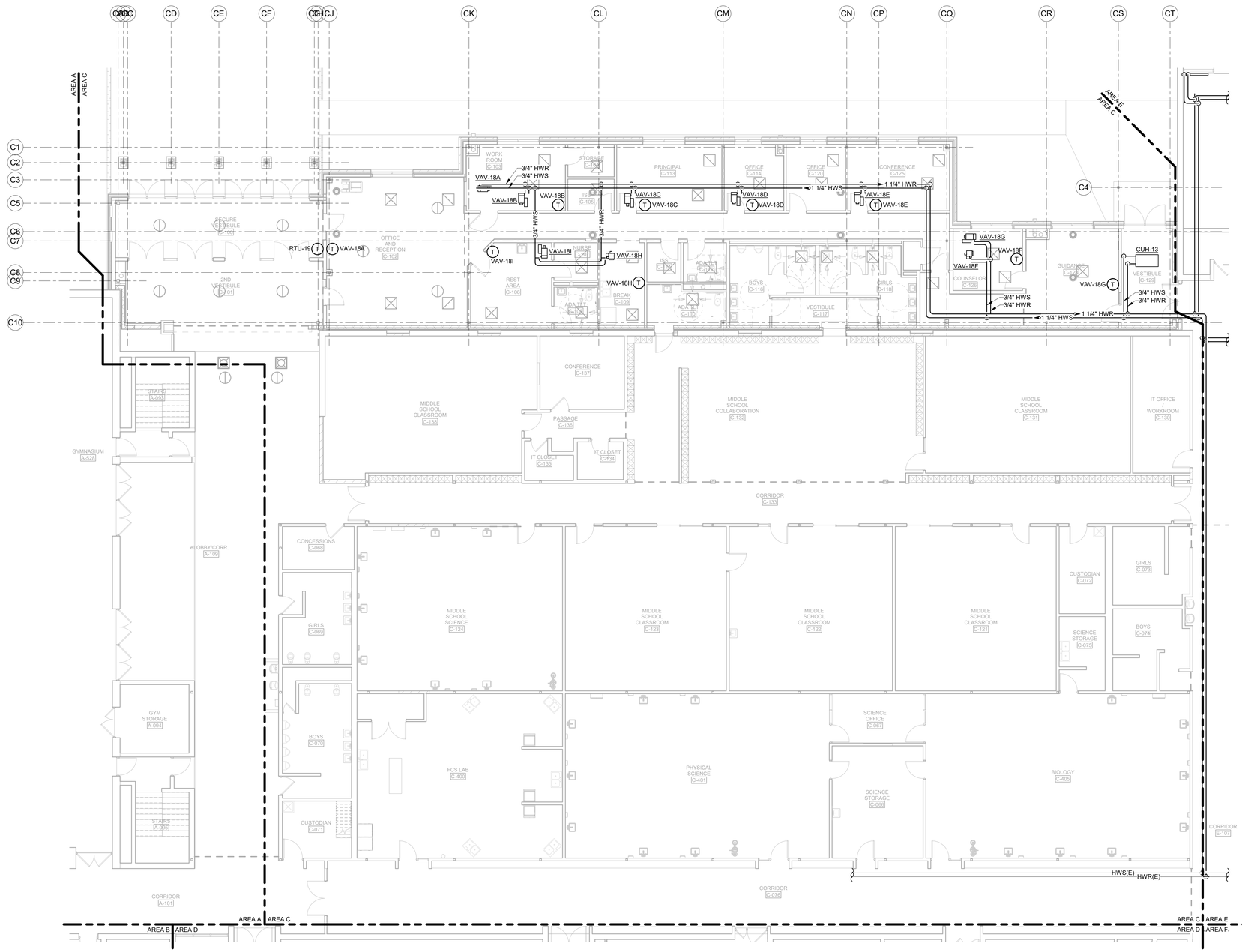


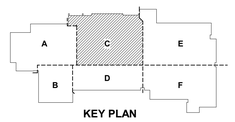
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA C

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA C

SHEET NUMBER:
2-MP-104

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
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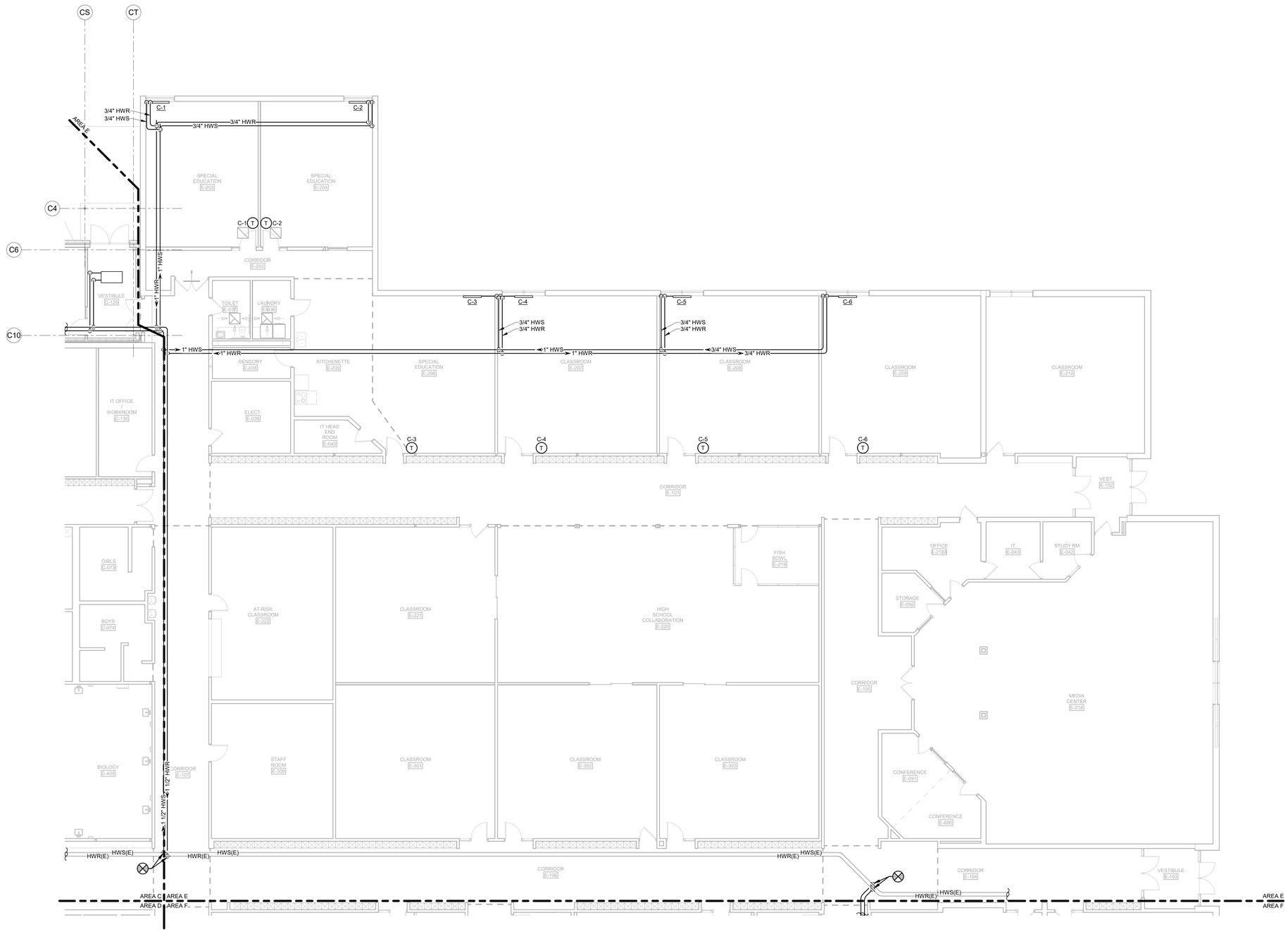


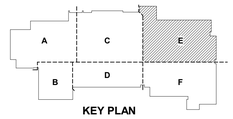
TRUE NORTH PLAN NORTH

N N 1 **FIRST FLOOR HVAC PLAN - AREA E**

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PIPING PLAN - AREA E

SHEET NUMBER:
2-MP-106

GENERAL PIPING NOTES:

1. PIPING RUNOUTS TO ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
2. WELD-O-LETS AND THREAD-O-LETS MAY BE USED FOR BRANCH TAKE-OFFS UP TO ONE-HALF THE DIAMETER OF THE MAIN.
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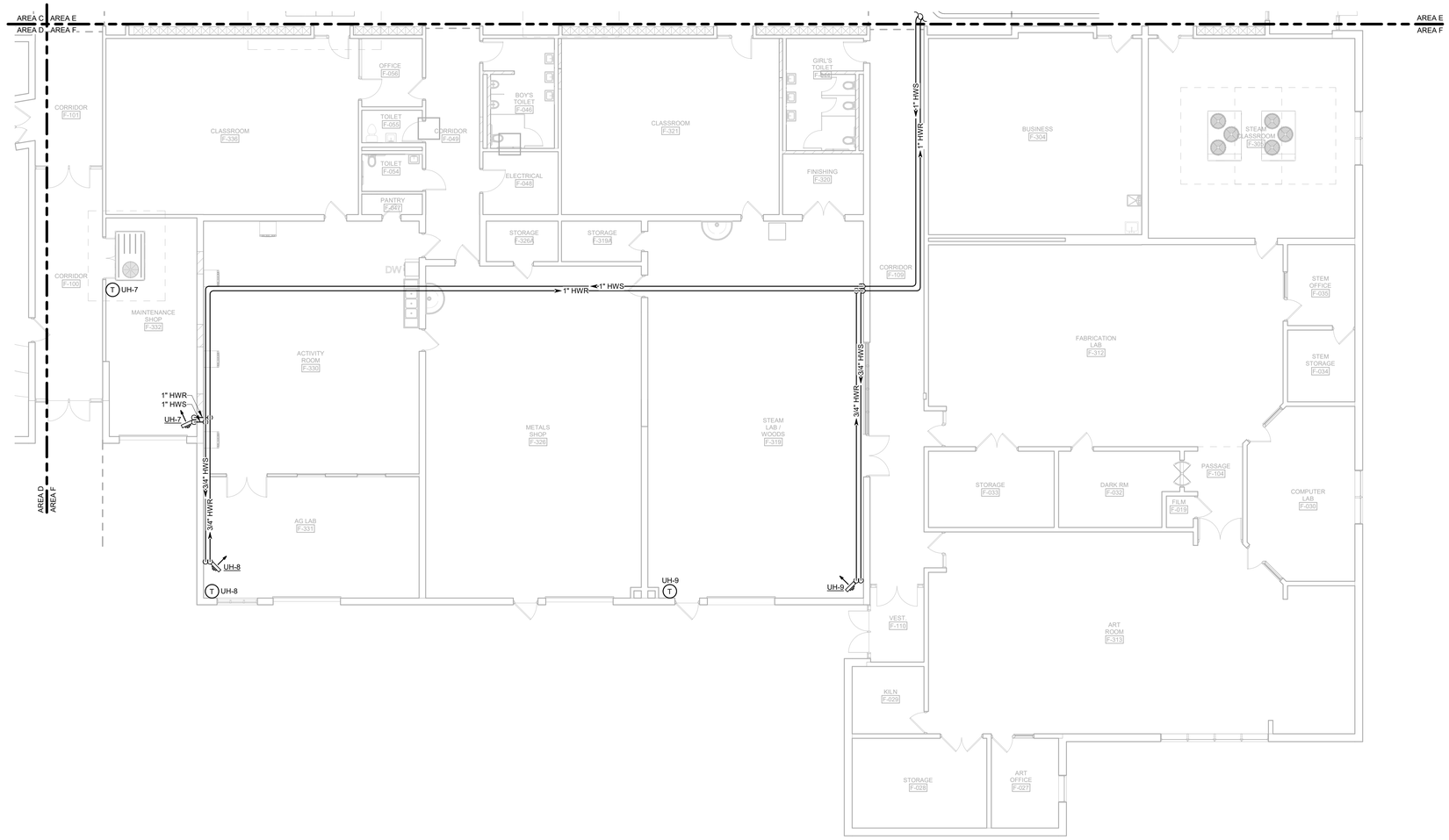


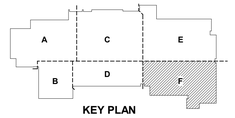
TRUE NORTH PLAN NORTH

FIRST FLOOR HVAC PLAN - AREA F

1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

FOR BIDS
NOT FOR CONSTRUCTION



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SHEET TITLE:
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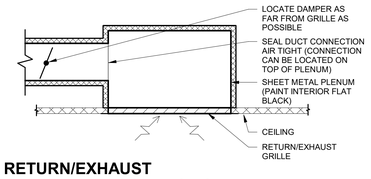
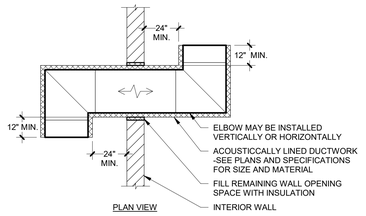
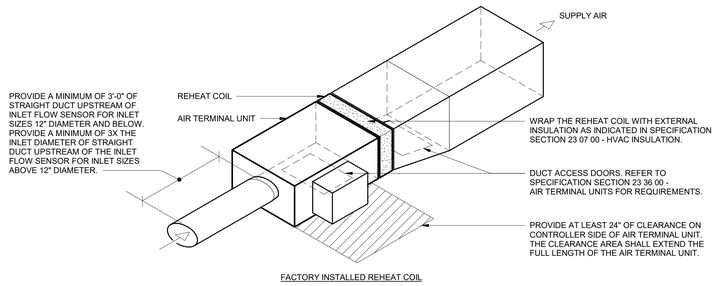
SHEET NUMBER:
2-MP-107



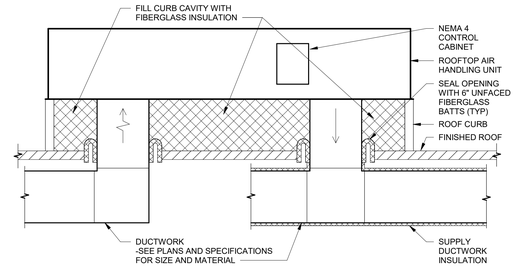
14 RETURN/EXHAUST GRILLE DUCT CONNECTION
NO SCALE



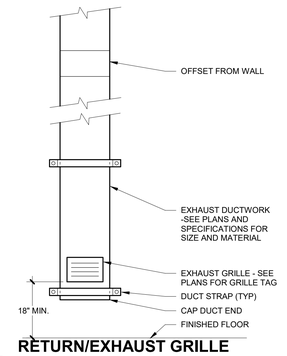
10 TRANSFER DUCT DETAIL
NO SCALE



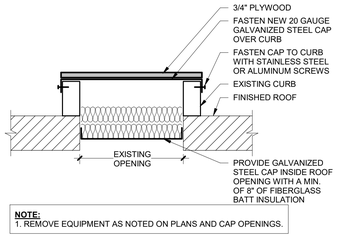
6 SUPPLY AIR TERMINAL UNIT WITH REHEAT COIL
NO SCALE



1 ROOFTOP UNIT (RTU) SECTION
NO SCALE

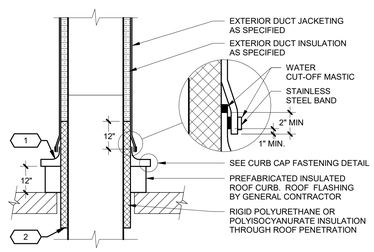


15 RETURN/EXHAUST GRILLE DUCT CONNECTION AT FLOOR
NO SCALE



NOTE:
1. REMOVE EQUIPMENT AS NOTED ON PLANS AND CAP OPENINGS.

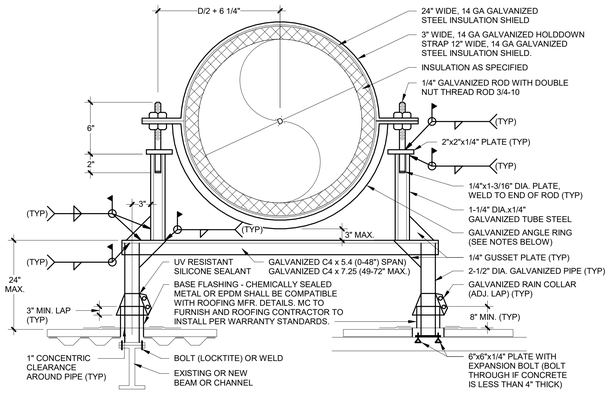
16 CURB CAP DETAIL
NO SCALE



KEYED NOTES:

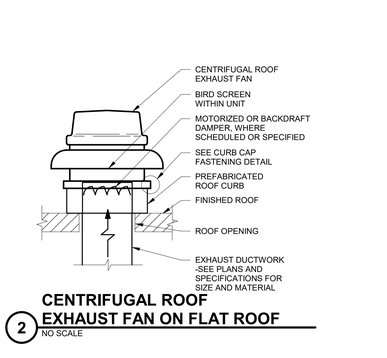
1. CURB CAP SIZED TO FIT CURB AND DUCT SHALL BE PROVIDED BY ROOF CURB MANUFACTURER.
2. FOR UNINSULATED DUCTWORK IN INTERIOR SPACES, TERMINATE INSULATION AT ROOF LINE.

11 ROOF DUCT PENETRATION
NO SCALE

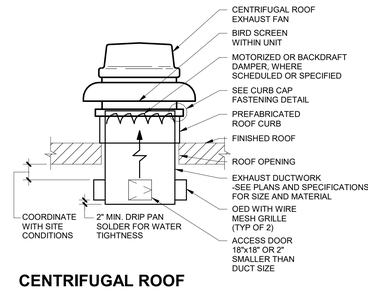


NOTES:
1. PAINT ALL FIELD WELDED GALVANIZED COMPONENTS WITH ZINC PAINT AFTER WELDING.
2. USE 2"x2"x1/4" ANGLE FOR 25" - 40" DUCT.
3. USE 2 1/2"x2 1/2"x1/4" ANGLE FOR 41" DUCT AND LARGER.

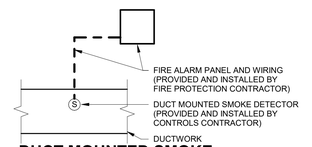
7 ROUND DUCT ROOF SUPPORT
NO SCALE



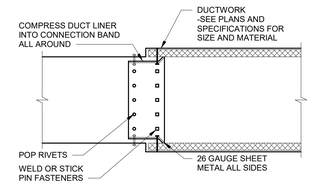
2 CENTRIFUGAL ROOF EXHAUST FAN ON FLAT ROOF
NO SCALE



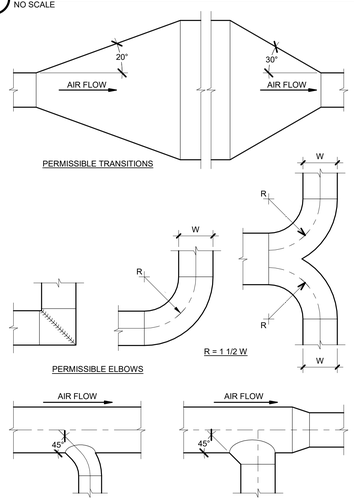
3 CENTRIFUGAL ROOF EXHAUST FAN WITH DRIP PAN
NO SCALE



4 DUCT MOUNTED SMOKE DETECTOR CONTROL DIAGRAM
NO SCALE



5 DUCT SOUND LINING TERMINATION
NO SCALE



NOTE:
THIS DETAIL APPLIES ONLY FOR INSULATED DUCTS REQUIRING CONTINUOUS INSULATION THROUGH WALL, AND DUCTS NOT REQUIRING FIRE DAMPERS.

13 DUCT PENETRATION THROUGH INTERIOR WALL
NO SCALE

8 TYPICAL DUCT OFFSET
NO SCALE

9 TYPICAL DUCT TRANSITIONS
NO SCALE

12 TRANSFER DUCT WITH BOTTOM CONNECTION
NO SCALE

FOR BIDS
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PRELIMINARY
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2019-04-09

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE
ISSUED:	April 16, 2019
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	RRW
CHECKED BY:	DJG

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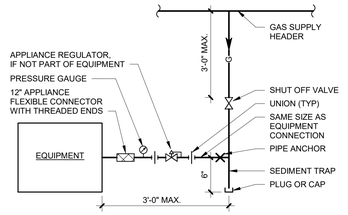
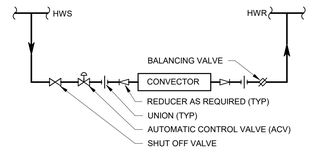
SHEET TITLE:
HVAC DETAILS

SHEET NUMBER:
2-MS-501



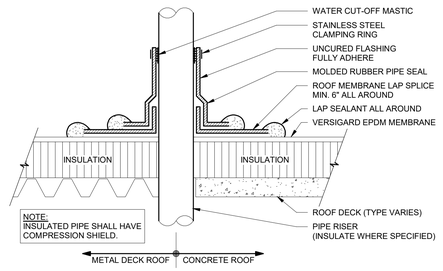
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

6 EQUIPMENT GAS CONNECTION (TYP)
NO SCALE



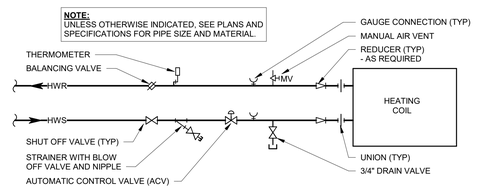
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIALS.

1 HOT WATER FIN TUBE CONVECTOR PIPING
NO SCALE

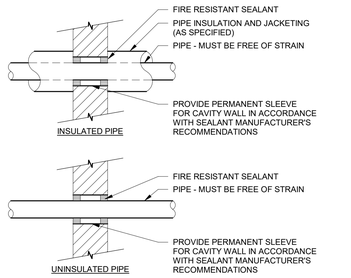


NOTE:
INSULATED PIPE SHALL HAVE COMPRESSION SHIELD.

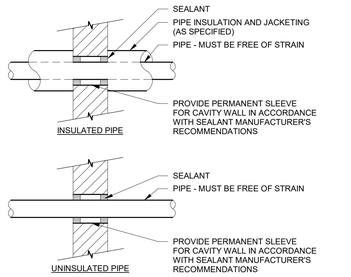
7 ROOF PIPE PENETRATION - RUBBER SEAL (ALT)
NO SCALE



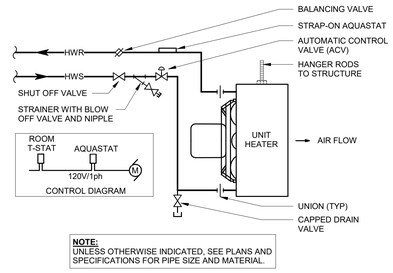
2 HOT WATER REHEAT COIL PIPING
NO SCALE



8 FIRE RATED INTERIOR WALL PIPE PENETRATION
NO SCALE

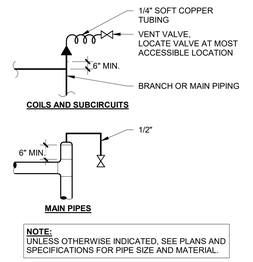


9 NON-RATED INTERIOR WALL PIPE PENETRATION
NO SCALE



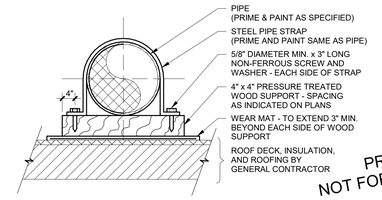
NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

3 HOT WATER UNIT HEATER PIPING WITH TEMPERATURE CONTROL AND ACV
NO SCALE



NOTE:
UNLESS OTHERWISE INDICATED, SEE PLANS AND SPECIFICATIONS FOR PIPE SIZE AND MATERIAL.

4 AIR VENT PIPING
NO SCALE



5 ROOF WOOD PIPE SUPPORT
NO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

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SHEET TITLE:
PIPING DETAILS

SHEET NUMBER:
2-MS-511

DESTRATIFICATION FAN (DF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIRFLOW RATE (CFM)	MOTOR (HP)	MOTOR (W)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	(1) MOUNTING HEIGHT	MAX. SOUND (DB)	WEIGHT (LB)	LOCATION	REMARKS
DF-1	GREENHECK, DS-14 SERIES	CEILING	90,000	0.75	664	IP 54	97	DIRECT	460 / 3	22'-5"	45	170	AREA A	(1)(3)(4)(5)(6)
DF-2	GREENHECK, DS-8 SERIES	CEILING	28,600	0.75	249	IP 40	142	DIRECT	460 / 3	22'-5"	50	167	AREA A	(1)(3)(4)(5)(6)

REMARKS:

(1) PROVIDE MOUNTING HARDWARE AND DROP TUBE.

(2) MOUNTING HEIGHT IS FROM FINISHED FLOOR TO BOTTOM OF FAN IN FEET.

(3) PROVIDE WITH WALL MOUNTED REMOTE CONTROL FOR ON/OFF AND SPEED CONTROL. PROVIDE VARIABLE FREQUENCY DRIVE.

VARIABLE FREQUENCY DRIVE (VFD) SCHEDULE

MARK	MODEL, MANUFACTURER NUMBER	SERVES	MOTOR (HP)	VOLTS / PHASE	ENCLOSURE	ACCESSORIES: INTEGRAL DISCONNECT	ACCESSORIES: MANUAL BYPASS	LOCATION	REMARKS
VFD-1	DANFOSS	RTU-17	3	460 /3	NEMA 1	YES	NO	ROOF	
VFD-2	DANFOSS	RTU-18	5	460 /3	NEMA 1	YES	NO	ROOF	
VFD-3	DANFOSS	RTU-19	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-4	DANFOSS	RTU-20	3	460 /3	NEMA 1	YES	NO	ROOF	
VFD-5	DANFOSS	RTU-21	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-6	DANFOSS	RTU-22	1	460 /3	NEMA 1	YES	NO	ROOF	
VFD-7	DANFOSS	RTU-23	3	460 /3	NEMA 1	YES	NO	ROOF	

REMARKS:

(1)

HVAC DUCT SCHEDULE

SYSTEM		DUCT MATERIAL: TYPE	DUCT MATERIAL: REFERENCE STANDARD	DUCT MATERIAL: FINISH	PRESS. CLASS (IN WC)	SEAL CLASS	LEAKAGE CLASS: RECT.	LEAKAGE CLASS: ROUND	COMMENTS
SUPPLY AIR	DUCT CONNECTED TO TERMINAL UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO CONSTANT VOLUME AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO VARIABLE AIR VOLUME AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO VARIABLE VOLUME ROOFTOP UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
RETURN AIR	DUCT CONNECTED TO CEILING PLENUM	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	2	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO ROOFTOP UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
EXHAUST AIR	DUCT CONNECTED TO EXHAUST FANS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO FANS EXHAUSTING LABORATORY AIR - EXPOSED TO VIEW	304 SS	ASTM A 480	NO. 4	3	A	12	6	
	DUCT CONNECTED TO FANS EXHAUSTING LABORATORY AIR - CONCEALED	304 SS	ASTM A 480	NO. 2 [NO. 4]	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO DUST COLLECTOR FAN	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	10	A	12	6	
	DRYER EXHAUST	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	1	B	12	6	
OUTSIDE AIR	DUCT CONNECTED TO TERMINAL UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO AIR HANDLING UNITS	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
	DUCT CONNECTED TO OTHER FAN POWERED EQUIPMENT	G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	3	A	12	6	
TRANSFER DUCTS		G90 GALV.	ASTM A 653	MILL PHOSPHATIZED	1	B	12	6	1/2" THICK ACOUSTICAL LINER.

FITTINGS

RECTANGULAR DUCT ELBOWS (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2, "RECTANGULAR ELBOWS.")
- RADIUS TYPE RE 1 WITH MINIMUM 1.5 RADIUS-TO-DIAMETER RATIO.
- RADIUS TYPE RE 3 WITH MINIMUM 1.0 RADIUS-TO-DIAMETER RATIO AND TWO VANES.
- MITERED TYPE RE 2 WITH VANES COMPLYING WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-3, "VANES AND VANE RUNNERS," AND FIGURE 2-4, "VANE SUPPORT IN ELBOWS."

ROUND DUCT ELBOWS (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-3, "ROUND DUCT ELBOWS.")
- RADIUS TO DIAMETER RATIO: 1.5
- ROUND ELBOWS, 12 INCHES AND SMALLER IN DIAMETER: STAMPED OR PLEATED
- ROUND ELBOWS, 14 INCHES AND LARGER IN DIAMETER: WELDED

RECTANGULAR BRANCH DUCT CONFIGURATION (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-6, "BRANCH CONNECTIONS.")
- RECTANGULAR MAIN TO RECTANGULAR BRANCH: 45° ENTRY
- RECTANGULAR MAIN TO ROUND BRANCH: SPIN IN

ROUND BRANCH DUCT CONFIGURATION (COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-4, "90 DEGREE TEES AND LATERALS," AND FIGURE 3-5, "CONICAL TEES." SADDLE TAPS ARE PERMITTED IN EXISTING DUCT)
- VELOCITY 1500 FT/MIN AND LOWER: CONICAL TAP
- VELOCITY GREATER THAN 1500 FT/MIN: 45° LATERAL

REMARKS:

(1) PROVIDE PAINT GRIP TYPE DUCT WHERE DUCT IS EXPOSED AND INDICATED TO BE PAINTED.

(2) INSTALL DUCT ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.

(3) INTERMEDIATE REINFORCEMENT MATERIAL SHALL MATCH DUCT MATERIAL.

(4) SUPPLY AIR DUCTS PASSING THROUGH UNCONDITIONED OR OUTDOOR SPACES SHALL BE SEAL CLASS A (ASHRAE 90.1 - 2007).

(5) RETURN AIR DUCTS PASSING THROUGH OUTDOOR SPACES SHALL BE SEAL CLASS A (ASHRAE 90.1 - 2007).

(6) SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.

(7) LINED DUCTWORK MUST STILL BE WRAPPED TO MEET TOTAL INSULATING VALUE PER INSULATION SPECIFICATION AND SCHEDULE.

EXHAUST FAN (EF) AND SUPPLY FAN (SF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIR FLOW RATE (CFM)	ESP (IN WC)	MOTOR (HP)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	(2) MTG. HEIGHT (IN)	MAXIMUM SOUND (3) (DB)	MAXIMUM SOUND (4) SONES	MAXIMUM SOUND INSTALL. TYPE	(1) INTERLOCK WITH	OPENING (IN) LENGTH	OPENING (IN) WIDTH	ACCESSORIES	WEIGHT (LB)	LOCATION	REMARKS
EF-10	GREENHECK, G-085-VG	6	300	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-9	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	
EF-11	GREENHECK, G-123-VG	6	1,400	1.50	1/2	ECM	1554	DIRECT	115 / 1	18	-	12.8	C	RTU-21	14.5	14.5	2, 8, 9, 20, 23	75	ROOF	
EF-12	GREENHECK, G-123-VG	6	1,210	1.25	1/2	ECM	1448	DIRECT	115 / 1	18	-	12.1	C	RTU-11	14.5	14.5	2, 8, 9, 20, 23	75	ROOF	
EF-13	GREENHECK, G-085-VG	6	250	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-13	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	
EF-14	GREENHECK, G-085-VG	6	300	0.50	1/4	ECM	1,626	DIRECT	115 / 1	18	-	8.1	C	RTU-22	12.5	12.5	2, 8, 9, 20, 23	67	ROOF	

FAN TYPE

	CENTRIFUGAL		AXIAL
1	SIDEWALL	8	ROOFTOP DOWNBLAST
2	INLINE	9	SIDEWALL PROPELLER
3	UTILITY	10	TUBE AXIAL
4	CABINET	11	VANE AXIAL
5	ROOFTOP UPBLAST	12	MIXED FLOW
6	ROOFTOP HOODED	13	ROOFTOP FRP UPBLAST
7	ROOFTOP FILTERED SUPPLY		

MOTOR TYPE

ODP	OPEN DRIP PROOF
TEFC	TOTALLY ENCLOSED FAN COOLED
XPL	EXPLOSION PROOF
INV	INVERTER DUTY
TEAO	TOTALLY ENCLOSED AIR OVER
ECM	ELECTRONIC COMMUTATED

INSTALLATION TYPE

A	FREE INLET, FREE OUTLET
B	FREE INLET, DUCTED OUTLET
C	DUCTED INLET, FREE OUTLET
D	DUCTED INLET, DUCTED OUTLET

ACCESSORIES

1	GRAVITY BACKDRAFT DAMPER	11	OUTLET WIRE GUARD	21	HOODED WALL CAP
2	MOTORIZED BACKDRAFT DAMPER	12	INLET FILTER GUARD	22	HOODED ROOF CAP
3	WEATHERHOOD	13	MOTOR COVER	23	HINGED ROOF CURB
4	WALL COLLAR	14	HOUSING INSULATION	24	INLET GRILLE
5	MOTOR WIRE GUARD	15	BELT (OSHA) WIRE GUARD	25	BASE MOUNTED VIBRATION ISOLATORS
6	MOTOR (OSHA) WIRE GUARD	16	INLET BELL	26	DUCT ADAPTOR
7	SHUTTER GUARD	17	INLET/OUTLET FLANGES	27	HANGING SPRING ISOLATORS
8	FAN SPEED CONTROLLER	18	INLET VANE DAMPER	28	HANGING NEOPRENE ISOLATORS
9	NON-FUSED DISCONNECT SWITCH	19	EXTENDED LUBE LINES	29	FACTORY INSULATED ANGLED FILTER BOX
10	INLET WIRE GUARD	20	MFR. ROOF CURB		

REMARKS:

(1) SEE SPECIFICATION SECTION 230993 - HVAC SEQUENCE OF OPERATION.

(2) MOUNTING HEIGHT IS FROM FINISHED FLOOR LEVEL OF INDICATED ROOM, TO TOP OF FAN OR WALL OPENING.

(3) SOUND POWER LEVEL RATING PER AMCA 301.

(4) LOUDNESS VALUES AT 5 FT IN A HEMISPHERICAL FREE FIELD PER AMCA 301.

ROOF EXHAUST FAN (REF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	FAN TYPE	AIR FLOW RATE (CFM)	ESP (IN WC)	MOTOR (HP)	MOTOR TYPE	FAN SPEED (RPM)	DRIVE TYPE	ELECTRICAL (VOLTS/PH)	MTG. HEIGHT (FT)	MAXIMUM SOUND (DB)	MAXIMUM SOUND SONE	MAXIMUM SOUND INSTALL. TYPE	INTERLOCK WITH	OPENING (IN) LENGTH	OPENING (IN) WIDTH	ACCESSORIES	WEIGHT (LB)	LOCATION	REMARKS
REF-2	GREENHECK,	3	700	2.0	1	ODP	1857	DIRECT	460 / 3	1'-6"	-	22.0	B	W. SWITCH	-	-	1, 9,13,20,25	1,000	ROOF	(1)

FAN TYPE

	CENTRIFUGAL		AXIAL
1	SIDEWALL	8	ROOFTOP DOWNBLAST
2	INLINE	9	SIDEWALL PROPELLER
3	UTILITY - FUME EXHAUST	10	TUBE AXIAL
4	CABINET	11	VANE AXIAL
5	ROOFTOP UPBLAST	12	MIXED FLOW
6	ROOFTOP HOODED	13	ROOFTOP FRP UPBLAST
7	ROOFTOP FILTERED SUPPLY		

MOTOR TYPE

ODP	OPEN DRIP PROOF
TEFC	TOTALLY ENCLOSED FAN COOLED
XPL	EXPLOSION PROOF
INV	INVERTER DUTY
TEAO	TOTALLY ENCLOSED AIR OVER

INSTALLATION TYPE

A	FREE INLET, FREE OUTLET
B	FREE INLET, DUCTED OUTLET
C	DUCTED INLET, FREE OUTLET
D	DUCTED INLET, DUCTED OUTLET

ACCESSORIES

1	GRAVITY BACKDRAFT DAMPER	11	OUTLET WIRE GUARD	21	HOODED WALL CAP
2	MOTORIZED BACKDRAFT DAMPER	12	INLET FILTER GUARD	22	HOODED ROOF CAP
3	WEATHERHOOD	13	MOTOR COVER	23	HINGED ROOF CURB
4	WALL COLLAR	14	HOUSING INSULATION	24	INLET GRILLE
5	MOTOR WIRE GUARD	15	BELT (OSHA) WIRE GUARD	25	BASE MOUNTED VIBRATION ISOLATORS
6	MOTOR (OSHA) WIRE GUARD	16	INLET BELL	26	DUCT ADAPTOR
7	SHUTTER GUARD	17	INLET/OUTLET FLANGES	27	HANGING SPRING ISOLATORS
8	FAN SPEED CONTROLLER	18	INLET VANE DAMPER	28	HANGING NEOPRENE ISOLATORS
9	NON-FUSED DISCONNECT SWITCH	19	EXTENDED LUBE LINES	29	FACTORY INSULATED ANGLED FILTER BOX
10	INLET WIRE GUARD	20	MFR. ROOF CURB		

REMARKS:

(1) FUME EXHAUST ULTITY SET FAN WITH EXHAUST STACK.

FOR BIDS
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PRELIMINARY
NOT FOR CONSTRUCTION
2019-04-09

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MANAWA

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
CHECKED BY: DJG

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SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
2-MS-601

AIR TERMINAL (VAV) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	AIR FLOW (CFM)			(1) MAX. PD (IN. WC)	(2) HOT WATER REHEAT COIL								INLET SIZE (IN)	OUTLET			WEIGHT (LB)	ACCESSORIES	LOCATION	REMARKS
			MAX.	MIN.	HEATING		CAP. (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	PD (FT)	NO. OF ROWS		WIDTH (IN)	DEPTH (IN)	QTY.				
VAV-18A	TRANE, VCWF	1	620	120	308	1.0	13.4	55	105	180	150	1.3	5.0	2	8			-		3, 7	C-102	
VAV-18B	TRANE, VCWF	1	300	60	149	1.0	6.5	55	105	180	150	0.6	5.0	2	6			-		3, 7	C-103	
VAV-18C	TRANE, VCWF	1	210	40	104	1.0	4.5	55	105	180	150	0.5	5.0	2	5			-		3, 7	C-113	
VAV-18D	TRANE, VCWF	1	240	50	119	1.0	5.2	55	105	180	150	0.5	5.0	2	6			-		3, 7	C-114	
VAV-18E	TRANE, VCWF	1	310	60	154	1.0	6.7	55	105	180	150	0.7	5.0	2	6			-		3, 7	C-125	
VAV-18F	TRANE, VCWF	1	130	30	64	1.0	2.8	55	105	180	150	0.3	5.0	2	4			-		3, 7	C-126	
VAV-18G	TRANE, VCWF	1	400	80	199	1.0	8.6	55	105	180	150	0.9	5.0	2	7			-		3, 7	C-128	
VAV-18H	TRANE, VCWF	1	160	30	79	1.0	3.0	55	90	180	150	0.3	5.0	2	4			-		3, 7	C-111	
VAV-18I	TRANE, VCWF	1	250	50	124	1.0	4.7	55	90	180	150	0.5	5.0	2	5			-		3, 7	C-107	

TYPE				ACCESSORIES					
1	PRESSURE...	5	SERIES FAN POWERED	1	ELECTRIC HEAT	5	2-WAY TWO-POSITION VALVE	9	FACTORY MOUNTED TRANSFORMER
2	PRESSURE DEPENDENT	6	PARALLEL FAN POWERED	2	FUSE	6	3-WAY TWO-POSITION VALVE	10	FACTORY MOUNTED DISCONNECT...
3	SINGLE DUCT	7	BYPASS	3	DDC CONTROLS	7	2-WAY PROPORTIONAL VALVE		
4	DUAL DUCT			4	PNEUMATIC CONTROLS	8	3-WAY PROPORTIONAL VALVE		

REMARKS:

(1) MAXIMUM STATIC PRESSURE DROP BASED ON MAXIMUM RATED AIR FLOW.

(2) HEATING CAPACITY OF REHEAT COIL BASED ON MINIMUM RATED AIR FLOW, UNLESS OTHERWISE NOTED.

AIR FILTER (AF) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	AIR FLOW RATE (CFM)	PRESSURE DROP (IN WG)		FAN TSP & AIR BALANCE PD (IN WG)	(1) MIN. EFF. (%)	MERV RATING	MEDIA LENGTH (IN)	MIN. FACE AREA (FT2)	SERVES	LOCATION	REMARKS
				INITIAL	FINAL								
AF-17	AAF INTERNATIONAL, PREpleat M13	PRE	3,550	0.3	1.0	0.65	80-90	13	2		RTU-17	ROOF	
AF-18	AAF INTERNATIONAL, PREpleat M13	PRE	6,000	0.3	1.0	0.65	80-90	13	2		RTU-18	ROOF	
AF-19	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.3	1.0	0.65	80-90	13	2		RTU-19	ROOF	
AF-20	AAF INTERNATIONAL, PREpleat M13	PRE	3,550	0.2	1.0	0.65	80-90	13	2		RTU-20	ROOF	
AF-21	AAF INTERNATIONAL, PREpleat M13	PRE	6,000	0.2	1.0	0.65	80-90	13	2		RTU-21	ROOF	
AF-22	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.2	1.0	0.65	80-90	13	2		RTU-22	ROOF	
AF-23	AAF INTERNATIONAL, PREpleat M13	PRE	1,650	0.2	1.0	0.65	80-90	13	2		RTU-23	ROOF	

REMARKS:

(1) DUST SPOT EFFICIENCY MINIMUM FOR MERV 13 FILTERS.

HVAC DUCT INSULATION SCHEDULE

INDOOR OR OUTDOOR	CONCEALED OR EXPOSED	DUCT SHAPE	DUCT SERVICE	INSULATION			REMARKS
				TYPE	THICKNESS (IN)	JACKETING TYPE	
INDOOR	CONCEALED	SQUARE	SUPPLY AIR	D1, D2	1 1/2	J1	-
			RETURN AIR	D1, D2	1 1/2	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
			EXHAUST AIR	D1, D2	1	J1	(1)
		ROUND	SUPPLY AIR	D1	1 1/2	J1	-
			RETURN AIR	D1	1 1/2	J1	-
			OUTSIDE AIR	D1	3	J1	-
			EXHAUST AIR	D1	1	J1	(1)
	EXPOSED	SQUARE	SUPPLY AIR	D1, D2	1 1/2	J1	-
			RETURN AIR	D1, D2	1 1/2	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
			EXHAUST AIR	D1, D2	1	J1	(1)
		ROUND	SUPPLY AIR	D1	1 1/2	J1	-
			RETURN AIR	D1	1 1/2	J1	-
			OUTSIDE AIR	D1	3	J1	-
			EXHAUST AIR	D1	1	J1	(1)
OUTDOOR	CONCEALED	SQUARE	SUPPLY AIR	D1, D2	3	J1	-
			RETURN AIR	D1, D2	3	J1	-
			OUTSIDE AIR	D1, D2	3	J1	-
		ROUND	SUPPLY AIR	D1	3	J1	-
			RETURN AIR	D1	3	J1	-
			OUTSIDE AIR	D1	3	J1	-
	EXPOSED	SQUARE	SUPPLY AIR	D1, D2	3	J9	-
			RETURN AIR	D1, D2	3	J9	-
			OUTSIDE AIR	D1, D2	3	J9	-
		ROUND	SUPPLY AIR	D1	3	J9	-
			RETURN AIR	D1	3	J9	-
			OUTSIDE AIR	D1	3	J9	-

INSULATION TYPE		JACKETING TYPE	
D1	MINERAL FIBER BLANKET (ASTM C 553 TYPE II) (ASTM C 1290 TYPE III) AVAIL. MFR'S: CERTAINTEED CORP; DUCT WRAP JOHNS MANVILLE; MICROLITE. KNAUF INSULATION; DUCT WRAP OWENS CORNING; ALL-SERVICE DUCT WRAP	J1	FACTORY APPLIED FSK
		J2	FACTORY APPLIED FSP
		J3	FACTORY APPLIED VINYL
		J4	FACTORY APPLIED ASJ-SSL
D2	MINERAL FIBER BOARD (ASTM C 612 TYPE 1A OR 1B) AVAIL. MFR'S: CERTAINTEED CORP.; COMMERCIAL BOARD. JOHNS MANVILLE; 800 SERIES SPIN-GLAS KNAUF INSULATION; INSULATION BOARD. OWENS CORNING; FIBERGLAS 700 SERIES.	J5	PVC, 30 MIL THICK, WHITE, UVC RESISTANT, ASTM D 1784 CLASS 16354-C, AVAIL. MFR'S: JOHNS MANVILLE; ZESTON P.I.C. PLASTICS, INC.; FG SERIES PROTO PVC CORP; LOSMOKE SPEEDLINE CORPORATION; SMOKESAFE
D3	RIGID POLYISOCYANURATE (ASTM C 591) AVAIL. MFR'S: DOW CHEMICAL COMPANY (THE); TRYMER. APACHE PRODUCTS COMPANY; ISO-25. DUNA USA INC.; CORAFOAM. ELLIOTT COMPANY; ELFOAM.	J6	ALUMINUM, 0.016" THICK, EMBOSSED, ASTM B 209, ALLOY 3003, 3005, 3105, OR 5005, TEMPER H-14, FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
D4	HIGH TEMPERATURE MINERAL FIBER BLANKET (ASTM C 553 TYPE V) AVAIL. MFR'S: JOHNS MANVILLE, HTB 23 SPIN-GLAS OWNES CORNING; HIGH TEMP FLEXIBLE BATT	J7	STAINLESS STEEL, 304 [316] , 0.016" THICK, SMOOTH, 2B OR 4 FINISH, ASTM A 167 OR ASTM A 240 FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
D5	HIGH TEMPERATURE MINERAL FIBER BOARD (ASTM C 612 TYPE III) AVAIL. MFR'S: JOHNS MANVILLE, HTB 23 SPIN-GLAS OWNES CORNING; HIGH TEMP FLEXIBLE BATT	J8	PVDC (DOW CHEMICAL; SARAN 540 OR 560) (USDA & FDA COMPLIANT)
D6	[1] [2] HR FIRE RATED BLANKET (ASTM C 591) AVAIL. MFR'S: CERTAINTEED CORP.; FLAMECHEK JOHNS MANVILLE; FIRETEMP WRAP 3M; FIRE BARRIER WRAP PRODUCTS. THERMAL CERAMICS; FIREMASTER DUCT WRAP	J9	VENTURETAPE; VENTURECLAD 1577CW-E (NATURAL ALUMINUM EMBOSSED FINISH)

REMARKS:

(1) EXHAUST DUCT ONLY NEEDS TO BE INSULATED FROM THE DAMPER TO THE OUTSIDE WALL OR ROOF.

DUST COLLECTOR (DC) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	SERVICE	AIR FLOW RATE (CFM)	EXTERNAL SP (IN WC)	VEL. (FPM)	FAN SPEED (RPM)	FILTER PD (IN WG)	MOTOR		LOCATION	REMARKS
								POWER (HP)	VOLT / PH		
DC-1	DONALDSON/TORIT, 20-5	WOOD	2,315	7.0	6,000	3,500	1.0	5	460 / 3	ON-GRADE	

REMARKS:

(1)

AIR OUTLET AND INLET SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	APPLICATION	(1) MAX AIRFLOW (CFM)	OUTLET / INLET	TYPE	MOUNTING SYSTEM	(2) DAMPER	(3) FACE SIZE (IN)	NECK SIZE (IN)	(4) MAX NOISE LEVEL (NC)	PATTERN	MAX SP (IN WG)	FINISH	MATERIAL	(5) MOUNTING HEIGHT (IN)	ACCESSORIES	LOCATION	REMARKS
CD-1	TITUS, OMNI	SUPPLY	110	1	7	1	NONE	24x24	6	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-2	TITUS, OMNI	SUPPLY	225	1	7	1	NONE	24x24	8	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-3	TITUS, OMNI	SUPPLY	400	1	7	1	NONE	24x24	10	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-4	TITUS, OMNI	SUPPLY	575	1	7	1	NONE	24x24	12	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
CD-5	TITUS, OMNI	SUPPLY	750	1	7	1	NONE	24x24	14	24	4-WAY	0.1	W	STEEL	CEILING	24x24 LAY-IN PANEL		(12)
SG-1	TITUS, 272RS	SUPPLY	155	3	2		NONE	9x9	6x6	20	-	0.1	W	STEEL				(6)
SG-2	TITUS, 272RS	SUPPLY	255	3	2		NONE	13x9	10x6	20	-	0.1	W	STEEL				(6)
SG-3	TITUS, 272RS	SUPPLY	305	3	2		NONE	15x9	12x6	20	-	0.1	W	STEEL				(6)
SG-4	TITUS, 272RS	SUPPLY	400	3	2		NONE	15x11	12x8	20	-	0.1	W	STEEL				(6)
SG-5	TITUS, 272RS	SUPPLY	415	3	2		NONE	13x13	10x10	20	-	0.1	W	STEEL				(6)
SG-6	TITUS, 272RS	SUPPLY	440	3	2		NONE	21x9	18x6	20	-	0.1	W	STEEL				(6)
SG-7	TITUS, 272RS	SUPPLY	500	3	2		NONE	15x13	12x10	20	-	0.1	W	STEEL				(6)
SG-8	TITUS, 272RS	SUPPLY	580	3	2		NONE	15x15	12x12	20	-	0.1	W	STEEL				(6)
SG-9	TITUS, 272RS	SUPPLY	710	3	2		NONE	21x13	18x10	20	-	0.1	W	STEEL				(6)
SG-10	TITUS, 272RS	SUPPLY	780	3	2		NONE	17x17	14x14	20	-	0.1	W	STEEL				(6)
SG-11	TITUS, 272RS	SUPPLY	845	3	2		NONE	21x15	18x12	20	-	0.1	W	STEEL				(6)
RG/EG-1	TITUS, 350RL	RETURN/EXHAUST	95	3	3		NONE	8x8	6x6	20	-	0.1	W	STEEL				(10)
RG/EG-2	TITUS, 350RL	RETURN/EXHAUST	125	3	3		NONE	12x8	10x6	20	-	0.1	W	STEEL				(10)
RG/EG-3	TITUS, 350RL	RETURN/EXHAUST	140	3	3		NONE	14x8	12x6	20	-	0.1	W	STEEL				(10)
RG/EG-4	TITUS, 350RL	RETURN/EXHAUST	160	3	3		NONE	14x10	12x8	20	-	0.1	W	STEEL				(10)
RG/EG-5	TITUS, 350RL	RETURN/EXHAUST	175	3	3		NONE	12x12	10x10	20	-	0.1	W	STEEL				(10)
RG/EG-6	TITUS, 350RL	RETURN/EXHAUST	190	3	3		NONE	20x8	18x6	20	-	0.1	W	STEEL				(10)
RG/EG-7	TITUS, 350RL	RETURN/EXHAUST	200	3	3		NONE	14x12	12x10	20	-	0.1	W	STEEL				(10)
RG/EG-8	TITUS, 350RL	RETURN/EXHAUST	275	3	3		NONE	16x16	14x14	20	-	0.1	W	STEEL				(10)
RG/EG-9	TITUS, 350RL	RETURN/EXHAUST	275	3	3		NONE	24x12	22x10	20	-	0.1	W	STEEL				(10)
RG/EG-10	TITUS, 350RL	RETURN/EXHAUST	300	3	3		NONE	20x16	18x14	20	-	0.1	W	STEEL				(10)
RG/EG-11	TITUS, 350RL	RETURN/EXHAUST	375	3	3		NONE	20x20	18x18	20	-	0.1	W	STEEL				(10)
RG/EG-12	TITUS, 350RL	RETURN/EXHAUST	410	3	3		NONE	26x18	24x16	20	-	0.1	W	STEEL				(10)
RG/EG-13	TITUS, 350RL	RETURN/EXHAUST	470	3	3		NONE	26x22	24x20	20	-	0.1	W	STEEL				(10)
RG/EG-14	TITUS, 50F	RETURN/EXHAUST	575	3	8	1	NONE	15x15	12x12	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
RG/EG-15	TITUS, 50F	RETURN/EXHAUST	975	3	8	1	NONE	19x19	16x16	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
RG/EG-16	TITUS, 50F	RETURN/EXHAUST	1725	3	8	1	NONE	24x24	22x22	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-1	TITUS, 350RL	TRANSFER	115	3	3		NONE	12x12	10x10	15	-	0.05	W	STEEL				(10)
TG-2	TITUS, 350RL	TRANSFER	140	3	3		NONE	14x12	12x10	15	-	0.05	W	STEEL				(10)
TG-3	TITUS, 350RL	TRANSFER	160	3	3		NONE	20x16	18x14	15	-	0.05	W	STEEL				(10)
TG-4	TITUS, 350RL	TRANSFER	200	3	3		NONE	26x14	24x12	15	-	0.05	W	STEEL				(10)
TG-5	TITUS, 350RL	TRANSFER	255	3	3		NONE	22x22	20x20	15	-	0.05	W	STEEL				(10)
TG-6	TITUS, 50F	RETURN/EXHAUST	575	3	8	1	NONE	15x15	12x12	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-7	TITUS, 50F	RETURN/EXHAUST	975	3	8	1	NONE	19x19	16x16	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		
TG-8	TITUS, 50F	RETURN/EXHAUST	1725	3	8	1	NONE	24x24	22x22	20	-	0.1	W	ALUMINUM	CEILING	24x24 LAY-IN PANEL		

OUTLET/INLET		TYPE				MOUNTING SYSTEM		DAMPER		FINISH	
1	DIFFUSER	1	SINGLE DEFLECTION	9	LOUVERED	1	T-BAR CEILING	N	NONE	M	MILL
2	REGISTER	2	DOUBLE DEFLECTION	10	HOODED	2	PLASTER/CONCRETE CEILING	BF	BUTTERFLY	W	MFR. STANDARD WHITE
3	GRILLE	3	FIXED BLADE	11	DOOR TRANSFER	3	PLASTER/MASONRY WALL	G	GRAVITY	S	MFR. SPECIAL COLOR
4	LOUVER	4	PERFORATED	12	BRICK	4	EXPOSED DUCTWORK	MP	MOTORIZED PNEUMATIC	A	ANODIZED ALUMINUM
5	PENTHOUSE	5	LINEAR	13	PUNKAH	5	METAL PANEL WALL	ME	MOTORIZED ELECTRIC	P	PRIME COAT (FINAL COAT BY GC)
6	VENT	6	PLENUM SLOT	14	LAMINAR	6	FLOOR	OB	OPPOSED BLADE	O	OTHER (SEE SPECIFICATIONS)
		7	PLAQUE	15	DRUM	7	ROOF	PB	PARALLEL BLADE		
		8	EGGCRATE			8	EXTERIOR STUD WALL	LL	LOW LEAKAGE, INSUL.		

REMARKS:

(1) SEE PLANS FOR ACTUAL INDIVIDUAL AIR QUANTITIES OF EACH DEVICE.

(2) IF DAMPER IS SCHEDULED 'NONE', EACH SUPPLY, RETURN, AND EXHAUST DEVICE TO HAVE A BALANCE DAMPER IN THE DUCT BRANCH TAKE-OFF UNLESS AN ASSOCIATED VAV BOX SERVES A SINGLE DEVICE.

(3) BORDER TYPES SHALL BE COMPATIBLE WITH CEILING OR WALL TYPES WHERE AIR DEVICE IS LOCATED. REFER TO ARCHITECTURAL PLANS AND ALL OTHER TRADES.

(4) ALL GRILLES AND DIFFUSERS SHALL NOT EXCEED NOISE CRITERIA LISTED (BASED ON 10 DB ROOM ATTENUATION) AND AT THE SCHEDULED MAXIMUM STATIC PRESSURE DROP.

(5) MOUNTING HEIGHT SHALL BE FROM FINISHED FLOOR TO BOTTOM OF OPENING.

(6) INDIVIDUALLY ADJUSTABLE AIRFOIL BLADE WITH 3/4" SPACING. FRONT BLADES PARALLEL TO THE SHORT DIMENSION. INITIALLY SET BLADES FOR APPROXIMATELY 30 DEGREE THROW.

(7) EXTERNALLY INSULATE PLENUM SLOT DIFFUSERS.

(8) PENCIL-PROOF GRILLE DESIGN, 7/32" BARS WITH 7/16" SPACING.

(9) 1/8" BARS WITH 1/4" SPACING.

(10) BLADES PARALLEL TO THE LONG DIMENSION WITH FIXED 30 DEGREE DEFLECTION AND 3/4" SPACING.

(11) AIRFOIL BLADES PARALLEL TO THE LONG DIMENSION WITH FIXED 45 DEGREE DEFLECTION AND 3/4" SPACING.

(12) INSULATE THE TOP OF THE DIFFUSER WHEN THE SUPPLY AIR TEMPERATURE IS 50 DEGREES OR LESS.

(13) RE-BALANCE EXISTING OUTLET/INLET TO INDICATED AIR FLOW.

PACKAGED ROOFTOP UNIT (RTU) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	NOM. CAP. (TON)	SUPPLY FAN			MIN. OUTDOOR AIR FLOW (CFM)	COOLING COIL							GAS HEATER - NAT. GAS					
			AIR FLOW (CFM)	ESP (IN WC)	TSP (IN WC)		EAT (°F)		LAT (°F)		NO. OF STAGES	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	EAT (°F)	LAT (°F)	NO. OF STAGES	CAPACITY (MBH)		GAS PRESS. (IN WC)	MIN. AFUE (%)
							DB	WB	DB	WB							INPUT	OUTPUT		
RTU-17	TRANE YHC	10	3,550	1.25	1.5	TBD	80.0	67.0	58.0	57.0	2	116.0	90.0	70	122	2	250	200	7	80
RTU-18	TRANE YHD	15	6,000	1.50	2.0	TBD	80.0	67.0	60.0	58.0	2	181.0	138.0	70	115	MOD	350	284	7	80
RTU-19	TRANE YHC	5	1,650	1.00	1.5	TBD	80.0	67.0	57.0	56.0	2	57.3	33.7	70	105	1	130	104	7	80
RTU-20	TRANE YHC	7.5	3,550	1.25	1.5	TBD	80.0	67.0	58.0	57.0	2	93.0	58.0	70	122	2	250	200	7	80
RTU-21	TRANE YHD	15	6,000	1.50	2.0	TBD	80.0	67.0	60.0	58.0	2	181.0	138.0	70	115	MOD	350	284	7	80
RTU-22	TRANE YHC	5	1,650	1.00	1.5	TBD	80.0	67.0	57.0	56.0	2	57.3	33.6	70	105	1	120	96	7	80
RTU-23	TRANE YHC	7.5	1,650	0.75	1.5	TBD	80.0	67.0	57.0	56.0	2	81.3	44.6	70	105	2	150	120	7	80

MARK	ELECTRIC...		FILTER TAG	REFRIG. TYPE	CONDENSER			RETURN/EXHAUST FAN		ELECTRICAL				ACCESSORIES	WEIGHT WITH CURB (LB)	LOCATION	REMARKS
	CAP. (KW)	NO. OF STAGES			AMB. TEMP. (°F)		MIN. EER	AIR FLOW (CFM)	ESP (IN WC)	TSP (IN WC)	VOLTS	PHASE	MCA	MOCP				
					MIN.	MAX.												
RTU-17	-	-	AF-17	R-410A	40	95	10.9	3,550	0.5	1.0	460	3	-	15	1,3,4,5,6,7,11	800	ROOF	MIDDLE SCHOOL
RTU-18	-	-	AF-18	R-410A	40	95	10.9	6,000	0.5	1.0	460	3	-	50	1,3,4,5,6,7,11	2,800	ROOF	ADMINISTRATION
RTU-19	-	-	AF-19	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	1,200	ROOF	VESTIBULE
RTU-20	-	-	AF-20	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	1,800	ROOF	FITNESS
RTU-21	-	-	AF-21	R-410A	40	95	10.9	6,000	0.5	1.0	460	3	-	50	1,3,4,5,6,7,11	2,800	ROOF	VESTBULE
RTU-22	-	-	AF-22	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	15	1,4,5,6,7,11	800	ROOF	MAINTENANCE
RTU-23	-	-	AF-23	R-410A	40	95	10.9	1,650	0.5	1.0	460	3	-	30	1,3,4,5,6,7,11	800	ROOF	AG LAB

ACCESSORIES			
1	DRY BULB ECONOMIZER CONTROL	7	STANDARD ROOF CURB
2	ENTHALPY ECONOMIZER CONTROL	8	VIBRATION ISOLATION ROOF CURB
3	POWER EXHAUST	9	SEISMIC ROOF CURB
4	DISCONNECT SWITCH	10	SUPPLY AIR SMOKE DETECTOR
5	CONDENSER COIL GUARDS	11	RETURN AIR SMOKE DETECTOR
6	15A GFI CONVENIENCE OUTLET		

REMARKS:

(1)

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MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL

515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019

PROJECT NO: 18268

CAD DWG FILE:

DRAWN BY: RRW

CHECKED BY: DJG

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SHEET TITLE:

HVAC SCHEDULES

SHEET NUMBER:

2-MS-602

MECHANICAL PIPING & VALVE SCHEDULE

SYSTEM MARK	SERVICE	ROOM TYPE	PIPING SIZE (IN)	PIPING: MATERIAL TYPE	WALL THICKNESS	ASME PIPING: STD	GRADE	TYPE	PRESS. CLASS	FITTING TYPE	ENDS	JOINT TYPE	VALVE: TYPE	CHECK VALVES	PRESS. CLASS	CONNECTION TYPE	BODY MATERIAL	TRIM MATERIAL	VALVE EQUAL TO: [MANUFACTURER, MODEL]	REMARKS
G	NATURAL GAS	OUTDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	MI	PLAIN	TH	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	- LOW PRESSURE (2 PSIG OR <)	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	-	INDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	MI	PLAIN	TH	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	-	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	NATURAL GAS	OUTDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	WS	PLAIN	SW	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	- HIGH PRESSURE (> 2 PSIG)	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
-	-	INDOORS	1/2 TO 2	BS	SCH 40	A 53	B	E or S	150#	WS	PLAIN	SW	2BV	-	125#	THREADED	BRONZE	BRONZE	APOLLO, 77-100	PAINT PIPE
-	-	-	2 1/2 OR MORE	BS	SCH 40	A 53	B	E or S	150#	WS	BEVELED	BW, FL	PV	-	125#	FLANGED	IRON	IRON	XOMOX TUFFLINE	PAINT PIPE
HWS/R	HEATING WATER SUPPLY/RETURN	ALL AREAS	3/4 TO 2	Cu	L	B 88	-	-	-	WCu	PLAIN	SD	2BV	SWING	125#	THREADED	BRONZE	SS	APOLLO 70-100/200 SERIES	-
-	- (HVAC)		2 1/2 OR MORE	BS	SCH 40	A 53	A or B	E or S	150#	WS,WC,FS	BEVELED	BW	1BV	SWING	125#	FLANGED	DUCTILE	SS	AMERICAN VALVE BALL VALVE	-
CD	HVAC CONDENSATE DRAIN	INDOORS	3/4 TO 2	BS	SCH 40	A 53	B	-	-	WW	PLAIN	BW	-	-	-	-	-	-	-	-
-	-		3/4 TO 2	PVC	SCH 40	D 1785	-	-	-	PS	PLAIN	SV	-	-	-	-	-	-	-	-
RL/RS	REFRIGERANT	ALL AREAS	ALL SIZES	Cu	ACR	B 280	-	-	-	WCu	PLAIN	BZ	-	-	-	-	-	-	-	-

MATERIAL TYPE		JOINT TYPE	
BS	BLACK STEEL	BW	BUTT WELD
SS	STAINLESS STEEL	SW	SOCKET WELD
GS	GALVANIZED STEEL	TH	THREADED
PE	POLYETHYLENE	FL	FLANGED
CU	COPPER	SF	SOCKET FUSION
PVC	PVC	BF	BUTT FUSION
		SD	SOLDERED
		BZ	BRAZED
		SV	SOLVENT WELD

FITTING TYPE			
CI	CAST IRON (THREADED) (ASME B16.4 FOR IRON, ASME A 351 FOR SS) (FLANGED) (ASME B16.1)	WC	WROUGHT CAST (FLANGES, ASME B16.5)
MI	MALLEABLE IRON (THREADED) (ASME B16.3)	FS	FORGED STEEL (FLANGES, ASME B16.5)
WS	WROUGHT STEEL (ASTM A 234 FOR STEEL, ASTM A 403 FOR SS)	PS	PVC SOCKET
PE	POLYETHYLENE (ASTM D 2683 (SOCKET) OR ASTM D 3261 (BUTT))	WCu	WROUGHT COPPER (ASME B 16.22)
WW	WELDED WROUGHT STEEL (ASTM A 774 FOR SS)		

ASME PIPING TYPE	
S	SEAMLESS
E	ELECTRIC RESISTANCE WELDED
F	FURNACE BUTT WELDED

VALVE TYPE	
1BV	ONE PIECE FULL PORT BALL VALVE
2BV	TWO PIECE FULL PORT BALL VALVE
3BV	THREE PIECE FULL PORT BALL VALVE
SBV	STEEL BODY BALL VALVE
NGV	NON-RISING STEM GATE VALVE
RGV	RISING STEM GATE VALVE
OGV	OSY GATE VALVE
BFV	BUTTERFLY VALVE
PV	PLUG VALVE

PIPING SYSTEM JOINING MATERIALS

1. PIPE-FLANGE GASKET MATERIALS: SUITABLE FOR CHEMICAL AND THERMAL CONDITIONS OF PIPING SYSTEM CONTENTS.
2. PIPE FLANGE GASKETS: ASME B16.21, NONMETALLIC, FLAT, ASBESTOS-FREE, 1/8IN MAXIMUM THICKNESS UNLESS SPECIFIED OTHERWISE.
   A. FULL-FACE TYPE: FOR FLAT-FACE, CLASS 125, CAST-IRON AND CAST-BRONZE FLANGES.
   B. NARROW-FACE TYPE: FOR RAISED-FACE, CLASS 250, CAST-IRON AND STEEL FLANGES.
3. FLANGE BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL, UNLESS OTHERWISE INDICATED.
4. PLASTIC, PIPE-FLANGE GASKET, BOLTS, AND NUTS: TYPE AND MATERIAL RECOMMENDED BY PIPING SYSTEM MANUFACTURER, UNLESS OTHERWISE INDICATED.
5. SOLDER FILLER METALS: ASTM B 32, LEAD-FREE ALLOYS. INCLUDE WATER-FLUSHABLE FLUX ACCORDING TO ASTM B 813.
6. GENERAL DUTY BRAZING FILLER METALS: AWS A5.8, BCUP SERIES, COPPER-PHOSPHORUS ALLOYS UNLESS OTHERWISE INDICATED.
7. REFRIGERANT PIPING BRAZING FILLER METALS: AWS A5.8, BAG1, SILVER ALLOY UNLESS OTHERWISE INDICATED.
8. WELDING FILLER METALS: AWS D10.12 FOR WELDING MATERIALS APPROPRIATE FOR WALL THICKNESS AND CHEMICAL ANALYSIS OF STEEL PIPE.
9. SOLVENT CEMENTS FOR JOINING PLASTIC PIPING: CPVC PIPING: ASTM F 493, PVC PIPING: ASTM D 2564. INCLUDE PRIMER ACCORDING TO ASTM F 656.

REMARKS:

(1) FITTING MATERIAL SHALL MATCH PIPING MATERIAL (EXCEPTION: MI FITTINGS SHALL BE USED FOR BS PIPING WHERE INDICATED).
(2) PRESS. CLASS LISTED IS MIN. REQUIRED. PROVIDE GREATER PRESS. CLASS VALVE AND PIPE SYSTEM IF PRESS. CLASS INDICATED IS NOT AVAILABLE FOR GIVEN VALVE AND PIPE TYPE.
(3) FLANGES SHALL BE RAISED FACE WITH SPOT FACED BOLT HOLES.
(4) AIR VENT, VACUUM BREAKER, AND SAFETY VALVE PIPING SHALL BE THE SAME AS THE CONNECTED SERVICE PIPING.
(5) PROVIDE GEAR OPERATORS FOR VALVES LARGER THAN 6" IN SIZE.

UNIT HEATER (UH) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TYPE	CAPACITY (MBH)	AIR FLOW (CFM)	AIR FLOW HOR. or VER.	AIR THROW (FT)	MOTOR (HP)	ELECTRICAL (VOLTS/PH)	EAT (°F)	LAT (°F)	STEAM: PRESS. (PSI)	STEAM: COND. (LB/H)	WATER: FLOW (GPM)	WATER: PD (FT)	WATER: EWT (°F)	WATER: LWT (°F)	FUEL FIRED: FUEL TYPE	FUEL FIRED: INPUT (MBH)	FUEL FIRED: OUTPUT (MBH)	FUEL FIRED: VENT TYPE	ACCESSORIES	(1) MTG. HEIGHT (FT)	WEIGHT (LB)	LOCATION	REMARKS
UH-7	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	
UH-8	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	
UH-9	STERLING, HS-84	HYD	51.7	1,400	HOR.	30	1/12	115/1	50		-	-	3.4	5	180	150	-	-	-	-	2,7,8	12	150	SHOPS	

TYPE			
HYD	HYDRONIC	XPL	EXPLOSION PROOF
STM	STEAM	WD	WASH DOWN
GF	GAS-FIRED		
EL	ELECTRIC		

VENT TYPE	
GV	GRAVITY VENT
PV	POWER VENT
SC	SEPARATED COMBUSTION

ACCESSORIES	
1	CONCENTRIC VENT ASSEMBLY
2	DOWN TURN AIR NOZZLE
3	STAINLESS STEEL HEAT EXCHANGER
4	STAINLESS STEEL BURNER
5	MANUFACTURER SUPPLIED MOUNTING HARDWARE
6	INTEGRAL THERMOSTAT
7	REMOTE THERMOSTAT
8	DISCONNECT SWITCH

REMARKS:

(1) MOUNTING HEIGHT SHALL BE FROM FINISHED FLOOR TO BOTTOM OF UNIT.

CABINET UNIT HEATER (CUH) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	AIR FLOW (CFM)	EAT (°F)	LAT (°F)	HEATING: MEDIA TYPE	HEATING: CAPACITY (MBH)	HEATING: CAPACITY (KW)	HEATING: FLOW RATE (GPM)	HEATING: FLOW RATE (LB/HR)	HEATING: EWT (°F)	HEATING: LWT (°F)	ELECTRICAL (VOLTS/PH)	FAN MOTOR (HP)	FAN MOTOR (RPM)	CABINET SIZE (IN): D	CABINET SIZE (IN): L	CABINET SIZE (IN): H	(1) MOUNTING: HEIGHT (FT)	(1) MOUNTING: ORIENT.	(1) MOUNTING: TYPE	INLET LOCATION	OUTLET LOCATION	LOCATION	REMARKS
CUH-10	MC QUAY, F-CHF-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	43	25	*-	VERT.	F	FRONT	FRONT	AREA A	WALL PLATE
CUH-11	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-6"	HORIZ.	C, R	FRONT	FRONT	AREA A	WALL PLATE
CUH-12	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-6"	HORIZ.	C, R	FRONT	FRONT	AREA A	WALL PLATE
CUH-13	MC QUAY, F-CHB-S04	400	55	-	WATER	31	-	2.1	-	180	150	115 / 1	1/12	1,285	9	46	28	9'-0"	HORIZ.	C, R	FRONT	FRONT	AREA C	WALL PLATE

MOUNTING TYPE	
C	CEILING
SR	SEMI-RECESSED
R	RECESSED
FS	FLOOR STANDING
W	WALL

REMARKS:

(1) MOUNTING HEIGHT IS FROM BOTTOM OF UNIT TO FINISHED FLOOR.

MECHANICAL PIPE & EQUIPMENT INSULATION SCHEDULE

MARK	SERVICE	PIPE SIZES (IN)	All EXCEPT, OUTDOORS: INSULATION TYPE	All EXCEPT, OUTDOORS: THICKNESS (IN)	All EXCEPT, OUTDOORS: JACKETING TYPE	OUTDOORS: INSULATION TYPE	OUTDOORS: THICKNESS (IN)	OUTDOORS: JACKETING TYPE	PIPE/EQUIP LABEL (Y/N)	HEAT TRACE	REMARKS
HWS/R	HEATING HOT WATER SUPPLY & RETURN	3/4 TO 1 1/4	I2	1 1/2	-	I2	2	J3	Y	NONE	-
	(141ºF - 200ºF)	1 1/2 OR MORE	I2	2	-	I2	3	J3	Y	NONE	-
RS / RL	REFRIGERANT SUCTION & LIQUID	ALL SIZES	I5	1		I2	1	J3	N	NONE	-
CD	COOLING COIL CONDENSATE DRAIN	ALL SIZES	I2	1	-	-	-	-	-	NONE	-

INSULATION TYPE	
I1	RIGID MOLDED HYDROUS CALCIUM SILICATE (ASTM C 533, TYPE I) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 AVAIL. MFR'S: JOHNS MANVILLE: THERMO-12 GOLD
I2	MINERAL FIBER, PRE-FORMED PIPE (ASTM C 547, Type I, Grade A) INCLUDING SSL-ASJ WITH PREFORMED FITTING JACKETS AVAIL. MFR'S: JOHNS MANVILLE: MICRO-LOK KNAUF INSULATION: 1000 PIPE INSULATION OWENS CORNING: FIBERGLAS PIPE INSULATION
I3	EXTRUDED POLYSTYRENE (ASTM C 578, TYPE IV or TYPE XIII) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 AVAIL. MFR'S: DOW CHEMICAL COMPANY; STYROFOAM. KNAUF INSULATION; KNAUF POLYSTYRENE
I4	RIGID POLYISOCYANURATE (ASTM C 591, TYPE I OR TYPE IV) FABRICATE SHAPES ACCORDING TO ASTM C 450 AND ASTM C 585 INCLUDING SSL-ASJ WITH PREFORMED FITTING JACKETS AVAIL. MFR'S: DOW CHEMICAL COMPANY (THE); TRYMER APACHE PRODUCTS COMPANY; ISO-25
I5	FLEXIBLE ELASTOMERIC (COMPLY WITH ASTM C 534, TYPE I FOR TUBE AND TYPE II FOR SHEET) AVAIL. MFR'S: AEROFLEX USA INC.; AEROCEL ARMACELL LLC; AP ARMAFLEX
I6	MINERAL FIBER PIPE & TANK (ASTM C 1393, TYPE II OR TYPE IIIA CATEGORY 2) INCLUDING ASJ AVAIL. MFR'S: CERTAINTEED CORP.; CRIMPWRAP JOHNS MANVILLE; MICROFLEX KNAUF INSULATION; PIPE AND TANK INSULATION OWENS CORNING; FIBERGLAS PIPE AND TANK INSULATION

JACKETING TYPE (FIELD APPLIED)	
J1	PVC, 30 MIL THICK, WHITE,,, ASTM D 1784 CLASS 16354-C, AVAIL. MFR'S: JOHNS MANVILLE; ZESTON P.I.C. PLASTICS, INC.; FG SERIES PROTO PVC CORP; LOSMOKE SPEEDLINE CORPORATION; SMOKESAFE
J2	PVC, 30 MIL THICK, COLORED
J3	ALUMINUM, 0.016" THICK, EMBOSSED, ASTM B 209, ALLOY 3003, 3005, 3105, OR 5005, TEMPER H-14, FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE
J4	STAINLESS STEEL, 304, 0.016" THICK, SMOOTH, 2B OR 4 FINISH, ASTM A 167 OR ASTM A 240 FACTORY FABRICATED FITTING COVERS AVAIL. MFR'S: CHILDERS PRODUCTS, DIV OF ITW PABCO METALS CORP.; SUREFIT. RPR PRODUCTS, INC.; INSUL-MATE

REMARKS:

CONVECTOR (C) SCHEDULE

MARK	MANUFACTURER, MODEL NUMBER	TOTAL CAP. (MBH)	EAT (°F)	MEDIA TYPE	EWT (°F)	LWT (°F)	MEDIA FLOW RATE (GPM)	MEDIA FLOW RATE (FT HD)	CABINET SIZE (IN): D	CABINET SIZE (IN): L	CABINET SIZE (IN): H	TOP STYPE	MTG. TYPE	(1) MTG. HEIGHT (IN)	FINISH	LOCATION	REMARKS
C-1	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-2	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-3	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-4	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-5	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	
C-6	RITTING, MODEL SL	3.1	60	WTR	180	160	0.3	5	6	40	32	S	W	4	W	SEE DWGS	

MOUNTING TYPE		TOP STYLE		FINISH		MEDIA TYPE	
W	WALL	F	FLAT	W	MFR. STANDARD COLOR	WTR	WATER
F	FLOOR	S	SLOPED	P	PRIME COAT (PAINT BY GC)	XX% EG	XX% ETHYLENE GLYCOL
		R	RECESSED UNIT	S	MFR SPECIAL COLOR	XX% PG	XX% PROPYLENE GLYCOL

REMARKS:

(1) MOUNTING HEIGHT IS TO BOTTOM OF CONVECTOR CABINET.
(2) SUBMIT MANUFACTURER'S STANDARD COLOR CHART TO ARCHITECT FOR COLOR SELECTION.

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MANAWA

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
515 E. 4th STREET
MANAWA, WI 54949

MARK	DATE

ISSUED: April 16, 2019
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: RRW
CHECKED BY: DJG

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SHEET TITLE:
PIPING SCHEDULES

SHEET NUMBER:
2-MS-611

1. Facility Summary

A. Description of facility:

i. District buildings include Manawa Elementary School (MES) serving Early Childhood-6th and Little Wolf Jr/Sr High School (LWJSHS) for grades 7th-12th, along with an unoccupied school structure that was previously the elementary school.

ii. Manawa Elementary School (ES) – 85,578 square feet

Date(s) of Construction:

- 1996 – Original Construction – 85,578 square feet
- 2000 – Telecommunications and Power Systems Upgrade
- 2016 – Roof Upgrade
- 2016 – Energy Efficiency Projects
- 2017 – Mechanical Upgrades

iii. Little Wolf Junior / Senior High School (HS) - 93,261 square feet

Date(s) of Construction:

- 1969 – Original Construction - 73,069 square feet
- 1983 – Energy Conservation Measures
- 1992 – Roof and Mechanical Upgrades
- 1996 – Building Addition - 20,192 square feet
- 2000 – Telecommunications and Power Systems Upgrade
- 2011/2012 – First School Year with Junior High Students
- 2015 – Energy Efficiency Projects and Mechanical Upgrades

iv. Unoccupied School - 43,542 square feet

Date(s) of Construction:

- 1973 – Original Construction – 31,810 square feet
- 1983 – Energy Conservation Measures
- 1992 – Roof and Mechanical Upgrades
- 1996 – Building Addition – 11,732 square feet
- 2000 – Telecommunications and Power Systems Upgrade
- 2011 – School Closure
- 2012 – Building Contents Auction

v. The school properties include three main school structures and several accessory structures including a well building, a storage garage, a ticket booth, and combination concessions / press box building. Outdoor athletic facilities include several non-regulated practice fields, a performance football field with aluminum bleachers on asphalt pads, an 8-lane 400-meter track, field event areas, and a softball/little league field with bleachers dugouts and storage building. An outdoor seating area for eating is located on the south side of the school immediately outside of the interior cafeteria. The trash / recycling dumpsters are located within a fenced and screened area on the south side of the school

immediately outside the kitchen delivery entrance. The school district utilizes a performance baseball and a performance softball field at Lindsey

i. Referendum passed November 2018 for $12,000,000 to fund the project.

B. Occupancy levels and schedule

i. The School District of Manawa serves a student population of approximately 701 students in grades 4-Year-Old Kindergarten-12th.

ii. Special events with high concentrated occupancy include assemblies in the primary Gymnasium for athletic competitions, ceremonies, and musical performances.

iii. Normal school occupancy September thru June, with significant use during the summer months.

C. Code Summary

i. The project is subject to Plan Review and Inspection through the State of Wisconsin, referencing the 2015 suite of International Building Codes with Wisconsin amendments.

ii. The buildings have no fire suppression system (sprinklers).

iii. Total building area of the project (approximate):

i. ES

Existing Building:	81,786	sqft (1 floor)
Remodeled Area:	1,418	sqft (Level 2)
Total Project Area:	81,786	sqft

ii. HS

Existing Building:	104,939	sqft (1 floor + partial bsmt)
New Construction:	11,223	sqft (2 additions)
Remodeled Area:	28,351	sqft (Level 2)
Total Project Area:	116,162	sqft

iv. The existing buildings are considered an unseparated occupancy, with some exceptions. Occupancy classifications include:

a. E (Primary): K-12 educational facility
b. A-2: Commons, A-3: Multipurpose, A-4: Gymnasium (bleachers)
c. B: Offices
d. S-1: Storage and Mechanical
e. New additions will be separated by 2-hour fire walls.

v. Construction Types:

i. New Additions: IIB (noncombustible unprotected)
ii. Existing Buildings: IIB (noncombustible unprotected)

2. Environmental and Sustainability Goals

A. Program target

i. Project will be informally tracked using LEED guidelines based on Version NCv4. Goal is to be at LEED silver level but will not be formally certified. The LEED tracking will apply to

the new construction. Fundamental and enhanced commissioning will be provided by a third-party consultant.

3. Energy and Water Efficiency Goals

A. Upgraded components and systems will be subject to review by Wisconsin's Focus on Energy program, through their rebate program.

B. Desired features or technologies to realize efficiencies include:

i. Upgrading existing light fixtures to LED technologies (all new fixtures in the new addition and remodeled areas will be LED).

ii. Replacement and new plumbing fixtures will utilize low-flow fixtures. Flush-valve water saving toilets are to be provided at 1.75 gpf or less with urinals at 0.5 gpf or less.

iii. Replace existing domestic water heaters and storage tank and replace with sealed combustion gas fired water heaters at the high school.

i. Variable Torque VFD limited to HVAC Air Handling (i.e. Fan or Blower). System must operate a minimum of 2,000 hours annually.

ii. Electronically communitive motors (ECM) for efficiency serving existing mechanical system.

i. Demand Controlled Ventilation for Air Handling Units and Single Zone RTU/AHU (If required by code, incentive not applicable)

ii. DX Cooling - High Efficiency Packaged Rooftop Units and Split System Air Conditioning Equipment (> 5.42 Tons); Refer to HVAC Catalog for EER and IEER to qualify.

iii. Consider the Focus on Energy's incentives program using their Express Building Tune-up (EBTU) measures for the existing High School's mechanical systems

a. Economizer Optimization
b. VFD fan motors Control Restoration
c. Valve Repairs – Hot Water
d. Weekday Schedule Optimization– Heating/Cooling
e. Supply air Temperature Resets – Heating/Cooling

i. Interior lighting power densities with new lighting will be 25% or better of the ASHRAE 90.1-2017 watts/SF lighting density allowances.

ii. Exterior lighting power density where applicable to the new construction will be 25% below ASHRAE 90.1-2017 maximum allowances.

iii. Lighting controls in the alterations/renovations *work areas* will follow requirements of ASHRAE 90.1-2017 and IECC 2015.

4. Indoor Environmental Quality Requirements

A. Indoor lighting requirements:

i. For new construction area: Lighting and window design to provide views and daylight.

ii. Ambient Light levels from electric lights will be as follows:

a. General use classrooms 40 foot-candles at work plane defined at 2.5'AFF
b. Science Labs and other task-intensive classrooms 50 foot-candles at work plane.
c. New Fitness Center - 30 foot-candles on the floor
d. Main Lobby and wide Corridors - 20 foot-candles on the floor
e. Stairwells and legal exist 10 FC MIN for normal power lighting and 1 FC min for emergency egress illumination

f. Commons/Cafeteria – 50-30-5 FC at work plane of 2.5" AFF adjustable via programmable dimming system
g. Mechanical and Electrical rooms average 20 FC as required by IES and NFPA. Note that emergency lighting is required in Electrical Room
h. Elevator equipment room – 20 FC min on the floor, elevator hoist way – 10 FC min at the elevator pit floor; also, 10FC min at the elevator door threshold as required by the elevator Code ACME 17
i. IT rooms – 5FC at the bottom of the Rack, otherwise 30 FC average at work plane of 2.5' AFF.

iii. Fixture types

a. Direct/indirect grid fixtures are desired for most areas; high-ceilinged rooms should have pendant fixtures at the appropriate height.

iv. Control needs

a. Multilevel, manual stepped lighting control of all regularly occupied rooms, with dimming systems for special requirements as identified by owner.

b. Motion sensors (dual function) for lighting control in offices and other support rooms.

v. Special applications/ design constraints

a. LED lighting systems are preferred for energy performance and reduced maintenance costs.

b. Indoor lighting to provide a CRI of at least 80. Light color to be 5000 Kelvin (cool) per owner requirements.

c. Light design should standardize on a small number of different types of lamps.

d. Lighting should be provided for all parking for security.

e. Ceiling fans are **not** to be provided unless specifically required by the HVAC system.

B. Thermal comfort requirements:

i. Temperature

a. Comfort in terms of thermal conditions is important for health and well-being as well as productivity for faculty and students.

b. Individual room controls are provided for thermal control in most regularly occupied rooms. Classroom units will have their own control.

c. Temperature settings range assumed to be from 65 to 75 °F in all areas.

d. Hot water fin tube radiation to be provided in selected exterior spaces that experience high heat loss and comfort issues in the Special Education areas and exterior classrooms.

ii. Humidity

e. Humidity control during the cooling season will be a byproduct of the cooling and reheat capability in the system. Humidity levels in the space will always be maintained less than 60 percent relative humidity. Humidifiers are not required for winter or seasonal humidity control as part of this design.

C. Ventilation and filtration requirements:

i. Any window replacement generally will not include operable units.

ii. The building will be ventilated to Wisconsin Department of Safety and Public Services Requirements and Wisconsin Department of Administration Division of Facilities

Development Standards. The minimum outside air requirements will meet or exceed the requirements of the Wisconsin Administrative Code, Chapter 364

iii. Central exhaust system will be provided serving restrooms, lockers, whirlpool, laundry and training rooms as a part of the Fitness Addition.

iv. Point-of-use exhaust will be provided for STEAM lab, AG Lab, maintenance space, science labs and vocational shops. Air filtration will be provided for the rooftop units with a minimum 2", MERV 13 pre-filters. Filter effectiveness and velocities shall be closely coordinated and matched with the ambient environment.

D. Occupancy HVAC control requirements:

i. Classrooms and offices to have individual temperature control.

ii. Room controls to be easily readable and simple to operate, with overrides governed by the Building Control System (BCS). The BCS will easily integrate with the global facility management software standard (Tridium N4), The BAS will control and monitor HVAC, and domestic hot water system (DHW). Existing whole building utility meters will not be integrated or monitored by BCS.

iii. The building will use a web-based direct digital control (DDC) system with electronic actuation for all valves and dampers. Direct digital controls with electric actuation will be used to control and monitor the rooftop units, booster coils, VAV boxes, and perimeter radiation. Temperature control to be at individual room level. The BCS will control and/or monitor the central mechanical equipment including air terminal devices. The BCS will enable remote access to the HVAC system.

iv. The BCS system will also have the ability to adjust setpoints of the system equipment and report alarm conditions to the system computer terminal and to send alarms to remote locations through a modem or internet connection.

v. The DDC system will monitor critical plumbing systems and equipment. This would include but not limited to sump pump alarms, water heater status, etc.

vi. HVAC and control systems to allow simultaneous heating and cooling within the building.

E. A quiet indoor environment is a priority in classrooms and learning spaces. Acoustic environment requirements are:

i. The building design and mechanicals will allow for an acoustical environment which does not negatively impact occupant productivity, communication, and privacy of staff. Criteria is based on 2011 ASHRAE Handbook, HVAC Applications, Chapter 48, Table 1; AHRI Standard 885-2008, Table 15:

ii. Noise in the classrooms should be controlled to low levels at NC-40.

iii. Noise in common areas should be controlled to low levels at NC-45.

iv. Noise transmission between rooms should be controlled with wall having an STC Rating of 60 for adjacency between mechanical rooms and occupied areas, and 50 between other adjacencies, or as otherwise required per code. Reverberation time requirements are <0.6 T60(sec), at 500 Hz, 1000 Hz, and 2000 Hz for classrooms, meeting rooms, and offices.

5. Equipment and Systems Expectations

A. Mechanical equipment requirements:

i. Owner recognizes the existing HVAC systems for High School are gas-fired rooftop units installed 2013-14. The new High School additions will have similar outdoor roof equipment serving the Administrative and Fitness Center areas.

ii. Owner anticipates using existing hot water boilers pending review of final capacity needs and the condition. It's not anticipated to replace the existing boilers for this project.

iii. Owner anticipates new mechanical equipment to be located the roof or other existing mechanical rooms; no new mechanical rooms are anticipated.

iv. Separate cooling systems are not required for any IT spaces at this time.

v. Unacceptable HVAC system types or equipment:

a. No chlorofluorocarbon CFC's or hydrochlorofluorocarbons HCFC refrigerants.

vi. Equipment efficiencies and designs shall meet IMC International Energy Conservation. The School District has a strong desire to install high efficiency cooling and heating systems.

vii. Consider the reuse of existing energy recovery systems between the ventilation outside-air intake and exhaust-air streams.

viii. Where possible utilize for motors that can meet or exceed NEMA Premium efficiency standards. Variable speed drives will be installed on all motors 5 hp or larger that have variable load and operate regularly. Outside air intakes will be located to prevent recirculation of pollutants emitted from toilet exhausts, fume hoods, vehicle exhausts, etc. from mixing with outside air entering the HVAC system.

ix. Designers and contractors will ensure sufficient access and clearances are provided to mechanical and electrical equipment in order to perform routine building maintenance services and repairs.

x. Rooftop units will be air balancing by a certified TAB contractor. HVAC Test and Balance will be performed after the building is completed.

xi. Contractors will furnish a full set of record documents, maintenance and calibration requirements, control protocols, etc. in a format that facilitates building operation by School District's maintenance staff. These documents will be updated at the end of construction to reflect any changes in the installation from the construction documents.

xii. All HVAC Systems will be commissioned by a 3rd Party to ensure proper operation. The commissioning process will use prescriptive forms for Functional Performance Tests. CxP will witnessing functional performance testing and recording the results and deficiencies.

B. Special daylighting, lighting, and other electrical equipment requirements:

i. See note above on LED lighting consideration.

ii. New windows to be selected to manage glare and solar heat gain.

C. Domestic Water

i. Additions to be served by extensions of the existing domestic water heating system.

ii. Hot water to receive water treatment to reduce hardness. Buildings currently have water softeners. No new softening equipment required.

iii. Hot water supply to use recirculation. Hot water to be circulated at minimum 140F to control Legionella and tempered to 120 F using mixing valves. Water shall be stored at 140° and run to a master mixing valve and circulated throughout the building at 120°.

iv. No gray water systems.

D. Wastewater Systems

i. Existing remodeled bathrooms will tie into existing waste piping but will be subject to inspection and repair or replacement as required.

E. Other system requirements:

i. Existing fire alarm system to be extended to serve new additions. IT, telecommunication, and security systems are also to be provided per owner's specifications.

ii. New electrical main service to be provided and will backfeed existing switchgear. Older panels of the "bulldog" brand will be replaced.

iii. The existing emergency generator will be replaced and is to provide backup for boilers and pumps. Emergency lighting will have battery backup.

6. Building Occupant and O&M Personnel Expectations

A. Day-to-day mechanical system operation by:
   i. Single in-house operator

B. Periodic mechanical system maintenance performed by:
   i. In house operator.
   ii. Expect some service to be handled by outside contractor(s)

C. Lighting system maintenance will be performed by:
   i. In house operator to change lamps
   ii. Light fixture and lamp selection will minimize the number of different lamps required for stocking. Stocking issues are reduced with the use of LED fixtures. All specified LED products will have a 5-year minimum warranty.

D. Training required for maintenance personnel:
   i. Scheduling
   ii. Space temperature adjustments and operating parameters.
   iii. Operation and maintenance of the HVAC system, including demand control features.
   iv. Operation and maintenance of any special equipment or systems.
   v. Demonstrate preventive and routine maintenance procedures as well as common repairs.

Project Description and Assumptions for School District of Manawa

Hoffman Project # 18-268

Design Development: 16 April 2019

Building Project

Included in Scope

The School District of Manawa has contracted with Hoffman Planning, Design & Construction, Inc., to design and build additions and renovations to their existing 4K-12 school buildings. Highlights of the project include:

Elementary School (ES)

- Building remodel of approximately 1,418 square feet:
    - Early childhood will be placed in existing classroom
    - Two existing classrooms with be combined to create the 4K classroom
    - A new accessible bathroom and new storage room will be created in the 4K classroom
    - Casework will be relocated, and sinks will be added in the 4K classroom (north end)
    - A new bathroom with roll-in shower and area for changing table will be created adjacent to the early childhood classroom
    - New access doors between the OT/PT, early childhood and special education classrooms
- Site remodel
    - Bus entry, exit and drive are separate from visitor and parent entry and drive
    - Additional area behind building for bus traffic and turn-around; area is used during the day for playground and deliveries
    - New parking and sidewalks
    - Gate separates bus traffic from other traffic
    - Addition of 5 parking spaces from existing parking lot size
    - North end of parking area has been revised to turn parking direction
    - Bus drive has been revised to ease turns

Middle/Highschool (HS)

- Two building additions totaling approximately 11,223 square feet:
    - A new North main entry leading into a new administration area with offices, conference rooms and work areas; approx.. 5550 square feet.
    - A fitness addition; approx.. 5673 square feet.
        - Create new two-story entry from west parking lot including open stairway to second level and elevator serving existing locker rooms area and main floor of school
        - Create new school and community fitness center with separate entrance that can be open without opening the entire school
        - Create changing rooms and locker area for community members to use fitness center
        - Allow for future addition of fitness mezzanine inside new fitness center
        - Old weight room area is available for storage and other uses
- Several remodeled programmed areas:
    - Shop area
        - New student bathrooms created in this area
        - New staff bathroom created
        - Convert shop storage rooms into maintenance shop with exterior overhead door and interior doors
        - Create Ag activity lab with food science stations

        - Create Ag lab for animal and plant sciences with exterior overhead door and windows
        - Provide new electrical and ventilation for revised metal shop
        - Provide new electrical, ventilation and dust collection for STEAM and woods lab with windows and doors to promote collaboration
    - Stage/ Commons area
        - Provide new curtains, lighting and sound system for stage area
        - Provide new finishes for commons
        - Fill in pit floor in band room
        - Provide 2 new ramps up to stage level. One from commons and one from the band room utilizing an overhead coiling door for access to the stage.
    - Special Education
        - Remove risers and convert computer lab into 2 special education classrooms
        - Remove riser and convert IT workroom into special education classroom
        - Construct living skills area with kitchenette and laundry areas
        - Construct accessible toilet room as part of the suite
    - Collaboration area
        - Provide high school collaboration area by removing walls from two classrooms
        - Construct quiet study or collaboration room
        - Remove accordion partitions and construct permanent walls in existing classrooms
        - Provide sliding glass doors in existing walls to promote access to collaboration areas
        - Provide flexible furnishings and writable walls in collaboration area
    - Administration Area
        - Secure entry concept where all visitors must travel through the office to gain access during school hours
        - New entry is more open and welcoming
        - New addition houses offices for administration to create space internally for middle school area
        - New space includes bathrooms for middle school area
        - Spaces incorporate all high school and middle school administrative spaces in one area
    - Middle School
        - Middle school is separated from the school by doors at both ends of the corridor
        - Middle school lockers will be contained within the middle school area
        - Toilet rooms and staff toilet are provided within the middle school area
        - Provide middle school collaboration area by removing walls from two classrooms
        - Provide sliding glass doors in existing walls to promote access to collaboration areas
        - Provide flexible furnishings and writable walls in collaboration area
        - Provide new science lab for middle school
    - Science area
        - Remove existing lab stations and casework
        - Provide new fixed classroom casework for lab stations with movable lab tables for flexibility
        - Update science lab infrastructure including electrical, plumbing, gas and ventilation
        - Provide lab stations for 28 students in all labs including new middle school lab
- Renovations of building Mechanical, Electrical and Plumbing systems:
    - NOTE: These systems will be bid out to responsible design-build contractors; scope and major equipment will be identified but the contractors will complete the final design.
    - .
    - Replace existing domestic boilers and storage tanks with sealed combustion gas fired water heaters at high school.
    - Add sinks and gas outlets at each station in room FCS Lab C-400 at high school.

- Installation of five (5) new gas-fired VAV rooftop units in HS for the following areas:
  - School District Administration area
  - Middle School – Classroom
  - Vestibule C-140
  - AG Lab F-330A
  - Maintenance Area F-332
- Rooftop units will be high efficiency units with R-410A refrigeration and natural gas for heating/cooling. The following features:
  - Economizer strategy.
  - Power relief fan.
  - Carbon dioxide sensor (CO2) for demand ventilation.
  - Filtration will be minimum 2-inches, MERV 13 for ventilation
- Installation of variable volume air terminals in HS for the following:
  - School District Administration area
- Installation of heating hydronic terminals units in HS for the following areas:
  - Convectors in Classrooms and Special Education areas
  - Unit heaters in the vocational shop areas.
  - Cabinet unit heaters in the vestibules/
- Extension of existing hot water distribution system in HS to the new terminal heating devices.
- Air distribution replacement for rooftop unit RTU-8 serving Middle School classrooms
- Air distribution replacement for rooftop unit RTU-9 serving Special Education areas.
- Reuse of existing energy recovery system ERV-3 serving Middle School restrooms.
- Relocate fume exhaust hood from MES and install new exhaust fan serving MS C-124.
- Point-of-use exhaust will be provided for STEAM lab, AG Lab, maintenance space, science labs and vocational shops.
- Central exhaust system will be provided serving restrooms, lockers, whirlpool, laundry and training rooms as a part of the Fitness Addition.
- Replacement of cyclone Dust Collector.
- Extension of dust collector exhaust duct system and collection attachment points to woodworking equipment in STEAM/Woods in F-319.
- Destratification fans serving the high bay areas in Fitness Center LL-104 and Lobby A-101 Replace ceiling mounted indoor air handling unit AHU-7 indoor unit and DX condensing unit serving District School offices ES.
- Replacement of hydronic valves for PICV actuators serving all existing and new heating terminal in HS.
- All new rooftop unit packaged controls will be integrated by BACnet into new BAS.
- Building Automation System (BAS) replacement to new Tridium N4 platform in HS/ES.
- Air balancing by a certified TAB contractor. HVAC Test and Balance of new and existing system will be performed after the building is completed.
- HVAC systems will be commissioned by a 3rd Party.
- Existing electrical service and Main Switchboard to remain. Additional switches in the MSB will be required; selective replacement of the original to the building existing panel and transformers within work areas (HS)
- New electrical and plumbing infrastructure accommodating renovations and additions.
- Short circuit analysis and Arc Flash study to be performed on the entire electrical system.
- Horizontal cabling (technology,) extensions for the new addition and renovated spaces as required for space usage.
- Complete FA systems replacement in HS and ES,
- New connections for the additional HVAC equipment in HS.
- New Lighting and associated code required controls in all work areas and new addition
- Upgrades to the emergency egress lighting and associated wiring in HS.
- New Power Panels in Metal Sop, STEAM and STEM shops and associated power distribution and branch wiring in HS.
- New dimming system and associated wiring in HS.

    - Paging System upgrades repairs or replacement
    - New Wireless Clock System serving HS and ES
- Miscellaneous deferred maintenance items, as itemized in the project budget.
- The project work will be occurring over summer 2019 (site, demo of unoccupied building), 2019 - 2020 school year (additions, remodeling) and summer 2020 (addition, site)

Code Analysis

The building additions and areas of renovation will be designed to meet current building code requirements. Other areas of the building will continue to be governed by the requirements of the codes in force at the time of their construction.

Governing codes include:

- Wisconsin Building Code, which references the following with amendments:
- International Building Code Suite, 2015 edition
- IBC 117.1, Accessibility Code, 2011 edition
- NFPA 70, National Electrical Code, 2014 edition

Building Parameters include:

- Primary occupancy group
    - E, Educational Facility
- Active unseparated uses in the existing building include A-2, A-3, A-4 (assembly); B (offices); S-1 (storage and mechanical).
- Construction type
    - Type IIB (non-combustible, unprotected) – Additions;
    - Type IIB (non-combustible, unprotected) – Renovated areas and existing building
- Fire Suppression – No fire suppression existing
    - No fire suppression will be provided in the additions as they fall below the sprinklered area requirements and are separated from the existing building by 2-hour fire walls.
- Allowable area and heights (unsprinklered conditions without modifications):
    - E occupancy: 14,500 sf per floor, 55 feet height, 2 stories
- UL Assemblies intended for use in this project include:
    - U905 (masonry block or concrete) walls for firewalls.
    - U419 (interior metal stud walls)

Local Building Review Jurisdiction:

The facilities are located in the City of Manawa WI.

There is no formal building plan review at the city level, however a courtesy review is requested along with a review by the fire marshal prior to issuing building permits. A site plan review is required prior to permitting.

State Review and Inspection:

The State of Wisconsin Department of Safety and Professional Services (DSPS) will review and approve the building plans, and a State Inspector will provide inspection services for the project. Approved plans are required for issuance of the building permit by Manawa, and a final approved inspection is required for an occupancy permit.

Preliminary code assumptions

- The existing building masonry exterior walls will be used as 2-hour fire walls at each location for reasons related to maximum allowed area for the occupancy type; these will serve as horizontal exits. Openings will be 90-minute rated.
- New corridor walls in the additions will be built as 1-hour partitions with 20-minute openings.

General - Site Description and Specifications

Included in Site Scope

- The current Site Concept and building additions assumes no changes to the property lines, setbacks, or other zoning requirements. No additions will be constructed closer to the property lines or setbacks than current existing conditions.
- The primary vehicular access points into the site will not be changed from their current locations, though the driveway aprons may be modified.
- The new building additions will be constructed in two distinct areas:
    - West: New Fitness addition
    - North: New main entry and administration
- Removal of trees may be required for the additions and site renovations. Trees to remain will be protected.
- Concrete paved walks will be located to provide safe movement of students at the bus drive and around the playgrounds. Other exterior paths and walkways will be as indicated on the current site drawings. Site lighting will be provided for parking and pedestrian areas that meets the "night sky" initiatives, local requirements, and LEED.
- Landscaping will consist primarily of replacement turf, whether seeded or sodded; additional plantings, trees and associated vegetation would be the responsibility of the District.
- Roof drains will be connected to underground storm drainage with both overflow drains and scupper overflows depending on location. Stormwater management will be provided to meet state DNR requirements.

Not Included in Site Scope

- Public utility or public street improvements
- Improvements to athletic fields, other than new fencing required adjacent to the scope of work.
- Reconstruction or replacement of any existing site pavements, utilities, site lighting, site structures, landscaping, or other site features on the District property, that are not associated with the current project

General - Structural Description and Specifications

- Poured concrete foundation frost walls with perimeter below-grade rigid insulation, including deeper or stepped foundations as required adjacent to existing foundations.
- Concrete slab-on-grade w/ gravel base course and vapor barrier.
- Office and lobby addition- conventional structural steel frame, moment connections, steel joist, metal deck with non-bearing light gage stud framing cladding.
- Fitness addition- conventional structural steel frame, moment connections, steel joist, metal deck with non-bearing light gage stud framing cladding. Masonry elevator shaft and poured concrete slab over metal deck and steel beams for the first-floor framing system.
- Existing exterior masonry walls to be used as two-hour fire-rated separation between the additions and existing building, including rating of any penetrations or openings.
- Steel framing systems at both additions will be separate and independent of the existing building.

General - Building Envelope Description and Specifications

- At the additions, exterior walls will be of steel stud construction, consisting of steel studs, exterior gypsum board, closed cell spray foam insulation, and either a ground face masonry brick veneer or ribbed, concealed fastener metal panels.

- All exterior walls will be insulated to a minimum R-21 with continuous spray foam insulation on the exterior side of the substrate.
- New and replacement windows will be thermally-broken aluminum storefront assemblies, black/dark bronze anodized color, with high-performance insulated glazing.
- New roof systems will be sloped for drainage and include a single-ply adhered or mechanically-fastened EPDM membrane installed over rigid insulation; this includes replacement roofing. Roof drains will be provided as required and be connected to the underground storm drainage system, with scupper overflows. System will include parapets, metal flashings, copings, and trim as required for the building design.
- All new areas will be insulated to a minimum R-30 with rigid insulation.

General – Interiors Description and Specifications

Partitions

- Interior partitions will consist of either steel studs with 5/8" gypsum wallboard finished for paint, or running bond CMU walls with paint.
- Partitions will be insulated for sound as required between rooms, providing a minimum STC rating of 50. Doors and other openings will not be specifically designed with sound-controlling hardware.

Floors

- Depending on specific spaces, flooring will consist of carpet tile, LVT, epoxy, sealed concrete, rubber, ceramic tile or sheet vinyl flooring.
- Wall base will generally be vinyl. Epoxy flooring will be installed to cove up the wall to provide an integral base.

Ceiling Finishes:

- Most rooms and corridors will have 2' x 2' suspended acoustical tile ceilings. Some areas depending on program requirements will have an open structure, while others will keep existing conditions.
- Dropped headers with gypsum board will be provided to separate changes in ceiling height or intersecting and adjacent rooms/spaces that do not have walls separating them.
- Rooms with higher normal humidity or those requiring washable surfaces (such as restrooms) will be primarily 2'x2' suspended moisture resistant ceiling tile.

Doors/Borrowed Lites:

- Public interior doors: Doors will be flush, solid core wood veneer with hollow-metal frames and commercial grade (mortise) hardware. Finishes and styles will be chosen by the Owner.
- Public exterior doors: Doors will be a combination of painted steel insulated for utility and service doors, and aluminum storefront for high-traffic entrances. Most will use egress hardware (panic devices) and electronic access control. The main entry will include secure entry hardware and automatic operators.
- Fire-rated doors will be provided as required, including rated glazing. Interior borrowed lites will be hollow-metal frames. Depending on location and requested configuration, doors may include sidelites and/or lites in the doors.

Casework:

- Generally, new casework will be custom plastic laminate in colors as selected. Countertops will also be plastic laminate, with solid surface or epoxy as an option in selected areas.
- Selected existing casework may be relocated. If necessary, new countertops may be provided depending on the new configuration.

Specialties:

- Interior signage for new and renovated areas will be provided to match existing; room numbering to be verified with owner.

- Baked enamel steel toilet partitions will be specified as base bid, with an option to upgrade to solid plastic (HDPE) partitions.
- Commercial grade stainless steel toilet accessories will be provided in new and renovated restrooms. Soap, paper towel, and toilet paper dispensers, as well as waste receptacles, will be provided by owner and installed by the contractor.
- Fire extinguishers provided as required by code. Safety specialties, including emergency eyewashes and showers, fire blankets, etc. will be provided in rooms with special hazards.
- A roof access hatch and ladder will be installed at the fitness addition.

See Room Data Sheets for outfitting of specific rooms

Toilet Rooms
- Floor: Epoxy Flooring, Ceramic tile at showers (Ceramic tile floor @ ES)
- Base: Epoxy Cove Base
- Walls: Epoxy painted masonry or drywall. Ceramic tile at showers and @ ES
- Ceiling: 2x2 suspended vinyl-coated tile.
- Doors: Existing or solid core wood with painted hollow metal frame and commercial-grade hardware.
- Partitions: Baked-enamel steel (base bid) or alternate solid plastic, with stainless or cast hardware.
- Accessories: Grab bars, mirrors, sanitary napkin disposal. (Dispensers provided by owner.)
- Wall-hung porcelain lavatories. Faucets to be manual, metering type.
- Wall-hung toilets with manual or sensor flush valves.
- Lighting: 2x4 recessed direct-indirect fixtures.

General Corridors
- Floor: LVT (Alternate) or Stained Concrete (Base), Carpet collaboration
- Base: Vinyl
- Walls: Painted drywall/plaster, CMU or brick.
- Ceiling: 2x2 suspended acoustical tile or existing to remain.
- Lighting: 2x4 recessed direct-indirect fixtures.

Entry and Lobby
- Flooring: LVT (Alternate) Stained Concrete (Base) Walk-off carpet tile in vestibules.
- Base: Vinyl.
- Walls: Painted drywall, CMU and brick.
- Ceilings: Combination 2x2 suspended acoustic tile with drywall soffits and bulkheads, ceiling clouds and painted open structure for volume.
- Entry Doors: Black/Dark bronze aluminum storefront with full glazed lites, transoms and clerestory windows. Egress hardware; secure entry with automatic openers.
- Other Doors: Solid core wood with painted hollow metal frames and commercial grade hardware.
- Lighting: Generally recessed direct-indirect fixtures with accent can and indirect fixtures. Suspended linear pendant lighting in high bay exposed structure.

Office areas
- Flooring: Carpet tile. Work Room, ISS, Nurse, Break, Stained concrete (Base) LVT (Alternate)
- Base: Vinyl.
- Walls: Painted drywall or CMU.
- Ceiling: 2x2 suspended acoustical tile.
- Doors: Solid core wood with painted hollow metal frame and commercial-grade hardware
- Lighting: 2x4 recessed direct-indirect fixtures.
- Sinks: Stainless steel double compartment drop-in with manual faucet.

Classrooms

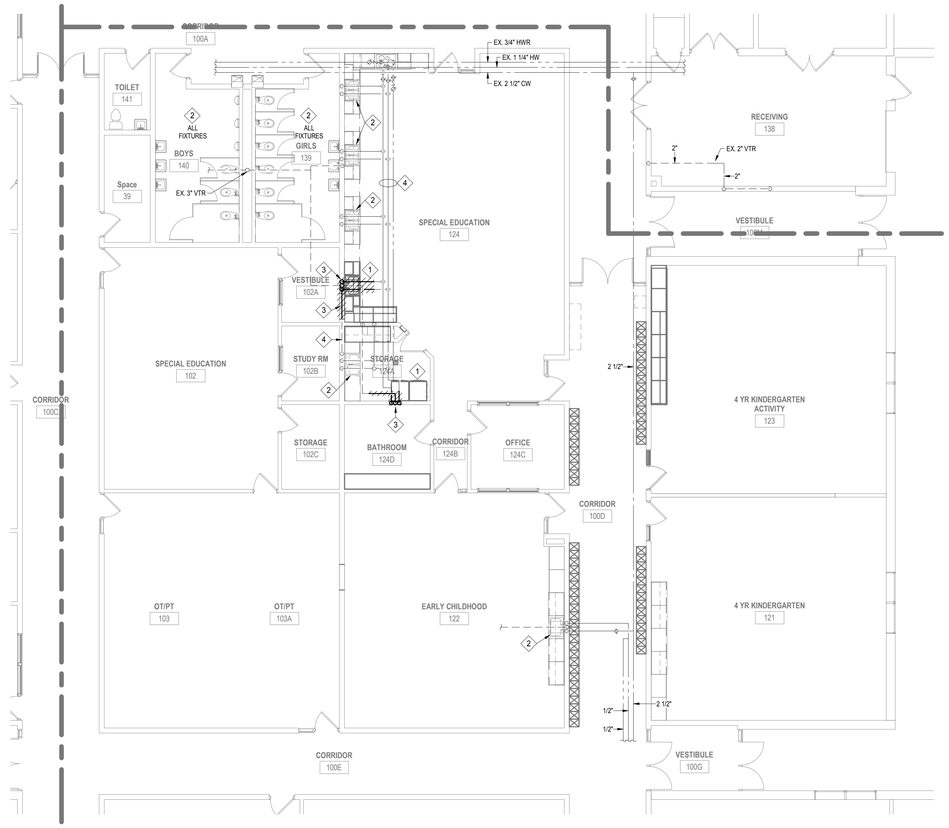
- Floor: Carpet (MS Classrooms), Stained Concrete (NW Classroom and HS Classrooms). Ceramic tile (ES 4K) Carpet Special Ed (ES)
- Base: Vinyl.
- Walls: Painted drywall or CMU.
- Ceiling: 2x2 suspended acoustical tile.
- Solid core wood doors, painted hollow metal frames and commercial-grade hardware.
- Lighting: 2x4 recessed or linear pendant direct-indirect fixtures.
- Plastic laminate casework and countertops as designed. Solid Surface counters in selected areas.
- Sinks: Stainless steel drop-in.

STEAM:

- Floor: Stained Concrete
- Base: Vinyl
- Walls: Painted CMU.
- Ceiling: Exposed
- Lighting: 2x4 recessed direct-indirect fixtures.
- Plastic laminate casework and countertops as designed.
- Sinks: Semi-circular wash fountain, Three compartment stainless steel sink, with faucet and sprayer (Activity room), Laundry tub with faucet (Ag Lab).
- Appliances: Residential-grade: Glass-top electric ranges with central power lock-out, recirculating range hoods and microwaves for kitchenettes. Single pair top-load washer and dryer, 36”wide “French door” refrigerators with bottom freezer and icemaker, single dishwasher, single electric cooktop.

KEYED DEMOLITION NOTES:

1. EXISTING PLUMBING FIXTURE AND ASSOCIATED PIPING TO BE REMOVED TO BELOW FLOOR, ABOVE CEILING TO STRUCTURE, AND CAPPED OR PLUGGED.
2. EXISTING PLUMBING FIXTURE TO REMAIN.
3. EXISTING PIPING TO BE REMOVED.
4. EXISTING PIPING TO REMAIN.

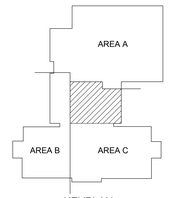


1 FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA C

1/8" = 1'-0"

PLUMBING SHEET INDEX

1-PD-101	PLUMBING DEMOLITION PLAN
1-PL-101	PLUMBING NEW WORK PLANS



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HEC Project Number 19-1004.00

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 1 - MANAWA ELEMENTARY SCHOOL
800 BEECH STREET
MANAWA, WI 54949

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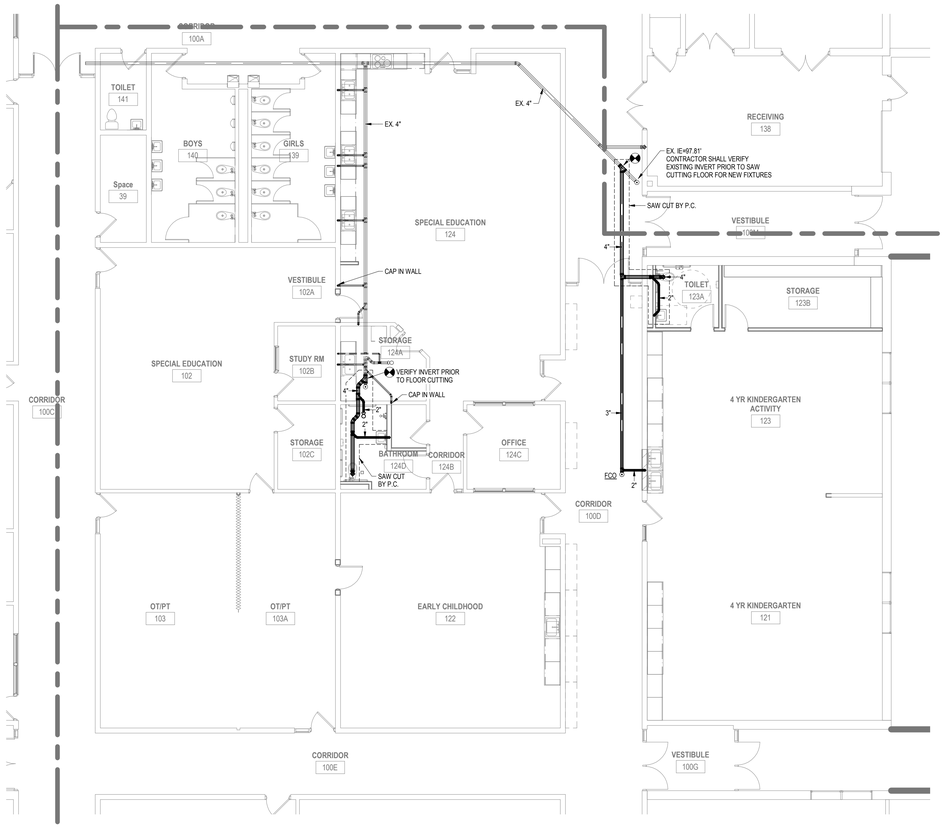
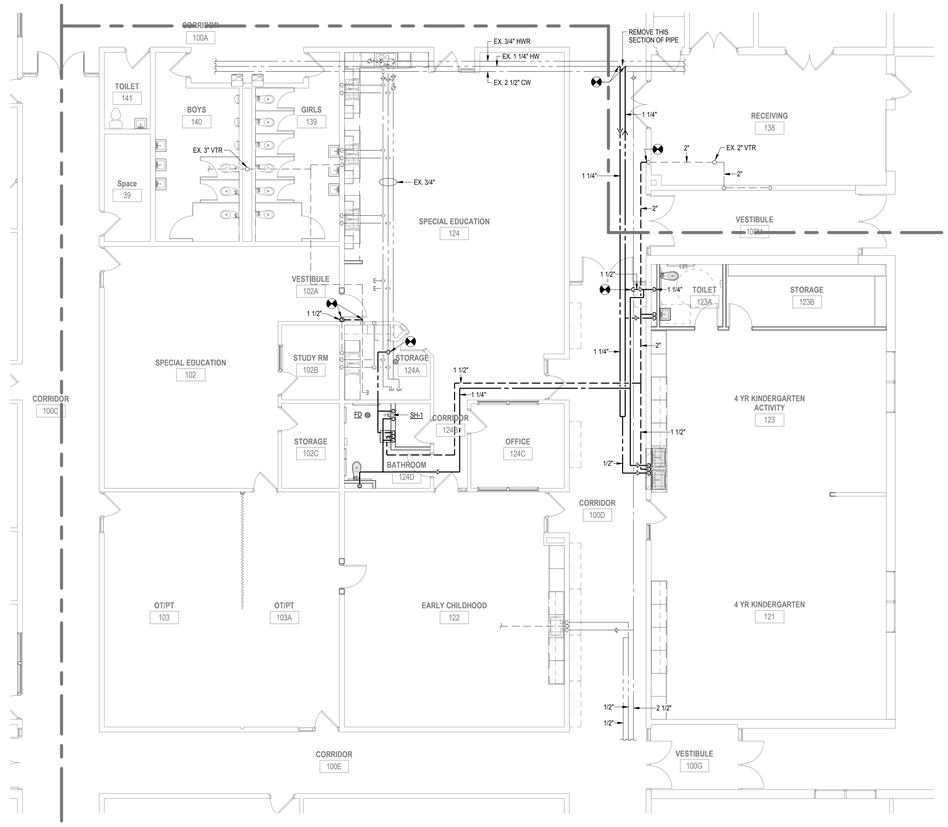
SHEET TITLE:
PLUMBING DEMOLITION PLAN

SHEET NUMBER:
1-PD-101



1 FOUNDATION PLUMBING PLAN - AREA C
1/8" = 1'-0"



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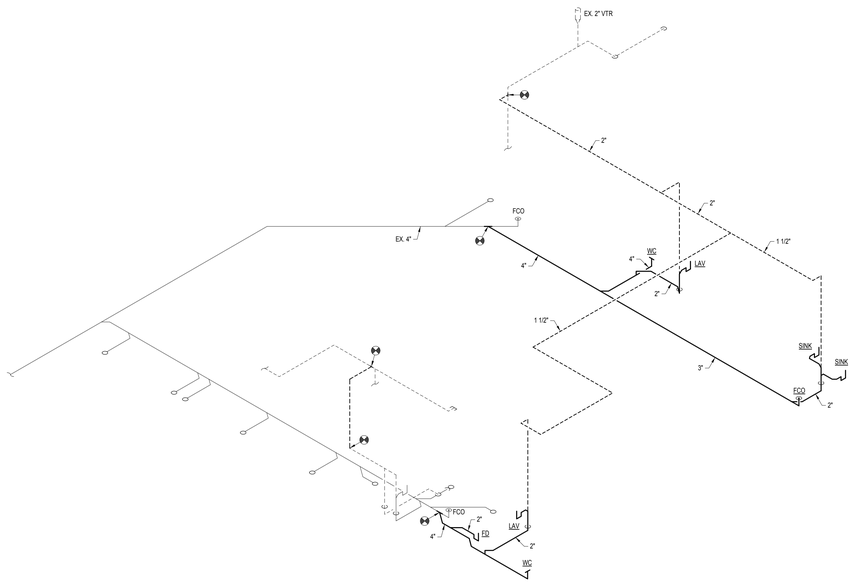
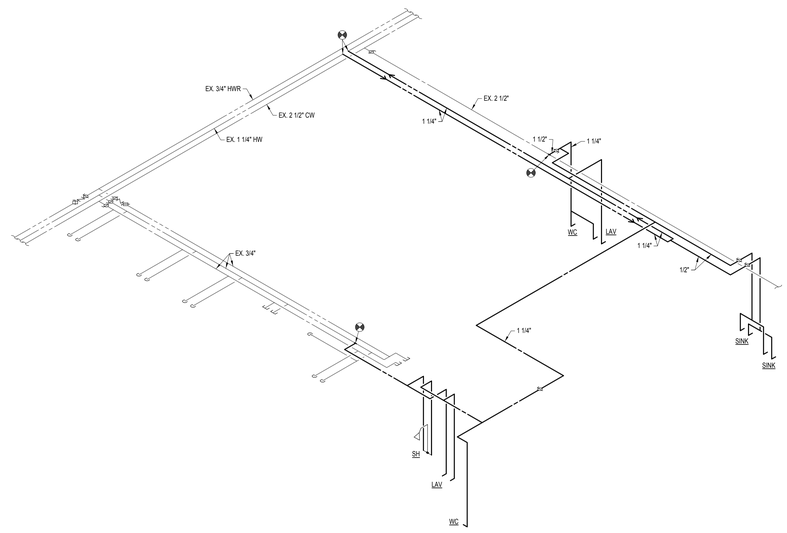
1/8" = 1'-0"



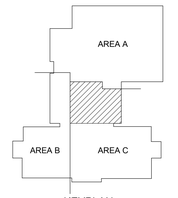
3 WASTE & VENT PIPING ISOMETRIC
NTS



4 WATER PIPING ISOMETRIC
NTS

PLUMBING LEGEND

SYMBOL	ABBR.	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
	W	SANITARY PIPING ABOVE GROUND
	W	SANITARY PIPING BELOW GROUND
	V	SANITARY VENT PIPING ABOVE GROUND
	V	SANITARY VENT PIPING BELOW GROUND
	ST	STORM PIPING ABOVE GROUND
	ST	STORM PIPING BELOW GROUND
	UP	PIPING UP
	DN	PIPING DOWN
	C.O.	CLEANOUT
	HB / WH	HOSE BIBB / WALL HYDRANT
	FCO	FLOOR CLEANOUT
		BALANCING VALVE
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
	FD	FLOOR DRAIN
	HD	HUB DRAIN OR SITE DRAIN
	RD	ROOF DRAIN
IE=00.00'	I.E.	INVERT ELEVATION
		POINT OF CONNECTION OF NEW PIPING TO EXISTING
		SHOCK ARRESTOR
		FIXTURE UNIT TAGS
	WC	WATER CLOSET
	LAV / L	LAVATORY
	MB	MOP BASIN
	SINK / SI	SINK
	UR	URINAL
	SH	SHOWER



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SHEET TITLE:
PLUMBING NEW WORK PLANS

SHEET NUMBER:
1-PL-101

GENERAL NOTES - DEMOLITION

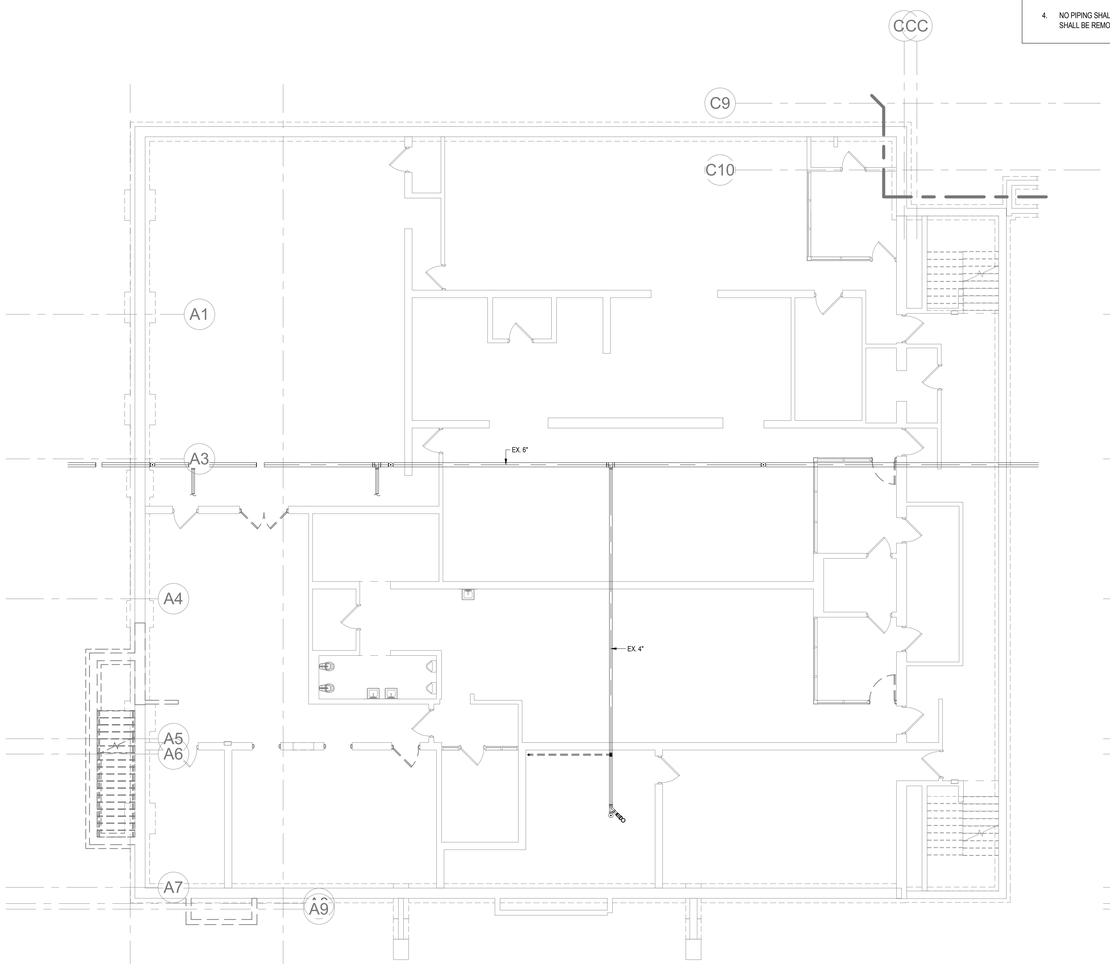
1. THE EXTENT OF THE EXISTING PIPING, VALVES, EQUIPMENT, ETC MAY NOT BE SHOWN IN ITS ENTIRETY. EXISTING PIPING SHOWN ON PLANS WAS TAKEN FROM EXISTING PLANS AND IS APPROXIMATE. FIELD VERIFY EXACT SIZE, LOCATION, AND CONFIGURATION OF EXISTING PIPING.
2. IT IS THE INTENT OF THESE DOCUMENTS THAT FIXTURES DESIGNATED TO BE REMOVED SHALL INCLUDE THE REMOVAL OF ALL INCIDENTAL BRANCH PIPING SERVING THAT FIXTURE OR FIXTURES.
3. FIELD VERIFY ALL PLUMBING EQUIPMENT, FIXTURES AND ASSOCIATED PIPING, ETC. TO BE REMOVED.
4. NO PIPING SHALL BE ABANDONED IN PLACE. ALL UNUSED EXISTING PIPING SHALL BE REMOVED.

PLUMBING DEMO LEGEND

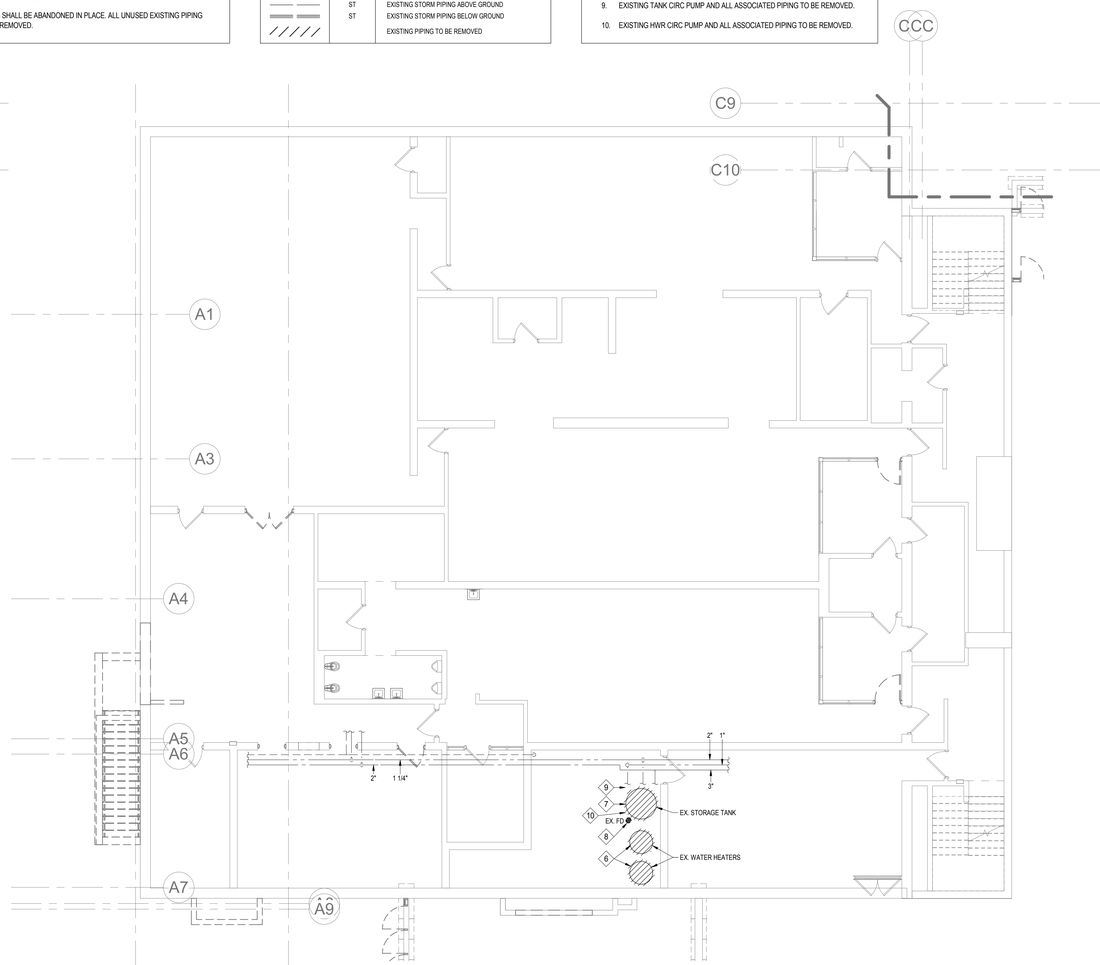
SYMBOL	ABBR.	DESCRIPTION
	CW	EXISTING COLD WATER PIPING
	HW	EXISTING HOT WATER PIPING
	HWR	EXISTING HOT WATER RETURN PIPING
	W	EXISTING SANITARY PIPING ABOVE GROUND
	W	EXISTING SANITARY PIPING BELOW GROUND
	V	EXISTING SANITARY VENT PIPING ABOVE GROUND
	V	EXISTING SANITARY VENT PIPING BELOW GROUND
	ST	EXISTING STORM PIPING ABOVE GROUND
	ST	EXISTING STORM PIPING BELOW GROUND
		EXISTING PIPING TO BE REMOVED

KEYED DEMOLITION NOTES:

1. EXISTING PLUMBING FIXTURE AND ASSOCIATED PIPING TO BE REMOVED TO BELOW FLOOR, ABOVE CEILING TO STRUCTURE, AND CAPPED OR PLUGGED.
2. EXISTING PLUMBING FIXTURE TO REMAIN.
3. EXISTING PIPING TO BE REMOVED.
4. EXISTING PIPING TO REMAIN.
5. EXISTING WALL HYDRANT TO BE REMOVED.
6. EXISTING WATER HEATER AND ALL ASSOCIATED PIPING TO BE REMOVED.
7. EXISTING STORAGE TANK AND ALL ASSOCIATED PIPING TO BE REMOVED.
8. EXISTING FLOOR DRAIN TO BE REMOVED. CAP PIPING BELOW SLAB.
9. EXISTING TANK CIRC PUMP AND ALL ASSOCIATED PIPING TO BE REMOVED.
10. EXISTING HWR CIRC PUMP AND ALL ASSOCIATED PIPING TO BE REMOVED.



1 LOWER LEVEL FOUNDATION PLUMBING DEMOLITION PLAN - AREA A
1/8" = 1'-0"



2 LOWER LEVEL PLUMBING DEMOLITION PLAN - AREA A
1/8" = 1'-0"

PLUMBING SHEET INDEX

2-PD-101	LOWER LEVEL PLUMBING DEMOLITION PLANS - AREA A
2-PD-103	FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA C
2-PD-104	FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA D
2-PD-106	FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA F
2-PL-001	FOUNDATION PLUMBING PLAN - AREA A
2-PL-003	FOUNDATION PLUMBING PLAN - AREA C
2-PL-005	FOUNDATION PLUMBING PLAN - AREA E
2-PL-006	FOUNDATION PLUMBING PLAN - AREA F
2-PL-100	LOWER LEVEL PLUMBING PLAN - AREA A
2-PL-103	FIRST FLOOR PLUMBING PLAN - AREA C
2-PL-104	FOUNDATION & FIRST FLOOR PLUMBING PLANS - AREA D
2-PL-105	FIRST FLOOR PLUMBING PLAN - AREA E
2-PL-106	FIRST FLOOR PLUMBING PLAN - AREA F

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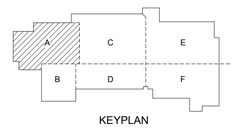

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PART 2 - MANAWA MIDDLE / HIGH SCHOOL
800 BEECH STREET
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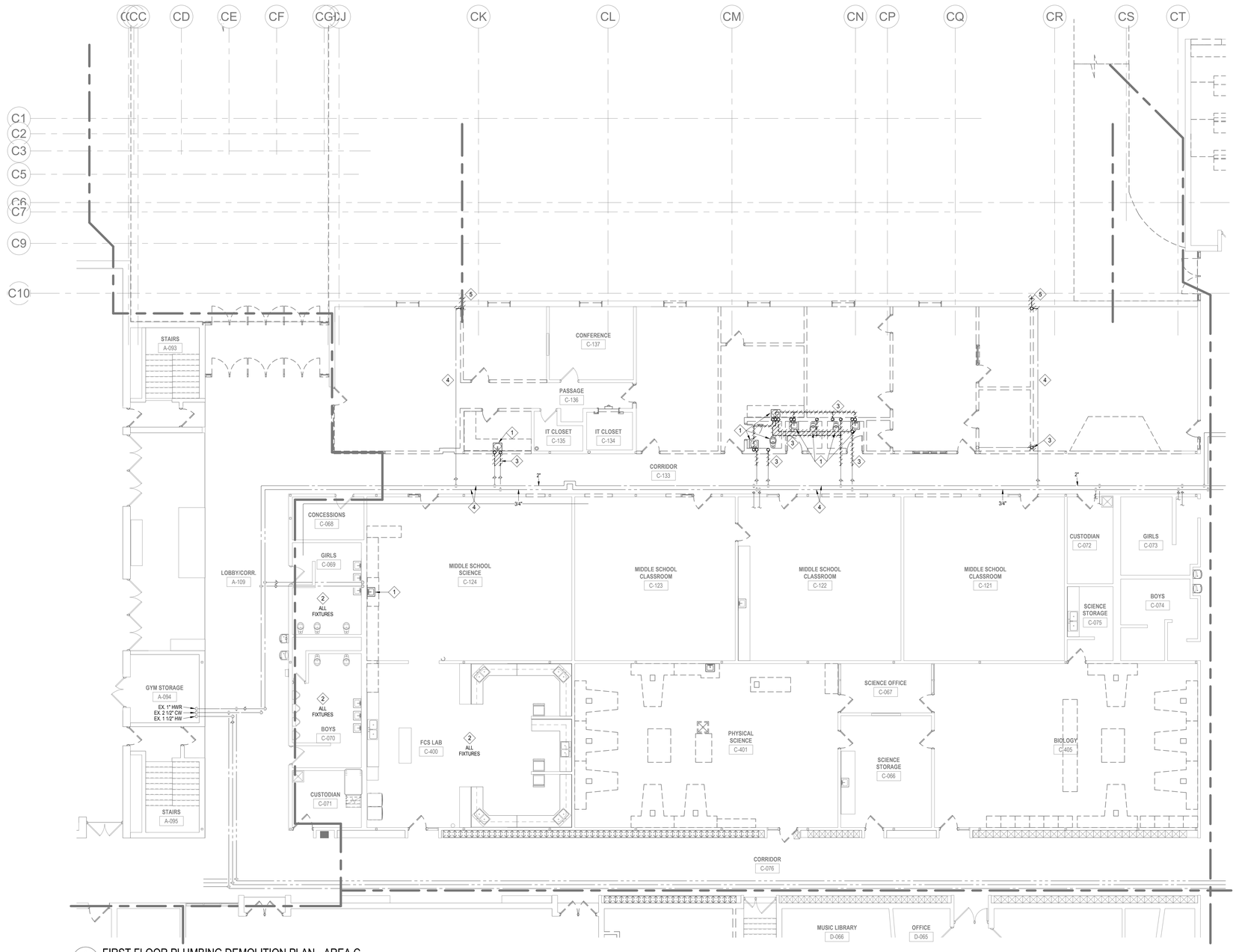
SHEET TITLE:
LOWER LEVEL PLUMBING DEMOLITION PLANS - AREA A

SHEET NUMBER:
2-PD-101



1 FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA C
1/8" = 1'-0"

KEYED DEMOLITION NOTES:

1. EXISTING PLUMBING FIXTURE AND ASSOCIATED PIPING TO BE REMOVED TO BELOW FLOOR, ABOVE CEILING TO STRUCTURE, AND CAPPED OR PLUGGED.
2. EXISTING PLUMBING FIXTURE TO REMAIN.
3. EXISTING PIPING TO BE REMOVED.
4. EXISTING PIPING TO REMAIN.
5. EXISTING WALL HYDRANT TO BE REMOVED.
6. EXISTING WATER HEATER AND ALL ASSOCIATED PIPING TO BE REMOVED.
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8. EXISTING FLOOR DRAIN TO BE REMOVED. CAP PIPING BELOW SLAB.
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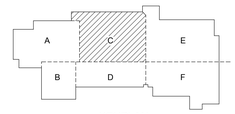
10. EXISTING HWR CIRC PUMP AND ALL ASSOCIATED PIPING TO BE REMOVED.



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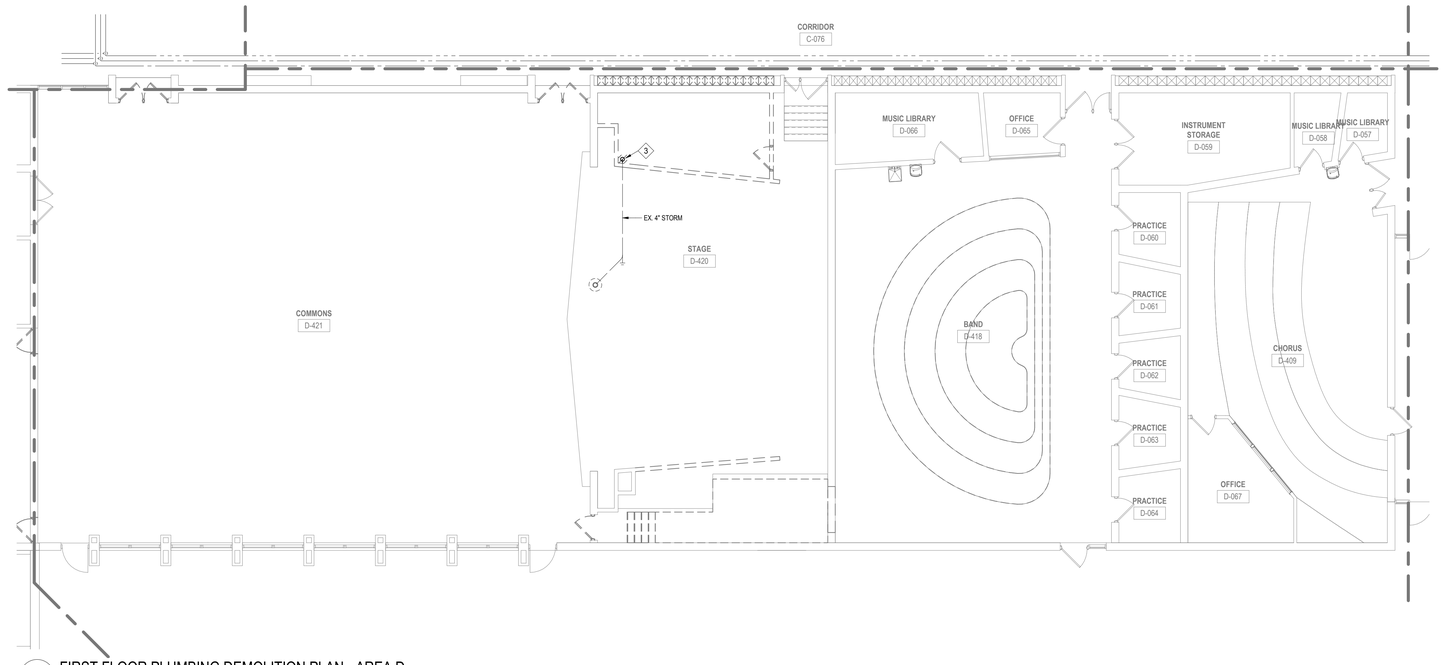
SHEET TITLE:
FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA C

SHEET NUMBER:
2-PD-103



1 FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA D
1/8" = 1'-0"

KEYED DEMOLITION NOTES:

1. EXISTING PLUMBING FIXTURE AND ASSOCIATED PIPING TO BE REMOVED TO BELOW FLOOR, ABOVE CEILING TO STRUCTURE, AND CAPPED OR PLUGGED.
2. EXISTING PLUMBING FIXTURE TO REMAIN.
3. EXISTING PIPING TO BE REMOVED.
4. EXISTING PIPING TO REMAIN.
5. EXISTING WALL HYDRANT TO BE REMOVED.
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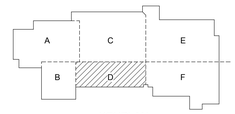
7. EXISTING STORAGE TANK AND ALL ASSOCIATED PIPING TO BE REMOVED.
8. EXISTING FLOOR DRAIN TO BE REMOVED. CAP PIPING BELOW SLAB.
9. EXISTING TANK CIRC PUMP AND ALL ASSOCIATED PIPING TO BE REMOVED.
10. EXISTING HWR CIRC PUMP AND ALL ASSOCIATED PIPING TO BE REMOVED.



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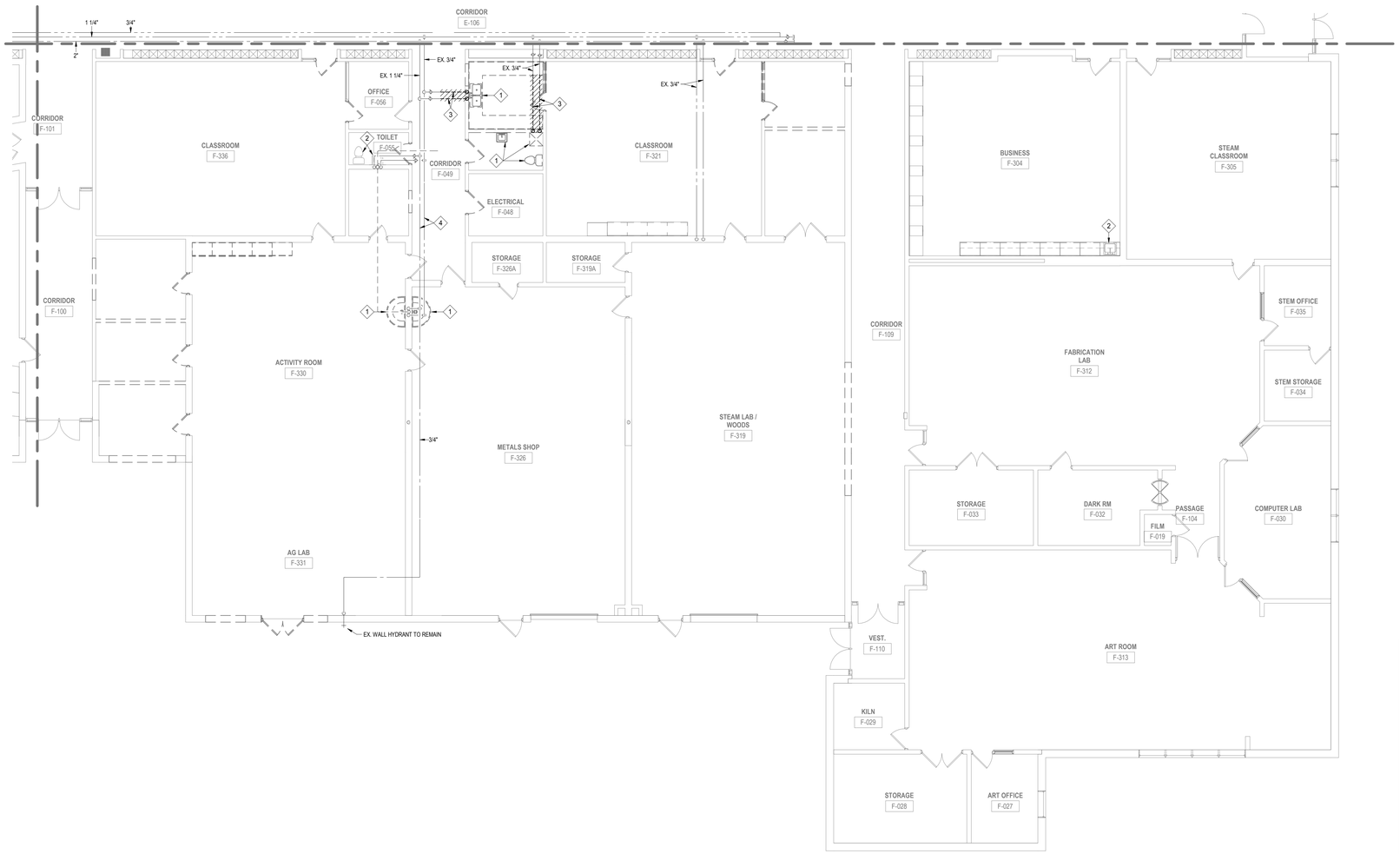
SHEET TITLE:
FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA D

SHEET NUMBER:
2-PD-104



1 FIRST FLOOR PLUMBING DEMOLITION PLAN - AREA F
1/8" = 1'-0"

KEYED DEMOLITION NOTES:

1. EXISTING PLUMBING FIXTURE AND ASSOCIATED PIPING TO BE REMOVED TO BELOW FLOOR, ABOVE CEILING TO STRUCTURE, AND CAPPED OR PLUGGED.
2. EXISTING PLUMBING FIXTURE TO REMAIN.
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4. EXISTING PIPING TO REMAIN.
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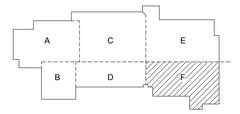

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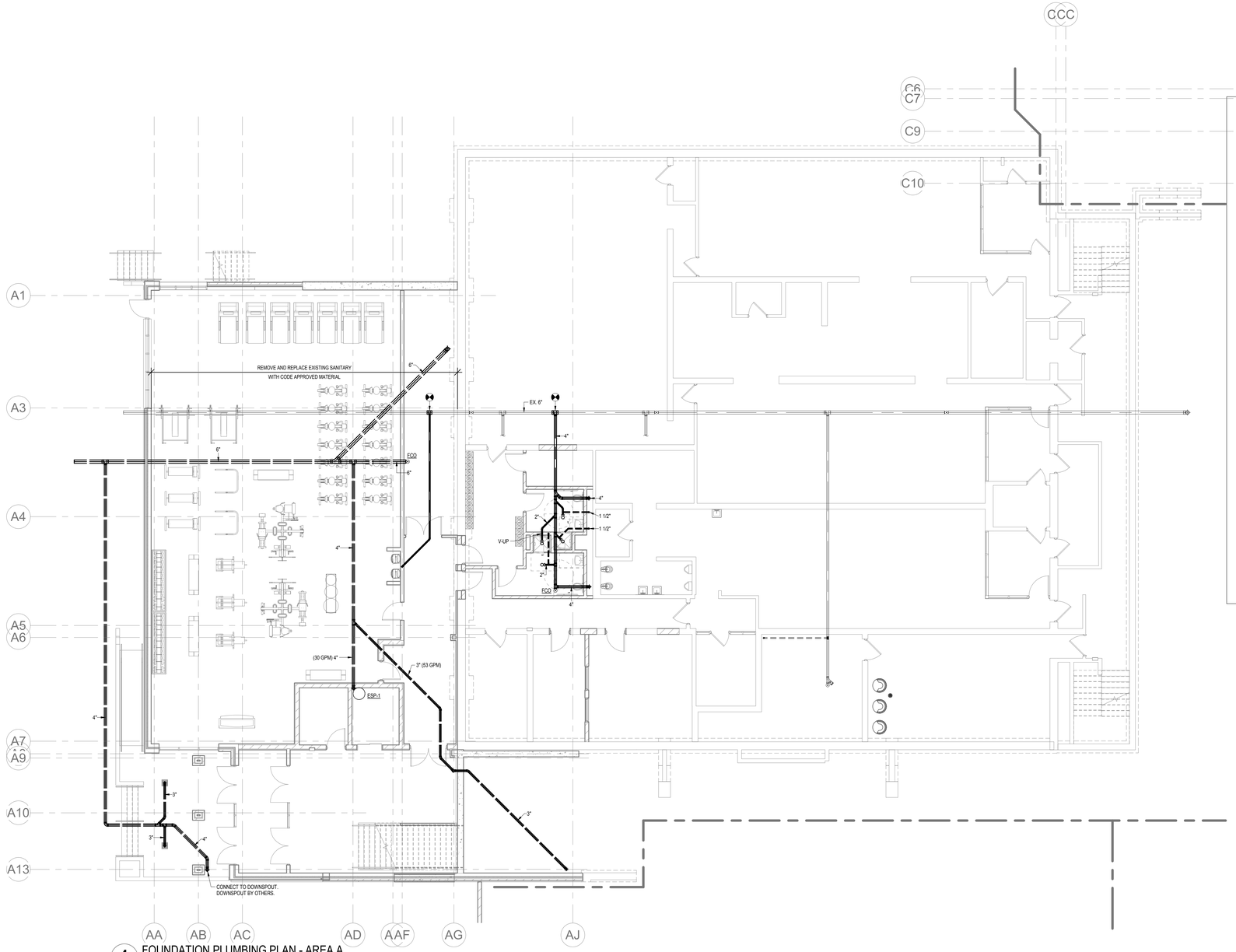


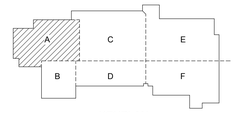
1 FOUNDATION PLUMBING PLAN - AREA A
1/8" = 1'-0"

GENERAL PLUMBING NOTES:

1. DRAWINGS OF ALL OTHER TRADES SHALL BE REVIEWED. THIS CONTRACTOR SHALL COORDINATE THE INSTALLATION AND SCHEDULING OF HIS WORK WITH OTHER TRADES TO PREVENT INTERFERENCE WITH THEIR RESPECTIVE INSTALLATIONS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL PLUMBING FIXTURES, EQUIPMENT, STRUCTURAL DIMENSIONS, AND LAYOUT.
3. DEVIATIONS FROM THE ROUTING OF NEW PIPING SHOWN MAY BE NECESSARY IN ORDER TO CLEAR WORK OF OTHER TRADES. HOWEVER, ALL SUCH DEVIATIONS SHALL BE PREVIOUSLY APPROVED BY THE ARCHITECT/ENGINEER.
4. ALL SANITARY, STORM, AND CLEAR WATER WASTE PIPING SHALL BE PITCHED AS FOLLOWS: PIPING 2" AND SMALLER AT 1/4"/FT, PIPING 3" AND LARGER AT 1/8"/FT UNLESS OTHERWISE NOTED.
5. PENETRATIONS THROUGH FLOORS AND WALLS SHALL BE SEALED WITH A U.L. LISTED SYSTEM OF MATERIAL THAT MEETS OR EXCEEDS THE FIRE RATING OF THE WALL OR FLOOR PENETRATED. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, NEW OPENINGS OR EXISTING OPENINGS MADE OBSOLETE BY THE REMOVAL OF EXISTING PLUMBING PIPING.
6. INSTALL ALL INTERIOR HORIZONTAL STORM, WATER, WASTE, AND VENT PIPING AS HIGH AS POSSIBLE. ALL HORIZONTAL PIPING LOCATED ABOVE CEILINGS SHALL BE INSTALLED WITHIN THE JOIST SPACE UNLESS OTHERWISE INDICATED.
7. INSTALL CLEANOUT AT THE BASE OF ALL ROOF CONDUCTORS AND WASTE STACKS. ALL CLEANOUTS SHALL BE INSTALLED WHERE EASILY ACCESSIBLE. COORDINATE ALL CLEANOUT LOCATIONS WITH ALL EQUIPMENT, CABINETS, ETC. PRIOR TO INSTALLATION.
8. ALL WORK SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE WISCONSIN PLUMBING CODE AND ALL OTHER APPLICABLE CODES AS ADOPTED BY THE LOCAL INSPECTING AUTHORITIES. ALL PLUMBING FIXTURES AND EQUIPMENT SHALL COMPLY WITH THE WISCONSIN PLUMBING CODE SPS 384.
9. SAW CUTTING, REMOVAL, AND REPLACEMENT OF EXISTING FLOOR SLAB FOR THE INSTALLATION OF NEW PLUMBING WORK IS THE RESPONSIBILITY OF THIS CONTRACTOR. NEW FLOOR CONSTRUCTION SHALL MATCH EXISTING.
10. SAW CUTTING, REMOVAL, AND REPLACEMENT OF EXISTING SIDEWALKS, ROADS, PAVEMENT, ETC. FOR THE INSTALLATION OF NEW PLUMBING WORK IS THE RESPONSIBILITY OF THIS CONTRACTOR.
11. ALL SLEEVES THROUGH CONCRETE FRAMING REQUIRED FOR THE INSTALLATION OF PLUMBING WORK SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
12. CORE-DRILLING OR SLEEVING THROUGH BEAMS, JOISTS, OR BRIDGING SHALL NOT BE PERMITTED UNLESS SPECIFICALLY SHOWN ON STRUCTURAL DRAWINGS. INCLUDE SUFFICIENT ALLOWANCES FOR OFFSETS OF PIPING TO CLEAR STRUCTURAL MEMBERS.
13. TRAPS AT ALL SINKS AND LAVATORIES SHALL BE INSTALLED STRAIGHT BACK TO THE WALL WITH ALL PIPING OFFSETS LOCATED WITHIN THE WALL.
14. LOCATE ALL VENT TERMINALS A MINIMUM OF 10'-0" FROM ANY OUTSIDE AIR INTAKES.
15. ALL VALVES, SHOCK ARRESTORS, ETC. SHOWN IN WALLS OR ABOVE NON-ACCESSIBLE CEILINGS SHALL BE CENTRALLY LOCATED BEHIND ACCESS PANELS.
16. REFER TO PIPING ISOMETRICS FOR SIZES NOT SHOWN ON PLANS.
17. REMOVAL AND REPLACEMENT OF EXISTING CEILINGS REQUIRED FOR THE INSTALLATION OF PLUMBING SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR. CEILING CONSTRUCTION AND FINISH SHALL MATCH EXISTING.

PLUMBING LEGEND

SYMBOL	ABBR.	DESCRIPTION
	CW	COLD WATER PIPING
	CW	COLD WATER PIPING BELOW GROUND
	HW	HOT WATER PIPING
	HW	HOT WATER PIPING BELOW GROUND
	HWR	HOT WATER RETURN PIPING
	W	SANITARY PIPING ABOVE GROUND
	W	SANITARY PIPING BELOW GROUND
	V	SANITARY VENT PIPING ABOVE GROUND
	V	SANITARY VENT PIPING BELOW GROUND
	ST	STORM PIPING ABOVE GROUND
	ST	STORM PIPING BELOW GROUND
	G	GAS PIPING
	UP	PIPING UP
	DN	PIPING DOWN
	C.O.	CLEANOUT
	HB / WH	HOSE BIBB / WALL HYDRANT
	FCO	FLOOR CLEANOUT
		BALANCING VALVE
		BALL VALVE
		BUTTERFLY VALVE
		CHECK VALVE
	FD	FLOOR DRAIN
	HD	HUB DRAIN OR SITE DRAIN
	RD	ROOF DRAIN
IE=00.00'	I.E.	INVERT ELEVATION
		POINT OF CONNECTION OF NEW PIPING TO EXISTING
		SHOCK ARRESTOR
		FIXTURE UNIT TAGS
	EWC	ELECTRIC WATER COOLER
	WC	WATER CLOSET
	LAV / Lr	LAVATORY
	MB	MOP BASIN
	SINK / Sr	SINK
	UR	URINAL
	SH	SHOWER



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HEC Project Number: 19-1004.00

MANAWA ELEMENTARY SCHOOL - ALTERATIONS
MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
800 BEECH STREET
MANAWA, WI 54949

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PROJECT NO:	Project Number
CAD DWG FILE:	
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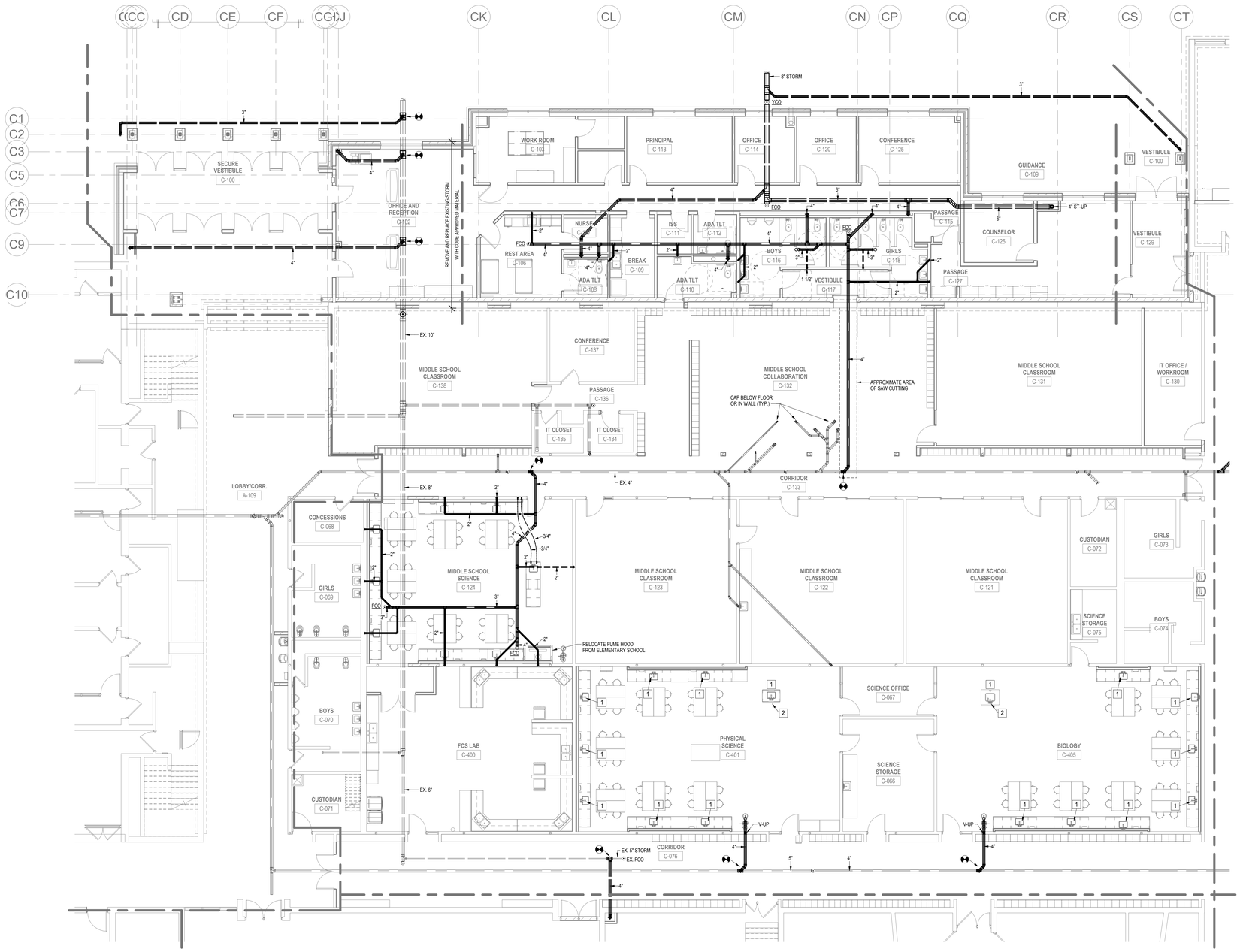
SHEET TITLE:
FOUNDATION PLUMBING PLAN - AREA A

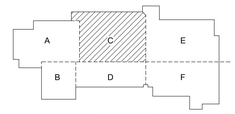
SHEET NUMBER:
2-PL-001



1 FOUNDATION PLUMBING PLAN - AREA C
1/8" = 1'-0"

NEW PLUMBING WORK KEYED NOTES:

1. CONNECT NEW LAB SINK TO EXISTING SANITARY, WATER, VENT, AND GAS. RECONFIGURE EXISTING ROUGH-IN LOCATIONS OF SANITARY, WATER, AND VENT AS REQUIRED TO MAKE FINAL CONNECTIONS TO LAB SINK, FAUCET, AND GAS OUTLET.
2. RELOCATE MASTER GAS SHUT-OFF TO TEACHER STATION. REMOVE EXISTING SHUT-OFF FROM ABOVE CEILING.



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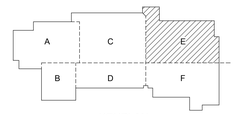
SHEET TITLE:
FOUNDATION PLUMBING PLAN - AREA C

SHEET NUMBER:
2-PL-003

1 FOUNDATION PLUMBING PLAN - AREA E
1/8" = 1'-0"



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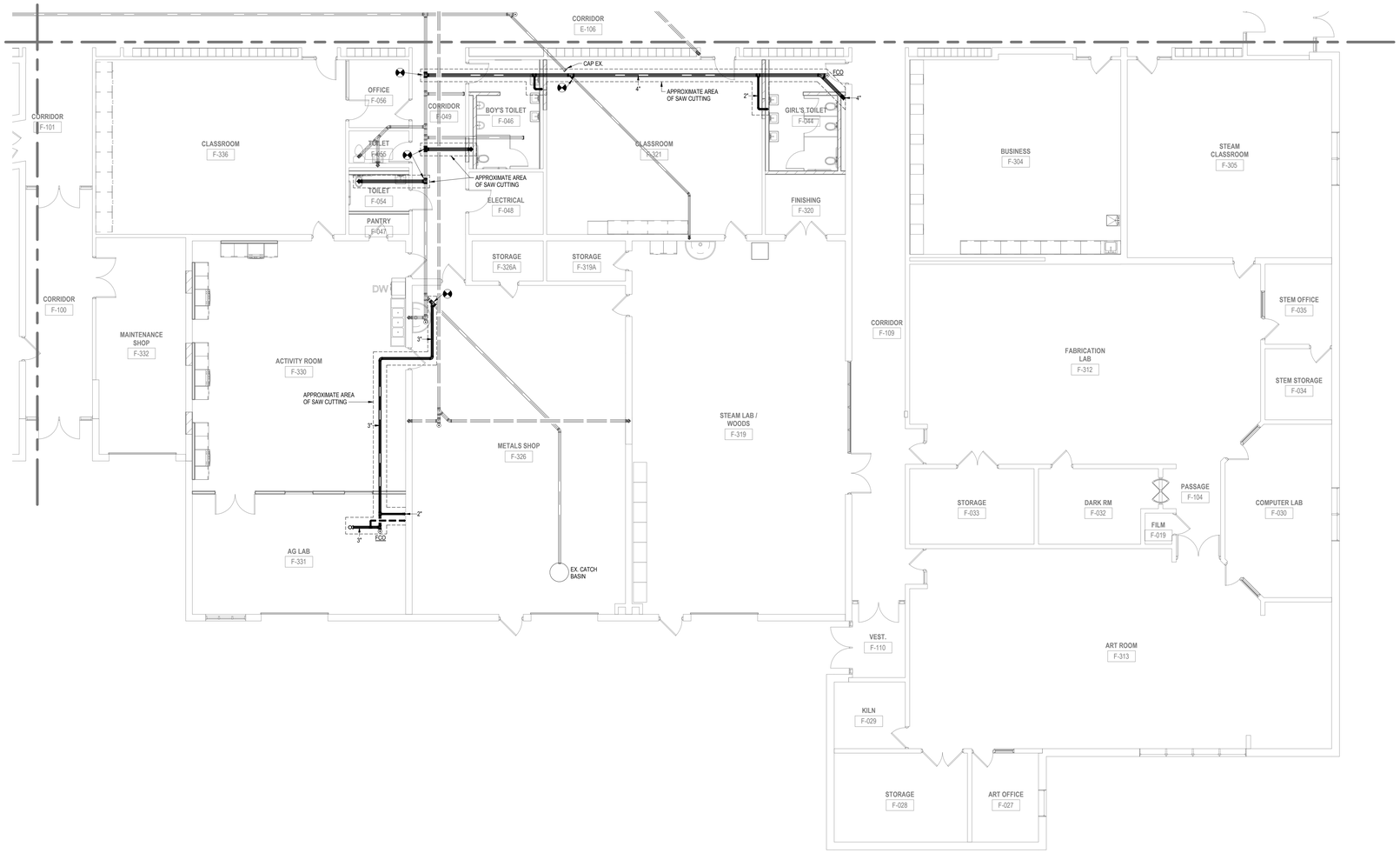
SHEET TITLE:
FOUNDATION PLUMBING PLAN - AREA E

SHEET NUMBER:
2-PL-005



1 FOUNDATION PLUMBING PLAN - AREA F
1/8" = 1'-0"

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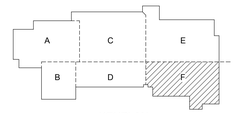

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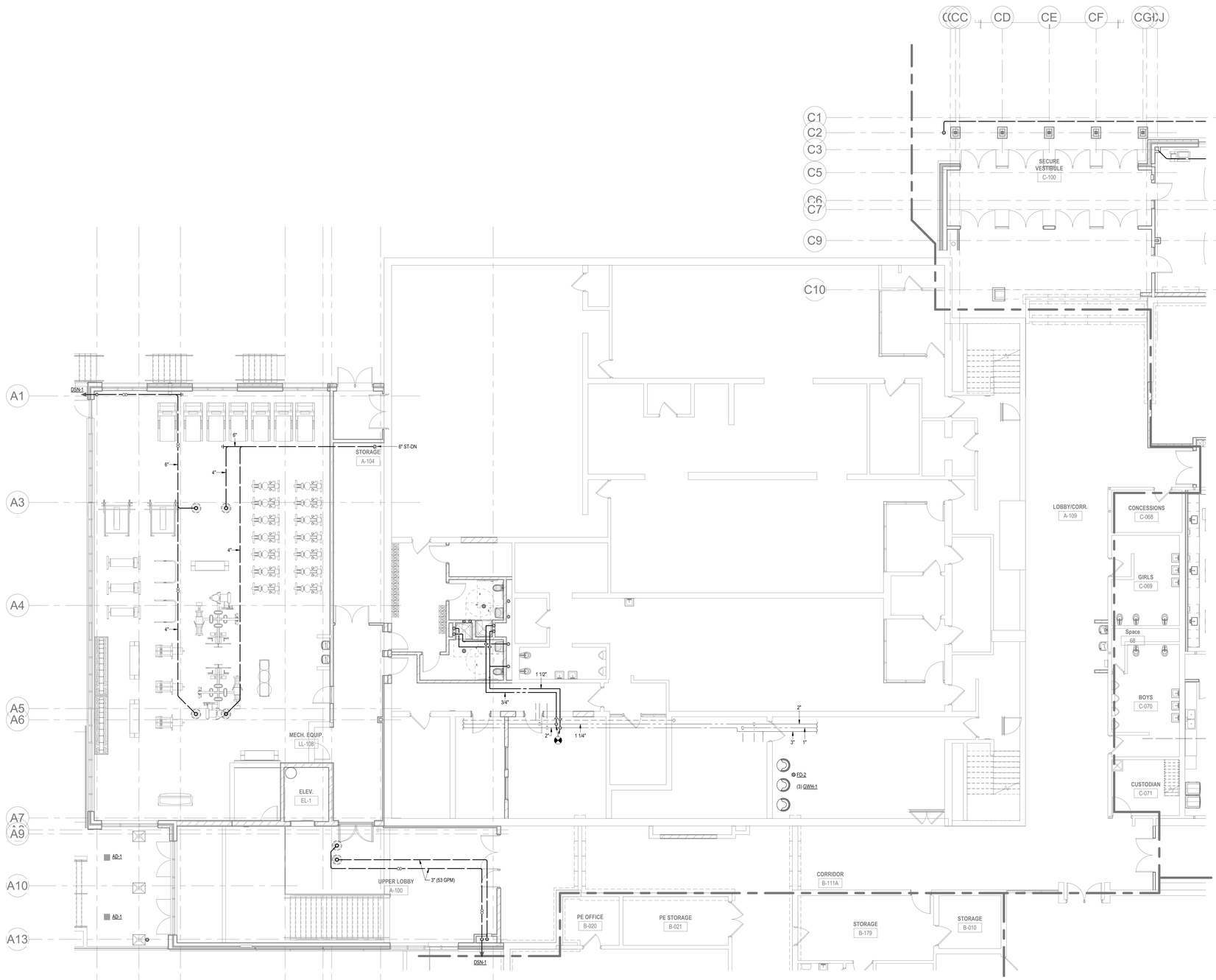
SHEET TITLE:
FOUNDATION PLUMBING PLAN - AREA F

SHEET NUMBER:
2-PL-006



1 LOWER LEVEL PLUMBING PLAN - AREA A
1/8" = 1'-0"

AA AB AC AD AAF AG AJ

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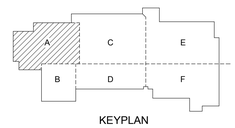

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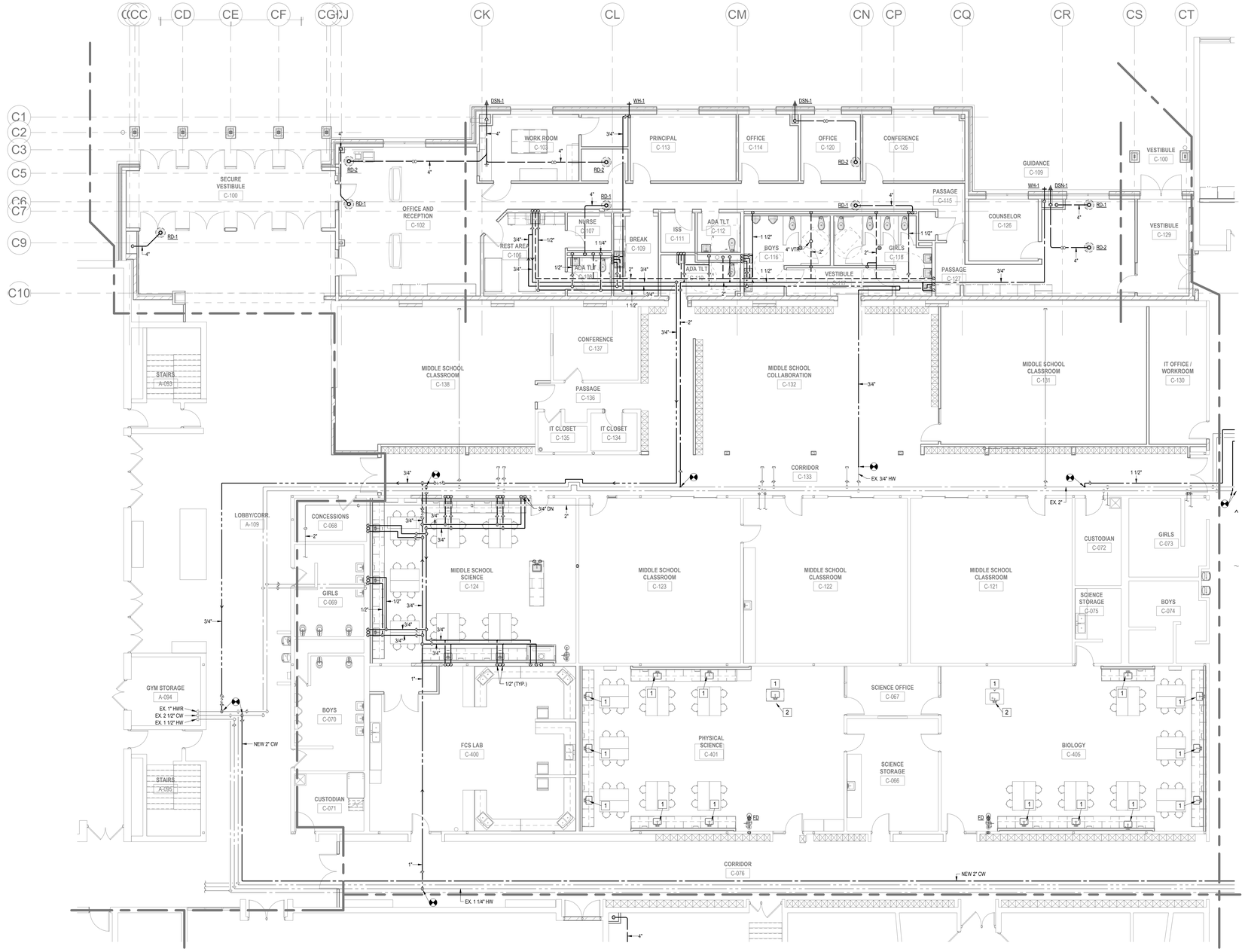
SHEET TITLE:
LOWER LEVEL PLUMBING PLAN - AREA A

SHEET NUMBER:
2-PL-100



1 FIRST FLOOR PLUMBING PLAN - AREA C
1/8" = 1'-0"

NEW PLUMBING WORK KEYED NOTES:

1. CONNECT NEW LAB SINK TO EXISTING SANITARY, WATER, VENT, AND GAS. RECONFIGURE EXISTING ROUGH-IN LOCATIONS OF SANITARY, WATER, AND VENT AS REQUIRED TO MAKE FINAL CONNECTIONS TO LAB SINK, FAUCET, AND GAS OUTLET.
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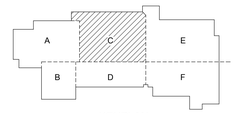

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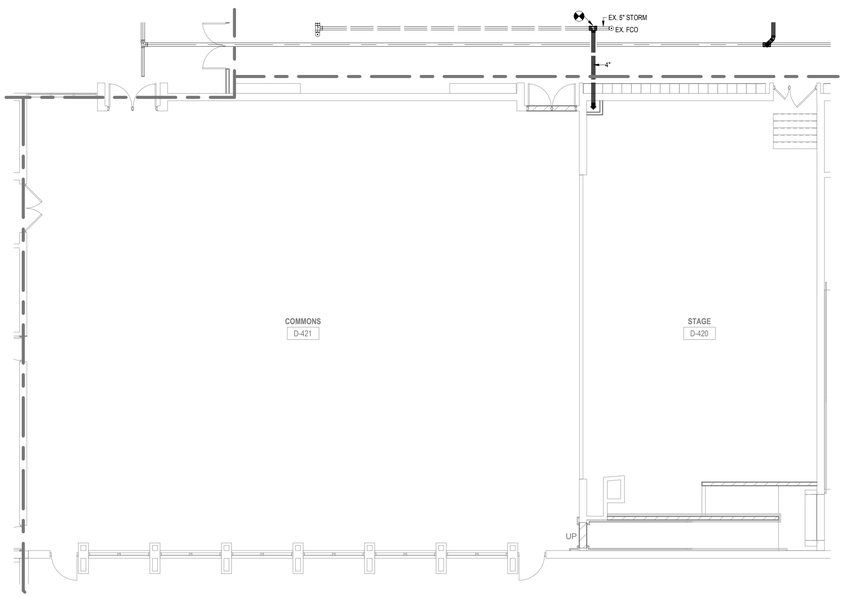
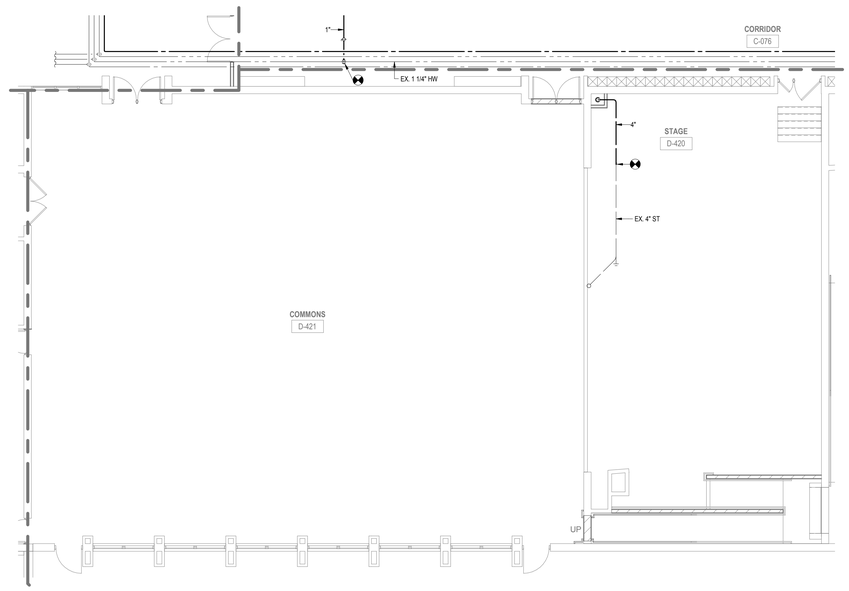
SHEET TITLE:
FIRST FLOOR PLUMBING PLAN - AREA C

SHEET NUMBER:
2-PL-103



1 FOUNDATION PLUMBING PLAN - AREA D
1/8" = 1'-0"



2 FIRST FLOOR PLUMBING PLAN - AREA D
1/8" = 1'-0"

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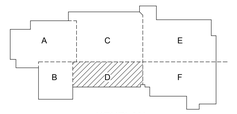

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MANAWA MIDDLE/HIGH SCHOOL - ADDITIONS & ALTERATIONS
PART 2 - MANAWA MIDDLE / HIGH SCHOOL
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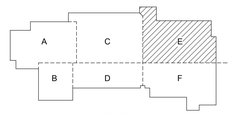
SHEET TITLE:
FOUNDATION & FIRST FLOOR PLUMBING PLANS - AREA D

SHEET NUMBER:
2-PL-104

1 FIRST FLOOR PLUMBING PLAN - AREA E
1/8" = 1'-0"



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HEC Project Number 19-1004.00

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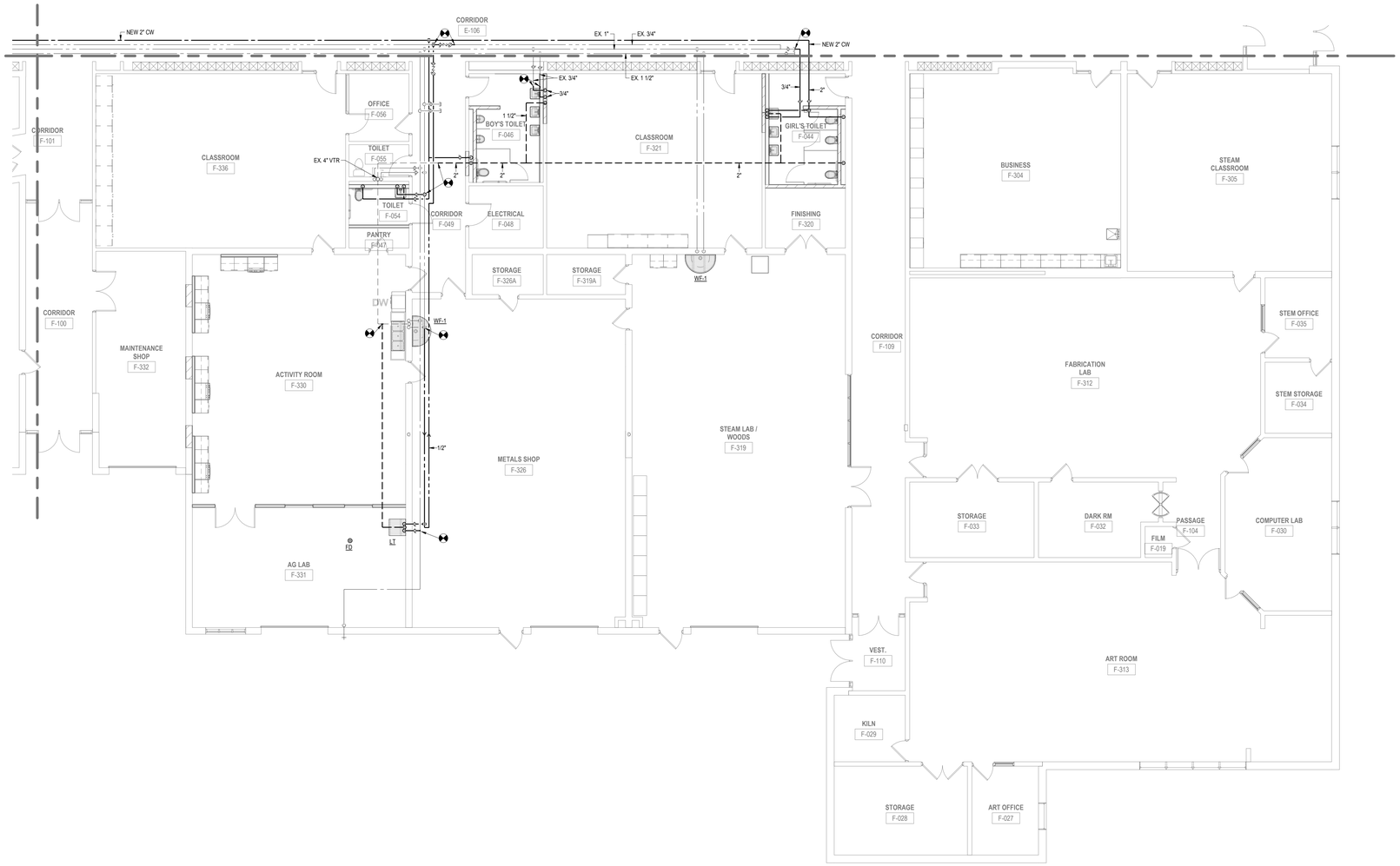
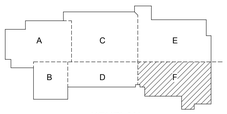
SHEET TITLE:
FIRST FLOOR PLUMBING PLAN - AREA E

SHEET NUMBER:
2-PL-105



1 FIRST FLOOR PLUMBING PLAN - AREA F
1/8" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION



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SHEET TITLE:
FIRST FLOOR PLUMBING PLAN - AREA F

SHEET NUMBER:
2-PL-106

ID	Task Name	Duration	Start	Finish	Predecessors
1	**DESIGN**	**183 days**	**Wed 11/7/18**	**Fri 7/19/19**	
2	**BID PACKAGE #1**	**120 days**	**Wed 11/7/18**	**Tue 4/23/19**	
8	**BID PACKAGE #2**	**183 days**	**Wed 11/7/18**	**Fri 7/19/19**	
9	SCHEMATIC DESIGN	12 wks	Wed 11/7/18	Tue 1/29/19	
10	DESIGN DEVELOPMENT	11 wks	Wed 1/30/19	Tue 4/16/19	9
11	CONSTRUCTION DOCUMENTS	38 days	Wed 4/17/19	Fri 6/7/19	10
12	REDLINE REVIEW	12 days	Mon 6/10/19	Tue 6/25/19	11
13	STATE REVIEW	6 wks	Mon 6/10/19	Fri 7/19/19	11
14					
15	**BIDDING/CONTRACTING**	**111 days**	**Thu 3/14/19**	**Thu 8/15/19**	
16	**DEMO BID PACKAGE**	**22 days**	**Thu 3/14/19**	**Fri 4/12/19**	
23	**BID PACKAGE #1**	**38 days**	**Wed 3/27/19**	**Fri 5/17/19**	
30	**BID PACKAGE #2**	**37 days**	**Wed 6/26/19**	**Thu 8/15/19**	
31	SEND OUT BIDS	1 day	Wed 6/26/19	Wed 6/26/19	12
32	PRE BID WALK THROUGH	1 day	Wed 7/10/19	Wed 7/10/19	12FS+10 days
33	BIDS DUE	1 day	Wed 7/17/19	Wed 7/17/19	12FS+15 days
34	QUALIFICATIONS	2 wks	Thu 7/18/19	Wed 7/31/19	33
35	PRESENT BIDS TO OWNER	1 day	Thu 8/1/19	Thu 8/1/19	34
36	CONTRACTING	2 wks	Fri 8/2/19	Thu 8/15/19	35
37					
38	**DEMO BID PACKAGE**	**81 days**	**Mon 4/1/19**	**Mon 7/22/19**	
47					
48	**BID PACKAGE #1 - CONSTRUCTION**	**76 days**	**Mon 5/13/19**	**Mon 8/26/19**	
60					
63					
68					
69	**BIG PACKAGE #2**	**271 days**	**Fri 8/16/19**	**Fri 8/28/20**	
70	**FITNESS CENTER ADDITION AND RENOVATION**	**176 days**	**Fri 8/16/19**	**Fri 4/17/20**	
71	SITE MOBILIZATION	5 days	Fri 8/16/19	Thu 8/22/19	36
72	EXCAVATION	2 wks	Fri 8/23/19	Thu 9/5/19	71
73	SITE UTILITIES	3 wks	Fri 8/23/19	Thu 9/12/19	71
74	FOOTINGS/FOUNDATIONS	3 wks	Fri 9/6/19	Thu 9/26/19	72
75	UNDERGROUND PLUMBING	2 wks	Fri 9/27/19	Thu 10/10/19	74
76	SLAB ON GRADE	1 wk	Fri 10/11/19	Thu 10/17/19	75
77	STRUCTURAL STEEL	2 wks	Fri 10/18/19	Thu 10/31/19	76
78	EXTERIOR STEEL STUD WALLS	2 wks	Fri 11/1/19	Thu 11/14/19	77
79	ROOFING	2 wks	Fri 11/1/19	Thu 11/14/19	77
80	BUILDING ENCLOSURE	0 days	Thu 11/14/19	Thu 11/14/19	79,78
81	BRICK VENEER/METAL PANEL	3 wks	Fri 11/15/19	Thu 12/5/19	78
82	WINDOWS	1 wk	Fri 12/6/19	Thu 12/12/19	81
83	INTERIOR STEEL STUD WALLS	3 wks	Fri 11/1/19	Thu 11/21/19	77
84	MEP ROUGH INS	4 wks	Fri 11/22/19	Thu 12/19/19	83
85	DRYWALL	4 wks	Fri 12/20/19	Thu 1/16/20	84
86	PAINTING	2 wks	Fri 1/17/20	Thu 1/30/20	85
87	CEILINGS	2 wks	Fri 1/31/20	Thu 2/13/20	86
88	MEP FINISHES	3 wks	Fri 2/14/20	Thu 3/5/20	87
89	CASEWORK	2 wks	Fri 3/6/20	Thu 3/19/20	88
90	DOORS AND HARDWARE	1 wk	Fri 3/6/20	Thu 3/12/20	88
91	FLOORING	2 wks	Fri 3/20/20	Thu 4/2/20	90,89
92	PUNCHLIST	2 wks	Fri 4/3/20	Thu 4/16/20	91
93	SUBSTANTIAL COMPLETION	1 day	Fri 4/17/20	Fri 4/17/20	92
94					
95	**ENTRY/ADMIN ADDITION AND RENOVATION**	**171 days**	**Fri 9/6/19**	**Fri 5/1/20**	
96	EXCAVATION	2 wks	Fri 9/6/19	Thu 9/19/19	72
97	SITE UTILITIES	3 wks	Fri 9/6/19	Thu 9/26/19	72
98	FOOTINGS/FOUNDATIONS	3 wks	Fri 9/20/19	Thu 10/10/19	96
99	UNDERGROUND PLUMBING	2 wks	Fri 10/11/19	Thu 10/24/19	98
100	SLAB ON GRADE	1 wk	Fri 10/25/19	Thu 10/31/19	99
101	STRUCTURAL STEEL	2 wks	Fri 11/1/19	Thu 11/14/19	100
102	EXTERIOR STEEL STUD WALLS	2 wks	Fri 11/15/19	Thu 11/28/19	101
103	ROOFING	2 wks	Fri 11/15/19	Thu 11/28/19	101
104	BUILDING ENCLOSURE	0 days	Thu 11/28/19	Thu 11/28/19	102,103
105	BRICK VENEER/METAL PANEL	3 wks	Fri 11/29/19	Thu 12/19/19	102
106	WINDOWS	1 wk	Fri 12/20/19	Thu 12/26/19	105
107	INTERIOR STEEL STUD WALLS	3 wks	Fri 11/15/19	Thu 12/5/19	101
108	MEP ROUGH INS	4 wks	Fri 12/6/19	Thu 1/2/20	107
109	DRYWALL	4 wks	Fri 1/3/20	Thu 1/30/20	108
110	PAINTING	2 wks	Fri 1/31/20	Thu 2/13/20	109
111	CEILINGS	2 wks	Fri 2/14/20	Thu 2/27/20	110
112	MEP FINISHES	3 wks	Fri 2/28/20	Thu 3/19/20	111
113	CASEWORK	2 wks	Fri 3/20/20	Thu 4/2/20	112
114	DOORS AND HARDWARE	1 wk	Fri 3/20/20	Thu 3/26/20	112
115	FLOORING	2 wks	Fri 4/3/20	Thu 4/16/20	113,114
116	PUNCHLIST	2 wks	Fri 4/17/20	Thu 4/30/20	115
117	SUBSTANTIAL COMPLETION	1 day	Fri 5/1/20	Fri 5/1/20	116
118					
119	**ELEMENTARY SCHOOL MAINTENANCE/SUMMER WORK**	**178 days**	**Fri 12/20/19**	**Tue 8/25/20**	
120	INSTALL NEW GENERATOR	10 wks	Fri 12/20/19	Thu 2/27/20	36FS+18 wks
121	SCHOOLS OUT	1 day	Fri 5/29/20	Fri 5/29/20	
122	SCHOOL MOVING WEEK	5 days	Mon 6/1/20	Fri 6/5/20	121
123	SELECT DEMOLITION	10 days	Mon 6/8/20	Fri 6/19/20	122
124	INTERIOR STEEL STUD WALLS	10 days	Mon 6/22/20	Fri 7/3/20	123
125	MEP ROUGH INS	10 days	Wed 6/24/20	Tue 7/7/20	124FS-8 days
126	DRYWALL	10 days	Wed 7/1/20	Tue 7/14/20	125FS-5 days
127	PAINTING	7 days	Mon 7/13/20	Tue 7/21/20	126FS-2 days
128	CASEWORK	10 days	Fri 7/17/20	Thu 7/30/20	127FS-3 days
129	MEP FINISHES	10 days	Fri 7/17/20	Thu 7/30/20	127FS-3 days
130	INSTALL CEILINGS	7 days	Wed 7/29/20	Thu 8/6/20	127FS-5 days
131	FLOORING	5 days	Fri 8/7/20	Thu 8/13/20	130
132	DOORS AND HARDWARE	5 days	Fri 8/7/20	Thu 8/13/20	130
133	CLEANING	3 days	Fri 8/14/20	Tue 8/18/20	131
134	PUNCHLIST	7 days	Fri 8/14/20	Mon 8/24/20	131
135	SUBSTANTIAL COMPLETION	1 day	Tue 8/25/20	Tue 8/25/20	134
136					
137	**HIGH SCHOOL MAINTENANCE/SUMMER WORK**	**66 days**	**Fri 5/29/20**	**Fri 8/28/20**	
138	SCHOOLS OUT	1 day	Fri 5/29/20	Fri 5/29/20	
139	SCHOOL MOVING WEEK	5 days	Mon 6/1/20	Fri 6/5/20	138
140	ABATEMENT	2 wks	Mon 6/8/20	Fri 6/19/20	139
141	CUT WALLS/DEMO	5 days	Mon 6/22/20	Fri 6/26/20	140
142	STEEL STUD WALLS	7 days	Mon 6/29/20	Tue 7/7/20	141
143	MEP ROUGH INS	7 days	Fri 7/3/20	Mon 7/13/20	142FS-3 days
144	DRYWALL	10 days	Tue 7/14/20	Mon 7/27/20	143
145	PAINTING	4 days	Tue 7/28/20	Fri 7/31/20	144
146	INSTALL CEILINGS	2 days	Mon 8/3/20	Tue 8/4/20	145
147	FLOORING	10 days	Wed 8/5/20	Tue 8/18/20	146
148	DOORS AND HARDWARE	3 days	Wed 8/19/20	Fri 8/21/20	147
149	CLEANING	3 days	Mon 8/24/20	Wed 8/26/20	148
150	PUNCHLIST	1 day	Thu 8/27/20	Thu 8/27/20	149
151	SUBSTANTIAL COMPLETION	1 day	Fri 8/28/20	Fri 8/28/20	150

Theatrical Power Control Equipment Schedule

Theatrical Fixture Load - ETC Sensor IQ48

Label	Location	Total Circuits	Stagepin Connectors	Circuit #	Edison Connectors	Circuit #	Notes
PB1	FOH	2	2 - 24" pigtail	1,2	1-flush Edison	29	Mount to FOH Pipe
PB2	FOH	2	2 - 24" pigtail	3,4	1-flush Edison	30	Mount to FOH Pipe
PB3	1st Electric	3	2 - 24" pigtail	5,6	1-flush Edison	31	Mount to 1st Pipe
PB4	1st Electric	2	2 - 24" pigtail	7,8	1-flush Edison	32	Mount to 1st Pipe
PB5	2nd Electric	3	2 - 24" pigtail	9,10	1-flush Edison	33	Mount to 2nd Pipe
PB6	2nd Electric	3	2 - 24" pigtail	11,12	1-flush Edison	34	Mount to 2nd Pipe
PB7	3rd Electric	2	2 - 24" pigtail	13,14	1-flush Edison	35	Mount to 3rd Pipe
PB8	3rd Electric	2	2 - 24" pigtail	15,16	1-flush Edison	36	Mount to 3rd Pipe
PB9	Cyc	2	2 - 24" pigtail	17,18	1-flush Edison	37	Mount to Cyc Pipe
WP1	DSR	2	2 - 18" pigtail stagepin	21,22	1-flush Edison	38	Surface Mount Box
WP2	DSL	2	2 - 18" pigtail stagepin	23,24	1-flush Edison	38	Surface Mount Box
WP3	USR	2	2 - 18" pigtail stagepin	25,26	1-flush Edison	39	Surface Mount Box
WP4	USL	2	2 - 18" pigtail stagepin	27,28	1-flush Edison	39	Surface Mount Box

Dimming System - Data

Label	Signal	Location	Wire Type	Description	Mounting	Box Type	Notes
N1	Network	Control Room (A204)	(2) Belden 1583A	(2) Net Jacks	Flush	(1) Two gang backbox	
N2	Network						
N6	Network	Sound Desk (A114)	(2) Belden 1583A	(2) Net Jacks	Flush	(1) Two gang backbox	
N7	Network						
D1	DMX	PB1	Belden 1583A	Net Jack	(2) U-Bolt Assemblies for Box	In Plug Box	IDC Connectors
D2	DMX	PB3	Belden 1583A	Net Jack	(2) U-Bolt Assemblies for Box	In Plug Box	IDC Connectors
D3	DMX	PB5	Belden 1583A	Net Jack	(2) U-Bolt Assemblies for Box	In Plug Box	IDC Connectors
D4	DMX	PB7	Belden 1583A	Net Jack	(2) U-Bolt Assemblies for Box	In Plug Box	IDC Connectors
D5	DMX	PB9	Belden 1583A	Net Jack	(2) U-Bolt Assemblies for Box	In Plug Box	IDC Connectors
D6	DMX	WP1	Belden 1583A	Net Jack	Surface-mount backbox by Stage Lighting Supplier	In Surface Box	IDC Connectors

Dimming System - Architectural Control				
Label	Location	Wire Type	Description	Mounting
ES1	Vestibule HL Rear	Belden 8471 + (1) #14AWG	5 button entry station	Flush
ES2	Vestibule HR Rear	Belden 8471 + (1) #14AWG	5 button entry station	Flush
ES3	Vestibule 6	Belden 8471 + (1) #14AWG	5 button entry station	Flush
ES4	Vestibule HR	Belden 8471 + (1) #14AWG	5 button entry station	Flush
ES5	Vestibule 9	Belden 8471 + (1) #14AWG	5 button entry station	Flush

THEATRICAL LIGHTING SYSTEM NOTES:

1. ALL DEVICES SHALL BE PROVIDED BY THEATRICAL LIGHTING DEALER UNLESS OTHERWISE NOTED:
2. ALL DIMMED CIRCUITS MUST BE TWO WIRE. NO SHARED NEUTRALS SHALL BE PERMITTED.
4. FOR THEATRES, NEC 2014 ARTICLE 520.6 EXCEPTS THE STANDARD 30 CONDUCTOR WIREWAY FILL LIMIT
5. FOR FIXED STAGE EQUIPMENT, NEC 2014 ARTICLE 520.42 SPECIFIES THE CONDUCTOR INSULATION AND DERATING REQUIREMENTS.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONTROL WIRING. CONTROL WIRING REQUIREMENTS VARY GREATLY AMONG MANUFACTURERS, ELECTRICAL CONTRACTOR SHALL OBTAIN CONTROL WIRING REQUIREMENTS FROM THEATRICAL LIGHTING MANUFACTURER PRIOR TO BID AND INSTALLATION. ELECTRICAL CONTRACTOR SHALL OBTAIN SHOP DRAWINGS FROM THEATRICAL LIGHTING MANUFACTURER PRIOR TO SIZING OR ROUTING ANY CONTROL SYSTEM CONDUITS.
7. ALL NETWORK AND / OR DMX WIRING RUNS SHALL BE CONTINUOUS AND WITHOUT BREAKS OR SPLICES.
8. ALL NETWORK WIRING RUNS SHALL BE CATEGORY 5E, 100 BASE T AND CONFORM TO THE ESTA (Entertainment Services & Technology Association) RECOMMENDED PRACTICE FOR ETHERNET CABLING IN ENTERTAINMENT LIGHTING APPLICATIONS.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES FOR ALL POWER CONTROL RACKS PER ELECTRICAL ENGINEER. POWER CONTROL RACKS DO NOT INCLUDE MAINS BREAKERS.
11. ELECTRICAL ENGINEER SHALL IDENTIFY WHICH ARCHITECTURAL LIGHTING DIMMED CIRCUITS REQUIRE EMERGENCY POWER TO PROVIDE THE REQUIRED EGRESS ILLUMINATION.
12. ELECTRICAL CONTRACTOR SHALL PROVIDE INDIVIDUAL 20AMP 120V CIRCUITS FOR EACH RELAY. ALL CIRCUITS REQUIRE NORMAL POWER FOR STANDARD OPERATION. ELECTRICAL ENGINEER SHALL IDENTIFY WHICH ARCHITECTURAL LIGHTING RELAY CIRCUITS ALSO REQUIRE EMERGENCY POWER TO PROVIDE THE REQUIRED EGRESS ILLUMINATION.
13. ELECTRICAL CONTRACTOR SHALL PROVIDE ONE (1) DMX CONTROL WIRING OUTPUT TO EACH ARCHITECTURAL LIGHTING FIXTURE TYPE REQUIRING DMX CONTROL. (HOUSE LIGHT FIXTURES MAY DAISY CHAIN. FOLLOW MANUFACTURERS RECOMMENDATIONS.) THEATRICAL LIGHTING MANUFACTURER SHALL PROVIDE DMX OUTPUT DEVICE(S) AT CONTROL INTERFACE RACK. ARCHITECTURAL LIGHTING MANUFACTURER SHALL PROVIDE DMX CONTROL INPUT INTERFACE(S) AS

14. ELECTRICAL ENGINEER SHALL IDENTIFY WHICH ARCHITECTURAL LIGHTING DIMMED CIRCUITS REQUIRE EMERGENCY POWER TO PROVIDE THE REQUIRED EGRESS ILLUMINATION.

Stage Lighting System

Items or Components to provide/install	Electrical Contractor Provides
Dimming and Control Equipment	
Dimmer Equipment Rack Power Disconnects	X
Dimmer Equipment Load Centers and Branch Breakers	X
Dimming Equipment Racks	
Dimmer Equipment Rack Feeder Conduit & Wiring	X
Dimmer Equipment Control Stations & Faceplates	
Dimmer Equipment Control Station Back Boxes/Conduit and Wiring	X
Dimming and Control Pull Boxes	X
Dimmer Equipment Rack Electrical Load wiring & Conduit	X
Dimmer Equipment Connector Strip Raceways, Grid Boxes, Plug Boxes	
Dimmer Equipment Connector Strip Raceways (connected to rigging)	
Portable Theatre Lighting Equipment & Accessories	
Dimming System Data Terminations	X
Kellems Strain Relief, SO Multiconductor Cables (for Lineset #24 only)	X

actor, Structural Steel Contractor Relationship

Electrical Contractor Installs	Electrical Contractor Terminates	Stage Rigging Contractor Provides	Stage Rigging Contractor Installs	Stage Lighting Supplier Provides	Stage Lighting Supplier Installs	Stage Lighting Supplier Terminates
X	X			X		
X	X					
X	X					
X	X			X		
X	X					
X	X			X		
X	X					
X	X					
X	X					
X	X			X		
	X			X		
				X	X	
X						X
X	X					

CONTROL WIRING LEGEND		
SYMBOL	*WIRE TYPE(S)*	*SIGNAL*
U*	(1) BELDEN 8471 + (1) #14AWG	UNISON
P*	(2) #15 AWG STRANDED WIRES	PANIC
D*	(1) BELDEN #1583A	DMX
N*	(1) BELDEN #1583A	NETWORK
LV*	TBD by Electrical Contractor	LOW VOLTAGE
* = WIRE IDENTIFICATION NUMBER (NOT QUANTITY)		

CURTAIN SCHEDULE

Position	Set Name	Material	Color	Qty	Finish Height	Finish Width	Sewing Instructions	Top Finish
1	Main Valance	23.5 - 24.5 oz. Charisma IFR	TBD	1	3'-0"	42'-0"	Sewn with 50% fullness with 3" turnbacks	Grommets, polypro webbing, and ties
2	Main Draw	23.5 - 24.5 oz. Charisma IFR Velour	TBD	2	13'0"	24'-0"	Sewn with 50% fullness with 12" turnback onstage and 3" offstage	Grommets, polypro webbing, and bitsnaps
4	Border #1	18 - 20 oz. Crescent IFR Velour	Black	1	3'-0"	52'-0"	Sewn flat with 3" turnback	Grommets, polypro webbing, and ties
5	Leg #1	18 - 20 oz. Crescent IFR Velour	Black	2	13'0"	6'-0"	Sewn Flat with 3" turnback / grommet for 50% fullness	Grommets, polypro webbing, and ties
7	Border #2	18 - 20 oz. Crescent IFR Velour	Black	1	3'-0"	52'-0"	Sewn flat with 3" turnback	Grommets, polypro webbing, and ties
8	Legs #2	18 - 20 oz. Crescent IFR Velour	Black	2	13'0"	6'-0"	Sewn Flat with 3" turnback / grommet for 50% fullness	Grommets, polypro webbing, and ties
9	Midstage Draw	18 - 20 oz. Crescent IFR Velour	Black	2	13'0"	24'-0"	Sewn with 50% fullness with 12" turnback onstage and 3" offstage	Grommets, polypro webbing, and bitsnaps
11	Border #3	18 - 20 oz. Crescent IFR Velour	Black	1	3'-0"	52'-0"	Sewn flat with 3" turnback	Grommets, polypro webbing, and ties
12	Legs #3	18 - 20 oz. Crescent IFR Velour	Black	2	13'0"	6'-0"	Sewn Flat with 3" turnback / grommet for 50% fullness	Grommets, polypro webbing, and ties
13	Rear Draw	18 - 20 oz. Crescent IFR Velour	Black	2	13'0"	24'-0"	Sewn with 50% fullness with 12" turnback onstage and 3" offstage	Grommets, polypro webbing, and bitsnaps
15	Cyclorama	Poly Muslin	Grey	1	14'-0"	48'-0"	Sewn Flat with 3" turnback	Grommets, polypro webbing, and ties

Bottom Finish
5-Inch hem
5-Inch hem with internal chain weight.
Pipe pocket for 1/2" wt. pipe
5-Inch hem with internal chain weight.
Pipe pocket for 1/2" wt. pipe
5-Inch hem with internal chain weight.
5-Inch hem with internal chain weight.
Pipe pocket for 1/2" wt. pipe
5-Inch hem with internal chain weight.
5-Inch hem with internal chain weight.
Lined Pipe pocket for 1/2" wt. pipe

TRACK SCHEDULE

Set Name	Dist. From Plasterline (ft.)	Type	Finish	No. of Pieces	Length each	Mounting
Main Draw	1.5	H&H 410S Track	Mill	2	24'0"	Pipe hangers to brackets
Midstage Draw	13.5	H&H 410S Track	Mill	2	24'0"	Pipe hangers to brackets
Rear Draw	26.25	H&H 410S Track	MIll	2	24'0"	Pipe hangers to brackets

Position	Set Name	Dist. From Plasterlin	Type	Attaches to	Batten Length	# Lines	Misc.
1	Main Valance	0"	Deadhung	1 1/2" Sched 40 pipe	42	6	
2	Main Draw	1'-4"	Deadhung	H&H 400 Series track	42	6	
3	1st Electric	3'-4"	Deadhung	1 1/2" Sched 40 pipe	40	6	
4	Border #1	5'-4"	Deadhung	1 1/2" Sched 40 pipe	40	6	1/2" weight pipe
5	Leg #1	7'-4"	Deadhung	1 1/2" Sched 40 pipe	42	6	
6	2nd Electric	9'-4"	Deadhung	1 1/2" Sched 40 pipe	42	6	
7	Border #2	11'4"	Deadhung	1 1/2" Sched 40 pipe	42	6	1/2" weight pipe
8	Leg #2	13'4	Deadhung	1 1/2" Sched 40 pipe	42	6	
9	Mid-stage Draw	15'4	Deadhung	H&H 400 Series track	42	6	
10	3rd Electric	17'4	Deadhung	1 1/2" Sched 40 pipe	42	6	
11	Border #3	19'4	Deadhung	1 1/2" Sched 40 pipe	42	6	1/2" weight pipe
12	Leg #3	21'10	Deadhung	1 1/2" Sched 40 pipe	42	6	

Stage Rigging System

Items or Components to provide/install	Electrical Contractor Provides
Counterweight Rigging System	
Counterweight Rigging Index Light (conduit/wiring & standard back boxes)	
Electrical Distribution	
Kellems Strain Relief, SO Multiconductor Cables	**X**
All Rigging Support Steel and Bracing	
All Steel Catwalks, Stairways, Ramps & Bridges	

trical Contractor, Structural Steel Contractor Relationship

Electrical Contractor Installs	Electrical Contractor Terminates	Stage Lighting Contractor Provides	Stage Rigging Contractor Provides	Stage Rigging Contractor Installs	Struct. Steel Contractor Provides	Struct. Steel Contractor Installs
			X	X		
X	X		X	X		
	X	X		X		
X	X					
					X	X
					X	X

MANAWA MIDDLE & HIGH SCHOOL
LARSON ENGINEERING, INC.
31180284.000

GENERAL

1. NO PROVISION OF ANY REFERENCED STANDARD SPECIFICATION OR CODE, WHETHER OR NOT SPECIFICALLY INCORPORATED BY REFERENCE IN THE CONTRACT DOCUMENTS, SHALL BE EFFECTIVE TO CHANGE THE DUTIES AND RESPONSIBILITIES OF THE OWNER, **ARCHITECT**, STRUCTURAL ENGINEER, CONTRACTOR OR ANY OF THEIR CONSULTANTS, AGENTS, OR EMPLOYEES FROM THOSE SET FORTH IN THE CONTRACT DOCUMENTS, NOR SHALL IT BE EFFECTIVE TO ASSIGN TO STRUCTURAL ENGINEER OR ANY OF STRUCTURAL ENGINEER'S CONSULTANTS, AGENTS, OR EMPLOYEES ANY DUTY OR AUTHORITY TO SUPERVISE OR DIRECT THE FURNISHING OR PERFORMANCE OF THE WORK OR ANY DUTY OR AUTHORITY TO UNDERTAKE RESPONSIBILITIES CONTRARY TO THE PROVISIONS OF THE CONTRACT DOCUMENTS.

2. REFERENCE TO STANDARD SPECIFICATIONS OR CODES OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES SHALL MEAN THE STANDARDS IN EFFECT AS OF THE DATE OF THE CONTRACT DOCUMENTS, UNLESS OTHERWISE NOTED.

3. CONTRACT DOCUMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE STRUCTURAL DOCUMENTS (DRAWINGS AND SPECIFICATIONS), BUT DO NOT INCLUDE SHOP DRAWINGS, VENDOR DRAWINGS, OR MATERIAL PREPARED AND SUBMITTED BY THE CONTRACTOR.

4. CONTRACT DOCUMENTS SHALL GOVERN IN THE EVENT OF A CONFLICT WITH STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION. WHERE A CONFLICT OCCURS WITHIN THE CONTRACT DOCUMENTS, THE STRICTEST REQUIREMENT SHALL GOVERN.

5. ALL OMISSIONS AND CONFLICTS WITHIN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO PROCEEDING WITH THE WORK. WHEN THIS PROCEDURE IS NOT FOLLOWED, THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTING IN-PLACE WORK WHEN THE ENGINEER DETERMINES THAT WORK TO BE INADEQUATE.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION RELATED TO ALL CONTRACTOR FURNISHED EQUIPMENT AND/OR COMPONENTS.

7. **SEE DOCUMENTS FROM OTHER DISCIPLINES FOR FLOOR, WALL, AND ROOF OPENINGS, TRENCHES, PITS, PIPE SLEEVES, EQUIPMENT PADS, METAL PAN STAIRS, AND MISCELLANEOUS IRON, ETC.**

8. LARSON ENGINEERING, INC. SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S SCHEDULE OR FAILURES TO CARRY OUT ANY CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. LARSON ENGINEERING, INC. SHALL NOT HAVE CONTROL OVER OR CHARGE OF ACTIONS OF CONTRACTOR, SUB-CONTRACTOR, OR ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING PORTIONS OF ANY CONSTRUCTION ACTIVITIES.

9. CONTRACTOR AGREES THAT CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF THE WORK, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS AND STRUCTURAL ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED,IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF OWNER OR STRUCTURAL ENGINEER.

10. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS AT THE JOB SITE. ANY DISCREPANCIES BETWEEN THE CONDITIONS FOUND AND THOSE INDICATED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD PRIOR TO PROCEEDING WITH THE WORK.

11. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM. TEMPORARY SUPPORTS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL INTERMEDIATE STAGES OF CONSTRUCTION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR.

12. CONTRACTOR HAS SOLE RESPONSIBILITY FOR MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO ADEQUATELY PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO: BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, TEMPORARY STRUCTURES, AND PARTIALLY COMPLETED WORK. OBSERVATION VISITS TO THE SITE BY STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.

13. DETAILS LABELED "TYPICAL" ON THE STRUCTURAL DRAWINGS APPLY TO ALL SITUATIONS OCCURRING ON PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE LOCATIONS SPECIFICALLY INDICATED. WHERE A DETAIL IS NOT INDICATED, THE DETAIL SHALL BE THE SAME AS FOR OTHER SIMILAR CONDITIONS.

14. DO NOT PLACE PIPES, DUCTS, CHASES, ETC. IN STRUCTURAL BEAM AND COLUMN MEMBERS. DO NOT CUT ANY STRUCTURAL MEMBER FOR PIPES, DUCTS, ETC., UNLESS NOTED OTHERWISE. NOTIFY STRUCTURAL ENGINEER WHEN DOCUMENTS BY OTHER DISCIPLINES SHOW OPENINGS, POCKETS, ETC. NOT INDICATED IN THE STRUCTURAL DRAWINGS BUT ARE LOCATED IN THE STRUCTURAL MEMBERS. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM STRUCTURAL ENGINEER FOR INSTALLATION OF SUCH PIPES, DUCTS, CHASES, ETC.

SUBMITTALS

1. REVIEW OF SUBMITTALS OR SHOP DRAWINGS BY THE ARCHITECT/STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE SOLE RESPONSIBILITY TO REVIEW AND CHECK ALL SUBMITTALS AND SHOP DRAWINGS BEFORE SUBMITTING TO THE STRUCTURAL ENGINEER. CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS.

2. ALL SUBMITTALS REVIEWED BY STRUCTURAL ENGINEER ARE REVIEWED FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION INCLUDED IN THE CONTRACT DOCUMENTS. ANY ACTION INDICATED IS SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR CORRELATING PROCESSES AND TECHNIQUES OF CONSTRUCTION, AND COORDINATION OF THE WORK WITH THAT OF OTHER TRADES.

3. LARSON ENGINEERING, INC. ASSUMES NO RESPONSIBILITY FOR ANY MISUSE, MODIFICATION, OR MISREPRESENTATION OF ANY INFORMATION CONTAINED IN ANY ELECTRONIC MEDIA TRANSFERRED. LARSON ENGINEERING, INC. SHALL BE HELD HARMLESS FROM ANY AND ALL CLAIMS, SUITS, LIABILITY, DEMANDS, OR COSTS ARISING OUT OF, OR RESULTING FROM THE USE OF SAID DOCUMENT(S). UTILIZATION OF THE ELECTRONIC DOCUMENTS IS AT RECIPIENT'S OWN RISK.

4. CONTRACTOR SHALL VERIFY THE STRUCTURALLY SUPPORTED EQUIPMENT WEIGHTS, OPENING SIZES, AND LOCATIONS INDICATED ON THE STRUCTURAL DRAWINGS WITH DRAWINGS FROM OTHER DISCIPLINES AND NOTIFY STRUCTURAL ENGINEER OF ANY DISCREPANCIES.

5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING SIZE, METHOD OF ANCHORAGE, WEIGHT, OPENINGS, AND LOCATIONS OF EQUIPMENT NOT INDICATED ON THE STRUCTURAL DRAWINGS PRIOR TO ORDERING FOR REVIEW BY STRUCTURAL ENGINEER TO DETERMINE ADEQUACY OF THE STRUCTURE.

6. CONTRACTOR DESIGNED ELEMENTS SHALL BE DESIGNED BY LICENSED PROFESSIONAL ENGINEERS REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, DESIGN LOAD DATA, SUPPORT REACTIONS, AND CERTIFICATION THAT ELEMENTS WERE DESIGNED FOR LOADS SPECIFIED IN THE CONTRACT DOCUMENTS OR IN THE BUILDING CODE. ALL DOCUMENTS NOTED SHALL BE SEALED BY THE LICENSED ENGINEER. IF CRITERIA INDICATED ARE NOT SUFFICIENT, SUBMIT A WRITTEN REQUEST FOR ADDITIONAL INFORMATION TO THE ARCHITECT. THE FOLLOWING ELEMENTS AND THEIR CONNECTIONS SHALL BE CONTRACTOR DESIGNED:

- **TRUSSES; (COLD FORMED & WOOD)**
- **STRUCTURAL STEEL CONNECTIONS NOT DETAILED OR SHOWN ON THE DRAWINGS.**
- **STEEL JOIST & JOIST GIRDERS**
- **PRECAST ELEMENTS INCLUDING FLOOR PLANKS, WALL PANELS, AND COLUMNS**
- **STRUCTURAL COLD FORMED FRAMING INCLUDING EXTERIOR WALLS**

7. SUBMITTALS SHALL BE REVIEWED AND RETURNED WITHIN THE FOLLOWING PERIOD AFTER BEING RECEIVED BY THE ENGINEER:

- **STRUCTURAL STEEL** **7 WORKING DAYS**
- **STEEL JOISTS** **7 WORKING DAYS**
- **METAL DECK** **7 WORKING DAYS**
- **REBAR** **7 WORKING DAYS**
- **CONCRETE MIX DESIGNS** **7 WORKING DAY**

DESIGN CRITERIA

1. CODE: **INTERNATIONAL BUILDING CODE 2015 WITH AMENDMENTS**

2. ROOF LIVE LOAD: (REDUCED AS ALLOWED BY THE BUILDING CODE) = **20** PSF

3. SNOW LOADS:

GROUND SNOW LOAD, Pg	= **##** PSF
EXPOSURE FACTOR, Ce	= **1.0**
THERMAL FACTOR, Ct	= **1.0**
IMPORTANCE FACTOR, Is	= **1.0**
FLAT ROOF SNOW LOAD, Pf	= **##** PSF
DRIFTING: PER ASCE 7, AS REQUIRED, SEE PLANS AND/OR CALCULATIONS	

4. WIND LOADS:

BASIC WIND SPEED, Vult	= **115** MPH
RISK CATEGORY	= **II**
EXPOSURE CATEGORY:	= **C**
INTERNAL PRESSURE COEFFICIENT, Gcpi	= **± 0.18**

COMPONENTS AND CLADDING NOT DESIGNED BY THE ENGINEER OF RECORD SHALL BE DESIGNED FOR THE WIND PRESSURES LISTED BELOW. PRESSURES ARE BASED ON A TRIBUTARY AREA OF 10 SQUARE FEET. WIND PRESSURES FOR LARGER TRIBUTARY AREAS MAY BE USED BASED ON DELEGATED DESIGN CALCULATIONS.

WALLS:

MAIN AREA:	
POSITIVE	= **##** PSF
NEGATIVE	= **##** PSF
CORNERS:	
POSITIVE	= **##** PSF
NEGATIVE	= **##** PSF

ROOF:

MAIN AREA:	
POSITIVE	= **##** PSF
NEGATIVE	= **##** PSF
EDGES:	
POSITIVE	= **##** PSF
NEGATIVE	= **##** PSF
CORNERS:	
POSITIVE	= **##** PSF
NEGATIVE	= **##** PSF

6. SEISMIC LOADS:

RISK CATEGORY:	= II
IMPORTANCE FACTOR, Ie	= **1.0**
SITE CLASS:	= **D**
MAPPED SPECTRAL RESPONSE ACCELERATIONS	
Ss:	= **#.###**
S1:	= **#.###**
DESIGN SPECTRAL RESPONSE ACCELERATIONS	
SDS:	= **#.###**
SD1:	= **#.###**
SEISMIC DESIGN CATEGORY	= **D**
BASIC SEISMIC FORCE RESISTING SYSTEM:	**XXXXXXXXXXXXXXXXX**
RESPONSE MODIFICATION FACTOR, R	= **#.#**
RESPONSE COEFFICIENT, Cs	= **#.#**
DESIGN BASE SHEAR	= **##** KIPS
ANALYSIS PROCEDURE:	EQUIVALENT LATERAL FORCE

FOUNDATIONS

1. ALL FOUNDATIONS SHALL BE SUPPORTED ON APPROVED EXISTING SUBGRADE OR APPROVED COMPACTED STRUCTURAL FILL HAVING A MINIMUM ALLOWABLE BEARING CAPACITY OF **2500 PSF** AS INDICATED IN THE **(GEOTECHNICAL ENGINEERING SERVICES REPORT)** AS PREPARED BY **(INTERTEK PSI)** DATED **MARCH 20, 2019**.

2. THE GEOTECHNICAL ENGINEER OR TESTING AGENCY SHALL CERTIFY THE BEARING CAPACITY AT THE TIME OF EXCAVATION PRIOR TO INSTALLATION OF FOUNDATIONS AND/OR BACKFILLING.

3. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE VALIDITY OF THE SUBSURFACE CONDITIONS DESCRIBED IN THE DRAWINGS, SPECIFICATIONS, TEST BORINGS OR GEOTECHNICAL REPORTS. THIS DATA IS INCLUDED TO ASSIST THE CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION, AND TO REPRESENT CONDITIONS ONLY AT SPECIFIC LOCATIONS AT THE PARTICULAR TIME THE OBSERVATIONS WERE MADE.

4. ALL EXTERIOR FOUNDATIONS SHALL BEAR ON APPROVED SUBGRADE AT MINIMUM DEPTH OF **4'-0"** BELOW ADJACENT FINISH EXTERIOR GRADE.

5. FOOTING ELEVATIONS SHOWN ON THE DRAWINGS REPRESENT ESTIMATED DEPTHS AND ARE NOT TO BE CONSTRUED AS LIMITING THE AMOUNT OF EXCAVATION REQUIRED TO REACH SUITABLE BEARING MATERIAL.

6. FOOTING ELEVATION CHANGES SHALL BE STEPPED AT A RATIO OF 1 VERTICAL TO 2 HORIZONTAL. MAXIMUM VERTICAL STEP SHALL BE **2'-0"** UNLESS NOTED OTHERWISE.

7. THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS IN ALL EXCAVATIONS AS REQUIRED TO PREVENT HORIZONTAL MOVEMENT OR VERTICAL SETTLEMENT OF SURROUNDING SOIL AND/OR PROPERTY WHICH WILL ENDANGER LIVES OR PROPERTY.

8. THE CONTRACTOR SHALL PROVIDE CONTROL OF SURFACE AND SUBSURFACE WATER PROMPTLY TO INSURE THAT ALL FOUNDATION WORK IS PERFORMED IN A DRY CONDITION.

9. FOUNDATIONS SHALL NOT BE PLACED ON FROZEN SUBGRADE.

10. THE CONTRACTOR SHALL PROTECT IN-PLACE FOUNDATIONS AND SLABS-ON-GRADE FROM FROST PENETRATION UNTIL THE PROJECT IS COMPLETE.

11. WHERE FOUNDATION WALLS HAVE FILL ON BOTH SIDES, BACKFILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDES OF THE WALL.

CONCRETE REINFORCEMENT

1. ALL REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING:

A. ACI 315 – "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES"

B. ACI 315 - "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"

C. ACI 318 – "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

D. MSP2 – "CRSI MANUAL OF STANDARD PRACTICE".

E. AWS D1.4 – "STRUCTURAL WELDING CODE – REINFORCING STEEL".

F. WRI – "WELDED WIRE FABRIC MANUAL OF STANDARD PRACTICE".

2. STEEL REINFORCING BARS SHALL CONFORM TO ASTM 615 (GRADE 60), 60 KSI YIELD POINT DEFORMED BARS IN ACCORDANCE WITH LATEST ASTM SPECIFICATIONS UNLESS NOTED OTHERWISE.

3. WELDED WIRE REINFORCING SHALL BE SUPPLIED IN FLAT SHEETS AND SHALL CONFORM TO ASTM A185.

4. ONLY REBAR CONFORMING TO ASTM A706 REBAR MAY BE WELDED.

5. ALL REINFORCING STEEL (#3 AND GREATER) IN EXTERIOR FLATWORK, STAIRS, AREA WAY WALLS AND AT OTHER LOCATIONS EXPOSED TO DEICING SALTS TO BE EPOXY COATED.

6. PROVIDE (2) #5 DIAGONALS FOR EACH LAYER AT EACH CORNER OF OPENINGS AND AT INTERSECTIONS.

7. PROVIDE CORNER BARS IN THE OUTSIDE FACE AND AT WALL JUNCTURES MATCHING HORIZONTAL WALL BARS.

8. CONTINUOUS BARS TO BE LAPPED. LAP SPLICES SHALL BE IN ACCORDANCE WITH SPLICE SCHEDULE LOCATED ON THE SCHEDULES SHEET UNLESS NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING STANDARDS:

A. ACI 301 – "SPECIFICATIONS FOR STRUCTURAL CONCRETE".

B. ACI MCP – "MANUAL OF CONCRETE PRACTICE".

C. ACI 318 – "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".

D. ACI 318.1 – "BUILDING CODE REQUIREMENTS FOR STRUCTURAL PLAIN CONCRETE".

2. CONCRETE SHALL HAVE A MINIMUM 28-DAY ULTIMATE COMPRESSIVE STRENGTH f'c AS FOLLOWS WHEN TESTNG IN ACCORDANCE WITH ASTM C39:

A. SLABS-ON-GRADE	**4000 PSI**
B. FOOTINGS	**3500 PSI**
C. EXTERIOR EXPOSED CONCRETE	**4500 PSI**
D. PIERS & FROST WALLS	**4500 PSI**

3. ALL CONCRETE EXPOSED TO WEATHER TO BE AIR ENTRAINED WITH **4%- 6%** AIR ENTRAINMENT.

4. ALL CONCRETE IS TO BE NORMAL WEIGHT CONCRETE UNLESS NOTED OTHERWISE.

5. ALL CONCRETE FLATWORK EXPOSED TO WEATHER TO BE FREE OF LIGNITE AND OTHER DELETERIOUS MATERIALS.

6. AGGREGATE SIZES SHALL BE IN ACCORDANCE TO ASTM C33 "STANDARD SPECIFICATION FOR CONCRETE AGGREGATION". THE COARSE AGGREGATE SHALL BE WELL GRADED #57 STONE WITH A MAXIMUM AGGREGATE SIZE OF 3/4". AGGREGATE FOR SLAB ON GRADE MAY HAVE A MAXIMUM AGGREGATE SIZE OF **1"**.

7. THE SLUMP OF THE CONCRETE SHALL BE 4" MAXIMUM. IF A HIGH RANGE WATER REDUCER IS USED THEN THE SLUMP PRIOR TO THE ADDITION OF THE WATER REDUCER SHALL BE 4" MAXIMUM. THE SLUMP SHALL NOT EXCEED 10" AFTER THE ADDITION OF A HIGH RANGE WATER REDUCER.

8. MINIMUM CEMENTITIOUS REQUIREMENTS:

A. 3000 PSI CONCRETE: 517 LBS/CU. YD.

B. 4000 PSI CONCRETE: 564 LBS/CU. YD.

9. MAXIMUM FLYASH CONTENT: 15% OF CEMENTITIOUS MATERIALS BY WEIGHT

10. MAXIMUM WATER-CEMENT RATIO:

A. AIR ENTRAINED CONCRETE: **0.45**

B. NON-AIR ENTRAINED CONCRETE: **0.50**

11. CONCRETE DESIGN SUBMITTALS SHALL INCLUDE A HISTORY OF BREAKS ACCORDING TO ACI 318.

12. PROTECTION FOR REINFORCING BARS:

UNFORMED SURFACES IN CONTACT WITH SOIL	3"
FORMED SURFACES EXPOSED TO SOIL OR WEATHER	
#6 BARS AND LARGER	2"
#5 BARS AND SMALLER	1 1/2"
FORMED SURFACES NOT EXPOSED TO SOIL OR WEATHER	
BEAMS AND COLUMNS	1 1/2"
SLABS, WALLS AND JOISTS	
#14 BARS AND LARGER	1 1/2"
#11 BARS AND SMALLER	3/4"

13. CONSTRUCTION JOINTS IN WALLS TO BE KEYED AND PLACED AT APPROVED LOCATIONS.

14. ALL COLUMN POCKETS TO BE FILLED WITH CONCRETE AFTER COLUMN IS ERECTED.

15. SLEEVES AND OPENINGS IN BEAMS, JOISTS AND SLABS NOT SHOWN ON STRUCTURAL DRAWINGS ARE NOT PERMITTED, UNLESS APPROVED BY THE ENGINEER.

16. SLAB ON GRADE TO BE A MINIMUM **4"** THICK UNDERLAIN BY **MINIMUM 10 MIL VAPOR BARRIER** ON 6" CLEAN COMPACTED GRANULAR FILL UNLESS NOTED OTHERWISE.

17. SLABS ON GRADE SHALL BE PLACED IN CONTINUOUS STRIPS PER ACI RECOMMENDATIONS.

CONCRETE JOINTS

1. MAXIMUM SPACING OF CONSTRUCTION AND/OR CONTRACTION JOINTS IN SLAB-ON-GRADE CONSTRUCTION SHALL BE **12'-0" O.C.** JOINTS SHALL BE PLACED TO PRODUCE PANELS THAT ARE AS SQUARE AS POSSIBLE AND NEVER EXCEEDING A LENGTH TO WIDTH RATIO OF 1.5 TO 1.

2. CONSTRUCTION AND/OR CONTRACTION JOINTS FOR SLAB-ON-GRADE CONSTRUCTION SHALL BE LOCATED ON COLUMN LINES.

REINFORCED MASONRY

1. ALL REINFORCED CONCRETE MASONRY MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING:

A. ACI 530.1/ASCE 6/TMS 602 "SPECIFICATION FOR MASONRY STRUCTURES".

B. ACI 530/ASCE 5/TMS 402 "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES".

2. NOTES APPLY TO MASONRY SHOWN ON STRUCTURAL DRAWINGS AND SHALL BE THE MINIMUM REQUIREMENTS FOR MASONRY SHOWN ON THE ARCHITECTURAL DRAWINGS.

3. CONCRETE MASONRY:

A. COMPRESSIVE STRENGTH OF MASONRY, PRISM STRENGTH F'm = **1830 PSI**,

B. CONCRETE MASONRY UNITS: ASTM C90 MEDIUM WEIGHT. **2500 PSI**

C. GROUT: **3000 PSI**. CONCRETE WITH A SLUMP OF 8" TO 10", USING 3/8" PEA GRAVEL AND CONFORMING TO ASTM C476.

D. MORTAR: ASTM C270

TYPE- M. BELOW GRADE.
TYPE - S, TYPICAL.
TYPE- N, INTERIOR NON-LOAD BEARING WALLS.

4. ALL CONCRETE BLOCK MASONRY UNITS SHALL BE LAID IN RUNNING BOND, UNLESS NOTED OTHERWISE ON DRAWINGS.

5. REINFORCING: BARS SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE ON DRAWINGS.

6. CONTINUOUS WIRE REINFORCING (JOINT REINFORCING) SHALL BE GALVANIZED FABRICATED UNITS WITH A SINGLE PAIR OF 9 GAUGE SIDE RODS AND 9 GAUGE CROSS RODS FABRICATED FROM COLD-DRAWN STEEL WIRE COMPLYING WITH ASTM A82, JOINT REINFORCING SHALL BE SPACED AT 16" O.C. VERTICALLY IN ALL MASONRY WALLS AND AT 8" O.C VERTICALLY AT PARAPETS.

7. DOWELS FROM CAST IN PLACE CONCRETE SHALL MATCH THE VERTICAL REINFORCEMENT IN THE WALL ABOVE UNLESS OTHERWISE NOTED. SUCH DOWELS SHALL BE FURNISHED BY THE CONCRETE CONTRACTOR.

8. WHEN A FOUNDATION DOWEL DOES NOT LINE UP WITH A VERTICAL BLOCK CORE, IT SHALL NOT BE SLOPED MORE THAN ONE HORIZONTAL IN 6 VERTICAL. DOWELS MAY BE GROUTED INTO A CELL IN VERTICAL ALIGNMENT, EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCING.

9. SPLICING REINFORCING SHALL BE LAPPED 48 BAR DIAMETERS OR 24", WHICHEVER IS GREATER. MECHANICAL SPLICES MAY BE USED IN LIEU OF LAP SPLICES.

10. VERTICAL BARS SHALL BE HELD IN POSITION, USING BAR POSITIONERS AT INTERVALS NOT EXCEEDING 200 DIAMETERS OF THE REINFORCING, AND AT TOP OF WALL.

11. VERTICAL REINFORCING BARS SHALL HAVE A MINIMUM CLEARANCE OF 3/4" FROM THE MASONRY OR ADJACENT BARS AND NOT LESS THAN ONE BAR DIAMETER BETWEEN BARS NOT SPLICED. HORIZONTAL STEEL SHALL MAINTAIN 1" MINIMUM CLEARANCE FROM THE MASONRY.

12. VERTICAL GROUTING MAY BE EITHER "LOW LIFT" OR "HIGH LIFT" AT THE CONTRACTOR'S OPTION.

13. VERTICAL CELLS THAT WILL BE GROUTED SHALL HAVE VERTICAL ALIGNMENT TO MAINTAIN A CONTINUOUS UNOBSTRUCTED CELL AREA NOT LESS THAN 2"x3".

14. GROUTING SHALL BE STOPPED 1-1/2" BELOW THE TOP OF A COURSE SO AS TO FORM A KEY AT THE POUR JOINT.

15. GROUTING OF MASONRY BEAMS OVER OPENINGS SHALL BE DONE IN ONE CONTINUOUS OPERATION.

16. ALL STEEL BEAMS BEARING ON MASONRY WALLS SHALL HAVE 3 COURSES MINIMUM FILLED WITH GROUT DIRECTLY BELOW THE BEARING POINT UNLESS NOTED OTHERWISE.

17. ALL BOLTS, ANCHORS, ETC., INSERTED IN THE WALLS, SHALL BE GROUTED SOLID INTO POSITION.

18. ALL HORIZONTAL REINFORCING (JOINT REINFORCING AND REBAR) SHALL STOP AT CONTROL JOINTS EXCEPT BOND BEAMS CONTINUOUS AT FLOORS AND ROOFS.

19. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DETAILS OF DOOR AND WINDOW OPENINGS FOR SPECIAL COURSING AND OTHER MASONRY DETAILS. THE INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS IS INTENDED TO DEFINE THE STRUCTURAL REQUIREMENTS ONLY.

20. PROVIDE BOND BEAMS AT: TOP AND BOTTOM OF OPENINGS (EXTEND MINIMUM OF 2'-0" PAST OPENING), TOP OF WALLS, FLOOR LINES, ROOF LINES, TOP OF PARAPETS, BELOW JOIST AND TRUSS BEARING, AND AT FLOOR AND ROOF DECK CONNECTIONS TO WALLS. WHERE JOIST, TRUSS, DECK, ETC. HAVE SLOPED BEARING ELEVATIONS, PROVIDE MULTIPLE BOND BEAMS AND STEP AS REQUIRED. BOND BEAMS SHALL BE CONTINUOUS UNLESS NOTED OTHERWISE.

21. CONTINUE VERTICAL REINFORCING FLOOR TO FLOOR (OR ROOF) AND EXTEND TO TOP OF PARAPET.

22. COORDINATE BLOCKOUTS, REVEALS, HOLES, OPENINGS, AND BUILT IN ITEMS WITH ALL CONTRACT DOCUMENTS AND TRADES.

23. GROUT SOLID MASONRY AT BOND BEAMS, CELLS CONTAINING VERTICAL REINFORCING, PARTIAL HEIGHT COURSES BETWEEN BOND BEAMS AND JOIST, TRUSS, DECK, BEARING, BELOW BEAMS AND LINTELS FOR FULL HEIGHT OF WALL≥24" WIDE, COLUMNS & PILASTERS **AND MASONRY BELOW FINISHED GRADE OR FINISHED FLOOR**.

24. CONTRACTOR TO PROVIDE A 1'-4" X 8" STRIP FOOTING OR THICKENED SLAB WITH (2) #5 BAR CONTINUOUS UNDER ALL NON-BEARING MASONRY WALLS UNLESS NOTED OTHERWISE.

25. SEE ARCHITECTURAL DRAWINGS FOR MOVEMENT JOINT LOCATIONS, UNLESS NOTED OTHERWISE. MAXIMUM JOINT SPACING SHALL NOT EXCEED 24'-0" O.C.

STRUCTURAL STEEL

1. STRUCTURAL STEEL WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING:

A. AISC – "SPECIFICATION FOR DESIGN, FABRICATION AND ERECTION OF STEEL FOR BUILDINGS"

B. AISC – "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"

C. AWS D1.1 – "STRUCTURAL WELDING CODE – STEEL"

D. AISC – "STRUCTURAL STEEL DETAILING MANUAL"

2. STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE.

HOT ROLLED WF AND WT SHAPES	ASTM A992	(FY = 50 KSI)
PLATES, CHANNELS, & ANGLES	ASTM A36	(FY = 36 KSI)
S, M, AND HP SHAPES	ASTM A36	(FY = 36 KSI)
STEEL PIPE	ASTM A53 TYPE E OR S GR B	(FY = 35 KSI)
RECTANGULAR HSS	ASTM A500 GR B	(FY = 46 KSI)
ROUND HSS	ASTM A500 GR B	(FY = 42 KSI)
HIGH STRENGTH BOLTS	ASTM A325 3/4" DIAMETER (MIN.)	
ANCHOR RODS	ASTM F1554 GR 36	(FY = 36 KSI)
THREADED ROD	ASTM A36	(FY = 36 KSI)
WELDING ELECTRODES	CONFORM TO AWS D1.1 SPECS FOR WELD METAL	

3. DETAIL STEEL BEAM CONNECTIONS AS SIMPLE SPAN BEAMS, UNLESS NOTED OTHERWISE.

4. SUBMIT SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE STRUCTURAL ELEMENTS AND CONNECTIONS SHOWN IN THE CONTRACT DOCUMENTS. CONNECTIONS SHALL BE DETAILED BASED ON THE DESIGN INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS. CONNECTIONS SHALL BE DESIGNED FOR THE SERVICE LOAD REACTION VALUES SHOWN ON THE STRUCTURAL DRAWINGS. FOR STEEL MEMBERS WHOSE REACTIONS ARE NOT SHOWN, THE DESIGN REACTION SHALL BE OBTAINED FROM THE TABLES ENTITLED "MAXIMUM TOTAL UNIFORM LOAD" IN THE AISC "STEEL CONSTRUCTION MANUAL", LATEST EDITION. THE DESIGN REACTION IS EQUAL TO HALF THE TABULATED VALUE FOR NONCOMPOSITE BEAMS AND EQUAL TO THE TABULATED VALUE FOR COMPOSITE BEAMS. DEVIATION FROM THE CONNECTION DETAILS DEPICTED IN THE CONTRACT DOCUMENTS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER. REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE FULL RESPONSIBILITY FOR THE DESIGN AND ADEQUACY OF SUCH CONNECTIONS. STRUCTURAL ENGINEER SHALL BE COMPENSATED BY THE CONTRACTOR FOR THE COST INVOLVED IN THE REDESIGN OF CONNECTIONS FOR THE CONVENIENCE OF THE CONTRACTOR.

5. BOLT TIGHTENING

A. ALL BOLTED CONNECTIONS TO BE DESIGNED AS SNUG-TIGHT BEARING CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE, UNLESS NOTED OTHERWISE.

B. ALL BOLTS IN MOMENT CONNECTIONS TO BE SLIP-CRITICAL.

C. ALL BOLTS IN HANGER CONNECTIONS TO BE SLIP-CRITICAL.

D. ALL BOLTED CONNECTIONS DESIGNATED AS PRE-TENSIONED PER ASTM F1852 OR SLIP-CRITICAL (FRICTION) SHALL BE INSTALLED WITH LOAD INDICATOR WASHERS OR TENSION CONTROLLED BOLTS.

6. ALL WELDS SHALL BE MADE BY WELDERS, CERTIFIED ACCORDING TO AWS PROCEDURES.

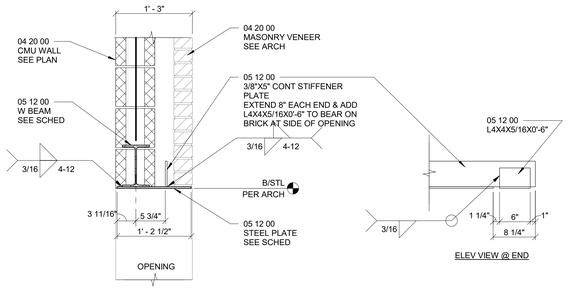
7. ALL FILLER METAL USED IN WELDING SHALL BE 70 KSI YIELD LOW-HYDROGEN.

8. ALL WELDS TO BE VISUALLY INSPECTED.

A. 15% OF FIELD & SHOP GROOVE WELDS TO BE TESTED BY NON-DESTRUCTIVE TESTING.

B. 20% OF FIELD & SHOP FILLET WELDS TO BE TESTED BY NON-DESTRUCTIVE TESTING.

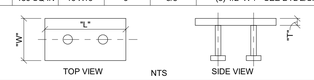
9. UNLESS NOTED OTHERWISE, STRUCTURAL STEEL SUPPLIER IS TO FURNISH SHOP WELDED ANGLE FRAMES AT ALL FLOOR AND ROOF OPENINGS. VERIFY SIZE AND LOCATION WITH MECHANICAL (M/E/P/FP) CONTRACTOR



1 2-SI-101 LINTEL DETAIL- L5 & L6
1" = 1'-0"

MASONRY BEARING PLATES

MARK	AREA	L	W	T	STUDS
BP1	48 SQ IN	8"	6"	1/2"	(2) 1/2" X 4"
BP2	56.25 SQ IN	7 1/2"	7 1/2"	1/2"	(2) 1/2" X 4"
BP3	80 SQ IN	10"	8"	3/4"	(2) 1/2" X 4"
BP4	156 SQ IN	16"X16"	6"	3/8"	(5) 1/2" X 4"- SEE DTL 2/SF-100



STEEL LINTELS FOR MASONRY VENEER

CLEAR SPAN	EXTERIOR ANGLES FOR BRICK
4'-0" (OR LESS)	L3 1/2" X 3 1/2" X 5/16"
5'-0"	L3 1/2" X 3 1/2" X 5/16"
6'-0"	L4" X 3 1/2" X 5/16"
7'-0"	L4" X 3 1/2" X 5/16"
8'-0"	L5" X 3 1/2" X 5/16"
9'-0"	L5" X 3 1/2" X 3/8"
10'-0"	L6" X 3 1/2" X 3/8"

NOTES
1. LINTELS SHALL BEAR A MINIMUM OF 8" EACH SIDE OF OPENING.
2. LONG LEG OF ANGLE SHALL BE VERTICAL.

REINFORCEMENT DEVELOPMENT AND SPLICE LENGTH SCHEDULE

Fy = 60 KSI f'c = 3000 PSI

BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
CLASS A SPLICE LENGTH	TOP BARS	22	29	36	43	63	72	81	91	101
	OTHERS	17	22	28	33	48	55	62	70	78
CLASS B SPLICE LENGTH	TOP BARS	28	37	47	56	81	93	105	118	131
	OTHERS	22	29	36	43	63	72	81	91	101

REINFORCEMENT DEVELOPMENT AND SPLICE LENGTH SCHEDULE

Fy = 60 KSI f'c = 4000 PSI

BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
CLASS A SPLICE LENGTH	TOP BARS	19	25	31	37	54	62	70	79	87
	OTHERS	15	19	24	29	42	48	54	61	67
CLASS B SPLICE LENGTH	TOP BARS	24	32	40	48	70	80	91	102	113
	OTHERS	19	25	31	37	54	62	70	79	87

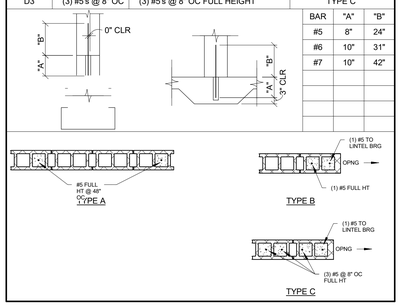
NOTES: (APPLY TO BOTH 3000 PSI & 4000 PSI CONCRETE

1. ALL SPLICE LENGTHS SHALL BE CLASS B UNLESS NOTED OTHERWISE.
2. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
3. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318-05, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY. TABULATED VALUES FOR BEAMS AND COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.
5. SPLICE AND DEVELOPMENT LENGTHS IN THIS SCHEDULE ARE BASED ON CASE 1 PER CRSI (1996):
   BEAMS OR COLUMNS: COVER AT LEAST 1.0 BAR DIA AND C-C SPACING AT LEAST 2.0 BAR DIA
   ALL OTHERS: COVER AT LEAST 1.0 BAR DIA AND C-C SPACING AT LEAST 3.0 BAR DIA

DOWEL/GROUTING REINFORCING SCHEDULE

MARK	DOWELS	CMU WALL REINFORCING	TYPE
D1	#5's @ 48" OC	#5's @ 48" OC	TYPE A
D2	(1) #5	#5 FULL HEIGHT	TYPE B
D3	(3) #5's @ 8" OC	(3) #5's @ 8" OC FULL HEIGHT	TYPE C

BAR	"A"	"B"
#5	8"	24"
#6	10"	31"
#7	10"	42"



ISOLATED FOOTING SCHEDULE

MARK	SIZE	REINFORCING	DETAIL
F1	3'-0"x3'-0"x12"	#5's @ 12" OC EACH WAY BOTTOM BARS	16/SB-500

CONCRETE PIER SCHEDULE

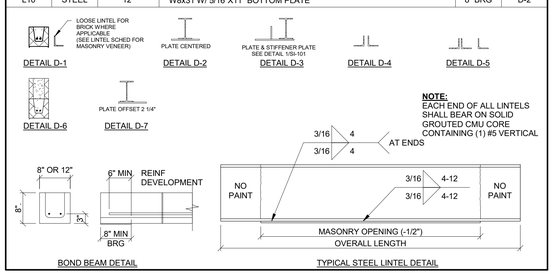
MARK	SIZE	REINFORCING	DETAIL
P1	1'-8"x1'-8"	(8) #6 VERTICAL & #3 TIES, BUNDLE TOP 3 REMAINDER @ 12" OC	10/SB-501
P2	1'-8"x2'-0"	(8) #6 VERTICAL & #3 TIES, BUNDLE TOP 3 REMAINDER @ 12" OC	10/SB-501
P3	2'-0"x2'-0"	(8) #6 VERTICAL & #3 TIES, BUNDLE TOP 3 REMAINDER @ 12" OC	10/SB-501
P4	2'-6"x3'-0"	(12) #6 VERTICAL & #3 TIES, BUNDLE TOP 3 REMAINDER @ 12" OC	10/SB-501
P5	2'-0"x4'-6"	(16) #6 VERTICAL & #3 TIES, BUNDLE TOP 3 REMAINDER @ 12" OC	10/SB-501

STEEL COLUMN SCHEDULE

		BASE PLATES					
MARK	SIZE	SIZE (txBxN)	"A"	"C"	ANCHOR BOLTS	T/CONC	DETAIL
SC1	HSS5x5x3/8	1 1/4"X9"x11"	3"	4"	(4) 5/8"x1'-2" THRD ROD	SEE PLAN	2/SF-101
SC2	HSS8x6x1/2	3/4"X10"x15"	-	-	(4) 5/8"x1'-2" THRD ROD	SEE PLAN	4/SF-101

MASONRY LINTEL SCHEDULE

MARK	TYPE	MAS. WIDTH	SIZE	BEARING	DETAIL
L1	MASONRY	8"	8" DEEP CMU BOND BEAM LINTEL w/(2) # 5 CONT	8" BRG	D-1
L2	MASONRY	12"	16" DEEP CMU BOND BEAM LINTEL w/(2) # 5 CONT	8" BRG	D-6
L3	STEEL	8"	(2)L4X3 1/2X5/16 (LLV)	8" BRG	D-4
L4	STEEL	8"	W8x18 W/ 5/16"X7" BOTTOM PLATE	8" BRG	D-2
L5	STEEL	SEE PLAN	W8x13 W/ 5/16"x14 1/2" BOTTOM PLATE W/ 3/8"X5" PLATE	8" BRG	D-3
L6	STEEL	SEE PLAN	W8x18 W/ 5/16"X14 1/2" BOTTOM PLATE W/ 3/8"X5" PLATE	8" BRG	D-3
L7	STEEL	SEE PLAN	W8x24 W/ 5/16"X11" BOTTOM PLATE	8" BRG	D-2
L8	STEEL	12"	(3)L4X3 1/2X5/16 (LLV)	8" BRG	D-5
L9	STEEL	12"	W8x24 W/ 5/16"X11" BOTTOM PLATE	8" BRG	D-7
L10	STEEL	12"	W8x31 W/ 5/16"X11" BOTTOM PLATE	8" BRG	D-2

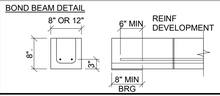


LINTEL SCHEDULE FOR NON-LOAD BEARING MASONRY WALLS

CLEAR SPAN	8" CMU WALL		12" CMU WALL	
	CMU LINTEL	STEEL LINTEL	CMU LINTEL	STEEL LINTEL
3'-0" OR LESS	(2) #4	(2) L3 1/2"x3 1/2"x5/16"	(2) #5	(3) L3 1/2"x3 1/2"x5/16"
3'-0" TO 5'-0"	(2) #5	(2) L4x3 1/2"x5/16"	(2) #5	(3) L4x3 1/2"x5/16"
5'-0" TO 6'-0"	(2) #5	(2) L5x3 1/2"x5/16"	(2) #5	(3) L5x3 1/2"x5/16"
6'-0" TO 8'-0"	N.A.	(2) L6"x3 1/2"x5/16"	N.A.	W8x10 w/ 5/16"x11 1/2" CONT PLATE
8'-0" TO 10"-0"	N.A.	W8x10 w/ 5/16"x 7 1/2" CONT. PL.	N.A.	W8x10 w/ 5/16"x11 1/2" CONT PLATE
10'-0" OR MORE	SEE DRAWINGS			

NOTES
1. OPENINGS 6'-4" OR LESS SHALL BE BOND BEAMS. LONGER OPENINGS SHALL BE STEEL.
2. LONG LEG OF ANGLE SHALL BE VERTICAL.
3. LINTELS SHALL BEAR A MIN OF 8" ON EACH SIDE OF OPENING.
4. CMU LINTEL REINFORCING SHALL HAVE 2 1/2" COVER TO THE BOTTOM OF THE BLOCK AND THE BLOCK SHALL BE GROUTED SOLID
5. ALL BEARING PLATES FOR W8x10 TO BE WIDTH OF BLOCK x 8" x5/16".

BOND BEAM DETAIL



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Project Number: 31180284.000 R18

MANAWA

ADDITIONS AND REMODELING FOR:
MANAWA MIDDLE & HIGH SCHOOL
2101 SCHAEFER CIRCLE, APPLTON, WI 54915

MARK	DATE

ISSUED: 05-03-19
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: BJR
CHECKED BY: LAW

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SHEET TITLE:
SCHEDULES

SHEET NUMBER:
2-SI-101

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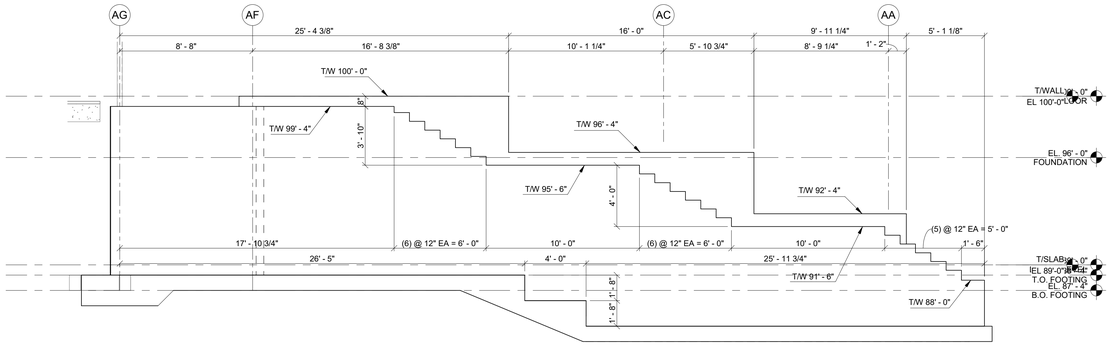
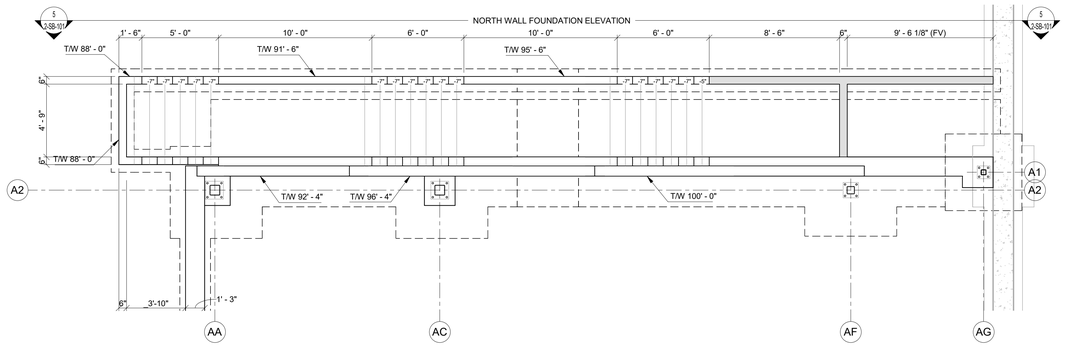
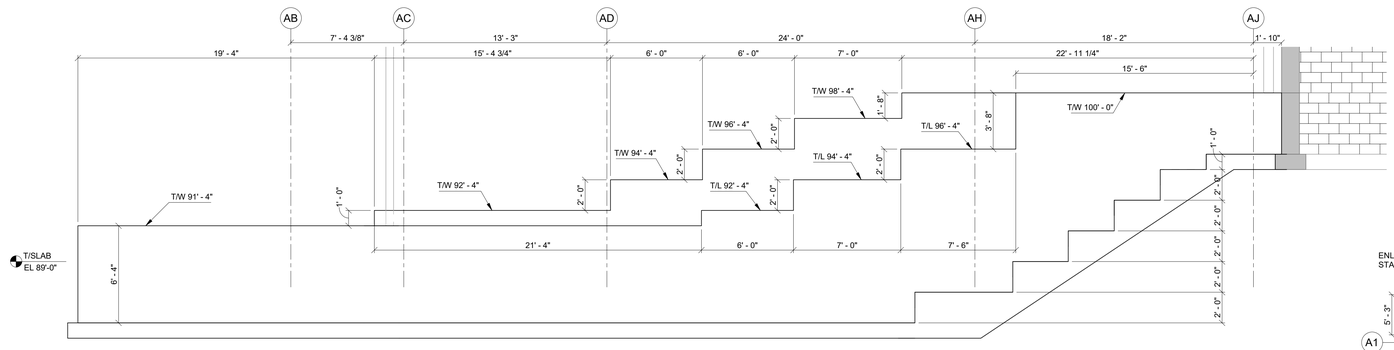


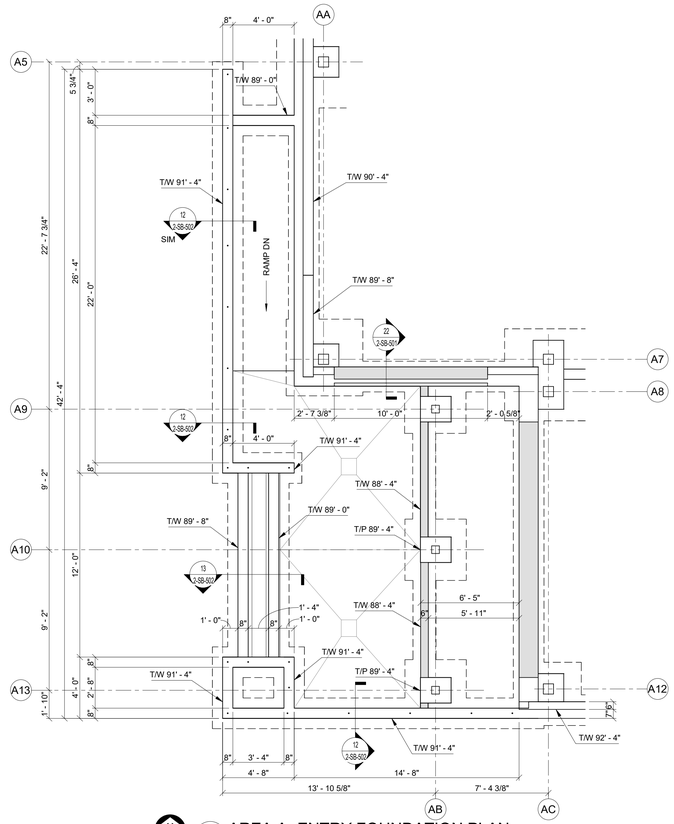
5 2-SB-101 **AREA A- NORTH WALL FND ELEVATION**
1/4" = 1'-0"



4 2-SB-101 **AREA A- NORTH STAIRS FOUNDATION PLAN**
1/4" = 1'-0"



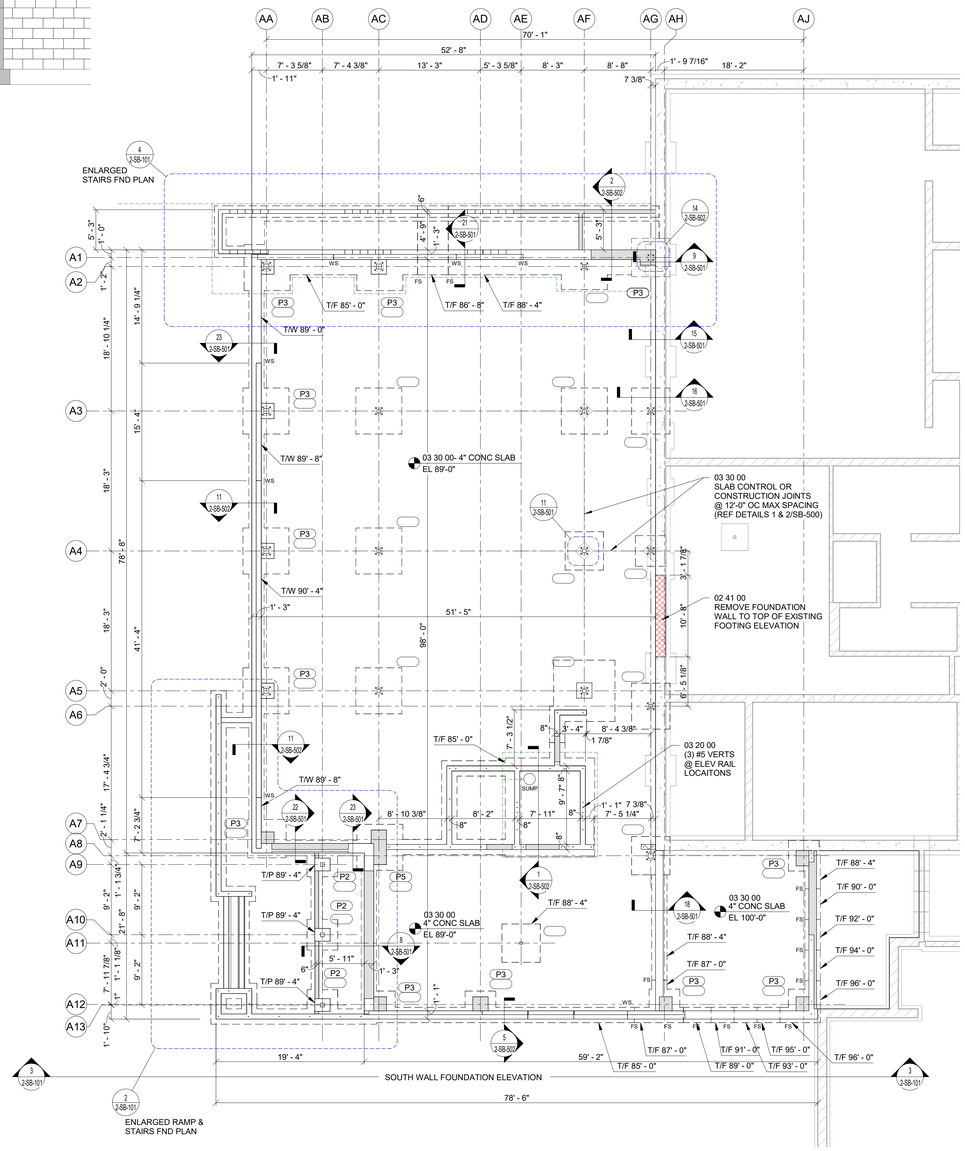
3 2-SB-101 **AREA A- SOUTH WALL FND ELEVATION**
1/4" = 1'-0"



NORTH 2 2-SB-101 **AREA A- ENTRY FOUNDATION PLAN**
1/4" = 1'-0"

NOTES:

1. SEE SHEET SI-100 FOR GENERAL NOTES
2. SEE SHEET SI-101 FOR SCHEDULES
3. TOP OF FOUNDATION WALL ELEVATION= 100'-0" (UNO)
4. INTERIOR FLOOR SLABS= 4" CONCRETE SLAB ON GRADE - UNREINFORCED (ELEV. 89'-0")
5. TOP OF FOOTING ELEVATION= 88'-4" (UNO)
6. ▭ INDICATES TOP OF FOUNDATION WALL OR PIER ELEVATION IS 8" BELOW FINISHED FLOOR ELEVATION
7. FS = FOOTING STEP (SEE DETAIL 7 / 2-SB-501
8. MASONRY WALLS TO HAVE (DX) VERTICAL REINFORCING. SEE DOWEL/GROUTING REINFORCING SCHEDULE ON SI-101



2 2-SB-101 ENLARGED RAMP & STAIRS FND PLAN

NORTH 1 2-SB-101 **FOUNDATION PLAN- AREA A**
1/8" = 1'-0"

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Project Number: 31180284.000

MANAWA

ADDITIONS AND REMODELING FOR:
MANAWA MIDDLE & HIGH SCHOOL
2101 SCHAEFER CIRCLE, APPLTON, WI 54915

MARK	DATE
ISSUED:	05-03-19
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	BJR
CHECKED BY:	LAW

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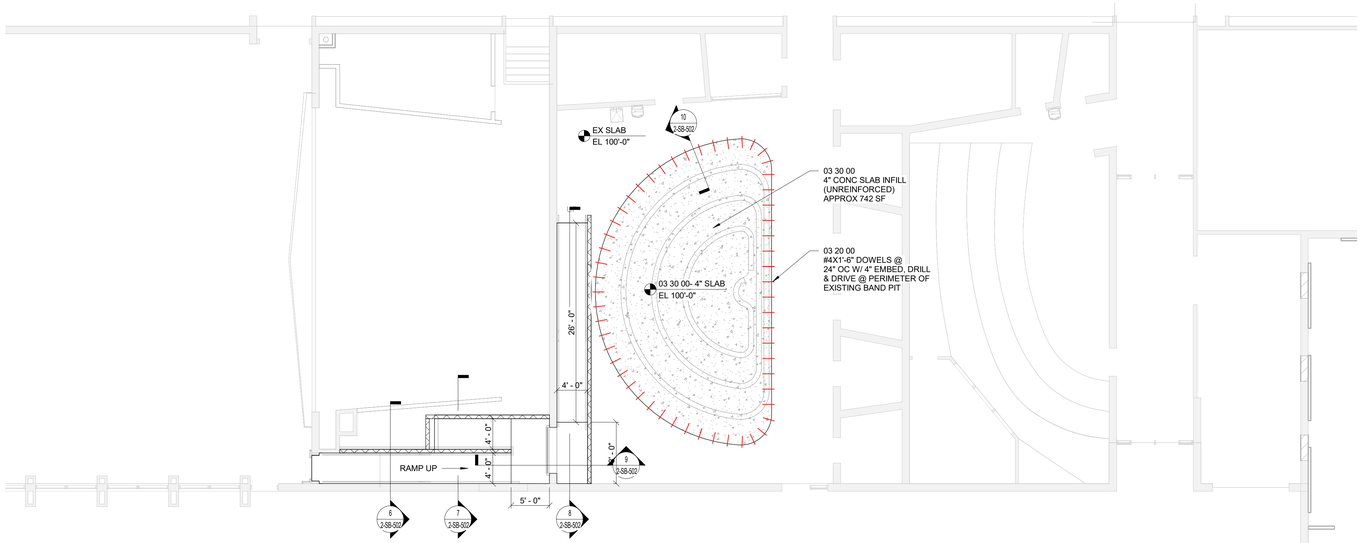
SHEET TITLE:
FOUNDATION PLAN- AREA A

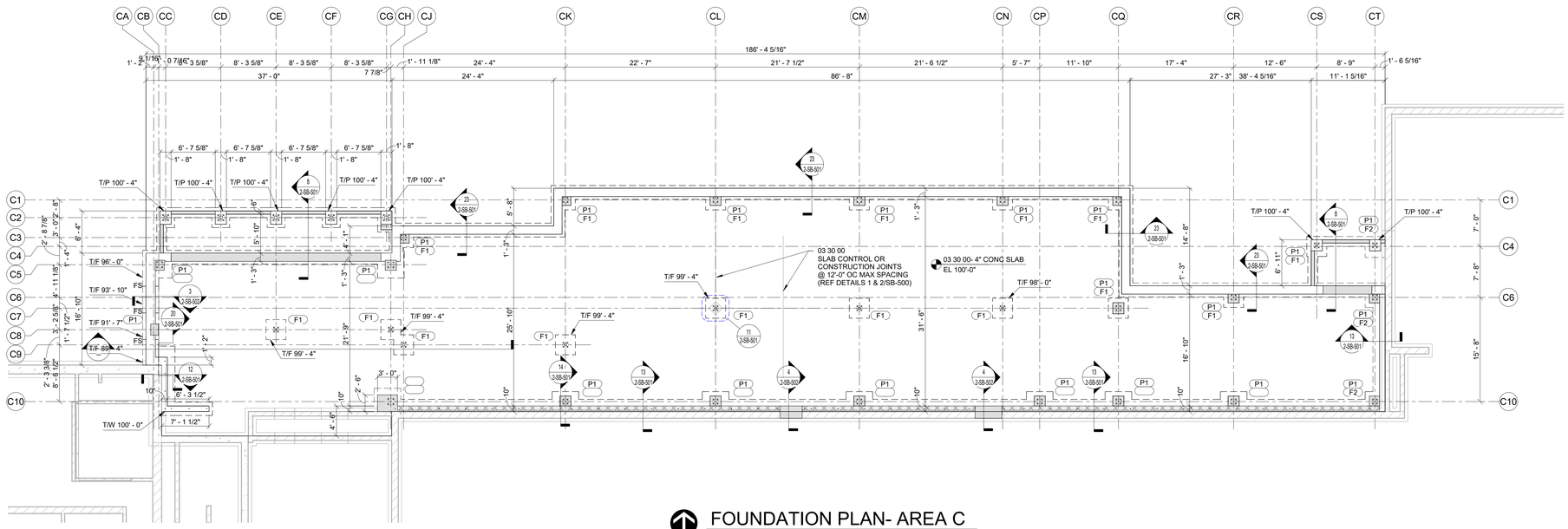
SHEET NUMBER:
2-SB-101



NORTH

FOUNDATION PLAN- AREA D

1/8" = 1'-0"



NORTH

FOUNDATION PLAN- AREA C

1/8" = 1'-0"

NOTES:

1. SEE SHEET SI-100 FOR GENERAL NOTES
2. SEE SHEET SI-101 FOR SCHEDULES
3. TOP OF FOUNDATION WALL ELEVATION= 100'-0" (UNO)
4. INTERIOR FLOOR SLABS= 4" CONCRETE SLAB ON GRADE - UNREINFORCED (ELEV. 100'-0")
5. TOP OF FOOTING ELEVATION= 96'-0" (UNO)
6. INDICATES TOP OF FOUNDATION WALL OR PIER ELEVATION IS 8" BELOW FINISHED FLOOR ELEVATION
7. FS = FOOTING STEP (SEE DETAIL 7 / 2-SB-501
8. MASONRY WALLS TO HAVE (DX) VERTICAL REINFORCING. SEE DOWEL/GROUTING REINFORCING SCHEDULE ON SI-101

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MARK	DATE
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CAD DWG FILE:	
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CHECKED BY:	LAW

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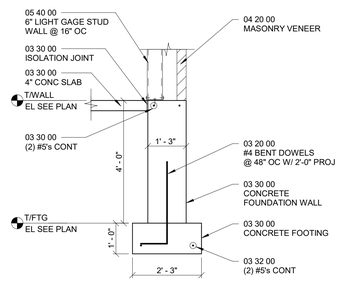
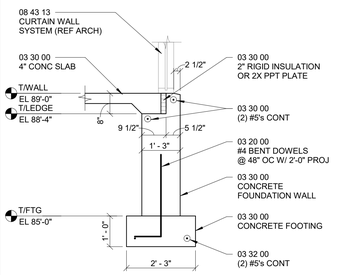
SHEET TITLE:
FOUNDATION PLAN- AREAS C & D

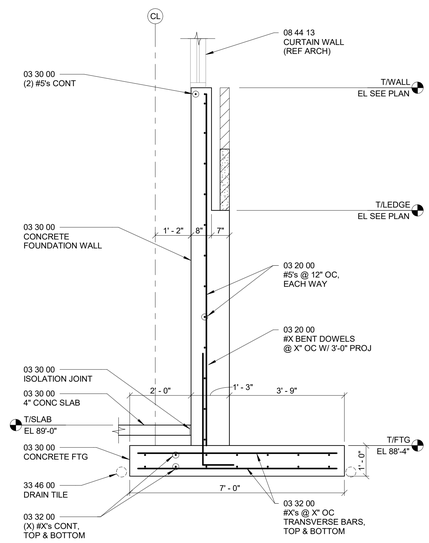
SHEET NUMBER:
2-SB-102



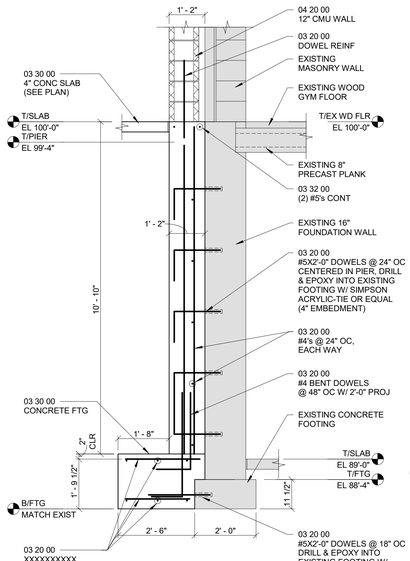
23 SECTION 2-SB-501 1/2" = 1'-0"



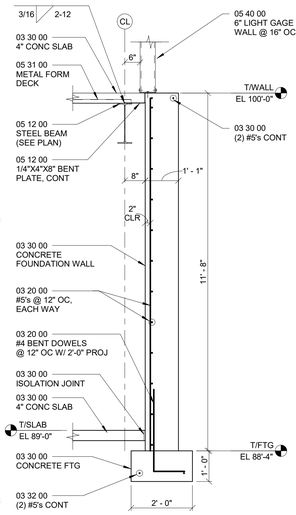
22 SECTION 2-SB-501 1/2" = 1'-0"



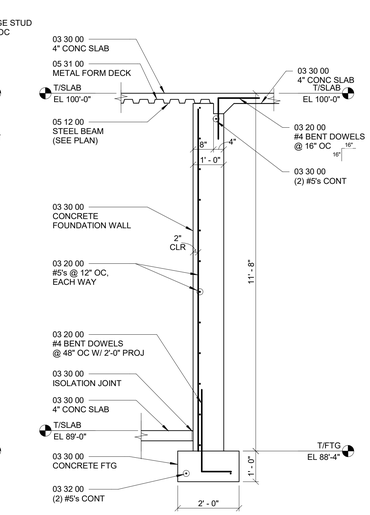
21 SECTION 2-SB-501 1/2" = 1'-0"



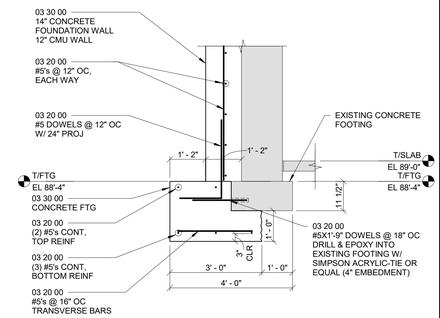
20 SECTION 2-SB-501 1/2" = 1'-0"



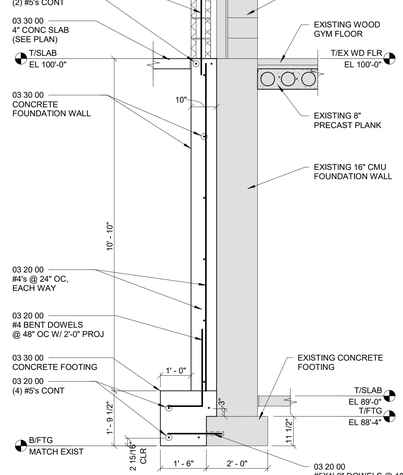
19 SECTION 2-SB-501 1/2" = 1'-0"



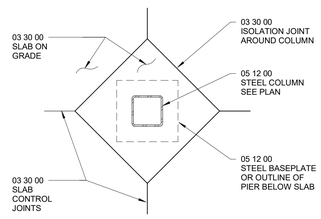
18 SECTION 2-SB-501 1/2" = 1'-0"



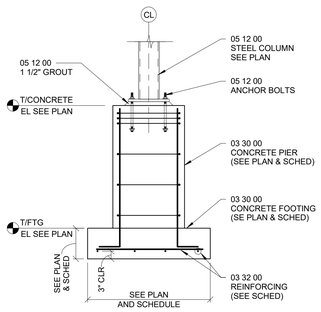
17 SECTION 2-SB-501 1/2" = 1'-0"



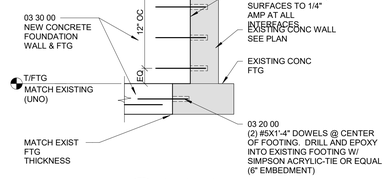
12 SECTION 2-SB-501 1/2" = 1'-0"



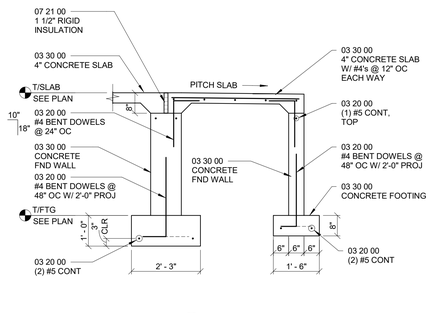
11 TYPIAL COLUMN ISOLATION JOINT 2-SB-501 1" = 1'-0"



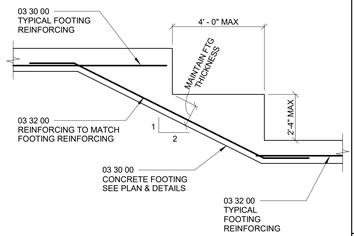
10 DETAIL 2-SB-501 1/2" = 1'-0"



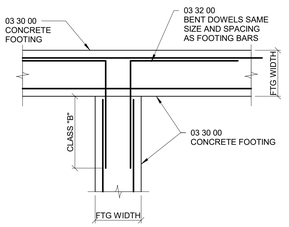
9 SECTION 2-SB-501 1/2" = 1'-0"

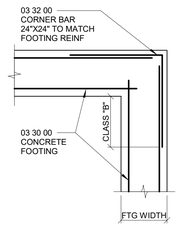


8 SECTION 2-SB-501 1/2" = 1'-0"

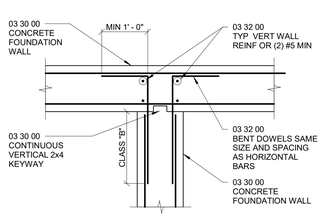


7 DETAIL 2-SB-501 3/8" = 1'-0"

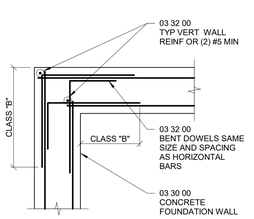




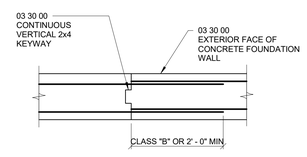
6 TYP FOOTING REINFORCING 2-SB-501 3/4" = 1'-0"



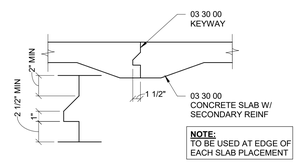
5 TYP FND WALL INTERSECTION REINF 2-SB-501 3/4" = 1'-0"



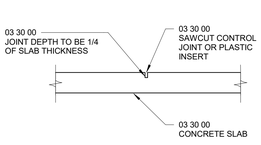
4 TYP FND WALL CORNER REINF 2-SB-501 3/4" = 1'-0"



3 TYP FND WALL CONSTRUCTION JOINT 2-SB-501 3/4" = 1'-0"



2 TYP CONC SLAB CONSTRUCTION JOINT 2-SB-501 1" = 1'-0"



1 TYP CONC SLAB CONTROL JOINT 2-SB-501 1" = 1'-0"

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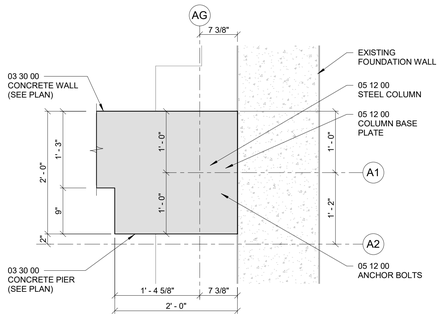
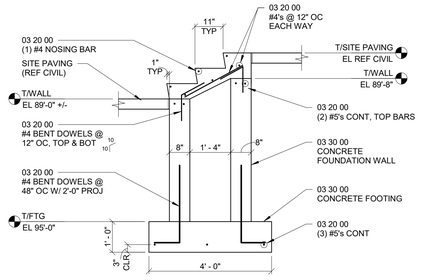
SHEET TITLE:
FOUNDATION DETAILS

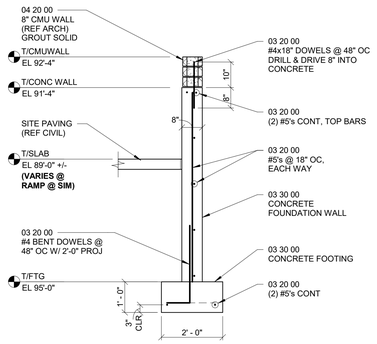
SHEET NUMBER:
2-SB-501



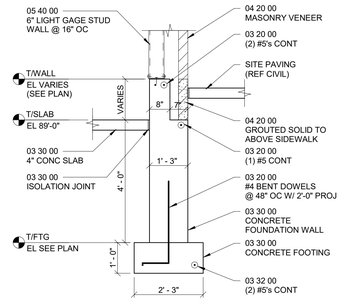
14 DETAIL 2-SB-502 1" = 1'-0"



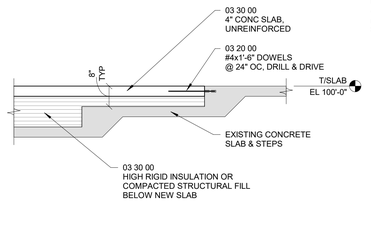
13 SECTION 2-SB-502 1/2" = 1'-0"



12 SECTION 2-SB-502 1/2" = 1'-0"



11 SECTION 2-SB-502 1/2" = 1'-0"



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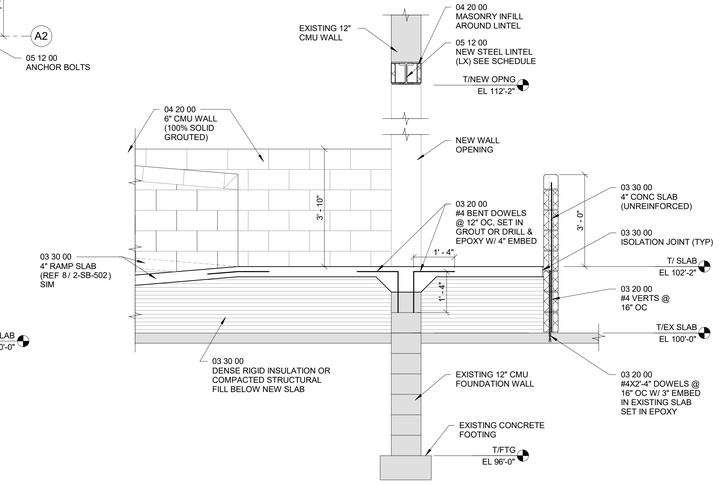
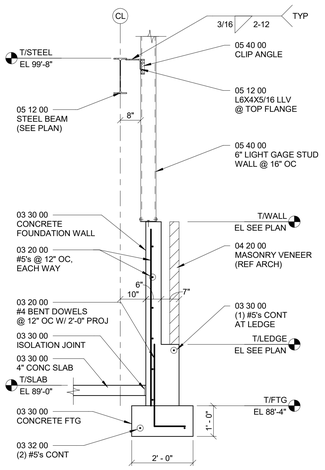


9 SECTION 2-SB-502 1/2" = 1'-0"

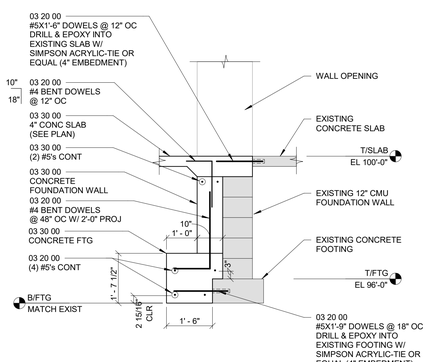
8 SECTION 2-SB-502 1/2" = 1'-0"

7 SECTION 2-SB-502 1/2" = 1'-0"

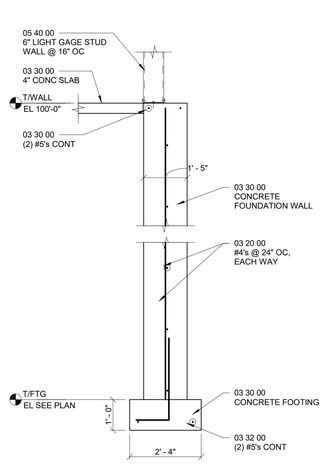
6 SECTION 2-SB-502 1/2" = 1'-0"



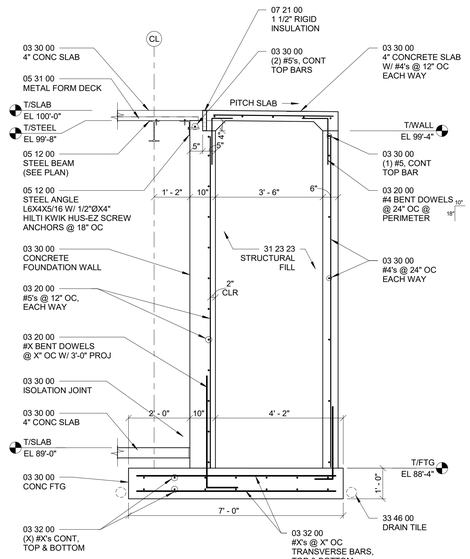
5 SECTION 2-SB-502 1/2" = 1'-0"



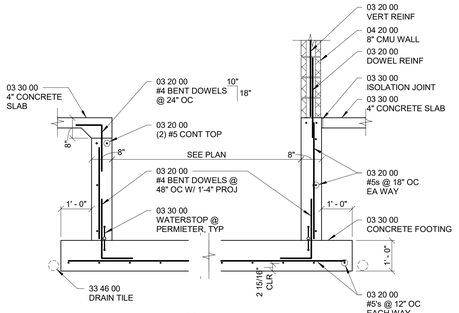
4 SECTION 2-SB-502 1/2" = 1'-0"



3 SECTION 2-SB-502 1/2" = 1'-0"



2 SECTION 2-SB-502 1/2" = 1'-0"



1 SECTION 2-SB-502 1/2" = 1'-0"

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CONSULTANT:
Larson Engineering, Inc.
2801 E. Enterprise Ave, Suite 200
Appleton, WI 54913-7703
920.734.9887 FAX 920.734.9880
www.larsonengr.com © 2019 LEI
Project Number: 31180284.000

MANAWA

ADDITIONS AND REMODELING FOR:
MANAWA MIDDLE & HIGH SCHOOL
2101 SCHAEFER CIRCLE, APPLTON, WI 54915

MARK	DATE
ISSUED:	05-03-19
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	BJR
CHECKED BY:	LAW

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SHEET TITLE:
FOUNDATION DETAILS

SHEET NUMBER:
2-SB-502

NORTH

OVERALL ROOF FRAMING PLAN

1/16" = 1'-0"

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2801 E. Enterprise Ave, Suite 200
Appleton, WI 54913-7789
920.734.9870 Fax: 920.734.9880
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MARK	DATE

ISSUED: 05-03-19
PROJECT NO: 18268
CAD DWG FILE:
DRAWN BY: Author
CHECKED BY: Checker

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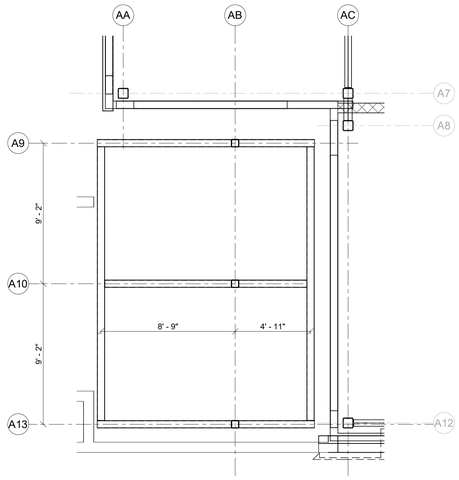
SHEET TITLE:
OVERALL ROOF FRAMING PLAN

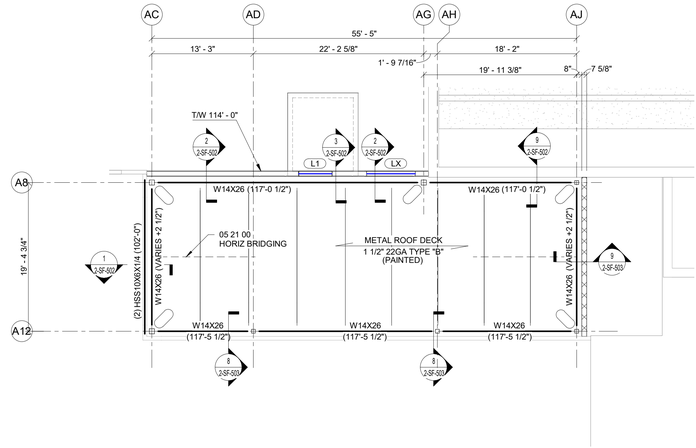
SHEET NUMBER:
2-SF-200



NORTH

4 / 2-SF-201 CANOPY FRAMING PLAN- AREA A

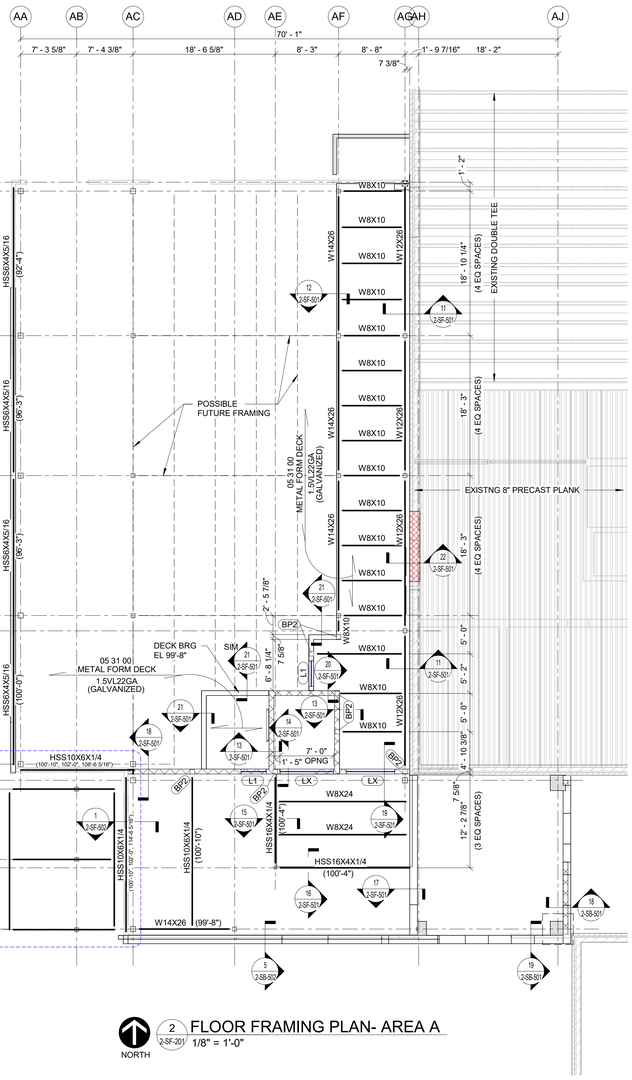
1/4" = 1'-0"



NORTH

3 / 2-SF-201 HIGH ROOF FRAMING PLAN- AREA A

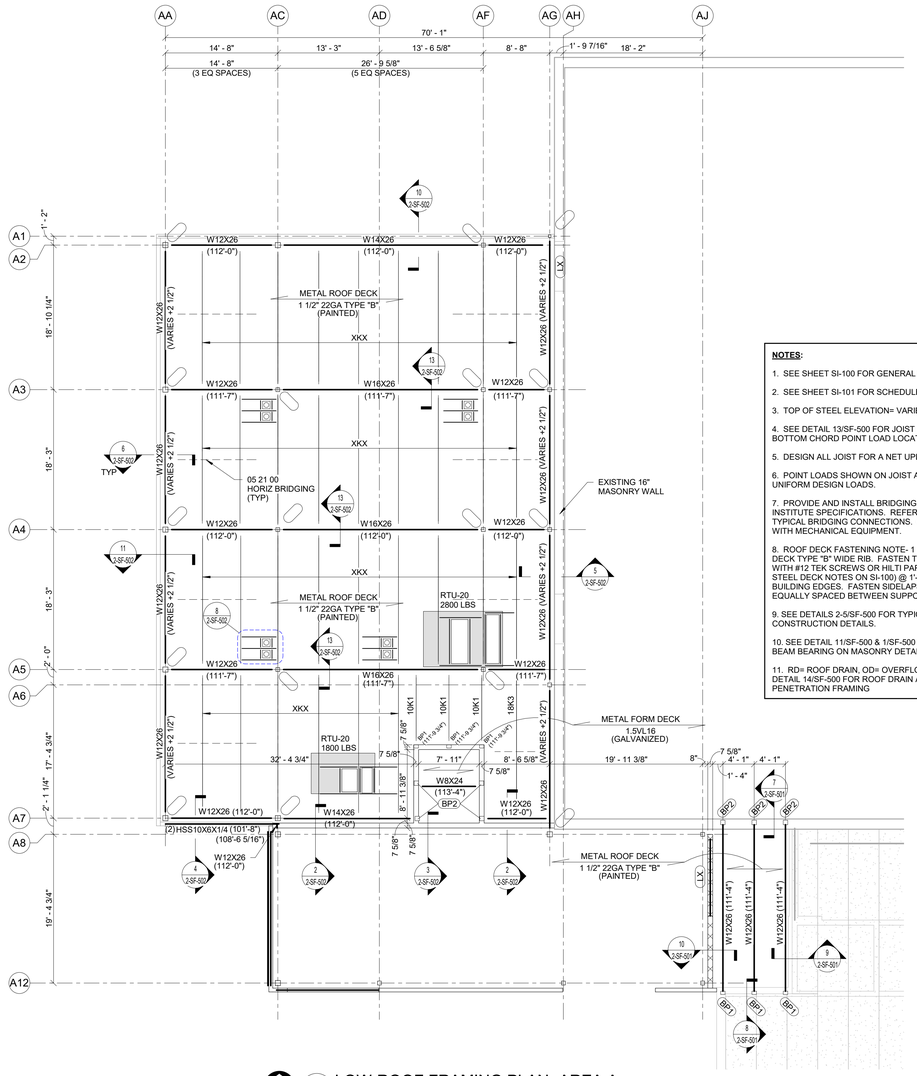
1/8" = 1'-0"



NORTH

2 / 2-SF-201 FLOOR FRAMING PLAN- AREA A

1/8" = 1'-0"



NOTES:

1. SEE SHEET SI-100 FOR GENERAL NOTES.
2. SEE SHEET SI-101 FOR SCHEDULES.
3. TOP OF STEEL ELEVATION= VARIES- XXX'-X" (SEE PLAN)
4. SEE DETAIL 13/SF-500 FOR JOIST REINFORCING AT TOP OR BOTTOM CHORD POINT LOAD LOCATIONS.
5. DESIGN ALL JOIST FOR A NET UPLIFT OF 10 PSF.
6. POINT LOADS SHOWN ON JOIST ARE IN ADDITION TO UNIFORM DESIGN LOADS.
7. PROVIDE AND INSTALL BRIDGING PER STEEL JOIST INSTITUTE SPECIFICATIONS. REFERENCE DETAIL 9/SF-500 FOR TYPICAL BRIDGING CONNECTIONS. COORDINATE LOCATIONS WITH MECHANICAL EQUIPMENT.
8. ROOF DECK FASTENING NOTE- 1 1/2"X22 GA METAL ROOF DECK TYPE "B" WIDE RIB. FASTEN TO ROOF DECK SUPPORTS WITH #12 TEK SCREWS OR HILTI PAF'S (SEE NOTE #9 UNDER STEEL DECK NOTES ON SI-100) @ 1'-0" OC IN FIELD, 6" OC AT BUILDING EDGES. FASTEN SIDELAPS W/ (4) #10 TEK SCREWS EQUALLY SPACED BETWEEN SUPPORTS.
9. SEE DETAILS 2-5/SF-500 FOR TYPICAL MASONRY WALL CONSTRUCTION DETAILS.
10. SEE DETAIL 11/SF-500 & 1/SF-500 FOR TYPICAL LINTEL AND BEAM BEARING ON MASONRY DETAILS.
11. RD= ROOF DRAIN, OD= OVERFLOW DRAIN. REFERENCE DETAIL 14/SF-500 FOR ROOF DRAIN AND MECHANICAL ROOF PENETRATION FRAMING

NORTH

1 / 2-SF-201 LOW ROOF FRAMING PLAN- AREA A

1/8" = 1'-0"

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MANAWA

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2101 SCHAEFER CIRCLE, APPLTON, WI 54915

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CHECKED BY:	LAW

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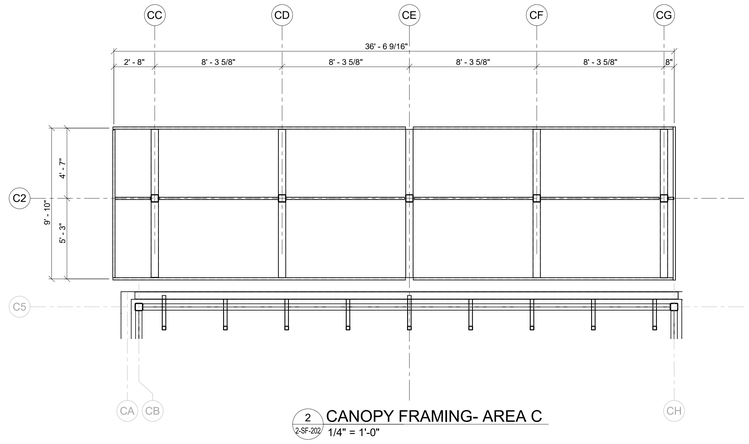
SHEET TITLE:

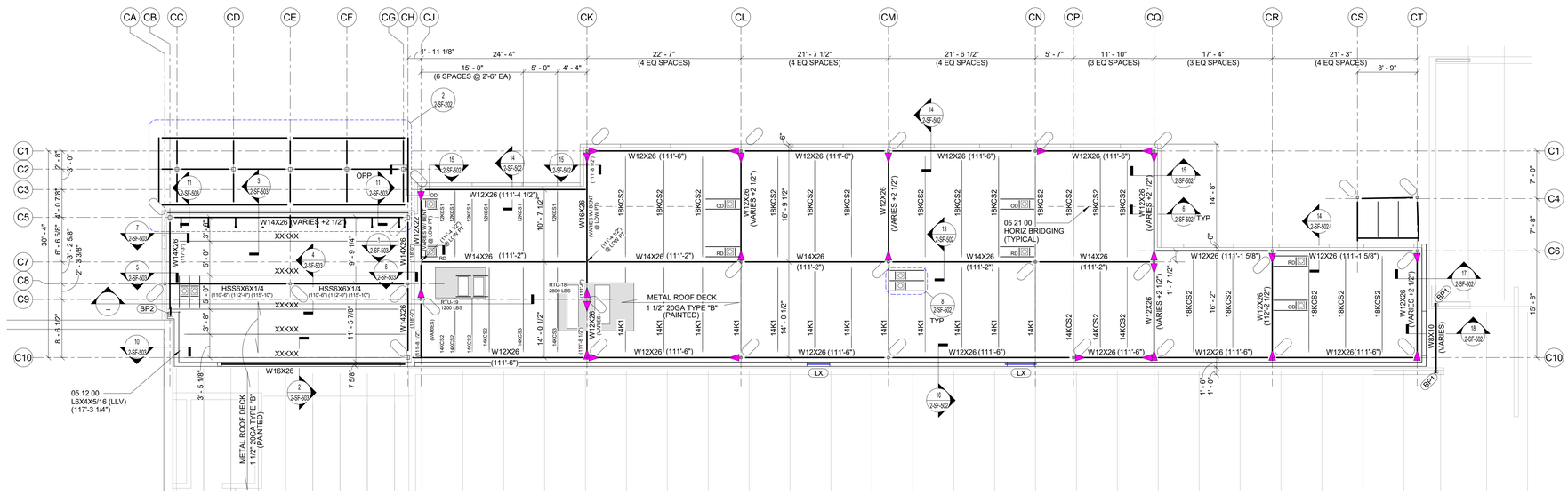
FRAMING PLANS- AREA A

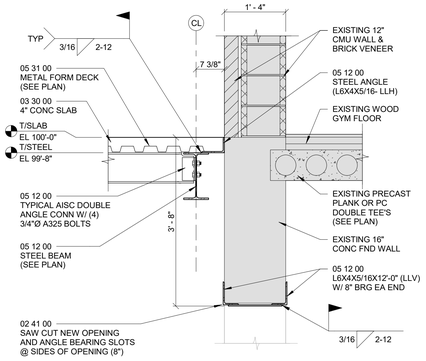
SHEET NUMBER:

2-SF-201

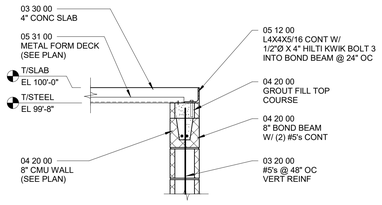


2 2-SF-202 CANOPY FRAMING- AREA C
1/4" = 1'-0"

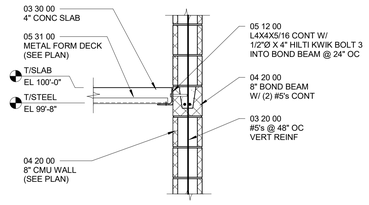

CA
CB
CC
CD
CE
CF
CG
CH
CJ
CK
CL
CM
CN
CP
CQ
CR
CS
CT
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
W12X26 (111'-6")
W14X26 (111'-2")
W16X26
W14X26 VARIES +2 1/2"
W12X26 (111'-4 1/2")
W12X26 (111'-1 5/8")
HSS6X6X1/4
HSS6X6X1/4
METAL ROOF DECK
1 1/2" 20GA TYPE "B"
(PAINTED)
05 12 00
L6X4X5/16 (LLV)
(117'-3 1/4")
05 21 00
HORIZ BRIDGING
(TYPICAL)
W12X26 (111'-6") (PAINTED)
W12X26 (111'-6") (PAINTED)
W12X26 (111'-6") (PAINTED



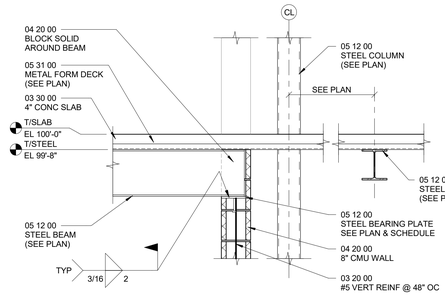
22 SECTION
2-SF-501 3/4" = 1'-0"



21 SECTION
2-SF-501 3/4" = 1'-0"



20 SECTION
2-SF-501 3/4" = 1'-0"



19 SECTION
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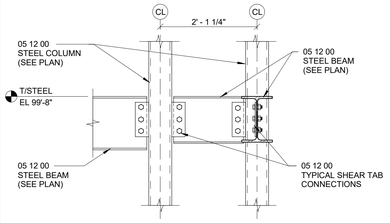

18 SECTION
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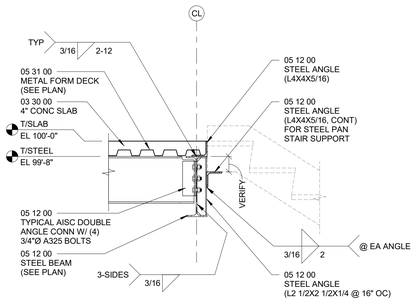
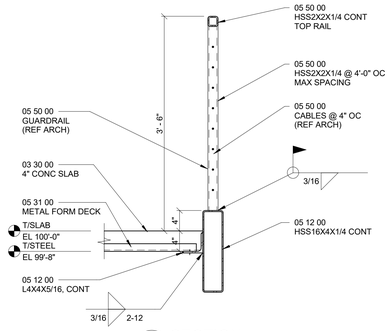
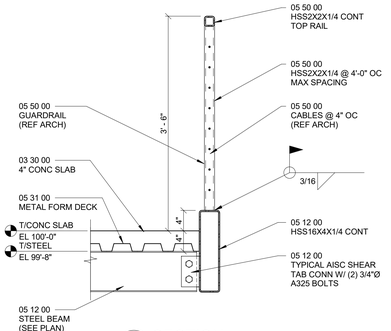


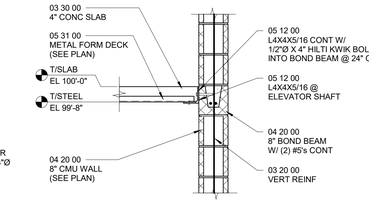
17 SECTION
2-SF-501 3/4" = 1'-0"



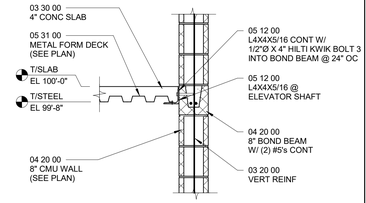
16 SECTION
2-SF-501 1" = 1'-0"



15 SECTION
2-SF-501 1" = 1'-0"



14 SECTION
2-SF-501 3/4" = 1'-0"



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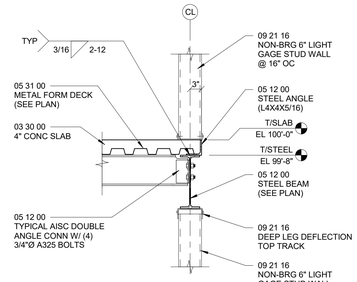

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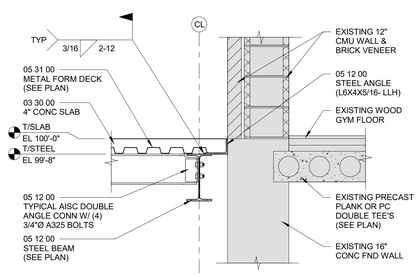

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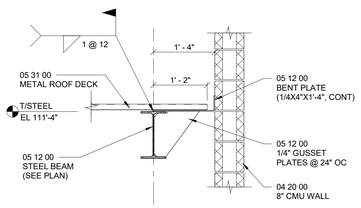

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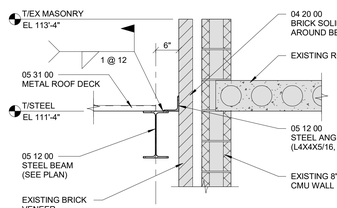
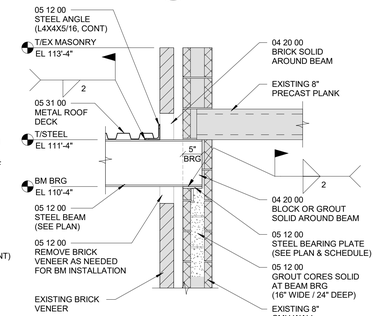
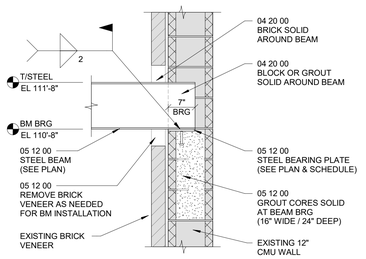
2-SF-501 3/4" = 1'-0"



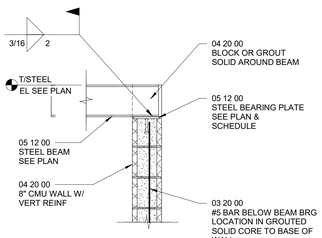
9 SECTION
2-SF-501 3/4" = 1'-0"



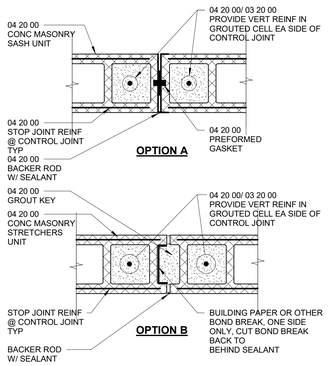
8 SECTION
2-SF-501 3/4" = 1'-0"



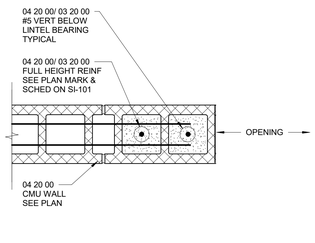
7 SECTION
2-SF-501 3/4" = 1'-0"



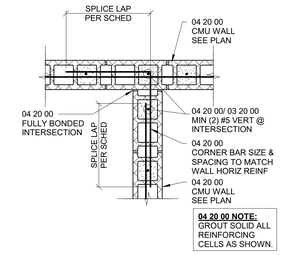
6 SECTION
2-SF-501 3/4" = 1'-0"



5 DETAIL
2-SF-501 1 1/2" = 1'-0"



4 DETAIL
2-SF-501 1 1/2" = 1'-0"



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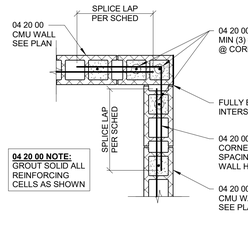
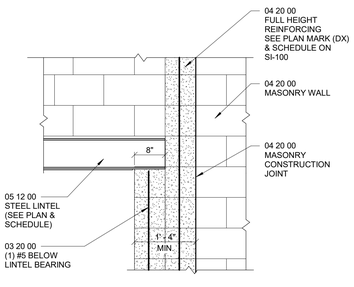
2-SF-501 3/4" = 1'-0"



2 DETAIL
2-SF-501 3/4" = 1'-0"



1 DETAIL
2-SF-501 3/4" = 1'-0"

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MANAWA

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ISSUED:	05-03-19
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	BJR
CHECKED BY:	LAW

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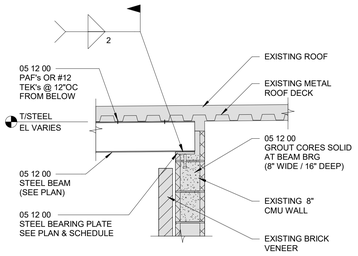
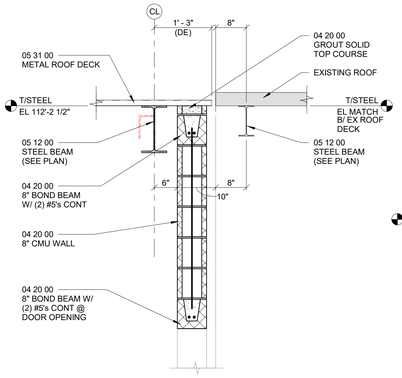
SHEET TITLE:
FRAMING DETAILS

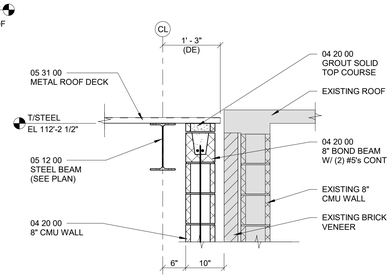
SHEET NUMBER:
2-SF-501



19 SECTION
2-SF-502 3/4" = 1'-0"



18 SECTION
2-SF-502 3/4" = 1'-0"



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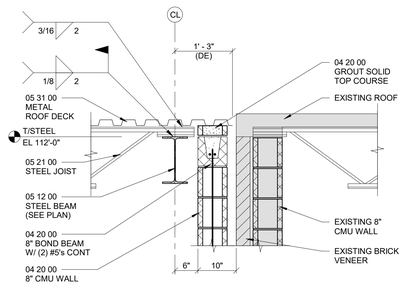
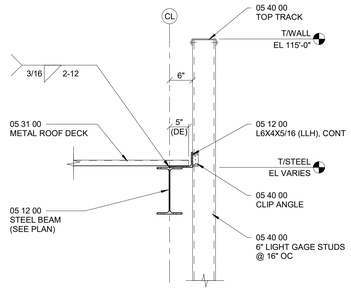
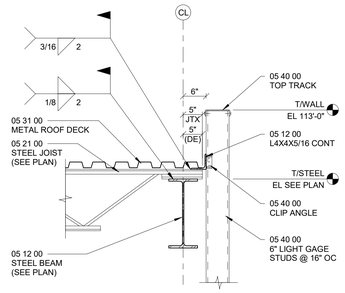
2-SF-502 3/4" = 1'-0"



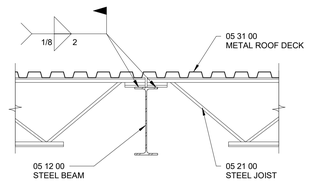
16 SECTION
2-SF-502 3/4" = 1'-0"



15 SECTION
2-SF-502 3/4" = 1'-0"



14 SECTION
2-SF-502 3/4" = 1'-0"



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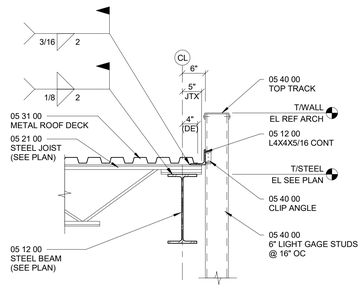

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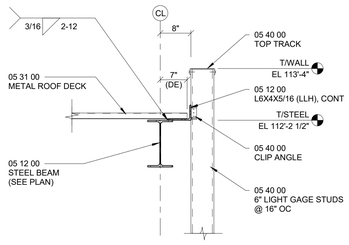

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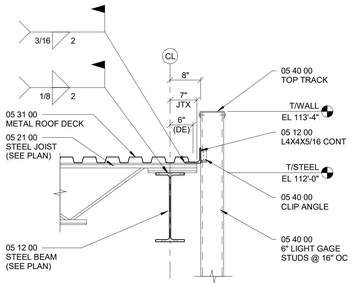

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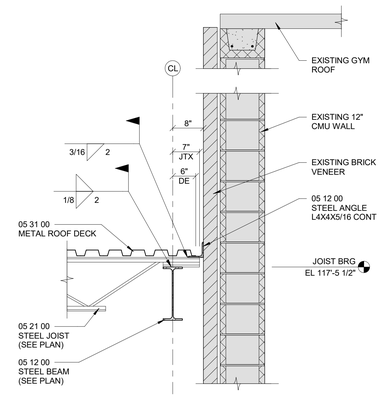

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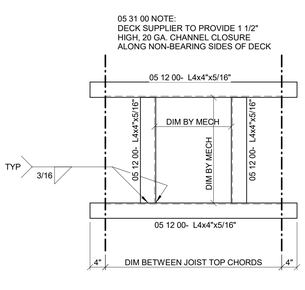

8 DETAIL
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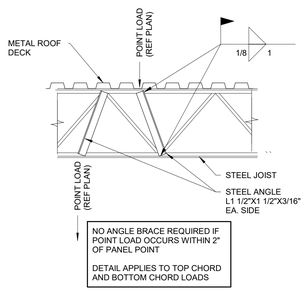

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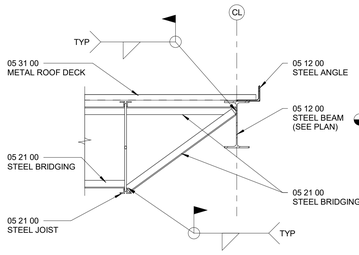

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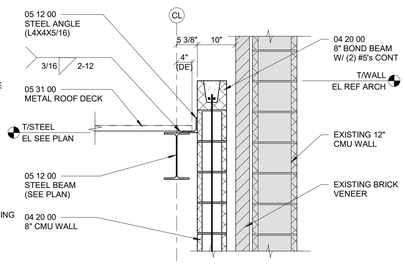

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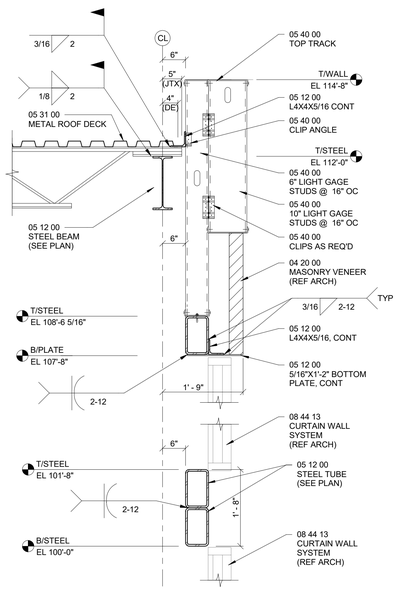

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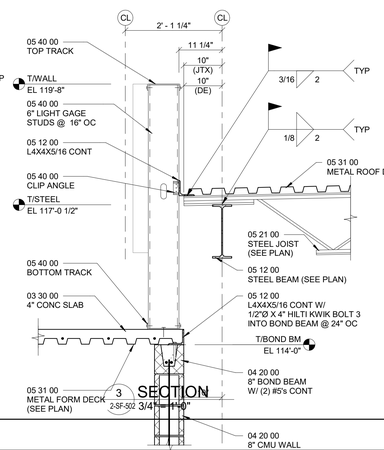

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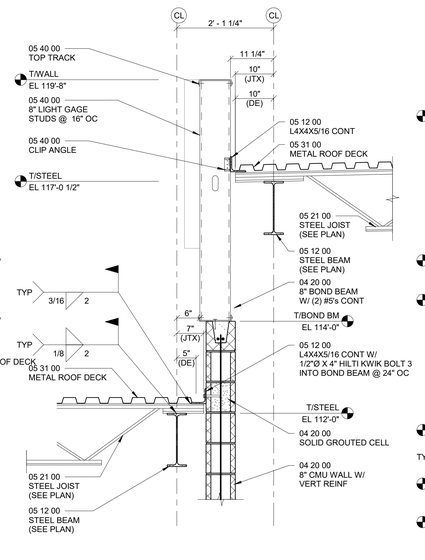

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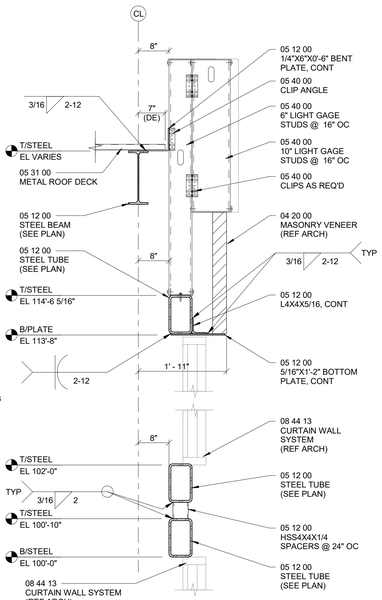

1 SECTION
2-SF-502 3/4" = 1'-0"

PRELIMINARY NOT FOR CONSTRUCTION

5/3/2019 1:50:27 PM BIM 360://Manawa Schools/31180284- Manawa HS- R18.rvt

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Planning, Design & Construction, Inc.
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CONSULTANT:
Larson Engineering, Inc.
2801 E. Enterprise Ave, Suite 200
Appleton, WI 54913-7989
920.734.9870 Fax: 920.734.9880
www.larsonengr.com © 2019 LEI
Project Number: 31180284.000

MANAWA

ADDITIONS AND REMODELING FOR:
MANAWA MIDDLE & HIGH SCHOOL
2101 SCHAEFER CIRCLE, APPLTON, WI 54915

MARK	DATE
ISSUED:	05-03-19
PROJECT NO:	18268
CAD DWG FILE:	
DRAWN BY:	BJR
CHECKED BY:	LAW

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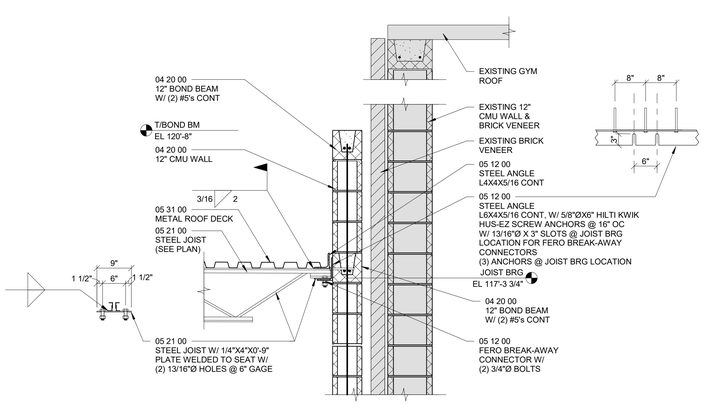
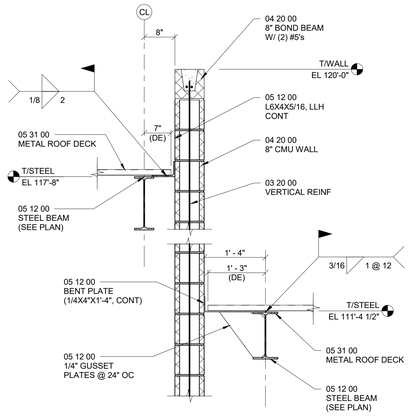
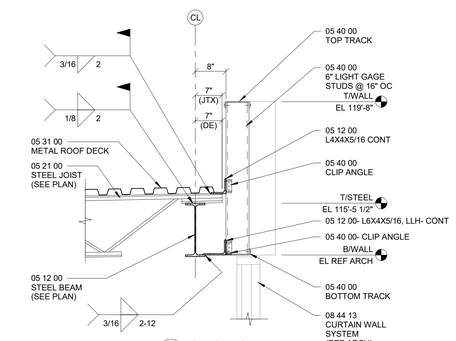
CONSTRUCTION, INC.

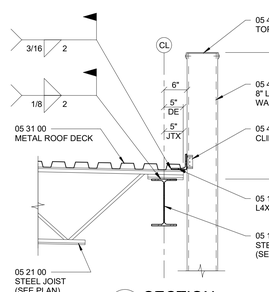
SHEET TITLE:
FRAMING DETAILS

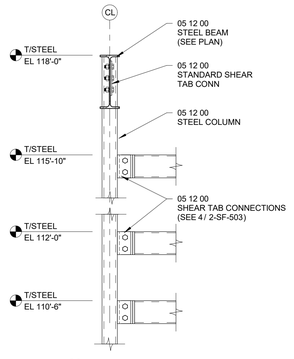
SHEET NUMBER:
2-SF-502

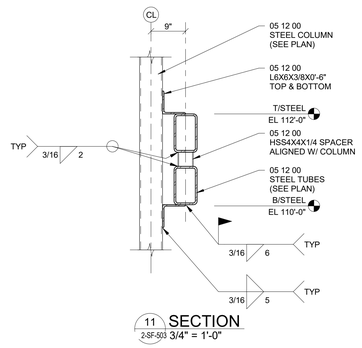


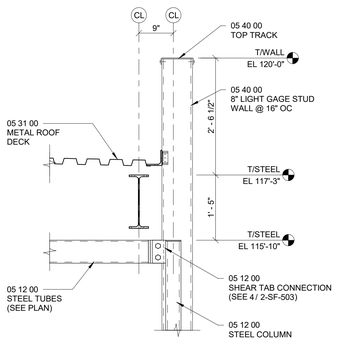


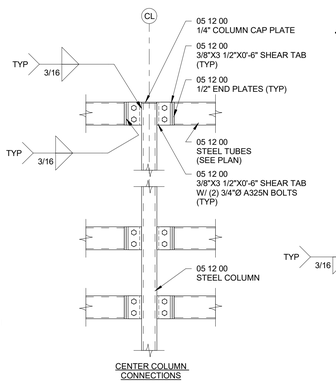


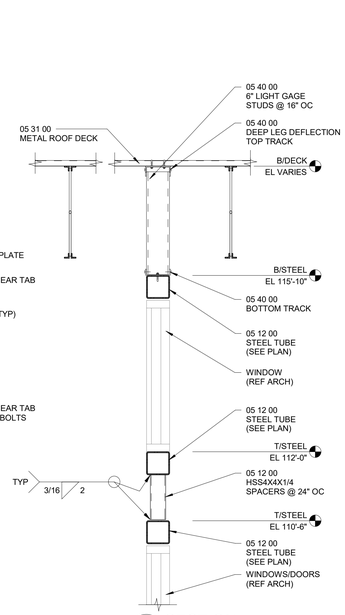


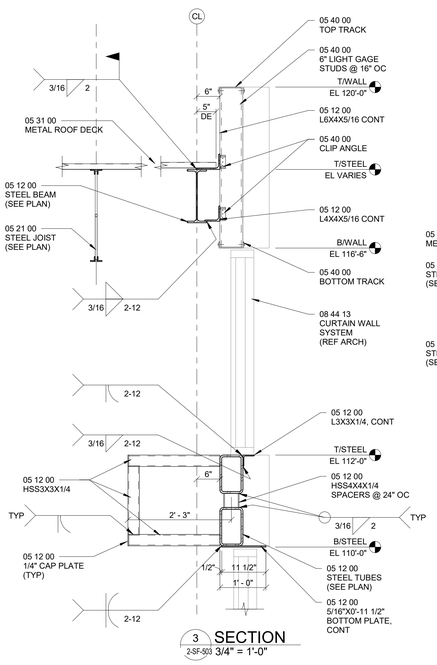


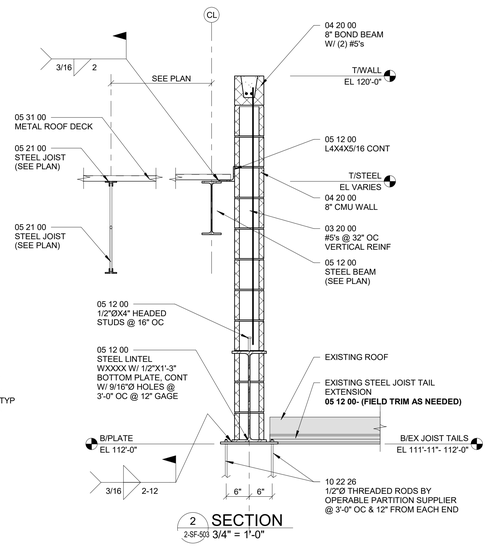


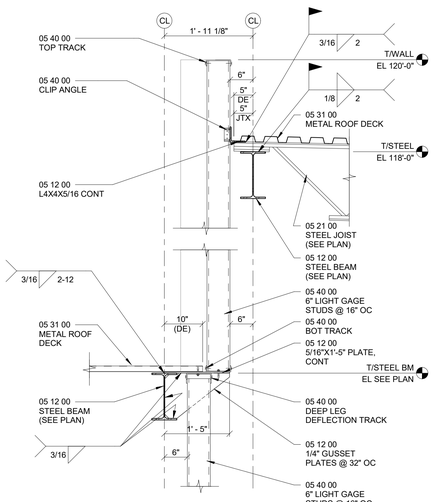












PRELIMINARY NOT FOR CONSTRUCTION

Hoffman
Planning, Design & Construction, Inc.
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CONSULTANT:
Larson Engineering, Inc.
2801 E. Enterprise Ave, Suite 200
Appleton, WI 54913-7989
920.734.9880
920.734.9887 - Fax
www.larsonengr.com © 2019 LEI
Project Number: 31180284.000 R18

MANAWA

ADDITIONS AND REMODELING FOR:
MANAWA MIDDLE & HIGH SCHOOL
2101 SCHAEFER CIRCLE, APPLTON, WI 54915

MARK	DATE
ISSUED:	05-03-19
PROJECT NO:	18268
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CHECKED BY:	LAW

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SHEET TITLE:
FRAMING DETAILS

SHEET NUMBER:
2-SF-503

SETTLEMENT AGREEMENT
AND
FULL, FINAL AND MUTUAL RELEASE OF CLAIMS

THIS SETTLEMENT AGREEMENT AND FULL, FINAL AND MUTUAL RELEASE OF CLAIMS ("Agreement") is made and entered into by and between the **SCHOOL DISTRICT OF MANAWA** (the "District"), **HOFFMAN PLANNING, DESIGN & CONSTRUCTION, INC.** ("Hoffman") and **SCHERRER CONSTRUCTION CO., INC.** ("Scherrer"), collectively the parties to this Agreement.

WHEREAS, the District and Scherrer are parties to AIA Document A133-2009, Standard Form of Agreement Between Owner and Construction Manager as Constructor, as amended and dated May 15/30, 2017 as well as AIA Document A201-2007, General Conditions of the Contract for Construction, as amended and dated May 15/30, 2017 ("Contracts"); and

WHEREAS, the Contracts allow for the District to terminate said Contracts under certain circumstances; and

WHEREAS, on or about August 25, 2018 the District provided notice to Scherrer of its intent to terminate the Contracts; and

WHEREAS, Scherrer contends that it is entitled to certain compensation as a result of the District's termination of the Contracts, which the District disputes; and

WHEREAS, Scherrer alleges that Hoffman may have engaged in conduct inducing the District to terminate the Contracts thereby giving rise to potential liability on the part of Hoffman, but the District and Hoffman expressly deny any such conduct; and

WHEREAS, the parties desire to resolve their differences and settle any and all claims or disputes, known or unknown, which exist among them as a result of the termination of the Contracts and any alleged conduct on the part of Hoffman related thereto, with finality and without further expenditure of time, effort or money.

NOW, THEREFORE, in consideration of the promises and mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree to settle any and all potential claims and disputes among them as to the Contracts, as follows:

1. Non-Admission. This Agreement is made in full, final and complete compromise and settlement of any disputed claims between the parties hereto. Neither the negotiation, undertaking, agreement to provide nor actual provision of payments under this Agreement shall in any way be construed as an acknowledgement or admission by any of the parties of any liability or wrongdoing whatsoever under federal, state or local law, any such liability being expressly denied.

2. Payment. The District shall pay Scherrer the total sum of Eighty Thousand and 00/100 Dollars ($80,000.00) in a lump sum within ten (10) business days of the execution of this Agreement by all parties to resolve any and all claims Scherrer may have related to the Contracts.

3. Mutual Release of Claims.

   A. In consideration of the promises and undertakings in this Agreement, and other good and valuable consideration, the sufficiency of which is hereby acknowledged, the District forever releases and discharges Scherrer and its successors, assigns, officers, representatives, directors, shareholders, employees, managers, members, principals, attorneys, insurers and agents, from any and all claims, demands, indebtedness, agreements, promises, obligations, damages or liabilities, costs, expenses and causes of action, in law or in equity, of any kind or nature, whether known or unknown, suspected or unsuspected, asserted or unasserted, arising out of or in any way related to any obligations of Scherrer under the Contracts or as a result of the termination thereof.

   B. In consideration of the promises and undertakings in this Agreement, and other good and valuable consideration, the sufficiency of which is hereby acknowledged, Hoffman forever releases and discharges Scherrer and its successors, assigns, officers, representatives, directors, shareholders, employees, managers, members, principals, attorneys, insurers and agents, from any and all claims, demands, indebtedness, agreements, promises, obligations, damages or liabilities, costs, expenses and causes of action, in law or in equity, of any kind or nature, whether known or unknown, suspected or unsuspected, asserted or unasserted, arising out of or in any way related to any obligations of Scherrer under the Contracts or as a result of the termination thereof or the project that is the subject of the Contracts.

   C. In consideration of the promises and undertakings in this Agreement, and other good and valuable consideration, the sufficiency of which is hereby acknowledged, Scherrer forever releases and discharges the District, all current and former officers, employees, elected officials, representatives, attorneys insurers and agents, as well Hoffman, and its successors, assigns, officers, representatives, directors, shareholders, employees, managers, members, principals, attorneys, insurers and agents, from any all claims, demands, indebtedness, agreements, promises, obligations, damages or liabilities, costs, expenses and causes of action, in law or in equity, of any kind or nature, whether known or unknown, suspected or unsuspected, asserted or unasserted, arising out of or in any way related to any obligations of the District or Hoffman under the Contracts (including Preconstruction Phase Services), the termination thereof or any conduct on the part of Hoffman related to the termination of the Contracts.

4. Covenant Not To Sue. The parties hereto, on behalf of themselves, their successors, assigns, officers, representatives, directors, shareholders, employees, managers, members, principals, attorneys, insurers and agents hereby irrevocably and unconditionally promise not to sue or proceed in any manner, in agency or other proceedings, whether at law, in equity, by way of administrative hearing or otherwise, to solicit others to institute any such actions or proceedings or consent to be a complainant in any civil or criminal proceeding, against the other parties and their respective successors, assigns, officers, representatives, directors, shareholders, employees, managers, members, principals, attorneys, insurers and agents because of or arising out of the obligations under the Contracts, the termination thereof or any conduct on the part of Hoffman related to the termination of the Contracts and any events related thereto occurring on or before the effective date of this Agreement.

   This Covenant Not To Sue may be pled as a full and complete defense to, and may be used as the basis for an injunction against, any action, suit or other proceeding which may be instituted, prosecuted or attempted in breach of this Covenant Not To Sue. Further, Scherrer will indemnify and hold the District and Hoffman harmless against all losses, damages, costs and expenses, including reasonable attorneys' fees, resulting from a breach of this Covenant Not To Sue. Further, the District and Hoffman will each indemnify and hold Scherrer harmless against all losses, damages, costs and expenses, including reasonable attorneys' fees, resulting from a breach of this Covenant Not To Sue.

5. Entire Agreement. This Agreement constitutes the entire agreement and understanding among the parties concerning the subject matter hereof and prevails over prior communication between them and their respective agents and representatives, if any, about its subject matter. No party hereto shall be bound by any condition, definition, representation or warranty other than as expressly provided in this Agreement, or as subsequently set forth in writing and signed by the parties hereto.

6. Providing Information to Third Parties. The parties recognize the District's obligation to comply with the Wisconsin Public Records Law, to provide information that is subject to disclosure by law to public records requesters, and to provide information related to any statutory or regulatory duty. The parties further recognize the District's responsibility to provide information to the public concerning District affairs and the District's right and responsibility to respond to statements including, but not limited to, those provided to and published in the media concerning the District. Finally, the parties recognize the District's obligation to approve this Agreement at a School Board meeting in public (open session). Hoffman and Scherrer shall not discuss or share with any third party information or opinion concerning any facts or the nature of the matter giving rise to this Agreement or its terms.

7. Legal Counsel. The parties acknowledge that they have had ample opportunity to consult with and/or obtain legal counsel prior to execution of this Agreement. They further acknowledge that they knowingly and voluntarily decided to sign and enter into this Agreement.

8. Governing Law. This Agreement shall be construed and enforced in accordance with the laws of the State of Wisconsin.

9. Modification. This Agreement may only be modified in writing, signed by the parties to this Agreement.

10. Binding Effect. This Agreement shall be binding upon the parties and their respective successors and assigns.

11. Severability. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement.

12. Waiver. No failure on the part of the parties to exercise and no delay in exercising any right or remedy provided in this Agreement shall operate as a waiver of such right or remedy.

13. Joint Drafting. The parties agree that this Agreement is a product of joint drafting, negotiation and mutual agreement and, accordingly, any ambiguity in this Agreement will not be resolved against any party to this Agreement on the grounds that any party served as the party responsible for drafting this Agreement.

14. Electronic Signatures / Counterparts. To facilitate circulation and execution of this Agreement, electronic signatures shall be deemed to be original signatures and this Agreement may be signed in counterparts. Scherrer shall sign this Agreement upon confirmation that the Agreement has been executed by the District and Hoffman.

15. Acknowledgment. The undersigned, by execution hereof, acknowledge that they have read and understand this Agreement and have fully agreed to each and every provision hereof. The undersigned further acknowledge that he/she has the authority to enter into this Agreement.

[Signatures Follow on Page 5]

IN WITNESS WHEREOF the parties have executed this Agreement as of the date indicated.

SCHOOL DISTRICT OF MANAWA

_____

Board President Date

_____

Board Clerk Date

SCHERRER CONSTRUCTON CO., INC.

_____

James E. Scherrer, President & CEO Date

HOFFMAN PLANNING, DESIGN & CONSTRUCTION, INC.

_____

Date