Addendum

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DATE: 11/18/2024

PROJECT: City of Dayton – New Police Station
West Patrol District

PROJECT ADDRESS: 10 Abbey Ave. Dayton, OH 45417

ADDENDUM NO. 1

RECEIPT OF THIS ADDENDUM MUST BE NOTED ON THE FORM OF PROPOSAL

TO ALL BIDDERS:

This addendum supplements and amends the original Plans and Specifications and shall be taken into account in preparing proposals and shall become part of the Contract Documents.

ARCHITECTURAL DRAWINGS:

ITEM A1 DRAWING G0.3 STORM SHELTER

- REVISE Storm Shelter notes and Code references.
- REVISE First aid kit and Flashlight requirements.

ITEM A2 DRAWING A0.3 DOOR SCHEDULES

- REVISE door detail references for door 117.
- UPDATE Storm shelter signs.
- REVISE frame elevation type 3.

ITEM A3 DRAWING A0.6 DOOR DETAILS

- REVISE door details with post installed anchors.
- ADD sill detail F2/A0.6

ITEM A4 DRAWING A3.4 BUILDING SECTIONS

- REVISE rating line in D5/A3.4 to include cast in place ceiling.

STRUCTURAL DRAWINGS:

ITEM S1 DRAWING S0.3 STRUCTURAL NOTES

- REVISE calculation notes for storm shelter

- ADD Note for inspection of fabricators.

ITEM S2 DRAWING S2.1 ENLARGED STRUCTURAL PLANS

- Refer to sheet.

ITEM S3 DRAWING S5.1 STRUCTURAL DETAILS

- Refer to sheet.

ITEM S4 DRAWING S5.2 STRUCTURAL DETAILS

- Refer to sheet.

PLUMBING DRAWINGS:

ITEM P1 DRAWING P0.1 LEGENDS AND SCHEDULES

- Plumbing Fixture Schedule – ADD Franke as an equal for Elkay sinks.

ITEM P2 DRAWINGS P1.1 FIRST FLOOR PLAN

- REVISE Storm Shelter Note per code review.

HVAC DRAWINGS:

ITEM H1 DRAWING H4.2 CONTROLS

- ADD control diagram 5.

HVAC SPECIFICATIONS:

ITEM HS1 Specification 23 0923

- ADD Distech Controls as approved manufacturer to section 2.1.A.

ITEM HS2 Specification 23 7413

- ADD Valent as approved manufacturer to section 2.1.A.

ELECTRICAL DRAWINGS:

ITEM E1 DRAWING E0.2 SCHEDULES

- ADD to Lighting Fixture Schedule, Fixture Type PL5 to be equal to Sternberg #1A-1914LEDF-40L45T3-MDL10-A-HSCS/FF8/BK. Tapered smooth round steel pole (25' tall) with single tenon mount top and welded steel baseplate with slotted holes, handhole located near base. 8' long decorative arm (tenon slip fit mounting) with decorate pendant acorn light (hang straight coupling, ball style finial) with acrylic teardrop lens. Pole, arm and fixture to have painted black finish. LED

fixture source, 29,000 lumens/4000K, 135 watts, 120V.

ITEM E2 DRAWING E2.1 FIRST FLOOR LIGHTING PLAN

- REVISE lighting and UPS circuitry in Storm Shelter, 117.
- DELETE emergency lighting bypass relays shown in various rooms.

ITEM E3 DRAWING E3.1 FIRST FLOOR POWER PLAN

- CLARIFY power to floor boxes in Rooms 102 & 108.
- CLARIFY power furniture floor box in Room 119A.

ITEM E4 DRAWING E4.1 FIRST FLOOR SYSTEMS PLAN

- CLARIFY data raceways for systems furniture in 119A.

END OF ADDENDUM NO. 1

ATTACHMENTS:

Sheets G0.2, A0.3, A0.6, A3.4, S0.3, S2.1, S5.1, S5.2, F1.1, P0.1, P1.1, H4.2, E0.2, E2.1, E3.1, E4.1,

Specification sections 23 0923, 23 7413

STORM SHELTER INFORMATION

GOVERNING CODES:
- OBC 2024, SECTION 423 STORM SHELTERS
- ICC 500 2020

THIS SHELTER IS CLASSIFIED AS A COMMUNITY TORNADO SHELTER.
THE SHELTER IS LOCATED ON THE MAIN FLOOR LEVEL OF THE POLICE STATION.

THE SHELTER IS DESIGNED TO ACCOMMODATE 16 OCCUPANTS OF THE POLICE STATION.

ICC 500, 2020 CHAPTER 1: APPLICATION AND ADMINISTRATION

DESIGN INFORMATION PER 106.2.1 IS LOCATED OR REFERENCED ON THIS SHEET.

ITEM 2: USE OF COMMUNITY STORM SHELTER IS BY BUILDING OCCUPANTS ONLY.
ITEM 9: DESIGN WIND PRESSURES ARE INCLUDED IN STRUCTURAL STORM SHELTER CALCULATIONS SECTION 1: DESIGN LOADS FOR BASIC DESIGN WIND LOAD AND SECTION 6 & 7 FOR COMPONENTS AND CLADDING WIND LOAD DESIGNS.
ITEM 20: FOUNDATION CAPACITY REQUIRMENTS AND REINFORECEMENT ARE INCLUDED ON STRUCTURAL SHEET S4.2 STRUCTURAL SECTIONS
ITEM 21: POST INSTALLED ANCHORS ARE USED FOR THE INSTALLATION OF THE IMPACT RESISTANT DOOR, AND THE WALL OPENING PLATE SHROUDS. REFER TO SHEETS A0.3, A0.6 AND S5.4 FOR ADDITIONAL INFORMATION.

ICC 500, 2020 CHAPTER 3: STRUCTURAL DESIGN AND TESTING CRITERIA

THE TORNADO SHELTER HAS BEEN DESIGNED PER THE REQUIREMENTS OF ICC 500 - 2020.

- SHELTER DESIGN WIND SPEED, V(ult): 250 mph
- WIND EXPOSURE CATEGORY: C
- INTERNAL PRESSURE COEFFICIENT (GCpi): +/- 0.55
- TOPOGRAPHICAL FACTOR: 1.0
- DIRECTIONALITY FACTOR: 1.0
- MINIMUM FOUNDATION CAPACITY REQUIREMENTS: REFER TO STRUCTURAL DRAWINGS
- SHELTER INSTALLATION REQUIREMENTS: REFER TO STRUCTURAL DRAWINGS

REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL STRUCTURAL NOTES AND DETAILS.

ICC 500, 2020 CHAPTER 4: SITING

THE SHELTER IS NOT BEING CONSTRUCTED WITHIN AN AREA SUSCEPTIBLE TO FLOODING PER FEMA.

THE SITE IS LOCATED OUTSIDE OF ANY FLOOD PLAINS. THEREFORE, BASE FLOOD ELEVATION IS NOT APPLICABLE.

THE SHELTER FINISHED FLOOR ELEVATION IS 776.50.
VERTICAL DATUM: NAVD88. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.

ICC 500 2020, SECTION 502 OCCUPANCY DENSITY IN COMMUNITY SHELTERS

TABLE 501.1.1 (TORNADO) - OCCUPANCY DENSITY
- 5 SF/STANDING OR SEATED MINIMUM
- 10 SF/WHEELCHAIR SPACE (1:200)

501.1.2.2 - ALTERNATIVE CALCULATION OF USABLE FLOOR AREA

GROSS AREA = 17' - 4 3/4" x 8' - 6"	=	**147.68 SF**
WALL AREA	-	**33.94 SF**
FIXED OBJECTS	-	**16.02 SF**
NET CLEAR AREA		**97.72 SF**

MAXIMUM OCCUPANCY = 15 OCCUPANTS + 1 WHEELCHAIR
DECLARED BUILDING OCCUPANCY = 16 OCCUPANTS

501.2 - NUMBER OF DOORS
- BASED ON SHELTER OCCUPANCY, ONLY ONE MEANS OF EGRESS IS REQUIRED.
- PER EXCEPTION LISTED UNDER 501.2, NO EMERGENCY ESCAPE OPENING IS REQUIRED FOR SHELTERS WITH AN OCCUPANT LOAD NOT EXCEEDING 16 OCCUPANTS.

501.3 - DIRECTION OF SWING
- DOOR SHALL SWING INTO THE SHELTER SPACE IN ACCORDANCE WITH OBC 2024.
- DOOR ASSEMBLY TO BE TESTED AND LABELED IN ACCORDANCE WITH ICC 500 2020, CHAPTER 8 AND ASTM E361.

504 - SIGNAGE FOR COMMUNITY SHELTERS
- REFER TO VIEWS F3 AND F5 ON THIS SHEET FOR SIGNAGE LOCATIONS.
- REFER TO SIGNAGE LEGEND ON SHEET A.03 FOR SIGNAGE DETAILS.

ICC 500, 2020 CHAPTER 6: FIRE SAFETY

601.1 - FIRE SEPARATION
- ALL SHELTER WALLS ARE 2 HOUR FIRE RATED PARTITIONS. A 2 HOUR RATING IS GIVEN TO CAST IN PLACE CONCRETE WALLS THICKER THAN 5" PER OBC TABLE 722.2.1.1.
- SHELTER HORIZONTAL ASSEMBLY (CEILING/ROOF) IS A 2 HR. RATED ASSEMBLY. A 2 HOUR RATING IS GIVEN TO CAST IN PLACE CONCRETE SLABS THICKER THAN 5" PER OBC TABLE 722.2.1.1

602 - FIRE EXTINGUISHERS
- A WALL HUNG FIRE EXTINGUISHER IS PROVIDED MEETING IBC AND NFPA 10 REQUIREMENTS.
- REFER TO SHEET A0.1 FOR MOUNTING DETAILS.

ICC 500, 2020 CHAPTER 7: SHELTER ESSENTIAL FEATURES AND ACCESSORIES

SECTION 702: TORNADO SHELTERS
STORM SHELTER OCCUPANCY IS 16 PEOPLE.

702.4.2 MECHANICAL VENTILATION.
- AN OUTDOOR AIR FLOW RATE OF 5 CFM PER OCCUPANT IS REQUIRED. AT 16 PEOPLE, A TOTAL AIRFLOW RATE OF 80 CFM IS REQUIRED.
  - THE REQUIRED AIRFLOW IS PROVIDED BY EF-3 LOCATED WITHIN THE STORM SHELTER. EF-3 IS POWERED THROUGH THE STORM SHELTER UPS AND WILL OPERATE CONTINUOUSLY THROUGH THE 2-HOUR TIME PERIOD.
  - OUTSIDE AIR IS PROVIDED TO THE STORM SHELTER THROUGH A 6/6 TRANSFER AIR DUCT. THE OUTSIDE AIR DUCT HAS A MOTORIZED CONTROL DAMPER INSTALLED INSIDE OF THE STORM SHELTER. THE DAMPER HAS AN ACTUATOR THAT IS POWERED CLOSED, SPRING RETURN, FAIL OPEN.
  - WHEN THE STORM SHELTER IS IN USE DURING A TORNADO EVENT, THE SHELTER OCCUPANTS MAY ACTIVATE THE MANUAL SWITCH TO OPEN THE DAMPER. THE DAMPER HAS A BUILT-IN FAIL SAFE TO AUTOMATICALLY OPEN UPON THE LOSS OF NORMAL AND BACKUP GENERATOR POWER IF THE USER DOES NOT ACTIVATE THE MANUAL SWITCH PRIOR.

TABLE 702.3
- ONE WATER CLOSET IS REQUIRED.
- THE LAVATORY IS NOT REQUIRED.
- HAND SANITIZER WILL BE STORED BY THE OWNER.

BASED ON 3 WATER CLOSET USES PER 8HR PERIOD PER OCCUPANT (FROM L.E.E.D.), IN A 2 HR PERIOD THAT IS 3/4 USES PER PERSON.
FOR 16 PEOPLE, 12 FLUSHES WILL BE REQUIRED.

THE TANK WILL BE FILLED ON ENTRY INTO THE SPACE AS A STORM SHELTER. THE POLICE DEPARTMENT WILL BE REQUIRED TO STORE ENOUGH WATER TO ACCOMMODATE 11 FLUSHES.

EACH TANK FILL/FLUSH REQUIRES 1.6 GALLONS OF WATER, 1.6 GALLONS PER FLUSH X 11= 17.6 GALLONS MINIMUM OF POTABLE WATER NEED TO BE MADE AVAILABLE FOR WATER CLOSET USAGE.

ADDITIONAL POTABLE WATER SHALL BE STORED FOR DRINKING.
INCLUDE THESE REQUIREMENTS IN THE OWNER'S INSTRUCTIONS.

REFER TO PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.

702.8 EMERGENCY LIGHTING
- LIGHTING FIXTURES WILL BE CONNECTED TO AN EMERGENCY BATTERY BACK-UP TO POWER LIGHTS IN SHELTER FOR A MINIMUM OF 2 HOURS UPON LOSS OF NORMAL POWER. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.
- A MINIMUM OF (3) FLASHLIGHTS >150 LUMENS EACH ARE TO BE STORED IN THE SHELTER.

STORM SHELTER SPECIAL INSTRUCTIONS

STORM EVENT OPERATIONS PLAN

POSITION DESIGNATED PERSONNEL AT DOOR TO ENSURE THAT ONCE ALL OCCUPANTS ARE INSIDE SHELTER, DOOR REMAINS CLOSED AND LOCKED DURING THE ENTIRE STORM EVENT.
- OPENING DOOR DURING HIGH PRE-EVENT OR EVENT WINDS COULD DAMAGE THE DEVICE, REMOVE THE DEVICE, OR MAKE IT WHERE THE DEVICE CANNOT BE RE-CLOSED MAKING ALL SHELTER OCCUPANTS VULNERABLE TO THE WIND EVENT FOR WHICH THEY ARE SEEKING PROTECTION.

SHELTER OCCUPANTS ARE NOT TO PHYSICALLY CONTACT THE EXTERIOR WALLS OR OPENING PROTECTIVE DEVICES OF THE SHELTER.
- VERY LARGE POINT LOADS CREATED BY DEBRIS MAY BE EXERTED ON THE EXTERIOR WALL AND THIS KINETIC ENERGY MAY BE TRANSFERRED THROUGH THE SHELTER WALL WHICH COULD INJURE AN INDIVIDUAL THAT IS CONTACT WITH THE EXTERIOR WALL OF THE SHELTER.

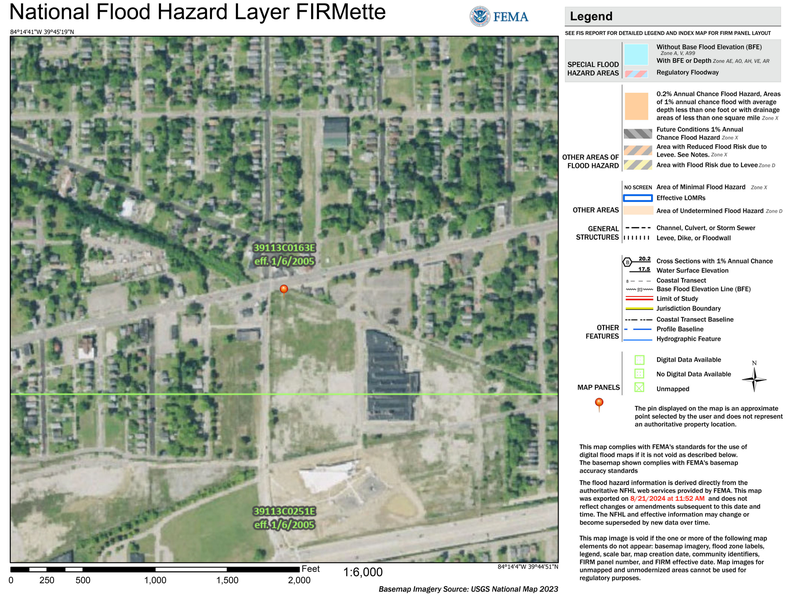
STORAGE CABINET CONTENTS

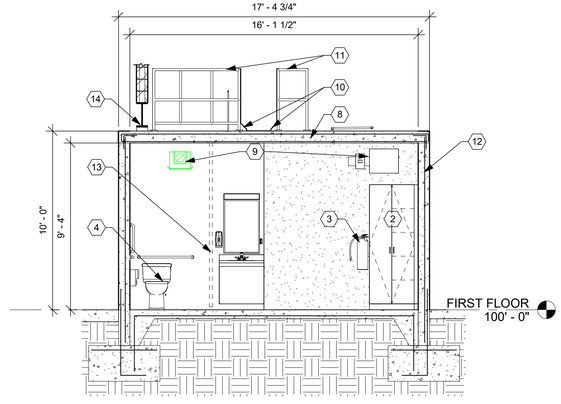
- 18 GALLONS OF POTABLE WATER FOR TOILET FLUSHING (TO BE STORED ON BOTTOM SHELF)
- 2 CASES OF 16 OZ. WATER BOTTLES (EQUALING 3 GALLONS) FOR DRINKING
- HAND SANITIZER
- FIRST AID KIT COMPLYING WITH ANSI/ISEAI Z308.1
- (3) FLASHLIGHTS WITH > 150 LUMENS OUTPUT EACH
- EVACUATION TOOLS
  - HAMMER
  - PRY BAR
  - WORK GLOVES

STORM SHELTER EVENT OPERATIONS PLAN – MECHANICAL VENTILATION

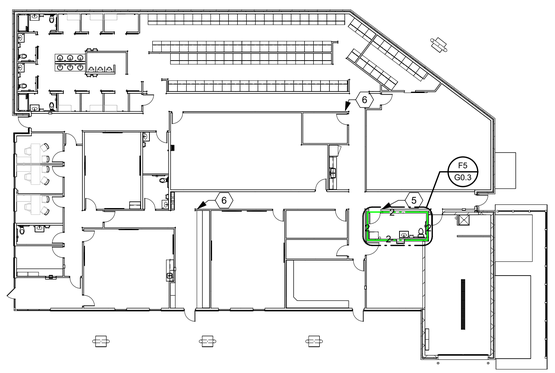
THE STORM SHELTER IS EQUIPPED WITH A MECHANICAL VENTILATION SYSTEM TO PROVIDE OUTSIDE AIR DURING USE. THE RESTROOM EXHAUST FAN INSIDE OF THE SHELTER WILL PULL OUTSIDE AIR IN AND VENTILATE EXHAUST AIR OUT. THE FAN IS POWERED THROUGH THE STORM SHELTER UPS AND WILL CONTINUE TO OPERATE IF THE BUILDING LOSES NORMAL AND GENERATOR BACKUP POWER UNDER A TORNADO STRIKE. THE STORM SHELTER HAS A DEDICATED OUTSIDE AIR INTAKE DUCT AND CONTROL DAMPER THAT IS MANUALLY CONTROLLED THROUGH A TOGGLE SWITCH. UNDER NORMAL BUILDING OPERATION, THE SWITCH SHALL REMAIN IN THE "DAMPER CLOSED" POSITION TO STOP OUTSIDE AIR INFILTRATION COMING INTO THE CONDITIONED BUILDING. WHEN THE STORM SHELTER IS IN USE DURING A TORNADO EVENT, TURN THE SWITCH TO THE "DAMPER OPEN" POSITION TO PROVIDE OUTSIDE AIR TO THE STORM SHELTER. THE OUTSIDE AIR DAMPER HAS A FAIL-SAFE BUILT INTO AUTOMATICALLY OPEN THE DAMPER IN THE EVENT OF BUILDING NORMAL AND BACKUP POWER LOSS. IF THE CONTROL SWITCH IS NOT ACTUATED PRIOR TO NORMAL AND BACKUP POWER LOSS, THE DAMPER FAIL-SAFE WILL OPEN THE DAMPER

National Flood Hazard Layer FIRMette

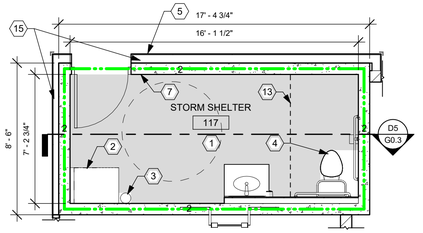




D5 STORM SHELTER SECTION
1/4" = 1'-0"



F3 STORM SHELTER - KEY PLAN
1" = 20'-0"



F5 STORM SHELTER 117 ENLARGED PLAN
1/4" = 1'-0"

CONSTRUCTION NOTES

⟨00⟩ INDICATES CONSTRUCTION NOTE.

1 SHADED AREA REPRESENTS ACTUAL CLEAR FOOR AREA OF 97.72 SF. TOTAL ROOM AREA IS 113.75 SF.
2 STORAGE CABINET FOR WATER AND EMERGENCY SUPPLIES. REFER TO F1/A8.1.
3 WALL MOUNTED FIRE EXTINGUISHER. REFER TO SHEET A1.1 FOR DETAILS.
4 ADA TOILET. REFER TO PLUMBING DRAWINGS AND MOUNTING AND CLEARANCE STANDARDS ON SHEET A0.1 FOR DETAILS.
5 SIGN TYPE 5. REFER TO SIGNAGE LEGEND ON SHEET A0.3 FOR DETAILS.
6 SIGN TYPE 6. REFER TO SIGNAGE LEGEND ON SHEET A0.3 FOR DETAILS.
7 SIGN TYPE 7. REFER TO SIGNAGE LEGEND ON SHEET A0.3 FOR DETAILS.
8 CONCRETE LID IS INDEPENDENT OF ROOF STRUCTURE ABOVE. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.
9 REFER TO HVAC DRAWINGS FOR DUCT PENETRATIONS. REFER TO STRUCTURAL DRAWINGS FOR SHROUD DETAILS.
10 ACCESS LADDER TO EQUIPMENT PLATFORM. ANY EQUIPMENT ACCESSED BY PLATFORM IS NOT MOUNTED ON TOP OF SHELTER.
11 EDGE PROTECTION RAILING. SURFACE MOUNT TO CONCRETE LID WITH CONCRETE ANCHORS.
12 REFER TO STRUCTURAL DRAWINGS FOR CONCRETE REBAR REINFORCEMENT DETAILS.
13 PRIVACY CUBICLE CURTAIN AND TRACK.
14 STEEL BEAM SUPPORTING CMU WALL. WALL AND BEAM ARE NOT SUPPORTED BY STORM SHELTER. REFER TO STRUCTURAL DRAWINGS.
15 FRAMED STEEL WALLS. NOT ATTACHED TO STORM SHELTER WALLS.

GENERAL NOTES

A. THIS SHEET CONTAINS A GENERAL OVERVIEW OF THE TORNADO SHELTER INFORMATION. FOR FURTHER NOTES AND DETAILS REFER TO THE PERTINENT DISCIPLINE'S DRAWINGS CONTAINED IN THIS SET.

B. REFER TO STRUCTURAL DRAWINGS FOR REINFORCEMENT DETAILS.

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Timothy J. Bement, License #12305
Expiration Date 12/31/2025

CITY OF DAYTON
NEW POLICE STATION
WEST PATROL DISTRICT
10 Abbey Ave, Dayton, Ohio 45417

ISSUE

NO.	DATE	DESCRIPTION
	10/03/2024	FOUNDATION PACKAGE
	11/01/2024	FOR CONSTRUCTION
1	11/18/2024	ADDENDUM 01

DATE	11/18/24
JOB NO.	4205.00
DRAWN	MLG
CHECKED	RFW/TJB

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TITLE
STORM SHELTER

SHEET NO.
G0.3

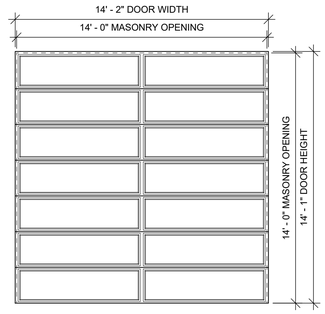
11/18/2024 4:03:36 PM

DOOR AND FRAME SCHEDULE

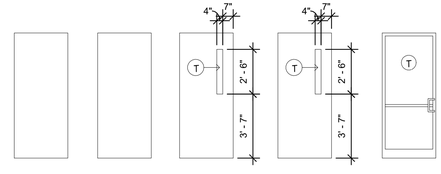
DOOR No.	ROOM NAME	HDW. SET	DOOR SIZE W	DOOR SIZE H	DOOR T	DOOR MAT.	DOOR TYPE	DOOR FIN.	U/C	FRAME MAT.	FRAME TYPE	FRAME FIN.	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS SILL	FIRE RTG.	REMARKS
100	VESTIBULE	3.0	3' - 0"	7' - 0"			AL1			ALUM.			E4/A0.6		F4/A0.6		2, 7, 8
101A	VESTIBULE	5.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
101B	CORRIDOR	6.0	3' - 0"	7' - 0"	1 3/4"	WD	NL1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6			8
101C	CORRIDOR	6.0	3' - 0"	7' - 0"	1 3/4"	WD	NL1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6			8
102A	MULTIPURPOSE/ TRAINING ROOM	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
102B	MULTIPURPOSE/ TRAINING ROOM	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
103	RECEPTION	9.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
104	TLT	12.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	1
105	OFFICE	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
106	OFFICE	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
107	OFFICE	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
108	CONFERENCE ROOM	14.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
109A	SECURE CORRIDOR	2.0	3' - 0"	7' - 10"	1 3/4"	HM	OH5	DEP-1		HM	1	DEP-1	B2/A0.6	D2/A0.6			2, 8
109B	SECURE CORRIDOR	2.0	3' - 0"	7' - 0"	1 3/4"	HM	NL2	DEP-1		HM	1	DEP-1	B4/A0.6	D4/A0.6			2, 8
109C	SECURE CORRIDOR	2.0	3' - 0"	7' - 0"	1 3/4"	HM	NL2	DEP-1		HM	1	DEP-1	B2/A0.6	D2/A0.6			2, 8
110	TLT.	12.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	1
111	ROLL CALL	11.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
112A	FITNESS	4.0	3' - 0"	7' - 0"	2"		AL1			HM	1	DEP-1	E1/A0.6	F1/A0.6			
112B	FITNESS	4.0	3' - 0"	7' - 0"	2"		AL1			HM	1	DEP-1	E1/A0.6	F1/A0.6			
113	COMM/SERVICE STORAGE	8.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
114	IT	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
115A	REPORT/MAIL	14.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
115B	REPORT/MAIL	2.0	3' - 0"	7' - 10"	1 3/4"	HM	OH5	DEP-1		HM	1	DEP-1	B2/A0.6	D2/A0.6			2, 8
116	MECH / ELE. ROOM	6.0	3' - 6"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
117	STORM SHELTER	1.0	3' - 0"	7' - 0"	1 3/4"	HM	F2	DEP-1		HM	3	DEP-1	B1/A0.6	D1/A0.6	F2/A0.6	90	1, 3, 5, 6
118	VEHICLE BAY	10.0	3' - 0"	7' - 0"	1 3/4"	HM	NL2	DEP-1		HM	1	DEP-1	B6/A0.6	D6/A0.6		-	
119A	SERGEANTS	6.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	8
119B	SERGEANTS	16.0	3' - 0"	6' - 8"	2"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6		-	
121	SGT. MEETING ROOM	9.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
123	DECOMPRESS/ MOTHER'S	13.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
124A	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124B	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124C	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124D	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124E	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124F	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124G	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124H	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124J	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
124K	PERSONAL GEAR CHANGING ROOM	15.0	3' - 4 1/2"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	4	DEP-1	E6/A0.6	F6/A0.6			
125	SECURE CORRIDOR	7.0	3' - 0"	7' - 0"	1 3/4"	WD	F1	STAIN		HM	1	DEP-1	E1/A0.6	F1/A0.6		-	
OH1	VEHICLE BAY	17.0	14' - 0"	14' - 0"		STEEL	OH1						C5/A0.9	F1/A0.9	F5/A0.9		

DOOR REMARKS

No.	REMARK
1	SIGN TYPE 1 AT THIS DOOR. REFER TO SIGNAGE LEGEND ON THIS SHEET.
2	SIGN TYPE 4 AT THIS DOOR. REFER TO SIGNAGE LEGEND ON THIS SHEET.
3	SIGN TYPE 5 AT THIS DOOR. REFER TO SIGNAGE LEGEND ON THIS SHEET.
4	SIGN TYPE 6 AT THIS DOOR. REFER TO SIGNAGE LEGEND ON THIS SHEET.
5	SIGN TYPE 7 AT THIS DOOR. REFER TO SIGNAGE LEGEND ON THIS SHEET.
6	HIGH IMPACT DOOR AND FRAME TO MEET ICC 500-2020 CRITERIA. COORDINATE UNDERCUT WITH DOOR MANUFACTURER TO ENSURE COMPLIANCE.
7	REFER TO STOREFRONT AND WINDOW SCHEDULE FOR MORE DETAILS.
8	COORDINATE ACCESS CONTROL TO THIS DOOR WITH OWNER'S IT.



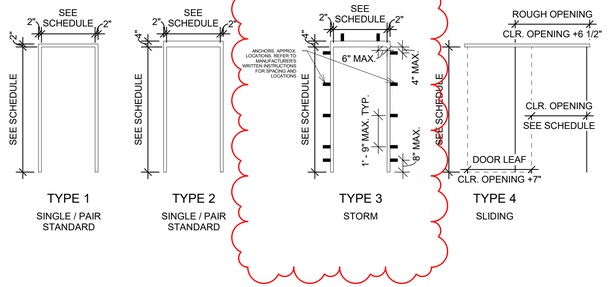
TYPE OH1



TYPE F1 FLUSH | TYPE F2 STORM | TYPE NL1 FLUSH | TYPE NL2 HM INSULATED | TYPE AL1 ALUMINUM STOREFRONT

(T) INDICATES TEMPERED SAFETY GLAZING

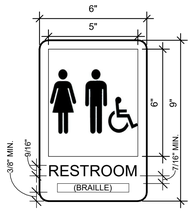
DOOR ELEVATIONS



TYPE 1 SINGLE / PAIR STANDARD | TYPE 2 SINGLE / PAIR STANDARD | TYPE 3 STORM | TYPE 4 SLIDING

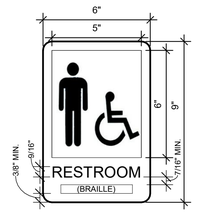
FRAME ELEVATIONS

SIGNAGE LEGEND



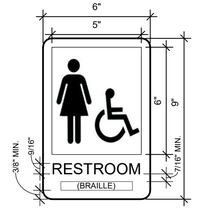
UNISEX RESTROOM - TYPE 1

3" = 1'-0"



MEN'S RESTROOM - TYPE 2

3" = 1'-0"



WOMEN'S RESTROOM - TYPE 3

3" = 1'-0"

SIGN NOTES

A. ALL SIGNS SHALL HAVE BRAILLE LETTERING BENEATH TEXT, TYPICAL.

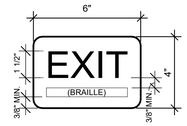
B. SIGNS MOUNTED ON GLASS AT DOOR NEED TO BE MOUNTED WITH ADHESIVE AND MATCHING BACKER PLATE FOR OTHER SIDE OF GLASS.

C. TEXT AND GRAPHICS TO BE NON-GLARE COLOR IN HIGH CONTRAST WITH BACKGROUND. SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.

D. BACKGROUND TO BE NON-GLARE COLOR IN HIGH CONTRAST WITH TEXT AND GRAPHICS. SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.

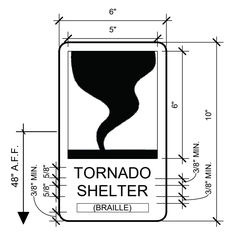
E. 1/2" RADIUS CORNERS.

F. ALL TEXT ON SIGNS LOCATED NEXT TO INTERIOR DOORS WILL BE 1/32" RAISED CHARACTERS, UPPERCASE, AND VIEWABLE AT LESS THAN 6 FEET.



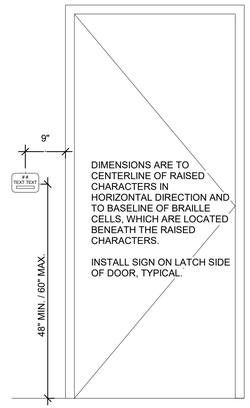
EXIT SIGN - TYPE 4

3" = 1'-0"



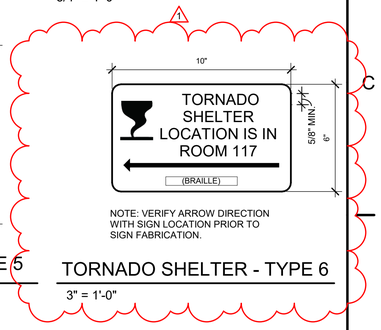
TORNADO SHELTER - TYPE 5

3" = 1'-0"



SIGNAGE LOCATION

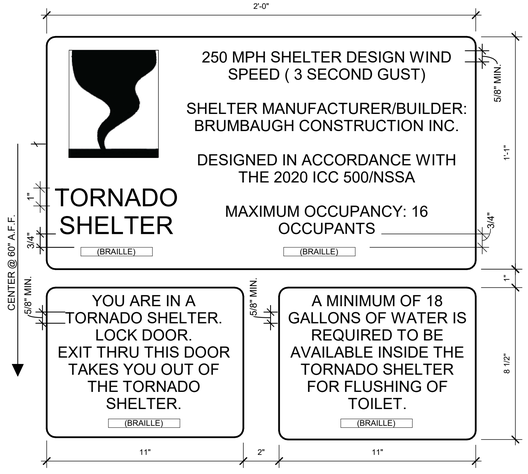
3/4" = 1'-0"



NOTE: VERIFY ARROW DIRECTION WITH SIGN LOCATION PRIOR TO SIGN FABRICATION.

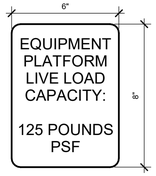
TORNADO SHELTER - TYPE 6

3" = 1'-0"



TORNADO SHELTER - TYPE 7

3" = 1'-0"



LIVE LOAD SIGN - TYPE 9

3" = 1'-0"

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TITLE
DOOR SCHEDULES

SHEET NO.
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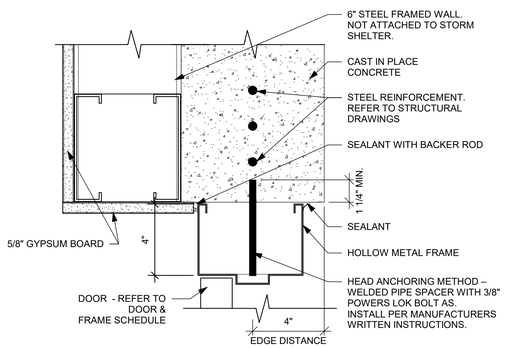
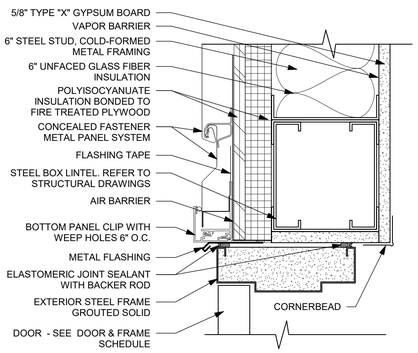
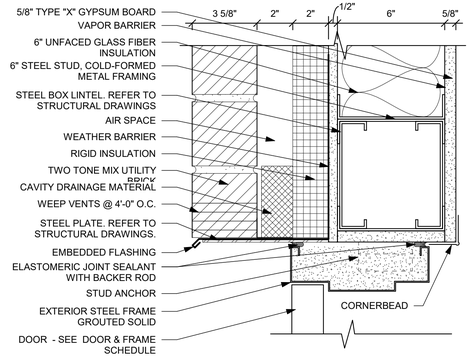


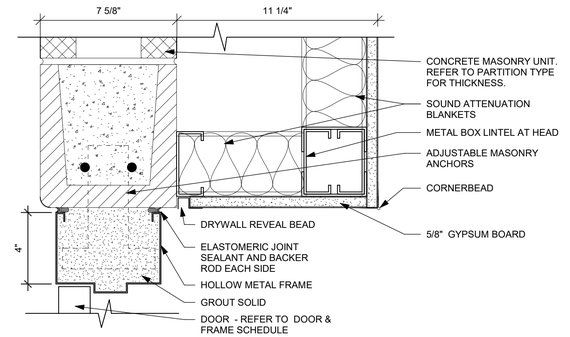
B1 DOOR HEAD DETAIL (STORM SHELTER)
3" = 1'-0"



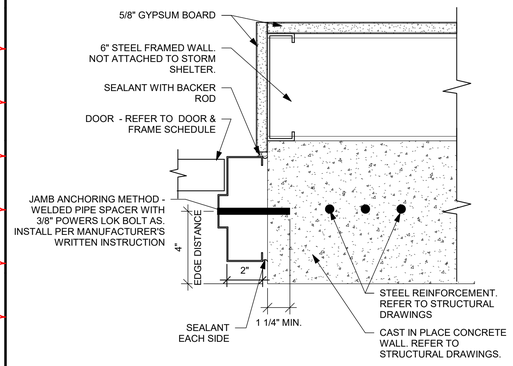
B2 DOOR HEAD DETAIL - METAL PANEL
3" = 1'-0"



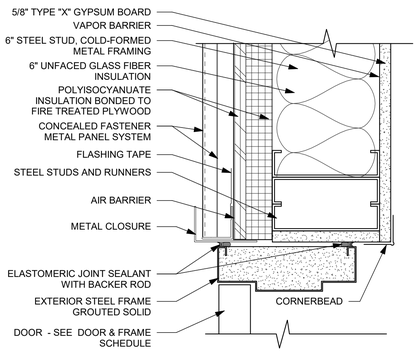
B4 DOOR HEAD DETAIL - BRICK
3" = 1'-0"



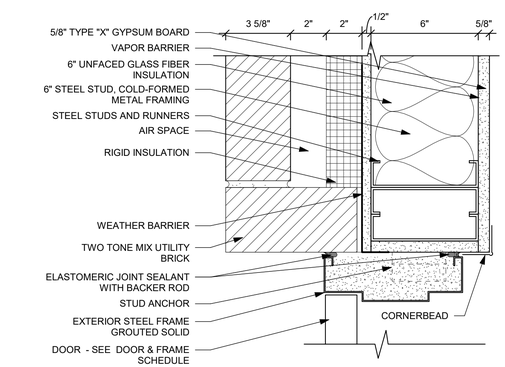
B6 DOOR HEAD DETAIL (CMU)
3" = 1'-0"



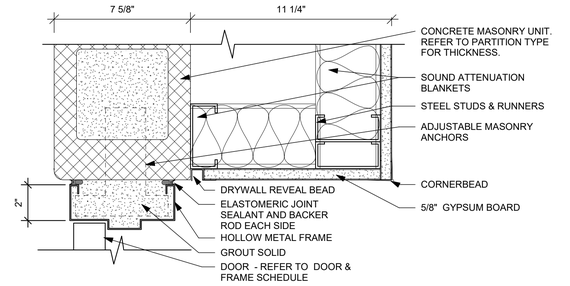
D1 DOOR JAMB DETAIL (STORM SHELTER)
3" = 1'-0"



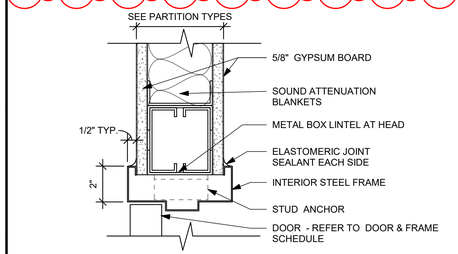
D2 DOOR JAMB DETAIL - METAL PANEL
3" = 1'-0"



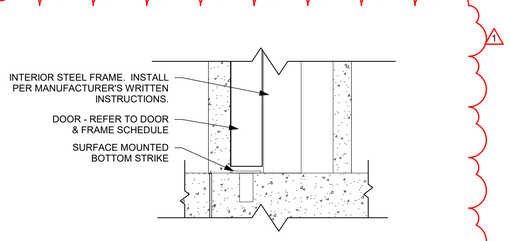
D4 DOOR JAMB DETAIL - BRICK
3" = 1'-0"



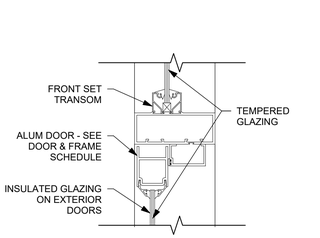
D6 DOOR JAMB DETAIL (CMU)
3" = 1'-0"



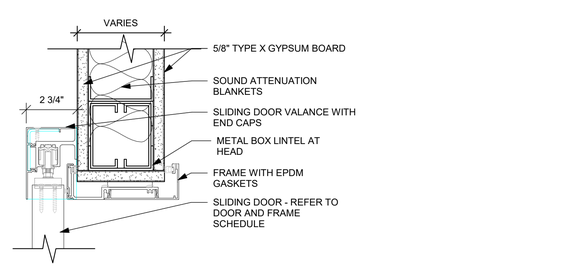
E1 DOOR HEAD DETAIL (METAL STUD)
3" = 1'-0"



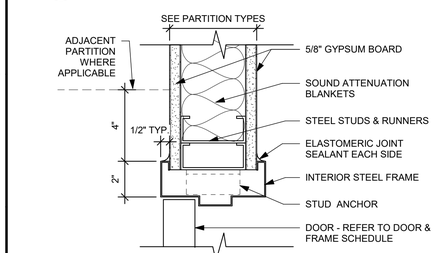
F2 DOOR SILL DETAIL (STORM SHELTER)
3" = 1'-0"



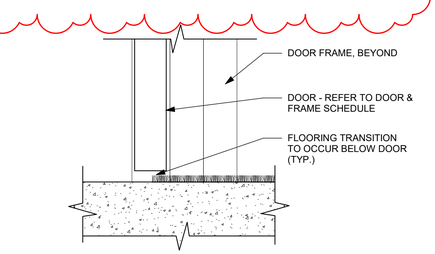
E4 HEAD DETAIL - STOREFRONT
3" = 1'-0"



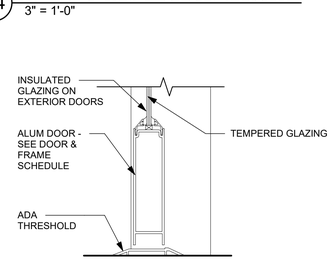
E6 SLIDING DOOR HEAD DETAIL
3" = 1'-0"



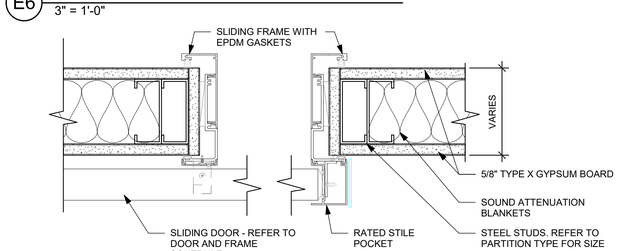
F1 DOOR JAMB DETAIL (METAL STUD)
3" = 1'-0"



E2 SILL DETAIL
3" = 1'-0"



F4 SILL DETAIL - STOREFRONT
3" = 1'-0"



F6 SLIDING DOOR JAMB DETAIL
3" = 1'-0"

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TITLE
DOOR DETAILS

SHEET NO.
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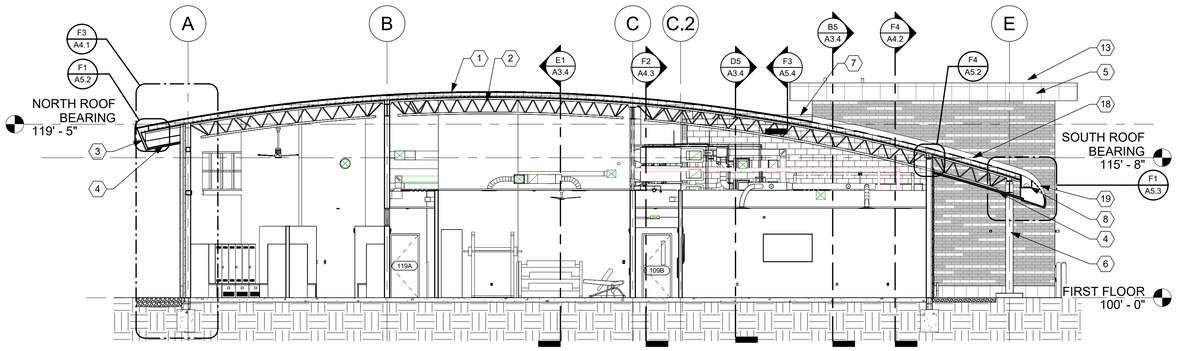
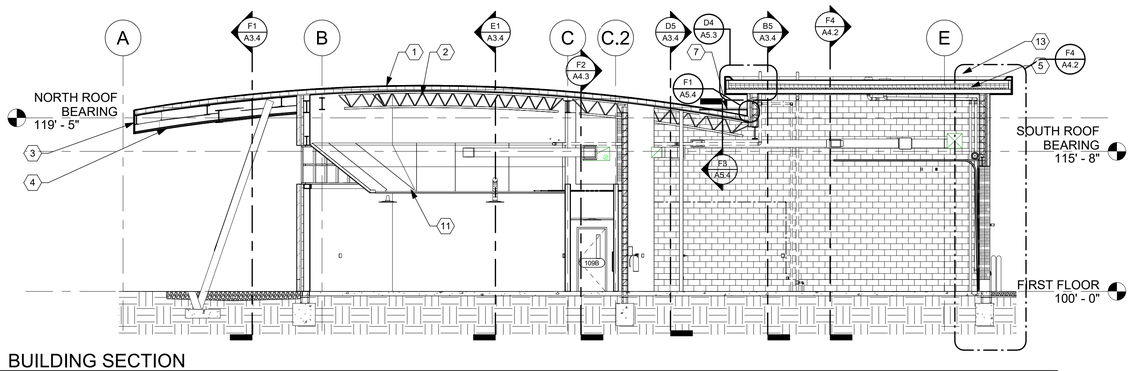
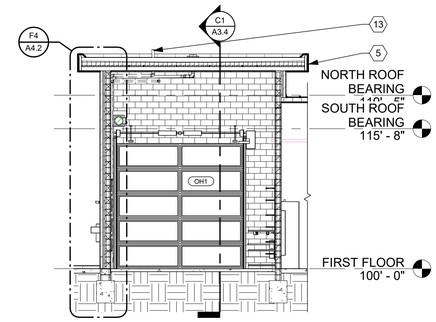


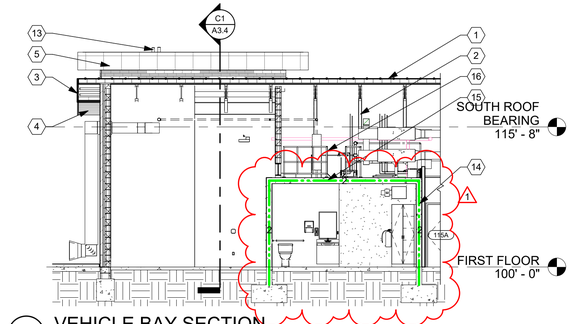
B1 BUILDING SECTION
1/8" = 1'-0"



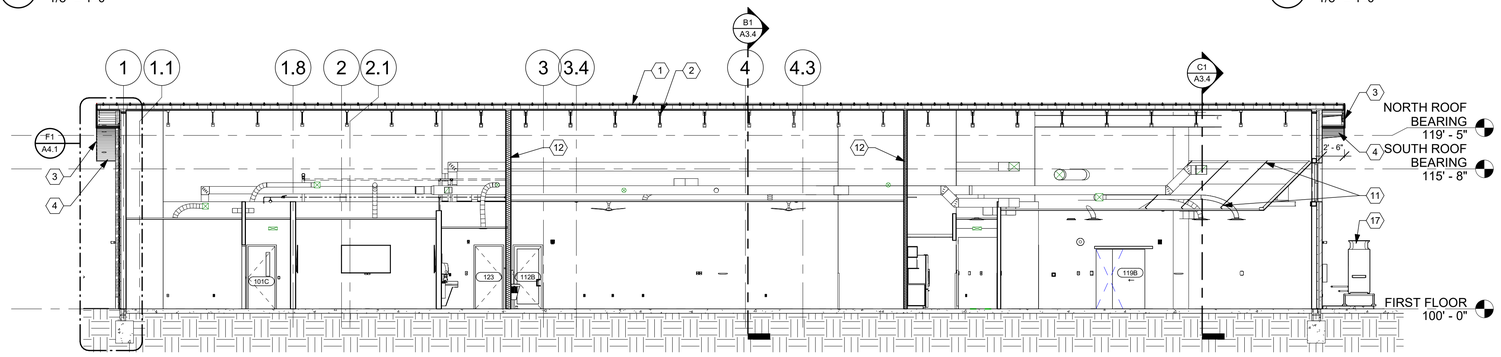
C1 BUILDING SECTION
1/8" = 1'-0"



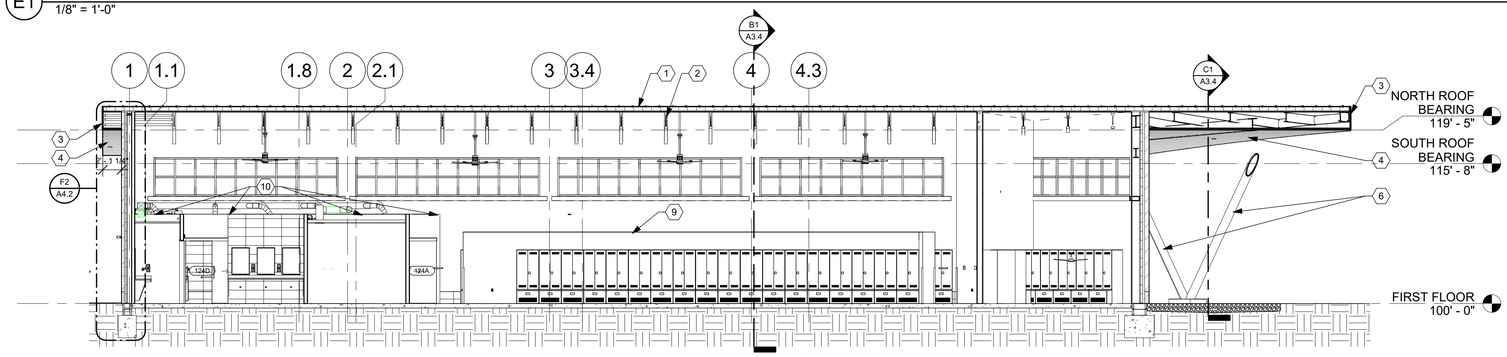
B5 VEHICLE BAY SECTION
1/8" = 1'-0"



D5 VEHICLE BAY SECTION
1/8" = 1'-0"



E1 BUILDING SECTION
1/8" = 1'-0"



F1 BUILDING SECTION
1/8" = 1'-0"

CONSTRUCTION NOTES

00 INDICATES CONSTRUCTION NOTE.

1 STANDING SEAM METAL ROOF PANELS.

2 STEEL BOW TRUSSES. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.

3 ALUMINUM COMPOSITE PANELS.

4 LINEAR METAL PLANK SOFFIT.

5 METAL PANEL FASCIA AND SOFFIT.

6 STRUCTURAL "V" COLUMN FOR ROOF OVERHANG. REFER TO STRUCTURAL DRAWINGS.

7 FRAMED ROOF SADDLE. SIMILAR TO SMACNA STANDARD DETAIL 4-17.

8 INTERNAL BOX GUTTER.

9 WALL EXTENDS TO 8'-0" AFF AND BRACING DOES NOT EXTEND TO STRUCTURE ABOVE. FINISH TOP OF WALL WITH DRYWALL AND CORNERBEAD REFER TO STRUCTURAL DRAWINGS FOR BRACING INFORMATION.

10 WALLS EXTEND TO 10'-0" AFF AND ARE BRACED TO ADJACENT WALLS ABOVE CEILINGS. FINISH TOP OF WALL WITH DRYWALL AND CORNERBEAD. REFER TO STRUCTURAL DRAWINGS FOR BRACING INFORMATION.

11 SUSPENDED DRYWALL GRID LIGHTWELL. REFER TO SHEET F4/A0.8 FOR DETAILS.

12 STC RATED WALL (MIN. 54)

13 PAINT PENETRATIONS THROUGH ROOF TO MATCH ROOFING MATERIAL.

14 2 HR. RATED WALLS AROUND STORM SHELTER.

15 CONCRETE LID OF STORM SHELTER IS INDEPENDENT OF ROOF AND SURROUNDING WALL STRUCTURES. REFER TO STRUCTURAL DRAWINGS FOR DETAILS.

16 EDGE RAILING FOR EQUIPMENT PLATFORM. REFER TO A1.3 FOR DETAILS.

17 VRF UNIT. REFER TO MECHANICAL DRAWINGS FOR DETAILS.

GENERAL NOTES

A. ALL GYPSUM BOARD IN VEHICLE BAY TO BE MOISTURE RESISTANT.

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TITLE
BUILDING SECTIONS

SHEET NO.
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STRUCTURAL NOTES cont.

DESIGN LOADS: STORM SHELTER:

1. ROOF LOAD
   A. MINIMUM LIVE LOAD (Lr/t): 100 PSF
   B. MINIMUM SNOW LOAD (Pf): 20 PSF
2. SNOW LOAD
   A. GROUND SNOW LOAD, P/G = 20 PSF MODIFIED BY APPLICABLE DRIFT COEFFICIENTS
   B. FLAT ROOF SNOW LOAD, P/F = 20 PSF MODIFIED BY APPLICABLE BUILDING COEFFICIENTS
   C. SNOW LOAD IMPORTANCE FACTOR I = 1.20
   D. SNOW EXPOSURE FACTOR Ce = 1.0
   E. THERMAL FACTOR, Ct = 1.00
3. FLOOR LOAD:
   A. FIRST FLOOR LIVE LOAD: 100 PSF
   B. SHELTER LID LIVE LOAD 100 PSF
4. WIND LOAD:
   A. MAIN WINDFORCE-RESISTING SYSTEM: 250 MPH PER STANDARD ICC 500-2020 AND NSSA STANDARD FOR DESIGN AND CONSTRUCTION OF STORM SHELTERS.
   B. WIND EXPOSURE C
   C. WIND DIRECTIONAL FACTOR = 1.0
   D. TOPOGRAPHICAL FACTOR = 1.0
   E. ENCLOSURE CLASSIFICATION PER ASCE 7
   F. INTERNAL GUST PRESSURE COEFFICIENT GCP = ±0.55
5. SEISMIC LOAD
   A. COUNTY = MONTGOMERY
   B. BUILDING SITE CLASSIFICATION = D
   C. SPECTRAL RESPONSE ACCELERATION, Ss = 14.5%
   D. Sds (EQUATION 16-19) = 15.4%
   E. SPECTRAL RESPONSE ACCELERATION, S1 = 7.1%
      Sd/1 (EQUATION 16-18) = 11.4%
   F. SEISMIC DESIGN CATEGORY, SDC = C
   G. SEISMIC IMPORTANCE FACTOR = 1.5
   H. SEISMIC FORCE RESISTING SYSTEM = ORDINARY REINFORCED CONCRETE SHEAR WALLS
   I. RESPONSE MODIFICATION FACTOR, R = 4
   J. TOPOGRAPHIC FACTOR, Kzt = 1.0
   K. DIRECTIONALITY FACTOR, Kd = 1.0
6. FLOOD
   A. THE SHELTER HAS NOT BEEN CONSTRUCTED WITHIN AN AREA SUSCEPTIBLE TO FLOODING IN ACCORDANCE TO CHAPTER 4.
7. MISSILE CRITERIA
   A. DEBRIS IMPACT TEST MISSILE FOR ALL COMPONENTS OF THE SHELTER ENVELOPE SHALL BE A 15 POUND SAWN LUMBER 2x4 TRAVELING AT SPEEDS PER TABLE 305.1.1. 100 MPH VERTICAL SURFACES, 67 MPH HORIZONTAL SURFACES.
8. SURFACES
   A. WALLS, DOORS AND OTHER ENVELOPE SURFACES INCLINED 30 DEGREES OR MORE FROM THE HORIZONTAL SHALL BE CONSIDERED AS VERTICAL SURFACES. SURFACES INCLINED LESS THAN 30 DEGREES FROM THE HORIZONTAL SHALL BE TREATED AS HORIZONTAL SURFACES.
9. OTHER DEBRIS HAZARDS:
   A. LAY DOWN, ROLLOVER AND COLLAPSE HAZARDS SHALL BE CONSIDERED BY THE DESIGN PROFESSIONAL WHEN DETERMINING THE LOCATION OF SHELTERS ON THE SITE (LRT).

STORM SHELTER QUALITY ASSURANCE PLAN:

1. PRIOR TO CONSTRUCTION OF THE STORM SHELTER PORTION OF THE PROJECT, THE OWNER IS TO RETAIN AN INDEPENDENT AGENCY TO PERFORM THE SPECIAL INSPECTIONS, TESTING, AND STRUCTURAL OBSERVATIONS REQUIRED IN THIS QUALITY ASSURANCE PLAN. WHERE APPLICABLE, INDIVIDUALS PERFORMING SPECIAL INSPECTIONS AND TESTING ARE TO BE QUALIFIED THROUGH RECOGNIZED INDUSTRY CERTIFICATION. INDIVIDUALS PERFORMING STRUCTURAL OBSERVATIONS ARE TO REGISTERED DESIGN PROFESSIONALS IN THE JURISDICTION OF THE PROJECT.
2. THE REQUIREMENTS SPECIFIED IN THIS QUALITY ASSURANCE PLAN ARE APPLICABLE TO THE STORM SHELTER PORTION OF THE PROJECT, ITS REFERENCED DETAILS, AND ALL COMPONENTS THEREOF. SEE THE PLANS FOR AREA(S) DESIGNATED AS PART OF THE STORM SHELTER CONSTRUCTION.
3. THE SPECIAL INSPECTION AND STRUCTURAL OBSERVATION AGENCY SHALL SUBMIT WRITTEN REPORTS IDENTIFYING DEFICIENCIES IN THE STORM SHELTER CONSTRUCTION ON REGULAR BASES. AT THE COMPLETION OF THE STORM SHELTER CONSTRUCTION, THE AGENCY SHALL SUBMIT A STATEMENT INDICATING THAT ALL DEFICIENCIES IDENTIFIED DURING CONSTRUCTION HAVE BEEN PROPERLY ADDRESSED, AND THAT STRUCTURAL OBSERVATIONS HAVE BEEN REGULARLY PERFORMED. ALL REPORTS ARE TO BE SUBMITTED TO THE OWNER, ARCHITECT, CONSTRUCTION MANAGER, AND THE AUTHORITY HAVING JURISDICTION.
4. EACH CONTRACTOR RESPONSIBLE FOR CONSTRUCTING ELEMENTS OF THE STORM SHELTER SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE OWNER, ARCHITECT, CONSTRUCTION MANAGER, AND THE AUTHORITY HAVING JURISDICTION. PARTIES RESPONSIBLE FOR THIS STATEMENT INCLUDE, BUT ARE NOT LIMITED TO, THE SITE GRADING CONTRACTOR, CAST-IN-PLACE CONCRETE SUPPLIER AND CONTRACTOR, STRUCTURAL STEEL FABRICATOR AND ERECTOR, MASONRY CONTRACTOR, REINFORCING STEEL FABRICATOR AND IRON WORKERS, PRECAST MANUFACTURER AND ERECTOR, DOOR MANUFACTURER AND INSTALLER, AND OPENING PROTECTIVE DEVICE FABRICATOR AND ERECTOR. THIS STATEMENT IS TO INCLUDE THE FOLLOWING:
   A. ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS IN THE QUALITY ASSURANCE PLAN.
   B. ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS.
   C. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING, AND THE DISTRIBUTION OF REPORTS.
   D. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
5. THE FOLLOWING SPECIAL INSPECTIONS AND TESTING OF THE STORM SHELTER CONSTRUCTION ARE TO BE PERFORMED AS PART OF THIS QUALITY ASSURANCE PLAN. THESE REQUIREMENTS ARE IN ADDITION TO THE TESTING AND INSPECTIONS REQUIRED FOR THE REMAINDER OF THE BUILDING:
   A. SOILS
      i. PERIODICALLY INSPECT SOILS BELOW FOOTINGS FOR ADEQUATE BEARING CAPACITY AND CONSISTENCY WITH GEOTECHNICAL REPORT. INSPECT REMOVAL OF UNSUITABLE MATERIAL AND PREPARATION OF SUBGRADE PRIOR TO PLACEMENT OF CONTROLLED FILL.
      ii. PERIODICALLY VERIFY DEPTH AND WIDTH OF FOUNDATION EXCAVATIONS.
   B. CONCRETE
      i. PERIODICALLY INSPECT SIZE, SPACING, COVER, POSITIONING, AND GRADE OF REINFORCING STEEL.
         1) VERIFY THAT REINFORCING BARS ARE FREE OF FORM OIL OR OTHER DELETERIOUS MATERIALS.
         2) INSPECT BAR LAPS AND MECHANICAL SPLICES.
         3) VERIFY THAT BARS ARE ADEQUATELY TIED AND SUPPORTED ON CHAIRS OR BOLSTERS.
      ii. PERIODICALLY INSPECT SIZE, POSITIONING, AND EMBEDMENT OF ANCHOR RODS, WELD PLATES, AND ALL OTHER CAST-IN EMBEDDED ITEMS. INSPECT CONCRETE PLACEMENT AND CONSOLIDATION AROUND ANCHORS.
      iii. CONTINUOUSLY INSPECT SIZE, POSITIONING, EMBEDMENT, AND INSTALLATION OF POST-INSTALLED CHEMICAL AND MECHANICAL ANCHORS.
         1) VERIFY INSTALLATION PROCEDURE IS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
         2) PULL-TEST ANCHORS THAT ARE DEEMED SUSPECT DUE TO IMPROPER TORQUE AND/OR INADEQUATE EMBEDMENT DEPTH.
      iv. PERIODICALLY VERIFY USE OF PROPER MIX DESIGN.
      v. PERIODICALLY VERIFY FORM WORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE BEING FORMED.
      vi. PERIODICALLY INSPECT PLACEMENT OF CONCRETE.
         1) VERIFY THAT CONCRETE CONVEYANCE AND DEPOSITING AVOIDS SEGREGATION OR CONTAMINATION.
         2) VERIFY THAT CONCRETE IS PROPERLY CONSOLIDATED. INSPECT CURING, COLDWEATHER PROTECTION, AND HOT-WEATHER PROTECTION PROCEDURES.
      vii. PERIODICALLY SAMPLE AND TEST CONCRETE FOR COMPRESSIVE STRENGTH, SLUMP, AIR CONTENT, AND TEMPERATURE. SAMPLE EACH 50 CUBIC YARDS OF CONCRETE, OR FRACTION THEREOF, PLACED IN ANY ONE DAY.
   C. STEEL
      i. PERIODICALLY INSPECT INSTALLATION AND TIGHTENING OF BEARING-TYPE HIGH-STRENGTH BOLTS.
      ii. CONTINUOUSLY VERIFY PROPER TIGHTENING SEQUENCE FOR SLIP-CRITICAL BOLTED CONNECTIONS. VERIFY THAT SPLINES HAVE SEPARATED FROM TENSION CONTROL BOLTS.
      iii. PERIODICALLY VERIFY SIZE AND LENGTH, AND VISUALLY INSPECT ALL SINGLEPASS FILLET WELDS NOT EXCEEDING 5/16 INCH IN SIZE.
      iv. CONTINUOUSLY VERIFY SIZE AND LENGTH, INSPECT PRE-HEAT, POST-HEAT, AND SURFACE PREPARATION BETWEEN PASSES, AND ULTRASONICALLY TEST ALL FILLET WELDS EXCEEDING 5/16 INCH IN SIZE, ALL MULTI-PASS FILLET WELDS, AND ALL PARTIAL AND COMPLETE PENETRATION GROOVE WELDS.
      v. PERIODICALLY INSPECT STEEL FRAMING FOR COMPLIANCE WITH STRUCTURAL DRAWINGS, INCLUDING BRACING, MEMBER CONFIGURATION, AND CONNECTION DETAILS.
   D. OPENING PROTECTIVE DEVICES
      i. CONTINUOUSLY INSPECT INSTALLATION OF DOOR ANCHORAGES AND ANCHORAGE OF PROTECTIVE BAFFLES FOR OPENINGS.
      ii. UPON COMPLETION, VERIFY THE PROPER OPERATION OF DOORS AND SHUTTERS.
      iii. CONFIRM MAXIMUM ALLOWABLE GAPS AT THRESHOLDS, SILLS, JAMBS, AND HEADS OF OPENING LEAFS.
6. THE FOLLOWING STRUCTURAL OBSERVATIONS OF THE STORM SHELTER CONSTRUCTION ARE TO BE PERFORMED AS PART OF THIS QUALITY ASSURANCE PLAN. THESE OBSERVATIONS ARE TO VISUALLY VERIFY THAT THE IDENTIFIED ASSEMBLIES ARE BEING BUILT IN GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS. ADDITIONAL OBSERVATIONS OF THE CONSTRUCTION ARE TO BE PERFORMED AT THE OBSERVER'S DISCRETION.
   A. FOUNDATIONS
      i. VERIFY THAT DOWEL BARS IN FOUNDATIONS AND SLABS ARE BEING PROVIDED WHERE INDICATED. VERIFY THAT DOWELS HAVE BEEN SHORTENED AT LOCATIONS WHERE THE HOST BUILDING ISDESIGNED TO BREAK-FREE FROM THE STORM SHELTER CONSTRUCTION.
      ii. VERIFY THAT ANCHOR BOLTS HAVE BEEN PROVIDED WITH SUFFICIENT LENGTHS TO RECEIVE FURTHER CONSTRUCTION. VERIFY THAT ANCHORS HAVE NOT BEEN BENT OR OTHERWISE MODIFIED.
   B. WALLS
      i. VERIFY THAT OPENINGS ARE BEING BUILT AS INDICATED.
      ii. VERIFY THAT SUFFICIENT LAP LENGTHS ARE BEING PROVIDED BETWEEN SEQUENCES OF CONSTRUCTION.
      iii. VERIFY THAT CAST-IN AND POST-INSTALLED ANCHORS HAVE SUFFICIENT LENGTH TO RECEIVE FURTHER CONSTRUCTION. VERIFY THAT ANCHORAGES HAVE NOT BEEN BENT OR OTHERWISE MODIFIED.
      iv. VERIFY THAT PROPER CAST-IN ITEMS FOR DOORS AND SHUTTERS ARE BEING PROVIDED.
      v. VERIFY THAT VERTICAL CONTROL JOINTS ARE 3/8" OR LESS IN WIDTH, AND HAVE BEEN FILLED ACCORDING TO TMS 602 FOR MASONRY OR ASTM C920 FOR CONCRETE.
      vi. VERIFY THAT BOND PATTERN AT CORNERS HAS BEEN CONSTRUCTED AS INDICATED.
   C. ROOFS
      i. VERIFY THAT ANCHORAGES BETWEEN THE STORM SHELTER WALLS AND ROOFS ARE BEING PROVIDED AS INDICATED.
      ii. VERIFY THAT MEMBER BRACING, CONFIGURATION, AND CONNECTIONS HAVE BEEN PROVIDED AS INDICATED.
      iii. VERIFY THAT DOWELS, BARS, AND/OR ANCHORAGES HAVE BEEN SHORTENED AT LOCATIONS WHERE THE HOST BUILDING IS DESIGNED TO BREAK-FREE FROM THE STORM SHELTER CONSTRUCTION.
      iv. VERIFY FILLING OF GAPS AND JOINTS BETWEEN ROOF FRAMING MEMBERS, AND AT BEARING LOCATIONS.
   D. OPENINGS
      i. VERIFY THAT POST-INSTALLED ANCHORAGES OF OPENING PROTECTIVE DEVICES HAVE BEEN INSTALLED.
      ii. VERIFY THAT PROTECTIVE BAFFLES HAVE BEEN PROVIDED FOR ALL PENETRATIONS THROUGH THE STORM SHELTER ENVELOPE.
7. INSPECTION OF FABRICATION:
   A. WHERE FABRICATION OF STRUCTURAL LOAD-BEARING AND IMPACT RESISTANT COMPONENTS AND ASSEMBLIES IS BEING PERFORMED ON THE PREMISES OF A FABRICATORS SHOP, SPECIAL INSPECTIONS OF THE FABRICATOR SHALL BE PROVIDED.

ABBREVIATIONS:

ADD'L	ADDITIONAL
ADJ	ADJACENT
A.F.F.	ABOVE FINISHED FLOOR
ANG	ANGLE
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
AOR	ARCHITECT OF RECORD
B/	BOTTOM OF
BETW	BETWEEN
BRG	BEARING
BM	BEAM
BOT	BOTTOM
C/C	CENTER TO CENTER
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
CMU	CONCRETE MASONRY UNIT
COMP	COMPOSITE
DBL	DOUBLE
DEMO	DEMOLISH
DIA	DIAMETER
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
E.E.	EACH END
E.F.	EACH FACE
ELEV	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
E.S.	EACH SIDE
E.W.	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F.F.	FINISH FLOOR
FLR	FLOOR
GA	GAGE
G.C.	GENERAL CONTRACTOR
GALV	GALVANIZED
HT	HEIGHT
HORIZ	HORIZONTAL
JST	JOIST
LG	LONG
LT WT	LIGHT WEIGHT
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MTL	METAL
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.H.	OPPOSITE HAND (OPP)
OPNG	OPENING
REINF	REINFORCING
REQ'D	REQUIRED
SCHED	SCHEDULE
SECT	SECTION
SIM	SIMILAR
S.O.G.	SLAB ON GRADE
SPC	SPACING
SPEC	SPECIFICATIONS
STIFF	STIFFENER
STL	STEEL
T/	TOP OF (T/STL, T/CONC, T/JST)
THK	THICK, THICKNESS
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
W/	WITH
WF	WIDE FLANGE (BM)
W.W.F.	WELDED WIRE FABRIC

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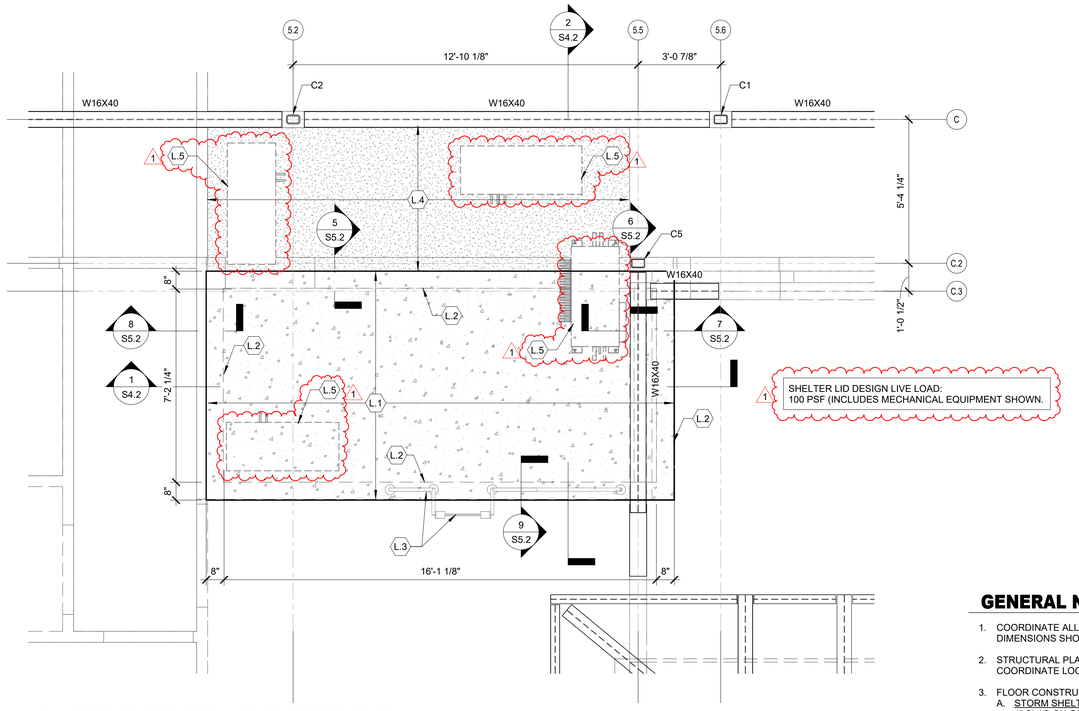
TITLE
STRUCTURAL NOTES

SHEET NO.
S0.3

11/18/2024 3:07:23 PM

CODED NOTES - SHELTER LID FRAMING : (L.X)

- (L.1) 8" THICK REINF CONC "SHELTER LID" (4,000 PSI) WITH #5 BAR @ 8" O.C.
- (L.2) STORM SHELTER WALLS BELOW
- (L.3) LADDER AND GUARDRAILS BY SUPPLIER - COORD W/ ARCH
- (L.4) COLD FORMED METAL STUD FRAMING DESIGN BY SUPPLIER
- 1 (L.5) MECHANICAL UNITS - SEE EQUIPMENT SCHEDULES SHEET H0.4 FOR MORE INFORMATION

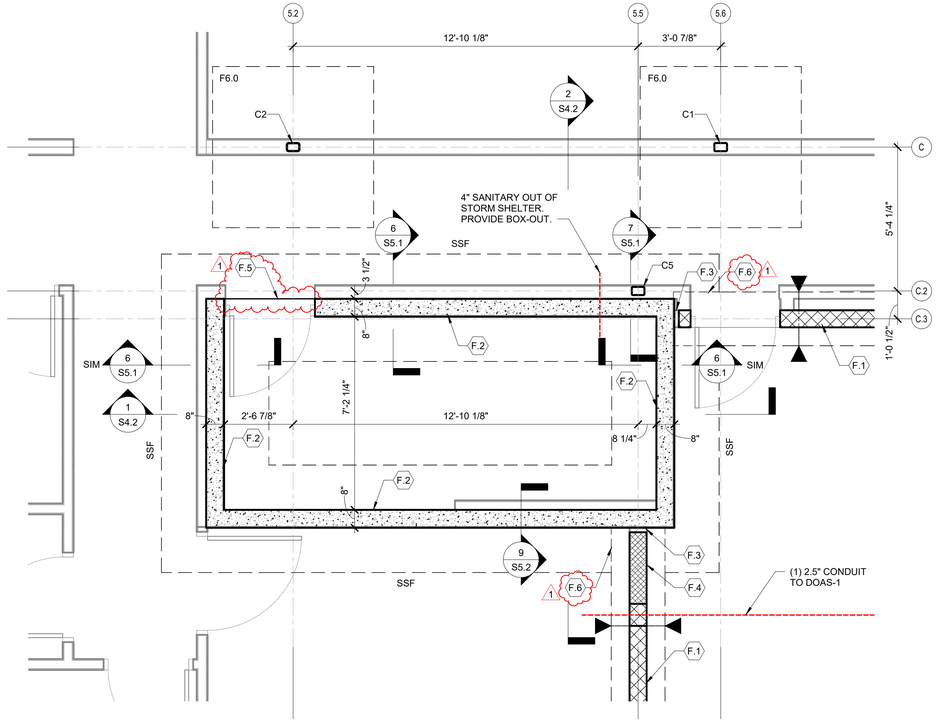


2 STORM SHELTER LID FRAMING PLAN

3/8" = 1'-0"

CODED NOTES - SHELTER FOUNDATION : (F.X)

- (F.1) 8" REINF CMU WALL ON REINF CONC TRENCH FOOTING - SEE GENERAL NOTE **11A/S1.1**
- (F.2) 8" REINF CONC STORM SHELTER WALL ON REINF CONC FOOTING
- (F.3) 2" EXPANSION JOINT BETWEEN STORM SHELTER WALL AND ADJACENT WALL
- (F.4) 32" WIDE MASONRY PILASTER FULL HEIGHT OF CMU WALL - PROVIDE #5 VERT BARS IN EACH CELL
- 1 (F.5) EXTEND SHELTER SLAB TO EXTERIOR FACE OF SHELTER WALL AS SHOWN
- 1 (F.6) TOP OF TR20 FOUNDATION TO CONTINUE AT 98'-8" - BOTTOM OF FOOTING TO BEAR ONTO TOP OF SSF FOOTING AT 98'-0" - TR20 FOOTING TO NOT ATTACH/DOWEL INTO SSF FOOTING



1 STORM SHELTER FOUNDATION PLAN

3/8" = 1'-0"

GENERAL NOTES - SHELTER:

1. COORDINATE ALL DIMENSIONS W/ ARCH DWGS. IN CASE OF CONFLICT, THE DIMENSIONS SHOWN IN THE ARCH DWGS GOVERN.
2. STRUCTURAL PLANS ARE AN EXTENSION OF ARCHITECTURAL PLANS. COORDINATE LOCATIONS OF COLUMNS, WALLS, OPENINGS, ETC W/ ARCH DWGS.
3. FLOOR CONSTRUCTION:
   A. STORM SHELTER:
      4" SLAB ON GRADE REINF W/ 6x6xW2.9xW2.9 OVER 10 MIL VAPOR BARRIER ON 6" DEEP COMPACTED GRANULAR FILL. T/SLAB = 100'-0".
4. ALL EXTERIOR FOOTINGS TO EXTEND TO A MIN OF **36"** BELOW GRADE.
5. TR# INDICATES CONT TRENCH FOOTING MARK.
6. WF# INDICATES CONT WALL FOOTING MARK.
7. SSF# INDICATES CONT STORM SHELTER WALL FOOTING MARK.
8. T/FTG XX'-XX" - INDICATES TOP OF FOOTING ELEVATION.
9. ▶◀ - INDICATES FOOTING STEP - SEE DETAIL **7 / S6.1**
10. WALL CONSTRUCTION:
    A. FOR 8" CONCRETE STORM SHELTER WALLS : (MARKED AS CODED NOTE F.2) 8" THICK REINF CONC WALL (4,000 PSI) W/ #6 VERT @8" O.C. AND #4 HORIZ @6" O.C.
11. SEE SHEET **S0.3** FOR STORM SHELTER QUALITY ASSURANCE PLAN.
12. CONTRACTOR TO COORDINATE ALL UNDERGROUND UTILITIES AS REQUIRED. SEE DETAIL **1 / S6.2** FOR UTILITIES CROSSING THROUGH/UNDER FOOTINGS. FOOTING MAY NEED TO STEP (DETAIL **7 / S6.1**). REFER TO ARCH DWGS FOR UTILITIES.
13. SEE DETAIL **8 / S5.1** FOR SHELTER LINTEL INFORMATION AND SHEETS **S4.2**, **S5.1**, **S5.2** AND **S5.4** FOR SHELTER DETAILS AND ADDITIONAL INFORMATION (U.N.O.).
14. SEE SHEET **S1.1** FOR FOOTING AND COLUMN SCHEDULES.

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TITLE
ENLARGED STRUCTURAL PLANS

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S2.1

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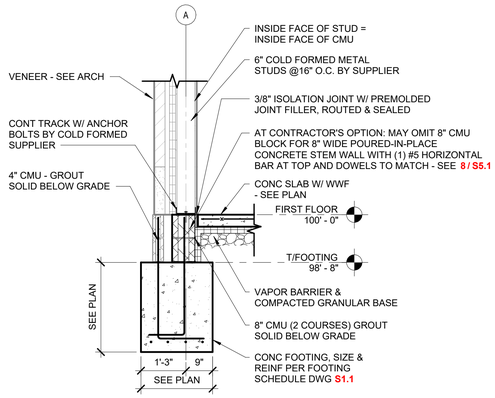
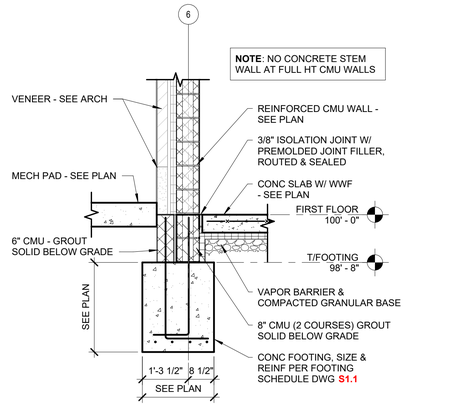
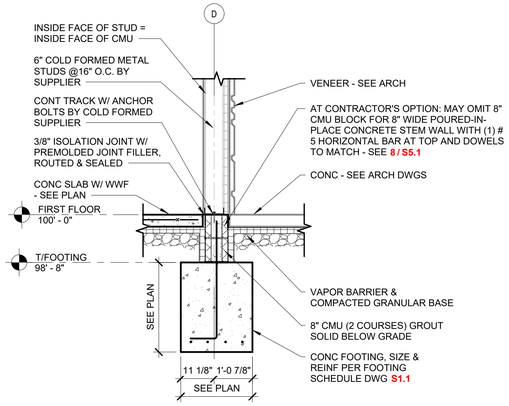


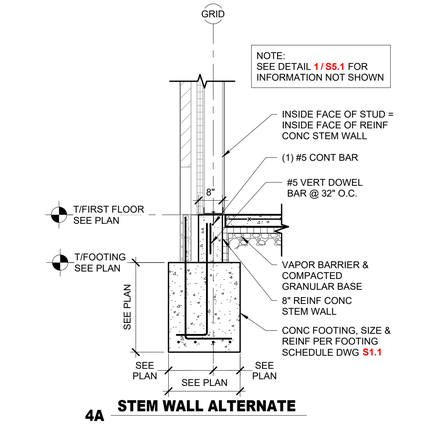
1 EXT WALL/FOOTING - METAL STUD/BRICK
SCALE: N.T.S.



2 EXT WALL/FOOTING - CMU/BRICK
1/2" = 1'-0"

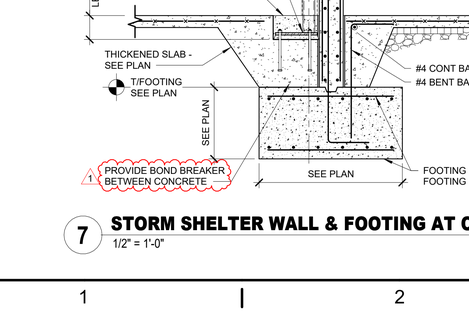


3 EXT WALL/FOOTING - METAL STUD/METAL PLANK
1/2" = 1'-0"

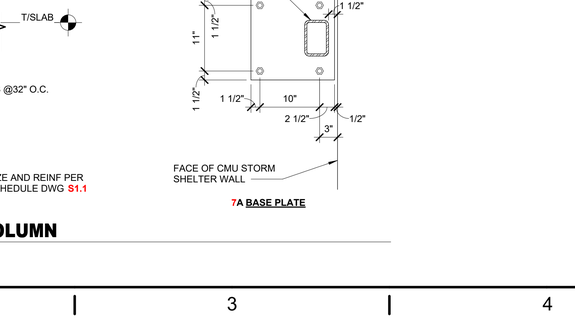


4A STEM WALL ALTERNATE

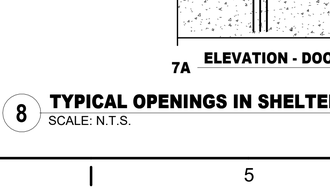
4 EXT WALL/FOOTING - METAL STUD/BRICK
1/2" = 1'-0"



5A SECTION

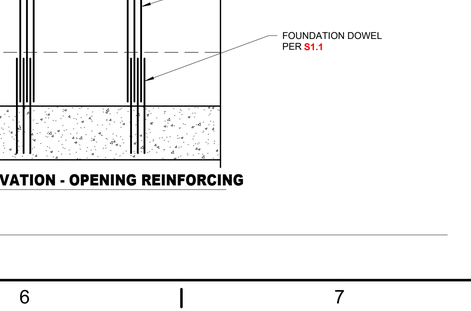


5B SECTION

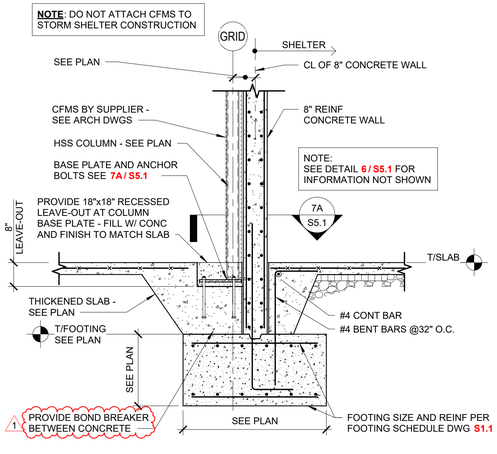


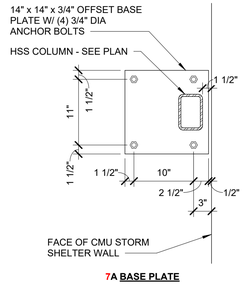
5C PLAN

5 SECTION
1/2" = 1'-0"



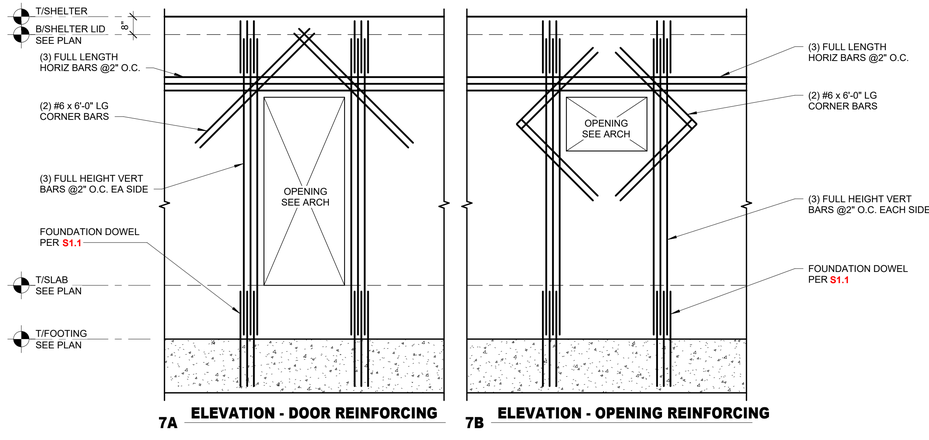
6 STORM SHELTER WALL & FOOTING
1/2" = 1'-0"





7A BASE PLATE

7 STORM SHELTER WALL & FOOTING AT COLUMN
1/2" = 1'-0"



7A ELEVATION - DOOR REINFORCING **7B ELEVATION - OPENING REINFORCING**

8 TYPICAL OPENINGS IN SHELTER
SCALE: N.T.S.

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TITLE
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SHEET NO.
S5.1

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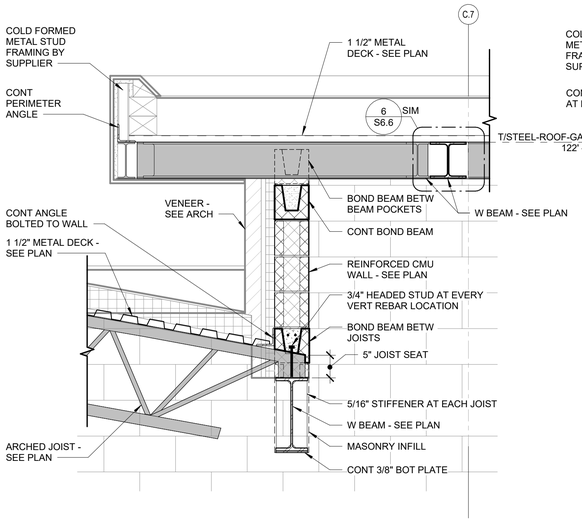
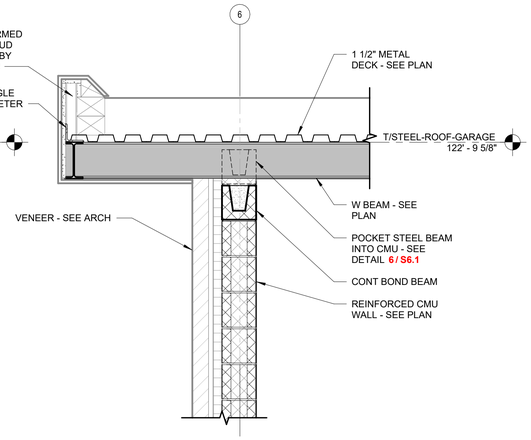


1 SECTION
3/4" = 1'-0"



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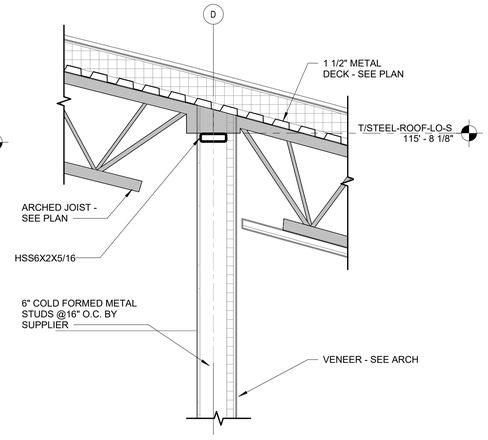

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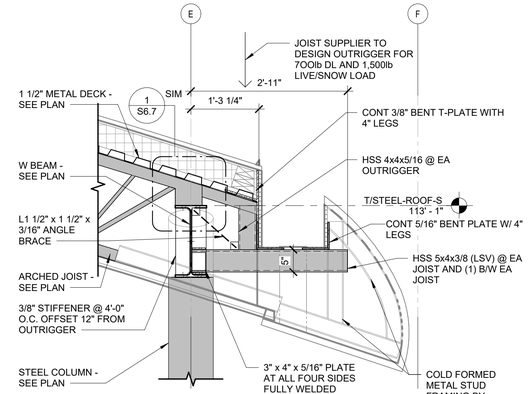

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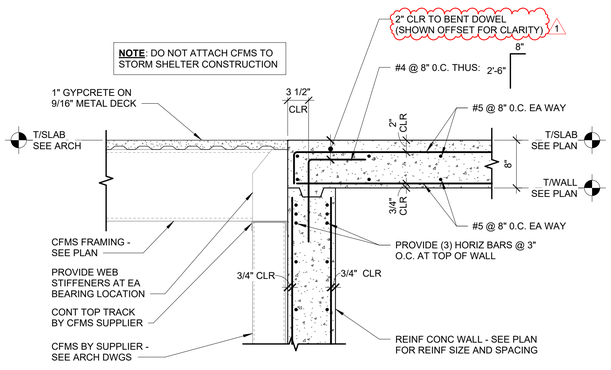
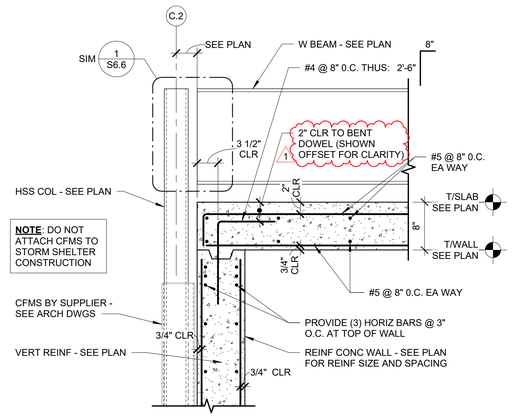
3/4" = 1'-0"



5 SECTION AT STORM SHELTER
1" = 1'-0"



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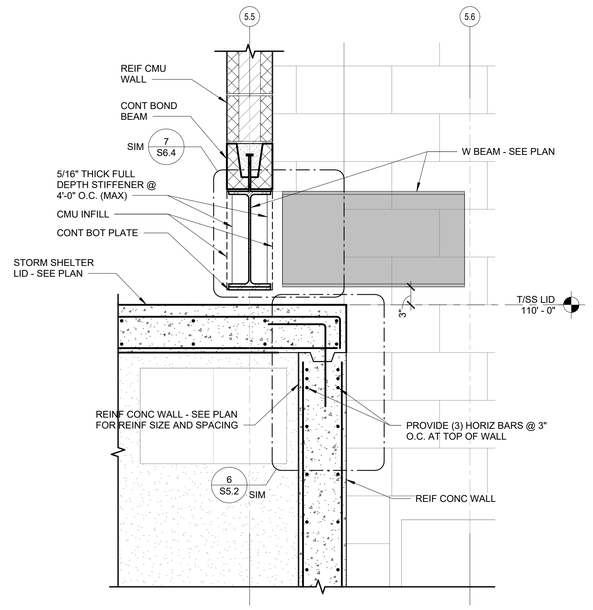
1" = 1'-0"



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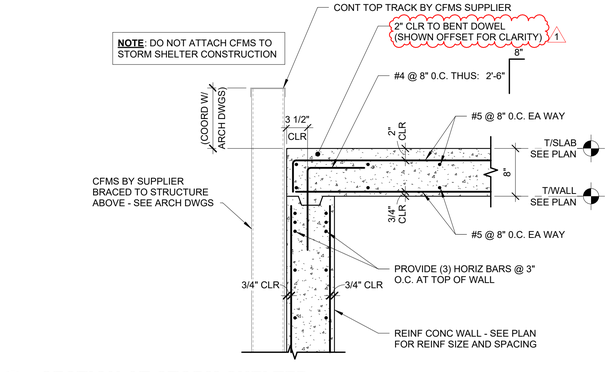
1" = 1'-0"



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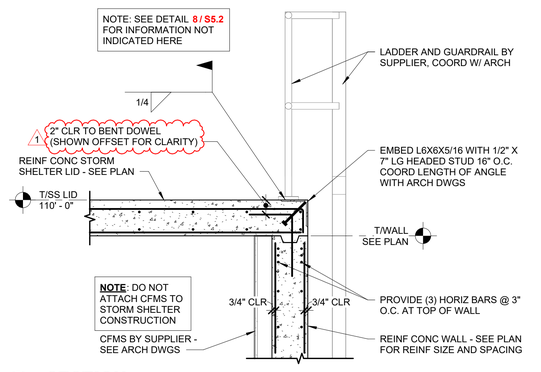
1" = 1'-0"



9 SECTION
3/4" = 1'-0"

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WEST PATROL DISTRICT
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ISSUE

NO.	DATE	DESCRIPTION
	11/01/2024	FOR CONSTRUCTION
1	11/18/2024	ADDENDUM 01

DATE	11/18/2024
JOB NO.	4205.00
DRAWN	KABIL
CHECKED	JFD

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TITLE
STRUCTURAL DETAILS

SHEET NO.
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PIPE HANGER SCHEDULE - PLUMBING

GENERAL NOTES FOR PIPE HANGERS:

DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.

WELDING: QUALIFY PROCEDURES AND PERSONNEL ACCORDING TO ASME BOILER AND PRESSURE VESSEL CODE: SECTION IX.

ATTACHMENT OF PIPE HANGER RODS TO THE STRUCTURE SHALL BE WITH:
1. PRE-SET CONCRETE INSERTS.
2. AFTER-SET STEEL EXPANSION TYPE CONCRETE INSERTS.
3. BEAM CLAMPS FOR STEEL CONSTRUCTION EQUAL TO ANVIL FIG. 92, 93, OR 94. UTILIZE SWIVEL TYPE IN SLOPED STEEL CONSTRUCTION TO PROVIDE VERTICAL SUPPORT OF PIPE WITHOUT BENDING HANGER RODS.
4. SIDE BEAM BRACKET FOR WOOD CONSTRUCTION EQUAL TO ANVIL FIG. 206.
5. CHANNEL SUPPORT SYSTEM EQUAL TO UNISTRUT OR HILTI.

ATTACHMENT TO MANUFACTURED TRUSSES AND OTHER ENGINEERED STRUCTURAL MEMBERS AND SUPPORTS SHALL BE DONE IN ACCORDANCE WITH THE STRUCTURAL MANUFACTURER'S RECOMMENDATIONS. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR TYPE OF ENGINEERED STRUCTURAL SYSTEMS BEING USED. CONNECTIONS TO THESE STRUCTURAL MEMBERS SHALL BE MADE WITH CONNECTION DEVICES AND METHODS APPROVED BY THE STRUCTURAL MANUFACTURER. PROVIDE ADDITIONAL SUPPORTS WITH SUPPLEMENTAL STEEL SHAPES WHEN SPACING BETWEEN STRUCTURAL MEMBERS EXCEEDS SPECIFIED DISTANCES.

ADJUST PIPE HANGERS TO PROPER ELEVATION AND SET HANGER RODS IN A VERTICAL POSITION BEFORE PIPE INSULATION IS INSTALLED.

THE FIRST TWO HANGERS ON PIPING CONNECTING TO MOTOR DRIVEN EQUIPMENT SHALL BE FITTED WITH A STEEL SPRING AND NEOPRENE VIBRATION ISOLATION SECTION SIMILAR TO MASON INDUSTRIES, NO. 30N.

TRAPEZE HANGERS FOR NUMEROUS PIPES RUN IN PARALLEL MAY BE UTILIZED. HORIZONTAL SUPPORT MEMBERS SHALL BE UNISTRUT TYPE SECTION WITH PIPE ROLLERS (TO ALLOW FOR EXPANSION TRAVEL) AND SPRING AND NUT CONNECTORS, SUSPENDED WITH HANGER RODS AND ATTACHMENTS SIMILAR TO INDIVIDUAL PIPE HANGER SUSPENSION.

SHORTENED EXTENDED LEGS OF PIPE RISER CLAMPS AS NEEDED TO MAINTAIN CONCEALMENT OF THE CLAMP WITHIN THE PIPE CHASE. INSURE THAT ADEQUATE SUPPORT IS STILL MAINTAINED.

HANGER ASSEMBLIES EXPOSED ON COMPLETION OF THE PROJECT SHALL BE PAINTED BEFORE INSTALLATION.

PIPE SUPPORTS FOR PIPE RUNNING ACROSS THE ROOF SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND AS DETAILED. INSTALL PROTECTIVE SLIP SHEETS OF ROOFING MEMBRANE UNDER THE BASES TO SATISFY REQUIREMENTS OF BOTH THE ROOFING MANUFACTURER AND THE SUPPORT SYSTEM MANUFACTURER.

IN PIPING SYSTEMS WITH MECHANICAL JOINT COUPLINGS, PIPE HANGERS SHALL BE PROVIDED ON HORIZONTAL PIPING AT NORMAL SPECIFIED INTERVALS AND, IN ADDITION, SO THAT NO PIPE SHALL BE LEFT UNSUPPORTED BETWEEN ANY TWO COUPLINGS NOR LEFT UNSUPPORTED WHENEVER A CHANGE IN DIRECTION TAKES PLACE. VERTICAL PIPING SHALL BE SUPPORTED AT NORMAL SPECIFIED INTERVALS OR EVERY OTHER PIPE LENGTH, WHICH EVER IS MORE FREQUENT. THE BASE OF THE RISER OR BASE FITTING SHALL BE SUPPORTED.

SYSTEM & SIZE	ORIENTATION & SIZE	SPACING
STEEL PIPING	VERTICAL	AT BASE AND 15 FT MAXIMUM
	HORIZONTAL 2" & SMALLER	8 FT.
	HORIZONTAL 2.5" - 6"	10 FT.
	HORIZONTAL 8" & LARGER	12 FT.
CAST IRON	VERTICAL	AT BASE AND 15 FT MAXIMUM
	HORIZONTAL	AT 10 FT. INTERVALS. SUPPORT EACH LENGTH OF PIPE NOT MORE THAN 18" FROM THE JOINT. SUPPORT TERMINAL ENDS OF HORIZONTAL RUNS AND BRANCHES AND EACH CHANGE IN DIRECTION. 5" AND LARGER PROVIDE BRACING TO PREVENT HORIZONTAL MOVEMENT IN ACCORDANCE WITH CISPI "SOIL PIPE AND FITTINGS HANDBOOK"
COPPER TUBING	VERTICAL	AT BASE AND 15 FT MAXIMUM
	HORIZONTAL 1.25" & SMALLER	6 FT.
	HORIZONTAL 1.5" - 2"	8 FT.
	HORIZONTAL 2.5" & LARGER	10 FT.
PLASTIC PIPING	VERTICAL	PER MANUFACTURER'S RECOMMENDATION
	HORIZONTAL	PER MANUFACTURER'S RECOMMENDATION

PLUMBING FIXTURE SCHEDULE

ITEM	FIXTURE DESCRIPTION	FIXTURE	CONNECTIONS H.W.	C.W.	SAN.	MTG. HGT.	TRIM REQUIREMENTS SUPPLY	STOPS	WASTE	TRAP	CARRIERS	ACCESSORIES	NOTES
W1	WATER CLOSET/ VIT. CHINA/ FLOOR SET/ MANUAL FLUSH VALVE/ 1.6 GPF/ ELONGATED BOWL/ 16 1/2" RIM HEIGHT/ 1,000 MG MaP SCORE/ OPEN FRONT SEAT WITH LID/ ACCESSIBLE	AM. STANDARD # 3043.001	--	1"	4"	--	SLOAN # SLOAN 111-1.6	UNIT	UNIT	INTEGRAL	--	SEAT BEMIS # 1950SS	
W2	WATER CLOSET/ VIT. CHINA/ FLOOR SET/ TANK TYPE/ HANDLE ON RIGHT/ 1.6 GPF/ ELONGATED BOWL/ 16 1/2" RIM HEIGHT/ 1,000 MG MaP SCORE/ OPEN FRONT SEAT WITH LID/ ACCESSIBLE	AM. STANDARD # 211AA.005	--	1/2"	4"	--	UNIT	MCGUIRE # LFBV2166	UNIT	INTEGRAL	--	SEAT BEMIS # 1950SS	
U1	URINAL/ VIT. CHINA/ WALL HUNG/ MANUAL FLUSH VALVE/ 1.0 GPF/ WASHOUT/ ACCESSIBLE	AM. STANDARD # 6590.001	--	3/4"	2"	17" TO LIP	SLOAN # SLOAN 186-1.0	UNIT	UNIT	INTEGRAL	ZURN # Z1222	--	
U2	URINAL/ VIT. CHINA/ WALL HUNG/ MANUAL FLUSH VALVE/ 1.0 GPF/ WASHOUT/	AM. STANDARD # 6590.001	--	3/4"	2"	24" TO LIP	SLOAN # SLOAN 186-1.0	UNIT	UNIT	INTEGRAL	ZURN # Z1222	--	
L1	LAVATORY/ SOLID SURFACE/ INTEGRAL WITH COUNTERTOP/ 2-HANDLED CAST BRASS FAUCET/ 0.5 GPM/ ASSE 1070 DEVICE/ ACCESSIBLE	BY OTHERS	1/2"	1/2"	1 1/4"	--	ELKAY # LK402L2	MCGUIRE # LFBV2165	WITH TRAP	MCGUIRE # PW2150WC	--	POWERS # LFUSG-B-M3	
L2	LAVATORY/ SOLID SURFACE/ INTEGRAL WITH COUNTERTOP/ 2-HANDLED CAST BRASS FAUCET W 5" GOOSENECK/ 1.5 GPM/ ASSE 1070 DEVICE/ ACCESSIBLE	BY OTHERS	1/2"	1/2"	1 1/4"	--	ELKAY # LK800GN05L2	MCGUIRE # LFBV2165	WITH TRAP	MCGUIRE # PW2150WC	--	POWERS # LFUSG-B-M3	
S1	SINK/ UNDERMOUNT/ DOUBLE BOWL/ 14 1/2" x17" x 9" DEEP BOWLS/ 2-HANDLED CAST BRASS FAUCET W 8" GOOSENECK & SPRAY/ DISPOSAL	ELKAY # ECTRU31179T	1/2"	1/2"	(2) 1 1/2"	--	ELKAY # LK801GN08L2	MCGUIRE # LFBV2165	MCGUIRE # 151A	MCGUIRE # 8912 & # 111	--	INSINKERATOR # EVOLUTION 120V,3/4HP	
S2	SINK/ ST. ST./ UNDERMOUNT/ SINGLE BOWL/ 17" X 17" X 9" DEEP BOWL/ 2-HANDLED CAST BRASS FAUCET W 8" GOOSENECK & SPRAY	ELKAY # ECTRU17179T	1/2"	1/2"	1 1/2"	-	ELKAY # LK801GN08L2	MCGUIRE # LFBV2165	MCGUIRE # 151A	MCGUIRE # 8912	--	--	
SH1	SHOWER/ STALL BY OTHERS/ CENTER DRAIN STYLE/ PRESSURE BALANCING MIXING VALVE WITH FIXED HEAD AND HAND HELD ON SLIDE BAR/ DIVERTER VALVE IN WALL	BY OTHERS	1/2"	1/2"	2"	VALVE 40" HEAD 78"	ZURN # Z7301-SS-MT-DV-2P-HW-H9-S9	UNIT	UNIT	SAME AS SANITARY PIPING	--	--	
M1	MOP SINK/ FLOOR SET/ 24" SQ. 10" DEEP/ MOLDED STONE/ VINYL. CAPS/ ST.ST. WALL PANELS/ ON 2 SIDES/ WALL MOUNTED FAUCET WITH INTEGRAL CHECK STOPS	FIAT # MSB2424	1/2"	1/2"	3"	36" FAUCET	ELKAY # LK940BP07L2S	UNIT	UNIT	SAME AS SANITARY PIPING	--	FIAT # E-88-AA , # MSG2424	
BF1	BOTTLE FILLER/ WALL SURFACE MOUNTED/ FILTERED/ REFRIGERATED	ELKAY # EZ8WSSSMC	--	1/2"	1 1/4"	34" TO RIM	UNIT	BALL VALVE	UNIT	CAST BRASS	ZURN # Z1225	--	
WB1	WASHER UTILITY CONNECTION BOX/ 1/4 TURN BALL VALVES WITH WATER HAMMER ARRESTOR/ WASTE CONNECTION	OATEY # 38540	3/4"	3/4"	2"	30"	UNIT	BALL VALVES ABOVE CEILING	UNIT	SAME AS SANITARY PIPING	--	--	
WB2	WATER CONNECTION BOX/ 1/4 TURN BALL VALVE/ WATER HAMMER ARRESTOR/ 6' ST. ST. HOSE	OATEY # 38574	--	1/2"	-	24"	UNIT	BALL VALVE ABOVE CEILING	--	--	--	--	
H1	WALL HYDRANT/ ENCASED/ NON-FREEZE/ ANTI-SIPHON/ AUTOMATIC DRAINING/ 1/2 TURN CERAMIC DISC/ WALL CLAMP	ZURN # Z1320XL-EZ-WC		3/4"	-	APPROX. 22"							1.

EQUALS

AMERICAN STANDARD CHINA - KOHLER, ZURN, SLOAN

CHICAGO FAUCETS - ZURN, CHICAGO, T&S BRASS

SLOAN FLUSH VALVES - ZURN, DELANEY

ELKAY SINKS - JUST, ACORN, ADVANCED TABCO, FRANKE, 1

MCGUIRE - WATTS, BRASS CRAFT

MCGUIRE "PROWRAP" - TRUEBRO "LAV GUARD", PLUMBEREX "PROEXTREME"

OATEY SUPPLY BOXES - IPS, GUY GRAY, SIOUX CHIEF

NOTES:

1. COORDINATE MOUNT HEIGHT WITH MASONRY COURSING.

SEISMIC REQUIREMENTS

THIS PROJECT HAS SEISMIC REQUIREMENTS. REFER TO HVAC DRAWINGS

GENERAL NOTES - PLUMBING

A. ALL WORK SHALL BE N ACCORDANCE WITH THE 2024 VERSION OF THE OHIO BUILDING AND PLUMBING CODES, INCLUDING REFERENCED CODES AND STANDARDS.

B. OBTAIN A PLUMBING PERMIT AND SECURE INSPECTION AND APPROVAL OF THE CODE OFFICIAL.

C. REMOVE ALL ABANDONED PIPING & SUPPORTS.

D. COORDINATE EACH ROUGH-IN INSTALLATION REQUIREMENTS AND LOCATIONS WITH OTHER TRADES, ACTUAL EQUIPMENT OR CABINETRY PROVIDED AND FIELD CONDITIONS BEFORE PERFORMING WORK.

E. REFER TO ARCHITECTURAL CODE PLANS FOR LOCATIONS OF FIRE WALLS AND SMOKE PARTITIONS.
IN SMOKE PARTITIONS FILL SPACE AROUND PENETRATIONS WITH AN APPROVED MATERIAL TO LIMIT THE FREE PASSAGE OF SMOKE.
IN FIRE WALLS SEAL ALL PENETRATIONS WITH AN APPROVED FIRE STOPPING PRODUCT, SEE SPECIFICATIONS.

F. REFER TO DIAGRAMS, DETAILS, AND SCHEDULES FOR PIPING AND PIPE SIZES NOT SHOWN ON PLAN OR ON DIAGRAMS.

G. ALL PIPING IS ABOVE THE CEILING (AT THE CEILING IN EXPOSED STRUCTURE AREAS) UNLESS OTHERWISE INDICATED ON PLAN.

H. ALL EQUIPMENT AND MATERIAL REQUIRED FOR COMPLETE AND FUNCTIONAL PLUMBING SYSTEMS ARE INCLUDED IN THE CONTRACT .THE WORK SCOPE IN THE PROJECT MANUAL DEFINES THE FINAL CONTRACTUAL RESPONSIBILITY TO PROVIDE SUPPORTING EQUIPMENT, MATERIALS, FINISHING, UTILITY COST, ETC (EXAMPLES: CONCRETE PADS, PAINTING, TEMPORARY ELECTRIC/GAS COSTS) FOR PRECEDENCE OVER OTHER SPECIFICATION SECTIONS OR DRAWING REQUIREMENTS.

DRAIN SCHEDULE

DRAIN TYPES
FD - FLOOR DRAIN
FS - FLOOR SINK
CO - CLEAN OUT - FLOOR
WCO - CLEAN OUT - WALL G
AD - GUTTER DRAIN
TD - TRENCH DRAIN
RD - ROOF DRAIN
SRD - SECONDARY ROOF DRAIN
SSO - SECONDARY STORM OUTLET

MATERIAL ABBREVIATIONS
BR - BRASS
AL -POWDERCOATED ALUMINUM
P - PLASTIC
CI - CAST IRON
NB - NICKEL BRONZE
DI - DUCTIL IRON

TAG	MODEL NUMBER	BODY MATERIAL	OUTLET SIZE	OUTLET BOTTOM	OUTLET SIDE	TOP/STRAINER SIZE	ADJUSTABLE	DOME	FLAT	FUNNEL	MATERIAL	HALF OPEN	OPEN - NO STRAINER	FEATURES ANCHOR FLANGE	FLASHING CLAMP	DBL. DRAINAGE	SED. BUCKET	BEARING PAN/ SUMP	S.S. MESH OVER DOME	STAND PIPE	HINGED PERF. COVER.	TRAP SEAL - ASSE 1072	NOTES
FD1	SIOUX CHIEF # 863-435NQ	P	3"	•		7" SQ	•		•		NB			•		•						•	
FD2	SIOUX CHIEF # 863-435NQ	P	3"	•		7" DIA.	•		•		NB			•		•						•	
FD3	SIOUX CHIEF # 860-63W	CI	3"	•		9 1/4" DIA.					--		•	•			•							
FD4	SIOUX CHIEF #860-W4P26	P	4"	•		9" DIA.			•		P	•												
FD5	SIOUX CHIEF # 863-435NQ & # 863-FN	P	3"	•		7" DIA.	•		•	•	NB			•		•						•	
TD1	ZURN #Z886-HD W/ #DGE GRATE	P	3"	•		6" WIDE 160" LONG			•		DI												
CO	ZURN # ZN1400-K	CI	AS NOTED	•			•		•		NB												
RD1	ZURN # ZC100F-EA-DP	CI	3"	•		15" DIA.	•	•			CI				•	•		•					
SRD1	ZURN # ZC100F-EA-DP-89	CI	3"	•		15" DIA.	•	•			CI				•	•		•		2"			
GD1	WATTS # RD-200-T-B-K-K83	CI	4"	•		8" DIA.		•			CI							•	•				
SSO	ZURN # ZF199-DSG	AL	AS NOTED		•				•		AL								•		•		1.

NOTES:

1. COLOR SELECTION BY ARCHITECT.

GENERAL LEGEND

EC	ELECTRICAL CONTRACTOR.
FC	FIRE PROTECTION CONTRACTOR.
GC	GENERAL CONTRACTOR.
HC	HVAC CONTRACTOR.
PC	PLUMBING CONTRACTOR.
TC	TEMPERATURE CONTROLS CONTRACTOR.
NIC	NOT IN CONTRACT.
AFF	ABOVE FINISHED FLOOR - TO BOTTOM OF ITEM UNLESS INDICATED OTHERWISE IN DRAWING.
ES	EQUIPMENT SUPPLIER.
3	NOTE SYMBOL - APPLIES ONLY TO SHEET ON WHICH IS SHOWN.
2	DETAIL NOTE SYMBOL - APPLIES ONLY TO DETAIL ON WHICH IS SHOWN.
H-1	EQUIPMENT REFERENCE SYMBOL. ELECTRICAL CONNECTION REQUIRED.
B / H2	DETAIL SYMBOL DETAIL "B" SHOWN ON SHEET H2.
A / H1	SECTION SYMBOL SECTION "A" DESIGNATION, SHOWN ON SHEET H1.
	CONNECTION, NEW TO EXISTING.
FD1	UP TO SYMBOL UP TO "FD1", SHOWN ON FLOOR ABOVE.
	ITEM TO BE REMOVED.
	EXISTING TO REMAIN.
	NEW ITEM.

PLUMBING LEGEND

	SANITARY DRAIN ABOVE FLOOR OR GRADE
ST	STORM DRAIN ABOVE FLOOR OR GRADE
SST	SECONDARY STORM DRAIN ABOVE FLOOR
	VENT
	COLD WATER
	HOT WATER
	HOT WATER RETURN
A	COMPRESSED AIR
C.O.	CLEAN OUT
	SHUT-OFF VALVE, SEE SCHEDULE FOR TYPE
	CHECK VALVE
	BALANCING VALVE
	VALVE ON RISER
	UNION, SCREWED
R	REGULATOR
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE
	CONNECTION, BOTTOM
	CONNECTION, TOP
	DIRECTION OF FLOW
	CAP
V.R.	VENT RISER
V.T.R.	VENT THRU ROOF
S.S.	SOIL STACK
V.S.	VENT STACK
D.S.	DOWNSPOUT (STORM)
S.D.S.	SECONDARY DOWNSPOUT (STORM)
S.S.O.	SECONDARY STORM OUTLET

PLUMBING INDEX OF DRAWINGS

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REGISTERED PROFESSIONAL ENGINEER

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EXPIRATION DATE 12/31/2025

CITY OF DAYTON
NEW POLICE STATION
WEST PATROL DISTRICT
10 Abbey Ave, Dayton, Ohio 45417

ISSUE

NO.	DATE	DESCRIPTION
	11/01/2024	FOR CONSTRUCTION
1	11/18/2024	ADDENDUM 1

DATE	11/01/24
JOB NO.	4205.00
DRAWN	DEG
CHECKED	JDZ

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TITLE
LEGENDS AND SCHEDULES

SHEET NO.
P0.1

NAUMAN & ZELINSKI LLC.
204 S. Ludlow Street Suite 400 Dayton, Ohio 45402
Phone: (937) 223-3621

PROJECT # 24014

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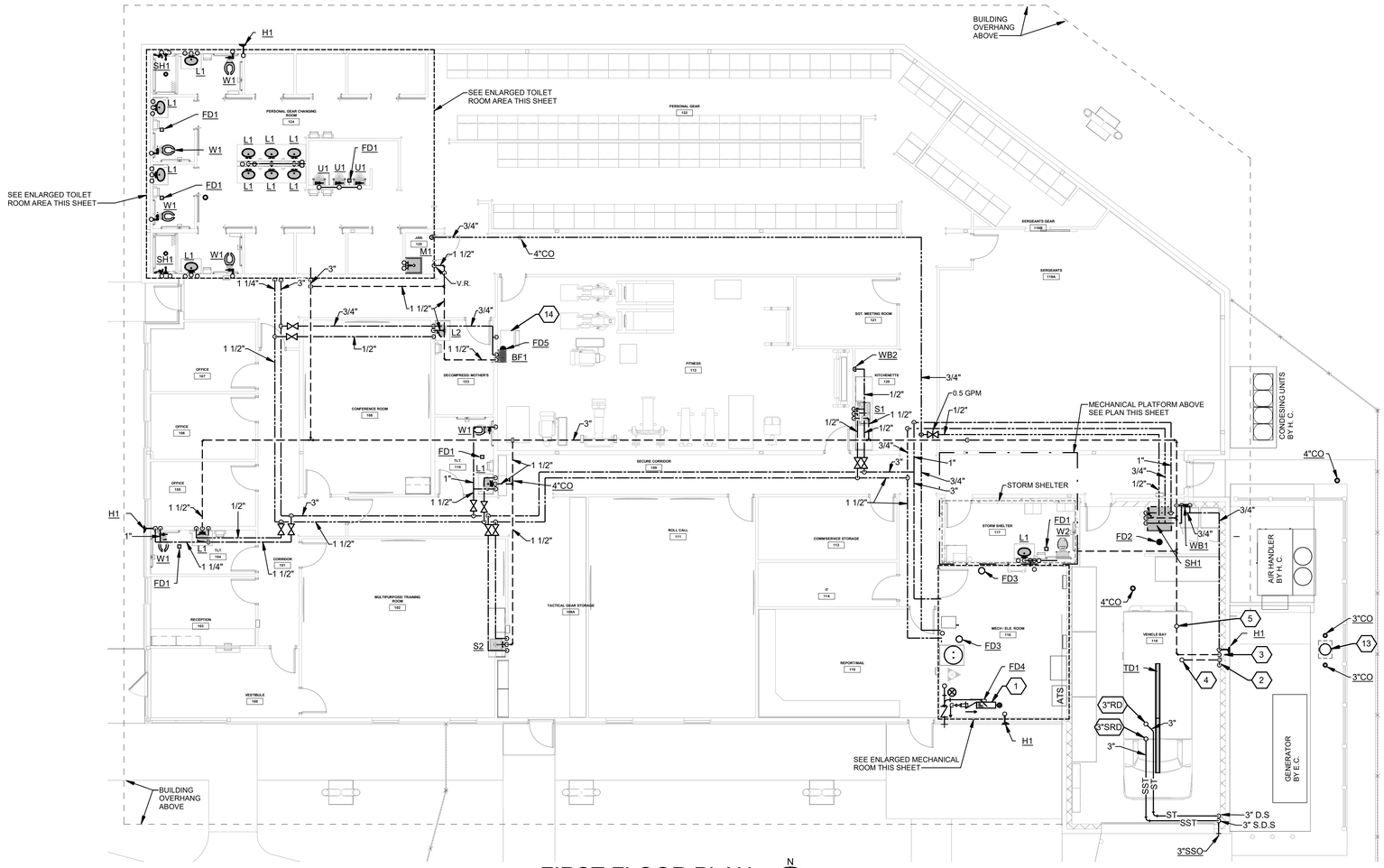
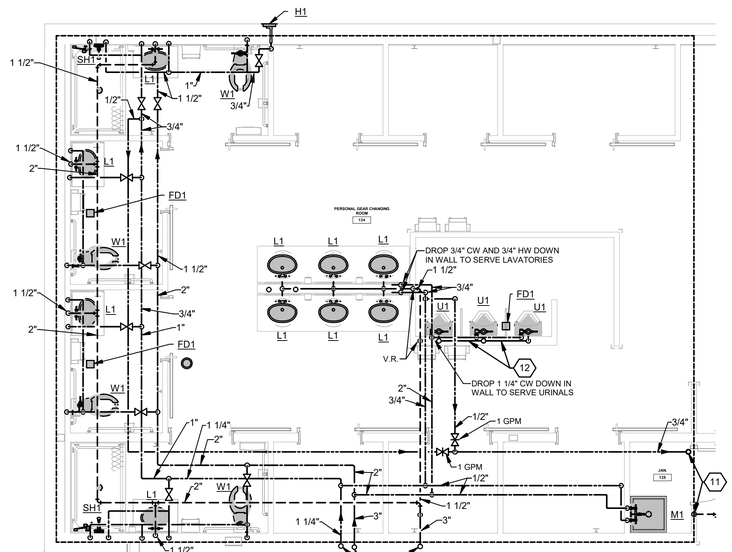
CONSTRUCTION NOTES

1. 3" REDUCED PRESSURE BACKFLOW WITH FLOOD CONTROL. SEE DETAIL SHEET P3.1.
2. 3" OIL INTERCEPTOR BASIN VENT FROM BELOW.
3. 1 1/2" TRENCH DRAIN VENT FROM BELOW. TIE INT 3" BASIN VANT APPROXIMATELY 18" A.F.F.
4. 3" OIL INTERCEPTOR VENT THRU ROOF.
5. 3" SANITARY VENT THRU ROOF.
6. FIRE SERVICE RISER BY F.S.C. SEE FIRE SUPPRESSION DRAWWINGS.
7. DRY PIPE SPRINKLER SYSTEM VALVE BY F.S.C. SEE FIRE SUPPRESSION DRAWINGS.
8. WATER HEATER SEE DETAIL SHEET P3.1.
9. BACKFLOW PREVENTER DISCHAGE. SEE BACKFLOW PREVENTER DETAIL SHEET P3.1.
10. 3/4" COLD WATER, 1/2" HOT WATER AND 1 1/2" VENT OFFSET TAND PENETRATE STORM SHELTER WALL. SEE STORM SHELTER NOTE.
11. PIPING TO RISE UP. SEE OVERALL FIRST FLOOR PLAN FOR CONTINUATION.
12. SANITARY PIPING NEAR TOP OF FLOOR.
13. OIL INTERCEPTOR IN GRADE. SEE DETAIL SHEET P3.1
14. ICE MAKER. DROP 3/4" COLD WATER DOWN IN WALL TO APPROXIMATELY 24" A.F.F., PROVIDE VALVE AND CONNECT TO ICE MAKER. PIPE DISCHARGE TO FLOOR DRAIN.



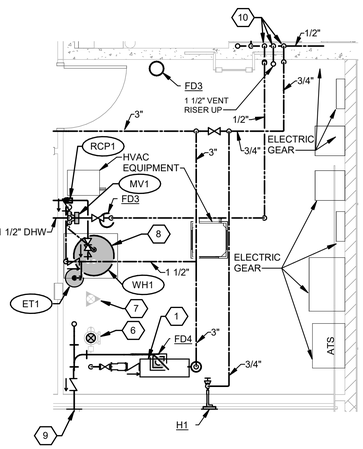
FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"



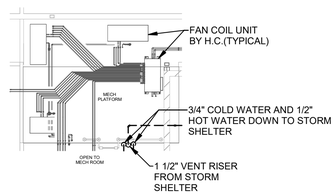
ENLARGED TOILET ROOM AREA

SCALE: 1/4" = 1'-0"



ENLARGED MECHANICAL ROOM

SCALE: 1/4" = 1'-0"



MECHANICAL PLATFORM PLAN

SCALE: 1/8" = 1'-0"

STORM SHELTER NOTES

PENETRATIONS THROUGH THE STORM SHELTER ENVELOPE LARGER THAN 3 1/2 SQUARE INCHES IN AREA FOR RECTANGULAR OPENINGS OR 3 1/2" IN DIAMETER SHALL BE PROVIDED WITH AN OPENING PROTECTIVE DEVICE. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF PROTECTIVE DEVICES.

WATER NOTE
SHELTER CAPACITY IS 16 PEOPLE. ONE WATER CLOSET IS REQUIRED. THE LAVATORY IS NOT REQUIRED. HAND SANITIZER WILL BE STORED BY THE OWNER.
BASED ON 3 WATER CLOSET USES PER 8 HOUR PERIOD (FROM I.E.E.D.), IN A 2 HOUR PERIOD THAT WOULD EQUAL 3/4 USES PER PERSON. FOR 16 PEOPLE, 12 FLUSHES WOULD BE REQUIRED. THE WATER CLOSET TANK WILL BE FILLED UPON ENTRY INTO THE SHELTER, SO ENOUGH WATER FOR 11 FLUSHES IS REQUIRED TO BE STORED IN THE SHELTER. AT 1.6 GALLONS PER FLUSH THAT WILL REQUIRE 18 GALLONS MINIMUM BE STORED FOR WATER CLOSET USAGE. ADDITIONAL POTABLE WATER SHALL BE STORED FOR DRINKING. INCLUDE THESE REQUIREMENTS IN THE OWNER'S INSTRUCTIONS.

0 2 4 8 12 16 20

SCALE: 1/4"=1'-0"

0 4 8 16 24 32 40

SCALE: 1/8"=1'-0"

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TITLE
FIRST FLOOR PLAN

SHEET NO.
P1.1

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SEQUENCE OF OPERATION

THE DDC TEMPERATURE SENSOR SHALL MONITOR THE VEHICLE BAY TEMPERATURE. IF THE TEMPERATURE DROPS BELOW 40 DEG. F (ADJ.), SEND AN ALARM TO THE DDC CONSOLE.

1 VEHICLE BAY TEMPERATURE SENSOR
N.T.S.

SEQUENCE OF OPERATION

THE DOMESTIC HOT WATER RETURN CIRCULATION PUMP SHALL OPERATE BASED ON BUILDING OCCUPANCY. PROVIDE A LOW VOLTAGE OUTPUT FROM THE DDC SYSTEM TO THE CIRCULATION PUMP STARTER. AN "OCCUPIED" OUTPUT SHALL START THE PUMP.

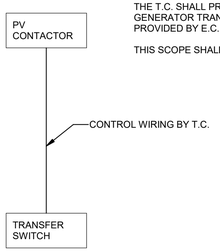
3 HOT WATER RETURN PUMP
N.T.S.

SEQUENCE OF OPERATION

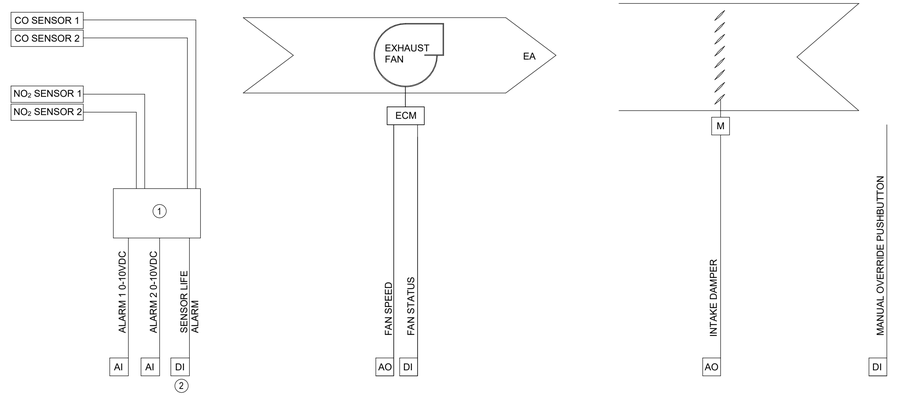
THE SOLAR ARRAY SHALL OPERATE ONLY UNDER NORMAL BUILDING POWER.

THE T.C. SHALL PROVIDE A LOW VOLTAGE WIRE BETWEEN CONTACTS ON GENERATOR TRANSFER SWITCH AND LINE VOLTAGE CONTACTOR PROVIDED BY E.C.

THIS SCOPE SHALL BE BID UNDER ALTERNATE E1.



4 SOLAR ARRAY CONTROL
N.T.S.



SEQUENCE OF OPERATION

FAN OPERATION

THE EXHAUST FAN SHALL BE NORMALLY OFF.

THE DDC SYSTEM SHALL RECEIVE INPUT FROM THE GAS DETECTION SYSTEM AND OUTPUT A SIGNAL TO VARY THE FAN SPEED. IN ADDITION, A MOMENTARY PUSHBUTTON IS PROVIDED TO START THE FAN.

EF-1 AIRFLOW RANGE:
- 550 CFM MAX.
- 125 CFM MIN.

CO/NO_2 SENSOR CONTROL

THE APPARATUS BAY'S CO/NO_2 MONITORING SYSTEM SHALL BE PROGRAMMED TO THE FOLLOWING ALARM LEVELS.

ALARM LEVELS:
- NO ALARM: CO (<34 PPM) AND NO_2 (<2.5 PPM)
- ALARM LEVEL 1: CO (35 - 50 PPM) OR NO_2 (2.5 - 2.8 PPM)
- ALARM LEVEL 2: CO (>50 PPM) OR NO_2 (>2.8 PPM)

FAN AIRFLOW:
- NO ALARM: MINIMUM AIRFLOW
- ALARM LEVEL 1: 50% OF MAXIMUM AIRFLOW
- ALARM LEVEL 2: MAXIMUM AIRFLOW

WHEN THE FAN IS INDEXED TO EITHER THE 50% OR MAXIMUM AIRFLOW, THE FAN SHALL RUN FOR A MINIMUM OF 15 MINUTES AT THE RESPECTIVE AIRFLOW. AT THE END OF THE 15 MINUTE TIME PERIOD, IF THE CO/NO_2 ALARM LEVEL HAS NOT LOWERED INTO THE 'NO ALARM' RANGE, THE TIMER SHALL RESET TO RUN ANOTHER 15 MINUTES.

MANUAL PUSHBUTTON:
THE FAN SHALL OPERATE AT 50% MAX. AIRFLOW. FOR 15 MIN. (ADJ.).

CONTROL PRIORITY:
THE CO/NO_2 ALARM SHALL ALWAYS HAVE PRIORITY CONTROL OF THE EXHAUST FAN. UPON RECEIVING AN ALARM THE FAN SHALL OPERATE AT THE RESPECTIVE ALARM AIRFLOW AND RESET ITS RUN TIMER. THE MOMENTARY PUSHBUTTON SHALL NOT OVERRIDE THE FAN SPEED AND RUN TIMER IF THERE IS AN ALARM.

INTAKE CONTROL DAMPER

- THE INTAKE DAMPER SHALL OPEN TO 100% WHEN THE RESPECTIVE APPARATUS BAY EXHAUST FAN IS OPERATING ABOVE THE MINIMUM AIRFLOW RATE.

1. CO/NO_2 CONTROL PANEL BY T.C. REFER TO H1.1 FOR MOUNTING LOCATION AND REFER TO SPECIFICATION FOR EQUIPMENT INFORMATION.
2. PROVIDE ALARM INPUT FROM CENTRAL CONTROLLER TO MONITOR SENSOR LIFE.

2 VEHICLE BAY CONTROL DIAGRAM - EF-1 & INTAKE DAMPER
N.T.S.

SEQUENCE OF OPERATION

THE WATER BACKFLOW PREVENTER IS EQUIPED WITH A DIGITAL CONTACT TO PROVIDE AN ALARM SIGNAL.

THE T.C. SHALL CONNECT THE DDC CONTROL SYSTEM TO THE BACKFLOW PREVENTER TO RECEIVE THIS ALARM SIGNAL AND PERFORM A DIAL OUT FEATURE TO ALERT CITY AND POLICE PERSONEL.

5 DOMESTIC WATER BACKFLOW PREVENTER
N.T.S.

1

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TITLE
CONTROLS

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LIGHTING FIXTURE SCHEDULE

FIXTURE SYMBOL	LUMINAIRE TYPE: LED	LUMINAIRE TYPE: LOW VOLTAGE	WATTS/ FIXTURE	LUMENS/ COLOR TEMP	FIXTURE VOLTAGE	MANUFACTURER & CATALOG NO.	OTHER ACCEPTABLE MANUFACTURES	DIFFUSING MEDIA	TRIM COLOR: WHITE	TRIM COLOR: BLACK	TRIM COLOR: ALUMINUM	TRIM COLOR: BRONZE	TRIM COLOR: STANDARD	TRIM COLOR: SEE NOTES	MOUNTED	SIZE: WIDTH	SIZE: LENGTH	SIZE: DEPTH	SIZE: DIAMETER	SEE NOTES
															S - SURFACE, R - RECESSED, SM - STEM MTD, WM - WALL MTD, C - CHAIN MTD, UC - UNDER CAB, CS - CLG. SURF.					
A1	●		12 PER FT	700 LUMEN PER FT / 4000K	120	LITECONTROL # 3L - P - ID - LPA - 4 - 08 - SOF - C1 - 40K9 - IO30 - D040 - D01 - 2C -...	PRUDENTIAL, LAMAR	FLAT DIFFUSE LENS	●						PENDANT	3	48	4.5		7
A2	●		12 PER FT	700 LUMENS PER FOOT / 4000K	120	LITECONTROL # 3L - P - ID - LPA - 8 - 08 - SOF - C1 - 40K9 - IO30 - D040 - D01 - 2C -...	PRUDENTIAL, LAMAR	FLAT DIFFUSE LENS	●						PENDANT	3	96	4.5		7
B1	●		30	3600 LUMENS / 4000K	120	LITHONIA# CPX 2X2 AL07 SWW M4	COLUMBIA, DAYBRITE	MATTE WHITE LENS	●						R(GRID)	24	24	2		
B1E	●		30	3600 LUMENS / 4000K	120	LITHONIA# CPX 2X2 AL07 SWW M4	COLUMBIA, DAYBRITE	MATTE WHITE LENS	●						R(GRID)	24	24	2		12
C1	●		40	5000 LUMENS / 4000K	120	LITHONIA# CLX L48 5000LUM SEF FDL MVOLT G210 40K	COLUMBIA, DAYBRITE	FLAT DIFFUSE LENS	●						WM/S/SM	3	48	3		13
D1	●		25	1300 LUMENS / 3000K	120	LITHONIA # FMVTSL - 24IN - MVOLT - 30K - 90CRI - BN - M4	PRUDENTAIL, BROWNLEE	WHITE ACRYLIC	●						WM (6'-0" A.F.F)	5	24	4		
F1	●		14	1100 LUMENS	120	LITHONIA# WF6-LED-304050K-90CRI-MW	GREEN CREATIVE, NORA	FLAT WHITE LENS	●						R			1.5	6	1, 4
F2	●		25	2000 LUMENS / 4000K	120	LITHONIA# LDN6-AL02-40K-LO6-NR-TRN-MVOLT-UGZ1	PRESCOLITE, LIGHTOLIER	REGRESSED WHITE BAFFLE	●						R			4	6	8
F3	●		10	1000 LUMENS / 4000K	120	LITHONIA # WF6-ADJ-LED-30K40K	WAC, NORA	ADJUSTABLE LENS	●						R			3	6	
F4	●		11	1000 LUMENS / 4000K	120	GOTHAM# IVO4S - D - 10LM - 40K - 80CRI - WD - MIN10 - MVOLT - ZT - NCH - WL	PRESCOLITE, LIGHTOLIER	CLEAR LENS	●						R			3	4	
F4E	●		11	1000 LUMENS / 4000K	120	GOTHAM# IVO4S - D - 10LM - 40K - 80CRI - WD - MIN10 - MVOLT - E6WR - ZT - NCH - WL	PRESCOLITE, LIGHTOLIER	CLEAR LENS	●						R			3	4	12
FL1	●		21	3000 LUMENS / 4000K	120	LITHONIA # DSXF1 LED - P1 - 40K - MSP - MVOLT	HUBBLE, GUARD CO	MEDIUM SPOT		●					S					
K1 (ALT 1)	●		34	5000 LUMENS / 4000K	120	LITHONIA # CNY - LED - ALO - SWW2 - UVOLT - PE - PIR - DDB - M2	COLUMBIA, DAYBRITE	IK08 IMPACT RATED FROSTED LENS	●						UNDER CANOPY SURFACE	10	10	3		14
PL1	●		100	12000 LUMENS / 4000K	120	LITHONIA# DSX0 - LED - P5 - 40K - 70CRI - T3M - MVOLT - SPA - DDBXD/SSS - 20 - 4G - DM19AS - DDBXD	BEACON, GARDCO	FULL CUTOFF (TYPE III)			●				20' (5") SQUARE STEEL POLE					3,5,10
PL2	●		200	12600 LUMENS x2 / 4000K	120	LITHONIA# DSX0 - LED - P5 - 40K - 70CRI - T5M - MVOLT - SPA - DDBXD/SSS - 20 - 4G - DM19AS - DDBXD	BEACON, GARDCO	FULL CUTOFF (TYPE V)			●				20' (5") SQUARE STEEL POLE					3,5,10
PL3	●		100	12300 LUMENS / 4000K	120	LITHONIA# DSX0 - LED - P5 - 40K - 70CRI - T4M - MVOLT - SPA - DDBXD/SSS - 20 - 4G - DM19AS - DDBXD	BEACON, GARDCO	FULL CUTOFF (TYPE IV)			●				20' (5") SQUARE STEEL POLE					3,5,10
PL4	●		100	12600 LUMENS / 4000K	120	LITHONIA# DSX0 - LED - P5 - 40K - 70CRI - T5M - MVOLT - SPA - DDBXD/SSS - 20 - 4G - DM19AS - DDBXD	BEACON, GARDCO	FULL CUTOFF (TYPE V)			●				20' (5") SQUARE STEEL POLE					3,5,10
PL5	●		135	29000 LUMENS/ 4000K	120	STERNBURG #1A - 1914LEDF - 40L45T3 - MDL10 - A - HSCS/FF8/BK	APPROVED EQUAL	ACRYLIC TEARDROP LENS		●					20' (5") SQUARE STEEL POLE					13
UC1	●		10	500 LUMENS / 4000K	120	LITHONIA# UPLD-18IN-30K-90CRI-SWR-WH	CONTECH, LAMAR	MATTE WHITE LENS	●					2	UC (OR SHELF)		18			2
REM						LITHONIA #ELA-Q		EXTERIOR REMOTE LAMP HEAD												
X1	●		5W		120	LITHONIA # LHQM-LED-R-HO-M6	COMPASS, CHLORIDE	LED EMERGENCY/EXIT RED LETTERS ON WHITE INTEGRAL BATTERIES AND EM LAMP HEADS	●						WM OR CLG SURFACE ABOVE DOOR					

NOTE...

1. SWITCHABLE COLOR TEMPERATURE.
2. INTEGRAL ROCKER SWITCH (HARD WIRED CONNECTION), WIRED AHEAD OF LOCAL SWITCHING.
3. REFER TO POLE BASE DETAIL.
4. PROVIDE SURFACE MOUNTED WEATHER PROOF BACK BOX FOR SURFACE MOUNTING TO UNDERSIDE OF CANOPY, WHERE EXTERIOR MOUNTED.
5. FIXTURES SHALL HAVE 7-PIN CONTROL RECEPTACLE WITH SHORTING CAP, REFER TO SITE PLAN FOR POLE FIXTURES WITH CONVENIENCE RECEPTACLE AT BASE.
6. PROVIDE CONCRETE BASE, FLUSH WITH GRADE, ADJACENT TO CONCRETE WALK AROUND FLAG POLE. PROVIDE FINAL AIMING AT FLAG.
7. COORDINATE SUSPENSION HEIGHT AND LOCATION WITH TOP OF FIXTURE AT BOTTOM OF WINDOW SILL (FINAL VERIFY HEIGHT AND LOCATION WITH ARCHITECT).
8. ADJUSTABLE LUMEN OUTPUT 1000-2000 LUMEN.
9. INCANDESCENT LAMP HOUSING WITH WHITE REFLECTOR ONLY. LAMP BY OTHERS.
10. 'C' POST-SCRIPT ON FIXTURE TAG INDICATES POLE TO HAVE PROVISIONS FOR DUPLEX RECEPTACLE AT BASE OF POLE AND PROVISIONS FOR SURVEILLANCE CAMERA AT 14' MOUNTING HEIGHT AND WIFI ROUTER (CUTOUT WITH NEMA 3R PROVISIONS ON EACH SIDE OF POLE.
11. CUSTOM LENGTH PER FIELD CONDITIONS, COORDINATE WITH ARCHITECTURAL.
12. FIXTURE WITH 'E' POST-SCRIPT SHALL HAVE INTEGRAL BATTERY BACKUP FOR MINIMUM OF 90 MINUTES.
13. CITY OF DAYTON STREET LIGHTING FIXTURE, POLE AND BASE. (CITY OF DAYTON STANDARD LED DECORATIVE PENDANT ACORN LIGHT, 8' LONG DECORATIVE ARM, POLE, ARM AND FIXTURE TO HAVE BLACK PAINTED FINISH)
14. FIXTURE PROVIDED UNDER ALTERNATE E1 SOLAR PACKAGE.

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SCHEDULES

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GENERAL NOTES

A. CONNECT ALL EXIT/EMERGENCY EGRESS LIGHTING AHEAD OF LOCAL CONTROLS.

B. 'F5' LIGHTS SHALL BE WIRED AHEAD OF ALL LIGHTING CONTROLS, CONSTANT HOT. FIXTURES UTILIZED FOR FIRE CALL SYSTEM SIGNALING LIGHTS. LAMPS PROVIDED BY OTHERS.

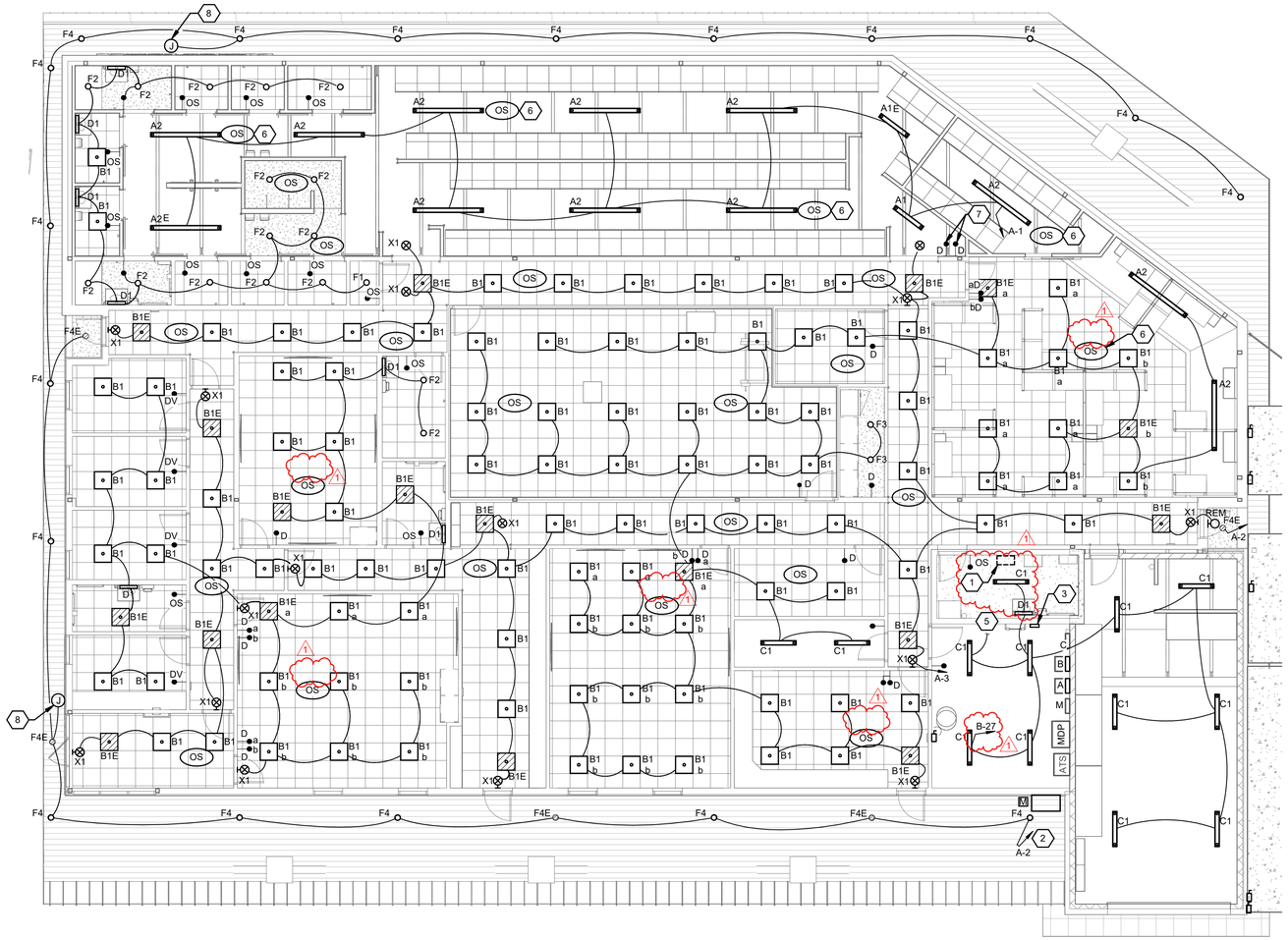
STORM SHELTER

A. PENETRATIONS THROUGH THE STORM SHELTER ENVELOPE LARGER THAN 3-1/2 IN² AREA FOR RECTANGULAR OPENING OR 2 - 1/2" IN DIAMETER SHALL BE CONSIDERED OPENING AND SHALL BE PROVIDED WITH AN OPENING PROTECTIVE DEVICE. REFERENCE STRUCTURAL DRAWINGS.

B. LIGHTING FIXTURES IN STORM SHELTER SHALL HAVE EMERGENCY BATTERY CAPABLE TO ILLUMINATE FIXTURE AND EXHAUST FAN FOR A MINIMUM OF 120 MINUTES (2 HOURS). SEE CONSTRUCTION NOTE #1.

CONSTRUCTION NOTES

1. PROVIDE STANDALONE UPS (1 KW-120V OUTPUT) TO POWER LIGHTING AND EXHAUST FAN SERVING STORM SHELTER (RM 117). UPS SHALL BE SIZED TO SUPPORT LIGHTING AND FAN LOAD FOR A MINIMUM OF 2 HOURS UPON LOSS OF BUILDING NORMAL AND STANDBY POWER. MOUNT HIGH ON WALL BELOW CEILING. COORDINATE LOCATION WITH ARCHITECT.
2. CIRCUIT LIGHTS TO EXTERIOR LIGHTING CONTACTOR, LOCATED IN MAIN ELECTRIC ROOM.
3. PROVIDE 4-POLE LIGHTING CONTACTOR WITH 120V COIL FOR CONTROL OF EXTERIOR LIGHTING. PHOTOCELL ON/OFF. LOCATE PHOTOCELL ON ROOF PARAPET ABOVE.
4. CONNECT UNDER CABINET LIGHT/SHELF LIGHT AHEAD OF ROOM LIGHTING CONTROL (INTEGRAL SWITCH).
5. CONNECT TO LIGHTS IN MECHANICAL PLATFORM.
6. CONTROL DOWNLIGHTING COMPONENT OF FIXTURES IN GEAR AREA VIA OCCUPANCY SENSOR(S). LINK SENSORS TO CONTROL AS ONE ZONE. UPLIGHTING COMPONENT TO REMAIN ON AT ALL TIMES.
7. PROVIDE SEPRATE DIMMING CONTROL FOR UPLIGHTING AND DOWNLIGHTING.
8. PROVIDE 120V POWER TO BACKLIT SIGNAGE. (CIRCUIT THROUGH LIGHTING RELAY PANEL)



FIRST FLOOR CEILING PLAN

SCALE: 1/8" = 1'-0"

0 4 8 16 24 32 40

SCALE: 1/8"=1'-0"

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TITLE
FIRST FLOOR LIGHTING PLAN

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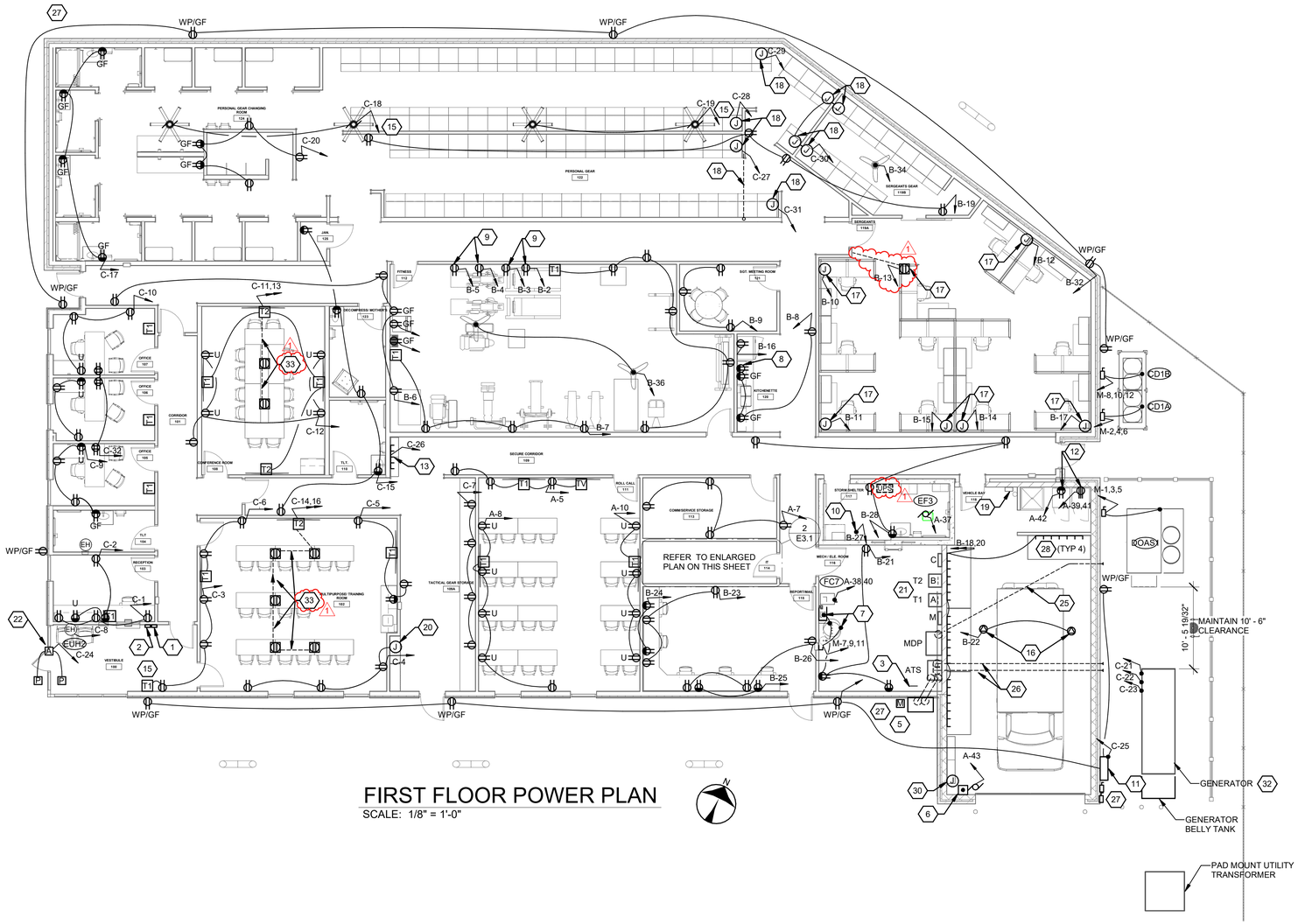
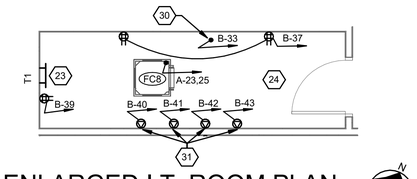


FIRST FLOOR POWER PLAN

SCALE: 1/8" = 1'-0"



ENLARGED I.T. ROOM PLAN

SCALE: 1/4" = 1'-0"

0 2 4 8 12 16 20

SCALE: 1/4"=1'-0"

0 4 8 16 24 32 40

SCALE: 1/8"=1'-0"

CONSTRUCTION NOTES

1. GENERATOR ANNUNCIATOR.
2. FIRE ALARM REMOTE ANNUNCIATOR .
3. MAIN GROUND BAR.
4. UNDERGROUND SERVICE FEEDERS FROM UTILITY TRANSFORMER.
5. UTILITY CT CABINET AND METER PER AES.
6. INSTALL AND WIRE DOOR OPERATOR BUTTON FURNISHED BY EQUIPMENT SUPPLIER. (OPERATOR TO BE PROGRAMMED FOR AUTO-CLOSE FEATURE AFTER 30 SECOND DELAY)
7. PROVIDE FUSED DISCONNECT FOR 480V POWER CONNECTION TO WATER HEATER, 120V POWER CONNECTION TO RECIRC PUMP AND 120V POWER TO DIGITAL MIXING VALVE. REFER TO DETAIL 7 ON SHEET P3.1.
8. COORDINATE RECEPTACLE MOUNTING HEIGHT, LOCATION, WITH MICROWAVE SHELF. REFER TO ARCHITECTURAL ELEVATIONS.
9. DEDICATED 20A-120V CIRCUIT FOR TREADMILL AND ELIPTICAL.
10. EXTEND 120V CIRCUIT TO CONTROL DAMPER FOR SHELTER.
11. GENERATOR DOCKING STATION. REFER TO DETAIL, SHEET E0.3 AND SPECIFICATIONS.
12. PROVIDE GFCI BREAKER FOR WASHER CIRCUIT.
13. COORDINATE RECEPTACLE AND DATA MOUNTING HEIGHTS AND LOCATIONS WITH CASEWORK ELEVATIONS. PROVIDE PLUGMOLD AND 2 DATA OUTLETS IN EACH OPEN SHELVING UNIT FOR RADIO BATTERY CHARGING.
14. UTILIZE #10 CONDUCTORS.
15. CEILING FANS SHOULD HAVE INTERCONNECT TO FIRE ALARM SYSTEM TO AUTOMATICALLY TURN OFF IN EVENT OF FIRE.
16. FLUSH MOUNTED TWISTLOCK RECEPTACLE AT CEILING STRUCTURE FOR SERVICE CORD DROP TO VEHICLE BAY.
17. PROVIDE HARDWIRED CONNECTION TO FURNITURE SYSTEM WHIP. COORDINATE INSTALLATION REQUIREMENTS WITH FURNITURE VENDOR.
18. PROVIDE HARDWIRED CONNECTION TO SECURE LOCKER SYSTEM WHIP. COORDINATE INSTALLATION REQUIREMENTS WITH LOCKER VENDOR.
19. PROVIDE 120V POWER TO CO/NOX SYSTEM DETECTION SYSTEM (FURNISHED BY H.C.). COORDINATE LOCATION WITH H.C.
20. PROVIDE 120V 1PH POWER FOR KRONOS TIME CLOCK
21. TRANSFORMERS SUSPENDED ABOVE PANELS.
22. PROVIDE 120V 1PH POWER FOR DOOR OPERATOR.
23. COMMUNICATIONS GROUND BAR.
24. PROVIDE 3/4" PLYWOOD BACKBOARD CONTINUOUS ACROSS 3 WALLS OF SERVER/IT ROOM, 6" A.F.F TO 8'-6" A.F.F.
25. COORDINATE ROUTING OF UNDERGROUND FEEDER TO DOAS UNIT WITH SLEEVED FOUNDATION WALL.
26. COORDINATE ROUTING OF UNDERGROUND FEEDERS, ACCESSORY CIRCUITS, START SIGNAL /ANNUNCIATION WIRING TO GENERATOR WITH SLEEVED FOUNDATION WALL AND TRENCH DRAIN.
27. COORDINATE ROUTING OF SITE CIRCUITS AND SECURITY /COMMUNICATIONS CONDUITS WITH FOUNDATION WALL SLEEVES. REFER TO SITE PLAN AND EARLY SITE PACKAGE/FOUDATION PLAN.
28. COORDINATE LOCATION AND MOUNTING HEIGHT OF PLUGMOLD WITH SHELFING UNITS.
29. PROVIDE DEDICATED 20A-120V CIRCUIT TO FM FIRE SUPPRESSION SYSTEM PANEL. PROVIDE FIRE ALARM MONITOR RELAY FOR SUPPRESSION SYSTEM COORDINATE REQUIREMENTS WITH SUPPRESSION SYSTEM SUPPLIER.
30. PROVIDE 120V POWER TO FIRE ALARM PANEL IN I.T. ROOM.
31. PROVIDE 120V 30A RECEPTACLE FOR RACK/UPS. FINAL COORDINATE LOCATION/TYPE WITH OWNER/EQUIPMENT SUPPLIER.
32. REFER TO GENERATOR PAD DETAIL ON SHEET E0.4.
33. PROVIDE .75"C. FROM TV WALL BOX TO FLOOR BOX FOR POWER TO RECEPTACLE. REFER TO T2 WALL BOX DETAIL.

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EXPIRATION DATE 12/31/2025

CITY OF DAYTON
NEW POLICE STATION
WEST PATROL DISTRICT
10 Abbey Ave, Dayton, Ohio 45417

ISSUE

NO.	DATE	DESCRIPTION
	11/01/2024	FOR CONSTRUCTION
1	11/18/2024	ADDENDUM 1

DATE	11/01/24
JOB NO.	4205.00
DRAWN	JTE
CHECKED	JDZ

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TITLE
FIRST FLOOR POWER PLAN

SHEET NO.
E3.1

NAUMAN & ZELINSKI LLC.
204 S. Ludlow Street Suite 400 Dayton, Ohio 45402
Phone: (937) 223-3921 – Fax: (937) 223-3849

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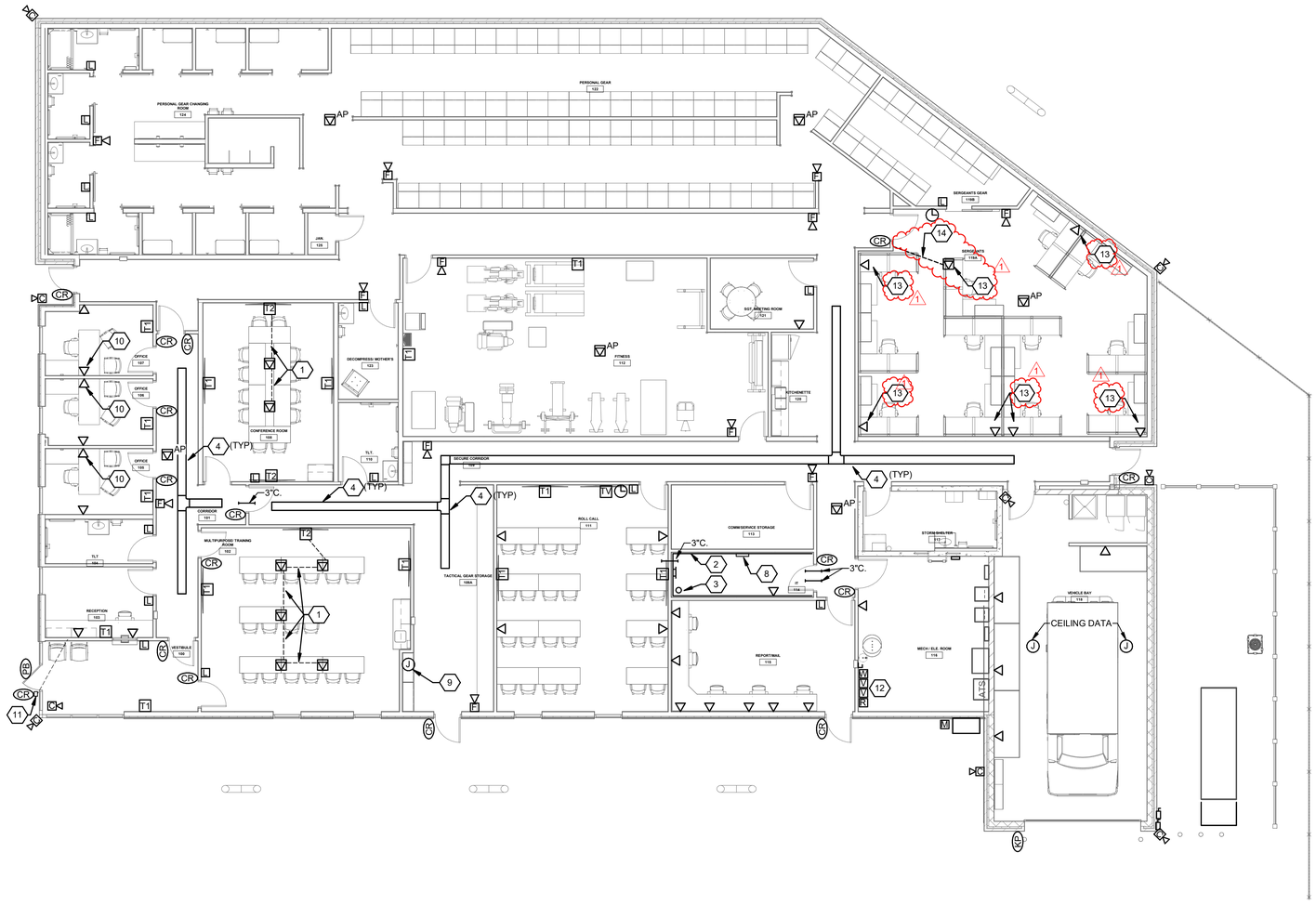

CONSTRUCTION NOTES

1. PROVIDE TWO GANG FLOOR BOX WITH 1.25" CONDUIT TO TV WALL BOX FOR A/V CABLING (BY OWNER). COORDINATE LOCATIONS AND COVER PLATES WITH OWNER.
2. PROVIDE 3/4" PLYWOOD, 3 WALLS, FOR DATA, IT EQUIPMENT.
3. REFER TO SITE PLAN FOR ROUTING OF SERVICE ENTRANCE CONDUIT TO UTILITY POLE
4. PROVIDE 12" W x 4" DP. BASKET TRAY ABOVE CEILING FOR LOW VOLTAGE SYSTEMS CABLING.
5. PROVIDE TWO 4" CONDUIT STUBS ABOVE DRYWALL CEILING FOR LOW VOLTAGE SYSTEMS CABLING.
6. 4" CONDUITS STUBBED FROM IT ROOM TO ABOVE FIRST FLOOR CEILING FOR SYSTEMS CABLING.
7. PROVIDE TELECOMMUNICATIONS GROUND BAR IN I.T. ROOM PROVIDE #4 A.W.G. GROUND TO MAIN GROUND BAR IN ELECTRIC SERVICE ROOM.
8. FIRE ALARM PANEL IN I.T. ROOM.
9. PROVIDE 1-GANG BOX WITH .75" CONDUIT TO ABOVE ACCESSIBLE CEILING FOR DATA DROP TO KRONOS TIME CLOCK.
10. PROVIDE ADDITIONAL 1.25" DATA CONDUIT TO ABOVE CEILING FOR HDMI CONNECTION FROM DESK COMPUTER TO TV WALL BOX.
11. PROVIDE PEDESTAL FOR MOUNTING OF CARD READER ROUGH-IN AND DOORBELL WITH CONDUITS BELOW SLAB TO RISE UP AT RECEPTION DESK WALL.
12. PROVIDE FIRE ALARM MONITORING OF DRY PIPE SYSTEM.
13. PROVIDE 1" DATA WHIP CONNECTION TO POWERED FURNITURE.
14. PROVIDE 1.25"C. IN FLOOR FOR DATA WHIP CONNECTION

FIRST FLOOR SYSTEMS PLAN

SCALE: 1/8" = 1'-0"

0 4 8 16 24 32 40

SCALE: 1/8"=1'-0"

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SECTION 23 0923 – DIRECT DIGITAL CONTROL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. A complete system of computer based, direct digital automatic temperature controls shall be installed under this contract as required to accomplish the sequence of control for various items of equipment and systems indicated on the drawings and as specified in Division 23.

B. Direct Digital Controls (DDC) upgrade for the existing building controls is part of the scope of work. Refer drawings for systems sequence of operations. Controllers, system architecture, communication cabling and network, software, graphics, etc. shall be seamlessly integrated as part of the new system.

C. This Section includes Direct Digital Control (DDC) components, including operator work station, controller/server, equipment specific and generic controllers, I/O interface, software and graphics.

D. See Sections 23 0913 “Instruments and Control Devices”, Section 23 0914 “Control Wiring and Cabling” and Section 23 0993 “Sequence of Operations for Controls” for requirements that relate to this Section.

1.2 SUBMITTALS

A. Product Data: For all hardware and software.

B. Shop Drawings:

1. Schematic air and fluid flow control diagrams.
2. Sequence of operations descriptions and points list.
3. Power, wiring diagrams.
4. DDC System Hardware components, including controllers, actuators, sensors, valves, dampers, cabinet enclosures, wiring, misc. controls devices, etc.
5. Control System Software
6. Graphics – Screen examples specific to the project for:
    a. DOAS Unit
    b. VRF System
    c. Fans
    d. Hot Water Heater Pump
    e.

C. Software and firmware operational documentation.

D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Each control subcontractor must be an authorized temperature control contractor in the business of installing and servicing direct digital temperature control systems for over five (5) years. The bidder must have installed and successfully completed at least ten (10) DDC systems of similar size using the same hardware that is proposed.

B. Subcontractor installation and service office must be located within 75 miles (90 minute travel time maximum) of the building site.

C. Design and installation of the digital control system shall be performed by employees trained and certified by the equipment supplier. Electrical power work other than low voltage shall be performed by licensed electricians.

D. The temperature controls subcontractor shall provide all necessary engineering support for a complete and functional system, including but not limited to engineering, programming, installation, supervision, commissioning and troubleshooting.

E. Refer to 23 0801 Mechanical Systems Commissioning.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 CONTROL SYSTEM

A. Contractors:
1. Honeywell International Inc Authorized Controls Integrator (ACI) (local authorized contractors only, branch office is not acceptable)
2. Schneider Electric (TAC, Invensys) – I/A Series
3. BuildingLogiX
4. Distech Controls – Addendum 1, 11/18/2024

B. Complete DDC system shall consist of operator workstation, sensors, indicators, actuators, final control elements, interface equipment, wiring, cabling, power supplies and power distribution, other apparatus, accessories, software and graphics connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems as specified here and in related Division 23 Sections.

2.2 LICENSING AGREEMENT AND OPEN PROTOCOL

A. A true Open Licensing Agreement shall be provided and executed with the Owner to permit total and open access to the system for servicing and software revisions by other qualified servicing contractors.

B. The supplied system must incorporate open protocol with the ability to access all data using Java base Web enabled browsers without requiring proprietary operator interface and configuration programs.

C. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a server. Proprietary database and user interface programs are not acceptable (except for unitary controllers as noted below).

D. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-1995, BACnet and LonMark to assure interoperability between all present and future system components is required.

E. Proprietary programming shall not be utilized. In addition, all required programming software and graphics shall be embedded in the server or controllers without the need for external software to execute queries or revisions. All graphics shall reside in the server. Remote access via LAN or Web shall not require external software to provide complete access to all data, graphics, alarms, programming, etc.

2.3 DDC ARCHITECTURE

A. DDC system shall be complete with an Operators Workstation/Server, Configurable Controllers, Unitary Controllers, required I/O modules for controller expansion, communication cards in controlled devices such as chillers, variable frequency drives (furnished with the equipment, coordinate card requirements), arranged for a completely integrated building automation system network.

B. Physical connection of BACnet network controllers shall be via Ethernet/Ethernet IP using the Owner’s Local Area Network (LAN).

C. Where data drops are not shown for the Configurable Controllers or Operator Station/Server, the temperature control subcontractor shall be responsible to provide the IP data drop to each network controller location for controller connectivity. Installation shall be subcontracted to the division 27 technology contractor; coordinate connection requirements. In addition, provide an additional IP data drop to each controller, or group of controllers to provide local access to data acquisition for the HVAC service technician.

D. All components and controllers supplied under this contract shall be true “peer-to-peer” communicating devices. Components or controllers requiring “polling” by a host to pass data shall not be acceptable.

E. A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer’s internal Intranet network. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

F. DDC system accessibility over the LAN or the Internet shall be user name and password protected. Provide separate user name/password for multiple level hierarchy to restrict access to appropriate personnel at the different levels (view, programming, etc.). The system must be set up to have at least 3 access levels: guest, user and administrator. Guest privileges shall be limited to view only. Users shall be able to make setpoint and schedule changes. Administrators shall have all privileges as users in addition to being able to assign passwords.

2.4 OPERATOR WORKSTATION/SERVER

A. An operator workstation/server shall be provided to effectively program, manage and access DDC information from all of the controllers. Interface shall utilize dynamic color graphics of each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

B. All DDC information shall be accessible through the server over the LAN as well as over the Internet via Ethernet IP.

C. Operator Workstation/Server Computer: Equal to Dell Studio XPS 630.

D. Minimum Requirements (or equivalent):
1. Processor: Intel Core 2 Duo.
2. Ports/Jacks: (6) USB 2.0, (2) IEEE 1394a, headphone, microphone, 19-1 media reader, (1) RJ-45, 2.1 audio, S video in/out, S/PDIF optical
3. Random-Access Memory: 2GB Dual Channel DDR2 SDRAM.
4. Monitor: 20” wide screen, WSXGA resolution, 5ms pixel display rate, 720p high definition display flat panel.
5. Graphics: Intel GMA 3100
6. Hard-Disk Drive: 160 GB.
7. 48X combo optical drive.
8. Communications: Integrated Gigabit Ethernet (10/100/1000Base-T), internal WiFi 802.1 a/b/g/n Draft 2.0
9. 10W Stereo Speakers
10. Operating System: Microsoft Windows
11. Keyboard.
12. Mouse: Three button, optical.
13. Six outlet surge protector.
14. Printer: Laser jet type, B&W, 8Mb RAM equal to HP LaserJet 1022
15. Workstation desk and chair will be provided with loose furnishings by others.

E. The server shall provide integrated control, supervision, data logging, alarming, scheduling and network management functions. The controller/server provides the Internet connectivity and Web serving capabilities, presenting real time information in Web based, rich graphical displays for the system. Application control programs to provide: Calendar functions, Scheduling, Trending, Alarm monitoring and routing, and Time synchronization.

F. Proprietary programming shall not be utilized. In addition, all required programming software shall be embedded in the server or controllers without the need for external software to execute queries or revisions. All graphics shall reside in the server. Remote access via LAN or Web shall not require external software to provide complete access to all data, graphics, alarms, programming, etc.

G. The server shall support standard Web browser access via the Intranet/Internet.

H. Provide and maintain an Audit Log that tracks defined activities on the system. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached a user-defined buffer size. Archive the log locally. For each log entry, provide the following data: Time and date, User ID, Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

I. The controller/server shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval. Copies of the current database and the most recently saved database shall be stored in the server. The age of the most recently saved database is dependent on the user-defined database save interval. The controller/server database shall be formatted to allow for user viewing and editing, if desired.

2.5 CONFIGURABLE CONTROLLERS/SERVERS

A. Individual configurable controllers shall be provided for each central HVAC equipment or system (AH unit, boiler, chiller, etc.). Distributed HVAC equipment, such as air control box terminals, fan coils, unit heaters, etc may utilize local, unit specific controllers.

B. Controllers shall be capable of functioning in either a standalone capacity or integrated into the building network.

C. Controllers shall be fully configurable type with both control and server capabilities including integrated control and management of external devices, supervision, data logging, alarming, scheduling, network management functions, Internet connectivity, web serving. The controller shall include software technology capable of integrating a variety of devices, interoperable networks and protocols such as LonWorks, BACnet, ModBus, etc into a seamless operating platform.

D. The controllers shall be expandable by the use of input/output I/O modules to provide additional points beyond resident points provided on the controller module.

E. Each configurable controller shall include the following minimum hardware features. Where required for functionality provide additional communication cards, memory cards or I/O modules: Two (2) Ethernet Port -10/100 Mbps, One (1) RS-232 port, One (1) RS-485 ports (BACnet MS/TP), LON Tunnel service, BACnet driver (Ethernet and Ethernet IP), One LONWorks Interface Port with driver – 78KB FTT-10A, Power Supply 24V power supply module, Battery Backup, 64 Mb flash memory for long term data backup and 64 Mb RAM.

F. I/O modules shall connect to the controller with a single multi pin plug, powered through the controller with a minimum of eight (8) universal inputs, four (4) analog outputs and four (4) relay outputs, Form A contacts. Do not exceed maximum I/O modules recommended by the manufacturer.

G. The controller/server must be capable of operation over a temperature range of 0 to 50°C and storage temperatures of between 0 and 70°C. The controller/server must be capable of operation over a humidity range of 5 to 95% RH, non-condensing.

H. The controller/server shall support standard Web browser access via the Intranet/Internet.

I. Where acting as a server, provide and maintain an Audit Log that tracks all activities performed on the controller/server. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached it's user-defined buffer size. Provide the ability to archive the log locally (to the controller/server), to another controller/server on the network, or to a server. For each log entry, provide the following data: Time and date, User ID, Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

J. The controller/server shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval. Copies of the current database and, at the most recently saved database shall be stored in the controller/server. The age of the most recently saved database is dependent on the user-defined database save interval. The controller/server database shall be stored, at a minimum, in XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

K. Controllers shall be fully programmable with "drag and drop" graphic representations of control algorithms and easy to use "wizards" that automate controller configurations.

L. Controllers shall be "Native" BACnet devices with interoperable native BACnet, IP, LON and MS/TP communication support.

M. Each controller with I/O modules shall include input/output capabilities with, as a minimum, sufficient universal inputs, digital inputs, universal outputs and digital outputs to perform the required function and include an additional spare two (2) universal inputs, (2) analog outputs and two (2) relay outputs for future upgrade capability (spare points are not required for unitary controllers).

2.6 UNITARY CONTROLLERS

A. Controller designed specifically for VAV reheat air terminal units, fan coil, unit heater, etc., shall be used for each distributed HVAC equipment item. Local controllers shall be capable of functioning in a standalone capacity but shall be integrated into the building network.

B. Use of a dedicated network with a proprietary communication protocol that is compatible for integration into the configurable controllers is acceptable provided the unitary controllers use true peer to peer communication for all devices, the communication network uses simple non polarity sensitive twisted pair wiring and the network provides for interoperability between devices and controllers such as Echelon LonWorks is acceptable.

C. For VAV reheat air terminal units:
   1. The controller shall include, where required, a digital communication to:
   2. The remote, space temperature and/or humidity wall sensor,
      a. The remote wall sensor shall include a communication jack for connecting a laptop to the terminal unit controller for air/water balance purposes.
   3. Velocity pressure pneumatic input via polyethylene tubing for supply air flow reading,
   4. Supply air flow sensor,

5. Flow balancing software (damper adjustment, set point monitoring and adjustment, flow validation and calibration, sequence/calibration/control set point logs)
    a. Terminal unit supply air temperature sensor
6. Damper actuator shall be separate from the VAV reheat box controller; integrated controller/actuator devices are not acceptable.
7. Integral controller/damper actuator is acceptable.

D. Controllers used for remote temperature and humidity sensing, adjustment and override such as VAV air terminal unit controllers and fan coil units shall include S-link communication via two wire, unshielded cable (non polarity sensitive) to provide power and communication interface for remote sensors.

2.7 CONTROLLER ENCLOSURE AND LISTING

A. Controllers shall be placed within enclosures that conform to NEMA-1 construction and shall further meet UL 94-5V flammability ratings for plenum application use.

B. Each controller shall be UL-916 listed and meet FCC Part 15 Class A.

2.8 GUI DISPLAY FRAMES

A. System Access – The system must be set up to have at least 3 access levels: guest, user and administrator. Guest privileges shall be limited to view only. Users shall be able to make setpoint and schedule changes. Administrators shall have all privileges as users in addition to being able to assign passwords.

B. Each Air Handling Unit heating water system and cooling system shall have a minimum of 5 graphic screens available from the tree view.
1. Diagrammatic – One diagrammatic screen shall display the airflow pattern with all dampers, coils and fans shown in their correct schematic location and dynamic data for all input values shown. This main graphic screen shall show the control devices in mechanical flow diagram format with directional arrows to indicate normal flow arrangement. These screens shall be available to anyone with access to the system, and therefore shall be view only.
2. Text Screen – Text screen shall display text information with the following primary categories:
    a. Occupied status
    b. Unit status
    c. Temperatures,
    d. Heating, cooling mode
    e. Economizer,
    f. Static pressure & setpoints
    g. Supply, return and exhaust fan status including setpoints.
3. A loop tuning screen shall also be furnished for each control loop, so that people with the appropriate access can change loop tuning parameters from PCs without needing individual programming tools.
4. Override screens shall be furnished for each controller to permit overriding control points without the need for vendor specific software.

5. An alarm screen shall also be furnished for each AHU, heating plant or cooling plant. The heating and cooling systems shall have similar screens as the AHUs.

C. Each VAV air terminal unit shall have a graphics screen and a text screen.

D. Systems that won't permit creating these customized screens as described herein will not be acceptable. Systems that use controllers that won't permit overrides of inputs and outputs from a browser based graphic screen will not be acceptable.

E. Animations
1. All shapes shall be 3-D with a common perspective.
2. All dampers shall have a minimum of 4 animation levels to show partially open, half open, mostly open, fully open, and closed position of dampers.
3. All analog inputs shall show the actual value and engineering units on the graphic screen.
4. Binary inputs shall be linked to flashing animated displays.
5. Safety alarms will flash when in alarm.
6. Filter status shall be indicated when value indicates that they are dirty.
7. To prevent clutter on the graphic displays, symbols will only be shown for equipment that is controlled or monitored by the DDC system.
8. Normal status for safeties will not be indicated, and normal status for safeties will be indicated by an image of a clean filter.
9. Pumps and fans shall rotate when flow is proven by a monitoring device. Coils shall change color when valves are open to permit water flow through the coils.

F. Color Schema – Graphics shall use common color schemes to make the overall system easy to understand. All overall backgrounds shall be white or other neutral color. All text shall be black. Any value that is in alarm shall be red or have a red background. Any value that is overridden shall have a blue background. All like sensors shall be the same color. For example, all temperature devices shall be yellow, all pressure devices shall be purple, all humidity devices shall be teal, all fire alarm devices shall be red, and all CO2 devices shall be green.

G. Current setpoints and occupancy status shall be shown at the bottom of each graphic screen.

H. Floor Plans – Overall floor plan drawings shall be provided, and permit access to each zone's individual floor plan sections.
1. On the individual floor plan sections, room numbers and room temperature and setpoint shall be displayed. Values that are out of the acceptable range shall appear in a different background color and/or flash.
2. Each VAV air terminal unit shall have its own graphic screen that contains the points from within its controller including the box flow setpoint, room temperature setpoint, maximum cooling flow setpoint, minimum cooling flow setpoint, and minimum heating flow setpoint, plus the discharge air temperature from the AHU supplying the unit. The VAV text screen shall have the same information as the graphic screen plus high and low flow calibration values, damper rotation adjustment (CW or CCW), and air balance set-up features.
3. GUI shall permit operator the ability to enable, set or disable high and low occupied and unoccupied limits for each room temperature reading.

I. Text Screens shall be available for all levels of access. Setpoint and output values are changeable from the text screen for users with appropriate access privileges and administrators, but not guests. When a value can be overridden or edited, a red box shall appear around it when

the cursor is position on it. A single click of the mouse shall bring up pop up menu that provide options to make a permanent override, change setpoint, or release a previous override of an output point. Analog inputs shall have pop up menus that allow setting high and low alarm limits and the ability to enable and disable alarm limits as appropriate for the sensing device. Pop up menus must be customized to include a description of the point that is being modified. Generic override menus are not permitted because they would not describe to an operator what is about to be modified. The Control Contractor shall set up all initial alarms as indicated in the point matrix.

J. Text screens shall include schedule information including current state and date and time of next scheduled event. Positioning the mouse over the current state shall permit single click access to the schedule. The schedule screen shall allow the operator to edit a yearly, weekly, daily, holiday or special event schedule for the system being viewed. Temperature values and setpoints shall be displayed below the schedule information, and shall have a minimum of 1 decimal place. Heating, cooling and damper ouputs shall be displayed next. The OA temperature for economizer switchover shall be displayed and adjustable from the text screen. Air flow readings shall be shown with setpoint and actual readings. Fan information shall be shown next, followed by static pressure readings and setpoints, which shall have a minimum of 2 decimal places. Miscellaneous setpoints including night setback cooling and heating, average zone temperature, return air warm-up and cool-down, dehumidification, and unoccupied mixed air temperature setpoints shall all be shown and adjustable. All safeties shall be shown, followed by coil pump control information.

K. Each system shall have its own specific alarm screen available to all operators but only editable by operators with user and administration access privileges. From the alarm screen, users and administrators shall be able to enable and disable alarms. Points that are in alarm shall have an alarm symbol highlighted in red. Points that are not in alarm shall be shown in gray. Alarms that are disabled shall have a way to indicate this on the alarm screen graphic.

L. Loop tuning screens shall be available through the web browser interface to save the owner the cost and time associated with using vendor specific software for tuning loops. Access to these screens shall not be provided to guests. Air handling units shall have dedicated screens for discharge air temperature, static pressure, and outside air control loops. Loop tuning screen for discharge air temperature shall include the discharge air temperature, discharge air temperature setpoint, cooling loop throttling range, I-gain and ramp time, heating loop throttling range, I-gain and ramp time, economizer loop throttling range, I-gain and ramp time, unoccupied heating loop throttling range, I-gain and ramp time, cooling valve output, heating valve output, and damper control output. Screens shall also have graphs that show 5 minutes of live data for the discharge air temperature, setpoint, cooling valve, heating valve and mixed air dampers. Each loop tuning screen shall include the appropriate throttling range, I-gain and ramp time.

M. Each non-unitary controller shall have an override screen. These screens shall be available on-site for use during point-to-point check-out and commissioning. The override screen shall show the inputs and outputs for each controller with the points in their wired location. Unused points shall be shown as spares. Points that are in alarm shall have a red background, and points that are overridden shall have a blue background just as on other screens. These screens shall show the actual values that come back from the controller, not the values that may have been typed in for override at the GUI if the controller software is not accepting the override value. The override screen shall also permit timed overrides.

N. Each AHU shall also have a overview screen listing every VAV terminals data in a text format that includes occupancy mode, room temperature, room setpoint, box flow, flow setpoint, temperature leaving VAV terminal, % cooling and % heating. Also, each VAV AHU shall have an air balance screen that will permit balancing the system through a computer connected to the Ethernet or directly to the appropriate BC without vendor specific software. The air balancing screens shall permit at least 8 manual override commands: normal, position (%), flow value, flow percent, open, close, min flow, and max flow.

O. Heating systems and cooling systems with multiple pieces of equipment such as pumps with lead-lag control shall display which device is lead and when the other device will become lead on the text screen.

P. Although only one outside air temperature sensor is needed per building, the GUI shall use independent outside air temperature points, so that during check-out and commissioning, the outside air temperature for a system can be changed without changing the outside air temperature for the whole building. The GUI shall also have a global outside air temperature point that can be overridden from the screen for the controller where the point is physically connected. Overriding this outside air temperature value will change it for all systems, except when outside air temperature has been overridden for an individual system.

Q. The system shall allow for the easy development and editing of dynamic graphics. Wizards shall be utilized to assist the operator with their manipulation of the graphic system. The operator shall be able to, through a single mouse function, select between the dynamic display mode and the graphic edit mode for the currently viewed graphic frame, assuming appropriate access level is provided to the operator. Systems requiring multiple mouse or operator keyboard commands to enter the graphic edit mode are not desirable and require thorough definition of steps involved to accomplish function.

R. Animation of system data shall be provided via graphic elements on the display frames. Standard graphic element library shall be provided to assist the operator with their implementation. The ability to define and add new animated graphic elements shall be provided. As a minimum, the ability to move, size, draw, arrange, align, layer, space, rotate, invert, duplicate, cut, copy, paste, erase any animated element shall be provided. System parameters and setpoints shall be assignable and modifiable by the animated graphic elements, relieving the need for keyboard commands for system manipulation.

S. The ability to simultaneously display a dynamic X/Y chart of selected points, shall be provided. The chart shall be an element of the graphic display and shall automatically update with the display data. The chart shall allow for dynamic manipulation to modify the range, rate, and timeframe of view, in both a real-time as well as historical configuration. A minimum of 4 values shall be included on any chart display element. There shall not be a limit to the quantity of chart elements displayed on a graphic frame. Trace colors and X values shall be User configurable. Systems not providing this capability are required to provide an equivalent charting package with the GUI offering.

T. The ability to provide graphically displayed global scheduling and editing functions shall be provided. The ability to link these functions to the associated equipment or zone frames shall be a standard feature. A calendar shall be provided for display and modification of the SDC time clock functions. The User shall be able to view a daily, weekly, monthly, annual, special or holiday schedule from a defined display frame. A list of served areas shall be displayed on the same screen, this list shall be displayed at all times, pull down menus or other means of

accessing these areas shall not be acceptable. The system shall have a master override screen that will allow an operator to change the schedule for every piece of equipment in every building by changing the master schedule.

U. All analog values shall be trended every 15 minutes. The trend samples shall be saved in the BC for at least 36 hours. Access to trended data shall be available by the single click of a mouse on the analog value. Systems that open other windows and require a selection of the desired data are not acceptable.

2.9 GUI ALARMING

A. The GUI shall provide, as standard, alarm annunciation of system data. On every display frame, the ability to view, acknowledge, delete and manipulate real-time and historical alarms shall be provided. The ability to provide a unique and custom alarm display for every display frame shall be provided. The ability to continuously or upon request, view the alarm display, shall be provided.

B. Alarm conditions shall be capable of invoking, as a minimum; a display frame, an email message, a text message sent to a pager or cellular phone.

C. Alarm logging shall be provided in a user definable configuration. All alarms shall be displayed and/or routed as follows, as a minimum; GUI display frame, local printer, server printer, client printer, logged to file, and archived in standard format for information management. Alarm groupings shall be hierarchical in nature allowing up to 8 alarm groups and 16 sub-groups. The GUI shall not possess any limits on the quantity of alarms that can be logged, including historical data archiving. Systems possessing limits must define the restrictions and may not be acceptable.

D. Provide up to 999 alarm priorities with up to 5 alarm color changes, per priority, according to alarm status.

2.10 GUI TRENDING

A. The GUI shall automatically perform time based, user defined, periodic collection of real time point data. The data shall be presented as an X/Y chart in the display frame. The data shall be stored and archived in a file format that allows for the manipulation and utilization of the data by third party applications.

B. A dynamic trend shall be defined as a group of at least 4 data points, with a circular buffer of 2000 data points. A historical trend shall be defined as a group of at least 8 data points, with the sampled points limited only by archival disk space. Sampling rates shall be user selectable from instantaneous (one per second) to once a week. Collection of data shall be user selectable to start and stop on a specific time and date. There shall be no limit to the number of X/Y charts within a display frame.

C. X/Y charting and column and row reporting shall be an integral part of the system. All points shall be chartable or reportable. Analytical data shall be displayed for any of the selected points in a clearly displayed X/Y chart. This analytical data shall consist of at least the following: Average Mean, Standard Deviation, Simple Average, Current Value, Cycle Length, Cycle High and Cycle Low.

D. X/Y charting shall provide for the following chart manipulation: display, zoom, scroll, centering, pen legend and export to Excel, Text via Dynamic Data Exchange.

PART 3 - EXECUTION

3.1 Furnish a complete set of shop drawings showing the kind of control equipment for each of the various systems and their functions, along with indication on the drawing of all original setpoints and calibration values and set up parameters, and sequence of operation and also that of the automation system. These drawings shall be submitted for approval to the Engineer, together with a complete brochure describing the equipment and their function and operation.

3.2 The control equipment supplier shall submit a detailed outline of the owner training material for review and comment by the Engineer during the shop drawing phase. The control system training program shall be customized to reflect the systems installed under this contract and shall cover, as a minimum: software navigation (via custom graphics and Windows based icons), system architecture, pass wording and system security features, input/output control functions, alarm functions/acknowledgement, trending/long term reporting, and control component operation.

3.3 Upon completion of the project, furnish and turn over to the Owner and Architect (3) complete sets of brochures describing the various items of equipment, their functions and directions for operation and maintenance.

3.4 Upon completion of the control system, the Control Contractor shall adjust all components of the system. ATC Contractor shall make all adjustments in the control system required and as directed by the air balance contractor to achieve the desired air balance quantities. All instruments shall be carefully calibrated and each control function shall be demonstrated to function properly, to the satisfaction of the Engineer and the Owner. Provide a complete instruction manual covering the function and operation of all components. At the time of demonstration, each function shall be simulated to insure that controls respond properly to all signals, and the Owner shall be instructed in the proper operation of the system.

3.5 In addition to the adjustments and fine tuning, the Contractor shall include as a part of this contract an additional 40 hours of service technician time for work as directed or authorized by the Engineer to make software changes or field adjustments to hardware.

3.6 During the first year of operation, after acceptance by the Owner, the Control Contractor shall provide complete service to adjust or assist the Owner in adjusting the equipment to obtain

optimum performance form the control equipment and from the heating and air conditioning systems in general. This shall be done without additional expense to the Owner. This work shall include revisions to DDC software programs and controller programs, and all PC front end software upgrades. All software shall be provided to the Owner in disk form, including back-ups of final field programs.

3.7 The control equipment manufacturer shall provide instruction and training of the Owner's personnel regarding the hardware and software of the system. Software training shall include programs, methods of programming, control loops, scheduling and reports. Training covering hardware shall include operation information, functional use, wiring diagrams and schematic diagrams necessary to troubleshoot the operating system. Training shall include "hands on" instructions to completely familiarize Owner's personnel with the equipment and system. Training of Owner's personnel shall be equal in scope and detail to that provided by the manufacturer to its service technicians.

3.8 TRAINING

The control equipment supplier shall provide 40 hours of instruction at the job site to familiarize the Owner's personnel in the application and details of the installed system. Site training classes shall not be scheduled for longer than 4 hours duration except at the discretion of the Owner.

3.9 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing**.** Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
2. Test and adjust controls and safeties.
3. Test calibration of controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
4. Test each point through its full operating range to verify that safety and operating control set points are as required.
5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
6. Test each system for compliance with sequence of operation.
7. Test software and hardware interlocks.

C. DDC Verification:

1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
2. Check instruments for proper location and accessibility.

3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
4. Check instrument tubing for proper fittings, slope, material, and support.
5. Check pressure instruments, piping slope, installation of valve manifold, and self-contained pressure regulators.
6. Check temperature instruments and material and length of sensing elements.
7. Check control valves. Verify that they are in correct direction.
8. Check dampers. Verify that proper blade alignment, either parallel or opposed, has been provided.
9. Check DDC system as follows:

    a. Verify that DDC controller power supply is from emergency power supply, if applicable.
    b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
    c. Verify that spare I/O capacity has been provided.
    d. Verify that DDC controllers are protected from power supply surges.

D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

END OF SECTION 23 0923

SECTION 23 7413 – PACKAGED DEDICATED OUTSIDE AIR SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes packaged, dedicated outside air units with the following components and accessories:

1. Direct-expansion cooling.
2. Gas furnace.
3. Hot Gas Reheat Coils
4. Roof curbs.

1.2 SUBMITTALS

A. Product Data: Include manufacturer's technical data for each DOAS unit, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Power, signal, and control wiring.

C. Operation and maintenance data.

D. Warranty.

1.3 QUALITY ASSURANCE

A. ARI Compliance:

1. Comply with ARI 210/240 and ARI 340/360 for testing and rating energy efficiencies.
2. Comply with ARI 270 for testing and rating sound performance.
3. Comply with ARI 1060 for testing and rating of energy recovery module.

B. ASHRAE Compliance:

1. Comply with ASHRAE 15 for refrigerant system safety.
2. Comply with ASHRAE 33 for methods of testing cooling and heating coils.
3. Comply with applicable requirements in ASHRAE 62.1.

C. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

D. NFPA Compliance: Comply with NFPA 90A and NFPA 90B.

E. UL Compliance: Comply with UL 1995.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

G. Motors 1 HP and larger shall be “premium efficiency” series motor, VFD rated with shaft grounding rings.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of units that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Compressors: Manufacturer's standard, but not less than five (5) years from date of Substantial Completion.
2. Warranty Period for Gas Furnace Heat Exchangers: Manufacturer's standard, but not less than ten (10) years from date of Substantial Completion.
3. Warranty Period for Solid-State Ignition Modules: Manufacturer's standard, but not less than three (3) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Daikin
2. Mitsubishi
3. Greenheck
4. LG
5. CaptiveAire
6. *Valent – Addendum 1, 11/18/2024*

2.2 CASING

A. Exterior Casing Material: Galvanized steel with factory-painted finish, with pitched roof panels and knockouts with grommet seals for electrical and piping connections and lifting lugs. Panels shall be easily removable for servicing all components.

B. Unit casing construction shall be double wall, 2” thick with minimum R-13 foam insulation.

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

2.3 FANS

A. Air circulating fans shall be either ECM or direct drive plenum type with backwards curved fan blades. Direct drive plenum fans shall be provided with a VFD capable of full fan modulation.

B. Condenser fans shall be either ECM or direct driven propeller type with wire guards.

2.4 COILS

A. Supply-Air Refrigerant Coil:

1. Aluminum plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
2. Polymer strip shall prevent all copper coil from contacting steel coil frame or condensate pan.
3. Coil Split: Interlaced.
4. Condensate Drain Pan: Stainless steel formed with pitch and drain connections complying with ASHRAE 62.1.

B. Hot Gas Refrigerant Reheat Coil

1. Aluminum tube micro-channel coil.

C. Outdoor-Air Refrigerant Coil:

1. Aluminum -plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
2. Polymer strip shall prevent all copper coil from contacting steel coil frame or condensate pan.

2.5 REFRIGERANT CIRCUIT COMPONENTS

A. Compressor:
1. Hermetic, scroll, inverter duty, mounted on vibration isolators; with internal overcurrent and high-temperature protection, internal pressure relief, and crankcase heater.

B. Refrigeration Specialties:

1. Refrigerant: R-32, R-454b.
2. Expansion valve with replaceable thermostatic element.
3. Refrigerant filter/dryer.
4. Manual-reset high-pressure safety switch.
5. Automatic-reset low-pressure safety switch.
6. Minimum off-time relay.
7. Automatic-reset compressor motor thermal overload.
8. Brass service valves installed in compressor suction and liquid lines.

C. Refrigerant Detection & Mitigation Control

1. Refrigerant systems with an A2L or higher flammability classification, as defined in ASHRAE Standard 15 and 34, shall be equipped with a refrigerant leak detection system. The leak detection system shall provide the following mitigation controls to ensure there is never a build up of refrigerant greater than the lower flammability limit of the respective refrigerant. The following shall occur:
   a. Activate refrigerant system safety shut-off valves to reduce releasable refrigerant charge.
   b. Energize the air circulation fan(s).
   c. De-energize potential ignition sources, including open flames (direct and indirect gas furnaces) and unclassified electrical sources of ignition with apparent power rating greater than 1kVa, where the apparent power is the product of the circuit voltage and current rating.

2.6 AIR FILTRATION

1. Pre and Final filters as indicated on unit schedule.

2.7 GAS FURNACE

A. Description: Factory assembled, piped, and wired; complying with ANSI Z21.47 and NFPA 54.

1. CSA Approval: Designed and certified by and bearing label of CSA.

B. Burners: Stainless steel

1. Fuel: Natural gas.
2. Ignition: Electronically controlled electric spark or hot-surface igniter with flame sensor.

C. Heat-Exchanger and Drain Pan: Stainless steel.

D. Power Vent: Integral, motorized centrifugal fan interlocked with gas valve.

E. Safety Controls:

1. Gas Control Valve: Modulating type, minimum 10:1 turndown.
2. Gas Train: Single-body, regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff.

2.8 ELECTRICAL POWER CONNECTION

A. Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

2.9 CONTROLS

A. Provide a factory mounted DDC controller capable of providing the sequence of operation described on the contract drawings. Controller shall have a BACnet MS/TP communication module. Provide control components as shown in control diagram.

B. Units shall be provided with the following external control components, for field installation:
   1. Supply duct static pressure sensor.

C. Control Accessories:
   1. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.
   2. Leaving Coil / Entering Fan Temperature Sensor
   3. Duct High Limit Switch
   4. Discharge Air Temperature Sensor
   5. Outside Air Temperature Sensor
   6. Supply Air Fan Proving
   7. Coil guards of painted, galvanized-steel wire.

2.10 ACCESSORIES

A. Coil guards of painted, galvanized-steel wire.

2.11 UNIT MOUNTING AND AIR DISCHARGE

A. Unit shall be mounted on grade. Secure to concrete equipment pad. Provide neoprene isolators below unit to facilitate rain water drainage from underneath unit.

B. Unit shall be provided with a side discharge for supply air. If the unit is not capable of being provided with a side discharge, a 24” insulated curb shall be provided to facilitate installation of ductwork and an elbow with turning vanes below the unit.

   1. Curb shall be anchored to the concrete equipment pad.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The unit shall be set in place, shimmed level, and secured.

B. Provide condensate drainage piping from the drain pan per the contract documents. Provide a concrete splash block at the outlet of the condensate drain.

C. The Plumbing Contractor shall provide a natural gas connection to the unit. A gas shut-off valve and dirt leg shall be provided on the exterior of the unit upstream of the gas connection. The HVAC contractor shall coordinate gas location with the Plumbing Contractor.

D. The Electrical Contractor will provide power wiring thru a fused disconnect switch to one set of power terminals in each unit. All other power and control wiring required for the completion of the systems shall be furnished and installed by the HVAC Contractor. All wiring shall be furnished and installed by the HVAC Contractor. All wiring shall be run in ½" and larger conduit in accordance with applicable provisions of the Electrical Specifications.

END OF SECTION 23 7415