PROPOSED FACILITIES FOR:

OUTAGAMIE COUNTY HIGHWAY

HORTONIA, WI

SHEET INDEX

SHEETS BELOW INTENDED TO BE PRINTED IN: COLOR. REFER TO DIGITAL FORMAT DRAWINGS IF PRINTED GRAYSCALE TO ENSURE SCOPE CLARITY

ISSUED FOR BID + APPROVAL (IFB)
DRAWINGS ISSUED ON MARCH 31, 2026 ARE FOR BIDDING BY ALL TRADES AND FOR STATE REVIEW AND APPROVAL. THESE DRAWINGS ARE NOT ISSUED FOR CONSTRUCTION.

NUMBER	SHEET NAME / DESCRIPTION	SHEET STATUS	LATEST SHEET ISSUE NUMBER	LATEST SHEET ISSUE DATE
GENERAL				
T1.0	TITLE SHEET	IFB	IFB	MAR. 31, 2026
T1.1	PROJECT INFORMATION	IFB	IFB	MAR. 31, 2026
T1.2	LIFE SAFETY PLAN	IFB	IFB	MAR. 31, 2026
T2.0	SPECIAL INSPECTIONS	IFB	IFB	MAR. 31, 2026
CIVIL				
C0.1	COVER SHEET	IFB	IFB	MAR. 31, 2026
C0.2	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
C1.0	EXISTING SITE AND DEMOLITION PLAN	IFB	IFB	MAR. 31, 2026
C1.1	SITE PLAN	IFB	IFB	MAR. 31, 2026
C1.2	GRADING AND EROSION CONTROL PLAN	IFB	IFB	MAR. 31, 2026
C1.3	UTILITY PLAN	IFB	IFB	MAR. 31, 2026
C1.4	LANDSCAPING AND RESTORATION PLAN	IFB	IFB	MAR. 31, 2026
C2.0	DETAILS	IFB	IFB	MAR. 31, 2026
C2.1	DETAILS	IFB	IFB	MAR. 31, 2026
ARCHITECTURAL				
A0.1	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
A0.2	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
A1.1	FIRST FLOOR PLAN - OVERALL AREA 'A' & 'B'	IFB	IFB	MAR. 31, 2026
A1.1A	FIRST FLOOR PLAN - AREA 'A' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A1.1B	FIRST FLOOR PLAN - AREA 'B' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A1.1C	FIRST FLOOR PLAN - AREA 'C' - COLD STORAGE	IFB	IFB	MAR. 31, 2026
A1.2	ROOF PLAN - OVERALL AREA 'A' & 'B'	IFB	IFB	MAR. 31, 2026
A1.2C	ROOF PLAN - AREA 'C' - COLD STORAGE	IFB	IFB	MAR. 31, 2026
A1.3	ROOF PLAN - DETAILS	IFB	IFB	MAR. 31, 2026
A1.4	DUMPSTER ENCLOSURE & GENERATOR PAD	IFB	IFB	MAR. 31, 2026
A1.5	FUEL ISLAND AND TRUCK SCALE - AREA 'D'	IFB	IFB	MAR. 31, 2026
A2.0	EXTERIOR PERSPECTIVE AND SPECS - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A2.1	EXTERIOR ELEVATIONS' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A2.2	EXTERIOR ELEVATIONS - COLD STORAGE	IFB	IFB	MAR. 31, 2026
A3.0	BUILDING SECTIONS' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A3.1	BUILDING SECTIONS - COLD STORAGE	IFB	IFB	MAR. 31, 2026
A4.0	OFFICE WALL SECTIONS & DETAILS	IFB	IFB	MAR. 31, 2026
A4.1	MAIN BUILDING - WALL SECTIONS & DETAILS	IFB	IFB	MAR. 31, 2026
A4.2	DETAILS	IFB	IFB	MAR. 31, 2026
A4.3	DETAILS	IFB	IFB	MAR. 31, 2026
A4.4	DETAILS	IFB	IFB	MAR. 31, 2026
A4.5	INTERIOR WALL TYPES	IFB	IFB	MAR. 31, 2026
A4.6	UL RATINGS	IFB	IFB	MAR. 31, 2026
A5.0	ENLARGED PLANS	IFB	IFB	MAR. 31, 2026
A5.1	INTERIOR DETAILS	IFB	IFB	MAR. 31, 2026
A5.2	INTERIOR ELEVATIONS	IFB	IFB	MAR. 31, 2026
A6.0	SCHEDULES	IFB	IFB	MAR. 31, 2026
A6.1	ALUM/HM/WOOD/SS DOOR SCHEDULE	IFB	IFB	MAR. 31, 2026
A6.2	SPECIALTY DOOR SCHEDULE	IFB	IFB	MAR. 31, 2026
A7.1A	FIRST FLOOR REFLECTED CEILING PLAN - AREA 'A' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A7.1B	FIRST FLOOR REFLECTED CEILING PLAN - AREA 'B' - MAIN BUILDING	IFB	IFB	MAR. 31, 2026
A8.1	FIRST FLOOR FINISH PLAN	IFB	IFB	MAR. 31, 2026
A9.1	FIRST FLOOR FURNITURE/EQUIPMENT PLAN	IFB	IFB	MAR. 31, 2026
STRUCTURAL				
S0.1	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
S0.2	DESIGN CRITERIA	IFB	IFB	MAR. 31, 2026
S1.0	OVERALL FOUNDATION PLAN	IFB	IFB	MAR. 31, 2026
S1.1A	FOUNDATION PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
S1.1B	FOUNDATION PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
S1.1C	FOUNDATION PLAN - AREA 'C' - COLD STORAGE	IFB	IFB	MAR. 31, 2026
S1.1S	CONCRETE FLOOR SLAB PLAN	IFB	IFB	MAR. 31, 2026
S1.1SA	CONCRETE FLOOR SLAB PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
S1.1SB	CONCRETE FLOOR SLAB PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
S1.1SC	CONCRETE FLOOR SLAB PLAN - AREA 'C'	IFB	IFB	MAR. 31, 2026
S1.2B	WASH BAY CAP FRAMING PLAN AREA "B"	IFB	IFB	MAR. 31, 2026
S1.3A	ROOF FRAMING PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
S1.3B	ROOF FRAMING PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
S1.3C	ROOF FRAMING PLAN - AREA 'C' - COLD STORAGE	IFB	IFB	MAR. 31, 2026
S2.0	FOUNDATION SCHEDULES AND DETAILS	IFB	IFB	MAR. 31, 2026
S2.1	FOUNDATION DETAILS	IFB	IFB	MAR. 31, 2026
S2.2	SLAB ON GRADE SCHEDULES AND DETAILS	IFB	IFB	MAR. 31, 2026
S2.3	PEMB BASE CONDITION REQUIREMENTS	IFB	IFB	MAR. 31, 2026
S2.4	TRUCK SCALE DETAILS	IFB	IFB	MAR. 31, 2026
S3.0	FRAMING DETAILS	IFB	IFB	MAR. 31, 2026
S5.0	MASONRY ELEVATIONS	IFB	IFB	MAR. 31, 2026
S5.1	MASONRY ELEVATIONS	IFB	IFB	MAR. 31, 2026
S5.2	MASONRY SCHEDULES	IFB	IFB	MAR. 31, 2026
S5.3	MASONRY CONTROL JOINT DETAILS	IFB	IFB	MAR. 31, 2026
PLUMBING				
P0.1	LEGEND AND SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
P0.2	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
P1.UA	UNDERGROUND PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
P1.UB	UNDERGROUND PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
P1.1A	FIRST FLOOR PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
P1.1B	FIRST FLOOR PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
P3.0	DRAIN, WASTE, AND VENT ISOMETRICS AND SCHEDULES	IFB	IFB	MAR. 31, 2026
P3.1	DRAIN, WASTE, AND VENT ISOMETRICS	IFB	IFB	MAR. 31, 2026
P3.2	WATER ISOMETRICS AND CALCULATIONS	IFB	IFB	MAR. 31, 2026
P4.0	DETAILS	IFB	IFB	MAR. 31, 2026
P4.1	STANDARD & HARSH ENVIRONMENT ROOM DETAILS	IFB	IFB	MAR. 31, 2026
P5.0	SCHEDULES	IFB	IFB	MAR. 31, 2026
P5.1	SCHEDULES	IFB	IFB	MAR. 31, 2026
FIRE PROTECTION				
FP0.1	LEGEND AND SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
FP1.1	FIRST FLOOR PLAN	IFB	IFB	MAR. 31, 2026
HVAC				
H0.1	LEGEND AND SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
H0.2	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
H1.1A	FIRST FLOOR PLAN - AREA 'A'	IFB	IFB	MAR. 31, 2026
H1.1B	FIRST FLOOR PLAN - AREA 'B'	IFB	IFB	MAR. 31, 2026
H1.1C	FIRST FLOOR PLAN - AREA 'C'	IFB	IFB	MAR. 31, 2026
H1.3AB	ROOF PLAN	IFB	IFB	MAR. 31, 2026
H2.0	SECTIONS AND ENLARGED PLANS	IFB	IFB	MAR. 31, 2026
H3.0	DETAILS	IFB	IFB	MAR. 31, 2026
H3.1	DETAILS	IFB	IFB	MAR. 31, 2026
H4.0	SCHEDULES	IFB	IFB	MAR. 31, 2026
H4.1	SCHEDULES	IFB	IFB	MAR. 31, 2026

NUMBER	SHEET NAME / DESCRIPTION	SHEET STATUS	LATEST SHEET ISSUE NUMBER	LATEST SHEET ISSUE DATE
ELECTRICAL				
E0.1	LEGEND AND SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
E0.2	SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
E0.3	LOW VOLTAGE SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
E0.4	LOW VOLTAGE SPECIFICATIONS	IFB	IFB	MAR. 31, 2026
E1.0	SITE PLAN	IFB	IFB	MAR. 31, 2026
E1.1	FIRST FLOOR PLAN - OVERALL	IFB	IFB	MAR. 31, 2026
E1.1AL	FIRST FLOOR PLAN - AREA 'A' - LIGHTING	IFB	IFB	MAR. 31, 2026
E1.1AP	FIRST FLOOR PLAN - AREA 'A' - POWER	IFB	IFB	MAR. 31, 2026
E1.1AS	FIRST FLOOR PLAN - AREA 'A' - SYSTEMS	IFB	IFB	MAR. 31, 2026
E1.1BL	FIRST FLOOR PLAN - AREA 'B' - LIGHTING	IFB	IFB	MAR. 31, 2026
E1.1BP	FIRST FLOOR PLAN - AREA 'B' - POWER	IFB	IFB	MAR. 31, 2026
E1.1BS	FIRST FLOOR PLAN - AREA 'B' - SYSTEMS	IFB	IFB	MAR. 31, 2026
E1.1CL	FIRST FLOOR PLAN - AREA 'C' - LIGHTING	IFB	IFB	MAR. 31, 2026
E1.1CP	FIRST FLOOR PLAN - AREA 'C' - POWER	IFB	IFB	MAR. 31, 2026
E1.1CS	FIRST FLOOR PLAN - AREA 'C' - SYSTEMS	IFB	IFB	MAR. 31, 2026
E1.3	ROOF PLAN	IFB	IFB	MAR. 31, 2026
E3.0	DETAILS	IFB	IFB	MAR. 31, 2026
E3.1	DETAILS	IFB	IFB	MAR. 31, 2026
E3.2	HARSH ENVIRONMENT ROOM DETAILS	IFB	IFB	MAR. 31, 2026
E4.0	ONELINE DIAGRAMS & SCHEDULES	IFB	IFB	MAR. 31, 2026
E4.1	PANEL SCHEDULES	IFB	IFB	MAR. 31, 2026
E5.0	LIGHT FIXTURE SCHEDULE	IFB	IFB	MAR. 31, 2026

PROJECT CONTACTS

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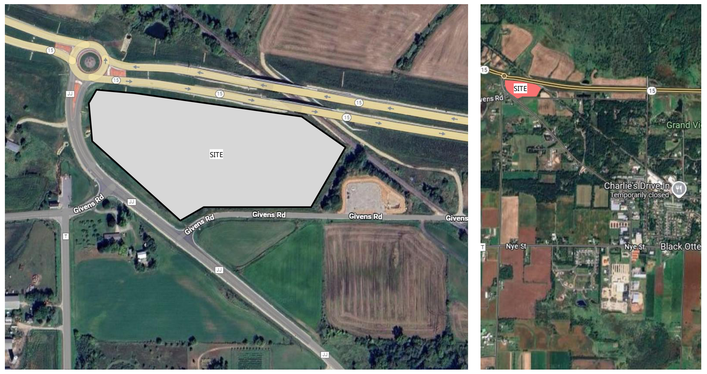
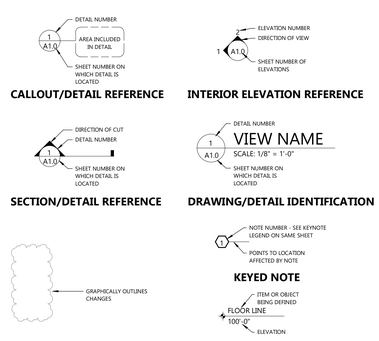
LOCATION MAP



SYMBOLS LEGEND



EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
T1.0

GENERAL TITLE SHEET

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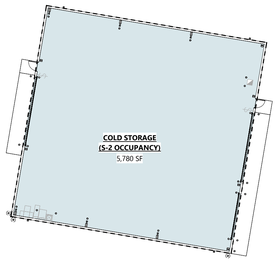


OCCUPANCY CLASSIFICATION

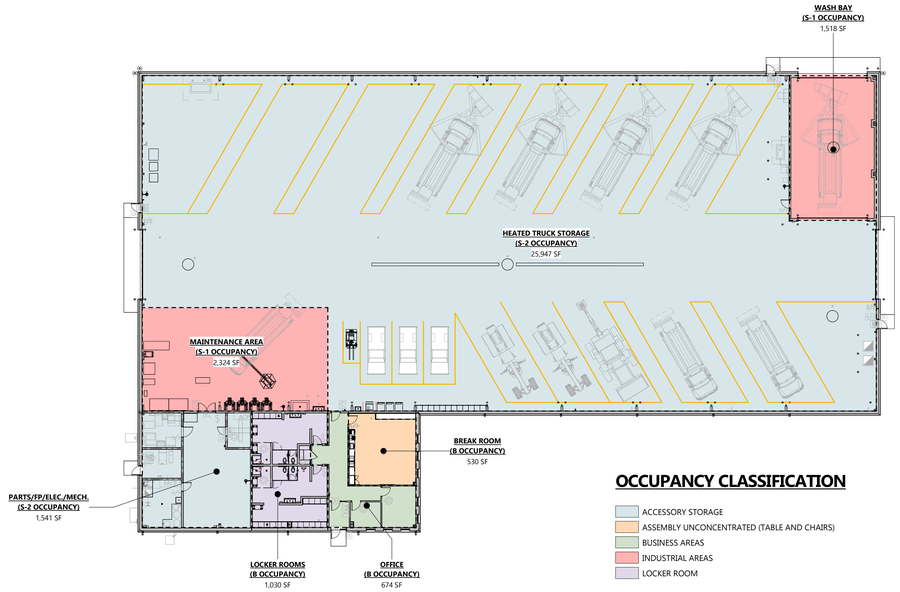
ACCESSORY STORAGE

NORTH

COLD STORAGE - AREA PLAN

SCALE: 3/64" = 1'-0"

0' 16' 32'



OCCUPANCY CLASSIFICATION

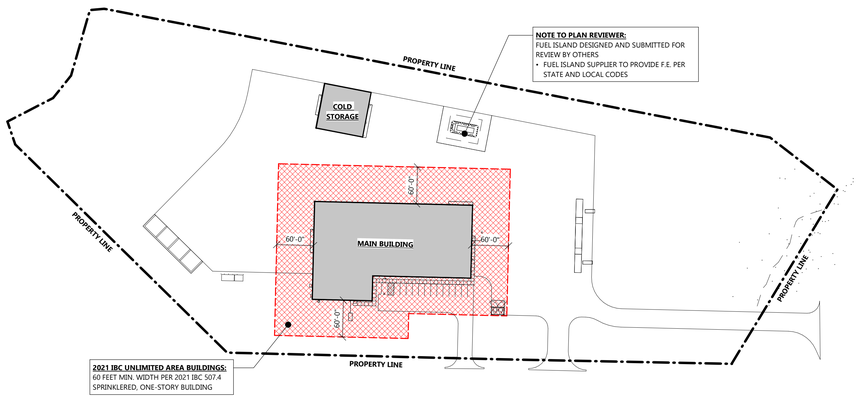
ACCESSORY STORAGE
ASSEMBLY UNCONCENTRATED (TABLE AND CHAIRS)
BUSINESS AREAS
INDUSTRIAL AREAS
LOCKER ROOM

NORTH

MAIN BUILDING - AREA PLAN

SCALE: 3/64" = 1'-0"

0' 16' 32'



NORTH

CODE SITE PLAN

SCALE: 1" = 100'-0"

OCCUPANCY CALCULATIONS

OCCUPANT LOADS - MAIN BUILDING

CALCULATIONS ARE BASED ON THE FOLLOWING CODES:
IBC 2021: TABLE 1004.5
IBC 2021: 402.8.2 DETERMINATION OF OCCUPANT LOAD
IBC 2021: 402.8.2.1 OCCUPANT FORMULA
IBC 2021: 1004.6 FIXED SEATING
IBC 2021: 1004.8 CONCENTRATED BUSINESS USE AREAS

ROOM OR SPACE DESIGNATION	CLASSIFICATION OF OCCUPANCY FOR USE	FLOOR AREA (S.F.)	DENSITY SF/PERSON	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NO.	OCCUPANT LOAD BY COMBINATION	OCCUPANTS ACCOUNTED FOR IN OTHER SPACES
OFFICE	BUSINESS AREAS	674	150 GROSS	5	5	-	-
BREAK ROOM	ASSEMBLY - UNCONCENTRATED (TABLES AND CHAIRS)	530	15 NET	36	36	-	-
LOCKER ROOMS	LOCKER ROOMS	1030	50 GROSS	21	21	-	-
PARTS/FP/ELEC./MECH	ACCESSORY STORAGE AREAS, MECH. EQUIPMENT	1541	300 GROSS	6	6	-	-
MAINTENANCE AREA	INDUSTRIAL AREAS	2324	100 GROSS	24	24	-	-
HEATED TRUCK STORAGE	ACCESSORY STORAGE AREAS, MECH. EQUIPMENT	25947	300 GROSS	87	87	-	-
WASH BAY	INDUSTRIAL AREAS	1518	100 GROSS	16	16	-	-

TOTAL CALCULATED OCCUPANT LOAD OF THE BUILDING = 195 OCCUPANTS
TOTAL ACTUAL OCCUPANT LOAD OF THE BUILDING = 195 OCCUPANTS

OCCUPANT LOADS - COLD STORAGE BUILDING

CALCULATIONS ARE BASED ON THE FOLLOWING CODES:
IBC 2021: TABLE 1004.5
IBC 2021: 402.8.2 DETERMINATION OF OCCUPANT LOAD
IBC 2021: 402.8.2.1 OCCUPANT FORMULA
IBC 2021: 1004.6 FIXED SEATING
IBC 2021: 1004.8 CONCENTRATED BUSINESS USE AREAS

ROOM OR SPACE DESIGNATION	CLASSIFICATION OF OCCUPANCY FOR USE	FLOOR AREA (S.F.)	DENSITY SF/PERSON	OCCUPANT LOAD BY CALCULATION	OCCUPANT LOAD BY ACTUAL NO.	OCCUPANT LOAD BY COMBINATION	OCCUPANTS ACCOUNTED FOR IN OTHER SPACES
COLD STORAGE	PARKING GARAGES	5780	200 GROSS	29	0	-	YES

NOTE: THE COLD STORAGE BUILDING IS INTENDED FOR STORAGE PURPOSES ONLY. NO EMPLOYEES WILL BE REGULARLY STATIONED IN THIS BUILDING.

TOTAL CALCULATED OCCUPANT LOAD OF THE BUILDING = 29 OCCUPANTS
TOTAL ACTUAL OCCUPANT LOAD OF THE BUILDING = 0 OCCUPANTS

SANITARY FIXTURE CALCULATIONS

CALCULATIONS ARE BASED ON THE FOLLOWING CODES:
IBC 2021: TABLE 2902.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES
IBC 2021: SECTION 2902.1.1 FIXTURE CALCULATIONS
IBC 2021: SECTION 2902.1.3 LAVATORY DISTRIBUTION

OCCUPANCY		WATER CLOSETS				LAVATORIES				DRINKING FOUNTAINS	
TYPE	TOTAL CAPACITY	CODE FACTOR	MALE FIXTURES REQUIRED	CODE FACTOR	FEMALE FIXTURES REQUIRED	CODE FACTOR	MALE FIXTURES REQUIRED	CODE FACTOR	FEMALE FIXTURES REQUIRED	CODE FACTOR	FIXTURES REQUIRED
GROUP B BUSINESS	62	1/25 (1ST 50) 1/50 (RMDR)	1.2	1/25 (1ST 50) 1/50 (RMDR)	1.2	1/40 (1ST 80) 1/80 (RMDR)	0.8	1/40 (1ST 80) 1/80 (RMDR)	0.8	1/100	0.6
GROUP S-1 & S-2 STORAGE/MECH	133	1/100	0.7	1/100	0.7	1/100	0.7	1/100	0.7	1/1000	0.1
TOTALS	**195**		1.9	-	1.9	-	1.4	-	1.4	-	0.8

SANITARY FIXTURE TOTALS

FIXTURES REQ'D ARE CALCULATED PER IBC 2021 2902.1.1		WATER CLOSETS		LAVATORIES		UNISEX LAVATORIES		DRINKING FOUNTAIN
		MALE	FEMALE	MALE	FEMALE	WC		
TOTAL REQUIRED		**2**	**2**	**2**	**2**	-	-	**1**
TOTAL PROVIDED	WC	**2**	**2**	**2**	**2**	-	-	**1(a)**
	UR	**1**						

(a) = BOTTLE FILLER ALTERNATIVE IS PROVIDED IN LIEU OF DRINKING FOUNTAIN PER TABLE 2902.1 EXCEPTION #2

PROJECT INFORMATION

APPLICABLE BUILDING CODES

2021 INTERNATIONAL BUILDING CODE WITH MODIFICATIONS IN CHAPTER SPS 362
2021 INTERNATIONAL ENERGY CONSERVATION CODE WITH MODIFICATIONS IN CHAPTER SPS 363
2021 INTERNATIONAL MECHANICAL CODE WITH MODIFICATIONS IN CHAPTER SPS 364
2021 INTERNATIONAL FUEL GAS CODE WITH MODIFICATIONS IN CHAPTER SPS 365
2021 INTERNATIONAL FIRE CODE (AS SPECIFIED PER WI SPS 361.03.14)
2017 NATIONAL ELECTRICAL CODE WITH MODIFICATIONS IN CHAPTER SPS 316
2023 WISCONSIN PLUMBING CODE
2017 ICC/ANSI A117.1 ACCESSIBILITY CODE

BUILDING SIZE

MAIN BUILDING
FIRST FLOOR 34,730 S.F.
TOTAL AREA 34,730 S.F.

COLD STORAGE BUILDING
FIRST FLOOR 5,780 S.F.
TOTAL AREA 5,780 S.F.

OCCUPANCY CLASSIFICATIONS

2021 IBC CHAPTER 3 OCCUPANCY CLASSIFICATIONS
OCCUPANCY CLASSIFICATIONS WITHIN BUILDING INCLUDE:
BUSINESS GROUP B 2021 IBC SECTION 304.1 - BUSINESS
STORAGE GROUP S-1 2021 IBC SECTION 311.2 - MODERATE HAZARD STORAGE
STORAGE GROUP S-2 2021 IBC SECTION 311.3 - LOW HAZARD STORAGE

2021 IBC SECTION 508.3 NON-SEPARATED OCCUPANCIES
NON-SEPARATED USES w/ MIXED OCCUPANCY
BUILDING IS DESIGNED FOR S-1 OCCUPANCY (MOST RESTRICTIVE)

ALLOWABLE HEIGHT & AREAS

2021 IBC TABLE 504.3 ALLOWABLE BUILDING HEIGHT
MOST RESTRICTIVE OCCUPANCY: S-1 (SPRINKLERED)

MAX ALLOWABLE BUILDING HEIGHT = 75 FT.
TOTAL BUILDING HEIGHT = 34 FT. 2 IN.

2021 IBC TABLE 504.4 ALLOWABLE NUMBER OF STORIES
MOST RESTRICTIVE OCCUPANCY: S-1 (SPRINKLERED)

MAX ALLOWABLE STORIES = (3)
NUMBER OF STORIES PROVIDED = (1)

2021 IBC TABLE 507.1.1 ACCESSORY OCCUPANCIES
ACCESSORY OCCUPANCIES SHALE BE PERMITTED PER 508.2 OR 507.2-507.12

2021 IBC TABLE 507.4 UNLIMITED AREA BUILDINGS
THE AREA OF A GROUP B, F, M OR S BUILDING NO MORE THAN ONE STORY ABOVE GRADE PLANE OF ANY CONSTRUCTION TYPE, SHALL NOT BE LIMITED WHERE THE BUILDING IS PROVIDED WITH AN AUTOMATIC SPRINKLER SYSTEM THROUGHOUT IN ACCORDANCE WITH SECTION 903.3.1.1 AND IS SURROUNDED AND ADJOINED BY PUBLIC WAYS OR YARDS NOT LESS THAN 60 FEET (18 288 MM) IN WIDTH.
• SEE CODE SITE PLAN

MAX ALLOWABLE BUILDING HEIGHT = UL

2021 IBC TABLE 508.3 NONSEPARATED OCCUPANCIES
THE ALLOWABLE BUILDING AREA, HEIGHT AND NUMBER OF STORIES OF THE BUILDING OR PORTION THEREOF SHALL BE BASED ON THE MOST RESTRICTIVE ALLOWANCES FOR THE OCCUPANCY GROUPS UNDER CONSIDERATION FOR THE TYPE OF CONSTRUCTION OF THE BUILDING IN ACCORDANCE WITH SECTION 503.1.

MOST RESTRICTIVE OCCUPANCY: S-1

CONSTRUCTION CLASSIFICATION

2021 IBC CHAPTER 6 TYPE OF CONSTRUCTION
2021 IBC SECTION 602.2 TYPE II(B) CONSTRUCTION

2021 IBC TABLE 601
BUILDING PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS DUE TO EXTERIOR BEARING, NON-BEARING, AND STRUCTURAL FRAME IS NOT REQ'D TO BE FIRE-RESISTANCE RATED

2021 IBC TABLE 705.8
BUILDING PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS DUE TO FIRE SEPARATION DISTANCE TO PROPERTY LINE IS GREATER THAN 30 FT.

ACCESSIBILITY

2015 IBC 1109.9 STORAGE
WHERE FIXED OR BUILT-IN STORAGE ELEMENTS SUCH AS CABINETS, COAT HOOKS, SHELVES, MEDICINE CABINETS, LOCKERS, CLOSETS AND DRAWERS ARE PROVIDED IN REQUIRED ACCESSIBLE SPACES, AT LEAST 5 PERCENT, BUT NOT LESS THAN ONE OF EACH TYPE SHALL BE ACCESSIBLE.

EFFICIENCY CREDITS

EFFICIENCY PACKAGE CREDITS

2021 IECC TABLE C406.1 ADDITIONAL EFFICIENCY PACKAGE CREDITS
ENHANCED LIGHTING
• C406.3: REDUCED LIGHTING POWER = CREDITS: 17

CREDITS REQUIRED: 10
CREDITS PROPOSED: 17

GENERAL PROJECT INFORMATION

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Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
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excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
T1.1

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CONTROL AREA STORAGE

MATERIAL INFORMATION PER CONTROL AREA

CONTROL AREAS	PRODUCT INFORMATION: PRODUCT NAME	COMPANY	IDENTIFICATION NUMBER	USE	MAIN CHEMICALS	CAS NUMBER***	% BY WT.	FLASH POINT (°F)	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	BOILING TEMP (°F)	PHYSICAL STATE	LD50 ORAL (MG/KG)	LC50 INHALATION (MG/L)	LD50 CONTACT (MG/KG)	IBC CLASSIFICATION: MATERIAL CLASS	QUANTITY PROVIDED	TOXICITY**	CORROSIVE*	NFPA RATING: HEALTH	FLAM.	INSTAB.
CONTROL AREA #1	CITGO CITGARD 700 ENGINE OIL	CITGO CITGARD	15W-40	ENGINE OIL	DISTILLATES (PETROLEUM), HYDROTREATED HEAVY PARAFFINIC	64742-54-7	>75-≤90	449.6°F	ND	ND	ND	LIQUID	>5000 mg/kg	ND	>5000 mg/kg	COMB. LIQ, CLASS IIIB	120	ND	ND	1	1	0
					DISTILLATES (PETROLEUM), SOLVENT-DEWAXED HEAVY PARAFFINIC	64742-64-0	≤3															
					DISTILLATES (PETROLEUM), SOLVENT-REFINED HEAVY PARAFFINIC	64741-88-4	≤3															
	CAM2 PROMAX TRACTOR HYDRAULIC FLUID	PRO PERFORMANCE		HYDRAULIC FLUID	PETROLEUM DISTILLATES, SOLVENT-DEWAXED HEAVY PARAFFINIC, DISTILLATES, PETROLEUM HYDROTREATED HEAVY PARAFFINIC	64742-65-0	75.75-95	400°F	ND	ND	ND	LIQUID	(64742-54-7) > 2000 mg/kg (64742-65-0) > 5000 mg/kg	ND	(64742-54-7) >2 g/kg (64742-65-0) >5 g/kg	COMB. LIQ, CLASS IIIB	120	ND	ND	1	1	0
						64742-54-7	0-15.10-17															
	CHAMPION -20 DEGREE WINDSHIELD WASH	CHAMPION PACKAGING & DISTRIBUTION	UN1987	WINDSHIELD WASHER FLUID	PHOSPHORODITHIOIC ACID, O,O-DI-C1-14 ALKYLESTERS, ZINC SALTS	68649-42-3	0.7-2.7	101°F	ND	ND	188°F	LIQUID	5628 mg/kg	83.2mg/L 4h = 64000ppm	15800mg/kg	COMB. LIQ, CLASS II	120	ND	ND	1	3	0
	PRO GLOBAL ANTIFREEZE	PRO PERFORMANCE		ANTIFREEZE /COOLANT	ETHYLENE GLYCOL	107-21-1	ND	250°F	ND	ND	226°F	LIQUID	ND	ND	ND	COMB. LIQ, CLASS IIIB	120	ND	ND	2	1	0
					DIETHYLENE GLYCOL	111-46-6	ND															
					WATER SOLIDS	7732-18-5	ND															
	USED OIL	SAFETY- KLEEN SYSTEMS, INC	N.A	HYDRAULIC OIL	LUBRICATING OILS, USED	70514-12-4	80-100	>200°F	ND	ND	ND	LIQUID	ND	ND	ND	COMB. LIQ,CLASS IIIB	275	ND	ND	1	1	0
					WATER SOLIDS	7732-18-5	0-20															
					HYDROCARBON SOLVENTS , (MAY INCLUDE GASOLINE DIESEL FUEL, JET FUEL, MINERAL SPIRITS, ETC.)	NA	0-10															
					METALS (MAY INCLUDE LEAD, IRON, ZINC, COPPER, CHROMIUM, ARSENIC, NICKEL AND OTHERS EACH BELOW 1.0)	NA	0-1.5															
					POLYNUCLEAR AROMATICS, (MAY INCLUDE NAPHTHALENE, FLUORANTHENE, PHENANTHRENE, PYRENE AND OTHERS. EACH BELOW 0.3)	NA	0-1.0															
					CHLORINATED SOLVENTS	NA	0-0.5															
	OXYGEN, COMPRESSED GAS	OXYGEN, COMPRESSED		OXYGEN	OXYGEN	7782-44-7	100	NA	ND	ND	-297°F	GAS	ND	ND	ND	OXIDIZER/CLASS II	300	ND	ND	0	0	0
	ACETYLENE	WISARN INTERNATIONAL GAS & CYL INC	UN1001	ACETYLENE	ACETYLENE	74-86-2	100	NA	ND	ND	NA	GAS	ND	ND	ND	FLAMMABLE GAS/ LIQUEFIED	76	ND	ND	1	4	3

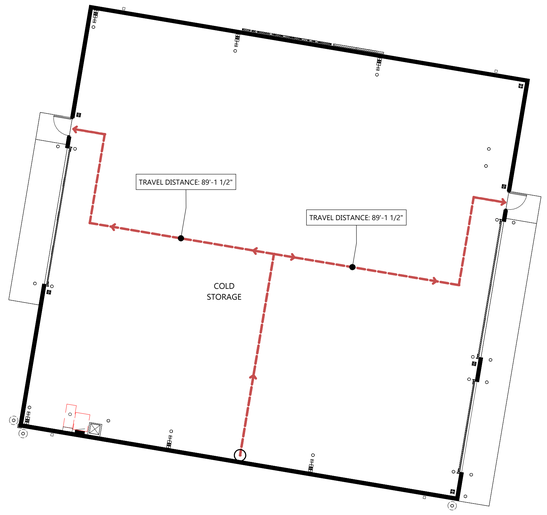
* BOILING TEMP AT 20% EVAPORATION PER ASTM D86 STANDARD TEST METHOD FOR DISTILLATION OF PETROLUM WAS ONLY NOTED FOR MATERIAL WITH A BOILING RANGED LOWER THAN 100°F
** NR; TOXICITY AND CORROSIVE EXPOSURE LIMITS ARE BELOW ICC THRESHOLDS FOR CLASSIFICATION OF THIS MATERIAL, "--"; SDS SHEET DOES NOT REPORT TOXICOLOGICAL OR CORROSIVITY INFORMATION
*** HIGHEST PERCENTAGE CHEMICAL COMPONENT IN MATERIAL SOLUTION
NA = NOT APPLICABLE
ND = NOT DETERMINED
NT = NOT BEEN TESTED

M.A.Q. PER CONTROL AREA

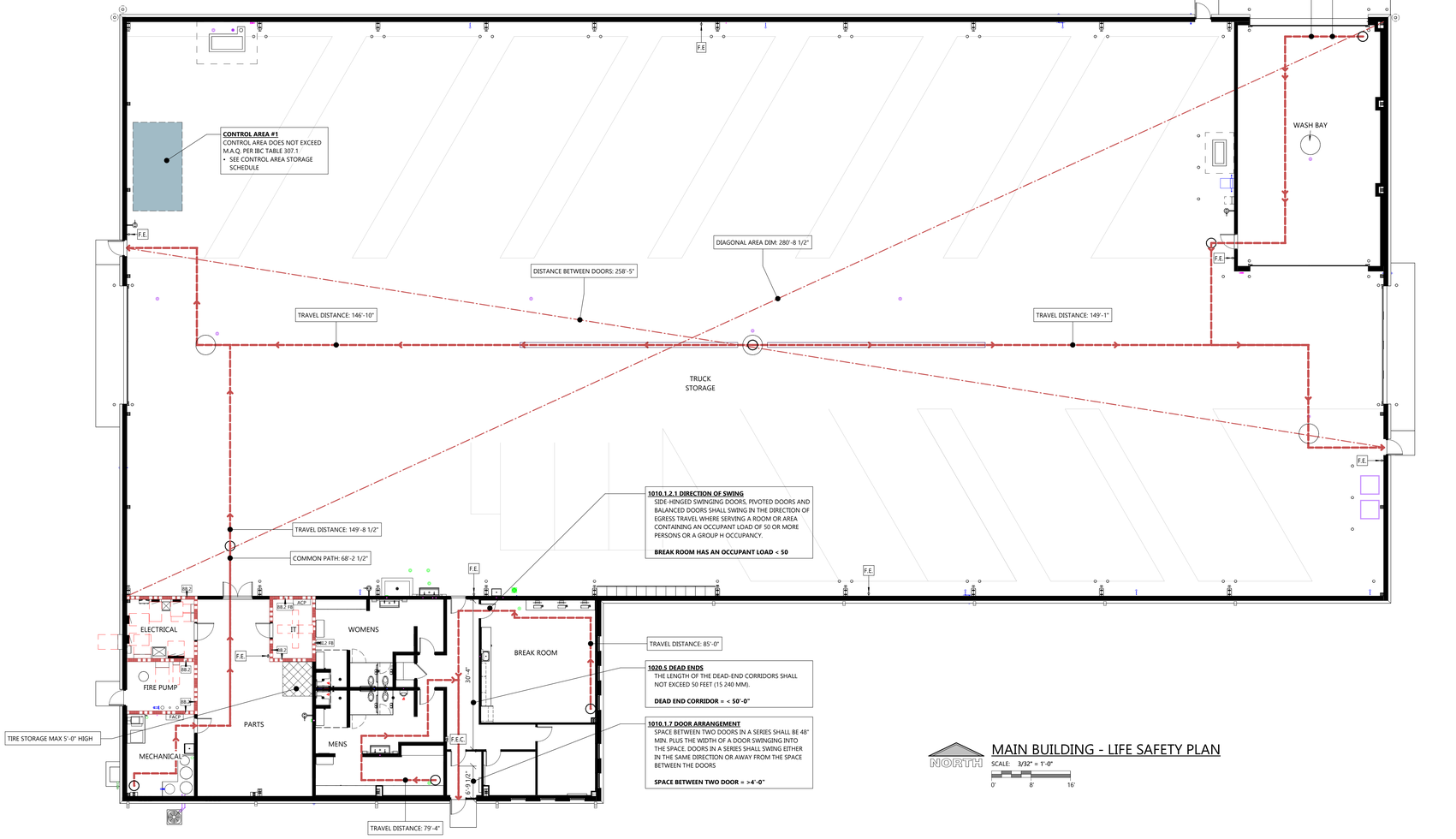
CALCULATIONS ARE BASED ON THE FOLLOWING CODES:
IBC 2021: TABLE 307.1/IFC 2021 TABLE 5003.1.1

CONTROL AREAS	MATERIAL CLASSIFICATION	MAXIMUM ALLOWABLE QUANTITY	TOTAL QUANTITIES PROVIDED
C.A. #1	COMB. LIQ. CLASS II	360 GAL (a)	**120 GAL.**
	COMB. LIQ. CLASS IIIB	13,200 GAL	**635 GAL.**
	OXIDIZER CLASSII	750 CUBIC FEET (a)	**300 CUBIC FEEET**
	FLAMMABLE GAS LIQUEFIED	450 LBS (a)	**76 LBS**

(a) = MAQ HAS BEEN INCREASED PER TABLE 307.1 FOOTNOTES "d" & "e"



NORTH
COLD STORAGE - LIFE SAFETY PLAN
SCALE: 3/32" = 1'-0"
0' 8' 16'



NORTH
MAIN BUILDING - LIFE SAFETY PLAN
SCALE: 3/32" = 1'-0"
0' 8' 16'

LIFE SAFETY INFORMATION

FIRE SUPPRESSION AND FIRE ALARM

2021 IBC SECTION 903.2
THE MAIN BUILDING IS FULLY EQUIPPED w/ AN AUTOMATIC SPRINKLER SYSTEM PER N.F.P.A. 13

903.2.10 GROUP S-2 PARKING GARAGES:
AN AUTOMATIC SPRINKLER SYSTEM SHALL BE PROVIDED THROUGHOUT BUILDINGS CLASSIFIED AS PARKING GARAGES WHERE THE FIRE AREA OF THE ENCLOSED PARKING GARAGE IN ACCORDANCE WITH SECTION 406.6 EXCEEDS 12,000 SQUARE FEET

COLD STORAGE < 12,000 SF

MEANS OF EGRESS

2021 IBC SECTION 1005.3.1
STAIRWAY EGRESS WIDTH PER OCCUPANT SERVED = 0.3"
• SEE PLANS FOR EGRESS WIDTH

2021 IBC SECTION 1005.3.2
EGRESS WIDTH PER OCCUPANT SERVED = 0.2"
• SEE PLANS FOR EGRESS WIDTH

2021 IBC TABLE 1006.2.1
• B OCCUPANCY = 100 FT. MAX COMMON PATH TRAVEL DISTANCE (SPRINKLERED)
• S OCCUPANCY = 100 FT. MAX COMMON PATH TRAVEL DISTANCE (SPRINKLERED)
• S OCCUPANCY (OL > 30) = 75 FT. MAX COMMON PATH TRAVEL DISTANCE (NOT SPRINKLERED)

2021 IBC TABLE 1010.2.9 PANIC AND FIRE EXIT HARDWARE
SWINGING DOORS SERVING A SPACES WITH AN OCCUPANT LOAD OF 50 OR MORE IN A GROUP A OR E OCCUPANCY SHALL NOT BE PROVIDED WITH A LATCH OR LOCK OTHER THAN PANIC HARDWARE OR FIRE EXIT HARDWARE.

BREAK ROOM HAS AN OCCUPANT LOAD < 50

2021 IBC TABLE 1010.2.9.2 ROOMS WITH ELECTRICAL EQUIPMENT
EXIT OR EXIT ACCESS DOORS SERVING TRANSFORMER VAULTS, ROOMS DESIGNATED FOR BATTERIES OR ENERGY STORAGE SYSTEMS, OR MODULAR DATA CENTERS SHALL BE EQUIPPED WITH PANIC HARDWARE OR FIRE EXIT HARDWARE. ROOMS CONTAINING ELECTRICAL EQUIPMENT RATED 800 AMPERES OR MORE THAT CONTAIN OVERCURRENT DEVICES, SWITCHING DEVICES OR CONTROL DEVICES AND WHERE THE EXIT OR EXIT ACCESS DOOR IS LESS THAN 25 FEET (7620 MM) FROM THE EQUIPMENT WORKING SPACE AS REQUIRED BY NFPA 70, SUCH DOORS SHALL NOT BE PROVIDED WITH A LATCH OR LOCK OTHER THAN PANIC HARDWARE OR FIRE EXIT HARDWARE. THE DOORS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL.

2021 IBC TABLE 1017.2
• S-1 OCCUPANCY = 250 FT. EXIT ACCESS TRAVEL DISTANCE (SPRINKLERED)
• B OCCUPANCY = 300 FT. EXIT ACCESS TRAVEL DISTANCE (SPRINKLERED)
• S-2 OCCUPANCY = 400 FT. EXIT ACCESS TRAVEL DISTANCE (SPRINKLERED)
• S-2 OCCUPANCY = 300 FT. EXIT ACCESS TRAVEL DISTANCE (NOT SPRINKLERED)

2021 IBC TABLE 1020.2
REQUIRED CORRIDOR FIRE-RESISTANCE RATING (WITH A SPRINKLER SYSTEM)
• A, B, & S OCCUPANCIES = 0 HOUR

2021 IBC SECTION 1020.5 DEAD ENDS
IN OCCUPANCIES IN GROUPS B AND S WHERE THE BUILDING IS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1, THE LENGTH OF THE DEAD-END CORRIDORS SHALL NOT EXCEED 50 FEET (15 240 MM).

HAZARDOUS MATERIALS

2021 IFC 3404.5 FIRE SAFETY PLAN
THE OWNER OR INDIVIDUAL IN CHARGE OF THE TIRE STORAGE SHALL BE REQUIRE TO PREPARE AND SUBMIT TO THE FIRE CODE OFFICIAL A FIRE SAFETY PLAN FOR REVIEW AND APPROVAL. THE FIRE SAFETY PLAN SHALL INCLUDE PROVISIONS FOR FIRE DEPARTMENT VEHICLE ACCESS. NOT LESS THAT ONE COPY OF THE FIRE SAFETY PLAN SHALL BE PROMINENTLY POSTED AND MAINTAINED AT THE STORAGE YARD.

2021 IFC_5004.1 SCOPE
...STORAGE OF HAZARDOUS MATERIALS IN AMOUNTS NOT EXCEEDING THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA AS SET FORTH IN SECTION 5003.1 SHALL BE IN ACCORDANCE WITH SECTIONS 5001 AND 5003...

QUANTITIES TO NOT EXCEED MAQ PER IFC TABLE 5003.1.1/IBC TABLE 307.1

2021 IFC 5703.4 SPILL CONTROL AND SECONDARY CONTAINMENT
WHERE THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA IS EXCEEDED, AND WHERE REQUIRED BY SECTION 5004.2, ROOMS, BUILDINGS OR AREAS USED FOR STORAGE, DISPENSING, USE, MIXING OR HANDLING OF CLASS I, II AND IIIA LIQUIDS SHALL BE PROVIDED WITH SPILL CONTROL AND SECONDARY CONTAINMENT IN ACCORDANCE WITH SECTION 5004.2.

QUANTITIES TO NOT EXCEED MAQ PER IFC TABLE 5003.1.1/IBC TABLE 307.1

2019 NFPA 13 3.3.124* MISCELLANEOUS TIRE STORAGE
THE STORAGE OF RUBBER TIRES THAT IS INCIDENTAL TO THE MAIN USE OF THE BUILDING; STORAGE AREAS DO NOT EXCEED 2,000 SF

STORAGE AREA OF TIRES = < 2,000 SF

ACCEPTABLE STORAGE ARRANGEMENTS INCLUDE (A) ON-FLOOR, ON-SIDE STORAGE UP TO 12 FT. (3.7m) HIGH; (B) ON-FLOOR, ON-TREAD STORAGE UP TO 5 FT. (1.5m) HIGH; (C) DOUBLE-ROW OR MULTIROW FIXED OR PORTABLE RACK STORAGE ON-SIDE OR ON TREAD UP TO 5 FT. (1.5m) HIGH; (D) SINGLE-ROW FIXED OR PORTABLE RACK STORAGE ON-SIDE OR ON-TREAD UP TO 12 FT. (3.7m) HIGH; AND (E) LACED TIRES IN RACK UP TO 5 FT. (1.5m) IN HEIGHT.

HEIGHT OF TIRE STORAGE = <.5'-0"

KEY PLAN
GENERAL LIFE SAFETY PLAN

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
T1.2

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SCHEDULE OF SPECIAL INSPECTIONS

SCHEDULE OF SPECIAL INSPECTIONS SERVICES			
MATERIAL / ACTIVITY	**SERVICE**	**APPLICABLE Y/N**	**EXTENT**
1705.1.1 SPECIAL CASES			
SPECIAL INSPECTIONS AND TESTS SHALL BE REQUIRED FOR ANY PROPOSED WORK THAT IS, IN THE OPINION OF THE BUILDING OFFICIAL, UNUSUAL IN ITS NATURE.	AS REQ'D BY BUILDING OFFICIAL	Y	AS REQ'D BY BUILDING OFFICIAL
SPECIAL INSPECTIONS AND TESTS SHALL BE REQUIRED FOR ANY WORK INCLUDED AS DELEGATED DESIGN. DELEGATED DESIGNER TO PROVIDE SPECIAL INSPECTION REQUIREMENTS WITHIN DRAWINGS.	AS REQ'D BY DELEGATED DESIGNER	Y	AS REQ'D BY DELEGATED DESIGNER
1705.2.1 STRUCTURAL STEEL CONSTRUCTION			
1. FABRICATOR AND ERECTOR DOCUMENTS (VERIFY REPORTS AND CERTIFICATES AS LISTED IN AISC 360, SECTION N 3.2 FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS)	SUBMITTAL REVIEW	Y	EACH SUBMITTAL
2. MATERIAL VERIFICATION OF STRUCTURAL STEEL	SHOP AND FIELD INSPECTION	Y	PERIODIC
3. STRUCTURAL STEEL WELDING:			
A. INSPECTION TASKS PRIOR TO WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-1)	SHOP AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED
B. INSPECTION TASKS DURING WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-2)	SHOP AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED
C. INSPECTION TASKS AFTER WELDING (OBSERVE, OR PERFORM FOR EACH WELDED JOINT OR MEMBER, THE QA TASKS LISTED IN AISC 360, TABLE N5.4-3)	SHOP AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED
D. NONDESTRUCTVE TESTING (NDT) OF WELDED JOINTS:			
1) COMPLETE PENETRATION GROOVE WELDS 5/16" OR GREATER IN RISK CATEGORY III OR IV	SHOP OR FIELD ULTRASONIC TESTING - 100%	N	PERIODIC
2) COMPLETE PENETRATION GROOVE WELDS 5/16" OR GREATER IN RISK CATEGORY II	SHOP OR FIELD ULTRASONIC TESTING - 10% OF WELDS MINIMUM	Y	PERIODIC
3) WELDED JOINTS SUBJECT TO FATIGUE WHEN REQUIRED BY AISC 360, APPENDIX 3, TABLE A-3.1	SHOP OR FIELD RADIOGRAPHIC OR ULTRASONIC TESTING	Y	PERIODIC
4) FABRICATOR'S NDT REPORTS WHEN FABRICATOR PERFORMS NDT	VERIFY REPORTS	Y	EACH SUBMITTAL
4. STRUCTURAL STEEL BOLTING:			
A. INSPECTION TASKS PRIOR TO BOLTING (OBSERVE, OR PERFORM TASKS FOR EACH BOLTED CONNECTION, IN ACCORDANCE WITH QA TASKS LISTED IN AISC 360, TABLE N5.6-1)	SHOP AND FIELD INSPECTION	Y	OBSERVE OR PERFORM AS NOTED
B. INSPECTION TASKS DURING BOLTING (OBSERVE THE QA TASKS LISTED IN AISC 360, TABLE N5.6-2)	SHOP AND FIELD INSPECTION	Y	OBSERVE
1) PRE-TENSIONED AND SLIP-CRITICAL JOINTS			
A) TURN-OF-NUT WITH MATCHING MARKINGS	SHOP AND FIELD INSPECTION	N	PERIODIC
B) DIRECT TENSION INDICATOR	SHOP AND FIELD INSPECTION	N	PERIODIC
C) TWIST-OFF TYPE TENSION CONTROL BOLT	SHOP AND FIELD INSPECTION	N	PERIODIC
D) TURN-OF-NUT WITHOUT MATCHING MARKINGS	SHOP AND FIELD INSPECTION	N	CONTINUOUS
E) CALIBRATED WRENCH	SHOP AND FIELD INSPECTION	N	CONTINUOUS
2) SNUG-TIGHT JOINTS	SHOP AND FIELD INSPECTION	Y	PERIODIC
C. INSPECTION TASKS AFTER BOLTING (PERFORM TASKS FOR EACH BOLTED CONNECTION IN ACCORDANCE WITH QA TASKS LISTED IN AISC 360, TABLE N5.6-3)	SHOP AND FIELD INSPECTION	Y	PERFORM
5. VISUAL INSPECTION OF EXPOSED CUT SURFACES OF GALVANIZED STRUCTURAL STEEL MAIN MEMBERS AND EXPOSED CORNERS OF THE RECTANGULAR HSS FOR CRACKS SUBSEQUENT TO GALVANIZING	SHOP OR FIELD INSPECTION	Y	PERIODIC
6. EMBEDMENTS (VERIFY DIAMETER, GRADE, TYPE, LENGTH, EMBEDMENT. SEE 1705.3 FOR ANCHORS)	FIELD INSPECTION	Y	PERIODIC
7. VERIFY MEMBER LOCATIONS, BRACES, STIFFENERS, AND APPLICATION OF JOINT DETAILS AT EACH CONNECTION COMPLY WITH CONSTRUCTION DOCUMENTS	FIELD INSPECTION	Y	PERIODIC
1705.2.2 COLD-FORMED STEEL DECK			**NOT APPLICABLE**
1705.2.3 OPEN-WEB STEEL JOISTS AND JOIST GIRDERS			**NOT APPLICABLE**
1705.2.4 COLD-FORMED STEEL TRUSSES SPANNING 60 FEET OR GREATER			**NOT APPLICABLE**
1705.3 CONCRETE CONSTRUCTION			
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	SHOP AND FIELD INSPECTION	Y	PERIODIC
2. REINFORCING BAR WELDING:			
A. VERIFICATION OF WELDABILITY OF BARS OTHER THAN ASTM A706.	SHOP AND FIELD INSPECTION	Y	PERIODIC
B. INSPECTION OF SINGLE-PASS FILLET WELDS 5/16 OR LESS IN SIZE.	SHOP AND FIELD INSPECTION	Y	PERIODIC
C. INSPECTION OF ALL OTHER WELDS.	SHOP AND FIELD INSPECTION	Y	CONTINUOUS
3. INSPECTION OF ANCHORS CAST IN CONCRETE.	SHOP AND FIELD INSPECTION	Y	PERIODIC
4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS PER RESEARCH REPORTS. OR, IF NO SPECIFIC REQUIREMENTS ARE PROVIDED. REQUIREMENTS SHALL BE PROVIDED BY THE REGISTERED DESIGN PROFESSIONAL AND APPROVED BY THE BUILDING OFFICIAL, INCLUDING VERIFICATION OF ANCHOR TYPE, ANCHOR DIMENSIONS, HOLE DIMENSIONS, HOLE CLEANING PROCEDURES, ANCHOR SPACING, EDGE DISTANCES, CONCRETE MINIMUM THICKNESS, ANCHOR EMBEDMENT AND TIGHTENING TORQUE			PERIODIC OR AS REQUIRED BY THE RESEARCH REPORT ISSUED BY AN APPROVED SOURCE
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY-INCLINED ORIENTATION THAT RESIST SUSTAINED TENSION LOADS.	FIELD INSPECTION	N	CONTINUOUS
B. MECHANICAL AND ADHESIVE ANCHORS NOT DEFINED IN 4A.	FIELD INSPECTION	Y	PERIODIC
5. VERIFY USE OF APPROVED DESIGN MIX	SHOP AND FIELD INSPECTION	Y	PERIODIC
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	SHOP AND FIELD INSPECTION	Y	CONTINUOUS
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	SHOP AND FIELD INSPECTION	Y	CONTINUOUS
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	SHOP AND FIELD INSPECTION	Y	PERIODIC
9. INSPECTION OF PRESTRESSED CONCRETE:			
A. APPLICATION OF PRESTRESSING FORCE	SHOP AND FIELD INSPECTION	N	CONTINUOUS
B. GROUTING OF BONDED PRESTRESSING TENDONS	SHOP AND FIELD INSPECTION	N	CONTINUOUS
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS	FIELD INSPECTION	Y	PERIODIC
11. FOR PRECAST CONCRETE DIAPHRAGM CONNECTIONS OR REINFORCEMENT AT JOINTS CLASSIFIED AS MODERATE OR HIGH DEFORMABILITY ELEMENTS (MDE OR HDE) IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E, OR F, INSPECT SUCH CONNECTIONS AND REINFORCEMENT IN THE FIELD FOR:			
A. INSTALLATION OF THE EMBEDDED PARTS.	FIELD INSPECTION	N	CONTINUOUS
B. COMPLETION OF THE CONTINUITY OF REINFORCEMENT ACROSS JOINTS.	FIELD INSPECTION	N	CONTINUOUS
C. COMPLETION OF CONNECTIONS IN THE FIELD.	FIELD INSPECTION	N	CONTINUOUS
12. INSPECT INSTALLATION TOLERANCES OF PRECAST CONCRETE DIAPHRAGM CONNECTIONS FOR COMPLIANCE WITH ACI 550.5.	FIELD INSPECTION	N	PERIODIC
13. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	REVIEW FIELD TESTING AND LABORATORY REPORTS	N	PERIODIC
14. INSPECTION OF FORMWORK FOR SHAPE, LINES, LOCATION AND DIMENSIONS	FIELD INSPECTION	Y	PERIODIC
15. CONCRETE STRENGTH TESTING AND VERIFICATION OF COMPLIANCE WITH CONSTRUCTION DOCUMENTS	FIELD TESTING AND REVIEW OF LABORATORY REPORTS	Y	PERIODIC
1705.4 MASONRY CONSTRUCTION			
MINIMUM VERIFICATION REQUIREMENTS			
(A) LEVEL 1, 2 AND 3 QUALITY ASSURANCE:			
1. PRIOR TO CONSTRUCTION, VERIFICATION OF COMPLIANCE OF SUBMITTALS	SUBMITTAL REVIEW	Y	PRIOR TO CONSTRUCTION
(B) LEVEL 2 & 3 QUALITY ASSURANCE:			
1. PRIOR TO CONSTRUCTION VERIFICATION OF F'M AND F'AAC EXCEPT WHERE SPECIFICALLY EXEMPTED BY THE CODE	TESTING BY UNIT STRENGTH METHOD OR PRISM TEST METHOD	Y	PRIOR TO CONSTRUCTION
2. DURING CONSTRUCTION, VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) WHEN SELF-CONSOLIDATING GROUT IS DELIVERED TO PROJECT SITE.	TESTING BY UNIT STRENGTH METHOD OR PRISM TEST METHOD	Y	PERIODIC
(C) LEVEL 3 QUALITY ASSURANCE:			
1. DURING CONSTRUCTION, VERIFICATION OF F'M AND F'AAC FOR EVERY 5,000 SF	TESTING BY UNIT STRENGTH METHOD OR PRISM TEST METHOD	N	PERIODIC
2. DURING CONSTRUCTION, VERIFICATION OF PROPORTIONS OF MATERIALS AS DELIVERED TO THE PROJECT SITE FOR PREMIXED OR PREBLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT.	FIELD INSPECTION	N	PERIODIC
(D) LEVELS 2 AND 3 QUALITY ASSURANCE:			
1. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
A. PROPORTIONS OF THE SITE-PREPARED MORTAR	FIELD INSPECTION	Y	PERIODIC
B. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES	FIELD INSPECTION	Y	PERIODIC
C. GRADE, TYPE, AND SIZE OF REINFORCEMENT, ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	FIELD INSPECTION	Y	PERIODIC
D. PRESTRESSING TECHNIQUE	FIELD INSPECTION	Y	PERIODIC
E. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY. (b) REQUIRED FOR THE FIRST 5,000 SQUARE FEET (c) REQUIRED AFTER THE FIRST 5,000 SQUARE FEET	FIELD INSPECTION	Y	LEVEL 2 - CONTINUOUS(b) LEVEL 2 - PERIODIC(c)
F. SAMPLE PANEL CONSTRUCTION	FIELD INSPECTION	Y	LEVEL 2 - PERIODIC
		Y	LEVEL 3 - CONTINUOUS
2. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:			
A. GROUT SPACE	FIELD INSPECTION	Y	LEVEL 2 - PERIODIC
		Y	LEVEL 3 - CONTINUOUS
B. PLACEMENT OF PRESTRESSING TENDONS AND...	FIELD INSPECTION	Y	PERIODIC
C. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND ANCHOR BOLTS	FIELD INSPECTION	Y	LEVEL 2 - PERIODIC
		Y	LEVEL 3 - CONTINUOUS
D. PROPORTIONS OF SITE-PREPARED GROUT AND RESTRESSING GROUT FOR BONDED TENDONS	FIELD INSPECTION	Y	PERIODIC
3. VERIFY COMPLIANCE OF THE FOLLOWING DURING CONSTRUCTION:			
A. MATERIALS AND PROCEDURES WITH THE APPROVED SUBMITTALS	FIELD INSPECTION	Y	PERIODIC
B. PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION	FIELD INSPECTION	Y	PERIODIC
C. SIZE AND LOCATION OF STRUCTURAL MEMBERS	FIELD INSPECTION	Y	PERIODIC
D. TYPE, SIZE, LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	FIELD INSPECTION	Y	LEVEL 2 - PERIODIC
		Y	LEVEL 3 - CONTINUOUS
E. WELDING OF REINFORCEMENT	FIELD INSPECTION	Y	CONTINUOUS
F. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40OF) OR HOT WEATHER (TEMPERATURE ABOVE 90 F)	FIELD INSPECTION	Y	PERIODIC
G. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	FIELD TESTING	Y	CONTINUOUS
H. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE	FIELD INSPECTION	Y	CONTINUOUS
I. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS. (b) REQUIRED FOR THE FIRST 5,000 SQUARE FEET (c) REQUIRED AFTER THE FIRST 5,000 SQUARE FEET	FIELD INSPECTION	Y	LEVEL 2 - CONTINUOUS(b) LEVEL 2 - PERIODIC(c)
		Y	LEVEL 3 - CONTINUOUS
4. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	FIELD INSPECTION	Y	LEVEL 2 - PERIODIC
		Y	LEVEL 3 - CONTINUOUS
1705.4.1 GLASS UNIT MASONRY AND MASONRY VENEER IN RISK CATEGORY IV.			**NOT APPLICABLE**
1705.5 WOOD CONSTRUCTION			**NOT APPLICABLE**
1705.5.3 MASS TIMBER CONSTRUCTION (TYPES IV-A, IV-B, AND IV-C CONSTRUCTION)			**NOT APPLICABLE**
1705.6 SOILS			
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	FIELD INSPECTION	Y	PERIODIC
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	FIELD INSPECTION	Y	PERIODIC
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	FIELD INSPECTION	Y	PERIODIC
4. DURING FILL PLACEMENT, VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	FIELD INSPECTION	Y	CONTINUOUS
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	FIELD INSPECTION	Y	PERIODIC
1705.7 DRIVEN DEEP FOUNDATIONS			**NOT APPLICABLE**
1705.8 CAST-IN-PLACE DEEP FOUNDATIONS			**NOT APPLICABLE**
1705.9 HELICAL PILE FOUNDATIONS			**NOT APPLICABLE**
1705.10 STRUCTURAL INTEGRITY OF DEEP FOUNDATION ELEMENTS			**NOT APPLICABLE**
1705.11 FABRICATED ITEMS			
1. LIST OF FABRICATED ITEMS REQUIRING SPECIAL INSPECTION DURING FABRICATION:	SHOP INSPECTION	Y	AS NOTED IN EACH APPLICABLE SHOP ACTIVITY
2. LIST OF FABRICATED ITEMS TO BE FABRICATED ON THE PREMISES OF A FABRICATOR APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION (INCLUDING NAME OF APPROVED AGENCY PROVIDING PERIODIC AUDITING):		Y	
1705.12.1 STRUCTURAL WOOD SPECIAL INSPECTIONS FOR WIND RESISTANCE			**NOT APPLICABLE**
1705.12.2 COLD-FORMED STEEL SPECIAL INSPECTIONS FOR WIND RESISTANCE			**NOT APPLICABLE**
1705.12.3 WIND-RESISTING COMPONENTS			**NOT APPLICABLE**
1705.13.1 STRUCTURAL STEEL SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.2 STRUCTURAL WOOD SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.3 COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.4 DESIGNATED SEISMIC SYSTEMS VERIFICATION SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.5 ARCHITECTURAL COMPONENTS SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.6 PLUMBING, MECHANICAL AND ELECTRICAL COMPONENTS SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.7 STORAGE RACKS SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.13.8 SEISMIC ISOLATION SYSTEMS			**NOT APPLICABLE**
1705.13.9 COLD-FORMED STEEL SPECIAL BOLTED MOMENT FRAMES			**NOT APPLICABLE**
1705.14.1 STRUCTURAL STEEL TESTING FOR SEISMIC RESISTANCE			**NOT APPLICABLE**
1705.14.2 SEISMIC CERTIFICATION OF NONSTRUCTURAL COMPONENTS			**NOT APPLICABLE**
1705.14.3 SEISMIC CERTIFICATION OF DESIGNATED SEISMIC SYSTEMS			**NOT APPLICABLE**
1705.14.4 SEISMIC ISOLATION SYSTEMS			**NOT APPLICABLE**
1705.15 SPRAYED FIRE-RESISTANT MATERIALS			**NOT APPLICABLE**
1705.16 MASTIC AND INTUMESCENT FIRE-RESISTIVE MATERIALS			
SPECIAL INSPECTION SHALL BE PERFORMED DURING CONSTRUCTION WITH AN ADDITIONAL VISUAL INSPECTION AFTER THE ROUGH INSTALLATION OF ELECTRICAL, SPRINKLERS, MECHANICAL AND PLUMBING SYSTEMS AND SUSPENSION SYSTEMS FOR CEILINGS, AND BEFORE CONCEALMENT WHERE APPLICABLE.		Y	
INSPECT AND TEST MASTIC AND INTUMESCENT FIRE-RESISTIVE MATERIALS APPLIED TO STRUCTURAL ELEMENTS AND DECKS PER AWCI 12-B	FIELD INSPECTION AND TESTING	N	PERIODIC
1705.17 EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)			**NOT APPLICABLE**
1705.18 FIRE-RESISTANT PENETRATIONS AND JOINTS			
1. INSPECT PENETRATION FIRESTOP SYSTEMS	FIELD TESTING	Y	PER ASTM E2174
2. INSPECT FIRE-RESISTANT JOINT SYSTEMS	FIELD TESTING	Y	PER ASTM E2393
1705.19 SMOKE CONTROL SYSTEMS			**NOT APPLICABLE**
1705.20 SEALING OF MASS TIMBER CONSTRUCTION			**NOT APPLICABLE**

GENERAL SPECIAL INSPECTIONS

EXCEL

Always a Better Plan

100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

T2.0

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PROPOSED FACILITIES FOR:

OUTAGAMIE COUNTY HIGHWAY

HORTONIA, WI

PROJECT INFORMATION

SITE INFORMATION:

LEGAL DESCRIPTION: Lot 1 of Certified Survey Map No. 8809 recorded in the office of the Register of Deeds for Outagamie County, Wisconsin, on January 20, 2025, as Document No. 2330427, being a redivision of being a part of the Southwest 1/4 of the Southwest 1/4 and part of the Southeast 1/4 of the Southwest 1/4 of Section 27, Township 22 North, Range 15 East, Town of Hortonia, Outagamie County, Wisconsin .

TAX KEY NUMBER: 120040701

PROPERTY AREA: 522,736 S.F. (12.00 ACRES).

EXISTING ZONING: A-2 GENERAL AG DISTRICT

PROPOSED ZONING: A-2 GENERAL AG DISTRICT (USE REQUIRES CONDITIONAL USE PERMIT)

EXISTING USE: VACANT

PROPOSED USE: COUNTY HIGHWAY DEPARTMENT FACILITY

AREA OF SITE DISTURBANCE: 517,040 SF (11.87 AC)

SETBACKS:
BUILDING: FRONT (SOUTH) = 50'
SIDE (EAST) = 20'
STREET (NORTH) = 50'
STREAM (WEST) = 75'

PAVEMENT: FRONT (SOUTH) = 50'
SIDE (EAST) = 25' DUE TO ADJACENT RESIDENTIAL
STREET (NORTH/WEST) - 50'

PROPOSED BUILDING HEIGHT: 34' 2"

PARKING REQUIRED: 1 SPACE PER EMPLOYEE ON LARGEST SHIFT (12 EMPLOYEES, 12 REQ.)

PARKING PROVIDED: 14 SPACES (1 H.C. ACCESSIBLE)
(SPACE ALLOCATED FOR 11 FUTURE SPACES)

HANDICAP STALLS REQUIRED: 1 REQUIRED, 1 PROVIDED

EXISTING SITE DATA

	AREA (AC)	AREA (SF)	RATIO
BUILDING FLOOR AREA	0.00	0	0.0%
PAVEMENT (ASP. & CONC.)	0.00	0	0.0%
TOTAL IMPERVIOUS	0.00	0	0.0%
LANDSCAPE/ OPEN SPACE	12.00	522,736	100.0%
PROJECT SITE	12.00	522,736	100.0%

PROPOSED SITE DATA

	AREA (AC)	AREA (SF)	RATIO
BUILDING FLOOR AREA	0.93	40,700	7.8%
PAVEMENT (ASP. & CONC.)	4.13	179,906	34.4%
TOTAL IMPERVIOUS	5.06	220,606	42.2%
LANDSCAPE/ OPEN SPACE	6.94	302,130	57.8%
PROJECT SITE	12.00	522,736	100.0%

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN
CALL DIGGERS HOTLINE
1-800-242-8511
TOLL FREE TELEFAX (414) 259-0947
TDD (FOR THE HEARING IMPAIRED)
1-800 542-2289
WISCONSIN STATUTE 182.0175 (1974)
REQUIRES MINIMUM OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE

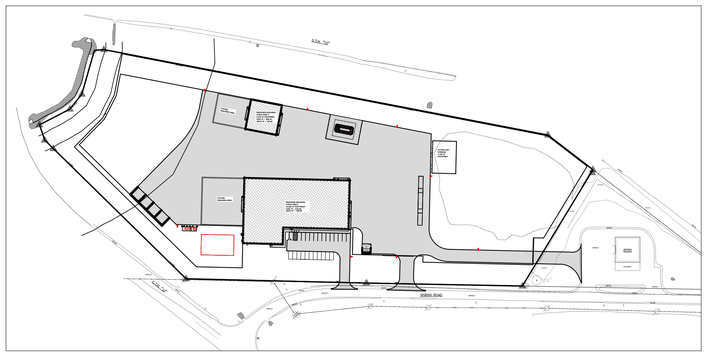
PROJECT CONTACTS

OWNER INFORMATION:
OUTAGAMIE COUNTY HIGHWAY DEPT
CURTIS RIEDY
1313 HOLLAND RD
APPLETON WI 54911
Phone: (920) 832-5673
Email: Curtis.Riedy@outagamie.org

CIVIL:
JASON DAYE
Phone: (920) 322-1687
E-mail: jason.d@excelengineer.com

TOWN PLANNER/BUILDING INSPECTOR:
TOWN OF HORTONIA
PAUL HANLON
Phone: (920) 878-0024
E-mail: phanlon1955@gmail.com

FIRE CHIEF:
HORTONVILLE HORTONIA FIRE DEPT.
JACK KUHNKE
Phone: (920) 810-8089


EXISTING BUILDING
PROPOSED BUILDING
EXISTING BUILDING
EXISTING BUILDING
EXISTING

CIVIL SPECIFICATIONS

DIVISION 31 EARTH WORK

31 10 00 SITE CLEARING (DEMOLITION)

A. CONTRACTOR SHALL CALL DIGGER'S HOT LINE AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING SITE DEMOLITION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION.
B. DEMOLITION PLAN IS AN OVERVIEW OF DEMOLITION TO TAKE PLACE ON SITE. CONTRACTOR TO FIELD VERIFY EXISTING SITE CONDITIONS PRIOR TO BIDDING. CONTRACTOR SHALL REMOVE, REPLACE, OR DEMOLISH ALL ITEMS AS NEEDED DURING CONSTRUCTION.
C. CONTRACTOR TO PROTECT EXISTING IMPROVEMENTS THAT ARE SCHEDULED TO REMAIN. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPLACED AT CONTRACTORS EXPENSE.
D. ALL CONCRETE NOTED TO BE REMOVED SHALL BE REMOVED TO THE NEAREST CONTROL JOINT.

31 20 00 EARTH MOVING

A. CONTRACTOR SHALL CALL DIGGER'S HOT LINE AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING EXCAVATION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION.
B. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT FOR ALL EXCAVATION, GRADING, FILL AND BACKFILL WORK AS REQUIRED TO COMPLETE THE GENERAL CONSTRUCTION WORK. ALL EXCAVATION AND BACKFILL FOR ELECTRICALS AND MECHANICALS ARE THE RESPONSIBILITY OF THE RESPECTIVE CONTRACTOR UNLESS OTHERWISE SPECIFIED IN THE BID DOCUMENTS.
C. ALL ORGANIC TOPSOIL INSIDE THE BUILDING AREA, UNDER PAVED AREAS, AND AT SITE FILL AREAS SHALL BE REMOVED. PROOF ROLL SUBGRADES BEFORE PLACING FILL WITH HEAVY PNEUMATIC-TIRED EQUIPMENT, SUCH AS A FULLY-LOADED TANDEM AXLE DUMP TRUCK, TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. CONTRACTOR SHALL VERIFY TOPSOIL DEPTHS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REVIEW AND FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT AND ACCOUNT FOR EXISTING CONDITIONS PRIOR TO SUBMITTING BID FOR THE PROJECT. EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED IN THE PLANS OR BY LOCAL ZONING REQUIREMENTS.
D. PLACE AND COMPACT FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL LAYER BEFORE COMPACTION AS RECOMMENDED TO ACHIEVE SPECIFIED DRY DENSITY. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT IS TOO WET TO COMPACT TO SPECIFIED DRY DENSITY.
E. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
F. COMPACT THE SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D 698, STANDARD PROCTOR TEST. FILL MAY NOT BE PLACED ON FROZEN GROUND AND NO FROZEN MATERIALS MAY BE USED FOR BACK FILL. APPLY THE MORE STRINGENT REQUIREMENTS WHEN COMPARING BETWEEN THE GEOTECHNICAL REPORT.
   1. UNDER FOUNDATIONS - SUBGRADE, AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT LESS THAN 98 PERCENT.
   2. UNDER INTERIOR SLAB-ON-GRADE WHERE GROUNDWATER IS MORE THAN 3 FEET BELOW THE SLAB - PLACE A DRAINAGE COURSE LAYER OF 3/4" CRUSHED STONE, WITH 5% TO 12% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN 95 PERCENT.
   3. UNDER INTERIOR SLAB-ON-GRADE WHERE GROUNDWATER IS WITHIN 3 FEET OF THE SLAB SURFACE - PLACE A DRAINAGE COURSE LAYER OF 3/4" CRUSHED STONE, WITH MINIMUM NO MORE THAN 5% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN 95 PERCENT.
   4. UNDER EXTERIOR CONCRETE AND ASPHALT PAVEMENTS - COMPACT THE SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL TO NOT LESS THAN 95 PERCENT.
   5. UNDER WALKWAYS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL TO NOT LESS THAN 95 PERCENT.
   6. UNDER LAWN OR UNPAVED AREAS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT LESS THAN 85 PERCENT.
G. CONTRACTOR SHALL ENGAGE A QUALIFIED INDERPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF PASSING DENSITY TESTING AND PROOF-ROLLING TO ENGINEER UPON COMPLETION. IT IS SUGGESTED THAT THE GEOTECHNICAL FIRM USED TO PERFORM THE SUBFACE SOIL INVESTIGATION BE ENGAGED FOR THE FIELD QUALITY CONTROL TESTS. THE GEOTECHNICAL REPORT WAS PERFORMED BY INTERTEK PSI.
H. ALLOW THE TESTING AGENCY TO TEST AND INSPECT SUBGRADES AND EACH FILL OR BACKFILL LAYER. PROCEED WITH SUBSEQUENT EARTHWORK ONLY AFTER TEST RESULTS FOR PREVIOUSLY COMPLETED WORK COMPLY WITH REQUIREMENTS. PROVIDE ONE TEST FOR EVERY 2000 SQUARE FEET OF PAVED AREA OR BUILDING SLAB, ONE TEST FOR EACH SPREAD FOOTING, AND ONE TEST FOR EVERY 50 LINEAR FEET OF WALL STRIP FOOTING.
I. WHEN THE TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS HAVE NOT ACHIEVED DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.
J. THE BUILDING SITE SHALL BE GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING AS INDICATED ON THE PLANS. SITE EARTHWORK SHALL BE GRADED TO WITHIN 0.10' OF REQUIRED EARTHWORK ELEVATIONS ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH THE GRADING PLAN.

31 30 00 EROSION CONTROL/STORMWATER MANAGEMENT

A. THE EXCEL ENGINEERING DESIGN ENGINEER SHALL PREPARE A SITE SPECIFIC EROSION CONTROL AND A STORMWATER MANAGEMENT PLAN PURSUANT TO NR 216.46 AND NR 216.47. THE DESIGN ENGINEER SHALL ALSO FILE A CONSTRUCTION NOTICE OF INTENT WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES PURSUANT TO NR 216.43 OR TO AN AUTHORIZED LOCAL PROGRAM PURSUANT TO NR 216.415 TO OBTAIN COVERAGE UNDER THE GENERAL WPDES STORM WATER PERMIT.
B. THE CONTRACTOR SHALL KEEP THE NOTICE OF INTENT PERMIT, APPROVED EROSION CONTROL AND STORMWATER MANAGEMENT PLANS, AND PLAN AMENDMENTS ON THE CONSTRUCTION SITE AT ALL TIMES PURSUANT TO NR 216.455 UNTIL PERMIT COVERAGE IS TERMINATED.
C. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL EROSION CONTROL PERMITS.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE MONITORING, MAINTENANCE, AND REPORTING REQUIREMENTS OF NR 216.48. INSPECTIONS OF IMPLEMENTED EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MUST AT A MINIMUM BE INSPECTED EVERY 7 CALENDAR DAYS OR EVERY 14 DAYS AND WITHIN 24 HOURS OF THE END OF A RAIN EVENT OF 0.5" OR MORE. A RAIN EVENT MAY BE CONSIDERED TO BE THE TOTAL AMOUNT OF PRECIPITATION RECORDED IN ANY CONTINUOUS 24-HOUR PERIOD. THE CONTRACTOR SHALL REPAIR OR REPLACE EROSION AND SEDIMENT CONTROL AS NECESSARY WITHIN 24 HOURS OF AN INSPECTION OR AFTER A DEPARTMENT NOTIFICATION WHERE REPAIR OR REPLACEMENT IS REQUESTED.
E. THE CONTRACTOR SHALL MAINTAIN, AT THE CONSTRUCTION SITE OR AVAILABLE VIA AN INTERNET WEBSITE, WEEKLY WRITTEN REPORTS OF ALL INSPECTIONS CONDUCTED. WISCONSIN DNR CONSTRUCTION SITE INSPECTION REPORT FORM 3400-187 SHALL BE USED. WEEKLY INSPECTION REPORTS SHALL INCLUDE ALL OF THE FOLLOWING:
   1. THE DATE, TIME, AND LOCATION OF THE CONSTRUCTION SITE INSPECTION.
   2. THE NAME OF THE INDIVIDUAL WHO PERFORMED THE INSPECTION.
   3. AN ASSESSMENT OF THE CONDITION OF THE EROSION AND SEDIMENT CONTROLS.
   4. A DESCRIPTION OF ANY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE IMPLEMENTATION AND MAINTENANCE PERFORMED.
   5. A DESCRIPTION OF THE PRESENT PHASE OF LAND DISTURBING CONSTRUCTION ACTIVITY AT THE CONSTRUCTION SITE.
F. EROSION AND SEDIMENT CONTROL IMPLEMENTED DURING CONSTRUCTION SHALL STRICTLY COMPLY WITH THE GUIDELINES AND REQUIREMENTS SET FORTH IN WISCONSIN ADMINISTRATIVE CODE (W.A.C.) NR 151, THE STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES RUNOFF MANAGEMENT PERFORMANCE STANDARDS. TECHNICAL STANDARDS PUBLISHED BY THE WISCONSIN DNR SHALL ALSO BE UTILIZED TO IMPLEMENT THE REQUIRED PERFORMANCE STANDARDS. THE METHODS AND TYPES OF EROSION CONTROL WILL BE DEPENDENT ON THE LOCATION AND TYPE OF WORK INVOLVED. ALL SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION, AND INSTALLED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. BELOW IS A LIST OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES TO ACHIEVE THE PERFORMANCE STANDARDS REQUIRED.
   1. SILT FENCE SHALL BE PLACED ON SITE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE SHALL ALSO BE PROVIDED AROUND THE PERIMETER OF ALL SOIL STOCKPILES THAT WILL EXIST FOR MORE THAN 7 DAYS. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1056 (CURRENT EDITION).
   2. DITCH CHECKS SHALL BE PROVIDED TO REDUCE THE VELOCITY OF WATER FLOWING IN DITCH BOTTOMS. PLACE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1062 (CURRENT EDITION).
   3. STONE TRACKING PADS AND TRACKOUT CONTROL PRACTICES SHALL BE PLACED AT ALL CONSTRUCTION SITE ENTRANCES AND SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE CONSTRUCTION SITE. SEE THE EROSION CONTROL PLAN FOR LOCATIONS. THE AGGREGATE USED FOR THE STONE TRACKING PAD SHALL BE 3/8" TO 3 INCH CLEAR OR WASHED STONE AND SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. THE STONE SHALL BE UNDERLAIN WITH A WISDOT TYPE R GEOTEXTILE FABRIC AS NEEDED. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT (12' MIN WIDTH) AND SHALL BE A MINIMUM OF 50 FEET LONG. SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. OTHER TRACKOUT CONTROL PRACTICES INCLUDING STABILIZED WORK SURFACES, MANUFACTURED TRACKOUT CONTROL DEVICES, TIRE WASHING, AND STREET/PAVEMENT CLEANING SHALL BE IMPLEMENTED AS NECESSARY TO MITIGATE THE TRACKOUT OF SEDIMENT ONTSITE. FOLLOW PROCEDURES FOUND IN WISCONSIN TECHNICAL STANDARDS 1057 (CURRENT EDITION).
   4. STORM DRAIN INLET PROTECTION SHALL BE PROVIDED FOR ALL NEW AND DOWNSTREAM STORM CATCH BASINS AND DRAIN INLETS. TYPE B OR C PROTECTION SHALL BE PROVIDED AND SHALL BE IN CONFORMANCE WITH WISCONSIN DNR TECHNICAL STANDARD 1060 (CURRENT EDITION).
   5. DUST CONTROL MEASURES SHALL BE PROVIDED TO REDUCE OR PREVENT THE SURFACE AND AIR TRANSPORT OF DUST DURING CONSTRUCTION. CONTROL MEASURES INCLUDE APPLYING MULCH AND ESTABLISHING VEGETATION, WATER SPRAYING, SURFACE ROUGHENING, APPLYING POLYMERS, SPRAY-ON TACKIFIERS, CHLORIDES, AND BARRIERS. SOME SITES MAY REQUIRE AN APPROACH THAT UTILIZES A COMBINATION OF MEASURES FOR DUST CONTROL. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1068 (CURRENT EDITION).
   6. THE USE, STORAGE, AND DISPOSAL OF CHEMICALS, CEMENT, AND OTHER COMPOUNDS AND MATERIALS USED ON SITE SHALL BE MANAGED DURING THE CONSTRUCTION PERIOD TO PREVENT THEIR TRANSPORT BY WIND AND/OR WATER OFF SITE.
   7. CONTRACTOR SHALL PROVIDE AN OPEN AGGREGATE CONCRETE TRUCK WASHOUT AREA ON SITE. CONTRACTOR TO ENSURE THAT CONCRETE WASHOUT SHALL BE CONTAINED TO THIS DESIGNATED AREA AND NOT BE ALLOWED TO RUN INTO STORM INLETS OR INTO THE OVERLAND STORMWATER DRAINAGE SYSTEM. WASHOUT AREA SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION.
   8. TEMPORARY SITE RESTORATION SHALL TAKE PLACE IN DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE OR WHICH LAND DISTURBING ACTIVITIES WILL NOT BE PERFORMED FOR A PERIOD GREATER THAN 14 DAYS AND REQUIRES VEGETATIVE COVER FOR LESS THAN ONE YEAR. THIS TEMPORARY SITE RESTORATION REQUIREMENT ALSO APPLIES TO SOIL STOCKPILES THAT EXIST FOR MORE THAN 7 DAYS. REMOVAL AND REINFORCING SUPPORTS SHALL BE IN ACCORDANCE WITH CRSI AND ACI MANUAL AND STANDARD PRACTICES. THE REINFORCEMENT SHALL NOT BE PAINTED AND MUST BE FREE OF GREASE/OIL, DIRT OR DEEP RUST WHEN PLACED IN THE WORK. ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A 1064. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB, UNLESS INDICATED OTHERWISE.
   9. IF SITE DEWATERING IS REQUIRED FOR PROPOSED CONSTRUCTION ACTIVITIES, ALL SEDIMENT LADEN WATER GENERATED DURING THE DEWATERING PROCESS SHALL BE TREATED TO REMOVE SEDIMENT PRIOR TO DISCHARGING OFF-SITE OR TO WATERS OF THE STATE. FOLLOW ALL PROCEDURES FOUND IN TECHNICAL STANDARD 1061.
   10. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION WORK OR A STORM EVENT SHALL BE CLEANED UP BY THE END OF EACH WORKING DAY. DUST CONTROL REQUIREMENTS SHALL BE FOLLOWED PER DNR TECHNICAL STANDARD 1068 (CURRENT EDITION). FLUSHING SHALL NOT BE ALLOWED.
G. EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL THE AREA(S) SERVED HAVE ESTABLISHED VEGETATIVE COVER.
H. ONCE THE CONSTRUCTION SITE HAS BEEN FULLY STABILIZED AND TEMPORARY EROSION CONTROL BEST MANAGEMENT PRACTICES HAVE BEEN REMOVED, THE CONTRACTOR SHALL FILE A CONSTRUCTION NOTICE OF TERMINATION WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES IN ACCORDANCE WITH NR 216.55.
I. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL GIVE THE OWNER COPIES OF THE EROSION CONTROL AND STORM WATER MANAGEMENT PLANS, AMENDMENTS TO PLANS, SUPPORTING PLAN DATA, AND CONSTRUCTION STORMWATER EROSION CONTROL INSPECTION REPORTS. THE OWNER SHALL RETAIN THESE FOR A PERIOD OF 3 YEARS FROM THE DATE OF TERMINATING COVERAGE UNDER WPDES GENERAL PERMIT.
J. ALL POST CONSTRUCTION STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES SHALL BE CONSTRUCTED BEFORE THE SITE HAS UNDERGONE FINAL STABILIZATION.

DIVISION 32 EXTERIOR IMPROVEMENTS

32 10 00 AGGREGATE BASE & ASPHALT PAVEMENT

A. CONTRACTOR TO PROVIDE COMPACTED AGGREGATE BASE AND HOT MIX ASPHALT PAVEMENT WHERE INDICATED ON THE PLANS. ALL AGGREGATE PROVIDED MUST COMPLY WITH SECTION 305 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. PROVIDE HOT MIX ASPHALT MIXTURE TYPES PER SECTION 460 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. CONTRACTOR SHALL OBTAIN AND REVIEW SOILS REPORT FOR RECOMMENDATIONS FOR GEO-GRID / GEOTEXTILE BELOW AGGREGATE (IF APPLICABLE). CONTRACTOR TO PROVIDE AGGREGATE BASE AND HOT MIX ASPHALT PAVEMENT TYPES AND DEPTHS AS INDICATED BELOW:

HEAVY ASPHALT PAVING SECTION
1"-1/2" SURFACE COURSE (5 LT 58-285)
(WISDOT 455.2.5 TACK COAT (STAGED PAVING)
2" BINDER COURSE (4 LT 58-285)
12" OF 1-1/4" CRUSHED AGGREGATE

STANDARD ASPHALT PAVING SECTION
1-1/2" SURFACE COURSE (5 LT 58-285)
(WISDOT 455.2.5 TACK COAT (STAGED PAVING)
2" BINDER COURSE (4 LT 58-285)
7" OF 1-1/4" CRUSHED AGGREGATE

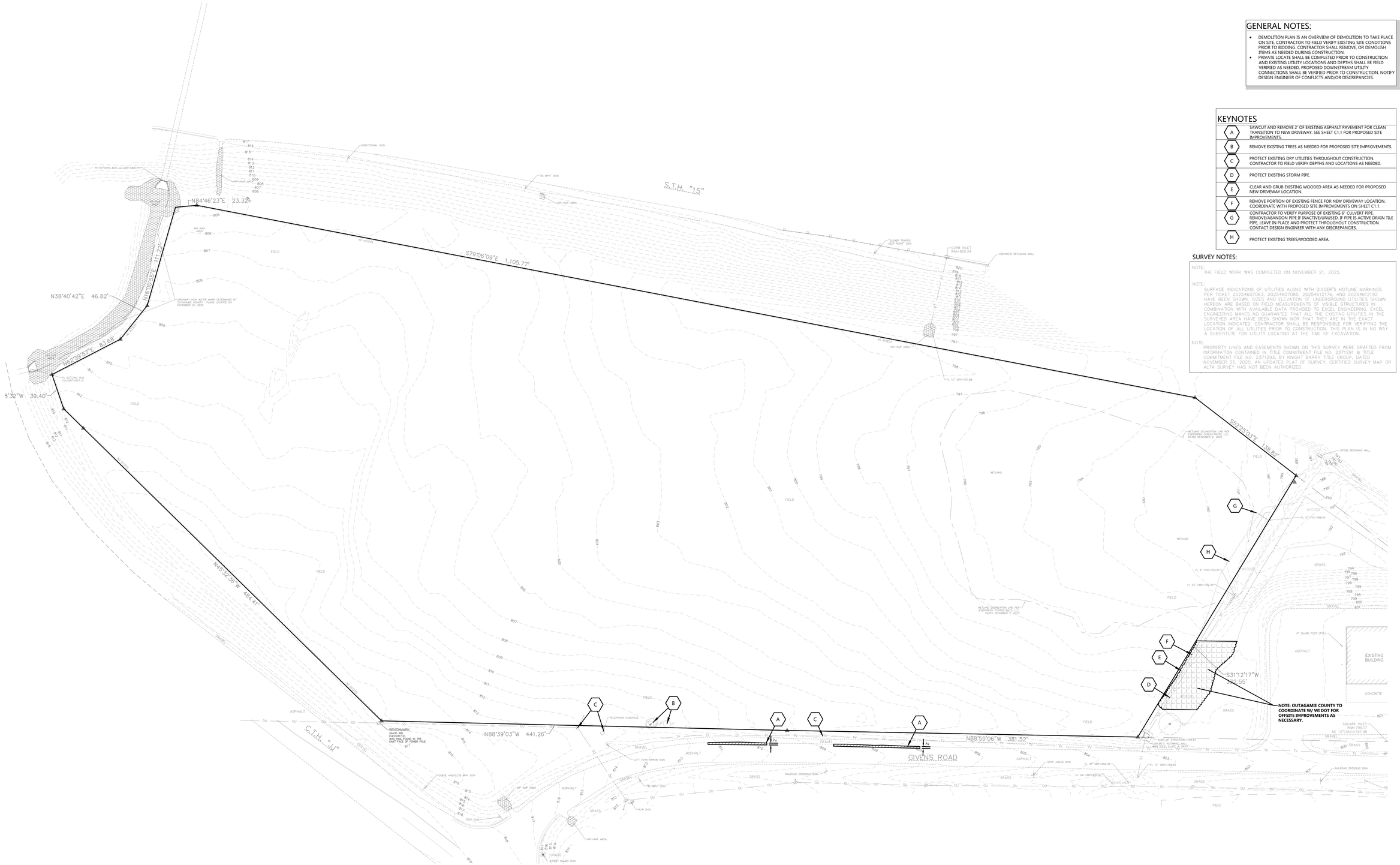
B. CONTRACTOR TO COMPACT THE AGGREGATE BASE, ASPHALT BINDER COURSE, AND ASPHALT SURFACE COURSE TO AN AVERAGE DENSITY PER WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. ALL ASPHALT PAVEMENT AREAS SHALL BE PAVED TO WITHIN 0.05' OF DESIGN SURFACE GRADES WITH POSITIVE DRAINAGE BEING MAINTAINED IN ACCORDANCE WITH DESIGN PLANS. A MINIMUM OF 1% SLOPE SHALL BE MAINTAINED IN ALL ASPHALT PAVEMENT AREA.
C. HOT MIX ASPHALT CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF GEOTECHNICAL REPORT OR CONSTRUCTION DOCUMENTS.
D. CONTRACTOR TO PROVIDE 4" WIDE YELLOW PAINTED STRIPING FOR PARKING STALLS, TRAFFIC LANES, AND NO PARKING AREAS. YELLOW PAINT MARKINGS SHALL ALSO BE PROVIDED FOR H.C. ACCESSIBLE SYMBOLS, TRAFFIC ARROWS, AND TRAFFIC MESSAGES. CONTRACTOR SHALL CONFIRM PARKING STALL STRIPING COLOR WITH OWNER PRIOR TO PERFORMING PAVEMENT MARKINGS.

32 20 00 CONCRETE AND AGGREGATE BASE

A. CONTRACTOR TO PROVIDE CRUSHED AGGREGATE BASE AND CONCRETE WHERE INDICATED ON THE PLANS.
B. ALL AGGREGATE PROVIDED MUST COMPLY WITH SECTION 305 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. ALL AGGREGATE PLACED MUST BE COMPACTED TO AN AVERAGE DENSITY PER WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.
C. DESIGN AND CONSTRUCTION OF ALL CAST-IN-PLACE EXTERIOR CONCRETE FLAT WORK SHALL CONFORM TO ACI 330R-08 & ACI 318-08.
D. EXTERIOR CONCRETE FLAT WORK CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF THE GEOTECHNICAL REPORT OR THIS SPECIFICATION. CONCRETE FLAT WORK CONSTRUCTION IS AS FOLLOWS:
   1. SIDEWALK CONCRETE - 4" OF CONCRETE OVER 4" OF 3/4" CRUSHED AGGREGATE BASE. CONTRACTION JOINTS SHALL CONSIST OF 1/8" WIDE BY 1" DEEP TOOLED JOINT WHERE INDICATED ON THE PLANS.
   2. HEAVY DUTY CONCRETE - 8" OF CONCRETE OVER 6" OF 3/4" CRUSHED AGGREGATE BASE.
      a. CONCRETE SHALL BE REINFORCED WITH ONE OF THE FOLLOWING AND PLACED IN THE UPPER 1/3 TO ½ OF THE SLAB:
         1) 4"X4" W5.5XW5.5 W.W.F
         2) TWO LAYERS OF 4"X4" W 2.9XW2.9 W.W.F.
         3) #3 REBARS AT 7-1/2" O.C.
         4) #4 REBARS AT 13" O.C.
      b. HEAVY DUTY CONCRETE JOINTING SHALL BE AS FOLLOWS:
         1) CONTRACTION SAWCUT JOINT -CONTRACTOR SHALL PROVIDE A SAWCUT JOINT AT MAXIMUM SPACING OF 15' ON CENTER. SAWCUT JOINT SHALL BE 2" IN DEPTH.
         2) TYPICAL POUR CONTROL JOINT - POUR CONTROL JOINT SHALL BE PROVIDED WITH 1-1/4" DIAMETER BY 20" LONG SMOOTH DOWEL PLACED AT 12" ON CENTER. ONE HALF OF THE DOWEL SHALL BE GREASED. GREENSTREAK 9" SPEED DOWEL TUBES SHALL BE USED.
E. DESIGN MIXES SHALL BE IN ACCORDANCE WITH ASTM C94
   1. STRENGTH TO BE MINIMUM OF 4,500 PSI AT 28 DAYS FOR EXTERIOR CONCRETE.
   2. MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45.
   3. SLUMP SHALL NOT EXCEED 4" FOR EXTERIOR CONCRETE FLAT WORK
   4. SLUMP SHALL BE 2.5" OR LESS FOR SLIP-FORMED CURB AND GUTTER
   5. SLUMP SHALL BE BETWEEN 1.5" TO 3" FOR NON SLIP-FORMED CURB AND GUTTER
   6. ALL EXTERIOR CONCRETE SHALL BE AIR ENTRAINED WITH 4% TO 7% AIR CONTENT. NO OTHER ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF EXCEL ENGINEERING, INC. CALCIUM CHLORIDE SHALL NOT BE USED.
   7. MAXIMUM AGGREGATE SIZE FOR EXTERIOR CONCRETE SHALL BE 0.75 INCHES.
F. VERIFY EQUIPMENT CONCRETE PAD SIZES WITH CONTRACTOR REQUIRING PAD. PADS SHALL HAVE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. OR 6 X 6-W1.4 X W1.4 WELDED WIRE MESH WITH MINIMUM 1 INCH COVER. EQUIPMENT PADS SHALL BE 6 INCHES THICK WITH 1 INCH CHAMFER UNLESS SPECIFIED OTHERWISE. CONCRETE SHALL BE PROVIDED ON 6" OF 3/4" CRUSHED AGGREGATE BASE. COORDINATE ADDITIONAL PAD REQUIREMENTS WITH RESPECTIVE CONTRACTOR.
G. ALL CONCRETE FLAT WORK SURFACES AND CONCRETE CURB FLOWLINES SHALL BE CONSTRUCTED TO WITHIN 0.05' OF DESIGN SURFACE AND FLOWLINE GRADES ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH THE DESIGN PLANS.
H. CONCRETE FLAT WORK SHALL HAVE CONSTRUCTION JOINTS OR SAW CUT JOINTS PLACED AS INDICATED ON THE PLANS OR PER THIS SPECIFICATION. SAWCUTS SHALL BE DONE AS SOON AS POSSIBLE, BUT NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. CONCRETE CURB AND GUTTER JOINTING SHALL BE PLACED EVERY 10' OR CLOSER (6' MIN.). IF CONCRETE PAVEMENT IS ADJACENT TO CONCRETE CURB, JOINTING IN THE PAVEMENT AND CURB SHALL ALIGN. ALL EXTERIOR CONCRETE SHALL HAVE A BROOM FINISH UNLESS NOTED OTHERWISE. A UNIFORM COAT OF A HIGH SOLIDS CURING COMPOUND MEETING ASTM C309 SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES. ALL CONCRETE IS TO BE CURED FOR 7 DAYS. EXTERIOR CONCRETE SHALL BE SEPARATED FROM BUILDINGS WITH CONTINUOUS 0.5 INCH FIBER EXPANSION JOINT AND/OR 0.25 INCH FIBER EXPANSION JOINT AT DECORATIVE MASONRY UNITS.
I. ALL REINFORCING BARS SHALL BE ASTM A615 GRADE 60. THICKNESS OF CONCRETE COVER OVER REINFORCEMENT SHALL BE NOT LESS THAN 3" WHERE CONCRETE IS DEPOSITED AGAINST THE GROUND WITHOUT THE USE OF FORMS AND NOT LESS THAN 1.5" FOR UP TO #5 BARS AND 2" FOR #6 TO #10 BARS IN ALL OTHER LOCATIONS. ALL REINFORCING SHALL BE LAPPED 48 DIAMETERS FOR UP TO #6 BARS, 62 DIAMETERS FOR #7 TO #9 BARS, 68 DIAMETERS FOR #10 BARS OR AS NOTED ON THE DRAWINGS AND EXTENDED AROUND CORNERS WITH CORNER BARS. PLACING AND DETAILING OF STEEL REINFORCEMENT AND REINFORCING SUPPORTS SHALL BE IN ACCORDANCE WITH CRSI AND ACI MANUAL AND STANDARD PRACTICES. THE REINFORCEMENT SHALL NOT BE PAINTED AND MUST BE FREE OF GREASE/OIL, DIRT OR DEEP RUST WHEN PLACED IN THE WORK. ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A 1064. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB, UNLESS INDICATED OTHERWISE.
J. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT. TESTS WILL BE PERFORMED ACCORDING TO ACI 301. CAST AND LABORATORY CURE ONE SET OF FOUR STANDARD CYLINDERS FOR EACH COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIX EXCEPT FOR 50 CU. YD. BUT LESS THAN 25 CU. YD., FOR ONE SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF. PERFORM COMPRESSIVE-STRENGTH TESTS ACCORDING TO ASTM C 39. TEST TWO SPECIMENS AT 7 DAYS AND TWO SPECIMENS AT 28 DAYS. PERFORM SLUMP TESTING ACCORDING TO ASTM C 143. PROVIDE ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
K. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. IN HOT, DRY, AND WINDY WEATHER, APPLY AN EVAPORATION-CONTROL COMPOUND ACCORDING TO MANUFACTURER'S DIRECTIONS AFTER SCREEDING AND BULL FLOATING, BUT BEFORE POWER FLOATING AND TROWELLING.
L. LIMIT MAXIMUM WATER-CEMENTITIOUS RATIO OF CONCRETE EXPOSED TO FREEZING, THAWING AND DEICING SALTS TO 0.45.
M. TEST RESULTS WILL BE REPORTED IN WRITING TO THE DESIGN ENGINEER, READY-MIX PRODUCER, AND CONSTRUCTOR WITHIN 24 HOURS AFTER TESTS. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF CONCRETE BATCH IN STRUCTURE, COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7-DAY TESTS AND 28-DAY TESTS.

32 30 00 LANDSCAPING AND SITE STABILIZATION

A. TOPSOIL: CONTRACTOR TO PROVIDE A MINIMUM OF 6" OF TOPSOIL FOR ALL DISTURBED OPEN AREAS. REUSE SURFACE SOIL STOCKPILED ON SITE AND SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF SITE SOURCES WHEN QUANTITIES ARE INSUFFICIENT. EXCAVATOR SHALL BE RESPONSIBLE FOR ROUGH PLACEMENT OF TOPSOIL TO WITHIN 1" OF FINAL GRADE PRIOR TO LANDSCAPER FINAL GRADING. LANDSCAPER TO PROVIDE PULVERIZING AND FINAL GRADING OF TOPSOIL. PROVIDE SOIL ANALYSIS BY A QUALIFIED SOIL TESTING LABORATORY AS REQUIRED TO VERIFY THE SUITABILITY OF SOIL TO BE USED AS TOPSOIL AND TO DETERMINE THE NECESSARY SOIL AMENDMENTS. TEST SOIL FOR PRESENCE OF ATRAZINE AND INFORM EXCEL ENGINEERING, INC. IF PRESENT PRIOR TO BIDDING PROJECT. TOPSOIL SHALL HAVE A PH RANGE OF 5.5 TO 8, CONTAIN A MINIMUM OF 5 PERCENT ORGANIC MATERIAL CONTENT, AND SHALL BE FREE OF STONES 1 INCH OR LARGER IN DIAMETER. ALL MATERIALS HARMFUL TO PLANT GROWTH SHALL BE REMOVED.
B. TOPSOIL INSTALLATION: LOOSEN SUBGRADE TO A MINIMUM DEPTH OF 6 INCHES AND REMOVE STONES LARGER THAN 1" IN DIAMETER. ALSO REMOVE ANY STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER AND DISPOSE OF THEM OFF THE PROPERTY. SPREAD TOPSOIL TO A DEPTH OF 6" BUT NOT LESS THAN WHAT IS REQUIRED TO MEET FINISHED GRADES AFTER LIGHT ROLLING AND NATURAL SETTLEMENT. DO NOT SPREAD TOPSOIL IF SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET. GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN 0.05 FEET OF FINISHED GRADE ELEVATION.
C. SEEDED LAWNS:
   1. PERMANENT LAWN AREAS SHALL BE SEEDED WITH THE FOLLOWING MIXTURE: 65% KENTUCKY BLUEGRASS BLEND (2.0-2.6 LBS./1,000 S.F.), 20% PERENNIAL RYEGRASS (0.6-0.8 LBS./1,000 S.F.), 15% FINE FESCUE (0.4-0.6 LBS/1,000 S.F.). STRAW AND MULCH SHALL BE LAID AT 100LBS/1,000 S.F. FERTILIZE AS PER SOIL TEST OR APPLY 5-10-10 OR EQUIVALENT AT 5-6 LBS/1,000 S.F. SEE EROSION MATTING SPECIFICATIONS AS REQUIRED. ALL SITE DISTURBED AREAS NOT DESIGNATED FOR OTHER LANDSCAPING AND SITE STABILIZATION METHODS SHALL BE SEEDED AS PERMANENT LAWN. NO BARE



GENERAL NOTES:

- DEMOLITION PLAN IS AN OVERVIEW OF DEMOLITION TO TAKE PLACE ON SITE. CONTRACTOR TO FIELD VERIFY EXISTING SITE CONDITIONS PRIOR TO BIDDING. CONTRACTOR SHALL REMOVE, OR DEMOLISH ITEMS AS NEEDED DURING CONSTRUCTION.
- PRIVATE LOCATE SHALL BE COMPLETED PRIOR TO CONSTRUCTION AND EXISTING UTILITY LOCATIONS AND DEPTHS SHALL BE FIELD VERIFIED AS NEEDED. PROPOSED DOWNSTREAM UTILITY CONNECTIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION. NOTIFY DESIGN ENGINEER OF CONFLICTS AND/OR DISCREPANCIES.

KEYNOTES

A	SAWCUT AND REMOVE 2' OF EXISTING ASPHALT PAVEMENT FOR CLEAN TRANSITION TO NEW DRIVEWAY. SEE SHEET C1.1 FOR PROPOSED SITE IMPROVEMENTS.
B	REMOVE EXISTING TREES AS NEEDED FOR PROPOSED SITE IMPROVEMENTS.
C	PROTECT EXISTING DRY UTILITIES THROUGHOUT CONSTRUCTION. CONTRACTOR TO FIELD VERIFY DEPTHS AND LOCATIONS AS NEEDED.
D	PROTECT EXISTING STORM PIPE.
E	CLEAR AND GRUB EXISTING WOODED AREA AS NEEDED FOR PROPOSED NEW DRIVEWAY LOCATION.
F	REMOVE PORTION OF EXISTING FENCE FOR NEW DRIVEWAY LOCATION. COORDINATE WITH PROPOSED SITE IMPROVEMENTS ON SHEET C1.1.
G	CONTRACTOR TO VERIFY PURPOSE OF EXISTING 6" CULVERT PIPE. REMOVE/ABANDON PIPE IF INACTIVE/UNUSED. IF PIPE IS ACTIVE DRAIN TILE PIPE, LEAVE IN PLACE AND PROTECT THROUGHOUT CONSTRUCTION. CONTACT DESIGN ENGINEER WITH ANY DISCREPANCIES.
H	PROTECT EXISTING TREES/WOODED AREA.

SURVEY NOTES:

NOTE:
THE FIELD WORK WAS COMPLETED ON NOVEMBER 21, 2025.

NOTE:
SURFACE INDICATIONS OF UTILITIES ALONG WITH DIGGER'S HOTLINE MARKINGS PER TICKET 20254607063, 20254607085, 20254612176, AND 20254612192 HAVE BEEN SHOWN. SIZES AND ELEVATION OF UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON FIELD MEASUREMENTS OF VISIBLE STRUCTURES IN COMBINATION WITH AVAILABLE DATA PROVIDED TO EXCEL ENGINEERING. EXCEL ENGINEERING MAKES NO GUARANTEE THAT ALL THE EXISTING UTILITIES IN THE SURVEYED AREA HAVE BEEN SHOWN NOR THAT THEY ARE IN THE EXACT LOCATION INDICATED. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THIS PLAN IS IN NO WAY A SUBSTITUTE FOR UTILITY LOCATING AT THE TIME OF EXCAVATION.

NOTE:
PROPERTY LINES AND EASEMENTS SHOWN ON THIS SURVEY WERE DRAFTED FROM INFORMATION CONTAINED IN TITLE COMMITMENT FILE NO. 2371291 & TITLE COMMITMENT FILE NO. 2371293, BY KNIGHT BARRY TITLE GROUP, DATED NOVEMBER 25, 2025. AN UPDATED PLAT OF SURVEY, CERTIFIED SURVEY MAP OR ALTA SURVEY HAS NOT BEEN AUTHORIZED.

SCALE: 1" = 40'
40' 0 40' 80'
NORTH

CIVIL EXISTING SITE AND DEMOLITION PLAN

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
C1.0

LEGEND:

HATCH	PAVEMENT SECTION
	STANDARD ASPHALT
	HEAVY DUTY ASPHALT
	SIDEWALK CONCRETE
	8" HEAVY DUTY CONCRETE

SEE SHEET C0.2 FOR SPECIFICATIONS.

GENERAL NOTES:

- A KNOX BOX SHALL BE PROVIDED AT THE PRIMARY BUILDING ENTRANCE(S) PER LOCAL REQUIREMENTS. CONTRACTOR TO COORDINATE REQUIREMENTS W/ LOCAL BUILDING INSPECTOR OR FIRE DEPARTMENT AS NEEDED.

KEYNOTES

1	CONCRETE STOOP (SEE STRUCTURAL PLANS FOR DETAILS)
2	RAISED WALK (SEE DETAIL)
3	CONCRETE SIDEWALK
6	ADA SIDEWALK RAMP (SEE DETAIL)
11	CONCRETE PAD FOR TRANSFORMER & GENERATOR, FINAL PAD DESIGN TO BE VERIFIED W/ EQUIPMENT SUPPLIERS, SEE ELECTRICAL PLANS FOR EQUIPMENT REQUIREMENTS. SEE ARCH/STRUCT PLAN FOR SEPARATION WALL BETWEEN UNITS. (CONTRACTOR TO VERIFY FINAL LOCATION AND PAD DESIGN WITH SELECTED EQUIPMENT AS NEEDED.)
12	HANDICAP SIGN PER STATE CODE (SEE DETAIL)
13	HANDICAP STALL & STRIPING PER STATE CODES
16	DUMPSTER ENCLOSURE (SEE ARCH PLANS FOR DETAILS)
17	6" CONCRETE BOLLARDS (TYP.) (SEE ARCH PLANS FOR DETAILS)
21	DETECTABLE WARNING PLATE PER STATE CODE
23	PAINT LINE STRIPING (TYP).
25	6" CONCRETE EQUIPMENT PAD. VERIFY PAD SIZE WITH CONTRACTOR REQUIRING PAD PRIOR TO CONSTRUCTION.
27	SCALE W/ CONCRETE RAMPS/FOUNDATIONS. SEE STRUCTURAL PLANS FOR FOUNDATION DETAILS. REFER TO ARCH BID SPEC FOR ALTERNATE PRICING FOR SCALE FOUNDATION AND ASSOCIATED FEATURES.
28	FUELING ISLAND W/ CANOPY & EQUIPMENT. FINAL SIZE, DESIGN, LAYOUT, ETC BY FUELING VENDOR. REFER TO ARCH BID SPEC AND PLANS FOR ADDITIONAL INFORMATION.
29	6' TALL GALVANIZED CHAINLINK FENCE. FINAL DETAILS/SPECIFICATIONS BY SUPPLIER. CONTRACTOR TO CONFIRM FENCING STYLE AND MATERIAL W/ OWNER.
30	30' AUTOMATED SLIDE GATE. PROVIDE FIRE DEPARTMENT LOCK BOX AS REQUIRED. SLIDE GATE SHALL BE CANTILEVER TYPE. GATE OPERATOR SHALL HAVE A CLUTCH RELEASE FOR MANUALLY OPENING THE GATE. FINAL SPECIFICATIONS/DETAILS BY GATE SUPPLIER.
31	24' AUTOMATED SLIDE GATE. PROVIDE FIRE DEPARTMENT LOCK BOX AS REQUIRED. SLIDE GATE SHALL BE CANTILEVER TYPE. GATE OPERATOR SHALL HAVE A CLUTCH RELEASE FOR MANUALLY OPENING THE GATE. FINAL SPECIFICATIONS/DETAILS BY GATE SUPPLIER.
33	STANDARD 4' MAN-DOOR SWING GATE ON CHAINLINK FENCE. FINAL SPECIFICATIONS BY FENCE SUPPLIER.
34	MATERIAL STORAGE AREA CONSISTING OF CONCRETE MONSTER BLOCK UNITS FOR EXTERIOR AND INTERIOR WALL BARRIERS, 8' EXTERIOR WALL HEIGHT, 6' INTERIOR WALL HEIGHT. FINAL SPECIFICATIONS/QUANTITIES BY CONCRETE BLOCK SUPPLIER. 8" HEAVY DUTY CONCRETE SLAB PER SPECIFICATIONS.
35	NEW ASPHALT DRIVE APPROACH PER LOCAL STANDARDS (TYP.)
36	POTENTIAL SEPTIC FIELD LOCATION. FINAL LOCATION, SIZE, DESIGN, AND PERMITTING BY DESIGN-BUILD CONTRACTOR.
37	UNDERGROUND FIRE SUPPRESSION STORAGE TANKS. FINAL DESIGN BY FIRE PROTECTION CONTRACTOR.
38	STOP SIGN PER MUTCD.

SCALE: 1"= 40'

CIVIL SITE PLAN

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SHEET NUMBER

C1.1

GENERAL NOTES:

- HANDICAP STALL AND ACCESS AISLES SHALL NOT EXCEED A SLOPE OF 1.50% IN ANY DIRECTION. HANDICAP STALL & ACCESS AISLES SHALL CONFORM TO ADA REQUIREMENTS (CURRENT EDITION)
- ALL SIDEWALKS SHALL NOT EXCEED A MAXIMUM CROSS SLOPE OF 1.50% AND RUNNING SLOPE OF 4.50% UNLESS OTHERWISE SPECIFIED.
- CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ENTRANCE AT CONSTRUCTION ENTRANCE FOR PROPOSED IMPROVEMENTS AS REQUIRED PER CODE.
- CONTRACTOR SHALL PROVIDE CONCRETE WASHOUT AS REQUIRED PER CODE. FINAL LOCATION TBD BY CONTRACTOR.
- CONTRACTOR SHALL PROVIDE TEMPORARY INLET PROTECTION FOR ALL CURB INLETS & CATCH BASINS ONSITE & OFFSITE IMMEDIATELY DOWNSTREAM OF THE PROJECT SITE PER LOCAL CODE.

KEYNOTES

EC 1	SILT FENCE
EC 2	DITCH CHECK
EC 3	STABILIZED CONSTRUCTION ENTRANCE
EC 4	INLET PROTECTION
EC 5	CONCRETE WASHOUT (FINAL LOCATION BY CONTRACTOR)
EC 6	SEDIMENT LOG (CULVERT INLETS)

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JOB NUMBER

250041200

SHEET NUMBER

C1.2

SCALE: 1" = 40'
40' 0 40' 80'
NORTH

CIVIL GRADING AND EROSION CONTROL PLAN

GENERAL NOTES:

- CONTRACTOR/OWNER SHALL COORDINATE A PRIVATE LOCATE TO BE COMPLETED TO LOCATE UNDERGROUND UTILITIES AS NEEDED. EXISTING UTILITIES SHALL BE FIELD VERIFIED AND INFORMATION PROVIDED TO THE DESIGN ENGINEER AS NEEDED. DOWNSTREAM UTILITY CONNECTIONS MUST BE VERIFIED PRIOR TO CONSTRUCTION. NOTIFY DESIGN ENGINEER WITH ANY DISCREPANCIES.
- REFER TO ELECTRICAL SITE PLAN FOR EXTERIOR ELECTRICAL CONDUIT ROUTING AND ASSOCIATED ELECTRICAL REQUIREMENTS.
- FINAL DESIGN AND PERMITTING OF PRIVATE ONSITE WASTEWATER TREATMENT SYSTEMS, (POWTS) INCLUDING SEPTIC SYSTEM AND HOLDING TANK SHALL BE THE RESPONSIBILITY OF THE LICENSED DESIGN-BUILD CONTRACTOR. THIS INCLUDES ALL APPLICABLE STATE AND/OR LOCAL/COUNTY PERMITTING REQUIRED FOR INSTALLATION.

HOLDING TANK GENERAL DESIGN CRITERIA:

- MINIMUM 10,000 GALLON HOLDING CAPACITY BELOW INLET ELEVATION.
- PROVIDE LEVEL SENSOR SYSTEM & ALARM WHEN LIQUID LEVEL REACHES 1' BELOW INLET.
- PROVIDE PUMP-OUT PORT IN LOCATION DETERMINED BY OWNER.
- ALL TANK COMPONENTS, RISERS, ETC SHALL MEET H-20 TRAFFIC LOAD RATING IF LOCATED WITHIN TRAFFIC AREAS. NO CONSTRUCTION TRAFFIC OVER TANK BEFORE FINAL PAVING TAKES PLACE. FOLLOW SUPPLIER SPECIFICATIONS FOR BACKFILL AND FINAL PAVEMENT PLACEMENT OVER TANK.
- RISER COVERS TO BE NEENAH R-6462 W/ SOLID COVER BOLTED AND SEALED (TRAFFIC RATED)
- CONCRETE TANK SHALL BE COATED WITH COAL-TAR EPOXY LINER IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN.
- IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATIONS, CONCRETE DEAD-MAN ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH SUPPLIER RECOMMENDATIONS.
- ACCEPTABLE MANUFACTURERS: CREST, WEISER, OR EQUAL. FOLLOW SUPPLIER INSTALLATION GUIDELINES & REQUIREMENTS.
- FINAL SIZE, DESIGN, PERMITTING, AND INSTALLATION BY DESIGN-BUILD SEPTIC SYSTEM CONTRACTOR.

CULVERT NOTE:

- GRATES SHALL BE PROVIDED ON CULVERT INLETS WHERE NOTED ON THE PLAN. GRATES SHALL BE PROVIDED PER WI PLUMBING CODE SECTION SPS 382.36(9)(b)3.c. BARS OR RODS SHALL BE SPACED SO THAT THE OPENINGS DO NOT PERMIT THE PASSAGE OF A 6-INCH SPHERE. (6" MAX OPENING SIZE). PRE-MANUFACTURED PRODUCT OR CUSTOM DEBRIS GUARDS PERMITTED SO LONG AS REQUIREMENTS FOR SPACING ARE MET.

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PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

C1.3

SCALE: 1"= 40'

CIVIL UTILITY PLAN

PLANT SCHEDULE					
SYMBOL	COMMON NAME	BOTANICAL NAME	QUANTITY	PLANTED SIZE	ROOT
SHADE TREES					
	State Street Maple	Acer miyabi 'Morton'	3	1 1/2" CAL	B&B
EVERGREEN TREES					
	Black Hills Spruce	Picea glauca var. densata	17	4' HT.	B&B
DECIDUOUS SHRUBS					
	Iroquois Beauty Black Chokeberry	Aronia melanocarpa 'Morton'	10	3 GAL	CONT.
	Kodiak Orange Bush Honeysuckle	Diervilla x 'G2X88544'	8	3 GAL	CONT.
EVERGREEN SHRUBS					
	Green Mound Boxwood	Buxus x 'Green Mound'	15	3 GAL	CONT.

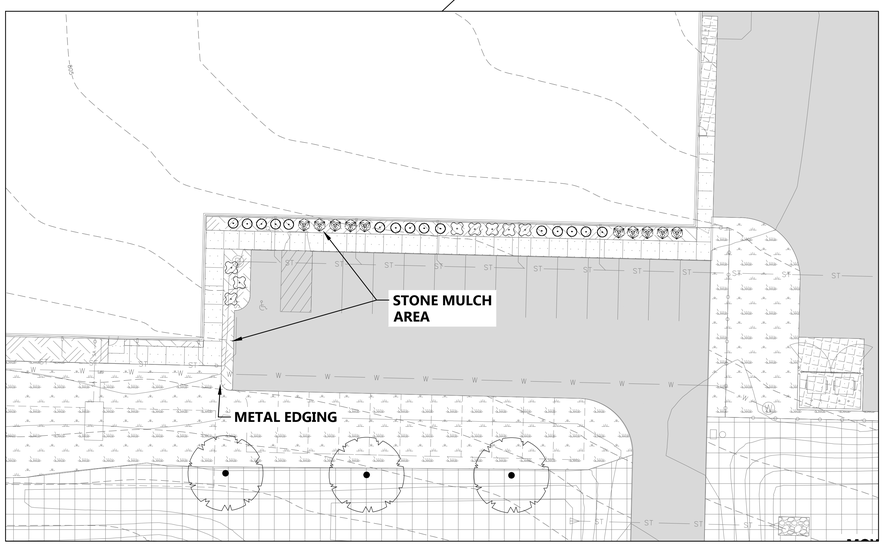
NO MOW SEEDED LAWN
NO MOW SEEDED LAWN
5' WIDE STONE MULCH MAINTENANCE STRIP ALONG NORTH EDGE OF BUILDING
5' SEEDED LAWN MOW STRIP
METAL EDGING
5' SEEDED LAWN MOW STRIP
NO MOW SEEDED LAWN
5' SEEDED LAWN MOW STRIP
NO MOW SEEDED LAWN
NO MOW SEEDED LAWN LIMITS (TYP.)
MOWED SEEDED LAWN
NO MOW SEEDED LAWN LIMITS (TYP.)
NO MOW SEEDED LAWN
NO MOW SEEDED LAWN LIMITS (TYP.)
LANDSCAPE BOULDERS PLACED NORTH OF FP TANKS.
6' WIDE STONE MULCH MAINTENANCE STRIP ALONG BUILDING
STONE MULCH AREA
MOWED SEEDED LAWN
METAL EDGING
METAL EDGING
10' SEEDED LAWN MOW STRIP
NO MOW SEEDED LAWN
10' SEEDED LAWN MOW STRIP
MOWED SEEDED LAWN
MOWED SEEDED LAWN
GIVENS ROAD
C.T.H. "JJ"
S.T.H. "15"
N84°46'23"E 23.32'
N38°40'42"E 46.82'
S79°06'09"E 1,106.27'
N88°39'03"W 441.26'
N88°39'03"W 1,321.82'

GENERAL NOTES:

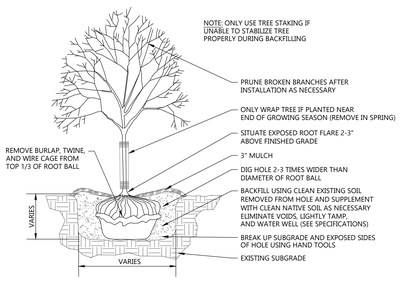
- SEE SHEET C0.2 FOR LANDSCAPE SPECIFICATIONS.
- ALL DISTURBED BARE SOIL TO BE SEEDED PER PLAN.
- STONE MULCH AREAS ADJACENT TO LAWN TO BE EDGED WITH METAL EDGING PER SPECS.

HATCH KEY:

HATCH	LANDSCAPE MATERIAL
	SEEDED LAWN
	SAFETY SHELF SEEDING PER SPECIFICATIONS ON SHEET C0.2
	STONE MULCH
	EROSION MATTING (NAG C125) OVER SEEDED LAWN (SWALE BOTTOMS & SWM)

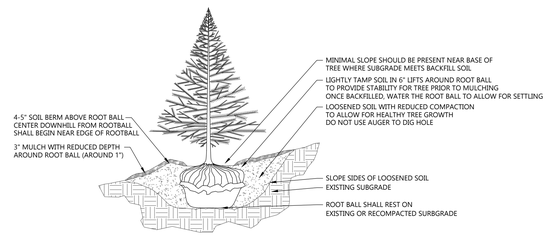


LANDSCAPE DETAIL PLAN (1" = 20')



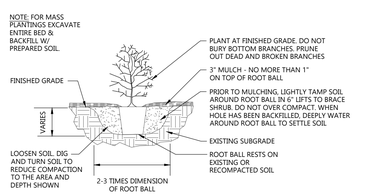
DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



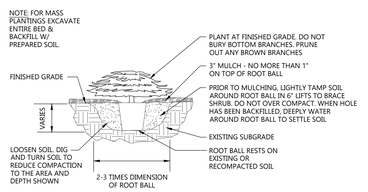
EVERGREEN TREE PLANTING ON SLOPE DETAIL

NOT TO SCALE



DECIDUOUS SHRUB PLANTING DETAIL

NOT TO SCALE



EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

SCALE: 1" = 40'
40' 0 40' 80'
NORTH

CIVIL LANDSCAPE AND RESTORATION PLAN

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

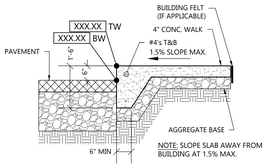
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944
NEW HIGHWAY FACILITY:

PROFESSIONAL SEAL

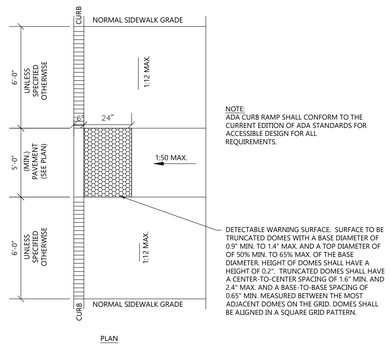
SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
C1.4



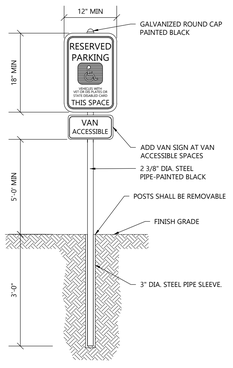
RAISED WALK DETAIL
NOT TO SCALE



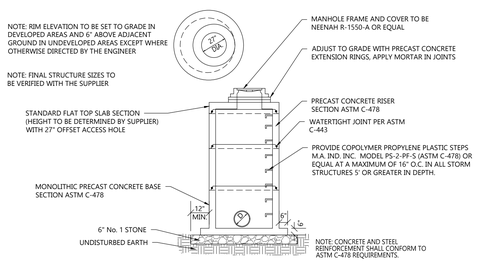
NOTE:
ADA CURB RAMP SHALL CONFORM TO THE CURRENT EDITION OF ADA STANDARDS FOR ACCESSIBLE DESIGN FOR ALL REQUIREMENTS.

DETECTABLE WARNING SURFACE. SURFACE TO BE TRUNCATED DOMES WITH A BASE DIAMETER OF 0.9" MIN. TO 1.4" MAX, AND A TOP DIAMETER OF OF 50% MIN. TO 65% MAX. OF THE BASE DIAMETER. HEIGHT OF DOMES SHALL HAVE A HEIGHT OF 0.2". TRUNCATED DOMES SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6" MIN. AND 2.4" MAX. AND A BASE-TO-BASE SPACING OF 0.65" MIN. MEASURED BETWEEN THE MOST ADJACENT DOMES ON THE GRID. DOMES SHALL BE ALIGNED IN A SQUARE GRID PATTERN.

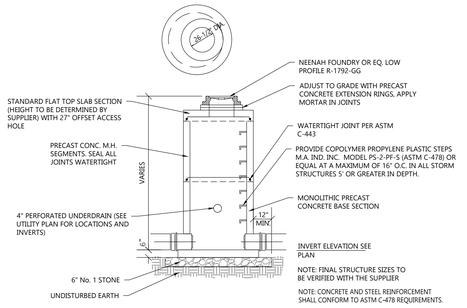
ADA SIDEWALK RAMP DETAIL
NOT TO SCALE



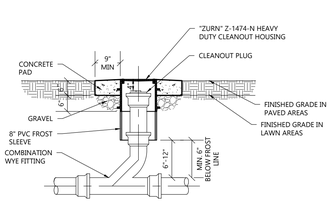
HANDICAP SIGNAGE DETAIL
NOT TO SCALE



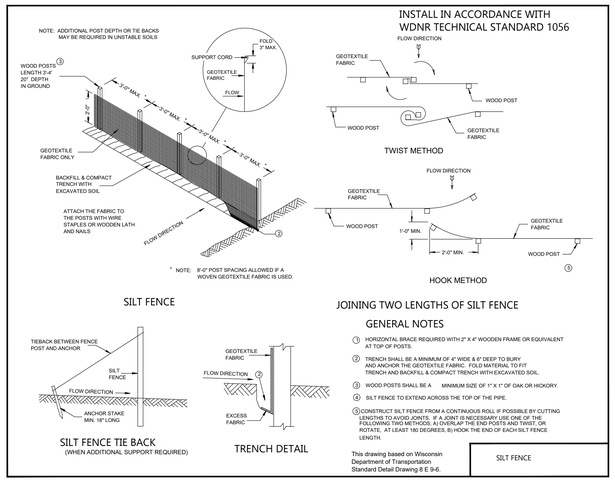
STORM MANHOLE DETAIL
NOT TO SCALE



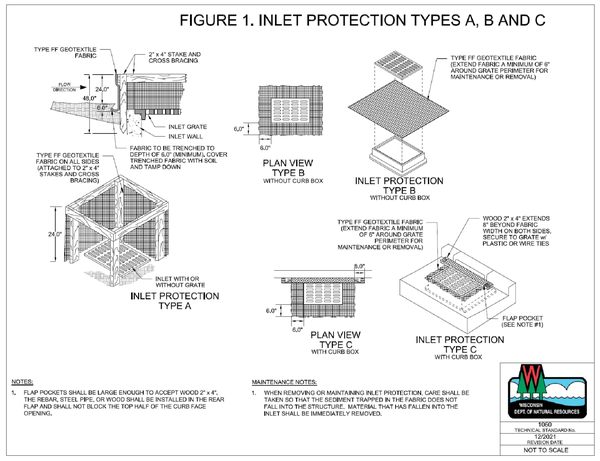
STORM CATCH BASIN DETAIL
NOT TO SCALE



CLEANOUT TO GRADE DETAIL
NOT TO SCALE



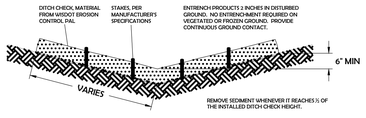
SILT FENCE - INSTALLATION DETAIL
NOT TO SCALE

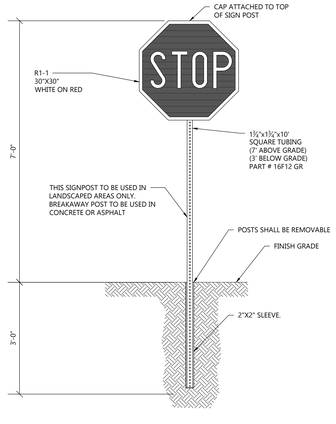


INLET PROTECTION DETAIL
NOT TO SCALE

DITCH CHECK DETAIL

LOG-TYPE DITCH CHECK





STOP SIGN DETAIL
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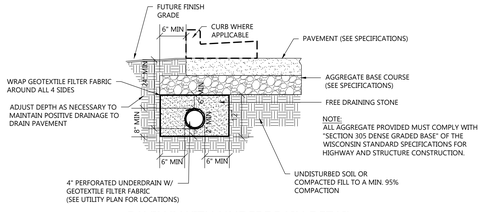
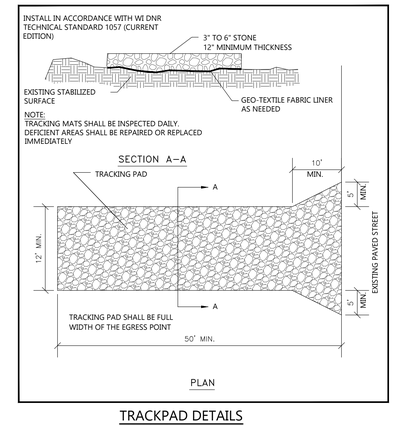


PAVING WITH UNDERDRAIN DETAIL
NOT TO SCALE



TRACKPAD DETAILS
NOT TO SCALE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

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JOB NUMBER
250041200

SHEET NUMBER
C2.0

CIVIL DETAILS

TYPE A

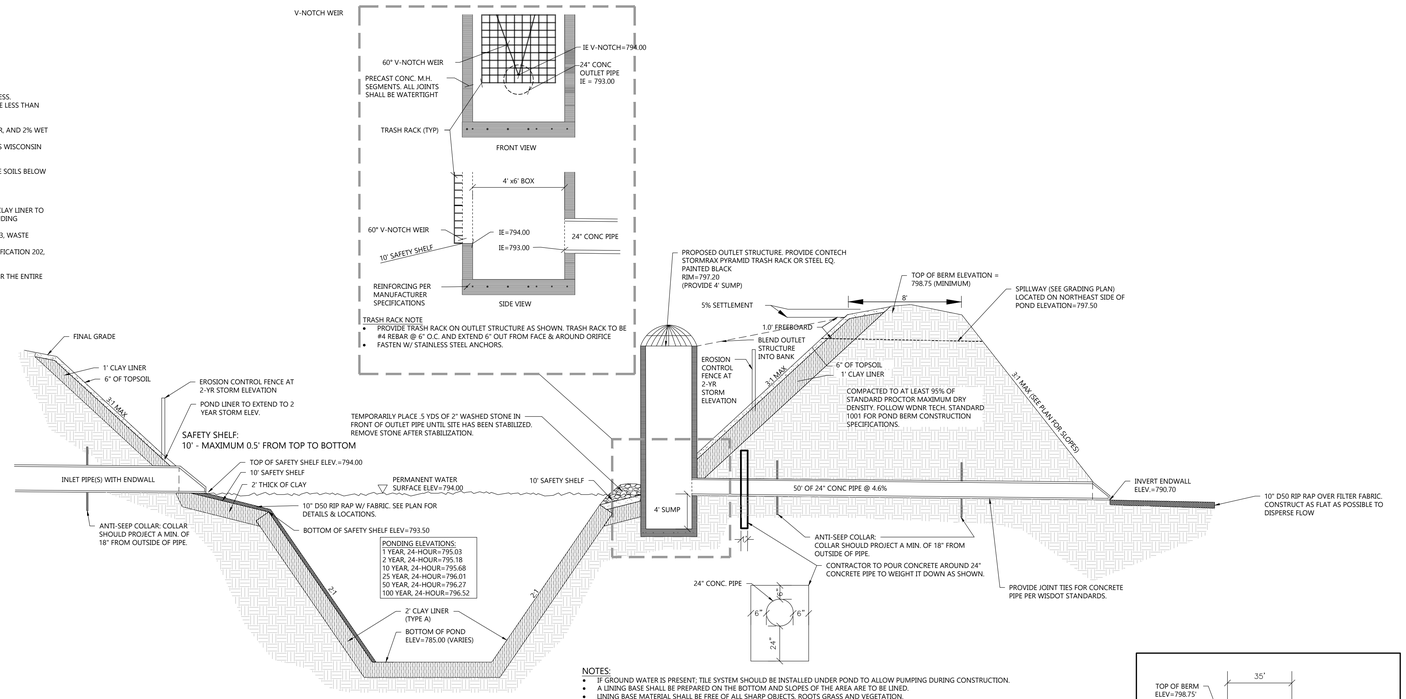
POND LINER CRITERIA FOR SAFETY SHELF AND BELOW (CLAY):

- 50% FINES (200 SIEVE) OR MORE.
- AN IN-PLACE HYDRAULIC CONDUCTIVITY OF $1x10^{-7}$ CM./SEC. OR LESS.
- AVERAGE LIQUID LIMIT VALUE OF 25 OR GREATER, WITH NO VALUE LESS THAN 20.
- AVERAGE PI OF 12 OR MORE WITH NO VALUES LESS THAN 10.
- CLAY INSTALLED WET OF OPTIMUM IF USING STANDARD PROCTOR, AND 2% WET OF OPTIMUM IF USING MODIFIED PROCTOR.
- CLAY COMPACTION AND DOCUMENTATION AS SPECIFIED IN NRCS WISCONSIN CONSTRUCTION SPECIFICATION 300, CLAY LINERS.
- MINIMUM THICKNESS OF TWO FEET.
- SPECIFY METHOD FOR KEEPING POOL FULL OR USE OF COMPOSITE SOILS BELOW LINER.

POND LINER ALTERNATE:

- CONTRACTOR TO PROVIDE 60 MIL/HDPE POND LINER IN LIEU OF CLAY LINER TO LINE ENTIRE POND AREA UP TO THE 2 YEAR, 24-HOUR WATER PONDING ELEVATION (SEE ELEVATION ON DETAIL).
- DESIGN ACCORDING TO THE CRITERIA IN TABLE 3 OF THE NRCS 313, WASTE STORAGE FACILITY TECHNICAL STANDARD
- INSTALL ACCORDING TO NRCS WISCONSIN CONSTRUCTION SPECIFICATION 202, POLYETHYLENE GEOMEMBRANE LINING.

4-6" ROUND STONE OVER FILTER FABRIC SHALL BE PROVIDED TO COVER THE ENTIRE LINER. TOP OF STONE SHALL MATCH PROPOSED POND ELEVATIONS.



WET RETENTION POND

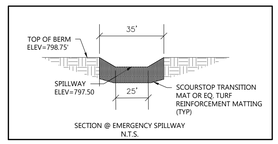
NOT TO SCALE

NOTES:

- IF GROUND WATER IS PRESENT; TILE SYSTEM SHOULD BE INSTALLED UNDER POND TO ALLOW PUMPING DURING CONSTRUCTION.
- A LINING BASE SHALL BE PREPARED ON THE BOTTOM AND SLOPES OF THE AREA ARE TO BE LINED.
- LINING BASE MATERIAL SHALL BE FREE OF ALL SHARP OBJECTS, ROOTS GRASS AND VEGETATION.
- THE BASE MATERIAL SHALL BE NATIVE MATERIALS OR MATERIALS OBTAINED FROM A BORROW SOURCE COMPACTED TO A MIN. OF 95% COMPACTING OR AN APPROVED CONSTRUCTION FABRIC.
- THE SUBGRADE SHALL BE PREPARED IMMEDIATELY PRIOR TO THE PLACING OF THE LINER. THE SURFACE ON WHICH THE LINER IS TO BE PLACED IS TO BE FIRM, CLEAN, DRY AND SMOOTH.
- AT END OF SITE CONSTRUCTION, POND DEPTH SHALL BE CHECKED FOR SEDIMENTATION AND DREDGED, IF NECESSARY, TO THE DESIGN DEPTH ORIGINALLY PROPOSED.
- CONTRACTOR SHALL PROVIDE EROSION MATTING AS REQUIRED PER SPECIFICATIONS NOTED ON C0.2
- CONTRACTOR TO CONTACT EXCEL ENGINEERING TO COMPLETE AN AS-BUILT SURVEY FOLLOWING COMPLETION OF THE CONSTRUCTION OF THE STORMWATER POND. THE SURVEY SHALL BE COMPLETED PRIOR TO THE POND FILLING WITH WATER. CONTRACTOR SHALL GIVE EXCEL ENGINEERING A MINIMUM OF A 3 DAY NOTICE. PLEASE NOTE THAT THE HORIZONTAL TOLERANCE FOR POND CONSTRUCTION IS 0.50' AND THE VERTICAL TOLERANCE FOR POND, OUTLET, AND SPILLWAY CONSTRUCTION IS 0.10'. ANY ADDITIONAL WORK REQUIRED TO SURVEY A POND FULL OF WATER OR FOR SURVEYING FOLLOWING REWORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

OVERALL STORMWATER FACILITY DETAIL

NOT TO SCALE



SECTION @ EMERGENCY SPILLWAY
N.T.S.

NORTHEAST EMERGENCY SPILLWAY DETAIL

NOT TO SCALE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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PROFESSIONAL SEAL

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IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

C2.1

CIVIL DETAILS

ARCHITECTURAL SPECIFICATIONS

DIVISION 00 PROCUREMENT AND CONTRACTING

00 72 00 GENERAL CONDITIONS

A. THE AIA GENERAL CONDITIONS A201 LATEST EDITION IS A PART OF THESE DOCUMENTS. COPIES ARE ON FILE AT THE OFFICE OF EXCEL ENGINEERING, INC.

00 73 16 INSURANCE REQUIREMENTS

A. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL SUBMIT TO THE OWNER CERTIFICATE OF INSURANCE FOR NOT LESS THAN THE FOLLOWING LIMITS:
   1. WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY:
      a. PER STATUTORY LIMITS
   2. COMMERCIAL GENERAL LIABILITY:
      a. GENERAL AGGREGATE: $2,000,000
      b. PRODUCTS AND COMPLETED OPERATIONS AGGREGATE: $2,000,000
      c. PERSONAL AND ADVERTISING INJURY: $1,000,000
      d. EACH OCCURRENCE: $1,000,000
      e. CONTRACTOR SHALL LIST EXCEL ENGINEERING, INC. AS ADDITIONAL INSURED.

DIVISION 01 GENERAL REQUIREMENTS

01 11 00 SUMMARY OF WORK

A. THE PLANS AND SPECIFICATIONS ARE INTENDED TO GIVE A DESCRIPTION OF THE WORK. NO DEVIATION FROM THE PLANS AND SPECIFICATIONS SHALL BE MADE WITHOUT THE WRITTEN CONSENT OF EXCEL ENGINEERING, INC. THE CONTRACTOR IS TO CLARIFY ANY DISCREPANCIES WITH EXCEL ENGINEERING, INC. PRIOR TO BIDDING. THE CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING CONDITIONS AND ACCESS TO THE WORK AREA.
B. REFERENCE TO "GENERAL CONTRACTOR" OR "GC" IN THE CONSTRUCTION DOCUMENTS IS INTENDED TO REPRESENT THE CONTRACTOR RESPONSIBLE FOR OVERALL CONSTRUCTION AND COORDINATION OF THE WORK. THE "GC" COULD BE A GENERAL CONTRACTOR, CONSTRUCTION MANAGER OR ANY OTHER CONTRACTOR RESPONSIBLE FOR THE OVERALL PROJECT. IT IS THE RESPONSIBILITY OF THE GC TO ASSIGN RESPONSIBILITY FOR ALL WORK.
C. OUTAGAMIE COUNTY INTENDS TO INVOLVE FOCUS ON ENERGY IN THE DESIGN AND CONSTRUCTION PROCESS TO MAXIMIZE ENERGY SAVINGS AND RECEIVE FINANCIAL INCENTIVES FOR INSTALLING ENERGY EFFICIENT SYSTEMS AND EQUIPMENT. THE CONSTRUCTION TEAM COMMISSIONED FOR THIS PROJECT SHALL WORK WITH FOCUS ON ENERGY BY PROVIDING SERVICES THAT MAY INCLUDE, BUT ARE NOT LIMITED TO, FURNISHING SUBMITTALS, INVOICES AND OTHER COMPLETION DOCUMENTATION PRIOR TO PROJECT CLOSE-OUT TO SUPPORT FOCUS ON ENERGY INCENTIVE APPLICATIONS
D. THE FOLLOWING LIST IS INTENDED TO AID THE GC IN DIRECTING THE SUBCONTRACTORS REGARDING RESPONSIBILITY OF WORK. THE DRAWINGS MAY OR MAY NOT IDENTIFY RESPONSIBILITY FOR THESE SCOPES OF WORK. THIS LIST IS INTENDED TO PROVIDE THE GC AN AID TO ASSIGN THIS WORK SO SCOPE OF WORK IS PROPERLY BID.THE LIST IS NOT INTENDED TO BE ALL INCLUSIVE AND IT REMAINS THE RESPONSIBILITY OF THE GC TO ENSURE ALL SCOPES OF WORK ARE ASSIGNED AND PROVIDED.

   1. TEMPORARY ELECTRIC SERVICE
   2. TEMPORARY PHONE / INTERNET
   3. TEMPORARY HEATING
   4. TEMPORARY WATER
   5. TEMPORARY TOILETS
   6. PERMITS AND SALES TAX
   7. DEMOLITION
   8. INTERIOR CONCRETE EQUIPMENT PADS
   9. EXTERIOR CONCRETE EQUIPMENT PADS AND POLE BASES
   10. OPENINGS IN PRECAST PLANK
   11. CORE DRILLING HOLES IN MASONRY
   12. PIPE SLEEVES IN MASONRY, POURED CONCRETE AND FOUNDATION WALLS
   13. BOX OUT OPENINGS IN POURED CONCRETE AND FOUNDATION WALLS.
   14. LARGE OPENINGS IN INSULATED METAL PANELS
   15. SMALL OPENINGS IN INSULATED METAL PANELS
   16. TRIM AROUND INSULATED METAL PANEL OPENINGS
   17. ROOFING, FLASHING, AND INSULATION AT ROOF CURBS
   18. EXCAVATION AND BACKFILL FOR MEP WORK.
   19. INSTALLATION OF CEILING/WALL ACCESS PANELS
   20. INSTALLATION OF ROOF CURBS AND ASSOCIATED BLOCKING
   21. PAINTING
   22. SEALANTS
   23. SHOWERS, MOP SINK, FLOOR DRAIN SAFING.
   24. INSTALLATION OF APPLIANCES.

01 11 13 WORK COVERED BY THE CONSTRUCTION DOCUMENTS

A. THE FOLLOWING IS A GENERAL LIST OF WORK COVERED BY THE CONSTRUCTION DOCUMENTS. NOTE THAT THIS LISTING IS NOT ALL-INCLUSIVE OF THE WORK TO BE PERFORMED. THE CONTRACTOR IS STILL RESPONSIBLE FOR PROVIDING ALL WORK AS COVERED IN THE CONSTRUCTION DOCUMENTS.
   1. GENERAL REQUIREMENTS
   2. SITE:
      a. SITE DEMOLITION
      b. EARTHWORK
      c. SITE UTILITIES
      d. STORM DRAINAGE
      e. CONCRETE CURBS
      f. EXTERIOR CONCRETE
      g. ASPHALT PAVING/MARKINGS
      h. UNIT PAVERS
      i. RETAINING WALLS
      j. CHAIN-LINK FENCES AND GATES
      k. DUMPSTER ENCLOSURES
      l. LANDSCAPING
      m. BUILDING SIGNAGE
   3. CONCRETE:
      a. CAST-IN PLACE CONCRETE
      b. PLANT PRECAST
      c. TRUCK SCALE FOUNDATION
   4. MASONRY:
      a. UNIT MASONRY
      b. ARCHITECTURAL UNIT MASONRY
   5. METALS:
      a. STRUCTURAL STEEL
      b. METAL FABRICATIONS
   6. WOODS AND PLASTICS:
      a. ROUGH CARPENTRY
      b. MISCELLANEOUS CARPENTRY
      c. FINISH CARPENTRY
      d. INTERIOR ARCHITECTURAL WOODWORK AND DOORS
   7. THERMAL AND MOISTURE PROTECTION:
      a. WATERPROOFING
      b. BUILDING INSULATION
      c. METAL WALL PANELS
      d. SIDING
      e. SHEET METAL ROOFING
      f. SHEET METAL FLASHING AND TRIM
      g. ROOF VENTS
      h. ROOF HATCHES
      i. FIRE-RESISTIVE MATERIALS
      j. FIRESTOPS
      k. JOINT SEALANTS
   8. DOORS AND WINDOWS:
      a. STEEL DOORS AND FRAMES
      b. FLUSH WOOD DOORS
      c. STAINLESS STEEL DOORS AND FRAMES
      d. ACCESS DOORS AND FRAMES
      e. OVERHEAD DOORS
      f. ALUMINUM- FRAMED ENTRANCES AND STOREFRONTS
      g. ALUMINUM WINDOWS
      h. FINISH HARDWARE
      i. GLAZING
      j. SPECIALTY GLAZING
   9. FINISHES:
      a. GYPSUM BOARD
      b. ACOUSTICAL CEILINGS
      c. VINYL BASE
      d. PAINTING AND STAINS
      e. HIGH-PERFORMANCE COATINGS
   10. SPECIALTIES
      a. VISUAL DISPLAY SURFACES
      b. TOILET PARTITIONS
      c. WALL PROTECTION
      d. ACCESS FLOORING
      e. SIGNAGE
      f. LOCKERS
      g. FIRE-PROTECTION SPECIALTIES
      h. TELEPHONE SPECIALTIES
      i. TOILET AND BATH ACCESSORIES
   11. EQUIPMENT:
      a. PARKING CONTROL EQUIPMENT
      b. APPLIANCES
   12. FURNISHINGS:
      a. CASEWORK
      b. WINDOW TREATMENTS
   13. SPECIAL CONSTRUCTION:
      a. METAL BUILDING SYSTEMS
   14. MECHANICAL
      a. PLUMBING
      b. FIRE PROTECTION
      c. HVAC
   15. ELECTRICAL

01 11 16 WORK BY OWNER

A. THE OWNER WILL BE RESPONSIBLE FOR THE FOLLOWING COSTS AND WORK WHICH ARE NOT PART OF THE CONTRACT DOCUMENTS. CONTRACTOR SHALL ASSIST THE OWNER IN COORDINATING THE SERVICE/WORK LISTED AS REQUIRED:
   1. BUILDER'S RISK INSURANCE
   2. GAS UTILITY SERVICE AND ASSESSMENTS
   3. ELECTRIC UTILITY SERVICE AND ASSESSMENTS
   4. TELEPHONE UTILITY SERVICE AND ASSESSMENTS
   5. CABLE UTILITY SERVICE AND ASSESSMENTS
   6. IMPACT FEES
   7. SURVEY RECERTIFICATION
   8. HAZARDOUS MATERIAL REMOVAL
   9. TELEPHONE SYSTEM
   10. SECURITY SYSTEM
   11. FURNITURE AND FURNISHINGS:
      a. OFFICE FURNITURE
      b. TABLES AND CHAIRS
      c. ARTWORK
   12. ACOUSTICAL TREATMENT
   13. UNINTERRUPTABLE POWER SUPPLY (UPS)
   14. PRODUCT SHELVING / RACKS
   15. ENERGY MANAGEMENT SYSTEMS
   16. KITCHEN EQUIPMENT AND APPLIANCES
   17. BULK FLUIDS SYSTEM
   18. FUEL ISLAND
   19. TRUCK SCALE
   20. JIB CRANE
   21. WELL
   22. SPECIAL INSPECTIONS: THE OWNER SHALL EMPLOY SPECIAL INSPECTORS TO PROVIDE INSPECTIONS DURING CONSTRUCTION AS REQUIRED PER CHAPTER 17 OF THE IBC. TESTS AND INSPECTIONS SHALL BE CONDUCTED BY TESTING AGENCIES APPROVED BY THE CODE ENFORCEMENT OFFICIAL. SEE SCHEDULE OF SPECIAL INSPECTIONS ON T2.0.

01 23 00 ALTERNATE BIDS

A. ALTERNATE BID #1: CONTRACTOR TO PROVIDE A BREAKOUT PRICE FOR CONSTRUCTION OF THE FUEL ISLAND CANOPY AS INDICATED ON THE DRAWINGS. PROVIDE AN ALTERNATE PRICE TO ADD ONE POLE-MOUNTED LIGHT FIXTURE AT THE FUEL ISLAND IN THE EVENT THE FUEL ISLAND CANOPY IS NOT ACCEPTED.
B. ALTERNATE BID #2: CONTRACTOR TO PROVIDE AN ALTERNATE PRICE FOR APPLICATION OF BARACADE SILANE 40 (SC-3) SEALED CONCRETE IN LIEU OF CORVIXX POLYMER — CXE-600 (SC-1) WITHIN THE HEATED TRUCK STORAGE AREA.
C. ALTERNATE BID #3: CONTRACTOR TO PROVIDE ALTERNATE PRICE FOR TRUCK SCALE FOUNDATION, POWER, DATA, AND ASSOCIATED FEATURES NOT COVERED UNDER THE TRUCK SCALE SUPPLIERS' SCOPE OF WORK. NOTE: CONDUIT FROM MAIN BUILDING TO THE TRUCK SCALE SHALL BE INSTALLED REGARDLESS OF WHETHER THE ALTERNATIVE IS ACCEPTED OR REJECTED.
D. ALTERNATE BID #4A: CONTRACTOR TO PROVIDE A BREAKOUT PRICE FOR THE CONSTRUCTION OF THE COLD STORAGE BUILDING AS SHOWN ON THE DRAWINGS, INCLUDING ALL WORK REQUIRED TO ACCOMMODATE THE PLANNED FUTURE EXPANSION AS INDICATED ON THE PLANS.
E. ALTERNATE BID #4B: CONTRACTOR TO PROVIDE AN ALTERNATE PRICE FOR THE CONSTRUCTION OF AN ENLARGED COLD STORAGE BUILDING, INCLUDING BOTH THE BASE BID SCOPE AND THE INDICATED FUTURE EXPANSION AREA.
F. ALTERNATE BID #5: CONTRACTOR TO PROVIDE AN ALTERNATE PRICE FOR ALUMINUM FEEDERS FOR ANY FEEDERS BIGGER THAN 100A.
G. ALTERNATE BID #6: THE OWNER WILL BID OUT THE FUEL ISLAND. THE FUEL ISLAND VENDOR/SUPPLIER MUST PROVIDE AN ALTERNATE PRICE FOR AN ABOVE-GROUND FUEL AND DEF TANK INSTEAD OF THE BELOW-GROUND TANKS. SEE FUEL ISLAND PLANS AND SPECIFICATIONS FOR ANTICIPATED TANK SIZES AND LOCATIONS. THE CONTRACTOR IS TO PROVIDE AN ALTERNATE PRICE FOR RELATED INFRASTRUCTURE OUTSIDE THE FUEL ISLAND VENDOR/SUPPLIER'S SCOPE, SPECIFIC TO THE ABOVE-GROUND TANK ALTERNATE.

01 25 13 PRODUCT SUBSTITUTION PROCEDURES

A. REFERENCE TO MATERIALS OR SYSTEMS HEREIN BY NAME, MAKE OR CATALOG NUMBER IS INTENDED TO ESTABLISH A QUALITY STANDARD, AND NOT TO LIMIT COMPETITION. THE WORDS "OR APPROVED EQUIVALENT" ARE IMPLIED FOLLOWING EACH BRAND NAME/MODEL NUMBER UNLESS STATED OTHERWISE. "OR APPROVED EQUIVALENT" MATERIALS SHALL BE APPROVED BY EXCEL ENGINEERING, INC. PRIOR TO BIDS BEING ACCEPTED AND ACCEPTANCE FOR USE. PROVIDE A LETTER FROM THE MANUFACTURER CERTIFYING THAT THE PRODUCT MEETS OR EXCEEDS THE SPECIFIED PRODUCT.

01 31 00 PROJECT MANAGEMENT AND COORDINATION

A. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR AND SHALL HAVE CONTROL OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND SAFETY PRECAUTIONS AND PROCEDURES USED TO CONSTRUCT THE WORK.
B. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL (INCLUDING TAXES), AND EQUIPMENT AS NECESSARY TO COMPLETE THE WORK. PERMITS SHALL BE OBTAINED AND PAID FOR BY THE RESPECTIVE CONTRACTOR, INCLUDING TEMPORARY OCCUPANCY PERMIT IF REQUIRED.
C. REVIT / AUTOCAD FILES OF CONSTRUCTION DOCUMENTS MAY BE OBTAINED BY CONTACTING EXCEL ENGINEERING, INC. 3 DIMENSIONAL MODEL MAY BE PROVIDED TO CONVEY DESIGN INTENT. FILE REQUESTS SHALL BE EMAILED TO EXCEL PROJECT MANAGER AND PROJECT ASSISTANT AND SHALL INCLUDE THE FOLLOWING INFORMATION:
   1. EXCEL ENGINEERING PROJECT NAME
   2. EXCEL ENGINEERING PROJECT NUMBER
   3. SHEET NUMBERS REQUESTED
D. REVIT / AUTOCAD FILES REQUEST SHALL BE MADE TO:
   1. PROJECT MANAGER DAVID VANDEN AVOND AT DAVID.VANDENAVOND@EXCELENGINEER.COM
   2. PROJECT ASSISTANT: KELLY WIDZINSKI AT KELLY.WIDZINSKI@EXCELENGINEER.COM
E. REVIT / AUTOCAD FILES WILL BE SENT BY METHOD OF EXCEL ENGINEERING, INC. CHOOSING AS SOON AS POSSIBLE.
F. REVIT / AUTOCAD FILES SHALL NOT BE USED FOR COMPONENT SUBMITTALS OR SHOP DRAWINGS. SUBMITTALS AND SHOP DRAWINGS USING EXCEL ENGINEERING, INC. CAD FILES WILL BE RETURNED REJECTED AND UN-REVIEWED.
G. ALL "REQUEST FOR INFORMATION" (RFI) SHALL BE MADE THROUGH THE GENERAL CONTRACTOR FOR LOGGING AND TRACKING PURPOSES. RFI'S SHALL BE SUBMITTED TO THE EXCEL ENGINEERING PROJECT ASSISTANT. RITS SHALL BE SUBMITTED ON AN ARCHITECT APPROVED FORM, NUMBER SEQUENCE AND INCLUDE THE FOLLOWING INFORMATION:
   1. EXCEL ENGINEERING PROJECT NAME
   2. EXCEL ENGINEERING PROJECT NUMBER
   3. DIVISION OF CONSTRUCTION REFERENCED
   4. POTENTIAL SCHEDULE IMPACTS
   5. POTENTIAL COST IMPACTS OF ANY SUGGESTED ALTERNATES FROM THE CONSTRUCTION DOCUMENTS

01 32 00 SCHEDULING OF WORK

A. THE CONTRACTOR SHALL OBTAIN THE OWNER'S APPROVAL OF THE CONSTRUCTION SCHEDULE PRIOR TO PROCEEDING WITH THE WORK.

01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. SUBMIT FOR APPROVAL ARCHITECTURAL, CIVIL, STRUCTURAL, HVAC, PLUMBING, FIRE PROTECTION AND ELECTRICAL SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLES INDICATED IN THE CONSTRUCTION ADMINISTRATION SUBMITTAL LIST (CASL). SEE DISCIPLINE SPECIFICATIONS FOR DISCIPLINE SPECIFIC CASL.
B. SHOP DRAWING SUBMITTALS SHALL BE MADE TO EXCEL ENGINEERING, INC. FOR APPROVAL PRIOR TO FABRICATION AND INSTALLATION.
C. SUBMITTALS SHALL BE MADE BY ELECTRONIC SUBMISSION IN PORTABLE DOCUMENT FORMAT (PDF) UNLESS NOTED OTHERWISE. WHEN HARD COPY SUBMISSIONS ARE REQUIRED, COORDINATE WITH EXCEL ENGINEERING, INC. PRIOR TO SUBMISSION.
D. SUBMITTALS SHALL BE MADE TO THE EXCEL ENGINEERING, INC. PROJECT ASSISTANT.
   1. KELLY WIDZINSKI AT KELLY.WIDZINSKI@EXCELENGINEER.COM
E. SUBMITTAL SHALL BE MADE USING APPROVED SUBMITTAL FORM CONTAINING AT MINIMUM THE FOLLOWING INFORMATION:
   1. EXCEL ENGINEERING PROJECT NAME
   2. EXCEL ENGINEERING PROJECT NUMBER
   3. SUBMITTAL DIVISION OF CONSTRUCTION
   4. MATERIAL SUPPLIER / SUBCONTRACTOR
   5. SUBMITTAL DESCRIPTION (i.e. CONCRETE MIX DESIGN)
F. SUBMITTALS SHALL BE REVIEWED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMITTING FOR APPROVAL. CONTRACTOR SHALL COMPLETE ALL FIELD VERIFICATIONS PRIOR TO SUBMITTAL SUBMISSION.
G. SUBMITTALS MUST BE 100% COMPLETE AND IN ONE (1) PACKAGE FOR THE ITEM BEING SUBMITTED. NON-COMPLETE SUBMITTALS WILL BE RETURNED TO THE CONTRACTOR WITHOUT COMMENT AND STAMPED "REJECTED-RESUBMIT". CONTRACTORS WHO KNOWINGLY WANT TO SUBMIT NON-COMPLETE SUBMITTALS OR BREAK SINGLE SYSTEM SUBMITTALS INTO MULTIPLE SUBMITTALS WILL BE RESPONSIBLE TO ARRANGE WITH EXCEL ENGINEERING, PRIOR TO SUBMITTING THE SUBMITTAL(S), AND TO COMPENSATE EXCEL ENGINEERING FOR THE EXTRA WORK INVOLVED.
H. SHOP DRAWINGS SHALL CLEARLY INDICATE SPECIFIC MODEL BEING PROVIDED WHERE CUT SHEETS SHOW MULTIPLE MODELS.
I. FAILURE TO SUBMIT SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING THE SPECIFIED EQUIPMENT AND MATERIALS.
J. PHYSICAL SAMPLES FOR FINISHES ARE TO BE SUBMITTED TO EXCEL ENGINEERING, INC. FOR APPROVAL PRIOR TO INSTALLATION.
K. BUILDING COMPONENTS REQUIRING SUBMISSION "FOR RECORD" TO THE AUTHORITY HAVING JURISDICTION REQUIRE SEALED AND SIGNED HARD COPIES. PROVIDE TWO (2) HARD COPIES WITH WET SEAL AND ORIGINAL SIGNATURE IN ADDITION TO THE ELECTRONIC SUBMISSION IN PORTABLE DOCUMENT FORMAT (PDF).
L. TEST RESULTS SHALL BE SUBMITTED FOR REVIEW WITHIN 24 HOURS OF COMPLETION OF TEST.
M. CONTRACTOR SHALL ALLOW 10 WORKING DAYS IN SCHEDULE FOR A/E TO REVIEW SUBMITTALS. IF SUBMITTALS REQUIRE AN EXPEDITED REVIEW PROCESS, CONTACT EXCEL ENGINEERING, INC. PRIOR TO SUBMITTING THE SUBMITTAL(S) TO MAKE THE APPROPRIATE ARRANGEMENT.
N. SUBMITTALS REQUIRING RESUBMISSION SHALL HAVE CHANGES MADE TO A PREVIOUSLY REVIEWED SUBMITTAL DENOTED WITH REVISION CLOUDS AND TAGS IDENTIFYING CHANGES.
O. ARCHITECTURAL CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
   1. UNIT MASONRY
   2. BRICK
   3. ROUGH CARPENTRY MATERIALS
   4. EXTERIOR FINISH CARPENTRY MATERIALS
   5. INTERIOR FINISH CARPENTRY MATERIALS
   6. WATERPROOFING
   7. INSULATION
   8. AIR AND MOISTURE BARRIERS
   9. INSULATED METAL PANELS
   10. ROOFING ACCESSORIES
   11. PENETRATION FIRE STOPPING
   12. SEALANTS
   13. HOLLOW METAL DOORS AND FRAMES
   14. STAINLESS STEEL DOORS AND FRAMES
   15. FLUSH WOOD DOORS
   16. OVERHEAD SECTIONAL DOORS
   17. ALUMINUM FRAMED ENTRANCES AND STOREFRONTS
   18. DOOR HARDWARE
   19. GLAZING
   20. DRYWALL STUDS
   21. GYPSUM BOARD
   22. ACOUSTICAL PANEL CEILINGS
   23. RESILIENT TILE FLOORING
   24. RESINOUS FLOORING
   25. TILE CARPETING
   26. WALL COVERING
   27. PAINTING SYSTEMS
   28. SIGNAGE
   29. FIRE EXTINGUISHERS
   30. METAL BUILDING SYSTEMS (PROVIDE "PRELIMINARY" AND "FOR RECORD" SUBMITTALS)
   31. TOILET ACCESSORIES
   32. TOILET PARTITIONS
   33. CABINET AND MILLWORK
   34. BULK FLUIDS SYSTEMS
   35. JIB CRANE
P. STRUCTURAL AND ARCHITECTURAL PLANS SHOW DIMENSIONS AND ELEVATIONS TO SIGNIFICANT WORKING POINTS. SHOP DRAWING DETAILERS AND SUPPLIERS ARE RESPONSIBLE FOR THE DETERMINATION OF ALL DIMENSIONS, PITCHES, ELEVATIONS, ETC., BEYOND THOSE NOTED AS NECESSARY TO THOROUGHLY DETAIL / FABRICATE THEIR WORK. CONTACT A/E WITH ANY DISCREPANCIES FOUND.
Q. IN NO CASE SHALL CHANGES BE MADE TO WORK SHOWN OR PROCEDURE SPECIFIED ON STRUCTURAL PLANS UNLESS FIRST APPROVED IN WRITING BY A/E. REVIEW OF SHOP DRAWINGS BY A/E DOES NOT CONSTITUTE ACCEPTANCE OF A DESIGN CHANGE. PROPOSED CHANGES BY CONTRACTOR MUST BE SUBMITTED IN RFI FORMAT AND MUST BE APPROVED IN THE SAME MANNER. CONTRACTOR REQUESTING CHANGE MAY BE BILLED ON A TIME AND EXPENSE BASIS BY A/E FOR ALL REDESIGN WORK, FOR ALL NEW SKETCHES PREPARED, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO THE CHANGES.

01 40 00 QUALITY REQUIREMENTS

A. IN AS MUCH AS THE SPECIFICATIONS ARE BRIEF, THE CONTRACTOR SHALL PROVIDE WORKMANSHIP THAT IS NEAT, SECURE AND OF THE BEST QUALITY WITH THE BEST POSSIBLE APPEARANCE AND UTILITY MEETING ALL APPLICABLE STANDARDS. FAULTY WORK SHALL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER. INDUSTRY STANDARDS SHALL BE USED AS THE GUIDE FOR QUALITY OF MATERIALS AND WORKMANSHIP.

01 41 00 REGULATORY REQUIREMENTS

A. ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES AND REGULATIONS, INCLUDING THE REQUIREMENTS OF THE AMERICAN WITH DISABILITIES ACT (A.D.A.) ARE MADE PART OF THESE SPECIFICATIONS AND SHALL BE COMPLIED WITH AS FAR AS THEY APPLY TO WORK UNDER THIS CONTRACT.

01 45 00 QUALITY CONTROL

A. NOTIFY ARCHITECT ONE WEEK IN ADVANCE TO SCHEDULE FINAL COMPLIANCE WALK-THRU. PRIOR TO THIS WALK THRU, PROVIDE THE ARCHITECT WITH THE FIRE PROTECTION SYSTEM TEST REPORT AND A COPY OF THE ELEVATOR INSPECTION REPORT AS APPLICABLE. ALL COMPONENT SUBMITTALS SHOULD BE FILED AND AVAILABLE FOR REVIEW AT THE WALK THRU. THE BUILDING SHALL BE COMPLETE AND ALL SYSTEMS OPERATIONAL AT THE TIME OF THE WALK THRU. IF THE ARCHITECT IS REQUIRED TO MAKE ADDITIONAL VISITS DUE TO NON-COMPLIANCE, THEY WILL BE CHARGED TO THE REQUESTING CONTRACTOR.

01 45 33 SPECIAL INSPECTIONS

A. SPECIAL INSPECTIONS PER IBC CHAPTER 17 ARE REQUIRED FOR THE PROJECT.
B. REQUIRED SPECIAL INSPECTIONS FOR THE PROJECT ARE LISTED ON T2 SHEETS.
C. OWNER HAS CONTRACTED THE SPECIAL INSPECTION WORK.
D. GC SHALL
   1. HOLD A PRE-CONSTRUCTION MEETING WITH SPECIAL INSPECTOR TO REVIEW SCOPE OF SPECIAL INSPECTIONS.
   2. CREATE AND POST OR MAKE AVAILABLE THE SPECIAL INSPECTIONS TESTING SCHEDULE AT THE JOB SITE. PROVIDE ADEQUATE NOTIFICATION TO THOSE PARTIES DESIGNATED ON THE SCHEDULE SO THEY MAY PREPARE FOR AND SCHEDULE THEIR SERVICES. FAILURE TO SCHEDULE A SPECIAL INSPECTOR IN A TIMELY MANNER WILL NOT ALLOW FOR A CHANGE IN CONSTRUCTION SCHEDULE.
   3. PROVIDE THE SPECIAL INSPECTOR ACCESS TO THE APPROVED PLANS AND SPECS AT THE JOB SITE.
   4. PROVIDE THE SPECIAL INSPECTOR SAFE ACCESS TO THE WORK.
   5. REVIEW ALL REPORTS ISSUED BY SPECIAL INSPECTORS AND RETAIN AT THE JOB SITE FOR REVIEW BY THE BUILDING OFFICIAL.
   6. CORRECT IN A TIMELY MANNER DEFICIENCIES IDENTIFIED IN REPORTS.

01 52 00 CONSTRUCTION FACILITIES

A. THE CONTRACTOR SHALL FURNISH TEMPORARY OFFICE, TOILET FACILITIES, WORKING TELEPHONE, ELECTRICITY, HEAT, WATER AND FIRE EXTINGUISHERS AS REQUIRED FOR COMPLETION OF THE WORK UNLESS THE OWNER HAS AGREED IN WRITING TO FURNISH OR WAIVE ANY OF THE ABOVE ITEMS.

01 53 00 TEMPORARY CONSTRUCTION

A. THE CONTRACTOR SHALL FURNISH TEMPORARY BRACING OF ALL BUILDING ELEMENTS DURING CONSTRUCTION. TEMPORARY BRACING SYSTEMS SHALL BE DESIGNED TO WITHSTAND CODE DESIGN LOADS. CONTRACTOR SHALL RETAIN SERVICES OF A PROFESSIONAL ENGINEER TO DESIGN AND SUPERVISE BRACING INSTALLATION IF THEY DO NOT HAVE THE EXPERTISE REQUIRED.

01 71 00 FIELD ENGINEERING

A. THE CONTRACTOR SHALL PROVIDE ALL LAYOUT AS REQUIRED, COMPETENT FULLTIME ON SITE SUPERVISION, AND BROOM CLEANING OF CONSTRUCTION SITE INCLUDING DUMPSTERS FOR REFUSE DISPOSAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY ON SITE AND PROTECTION OF SITE PER LOCAL, STATE AND FEDERAL REQUIREMENTS.

01 78 00 CLOSEOUT SUBMITTALS

A. THE CONTRACTOR SHALL FURNISH "AS-BUILT" DRAWINGS REFLECTING ALL CHANGES DURING CONSTRUCTION. PROVIDE TWO (2) COPIES OF OPERATING AND MAINTENANCE MANUALS TO OWNER FOR ALL FURNISHED EQUIPMENT.

01 78 36 WARRANTIES

A. THE CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION OF THE PROJECT. FURNISH MANUFACTURER'S WRITTEN WARRANTIES FOR SPECIFIED EQUIPMENT STATING EFFECTIVE WARRANTY DATE.

01 91 13 GENERAL COMMISSIONING REQUIREMENTS

A. COMMISSIONING ENCOMPASSES THE VERIFICATION THAT THE OPERATION OF APPLICABLE EQUIPMENT AND SYSTEMS MEET THE DESIGN SPECIFICATIONS AS DOCUMENTED THROUGH FUNCTIONAL TESTING. COMMISSIONING ACTIVITIES WILL BE LED BY THE COMMISSIONING PROVIDER (CXP).
   1. SEE DIVISION 22 08 00 COMMISSIONING OF PLUMBING FOR ADDITIONAL REQUIREMENTS.
   2. SEE DIVISION 23 08 00 COMMISSIONING OF HVAC FOR ADDITIONAL REQUIREMENTS.
   3. SEE DIVISION 26 08 00 COMMISSIONING OF ELECTRICAL FOR ADDITIONAL REQUIREMENTS.
B. GENERAL CONTRACTOR SHALL HIRE COMMISSIONING PROVIDER TO MEET 2021 IECC SECTION C408 REQUIREMENTS.

   1. THE GENERAL CONTRACTOR SHALL SCHEDULE PROJECT AND CONTRACTORS TO COMPLETE SYSTEM INSTALLATIONS, BALANCING AND STARTUP TO INCLUDE TIME REQUIRED BY COMMISSIONING PROVIDER FOR FUNCTIONAL TESTING (CALLED "ONSITE FUNCTIONAL TESTING") BEFORE OWNER OCCUPANCY. THIS ACTIVITY SHALL NOT TAKE PLACE UNTIL ALL SUBMITTALS HAVE BEEN RECEIVED AND REVIEWED BY THE COMMISSIONING PROVIDER AND ALL SYSTEMS HAVE BEEN INSTALLED, STARTED UP AND ARE FULLY OPERATIONAL.
   2. GC SHALL SCHEDULE SUBCONTRACTORS TO PARTICIPATE IN AND PERFORM COMMISSIONING PROCESS ACTIVITIES AND COORDINATE THE SCHEDULE WITH OWNER AND COMMISSIONING PROVIDER.
   3. THE COMMISSIONING PROVIDER WILL DETERMINE THE COMMISSIONING TEAM, BUT WILL USUALLY INCLUDE THE DESIGN TEAM, GENERAL CONTRACTOR, SITE SUPERVISOR, HVAC, ELECTRICAL AND PLUMBING SUBCONTRACTORS.
   4. COMMISSIONING TEAM MEMBERS SHALL BE REQUIRED TO PARTICIPATE IN THE FOLLOWING TEAM MEETINGS WHICH MAY TAKE PLACE VIA CONFERENCE CALL OR VIRTUAL MEETING.
      a. PRECONSTRUCTION COMMISSIONING KICKOFF MEETING: AN OVERVIEW OF THE COMMISSIONING PROCESS SUBMITTALS AND SCHEDULE AND REVIEW OF THE ONSITE FUNCTIONAL TEST PROCESS PROCEDURE.
      b. FUNCTIONAL TESTING DEFICIENCIES MEETING: AN OVERVIEW OF ANY DEFICIENCIES FOUND DURING THE ON-SITE FUNCTIONAL TEST PROCESS. DEFICIENCIES WILL BE DOCUMENTED IN AN ISSUES LOG AND DISTRIBUTED TO ALL PARTIES.
C. COMMISSIONING TESTING AND SUBMITTALS:
   1. PREFUNCTIONAL CHECKLIST SHALL BE PROVIDED TO EACH SUBCONTRACTOR BY CXP FOR COMPLETION.
   2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE SIGN-OFF THAT ALL PREFUNCTIONAL CHECKLISTS ARE COMPLETED AND SYSTEMS ARE TESTED BY EACH SUBCONTRACTOR BEFORE SCHEDULING COMMISSIONING. GC IS RESPONSIBLE FOR COST OF ADDITIONAL COMMISSIONING PROVIDER SITE VISITS DUE TO SYSTEMS NOT BEING READY.
   3. TEST AND BALANCE REPORT SHALL BE PROVIDED TO THE OWNER, ENGINEER, AND COMMISSIONING PROVIDER PRIOR TO THE FUNCTIONAL TESTING DATE.
   4. FUNCTIONAL TESTS SHALL BE COMPLETED UNDER THE OBSERVATION OF THE COMMISSIONING PROVIDER IN COLLABORATION WITH THE OTHER MEMBERS OF THE COMMISSIONING TEAM.
   5. TEST RESULTS ARE DOCUMENTED BY THE COMMISSIONING PROVIDER. FUNCTIONAL TESTS ARE DOCUMENTED TESTS OF THE DYNAMIC OPERATION OF THE EQUIPMENT AND SYSTEMS WITH THE GOAL OF VERIFYING THAT THE ACCEPTANCE CRITERIA ARE MET.
   6. COMMISSIONING PROVIDER WILL PROVIDE A PRELIMINARY COMMISSIONING REPORT TO THE OWNER AND INSPECTOR AND EXCEL ENGINEERING WHICH SHALL INCLUDE THE FOLLOWING:
      a. ITEMIZATION OF DEFICIENCIES FOUND DURING TESTING THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION.
      b. DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION BECAUSE OF CLIMATIC CONDITIONS.
      c. CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.
      d. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
      e. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS, INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE.
   7. GENERAL CONTRACTOR SHALL COORDINATE AND MONITOR SUBCONTRACTORS TO CORRECT IDENTIFIED DEFICIENCIES AND COORDINATE WITH COMMISSIONING PROVIDER FOLLOW-UP SITE VISITS FOR FINAL COMMISSIONING.
   8. COMMISSIONING PROVIDER SHALL PROVIDE FINAL COMMISSIONING REPORT TO THE OWNER WITHIN 90 DAYS OF THE DATE OF RECEIPT OF CERTIFICATE OF OC

ARCHITECTURAL SPECIFICATIONS (CONT)

A. INSTALLATION:
   1. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
   2. DO NOT INSTALL DAMAGED COMPONENTS.
   3. FIT JOINTS TO PRODUCE HAIRLINE JOINTS FREE OF BURRS AND DISTORTION.
   4. RIGIDLY SECURE NONMOVEMENT JOINTS.
   5. INSTALL ANCHORS WITH SEPARATORS AND ISOLATORS TO PREVENT METAL CORROSION AND ELECTROLYTIC DETERIORATION.
   6. SEAL JOINTS WATERTIGHT UNLESS OTHERWISE INDICATED.
B. INSTALL COMPONENTS TO DRAIN WATER PASSING JOINTS, CONDENSATION OCCURRING WITHIN FRAMING MEMBERS, AND MOISTURE MIGRATING WITHIN THE SYSTEM TO EXTERIOR.
C. INSTALL COMPONENTS PLUMB AND TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES, AND WITHOUT WARP OR RACK.
D. ENTRANCE DOORS: INSTALL DOORS TO PRODUCE SMOOTH OPERATION AND TIGHT FIT AT CONTACT POINTS.
E. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL ALL ENTRANCES AND STOREFRONTS AS INDICATED ON THE PLANS.

08 71 00 HARDWARE

A. REQUIREMENTS:
   1. ALL LOCKSETS SHALL BE LEVER TYPE AS REQUIRED TO MEET REQUIREMENTS OF A.D.A.
   2. ALL OTHER HARDWARE SHALL CONFORM TO THE REQUIREMENTS OF A.D.A.
   3. ALL EXIT DOORS SHALL BE EQUIPPED WITH LEVER TYPE OR PANIC TYPE EXIT HARDWARE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A LATCH, KEY OR BOLT.
   4. CONTRACTOR TO COORDINATE KEYING SCHEDULE WITH OWNER.
B. MOUNTING HEIGHTS: MOUNT DOOR HARDWARE UNITS AT HEIGHTS REQUIRED TO COMPLY WITH GOVERNING REGULATIONS.
C. INSTALL EACH DOOR HARDWARE ITEM TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
D. THRESHOLDS: SET THRESHOLDS FOR EXTERIOR AND ACOUSTICAL DOORS IN FULL BED OF SEALANT.
E. ADJUSTMENT: ADJUST AND CHECK EACH OPERATING ITEM OF DOOR HARDWARE AND EACH DOOR TO ENSURE PROPER OPERATION OR FUNCTION OF EVERY UNIT. REPLACE UNITS THAT CANNOT BE ADJUSTED TO OPERATE AS INTENDED. ADJUST DOOR CONTROL DEVICES TO COMPENSATE FOR FINAL OPERATION OF HEATING AND VENTILATING EQUIPMENT AND TO COMPLY WITH REFERENCED ACCESSIBILITY REQUIREMENTS.
F. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL ALL HARDWARE AS INDICATED ON THE PLAN.

08 80 00 GLAZING

A. COMPLY WITH COMBINED WRITTEN INSTRUCTIONS OF MANUFACTURERS OF GLASS, SEALANTS, GASKETS, AND OTHER GLAZING MATERIALS, UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED, INCLUDING THOSE IN REFERENCED GLAZING PUBLICATIONS.
B. PROTECT GLASS EDGES FROM DAMAGE DURING HANDLING AND INSTALLATION. REMOVE DAMAGED GLASS FROM PROJECT SITE AND LEGALLY DISPOSE OF OFF PROJECT SITE. DAMAGED GLASS IS GLASS WITH EDGE DAMAGE OR OTHER IMPERFECTIONS THAT, WHEN INSTALLED, COULD WEAKEN GLASS AND IMPAIR PERFORMANCE AND APPEARANCE.
C. PROVIDE SAFETY GLASS IN ALL GLAZING AS LISTED BELOW UNLESS NOTED OTHERWISE:
   1. WHERE REQUIRED BY FEDERAL, STATE AND LOCAL CODES.
D. SAFETY GLASS REQUIREMENTS:
   1. SAFETY GLASS SHALL BE, BUT NOT LIMITED TO
      a. TEMPERED GLASS
      b. LAMINATED GLASS
      c. SAFETY PLASTIC
      d. SAFETY INSULATING UNITS WHICH MEET THE TEST REQUIREMENTS OF ANSI Z97.1, AND WHICH ARE CONSTRUCTED, TREATED, OR COMBINED WITH OTHER MATERIALS SO AS TO MINIMIZE THE LIKELIHOOD OF CUTTING AND PIERCING INJURIES RESULTING FROM HUMAN IMPACT WITH THE GLAZING MATERIAL.
   2. ALL SAFETY GLAZING MATERIAL SHALL BE LABELED PER LOCAL, STATE, AND FEDERAL REQUIREMENTS.
E. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION. FURNISH AND INSTALL THE GLAZING AS INDICATED ON THE PLAN.

DIVISION 09 FINISHES

09 01 00 FINISHES

A. REQUIREMENTS:
   1. PROVIDE AND INSTALL ALL FINISHES AS INDICATED ON PLANS.
   2. INSTALL ALL MATERIALS PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
   3. "FINISH" INSTALLER INSPECT SUBSURFACE AND PREPARE AS PER MANUFACTURER'S SPECIFICATIONS PRIOR TO INSTALLATION OF PRODUCT.
   4. ALL FINISHES TO MEET ALL CODE REQUIREMENTS AND REGULATIONS INCLUDING FLAME SPREAD AND SMOKE DEVELOPMENT.
B. EXTRA MATERIAL:
   1. PROVIDE NEW, EXTRA MATERIAL OF EACH FINISH TYPE AND COLOR TO BE TURNED OVER TO OWNER AT JOB COMPLETION FOR THE FOLLOWING ITEMS:
      a. PAINT: PROVIDE 1 GALLON FOR FIELD COLORS AND 1 QUART FOR ACCENT COLORS APPLIED.
      b. RESILIENT TILE FLOORING: PROVIDE 1 BOX FOR EVERY 50 BOXES OR FRACTION THEREOF INSTALLED. FURNISH MINIMUM 10 LINEAR FEET FOR EACH 500 LINEAR FEET OR FRACTION THEREOF OF EACH TYPE OF RESILIENT ACCESSORY SUPPLIED.
      c. ACOUSTICAL CEILING TILE: PROVIDE FULL-SIZE UNITS EQUAL TO 2% OF QUANTITY INSTALLED, BUT NOT LESS THAN 1 BOX OF EACH TYPE OF CEILING TILE SUPPLIED.
      d. WOOD FLOORING: PROVIDE FULL-SIZE UNITS EQUAL TO 3% OF QUANTITY INSTALLED, BUT NOT LESS THAN 50 S.F.
      e. LAMINATE FLOORING: PROVIDE FULL-SIZE UNITS EQUAL TO 3% OF QUANTITY INSTALLED, BUT NOT LESS THAN 50 S.F.
      f. RESILIENT SHEET FLOORING: PROVIDE NOT LESS THAN 10 LINEAR FEET FOR EACH 500 LINEAR FEET OR FRACTION THEREOF INSTALLED.
      g. WALL COVERING MATERIAL: PROVIDE FULL-SIZE UNITS EQUAL TO 5 PERCENT INSTALLED.
      h. TILE CARPET: PROVIDE FULL-SIZE UNITS EQUAL TO 5 PERCENT OF THE AMOUNT INSTALLED, BUT NOT LESS THAN 10 SQ. YD.
      i. SHEET CARPET: PROVIDE FULL-WIDTH ROLLS EQUAL TO 5 PERCENT OF THE AMOUNT INSTALLED, BUT NOT LESS THAN 10 SQ. YD.
      j. CERAMIC, QUARRY, AND PORCELAIN TILE: PROVIDE FULL-SIZE UNITS EQUAL TO 3% OF QUANTITY INSTALLED, BUT NOT LESS THAN 50 S.F.

09 22 16 DRYWALL STUDS (INTERIOR NON-BEARING)

A. REQUIREMENTS:
   1. STUDS SHALL BE SECURED TO TOP AND BOTTOM TRACK WITH (1) #8ML SCREW IN EACH FLANGE (UNLESS A SLIP TRACK IS REQUIRED AT THE TOP OF THE WALL).
   2. PROVIDE SLIP TRACK AT TOP OF FULL HEIGHT PARTITIONS.
   3. STUDS SHALL BE INSTALLED PER "GYPSUM CONSTRUCTION HANDBOOK" AS PUBLISHED BY UNITED STATES GYPSUM COMPANY LATEST EDITION.
   4. DRYWALL STUDS SHALL BE ACCORDING TO THE LIST BELOW OR AS INDICATED ON THE PLANS (THESE HEIGHTS ARE BASED ON THE STUDS HAVING (1) LAYER OF DRYWALL EACH FACE).
   5. STUD SIZE — GAUGE — LIMITING HEIGHT WITH STUD SPACING
      a. 3 5/8" — 25 GA. — 13'-6" AT 16" O.C. — 11'-9" AT 24" O.C.
      b. 3 5/8" — 22 GA. — 15'-3" AT 16" O.C. — 13'-4" AT 24" O.C.
      c. 3 5/8" — 20 GA. — 15'-11" AT 16" O.C. — 13'-11" AT 24" O.C.
      d. 3 5/8" — 362s250-54 — 25'-0" AT 12" O.C. - 22'-8" AT 16" O.C.
      e. 6" — 25 GA. — 20'-0" AT 16" O.C. — 17'-6" AT 24" O.C.
      f. 6" — 22 GA. — 22'-9" AT 16" O.C. — 19'-11" AT 24" O.C.
      g. 6" — 20 GA. — 23'-9" AT 16" O.C. — 20'-9" AT 24" O.C.

09 29 00 GYPSUM BOARD (GYP)

A. DRYWALL SHALL BE INSTALLED PER THE LATEST EDITIONS OF "RECOMMENDED SPECIFICATIONS FOR THE APPLICATION AND FINISHING OF GYPSUM BOARD" GA-216 AS PUBLISHED BY THE GYPSUM ASSOCIATION AND THE "GYPSUM CONSTRUCTION HANDBOOK" AS PUBLISHED BY UNITED STATES GYPSUM COMPANY.
   1. PROVIDE CONTROL JOINTS PER THESE REQUIREMENTS.
B. COMPLY WITH ASTM C36 OR ASTM C 1396 AS APPLICABLE TO THE TYPE OF GYPSUM BOARD INDICATED.
C. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   1. AMERICAN GYPSUM CO.
   2. BPB AMERICAN INC.
   3. G-P GYPSUM
   4. LAFARGE NORTH AMERICA INC.
   5. NATIONAL GYPSUM COMPANY
   6. USG CORPORATION
D. AT ALL TOILET ROOMS, LOCKERS ROOMS, COOLER/FREEZER ROOMS, UNDER FRP PANELS OR OTHER DAMP/WET LOCATIONS PROVIDE:
   1. GOLD BOND XP GYPSUM BOARD BY NATIONAL GYPSUM OR EQUAL
E. UNDER CERAMIC AND PORCELAIN TILE IN TOILET ROOMS, LOCKER ROOMS OR OTHER DAMP/WET LOCATIONS PROVIDE:
   1. FIBEROCK AQUA-TOUGH TILE BACKER BOARD BY USG CORPORATION OR EQUAL.
F. UNDER CERAMIC AND PORCELAIN TILE IN SHOWERS, TUBS, KITCHEN WASH DOWN AREAS OR OTHER HIGH-MOISTURE AREAS PROVIDE:
   1. DUROCK CEMENT BOARD BY USG CORPORATION OR EQUAL
G. DRYWALL FINISHES SHALL BE INSTALLED PER THE LATEST EDITION OF "RECOMMENDED LEVELS OF GYPSUM BOARD FINISH" GA-214 AS PUBLISHED BY THE AWCI, PAINTING AND DECORATING CONTRACTORS OF AMERICA, GYPSUM ASSOCIATION AND CISCA.
H. LEVELS OF FINISH:
   1. SEE PLANS FOR FINISH LOCATIONS.
   2. LEVEL 0 — NO TAPING, FINISHING OR ACCESSORIES REQUIRED.
   3. LEVEL 1 — JOINTS AND INTERIOR ANGLES HAVE TAPE SET IN JOINT COMPOUND; SURFACE IS FREE OF EXCESS JOINT COMPOUND; TOOL MARKS AND RIDGES ARE ACCEPTABLE; TAPE AND FASTENERS ARE NOT COVERED WITH JOINT COMPOUND.
   4. LEVEL 2 — JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND HAVE A THIN COAT OF JOINT COMPOUND OVER JOINTS AND INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES ARE COVERED WITH JOINT COMPOUND; SURFACE IS FREE OF EXCESS JOINT COMPOUND; TOOL MARKS AND RIDGES ARE ACCEPTABLE.
   5. LEVEL 3 — JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND ONE ADDITIONAL COAT OF JOINT COMPOUND OVER ALL JOINTS AND INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES COVERED WITH TWO (2) COATS OF JOINT COMPOUND; NO TOOL MARKS OR RIDGES.
   6. LEVEL 4 — JOINTS AND INTERIOR ANGLES HAVE TAPE EMBEDDED IN JOINT COMPOUND AND TWO SEPARATE COATS OF JOINT COMPOUND APPLIED OVER ALL FLAT JOINTS AND ONE SEPARATE COAT APPLIED OVER INTERIOR ANGLES; FASTENER HEADS AND ACCESSORIES ARE COVERED WITH THREE (3) SEPARATE COATS OF JOINT COMPOUND; NO TOOL MARKS OR RIDGES.
   7. LEVEL 5 — IN ADDITION TO REQUIREMENTS OF LEVEL 4, A THIN SKIM COAT OF JOINT COMPOUND OR EQUAL SHALL BE APPLIED TO THE ENTIRE SURFACE: NO TOOL MARKS OR RIDGES ON THIS SURFACE.

09 51 13 ACOUSTICAL CEILINGS (ACT/ VCGB)

A. PANELS
   1. PROVIDE MANUFACTURER'S STANDARD CEILING TILE AS SCHEDULED COMPLYING WITH ASTM 1264 CLASSIFICATIONS.
   2. INSTALL PANELS WITH UNDAMAGED EDGES AND FIT ACCURATELY INTO SUSPENSION SYSTEM RUNNERS AND EDGE MOLDINGS. SCRIBE AND CUT PANELS AT BORDERS AND PENETRATIONS TO PROVIDE A NEAT, PRECISE FIT.
   3. PROVIDE HOLD-DOWN CLIPS AT ENTRY VESTIBULE(S) AND FOR FIRST 12' OF CORRIDOR(S) IN FRONT OF EACH EXTERIOR DOOR.
   4. PROVIDE APPROVED FIRE RATED GRID SYSTEM FOR FIRE RATED CEILINGS.
   5. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION.
B. GRID
   1. COMPLY WITH ASTM C636 (STANDARD PRACTICE FOR INSTALLATION OF METAL CEILING SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANELS), ASTM C635 (STANDARD SPECIFICATION FOR THE MANUFACTURE, PERFORMANCE AND TESTING OF METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANEL CEILINGS) AND SEISMIC DESIGN REQUIREMENTS INDICATED, PER MANUFACTURER'S WRITTEN INSTRUCTIONS AND CISCA'S "CEILING SYSTEMS HANDBOOK".
   2. SUSPEND CEILING HANGERS FROM BUILDING'S STRUCTURAL MEMBERS, PLUMB AND FREE FROM CONTACT WITH INSULATION OR OTHER OBJECTS WITHIN CEILING PLENUM. SPLAY HANGERS ONLY WHERE REQUIRED AND, IF PERMITTED WITH FIRE-RESISTANCE-RATED CEILINGS, TO MISS OBSTRUCTIONS, OFFSET RESULTING HORIZONTAL FORCES BY BRACING, COUNTER SPLAYING, OR OTHER EQUALLY EFFECTIVE MEANS. WHERE WIDTH OF DUCTS AND OTHER CONSTRUCTION WITHIN CEILING PLENUM PRODUCES HANGER SPACING THAT INTERFERE WITH LOCATION OF HANGERS, USE TRAPEZES OR EQUIVALENT DEVICES. WHEN STEEL FRAMING DOES NOT PERMIT INSTALLATION OF HANGER WIRES AT SPACING REQUIRED, INSTALL CARRYING CHANNELS OR OTHER SUPPLEMENTAL SUPPORT FOR ATTACHMENT OF HANGER WIRES.
   3. WIRE HANGERS TO BE ZINC-COATED CARBON STEEL WIRE COMPLYING WITH ASTM A641 STANDARDS, SIZED TO WITHSTAND 5X THE HANGER DESIGN LOAD BUT NOT LESS THAN 0.106" IN DIAMETER.
   4. INSTALL EDGE MOLDINGS AND TRIM AT PERIMETER OF ACOUSTICAL CEILING AREA AND WHERE NECESSARY TO CONCEAL EDGES OF ACOUSTICAL PANELS. SCREW ATTACH MOLDINGS TO SUBSTRATE, LEVELING WITH CEILING SUSPENSION SYSTEM. MITER CORNERS ACCURATELY AND CONNECT SECURELY.
   5. INSTALL SUSPENSION SYSTEM RUNNERS SO THEY ARE SQUARE AND SECURELY INTERLOCKED WITH ONE ANOTHER. REMOVE AND REPLACE DENTED, BENT, OR KINKED MEMBERS. SUSPENSION SYSTEM AS REQUIRED FOR THE SPECIFIED TILE-INTERMEDIATE DUTY CLASSIFICATION.
   6. PROVIDE CORROSION RESISTANT GRID IN SHOWER AND EXTREME ENVIRONMENT AREAS.

09 65 13 VINYL COVE BASE AND ACCESSORIES (VB)

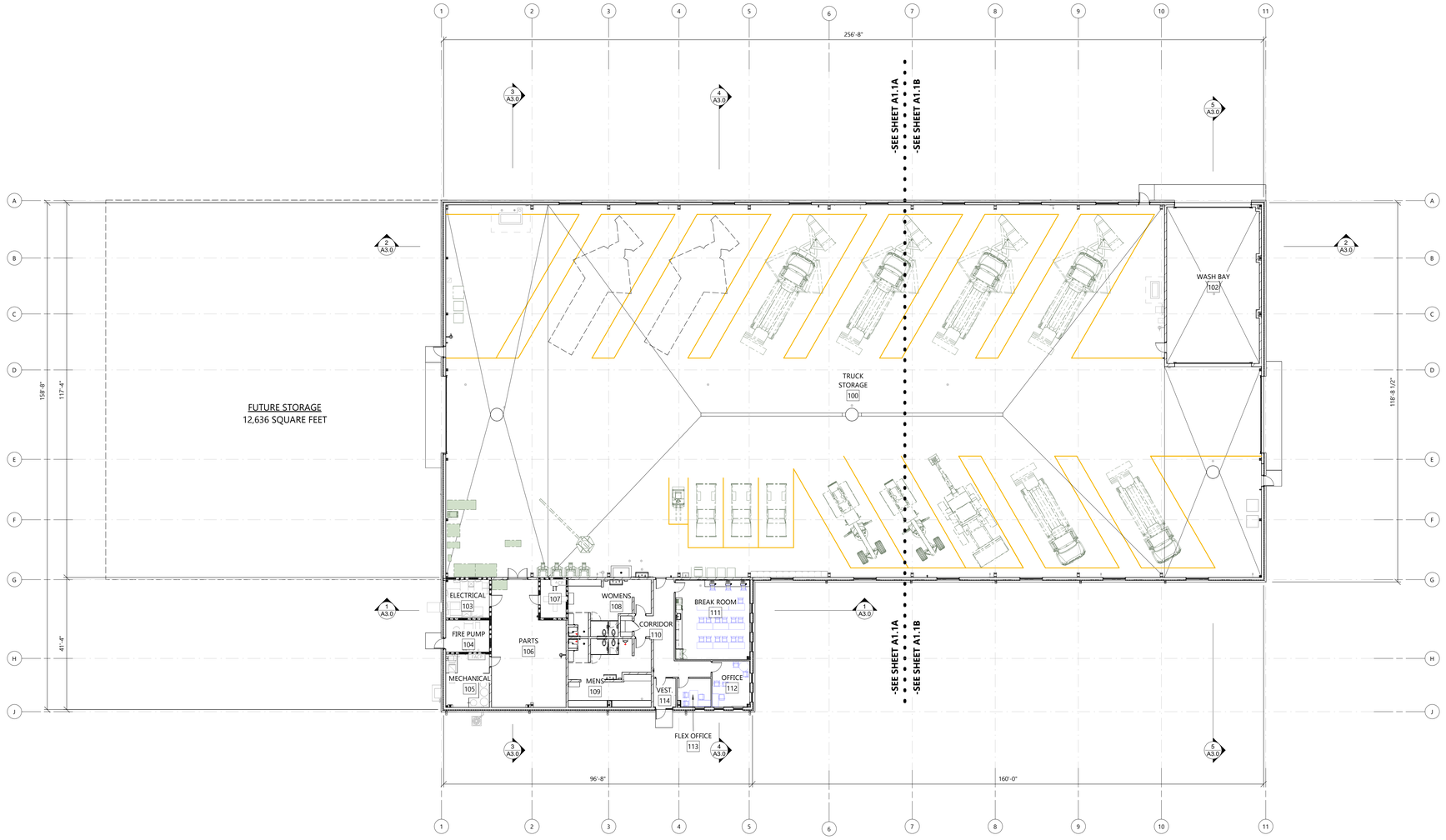
A. PROVIDE MANUFACTURES STANDARD VINYL BASE AS SPECIFIED THAT COMPLIES WITH ASTM F1861 TYPE TV.
B. PROVIDE MANUFACTURES STANDARD VINYL ACCESSORIES AS SPECIFIED THAT COMPLIES WITH ASTM F2169 TYPE TV.
C. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLING RESILIENT BASE AND ACCESSORIES.
D. PREPARE SUBSTRATES ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS TO ENSURE ADHESION OF BASE AND ACCESSORIES.
E. APPLY RESILIENT BASE TO WALLS, COLUMNS, PILASTERS, CASEWORK AND CABINETS IN TOE SPACES AND OTHER PERMANENT FIXTURES IN ROOMS AND AREAS WHERE BASE IS SPECIFIED.
F. INSTALL RESILIENT BASE IN LENGTHS AS LONG AS PRACTICAL WITHOUT GAPS AT SEAMS AND WITH TOPS OF ADJACENT PIECES ALIGNED.
G. TIGHTLY ADHERE RESILIENT BASE OR ACCESSORY TO SUBSTRATE THROUGHOUT LENGTH OF EACH PIECE, WITH BASE OR ACCESSORY IN CONTINUOUS CONTACT WITH HORIZONTAL AND VERTICAL SUBSTRATES.
H. DO NOT STRETCH RESILIENT BASE DURING INSTALLATION.
I. ON MASONRY SURFACES OR OTHER SIMILAR IRREGULARES SUBSTRATES, FILL VOIDS ALONG TOP EDGE OF RESILIENT BASE WITH MANUFACTURER'S RECOMMENDED ADHESIVE FILLER MATERIAL.
J. SEE PLAN FOR PRODUCT SPECIFICATION AND LOCATION.

09 66 31 RESINOUS FLOORING — EPOXY (EPX)

A. 1/4" EPOXY FLOORING.
B. PREPARE CONCRETE FLOOR BY MECHANICAL MEANS BY USE OF SCABBLER, SCARIFIER OR SHOT BLASTING. KEY CRACKS AND EDGES WHICH DO NOT ABUT A VERTICAL SURFACE (I.E. DOOR THRESHOLDS AND DRAINS).
C. HEAT WORK AREA TO 65 TO 90 DEG F FOR A MINIMUM 3 DAYS PRIOR TO AND 2 DAYS AFTER INSTALLATION.
D. PERFORM A MOISTURE TEST ON THE CONCRETE SLAB TO CONFIRM CONDITIONS MEET MFR'S REQUIREMENTS PRIOR TO INSTALLING THE FLOOR.
E. INSTALL TWO COMPONENT EPOXY PRIMER, THREE COMPONENT MORTAR CONSISTING OF EPOXY RESIN, CURING AGENTS AND GRADED AGGREGATES AND A TWO COMPONENT 100% SOLIDS GENERAL SURFACE EPOXY COATING WITH TEXTURE AS SELECTED BY OWNER.
F. CUT IN EXPANSION AND CONTROL JOINTS IN EPOXY AT SAME LOCATION AS CONCRETE FLOOR JOINTS. FILL WITH FLEXIBLE POLYURETHANE SEALANT.
G. SUBMIT COLOR AND TEXTURE SAMPLES AND MANUFACTURER'S TECHNICAL DATA FOR APPROVAL (MATCH EXISTING FINISH AND COLOR). OBTAIN ALL MATERIALS FROM A SINGLE MANUFACTURER WITH NOT LESS THAN 10 YEARS OF EXPERIENCE. THE CONTRACTOR SHALL HAVE COMPLETED AT LEAST 5 PROJECTS OF SIMILAR SIZE IN PRIOR 2 YEARS.
H. FURNISH A NON-PRORATED WARRANTY COVERING MATERIALS AND WORKMANSHIP FOR A 2 YEAR PERIOD FROM DATE OF INSTALLATION.
I. EPOXY BASE (EPX)
   1. MATCH PREPARATION, MATERIALS, AND CONSTRUCTION OF FLOOR SYSTEM.

09 91 00 PAINTING

A. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SCAFFOLDING REQUIRED FOR COMPLETING SURFACE PREPARATION, PAINTING, FINISHING AND RELATED ITEMS.
B. SEAL TOPS, BOTTOMS AND CUTOUTS OF UNPRIMED WOOD DOORS WITH A HEAVY COAT OF SEALER IMMEDIATELY UPON DELIVERY TO THE PROJECT.
C. PREPARATION
   1. REMOVE AND/OR PROTECT ALL HARDWARE, HARDWARE ACCESSORIES, MACHINED SURFACES, PLATES, LIGHTING FIXTURES, SPRINKLER HEADS AND SIMILAR ITEMS THAT ARE NOT TO BE PAINTED BUT REQUIRE PROTECTION FROM THE PAINTING PROCESS. RE-INSTALL SAME AFTER COMPLETION OF PAINTING. MASK OFF ALL NAMEPLATES, EQUIPMENT IDENTIFICATION AND SIMILAR ITEMS. REMOVAL AND REINSTALL OF ITEMS IS TO BE DONE BY CONTRACTOR SKILLED IN SUCH WORK.
   2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER PREPARATION OF ALL SURFACES PRIOR TO THE PAINTING INSTALLATION.
   3. REVIEW CLEANING SOLVENTS AND PROTOCOLS WITH COATING MANUFACTURER TO DETERMINE TEMPERATURE AND CHEMICAL RESISTANCE.
   4. MILD STEEL
      a. PREPARE UNPRIMED STEEL TO SSPC-SP-2 OR 3 (HAND OR POWER TOOL CLEANING).
      b. PREPARE ALL FIELD WELDED LOCATIONS PER THE REQUIREMENTS SET FORTH IN THIS SECTION.
      c. VERIFY FINISH COAT COLORS WITH OWNER.
   5. GALVANIZED METAL
      a. CLEAN PER SSPC-SP-1 USING DETERGENT AND WATER OR A DEGREASING CLEANER TO REMOVE GREASES AND OILS.
      b. APPLY A TEST AREA, PRIMING AS REQUIRED. ALLOW THE COATING TO DRY AT LEAST ONE WEEK BEFORE TESTING.
      c. IF ADHESION IS POOR, BRUSH BLAST PER SSPC-SP16 IS NECESSARY TO REMOVE THESE TREATMENTS.
   6. CONCRETE BLOCK (CMU)
      a. PREPARE ALL CMU SURFACES PER COATING MANUFACTURER'S RECOMMENDATIONS RELATED TO CLEANLINESS, DRYNESS AND SURFACE PROFILE.
      b. FILL ALL CMU SURFACES TO REMOVE VOIDS AND PROVIDE A SURFACE PROFILE CONSISTENT WITH REQUIREMENTS FOR INTERMEDIATE AND/OR FINISH COATING APPLICATIONS.
      c. VERIFY FINISH COAT COLORS WITH OWNER.
   7. PRECAST CONCRETE
      a. PREPARE PRECAST SURFACES PER SSPC-SP-13
      b. IF REQUIRED BY THE COATING MANUFACTURER, ACHIEVE THE APPROPRIATE CONCRETE SURFACE PROFILE (CSP) AS DEFINED BY ICRI GUIDELINES 310.2R-2013.
D. CONTRACTOR TO VERIFY THAT PAINT IS COMPATIBLE WITH PRIMER OF SHOP PRIMED SURFACES. NOTIFY EXCEL ENGINEERING IF THERE ARE ANY COMPATIBILITY ISSUES.
E. ALL PAINT COLORS, STAIN COLORS, AND VARNISH TO BE SELECTED BY ARCHITECT/OWNER FROM A FULL RANGE OF AVAILABLE COLORS UNLESS NOTED OTHERWISE.
F. THE FINISH PRODUCT SHALL HAVE A CONSISTENT, SMOOTH APPEARANCE OF THE SPECIFIED LUSTER.
G. APPLY PAINT PER MANUFACTURER'S TEMPERATURE AND HUMIDITY REQUIREMENTS.
H. COMPLETED WORK SHALL BE FREE FROM DEFECTS AND FLAWS.
I. THE CONTRACTOR SHALL KEEP EMPTY CONTAINERS ON THE PROJECT SITE UNTIL ALL PRODUCTS ARE VERIFIED AS TO COLOR AND/OR SHEEN. THE CONTRACTOR SHALL LEAVE WITH THE OWNER ALL OPENED PAINT CONTAINERS.
J. DISPOSE OF EXCESS MATERIALS, CONTAINERS AND OTHER ITEMS NECESSARY FOR THE COMPLETION OF THE WORK IN A MANNER THAT MEETS OR EXCEEDS THE STRICTEST LAWS GOVERNING THE PROJECT'S MUNICIPALITY AND/OR STATE. THE PAINTING CONTRACTOR IS RESPONSIBLE FOR COMPLETE ADHERENCE TO ALL DISPOSAL REGULATIONS.
K. COATING MAINTENANCE MANUAL
   1. UPON CONCLUSION OF THE PROJECT, THE CONTRACTOR OR PAINT MANUFACTURER/SUPPLIER SHALL FURNISH A COATING MAINTENANCE MANUAL, SUCH AS SHERWIN WILLIAMS "CUSTODIAN PROJECT COLOR AND PRODUCT INFORMATION" REPORT OR EQUAL. MANUAL SHALL INCLUDE AN AREA SUMMARY WITH FINISH SCHEDULE, AREA DETAIL DESIGNATING WHERE EACH PRODUCT/COLOR/FINISH WAS USED, PRODUCT DATA PAGES, MATERIAL SAFETY DATA SHEETS, CARE AND CLEANING INSTRUCTIONS, TOUCH-UP PROCEDURES, AND COLOR SAMPLES OF EACH COLOR AND FINISH USED.
L. PAINT VENT THRU ROOFS ON PITCHED ROOF SAME COLOR AS ROOFING MATERIAL.
M. PAINT ALL EXPOSED MISCELLANEOUS ITEMS, FINISHED OR UNFINISHED
N. PAINT CEILING ACCESS PANELS TO MATCH ADJACENT CEILING FINISH.
O. PROVIDE A YELLOW STRIPED AREA, 3' DEEP BY THE WIDTH OF THE ELECTRICAL PANELS, ON THE CONCRETE FLOOR IN FRONT OF THE ELECTRICAL PANELS AND SWITCHGEAR. AT THE SWITCHGEAR, PAINT THE EXPOSED PORTION OF THE CONCRETE HOUSEKEEPING PAD YELLOW.
P. ALL EXPOSED EXTERIOR & INTERIOR METAL SURFACES SHALL BE PAINTED, U.N.O.
Q. ALL EXPOSED MISCELLANEOUS ITEM IN FOOD PROCESS ROOMS SHALL REMAIN UNPAINTED UNLESS NOTED OTHERWISE. PROTECT ALL SUCH SYSTEM DURING THE PAINTING PROCESSES WITHIN THE ROOMS.
R. EXTERIOR ITEMS:
   1. FERROUS METAL:
      a. ACRYLIC - MISCELLANEOUS IRON, EXPOSED ROOF PIPING, ETC.:
         i. PRIMER: SEE SHOP APPLIED COATING SCHEDULE ON STRUCTURAL DRAWINGS FOR PRIMER. FOR SPOT PRIMING AND FERROUS METALS WITHOUT SHOP APPLIED PRIMER, APPLY 1 COAT S-W KEM BOND HS UNIVERSAL METAL PRIMER B50 SERIES
         ii. 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS, B66-650 @ 2.5-4.0 MILS DFT/COAT.
      b. EPOXY URETHANE - HOLLOW METAL DOORS AND FRAMES, STRUCTURAL STEEL:
         i. PRIMER: SEE SHOP APPLIED COATING SCHEDULE ON STRUCTURAL DRAWINGS FOR PRIMER. FOR SPOT PRIMING AND FERROUS METALS WITHOUT SHOP APPLIED PRIMER, APPLY 1 COAT S-W MACROPOXY 646 FAST CURE EPOXY, B65-600 SERIES @ 5.0 MILS DFT
         ii. 2 COATS S-W WATER BASED ACROLON 100, B65-720 @ 2. 0 MILS DFT/COAT.
   2. GALVANIZED, ALUMINUM, ZINC-COATED AND NON-FERROUS METALS:
      a. ACRYLIC
         i. PRIMER: APPLY 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER, B66-1310 SERIES, @ 2.0-4.0 MILS DFT.
         ii. 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS, B66-650 @ 2.5-4.0 MILS DFT/COAT.
      b. EPOXY URETHANE STRUCTURAL STEEL, HIGH VISIBILITY/TRAFFIC ADD ADDITIONAL LOCATIONS WHERE WANT USED:
         i. PRIMER: SEE SHOP APPLIED COATING SCHEDULE ON STRUCTURAL DRAWINGS FOR PRIMER. FOR SPOT PRIMING AND FERROUS METALS WITHOUT SHOP APPLIED PRIMER, APPLY 1 COAT S-W MACROPOXY 646 FAST CURE EPOXY, B65-600 SERIES @ 5.0 MILS DFT
         ii. 2 COATS S-W WATER BASED ACROLON 100, B65-720 @ 2. 0 MILS DFT/COAT.
   3. CONCRETE (POURED IN PLACE CONCRETE):
      a. ACRYLIC WATER BASED SYSTEM — NON WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION)
         i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.
         ii. 2 COAT S-W A-100 EXTERIOR LATEX SATIN A82 SERIES @ 1.5-2.0 MILS DFT/COAT.
      b. HIGH BUILD WATER BASED SYSTEM — WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION)
         i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.
         ii. 2 COAT S-W LOXON XP, LX11 SERIES @ 6.5-8.4 MILS DFT/COAT.
      c. ACRYLIC SELF CLEANING SYSTEM — SHEDS DIRT WHEN CONTACTED BY WATER (DESCRIBE TYPICAL LOCATION)
         i. 1 COAT S-W LOXON CONCRETE MASONRY PRIMER LX02 @ 2.0-3.5 MILS DFT.
         ii. 2 COAT S-W LOXON SELF CLEANING ACRYLIC LX13 SERIES @ 2.1-2.9 MILS DFT/COAT.
      d. SOLID WATERBORNE STAIN FINISH (DESCRIBE TYPICAL LOCATION):
         i. 1 COAT S-W LOXON VERTICAL CONCRETE STAIN, LX31 SERIES.
         ii. 2 COAT S-W LOXON VERTICAL CONCRETE STAIN, LX31 SERIES.
   4. CONCRETE (CONCRETE MASONRY UNITS):
      a. ACRYLIC WATER BASED SYSTEM — NON WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION).
         i. 1 COAT S-W LOXON ACRYLIC BLOCK SURFACER, LX01 SERIES (50-100 sf/gal).
         ii. 2 COAT S-W A-100 EXTERIOR LATEX SATIN A82 SERIES @ 1.5-2.0 MILS DFT/COAT.
      b. HIGH BUILD WATER BASED SYSTEM — WATER PENETRATION RESISTANT (DESCRIBE TYPICAL LOCATION).
         i. 1 COAT S-W LOXON ACRYLIC BLOCK SURFACER, L01 SERIES (50-100 sf/gal).
         ii. 2 COAT S-W LOXON XP, LX11 SERIES @ 6.5-8.4 MILS DFT/COAT.
      c. ACRYLIC SELF CLEANING SYSTEM — SHEDS DIRT WHEN CONTACTED BY WATER (DESCRIBE TYPICAL LOCATION)
         i. 1 COAT S-W LOXON ACRYLIC BLOCK SURFACER, L01 SERIES (50-100 sf/gal).
         ii. 2 COAT S-W LOXON SELF CLEANING ACRYLIC LX13 SERIES @ 2.1-2.9 MILS DFT/COAT.
      d. SOLID WATERBORNE STAIN FINISH (DESCRIBE TYPICAL LOCATION):
         i. 1 COAT S-W LOXON VERTICAL CONCRETE STAIN, LX31 SERIES.
         ii. 2 COAT S-W LOXON VERTICAL CONCRETE STAIN, LX31 SERIES.
S. INTERIOR ITEMS:
   1. GYPSUM DRYWALL (PA):
      a. ACRYLIC SATIN
         i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.0 MILS DFT.
         ii. 2 COATS S-W SUPER PAINT INTERIOR ACRYLIC LATEX SATIN A87@ 1.7 MILS DFT/COAT.
      b. ACRYLIC FLAT
         i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.2-1.5 MILS DFT.
         ii. 2 COATS S-W SUPER PAINT INTERIOR ACRYLIC LATEX FLAT A86 @ 1.4 MILS DFT/COAT.
      c. ACRYLIC SEMI-GLOSS
         i. 1 COAT S-W PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER B28W2600 @ 1.2-1.5 MILS DFT.
         ii. 2 COATS S-W SUPER PAINT INTERIOR ACRYLIC LATEX SEMI-GLOSS A88 @ 1.5 MILS DFT/COAT.
   2. FERROUS METAL
      a. MISC. METALS, ETC., (PRIMER, BRUSH/ROLLER)
         i. ACRYLIC: STANDARD:
            (A). PRIMER: SEE SHOP APPLIED COATING SCHEDULE ON STRUCTURAL DRAWINGS FOR PRIMER, FOR SPOT PRIMING AND FERROUS METALS WITHOUT SHOP APPLIED PRIMER, APPLY 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66-1310 @ 2.0-4.0 MILS DFT.
            (B). 2 COATS S-W PRO INDUSTRIAL ACRYLIC SEMI GLOSS B-66-650 @ 2.5 — 4 MILS DFT/COAT.
         ii. ALKYD (WATER BASED URETHANE MODIFIED ALKYD): DOORS, FRAMES, HANDRAILS,
            (A). PRIMER: SEE SHOP APPLIED COATING SCHEDULE ON STRUCTURAL DRAWINGS FOR PRIMER: FOR SPOT PRIMING AND FERROUS METALS WITHOUT SHOP APPLIED PRIMER, APPLY 1 COAT S-W PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66-1310 @ 2.0-4.0 MILS DFT.
            (B). 2 COATS S-W PRO INDUSTRIAL WATER BASED ALKYD URETHANE ENAMEL SEMI GLOSS B53-1150 @ 1.4



NORTH

MAIN BUILDING PLAN - OVERALL

SCALE: 1/16" = 1'-0"

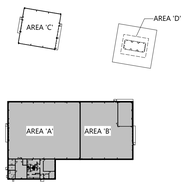
0' 16' 32'

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IW22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IMP — IMP WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M23.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FE — FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6 FOR TYPE AND DETAILS
- DS — DOWNSPOUTS SEE ROOF PLAN DETAILS
- STUD WALL
- CONCRETE WALL
- MASONRY VENEER
- C.M.U. WALL
- (1) HOUR FIRE RATED
- (2) HOUR FIRE RATED
- SEE PLAN FOR ALL WALL WIDTHS
- NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL IN ANY WALL GREATER THAN 30' IN LENGTH. POSITION ABOVE JAMB OF WALL OPENING. SEE A4 SHEETS FOR TYPICAL DETAILS.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).
- PROVIDE BLOCKING AND SUPPORT FOR ANY EQUIPMENT, FIXTURES, ETC. MOUNTED AT THE PEMP SECONDARY STRUCTURE/GIRT SPACE (TYP.)



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - OVERALL AREA 'A' & 'B'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

A1.1

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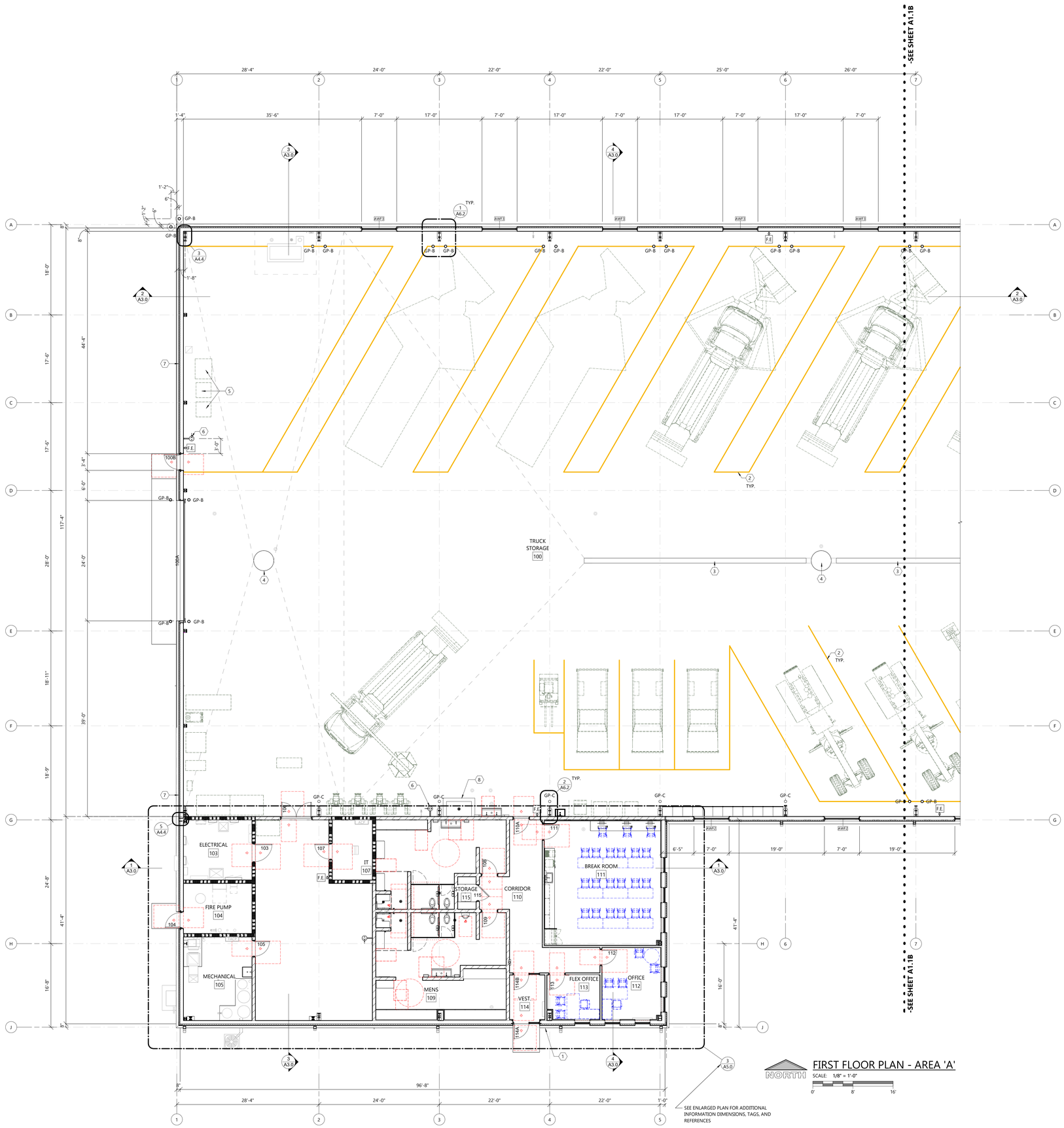

FIRST FLOOR PLAN - AREA 'A'

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

0' 8' 16'

NORTH

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- #W22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IMP — IMP WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- #M23.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FEC — FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6 FOR TYPE AND DETAILS
- DS — DOWNSPOUTS SEE ROOF PLAN DETAILS
- STUD WALL
- CONCRETE WALL
- MASONRY VENEER
- C.M.U. WALL
- (1) HOUR FIRE RATED
- (2) HOUR FIRE RATED
- SEE PLAN FOR ALL WALL WIDTHS
- NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL IN ANY WALL GREATER THAN 30' IN LENGTH. POSITION ABOVE JAMB OF WALL OPENING. SEE A4 SHEETS FOR TYPICAL DETAILS.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).
- PROVIDE BLOCKING AND SUPPORT FOR ANY EQUIPMENT, FIXTURES, ETC. MOUNTED AT THE PEMP SECONDARY STRUCTURE/GIRT SPACE (TYP.)

FLOOR PLAN KEYNOTES

1. PROPOSED KNOX BOX LOCATION. KNOX BOX IS REQUIRED AT THE PRIMARY ENTRANCE PER LOCAL STANDARDS. COORDINATE FINALLY LOCATION(S) AND REQUIREMENTS WITH LOCAL FIRE DEPARTMENTS/BUILDING INSPECTOR.
2. PROPOSED INTERIOR PARKING STRIPING. SEE FLOOR FINISH PLAN FOR ADDITIONAL INFORMATION.
3. FORMED CONCRETE TRENCH DRAIN. SEE STRUCTURAL PLANS
4. CATCH BASIN. SEE PLUMBING PLANS
5. CONTROL AREA FOR MATERIAL STORAGE. SEE CODE SHEETS FOR MAQ MATRIX
6. EMERGENCY EYE WASH STATION/SHOWER. SEE PLUMBING PLAN
7. WALL TO BE REMOVED FOR FUTURE EXPANSION, IF DESIRED
8. SEE BOOT SCRUBBING CURB DETAIL - SEE S1 SHEET

KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'A'' - MAIN BUILDING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

A1.1A

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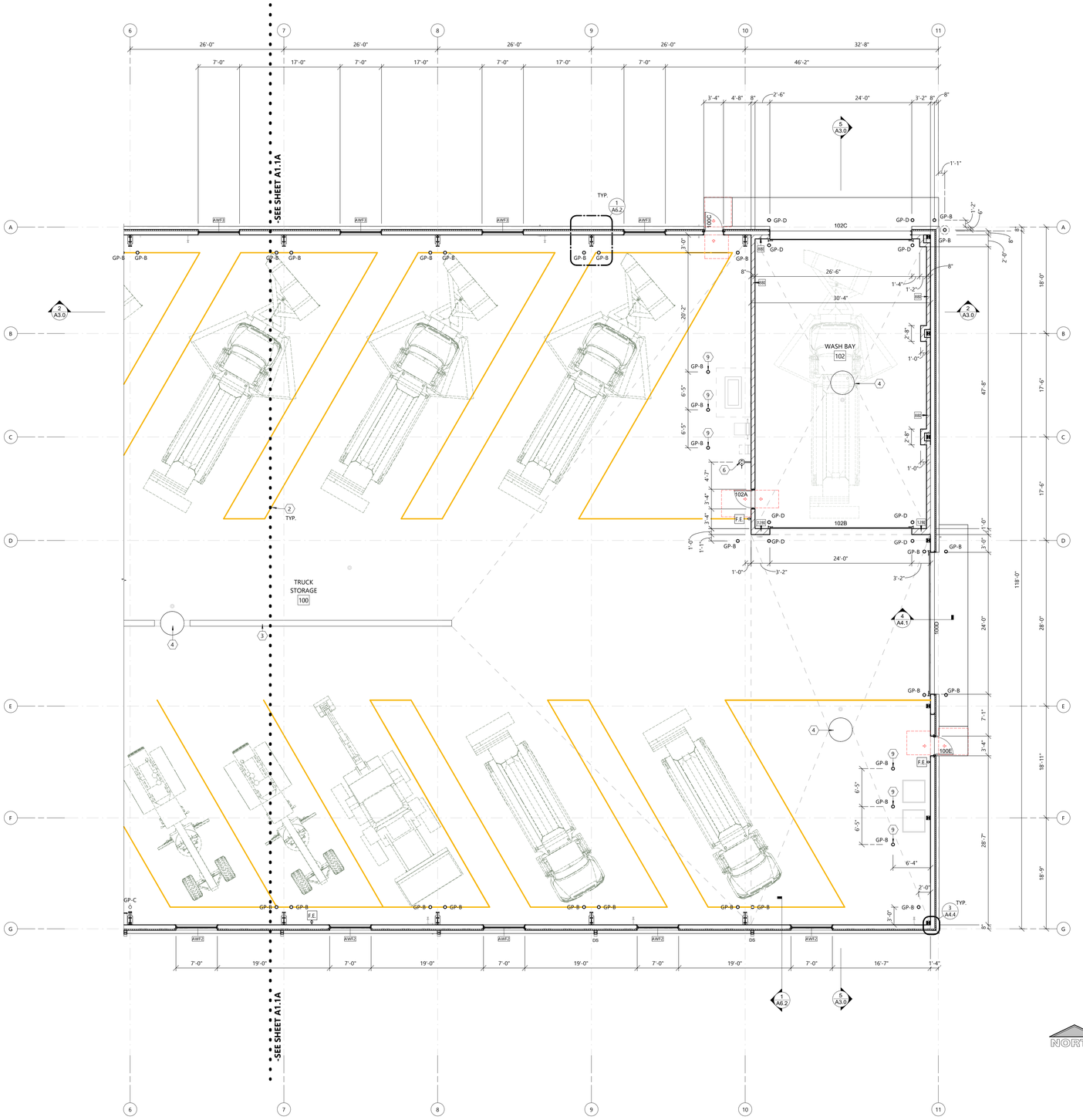

SYMBOLS LEGEND

- EXTERIOR WALL TYPE (EM1) • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE (4W22) • SEE A4 SHEETS FOR WALL TYPES
- IMP WALL TYPE (6IMP) • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE (6M23.2 FW) • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6 FOR TYPE AND DETAILS
- DS DOWNSPOUTS SEE ROOF PLAN DETAILS
- STUD WALL
- CONCRETE WALL
- MASONRY VENEER
- C.M.U. WALL
- (1) HOUR FIRE RATED
- (2) HOUR FIRE RATED
- SEE PLAN FOR ALL WALL WIDTHS
- NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
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- PROVIDE BLOCKING AND SUPPORT FOR ANY EQUIPMENT, FIXTURES, ETC. MOUNTED AT THE PEMP SECONDARY STRUCTURE/GIRT SPACE (TYP.)

FLOOR PLAN KEYNOTES

#	
2	PROPOSED INTERIOR PARKING STRIPING. SEE FLOOR FINISH PLAN FOR ADDITIONAL INFORMATION.
3	FORMED CONCRETE TRENCH DRAIN. SEE STRUCTURAL PLANS
4	CATCH BASIN. SEE PLUMBING PLANS
6	EMERGENCY EYE WASH STATION/SHOWER. SEE PLUMBING PLAN
9	CENTER BOLLARDS ON DUCTWORK. VERIFY FINAL LOCATION WITH HVAC CONTRACTOR.

FIRST FLOOR PLAN - AREA 'B'

NORTH

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

0' 8' 16'

KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'B' - MAIN BUILDING

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

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SHEET NUMBER

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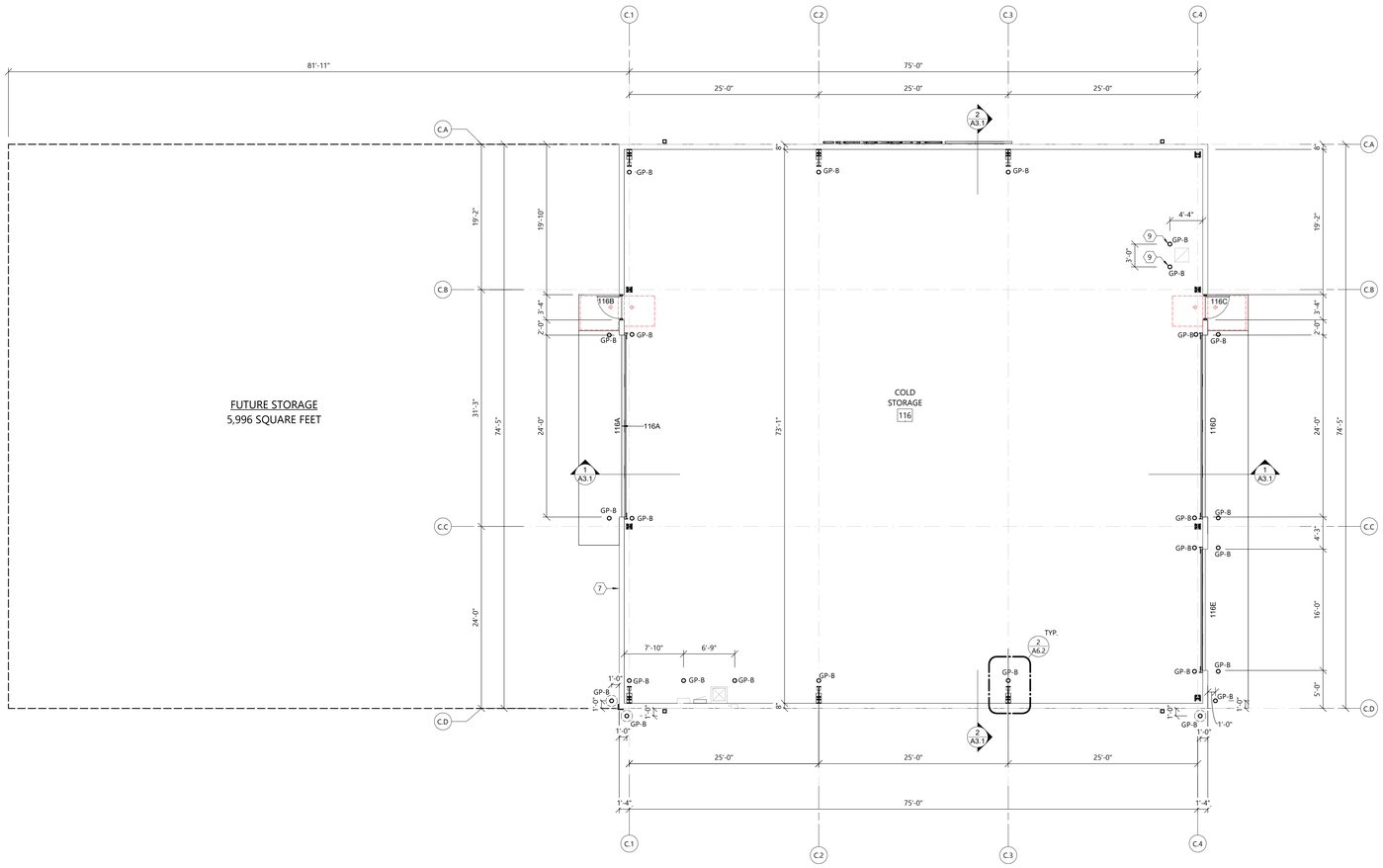

NORTH

FIRST FLOOR PLAN - AREA 'C' - COLD STORAGE

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

0' 8' 16'

SYMBOLS LEGEND

- EXTERIOR WALL TYPE (EM1) • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE (4W22) • SEE A4 SHEETS FOR WALL TYPES
- IMP WALL TYPE (IMP) • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE (6M23.2 FW) • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6 FOR TYPE AND DETAILS
- DS — DOWNSPOUTS SEE ROOF PLAN DETAILS
- STUD WALL
- CONCRETE WALL
- MASONRY VENEER
- C.M.U. WALL
- (1) HOUR FIRE RATED
- (2) HOUR FIRE RATED
- SEE PLAN FOR ALL WALL WIDTHS
- NEW DOOR

GENERAL NOTES

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FLOOR PLAN KEYNOTES

7	WALL TO BE REMOVED FOR FUTURE EXPANSION, IF DESIRED
9	CENTER BOLLARDS ON DUCTWORK. VERIFY FINAL LOCATION WITH HVAC CONTRACTOR.

EXCEL

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

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JOB NUMBER

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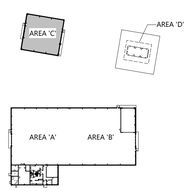

KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'C' - COLD STORAGE

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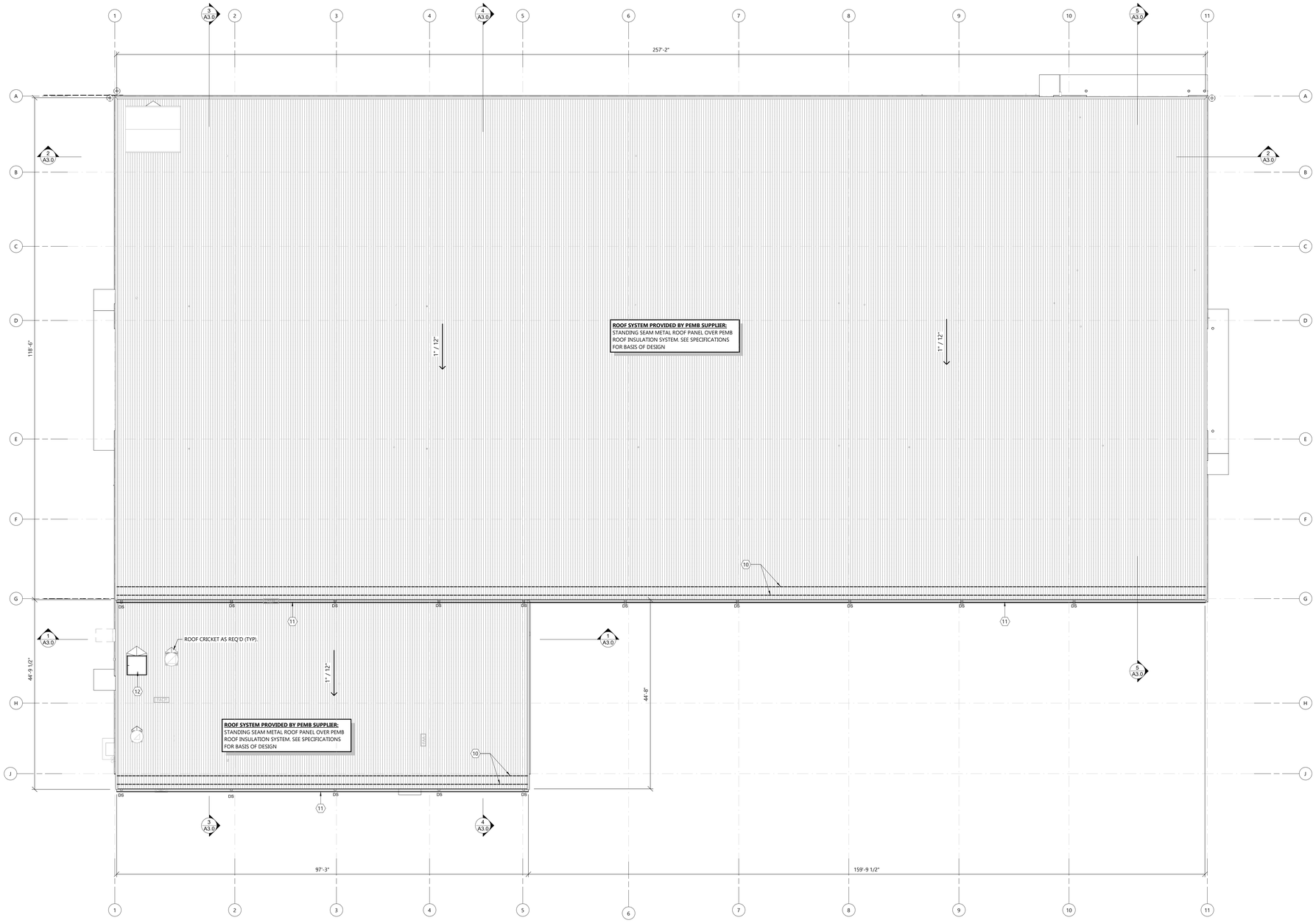

NORTH

ROOF PLAN - OVERALL - AREA 'A' & 'B'

SCALE: 3/32" = 1'-0"

0' 8' 16'

ROOF LEGEND

DS	DOWNSPOUT
→	ROOF SLOPE DIRECTION
△	CRICKET ON HIGH SIDE OF ROOF EQUIPMENT

GENERAL ROOF NOTES:

- ROOFING CONTRACTOR SHALL PROVIDE MEMBRANE FORM FLASHING FOR ALL ROOF PENETRATIONS PER ROOF MEMBRANE MANUFACTURER'S REQUIREMENTS.
- SEE MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF ALL ROOF PENETRATIONS AND CURBS REQUIRED FOR MECHANICAL EQUIPMENT.
- PIPE STANDS NOT INSTALLED ON CURBS SHALL BE INSTALLED ON SLEEPERS OR CONCRETE PADS 6" LARGER THAN EQUIPMENT.
- PROVIDE SINGLE PLY ROOFING MEMBRANE NOT ADHERED TO ROOF UNDER ALL FREE STANDING PIPE AND EQUIPMENT STANDS 6" LARGER THAN STANDS.

FLOOR PLAN KEYNOTES

#	
10	SNOW GUARDS TO BE INSTALLED PER METAL ROOF MANUFACTURE'S SPECIFICATION. PEMP SUPPLIER TO VERIFY LOCATIONS AND SPACING.
11	GUTTERS AND DOWNSPOUTS: SEE FLOOR PLANS AND ELEVATIONS FOR DOWNSPOUT LOCATIONS AND SPECIFICATION FOR BASIS OF DESIGN. SUPPLIER TO PROVIDE DOUBLE THE MANUFACTURER STANDARD AMOUNT OF HANGERS FOR ALL GUTTERS (TYP).
12	ROOF HATCH FOR MAINTFIRE PUMP AND ROOF HATCH TO BE ALIGNED CENTER-TO-CENTER TO ALLOW FUTURE REMOVAL OF THE FIRE PUMP. COORDINATE AND VERIFY OPENING REQUIREMENTS WITH FIRE PUMP CONTRACTOR.

STANDING SEAM METAL ROOF SPEC:

MANUFACTURER (BASIS OF DESIGN):
- PAC-CLAD (OR EQUAL)

MODEL:
- TITE-LOC PLUS

CONSTRUCTION:
- 22 GA GALVANIZED SMOOTH PANEL 16" WIDE WITH 2" HIGH (90 DEGREE) SEAMS
- COLOR TO MATCH FLUTED IMP PANEL
  - PROVIDE COLOR SAMPLES FOR APPROVAL
- TRIM: TRIM SHALL BE FABRICATED OF THE SAME MATERIAL AND FINISH TO MATCH THE PROFILE. TRIM TO BE ERECTED IN OVERLAPPED CONDITIONS
- CLOSURES: US COMPOSITION OR METAL PROFILED CLOSURES AT THE TOP OF EACH ELEVATION TO CLOSE END OF THE PANELS . METAL CLOSURES TO BE MADE IN THE SAME MATERIAL AND FINISH AS FACE SHEET.

INSTALLATION AND TESTING:
- INSTALL PER MANUFACTURES SPECIFICATIONS AND STANDARD DETAILS
- WATER PENETRATION: WHEN TESTED PER ASTM E-283/1680 AND ASTM E-331/1646 THERE SHALL BE NO UNCONTROLLED WATER PENETRATION OR AIR INFILTRATION THROUGH THE PANEL JOINTS
- ROOF SYSTEM SHALL BE DESIGNED TO MEET A UL CLASS 90 WIND UPLIFT IN ACCORDANCE WITH UL STANDARD 580 AND PANEL SYSTEM SHALL BE ASTM 1592 TESTED AND APPROVED

WARRANTY:
- 20 YEAR - WEATHERTIGHT WARRANTY
- 30 YEAR - FINISH WARRANTY

PEMB ROOF INSULATION SYSTEM SPEC:

MANUFACTURER (BASIS OF DESIGN):
- SILVERCOTE, LLC (OR EQUAL)

MODEL:
- ENERGY SAVER FP

CONSTRUCTION:
- INSULATION (.026 U-FACTOR):
  - 1" EPS SPACER BLOCK
  - (3) LAYERS UNFACED MINERAL WOOL INSUL. (R25+R11+R11=R47) INSTALLED BETWEEN AND ABOVE PRELINS
- VAPOR RETARDER LINER FABRIC W/ UV STABILIZER
  - COLOR: WHITE

INSTALLATION AND TESTING:
- INSTALL PER MANUFACTURES SPECIFICATIONS AND STANDARD DETAILS

WARRANTY:
- 10 YEAR - LIMITED WARRANTY

KEY PLAN

ARCHITECTURAL ROOF PLAN - OVERALL AREA 'A' & 'B'

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

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IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A1.2

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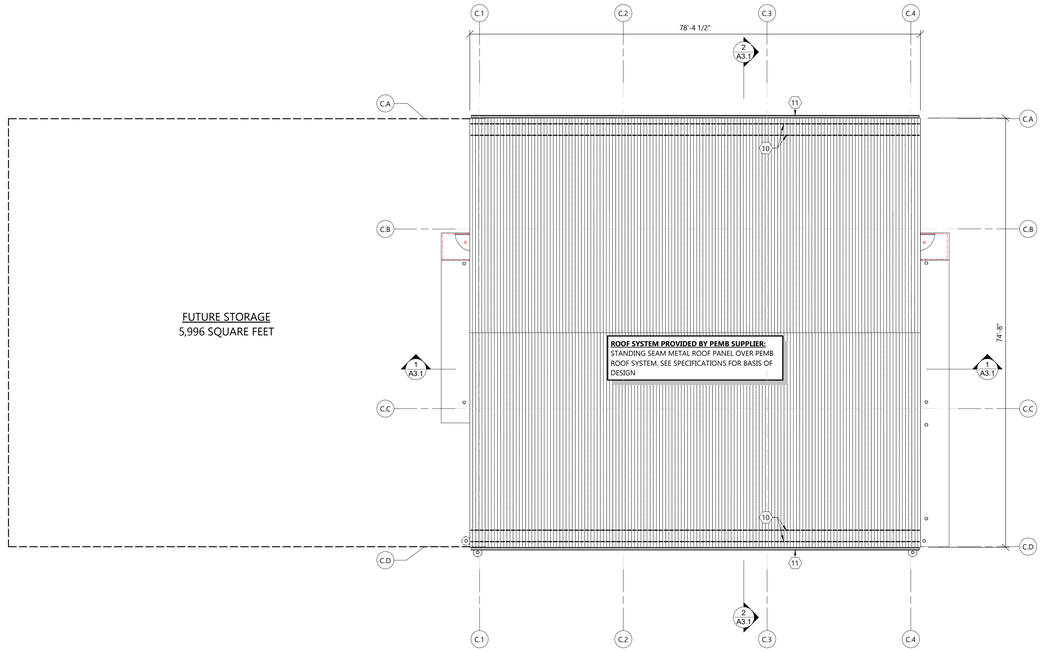

NORTH

ROOF PLAN - COLD STORAGE - AREA 'C'

SCALE: 3/32" = 1'-0"

0' 8' 16'

ROOF LEGEND

DS	DOWNSPOUT
→	ROOF SLOPE DIRECTION
△	CRICKET ON HIGH SIDE OF ROOF EQUIPMENT

GENERAL ROOF NOTES:

- ROOFING CONTRACTOR SHALL PROVIDE MEMBRANE FORM FLASHING FOR ALL ROOF PENETRATIONS PER ROOF MEMBRANE MANUFACTURER'S REQUIREMENTS.
- SEE MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF ALL ROOF PENETRATIONS AND CURBS REQUIRED FOR MECHANICAL EQUIPMENT.
- PIPE STANDS NOT INSTALLED ON CURBS SHALL BE INSTALLED ON SLEEPERS OR CONCRETE PADS 6" LARGER THAN EQUIPMENT.
- PROVIDE SINGLE PLY ROOFING MEMBRANE NOT ADHERED TO ROOF UNDER ALL FREE STANDING PIPE AND EQUIPMENT STANDS 6" LARGER THAN STANDS.

(#) FLOOR PLAN KEYNOTES

10	SNOW GUARDS TO BE INSTALLED PER METAL ROOF MANUFACTURE'S SPECIFICATION. PEMP SUPPLIER TO VERIFY LOCATIONS AND SPACING.
11	GUTTERS AND DOWNSPOUTS: SEE FLOOR PLANS AND ELEVATIONS FOR DOWNSPOUT LOCATIONS AND SPECIFICATION FOR BASIS OF DESIGN. SUPPLIER TO PROVIDE DOUBLE THE MANUFACTURER STANDARD AMOUNT OF HANGERS FOR ALL GUTTERS (TYP).

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Fond du Lac, WI 54935
920-926-9800
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PROJECT INFORMATION

NEW HIGHWAY FACILITY:
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W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

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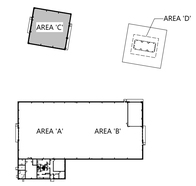

KEY PLAN

ARCHITECTURAL ROOF PLAN - AREA 'C' - COLD STORAGE

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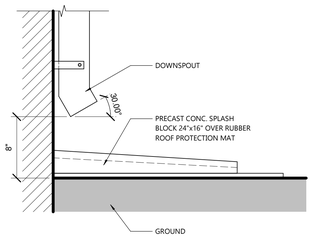
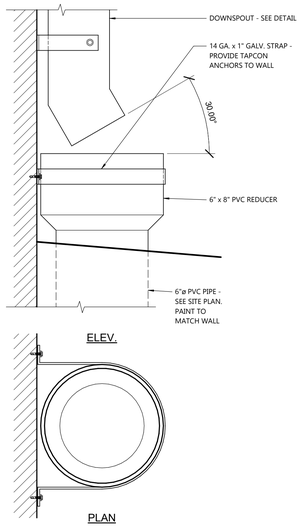
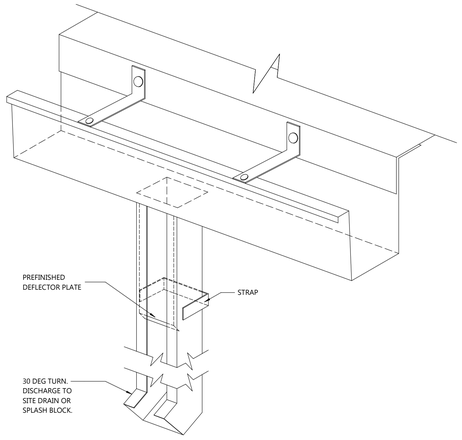


3 A1.3 DOWNSPOUT TO SPLASH BLOCK DETAIL
SCALE: 1 1/2" = 1'-0"



2 A1.3 DOWNSPOUT TO SITE DRAIN DETAIL
SCALE: 3" = 1'-0"



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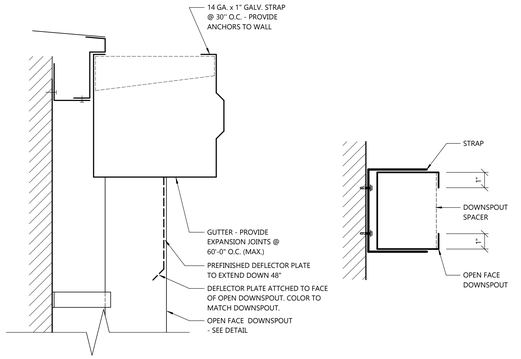


GUTTER SECTION

DOWNSPOUT SECTION

1 A1.3 GUTTER AND DOWNSPOUT DETAIL
SCALE: 3" = 1'-0"

GUTTER & DOWNSPOUT SPECIFICATION

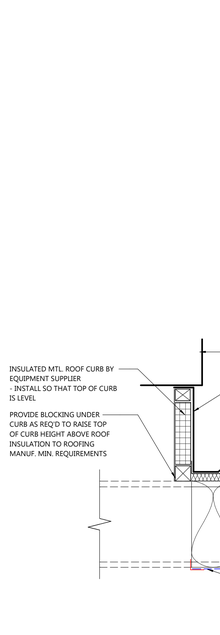
MANUFACTURER (BASIS OF DESIGN):
- METAL-ERA, INC. (OR EQUAL)

PRODUCT:
- SEAL TITE PRODUCT LINE

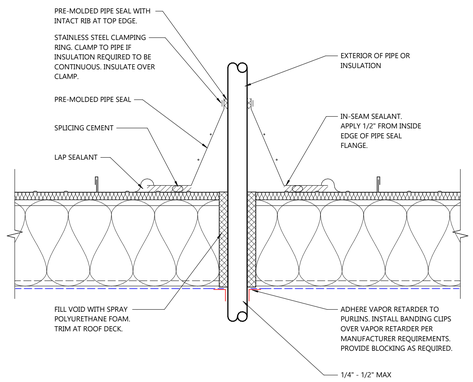
GUTTER
- MATERIAL - 22 GAUGE GALVANIZED STEEL
- MAIN BUILDING SIZE: 6" X 5"
- COLD STORAGE BUILDING SIZE: 6" X 6"
- STYLE: SQUARE GUTTER
- GUTTER HANGERS, EXTERNAL GUTTER BRACKET PER MANUFACTURERS RECOMMENDATIONS.
- GUTTER ATTACHMENT SHALL MEET FM WIND UPLIFT PROTECTION.
- EXPANSION JOINTS TO BE FREE FLOW WITH COVER PLATE, SPACED AND INSTALLED PER MANUFACTURERS WRITTEN INSTALLATION INSTRUCTIONS.
- COLOR TO MATCH ADJACENT FASCIA ON EXTERIOR ELEVATIONS BASED ON FROM FULL RANGE OF MANUFACTURERS KYNAR 500 COLORS
- PROVIDE END CAPS AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION

DOWNSPOUT
- MATERIAL - 24 GAUGE GALVANIZED STEEL
- SIZE: 4" X 6" IN 12'-0" LENGTHS
- ATTACHMENT 14 GA. STRAPS STYLE 1 WITH A MINIMUM OF 3 STRAPS PER 12'-0" SECTION OF DOWNSPOUT
- OPEN FACE WITH SPACER, MINIMUM OF 3 PER 12'-0" SECTION OF DOWNSPOUT
- PROVIDE COLOR MATCHED INSERT
- COLOR TO MATCH ADJACENT FASCIA ON EXTERIOR ELEVATIONS BASED ON FROM FULL RANGE OF MANUFACTURERS KYNAR 500 COLORS
- PROVIDE ELBOWS AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION
- DOWNSPOUT ON THE MAIN BUILDING ARE TO HAVE HEAT TRACE. SEE ELECTRICAL PLANS

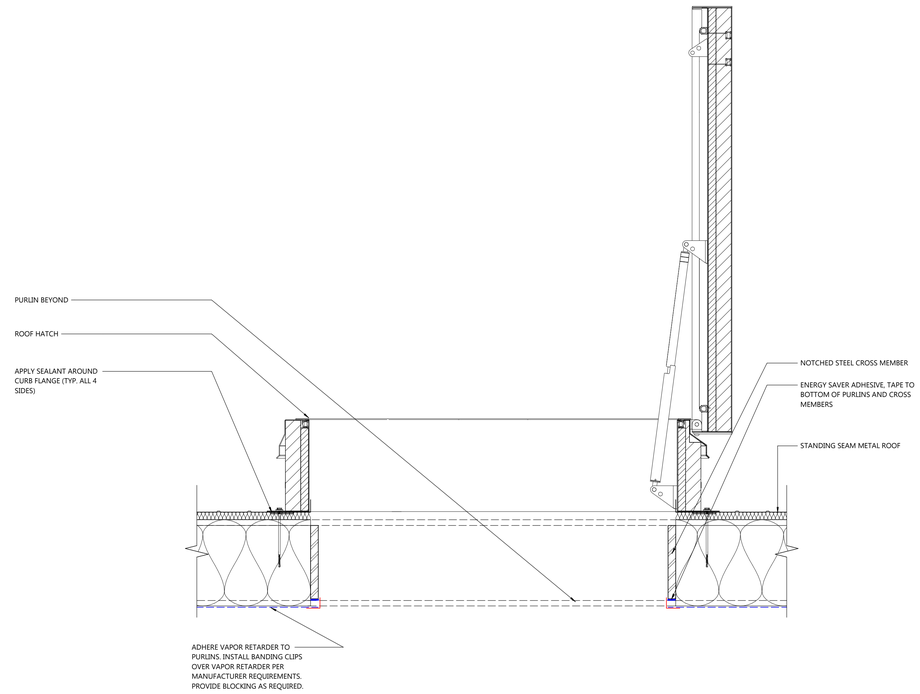
WARRANTY:
- 5 YEAR WARRANTY ON WORKSMANSHIP COVERING REPLACEMENT OR REPAIR OF PRODUCTS THAT ARE DEFECTIVE IN MATERIAL OR WORKMANSHIP.
- 20 YEAR TRANSFERABLE WARRANTY FOR PREFINISHED COIL-COATED STEEL COATED WITH KYNAR-500 STANDARD COLORS COVERING FADE, CHALK AND FILM INTEGRITY.
- STARTING WITH DATE OF FINAL INSPECTION AND ACCEPTANCE.



6 A1.3 ROOF TOP EQUIPMENT CURB DETAIL
SCALE: 1 1/2" = 1'-0"



5 A1.3 ROOF PIPE PENETRATION DETAIL
SCALE: 1 1/2" = 1'-0"



4 A1.3 ROOF SCUTTLE DETAIL
SCALE: 1 1/2" = 1'-0"

ARCHITECTURAL ROOF PLAN - DETAILS

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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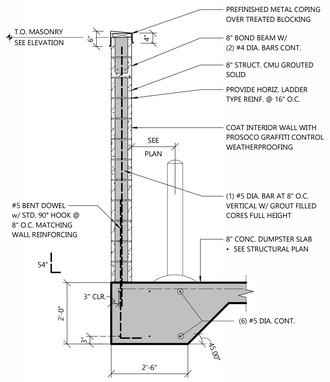
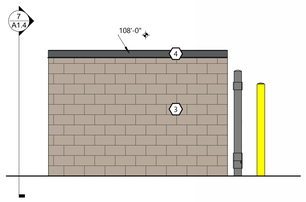
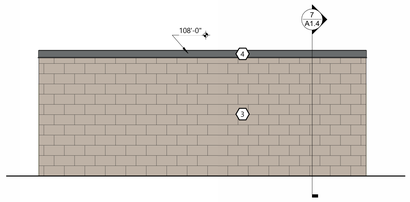


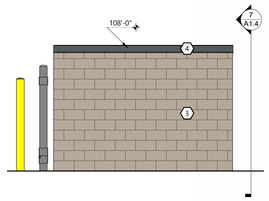
7 A1.4 DUMPSTER WALL SECTION
SCALE: 1/2" = 1'-0"



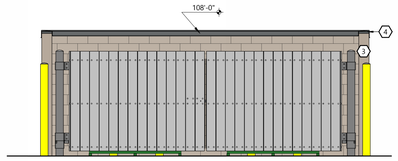
4 A1.4 EAST DUMPSTER ELEVATION
SCALE: 1/4" = 1'-0"



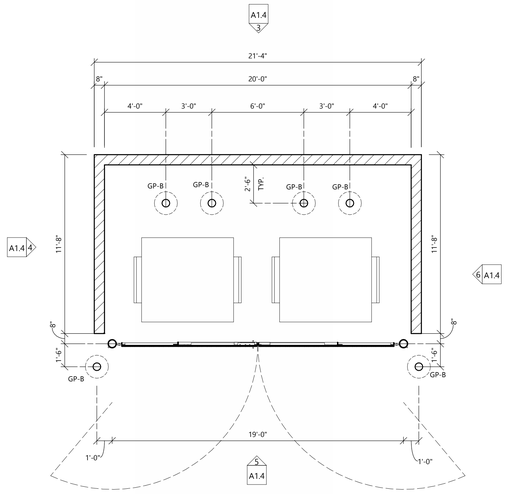
3 A1.4 NORTH DUMPSTER ELEVATION
SCALE: 1/4" = 1'-0"



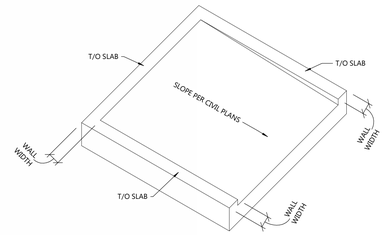
6 A1.4 WEST DUMPSTER ELEVATION
SCALE: 1/4" = 1'-0"



5 A1.4 SOUTH DUMPSTER ELEVATION
SCALE: 1/4" = 1'-0"



2 A1.4 DUMPSTER ENCLOSURE PLAN
SCALE: 1/4" = 1'-0"



1 A1.4 DUMPSTER PAD DETAIL
SCALE: 3/8" = 1'-0"

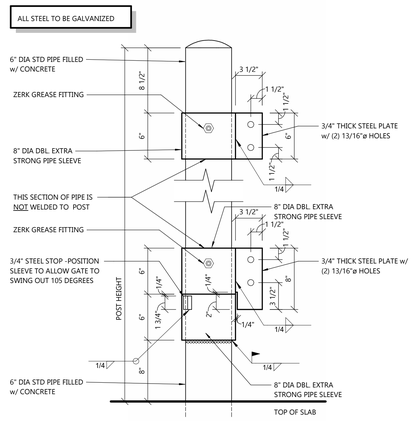
EXTERIOR MATERIAL KEY

3 **BURNISHED BLOCK VENEER**
SEE BLOCK VENEER SPECIFICATION

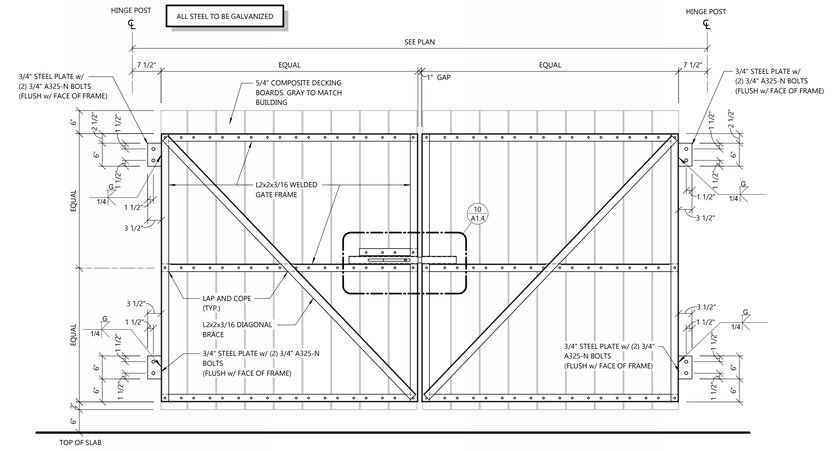
4 **PRE FINISHED METAL TRIM AND COPING**
COLOR: TO MATCH METAL PANEL - (DARK)
SEE WALL SECTIONS AND DETAILS

9 **STANDARD CMU**
COLOR: PAINT TO MATCH BLOCK VENEER

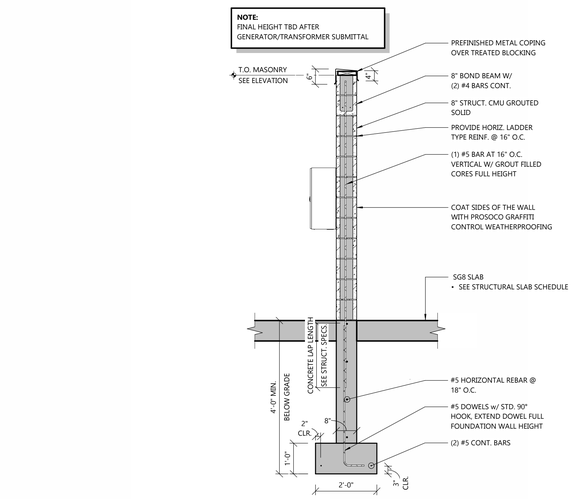
10 A1.4 GATE SLIDE BOLT
SCALE: 1 1/2" = 1'-0"



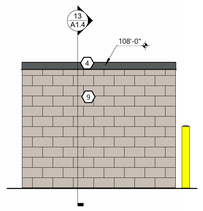
9 A1.4 GATE HINGE DETAIL
SCALE: 1 1/2" = 1'-0"



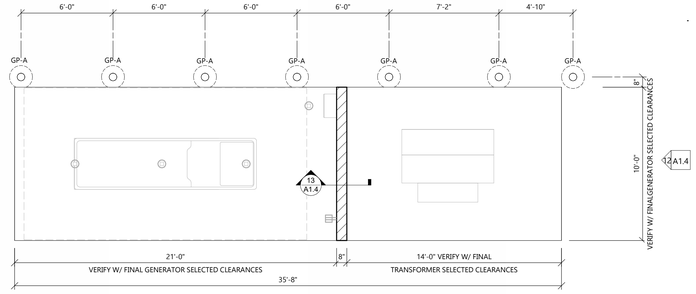
8 A1.4 DUMPSTER GATE ELEVATION
SCALE: 3/4" = 1'-0"



13 A1.4 WALL SECTION - GENERATOR - TRANSOFRMER
SCALE: 1/2" = 1'-0"



12 A1.4 WEST GENERATOR - TRANSFORMER ELEVATION
SCALE: 1/4" = 1'-0"



11 A1.4 GENERATOR - TRANSFORMER PLAN
SCALE: 1/4" = 1'-0"

ARCHITECTURAL DUMPSTER ENCLOSURE & GENERATOR PAD

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A1.4

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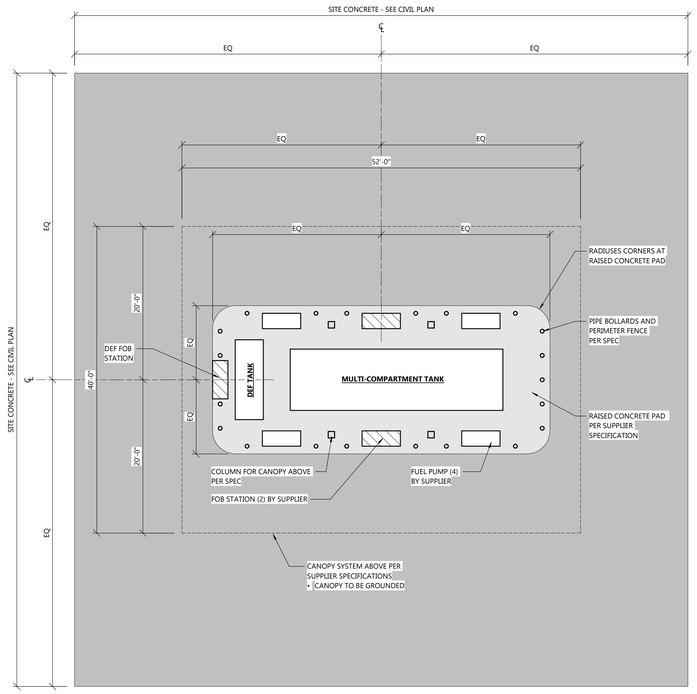
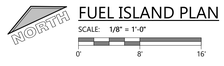




FUEL ISLAND PLAN

FUEL ISLAND BID SPECIFICATIONS:

GENERAL NOTES:

- FUEL ISLAND SYSTEM AND STRUCTURE WILL BE PROVIDED UNDER SEPARATE CONTRACT BY THE OWNER. GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION WITH THE FUEL ISLAND SUPPLIER AND SHALL PROVIDE ALL RELATED WORK NOT INCLUDED IN THE SUPPLIER'S SCOPE, INCLUDING NECESSARY INFRASTRUCTURE AND SITE COORDINATION.
- FUEL ISLAND SUPPLIER TO REVIEW CANOPY SIZE WITH OWNER AND ADJUST CANOPY SIZE AS REQUIRED. FUEL ISLAND SUPPLIER IS TO COORDINATE ANY CHANGES TO THE CANOPY SIZE WITH THE GC
- FUEL ISLAND SUPPLIER IS RESPONSIBLE FOR THE SUBMITTAL TO STATE FOR BUILDING REVIEW
- FUEL ISLAND AND FOUNDATIONS TO BE DESIGNED AND SUBMITTED BY BUILDING SUPPLIER
- SEE ELECTRICAL AND CIVIL PLAN FOR ADDITIONAL INFORMATION
- POSSIBLE BEDROCK WAS ENCOUNTERED AT DEPTHS OF 7 TO 14 FEET BELOW THE EXISTING GROUND SURFACE.

SPECIFICATIONS:

A. SCOPE OF WORK
1. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING AND INSTALLING A COMPLETE VEHICLE FUELING SYSTEM, INCLUDING STORAGE TANKS, DISPENSING EQUIPMENT, FUEL MANAGEMENT SYSTEM, MONITORING SYSTEM, ASSOCIATED CONCRETE WORK, AND ALL REQUIRED ACCESSORIES FOR A FULLY OPERATIONAL INSTALLATION.
2. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, ELECTRICAL CONNECTIONS, CANOPY STRUCTURE, FOOTINGS AND FOUNDATIONS, AND COORDINATION NECESSARY FOR A COMPLETE SYSTEM. SECURE ALL REQUIRED STATE AND LOCAL PERMITS, COORDINATE INSPECTIONS, AND COMPLETE REQUIRED DOCUMENTATION.

B. SUBMITTALS
1. SUBMIT THE FOLLOWING TO EXCEL ENGINEERING FOR REVIEW:
a. COMPLETE DRAWINGS, TOGETHER WITH DETAILED SPECIFICATIONS AND DATA COVERING MATERIAL, PARTS, DEVICES, AND ACCESSORIES FORMING A PART OF THE EQUIPMENT FURNISHED. DRAWINGS SHALL COVER ALL COMPONENT AND DETAIL INFORMATION NECESSARY FOR THE DESIGN.

C. FUEL STORAGE SYSTEM
1. GENERAL STORAGE REQUIREMENTS
a. PROVIDE NEW FUEL STORAGE MEETING THE FOLLOWING CAPACITIES:
b. DIESEL STORAGE: 12,000 GALLONS
c. GASOLINE STORAGE: 3,000 GALLONS
d. PREFERRED CONFIGURATION: SPLIT TANK (12,000-GALLON DIESEL / 3,000-GALLON GASOLINE COMPARTMENT CONFIGURATION);
e. PROVIDE BREAKOUT PRICE FOR THE FOLLOWING OPTIONS OF FUEL STORAGE:
• BASE BID: UNDERGROUND STORAGE TANKS (USTS)
• CONTINGENT UPON SITE CONDITIONS INCLUDING BEDROCK EVALUATION AND COST ANALYSIS.
• ALT BID: ABOVEGROUND TANKS ARE PROPOSED (SEE ALTERNATE BID #6)
f. STORAGE SYSTEM TO COMPLY WITH ALL APPLICABLE FIRE CODE.
2. DIESEL EXHAUST FLUID (DEF) STORAGE.
a. PROVIDE BREAKOUT PRICE FOR THE FOLLOWING OPTIONS OF DEF STORAGE:
• BASE BID: 2,000 GALLONS MINIMUM IF UNDERGROUND.
• CONTINGENT UPON SITE CONDITIONS INCLUDING BEDROCK EVALUATION AND COST ANALYSIS.
• ALT BID: 1,000 GALLONS MINIMUM IF ABOVEGROUND. (SEE ALTERNATE BID #6)
3. TANK CONSTRUCTION:
a. DOUBLE-WALL STEEL OR FIBERGLASS CONSTRUCTION AS REQUIRED BY CODE.
b. INTERSTITIAL MONITORING REQUIRED.
c. PROVIDE SPILL CONTAINMENT MANWAYS AND OVERFILL PREVENTION DEVICES.

D. TANK MONITORING SYSTEM
1. PROVIDE A NEW AUTOMATIC TANK GAUGE SYSTEM, INCLUDING:
a. VEEDER-ROOT TANK MONITORING SYSTEM
b. MONITORING EQUIPMENT LOCATED IN THE MAIN OFFICE
c. LEAK DETECTION, INTERSTITIAL MONITORING, AND OVERFILL ALARM CAPABILITY
d. COMMUNICATION CAPABILITY FOR REMOTE MONITORING

E. DISPENSING EQUIPMENT:
1. PROVIDE NEW COMMERCIAL-GRADE DISPENSERS MEETING THE FOLLOWING:
a. GASOLINE DISPENSER
• ONE (1) DISPENSER
• TWO (2) HOSES
• ELECTRONIC DISPLAY
• SUBMERSIBLE PUMP COMPATIBLE
• PULSE OUTPUT COMPATIBLE WITH FUEL MANAGEMENT SYSTEM
b. DIESEL DISPENSER
• ONE (1) DISPENSER
• TWO (2) HOSES
• HIGH-FLOW COMPATIBLE AS REQUIRED
• PULSE OUTPUT COMPATIBLE
c. DEF DISPENSER
• ONE (1) DISPENSER
• ONE (1) HOSE
• COMPATIBLE WITH INTEGRATED FUEL MANAGEMENT SYSTEM
2. ALL DISPENSERS SHALL BE COMMERCIAL DUTY, ELECTRONIC METERING TYPE WITH TOTALIZERS AND APPROPRIATE HOSE LENGTHS.

F. FUEL MANAGEMENT SYSTEM:
1. PROVIDE AND INSTALL A NEW FUEL MANAGEMENT SYSTEM INTEGRATED WITH THE OWNER'S EXISTING SYSTEM:
a. FUELMASTER FUEL MANAGEMENT SYSTEM
b. ISLAND TERMINAL(S) AS REQUIRED
c. VEHICLE IDENTIFICATION CAPABILITY
d. REPORTING SOFTWARE
e. INTEGRATION WITH TANK MONITORING SYSTEM
f. USER TRAINING INCLUDED

G. CONCRETE AND SITE WORK:
1. A. SITE PREP, FILL AND PREPARE FOR NEW CONCRETE AS SPECIFIED ON CIVIL AND ARCHITECTURAL DRAWINGS TO BE PERFORMED BY THE GENERAL CONTRACTOR
2. 6" RAISED CONCRETE PAD. SIZE CONCRETE PAD TO BE ABLE TO FIT THE EXISTING TANKS, EQUIPMENT, FENCE, BOLLARDS AND STRUCTURE FOR THE CANOPY ABOVE (BY GC)
3. 6"X 6" PIPE BOLLARDS FOR COLLISION PROTECTION TO BE PROVIDED AND INSTALLED BY GENERAL CONTRACTOR. 7" YELLOW PVC BOLLARD COVERS WITH REFLECTIVE STRIPES PROVIDED BY FUEL SYSTEM CONTRACTOR.

H. CANOPY STRUCTURE:
1. A. FURNISH AND INSTALL A NEW CANOPY TO COVER TANKS AND FUELING LANES PER THE FOLLOWING:
a. ONE (1) 40'W X 52'L X 18'H (15' TO UNDERSIDE) CANOPY 3' WHITE LAMINATED FASCIA
b. CANOPY WILL BE A FOUR-COLUMN WITH FOUNDATION BELOW BY FUEL ISLAND SUPPLIER TO
c. PAINTING OF CANOPY COLUMNS: COLOR TO BE SELECTED BY OWNER.

I. ELECTRICAL:
1. PROVIDE ALL WIRING, CONDUIT, AND CONNECTIONS FOR:
a. SUBMERSIBLE PUMPS
b. DISPENSERS
c. TANK MONITORING SYSTEM
d. FUEL MANAGEMENT SYSTEM
2. CANOPY LIGHTING
a. PROVIDE LED CANOPY LIGHTS WITH COVERS AND DUSK / DAWN AND MOTION SENSORS.

J. SAFETY AND CODE COMPLIANCE
1. EMERGENCY SHUTOFF DEVICES LOCATED AS REQUIRED BY CODE.
2. FIRE EXTINGUISHERS AND CABINETS PER APPLICABLE FIRE CODE.
3. REQUIRED SIGNAGE AND LABELING.
4. INSTALLATION SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES.

K. WARRANTY
1. ONE (1) YEAR PARTS AND LABOR FROM DATE OF SUBSTANTIAL COMPLETION

TRUCK SCALE BID SPECIFICATION:

GENERAL NOTES:

- TRUCK SCALE WILL BE PROVIDED UNDER A SEPARATE CONTRACT BY THE OWNER. GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION WITH THE TRUCK SCALE SUPPLIER AND SHALL PROVIDE ALL RELATED WORK NOT INCLUDED IN THE SUPPLIER'S SCOPE, INCLUDING NECESSARY, INFRASTRUCTURE, POWER, FOUNDATION, ETC...
- TRUCK SCALE SUPPLIER IS RESPONSIBLE FOR THE SUBMITTAL TO STATE FOR BUILDING REVIEW AND THE REQUIRED PERMITS
- SEE STRUCTURAL PLANS FOR ADDITIONAL INFORMATION.

CONSTRUCTION:

- 40'X11' - ABOVE GROUND TRUCK SCALE
- LOAD CAPACITY:
  - 90,000 LBS CONCENTRATED LOAD CAPACITY
  - 120 TON OVERALL CAPACITY
- (8) EIGHT LOAD CELLS RATED AT 66,000 IBS EACH
- 10" THICK REINFORCED COMPOSITE CONCRETE DECK
- SINGLE RUB RAIL ACCESSORY - SAFETY YELLOW
- 10'-0" POLE FOR CARD READER AND REMOTE DISPLAY
- WEIGHT INDICATOR TO BE LOCATED IN OFFICE AREA
  - PROVIDE PRICING FOR PRINTER LOCATED AT TRUCK SCALE

MISC:

- GC TO COORDINATED REQUIRED POWER TO SCALE HOUSING FOR WEIGHT INDICATOR AND AT OUTSIDE REMOTE DISPLAY

INSTALLATION AND QC:

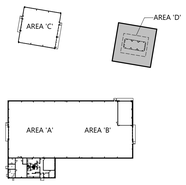
- SCALE SUPPLIER IS RESPONSIBLE FOR PERFORMING FIELD QUALITY CONTROL TESTING AS RECOMMENDED BY MANUFACTURER
- CLEAN SURFACES. IF NECESSARY, TOUCH-UP PAINT DAMAGE, SCRATCHES, AND BLEMISHES WITH MANUFACTURER PROVIDED MATCHING PAINT. PROTECT CRANE FROM OTHER CONSTRUCTION OPERATIONS.

TRAINING:

- PROVIDE DEMONSTRATION AND TRAINING SESSION FOR OWNER'S REPRESENTATIVE COVERING OPERATION AND MAINTENANCE.

WARRANTY:

- 25 YEAR STANDARD MANUFACTURES WARRANTY



KEY PLAN

ARCHITECTURAL FUEL ISLAND AND TRUCK SCALE - AREA 'D'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A1.5

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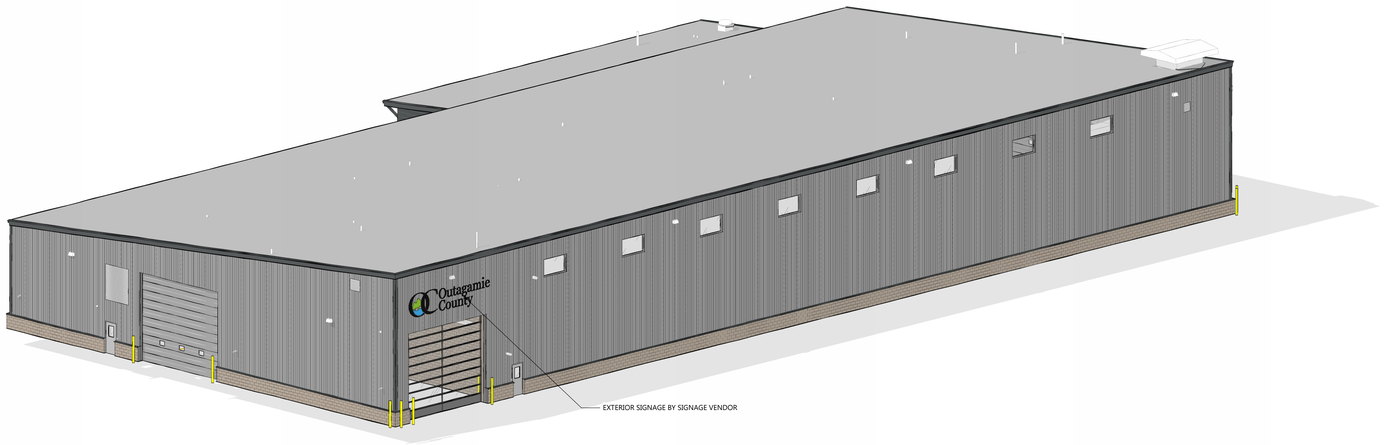
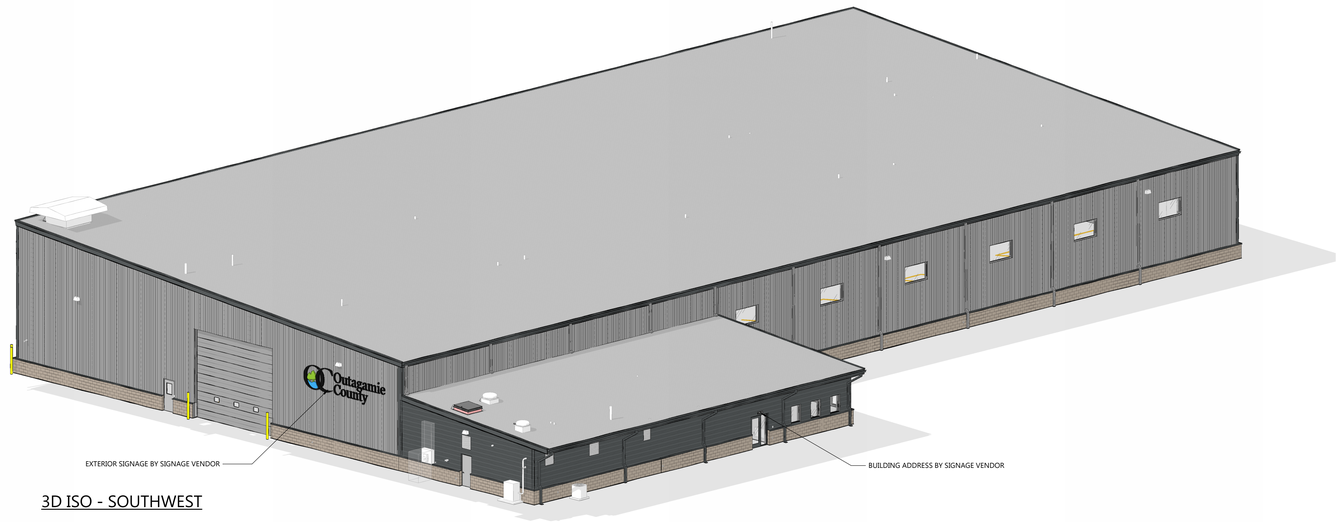


3D ISO - NORTHEAST



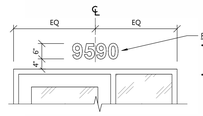
3D ISO - SOUTHWEST

GENERAL NOTES

- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1. **FLUTED INSULATED METAL PANEL - (LIGHT)**
   SEE FLUTED METAL WALL PANEL SPECIFICATION
2. **RIBBED INSULATED METAL PANEL - (DARK)**
   SEE RIBBED METAL WALL PANEL SPECIFICATION
3. **BURNISHED BLOCK VENEER**
   SEE BLOCK VENEER SPECIFICATION
4. **PRE FINISHED METAL TRIM AND COPING**
   COLOR: TO MATCH METAL PANEL - (DARK)
   SEE WALL SECTIONS AND DETAILS
5. **DOWNSPOUT**
   COLOR: TO MATCH ADJACENT METAL PANEL COLOR
   SEE DOWNSPOUT SPECIFICATIONS
6. **EXPOSED CONCRETE WALL**
   HAND RUB FINISH AT ALL EXPOSED CONC. FOUNDATION WALLS
   STAIN TO MATCH BLOCK VENEER
7. **VERTICAL METAL WALL PANEL**
   METAL WALL PANEL BY PEMB SUPPLIER
   COLOR: TO MATCH FLUTED METAL WALL PANEL - (LIGHT)
   SUBMIT COLOR SAMPLE FOR FINAL APPROVAL
8. **DOWNSPOUT**
   COLOR: TO MATCH ADJACENT METAL PANEL COLOR
   SEE DOWNSPOUT SPECIFICATIONS

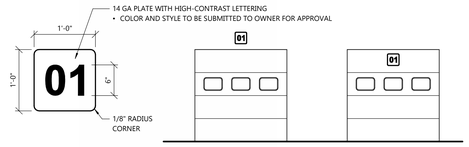


RAISED ADDRESS SIGNAGE (BY SIGNAGE VENDOR)
- SUBMIT COLOR AND MATERIAL OF RAISED LETTERS TO OWNER/ARCHITECT FOR FINAL SELECTION AND APPROVAL.
- SIGNAGE VENDOR TO ENSURE THAT SIGNAGE MEETS LOCAL AND STATE CODES

1 / A2.0 ADDRESS DETAIL
SCALE: 1/2" = 1'-0"

EXTERIOR BUILDING SIGNAGE (BY SIGNAGE VENDOR)
- SIGNAGE VENDOR TO REVIEW SIGN TYPOGRAPHY, STYLE, AND VERBIAGE OF SIGN WITH OWNER TO ENSURE COMPLIANCE WITH OWNER'S BRANDING AND MARKETING STANDARDS.
- SIGNAGE VENDOR TO CONFIRM FINAL SIZE AND LOCATION OF SIGN WITH OWNER.
- SIGNAGE IS INTENDED TO BE BACKLIT AND CONTROLLED BY A PHOTOCELL SENSOR WITH AN OVERRIDE SWITCH. SIGNAGE VENDOR TO CONFIRM SIGNAGE LIGHT CONTROLS WITH OWNER
- GC TO COORDINATE WITH EC AND SIGNAGE SUPPLIER ON LOCATION, AND PROVIDE BLOCKING AND POWER AS REQUIRED. SEE ELECTRICAL PLANS FOR ADDITIONAL REQUIREMENTS
- SIGNAGE VENDOR TO ENSURE THAT SIGNAGE MEETS LOCAL AND STATE CODES

2 / A2.0 SIGNAGE
SCALE: 3/16" = 1'-0"



OH DOOR NUMBERING (BY SIGNAGE VENDOR)
- SIGNAGE VENDOR TO REVIEW SIGN TYPOGRAPHY, STYLE, AND VERBIAGE OF SIGN WITH OWNER TO ENSURE COMPLIANCE WITH OWNER'S BRANDING AND MARKETING STANDARDS.

3 / A2.0 OH DOOR NUMBERING SIGN
SCALE: 1" = 1'-0"

BACKUP IMP SPECIFICATION:

(IMP BACKUP TO BE INSTALLED BEHIND BLOCK VENEER. SEE SECTIONS)

MANUFACTURER:
- METAL SPAN. (OR EQUAL)

MODEL:
- BW STRETCH SYSTEM

CONSTRUCTION:
- PANEL THICKNESS: 2.75"
  - U-FACTOR: 0.046
  - R-VALUE: 23.0
- EXTERIOR FACE SHEET:
  - 22 GA. G-90 GALVANIZED (NO PROFILE) UNEMBOSSED STEEL WITH EPOXY PRIMER FINISH
- INSULATION CORE: CLOSED CELL POLYURETHANE
- INTERIOR FACE SHEET:
  - 24 GA. G-90 GALVANIZED SHALLOW PLANKED UNEMBOSSED STEEL WITH EPOXY PRIMER FINISH
- JOINT: OFFSET DOUBLE TONGUE-AND-GROOVE WITH EXTENDED METAL SHELF FOR POSITIVE FACE FASTENING, THROUGH FASTENING REQUIRED AT PANEL ENDS.
- FLASHING AND TRIM: MATCH MATERIAL, THICKNESS, AND FINISH OF METAL PANEL SURFACE TO WHICH IT IS TO BE SECURED U.N.O.

INSTALLATION AND TESTING:
- INSTALL PER MANUFACTURES SPECIFICATIONS AND STANDARD DETAILS
- WATER-SPRAY TEST: AFTER COMPLETING A PORTION OF A METAL PANEL ELEVATION, INCLUDING ACCESSORIES AND TRIM, TEST 2-BAY AREA SELECTED BY ARCHITECT FOR WATER PENETRATION, ACCORDING TO AAMA 501.2.

WARRANTY:
- 2 YEAR - LIMITED WARRANTY PROVIDING PANELS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP
- 10 YEAR - LIMITED WEATHERTIGHT WALL WARRANTY
- MANUFACTURER'S LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR ADHESION TO THE METAL SUBSTRATE AND LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR CHALK AND FADE.
- THE INSTALLATION CONTRACTOR SHALL ISSUE A SEPARATE WARRANTY AGAINST DEFECTS IN INSTALLED MATERIALS AND WORKMANSHIP

FLUTED IMP SPECIFICATION:

MANUFACTURER:
- METAL SPAN. (OR EQUAL)

MODEL:
- CF FLUTE WALL PANEL WALL PANEL

CONSTRUCTION:
- PANEL THICKNESS: 3" SEE SECTION AND PLAN FOR LOCATION
  - U-FACTOR: 0.039
  - R-VALUE: 26.2
- EXTERIOR FACE SHEET:
  - 22 GA. G-90 GALVANIZED SMOOTH UNEMBOSSED STEEL
  - COLOR: SILVERSMITH (MICA FULL-STRENGTH FLUOROPOLYMER TWO-COAT SYSTEM).
- INSULATION CORE: CLOSED CELL POLYURETHANE
- INTERIOR FACE SHEET:
  - 24 GA. G-90 GALVANIZED SMOOTH UNEMBOSSED STEEL
  - COLOR: IGLOO WHITE (STANDARD POLYESTER INTERIOR COLOR)
- JOINT: OFFSET DOUBLE TONGUE-AND-GROOVE WITH EXTENDED METAL SHELF FOR POSITIVE FACE FASTENING, THROUGH FASTENING REQUIRED AT PANEL ENDS.
- FLASHING AND TRIM: MATCH MATERIAL, THICKNESS, AND FINISH OF METAL PANEL SURFACE TO WHICH IT IS TO BE SECURED U.N.O.

INSTALLATION AND TESTING:
- INSTALL PER MANUFACTURES SPECIFICATIONS AND STANDARD DETAILS
- WATER-SPRAY TEST: AFTER COMPLETING A PORTION OF A METAL PANEL ELEVATION, INCLUDING ACCESSORIES AND TRIM, TEST 2-BAY AREA SELECTED BY ARCHITECT FOR WATER PENETRATION, ACCORDING TO AAMA 501.2.

WARRANTY:
- 2 YEAR - LIMITED WARRANTY PROVIDING PANELS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP
- 10 YEAR - LIMITED WEATHERTIGHT WALL WARRANTY
- MANUFACTURER'S LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR ADHESION TO THE METAL SUBSTRATE AND LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR CHALK AND FADE.
- THE INSTALLATION CONTRACTOR SHALL ISSUE A SEPARATE WARRANTY AGAINST DEFECTS IN INSTALLED MATERIALS AND WORKMANSHIP

RIBBED IMP SPECIFICATION:

MANUFACTURER:
- METAL SPAN. (OR EQUAL)

MODEL:
- CF 7.2 INSUL-RIB WALL PANEL

CONSTRUCTION:
- PANEL THICKNESS: 3" SEE SECTION AND PLAN FOR LOCATION
  - U-FACTOR: 0.066
  - R-VALUE: 15.2
- PANEL THICKNESS: 4" SEE SECTION AND PLAN FOR LOCATION
  - U-FACTOR: 0.043
  - R-VALUE: 23.3
- EXTERIOR FACE SHEET:
  - 22 GA. G-90 GALVANIZED SMOOTH UNEMBOSSED STEEL
  - COLOR: DARK GRAY METALLIC (MICA FULL-STRENGTH FLUOROPOLYMER TWO-COAT SYSTEM)
- INSULATION CORE: CLOSED CELL POLYURETHANE
- INTERIOR FACE SHEET:
  - 24 GA. G-90 GALVANIZED SMOOTH UNEMBOSSED STEEL
  - COLOR: IGLOO WHITE (STANDARD POLYESTER INTERIOR COLOR)
- JOINT: OFFSET DOUBLE TONGUE-AND-GROOVE WITH EXTENDED METAL SHELF FOR POSITIVE FACE FASTENING, THROUGH FASTENING REQUIRED AT PANEL ENDS.
- FLASHING AND TRIM: MATCH MATERIAL, THICKNESS, AND FINISH OF METAL PANEL SURFACE TO WHICH IT IS TO BE SECURED U.N.O.

INSTALLATION AND TESTING:
- INSTALL PER MANUFACTURES SPECIFICATIONS AND STANDARD DETAILS
- WATER-SPRAY TEST: AFTER COMPLETING A PORTION OF A METAL PANEL ELEVATION, INCLUDING ACCESSORIES AND TRIM, TEST 2-BAY AREA SELECTED BY ARCHITECT FOR WATER PENETRATION, ACCORDING TO AAMA 501.2.

WARRANTY:
- 2 YEAR - LIMITED WARRANTY PROVIDING PANELS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP
- 10 YEAR - LIMITED WEATHERTIGHT WALL WARRANTY
- MANUFACTURER'S LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR ADHESION TO THE METAL SUBSTRATE AND LIMITED WARRANTY ON THE EXTERIOR PAINT FINISH FOR CHALK AND FADE.
- THE INSTALLATION CONTRACTOR SHALL ISSUE A SEPARATE WARRANTY AGAINST DEFECTS IN INSTALLED MATERIALS AND WORKMANSHIP

BLOCK VENEER SPECIFICATION:

MANUFACTURER:
- COUNTY MATERIALS CORP. (OR EQUAL)

MODEL:
- PREMIER ULTRA BURNISHED - MASONRY UNITS

CONSTRUCTION:
- SIZE: 4" VENEER - 16"X8" (NOMINAL DIM.)
- COLOR: MOONBEAM (63-214A)
  - a. INTEGRAL, THROUGH-BODY COLORING
- FINISH: GROUND FACE
- COMPLIANCE: ASTM C90
- BOND PATTERN: RUNNING BOND
- MORTAR: IVORY (PROVIDE PHYSICAL SAMPLES FOR APPROVAL)
- INSTALLATION: BRICK-TIES ARE TO BE ATTACHED TO "BACKUP IMP" SYSTEM. PROVIDE ADDITIONAL BLOCKING BEHIND IMP SYSTEM AS REQUIRED PER IMP MANUF. DETAILS AND REQUIREMENTS

MOCK-UP:
- PRIOR TO INSTALLATION, CONSTRUCT A SEPARATE (NOT PART OF THE ACTUAL BUILDING) MOCK-UP SAMPLE WALL PANEL OF THE BLOCK VENEER NOT LESS THAN 4 FEET BY 4 FEET. MOCK UP TO INCLUDE BLOCK VENEER, GROUT, SEALANT AND TRIM.

WARRANTY:
- MANUFACTURER'S STANDARD LIMITED WARRANTY AGAINST MANUFACTURING DEFECT, OUTLINING ITS TERMS, CONDITIONS, AND EXCLUSIONS FROM COVERAGE

VENTED SOFFIT SPECIFICATIONS:

MANUFACTURER:
- PAC-CLAD (OR EQUAL)

PRODUCT:
- FLUSH NARROW VENT ALUMINUM SOFFIT SYSTEM
- INSTALL PER ALL MANUF. SPECIFICATIONS AND DETAILS
- 12" WIDE, 0.032" THICK ALUMINUM PANELS
- PROVIDE NECESSARY TRIM, CLIPS, AND FASTENERS OF MATCHING COLOR AS REQ'D FOR A COMPLETE INSTALLATION
- COLOR SELECTED BY ARCHITECT/OWNER (PROVIDE COLOR SAMPLES FOR APPROVAL)

WARRANTY:
- LIMITED LIFETIME WARRANTY
- 25 YEAR CHALK AND FADE COVERAGE

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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A2.0

ARCHITECTURAL EXTERIOR PERSPECTIVE AND SPECS - MAIN BUILDING

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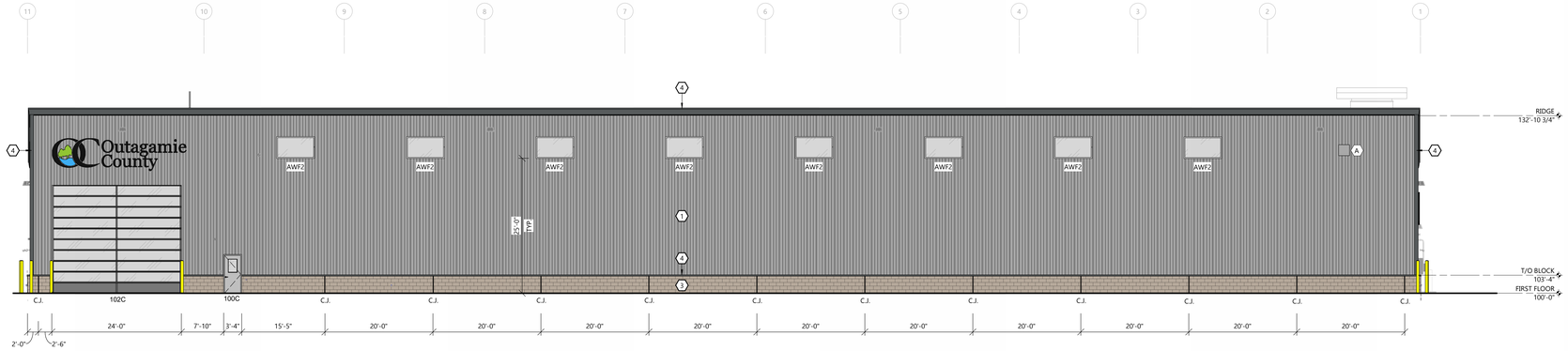
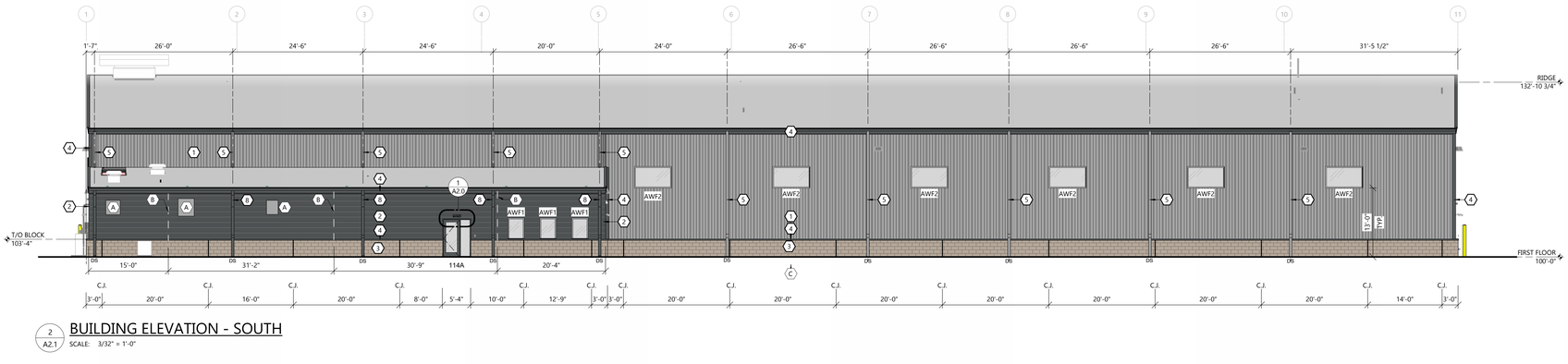


1 A2.1 BUILDING ELEVATION - NORTH

SCALE: 3/32" = 1'-0"



2 A2.1 BUILDING ELEVATION - SOUTH

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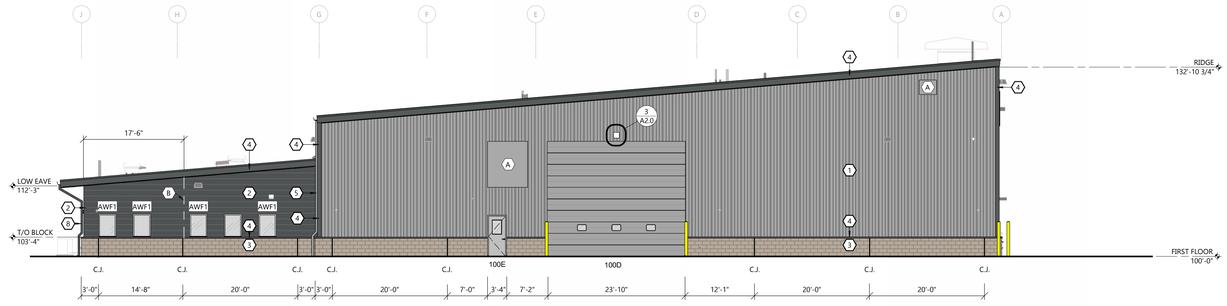
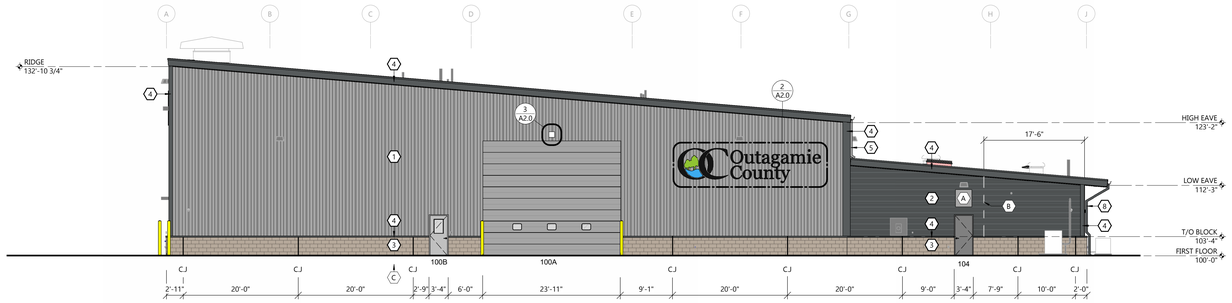


3 A2.1 BUILDING ELVATION - EAST

SCALE: 3/32" = 1'-0"



4 A2.1 BUILDING ELEVATION - WEST

SCALE: 3/32" = 1'-0"

GENERAL NOTES

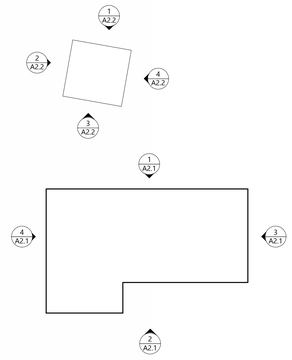
- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1. **FLUTED INSULATED METAL PANEL - (LIGHT)**
   SEE FLUTED METAL WALL PANEL SPECIFICATION
2. **RIBBED INSULATED METAL PANEL - (DARK)**
   SEE RIBBED METAL WALL PANEL SPECIFICATION
3. **BURNISHED BLOCK VENEER**
   SEE BLOCK VENEER SPECIFICATION
4. **PRE FINISHED METAL TRIM AND COPING**
   COLOR: TO MATCH METAL PANEL - (DARK)
   SEE WALL SECTIONS AND DETAILS
5. **DOWNSPOUT**
   COLOR: TO MATCH ADJACENT METAL PANEL COLOR
   SEE DOWNSPOUT SPECIFICATIONS
6. **EXPOSED CONCRETE WALL**
   HAND RUB FINISH AT ALL EXPOSED CONC. FOUNDATION WALLS
   STAIN TO MATCH BLOCK VENEER
7. **VERTICAL METAL WALL PANEL**
   METAL WALL PANEL BY PEMB SUPPLIER
   COLOR: TO MATCH FLUTED METAL WALL PANEL - (LIGHT)
   SUBMIT COLOR SAMPLE FOR FINAL APPROVAL
8. **DOWNSPOUT**
   COLOR: TO MATCH ADJACENT METAL PANEL COLOR
   SEE DOWNSPOUT SPECIFICATIONS

FLOOR PLAN KEYNOTES

A	LOUVERS TO BE PAINTED TO MATCH EXTERIOR FACADE. TYP
B	PANEL TRIM, SEE A4 SHEETS FOR DETAILS
C	BRICK LEDGE BELOW GRADE. SEE WALL SECTIONS AND DETAILS (TYP.)



ELEVATION KEY PLAN

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PROJECT INFORMATION

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W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

A2.1

ARCHITECTURAL EXTERIOR ELEVATIONS' - MAIN BUILDING

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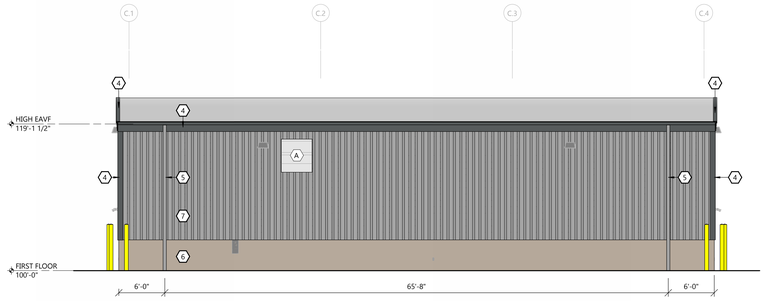
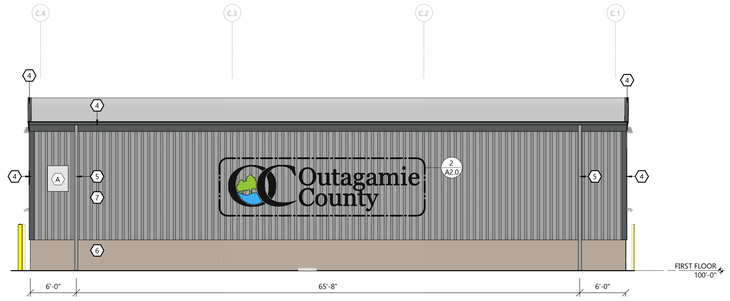
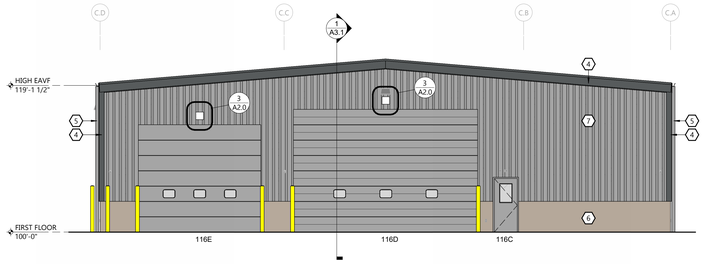


3 A2.2 BUILDING ELEVATION - NORTH
SCALE: 1/8" = 1'-0"



1 A2.2 BUILDING ELEVATION - SOUTH
SCALE: 1/8" = 1'-0"



4 A2.2 BUILDING ELEVATION - EAST
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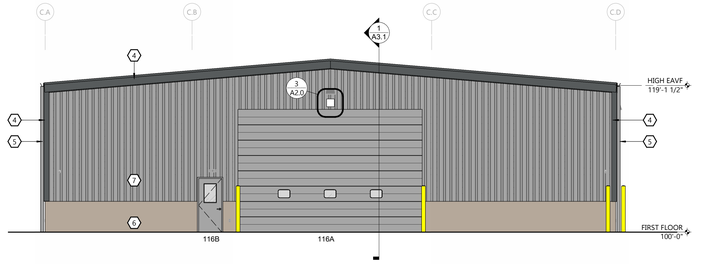


2 A2.2 BUILDING ELEVATION - WEST
SCALE: 1/8" = 1'-0"

GENERAL NOTES

- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1 **FLUTED INSULATED METAL PANEL - (LIGHT)**
SEE FLUTED METAL WALL PANEL SPECIFICATION

2 **RIBBED INSULATED METAL PANEL - (DARK)**
SEE RIBBED METAL WALL PANEL SPECIFICATION

3 **BURNISHED BLOCK VENEER**
SEE BLOCK VENEER SPECIFICATION

4 **PRE FINISHED METAL TRIM AND COPING**
COLOR: TO MATCH METAL PANEL - (DARK)
SEE WALL SECTIONS AND DETAILS

5 **DOWNSPOUT**
COLOR: TO MATCH ADJACENT METAL PANEL COLOR
SEE DOWNSPOUT SPECIFICATIONS

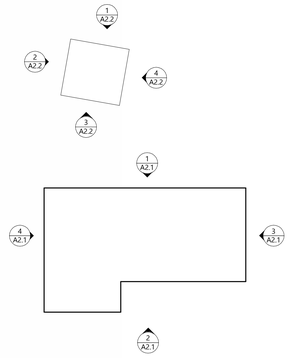
6 **EXPOSED CONCRETE WALL**
HAND RUB FINISH AT ALL EXPOSED CONC. FOUNDATION WALLS
STAIN TO MATCH BLOCK VENEER

7 **VERTICAL METAL WALL PANEL**
METAL WALL PANEL BY PEMB SUPPLIER
COLOR: TO MATCH FLUTED METAL WALL PANEL - (LIGHT)
SUBMIT COLOR SAMPLE FOR FINAL APPROVAL

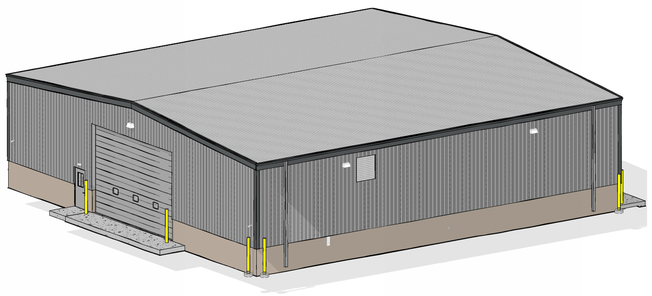
8 **DOWNSPOUT**
COLOR: TO MATCH ADJACENT METAL PANEL COLOR
SEE DOWNSPOUT SPECIFICATIONS

FLOOR PLAN KEYNOTES

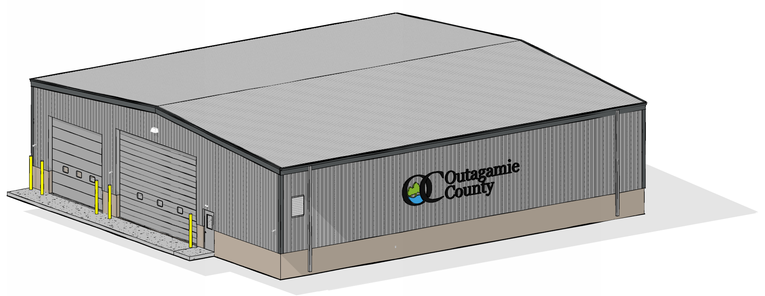
#	
A	LOUVERS TO BE PAINTED TO MATCH EXTERIOR FACADE, TYP



ELEVATION KEY PLAN



3D ISO - SOUTHWEST



3D ISO - NORTHEAST

ARCHITECTURAL EXTERIOR ELEVATIONS - COLD STORAGE

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PROJECT INFORMATION

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W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A2.2

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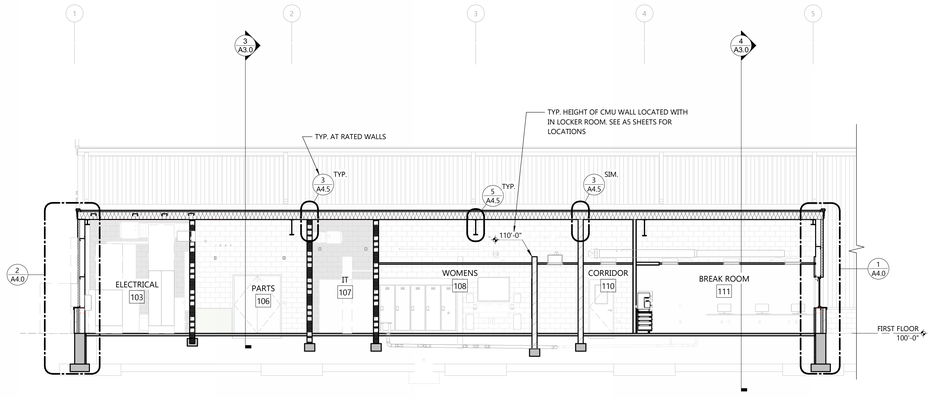
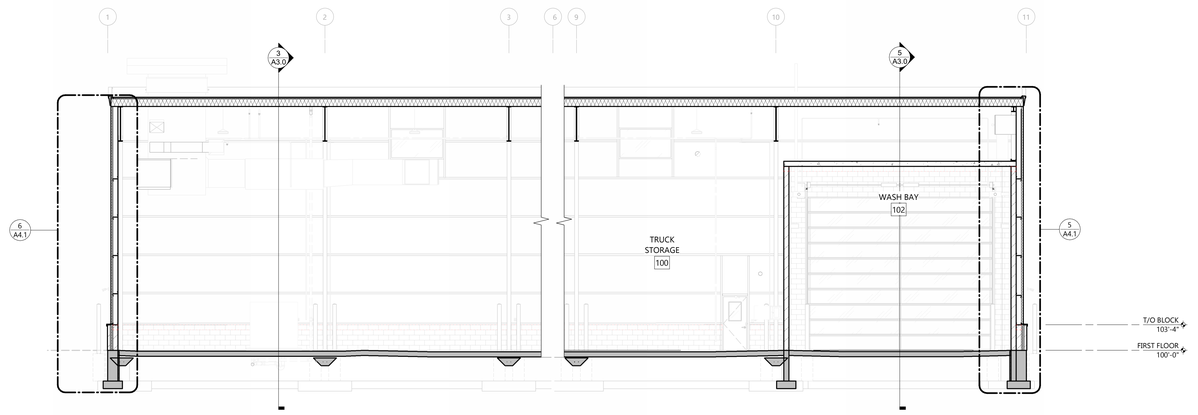


1 A3.0 BUILDING SECTION
SCALE: 1/8" = 1'-0"



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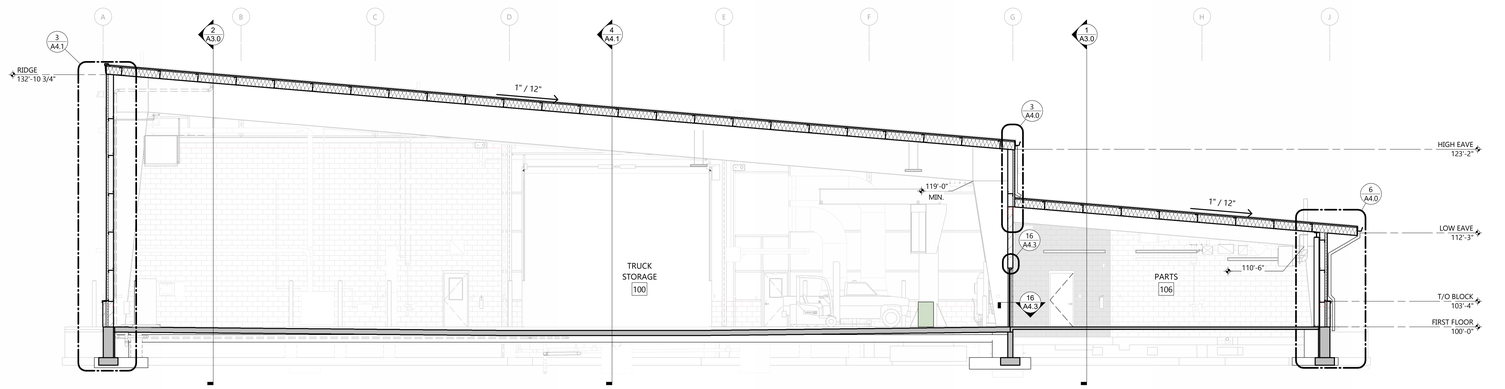

3 A3.0 BUILDING SECTION
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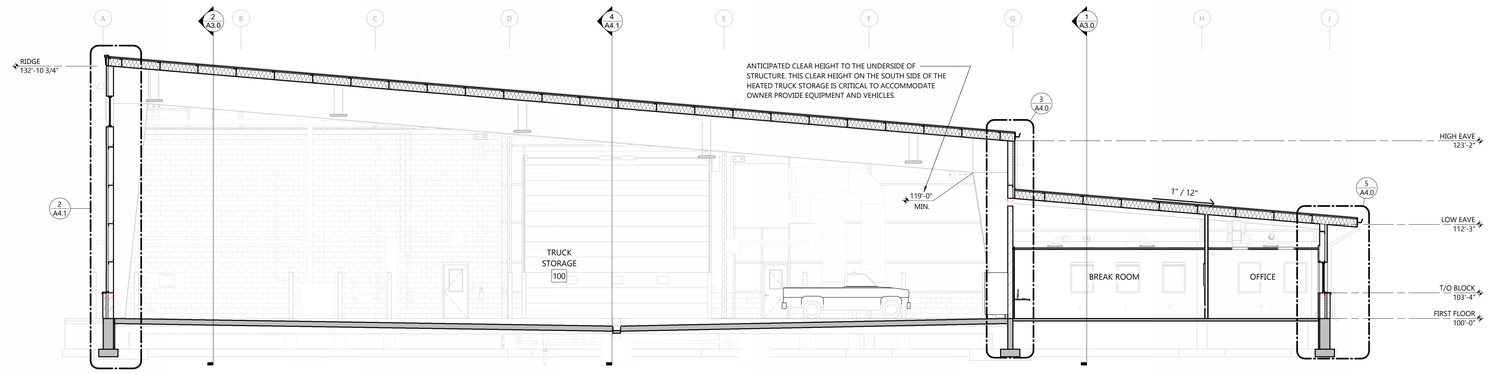

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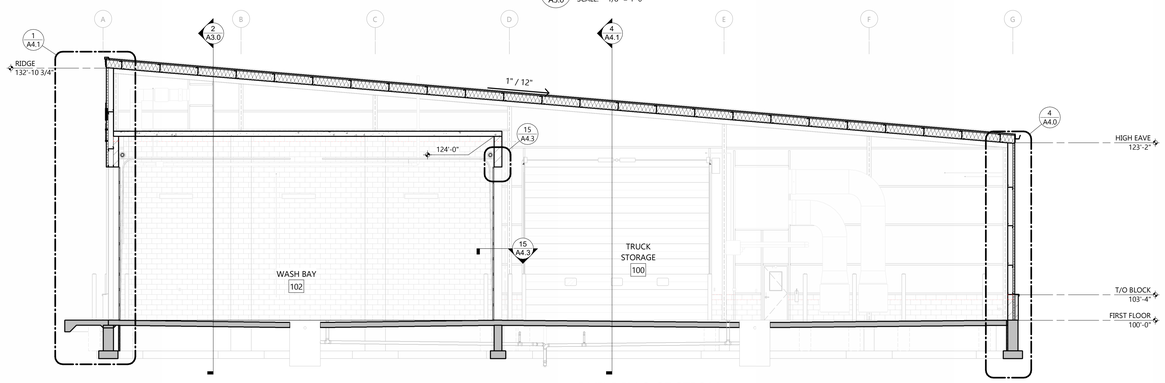

5 A3.0 BUILDING SECTION
SCALE: 1/8" = 1'-0"

ARCHITECTURAL BUILDING SECTIONS' - MAIN BUILDING

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PROJECT INFORMATION

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W9590 GIVENS RD. • HORTONVILLE, WI 54944

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SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A3.0

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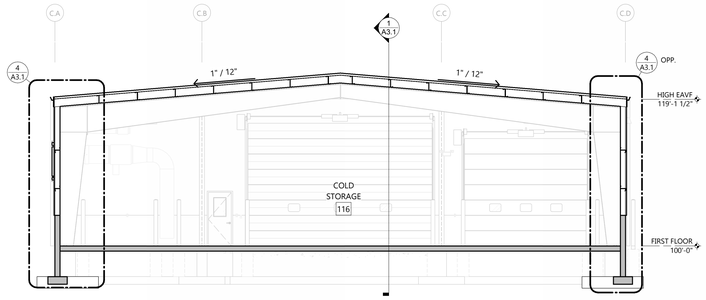
EXTERIOR WALL TYPE SCHEDULE

WALL TAG	WALL DISCRIPTION	WALL CONSTRUCTION
EC1	EXPOSED FOUNDATION WALL	- 8" CONCRETE WALL WITH HAND RUBBED FINISH
EM4	EXT. SIDING OVER METAL STUD	- 24 GA EXTERIOR METAL WALL PANELS (BY PEMB SUPPLIER) - 8" WALL GIRTS (BY PEMB SUPPLIER)



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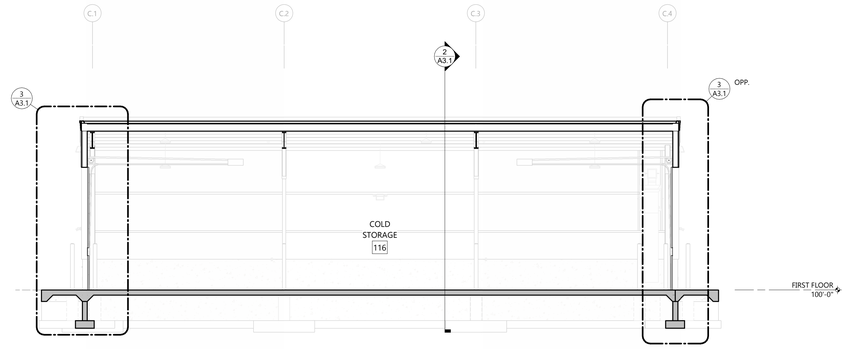
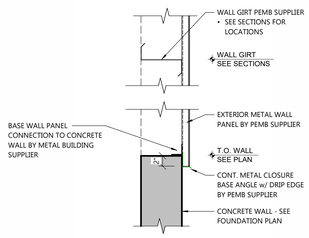


1 A3.1 BUILDING SECTION
SCALE: 1/8" = 1'-0"

4 A3.1 WALL SECTION
SCALE: 1/2" = 1'-0"

3 A3.1 WALL SECTION
SCALE: 1/2" = 1'-0"



5 A3.1 DETAIL
SCALE: 1" = 1'-0"

ARCHITECTURAL BUILDING SECTIONS - COLD STORAGE

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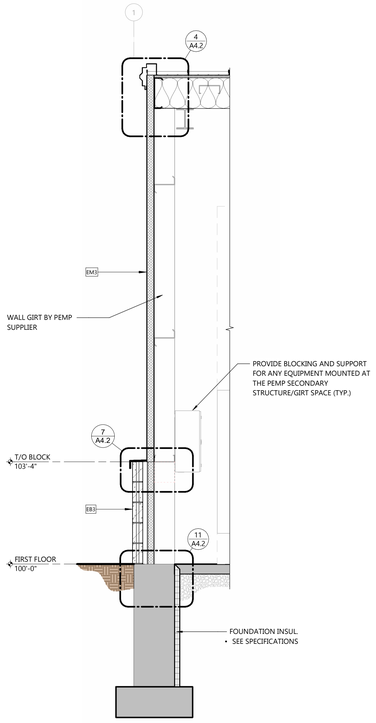
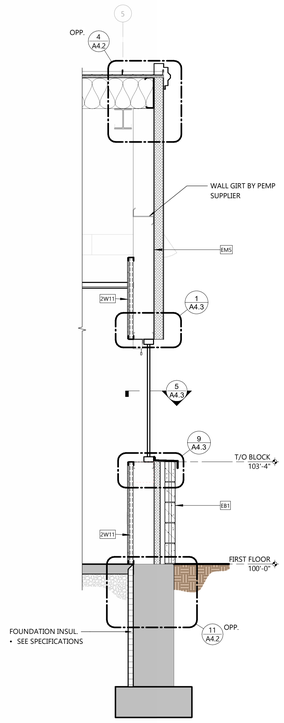
EXTERIOR WALL TYPE SCHEDULE

WALL TAG	WALL DISCRIPTION	WALL CONSTRUCTION
EB1	BLOCK VENEER OVER IMP/PEMB	- 4" BLOCK VENEER - 1 3/4" AIR SPACE - 2 3/4" BACKUP IMP (R-23) - PEMB STRUCTURE
EB2	BLOCK VENEER OVER IMP/CMU	- 4" BLOCK VENEER - 1 3/4" AIR SPACE - 2 3/4" BACKUP IMP (R-23) - 8" CMU WALL
EB3	BLOCK VENEER OVER IMP/PEMB	- 4" BLOCK VENEER - 1 3/4" AIR SPACE - 2 3/4" BACKUP IMP (R-23)
EM2	FLUTTED IMP OVER PEMB	- 3" FLUTED IMP WALL (R-26.2) - PEMB STRUCTURE (OPEN)
EM3	RIBBED IMP OVER PEMB	- 3" RIBBED WALL PANEL (R-VALUE: 15.2) - PEMB STRUCTURE (OPEN)
EM5	RIBBED IMP OVER PEMB	- 4" RIBBED WALL PANEL (R-VALUE: 23.3) - PEMB STRUCTURE



2 A4.0 WALL SECTION
SCALE: 1/2" = 1'-0"



1 A4.0 WALL SECTION
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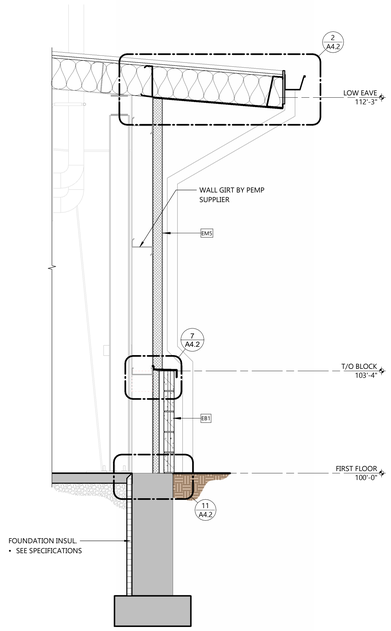

6 A4.0 WALL SECTION
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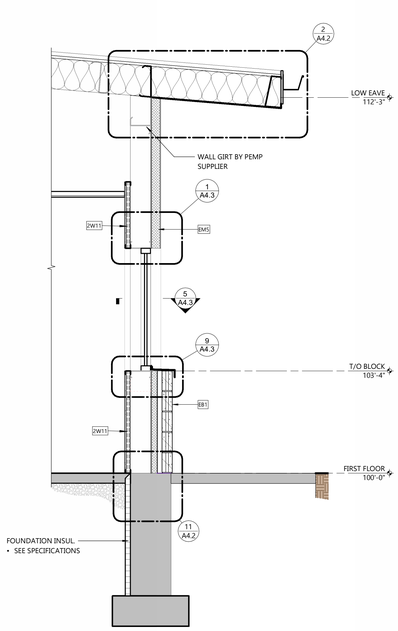

5 A4.0 WALL SECTION
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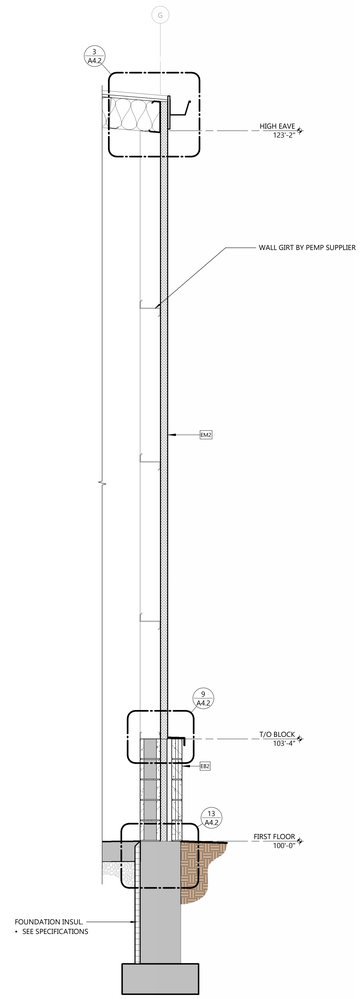

4 A4.0 WALL SECTION
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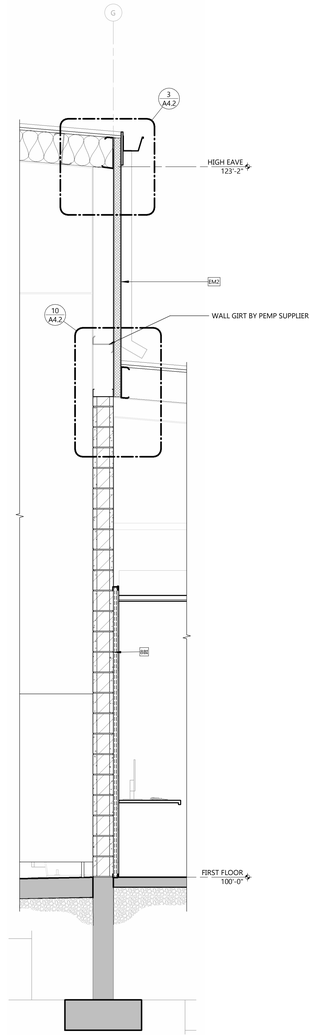

3 A4.0 WALL SECTION
SCALE: 1/2" = 1'-0"

ARCHITECTURAL OFFICE WALL SECTIONS & DETAILS

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Fond du Lac, WI 54935
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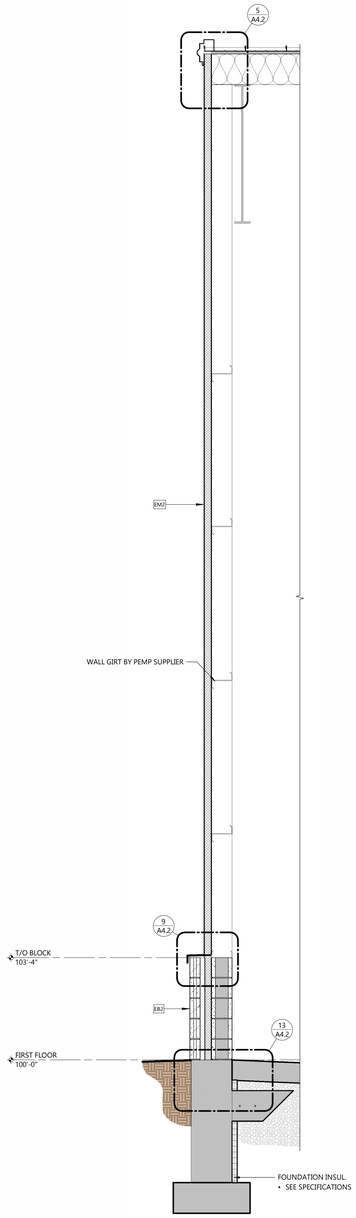
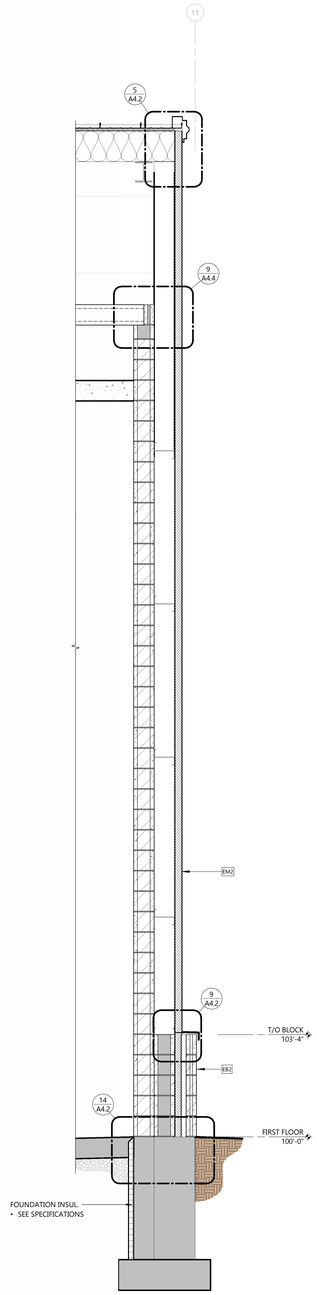
EXTERIOR WALL TYPE SCHEDULE

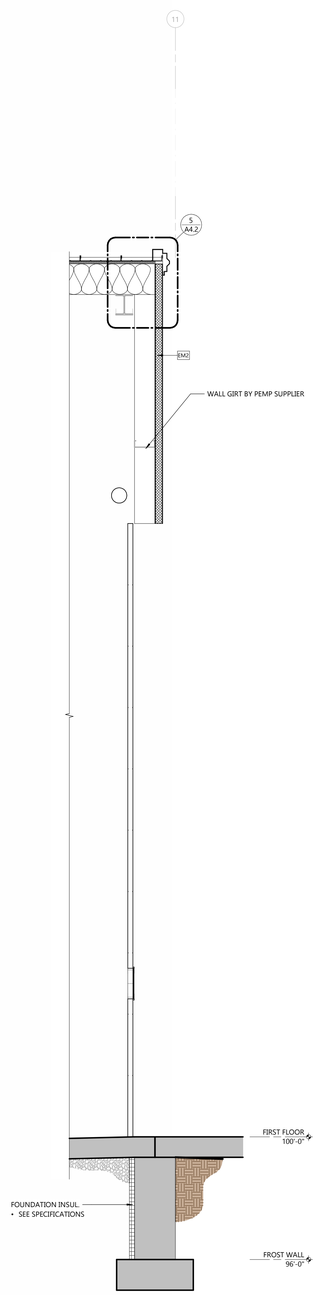
WALL TAG	WALL DISCRIPTION	WALL CONSTRUCTION
EB2	BLOCK VENEER OVER IMP/CMU	- 4" BLOCK VENEER - 1 3/4" AIR SPACE - 2 3/4" BACKUP IMP (R-23) - 8" CMU WALL
EM2	FLUTTED IMP OVER PEMB	- 3" FLUTED IMP WALL (R-26.2) - PEMB STRUCTURE (OPEN)



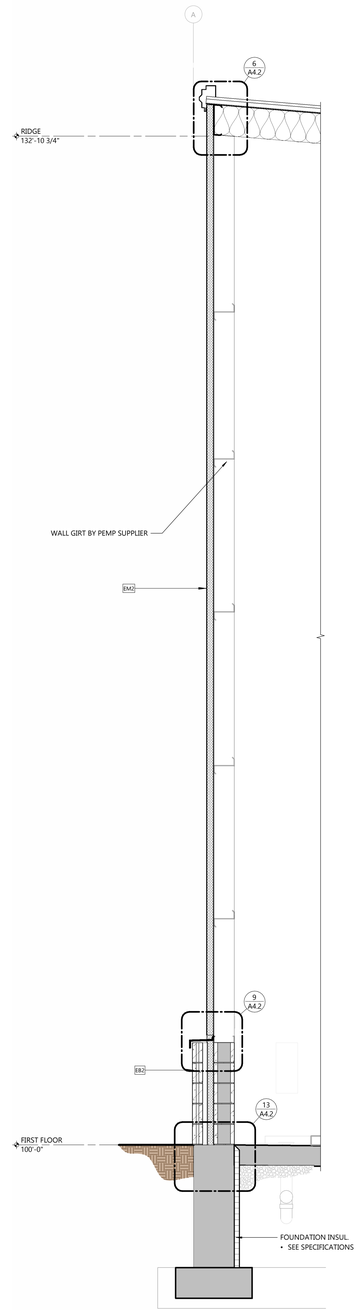
6 A4.1 WALL SECTION
SCALE: 1/2" = 1'-0"



5 A4.1 WALL SECTION
SCALE: 1/2" = 1'-0"



4 A4.1 WALL SECTION
SCALE: 1/2" = 1'-0"



3 A4.1 WALL SECTION
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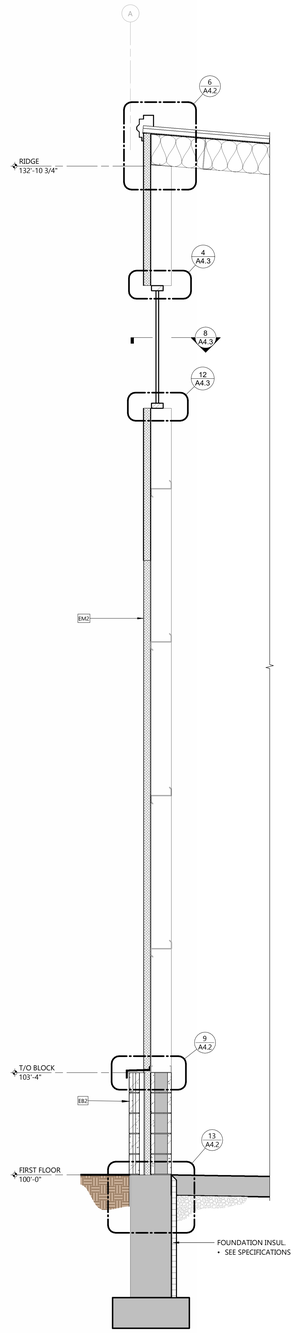

2 A4.1 WALL SECTION
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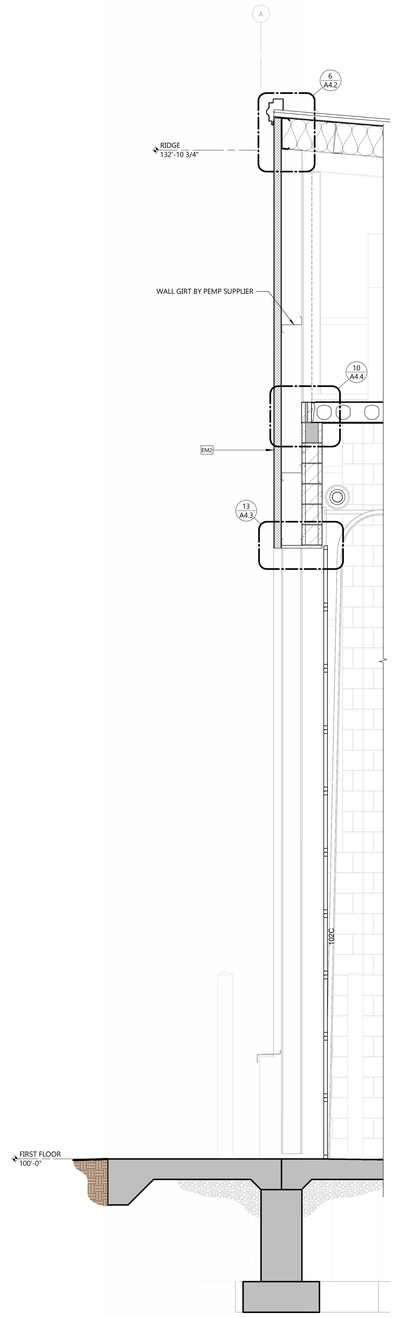

1 A4.1 WALL SECTION
SCALE: 1/2" = 1'-0"

ARCHITECTURAL MAIN BUILDING - WALL SECTIONS & DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
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PROFESSIONAL SEAL

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IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A4.1

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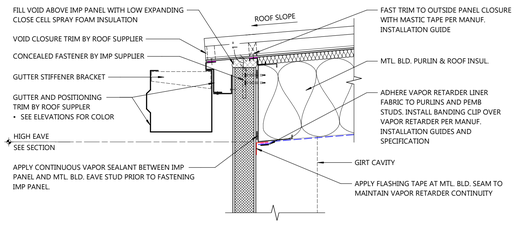
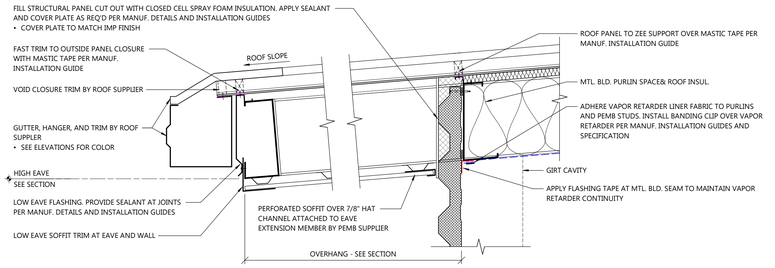


3 / A4.2 HIGH GUTTER DETAIL
SCALE: 1 1/2" = 1'-0"



2 / A4.2 LOW GUTTER DETAIL
SCALE: 1 1/2" = 1'-0"

FLASHING PRODUCT SPECS:

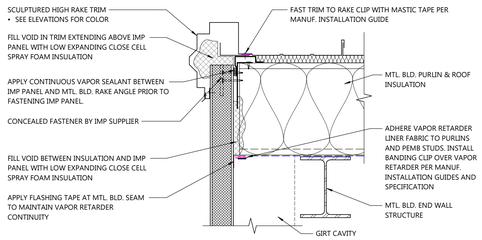
DRIP EDGE FLASHING:
HOHMANN & BARNARD 'DP' STAINLESS STEEL DRIP PLATE EDGE FLASHING

FLEXIBLE MEMBRANE FLASHING:
'PERM-A-BARRIER' WALL FLASHING

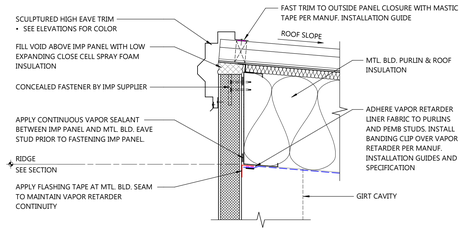
WEEP VENTS:
'MORTAR NET' WEEP VENTS

ICE AND WATER SHIELD:
'GRACE ICE & WATER SHIELD' FLASHING

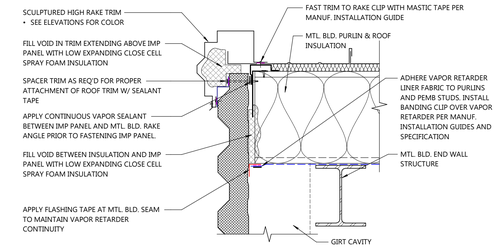
VENEER ANCHORS (HOHMANN & BARNARD):
#270 LADDER EYE-WIRE JOINT REINFORCING (FOR CAVITY WALLS WITH MASONRY BACKUP W/O RIGID INSULATION)
DW-10 TIES (FOR CAVITY WALLS WITH STUD BACKUP w/ WOOD SHEATHING ONLY)
X-SEAL TIES (FOR CAVITY WALLS WITH RIGID INSULATION)
2-SEAL TIES (FOR CAVITY WALLS WITH STUD BACKUP w/ RIGID INSULATION)



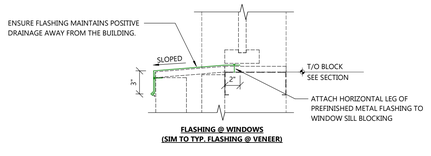
5 / A4.2 HIGH RAKE DETAIL
SCALE: 1 1/2" = 1'-0"



6 / A4.2 HIGH RIDGE DETAIL
SCALE: 1 1/2" = 1'-0"



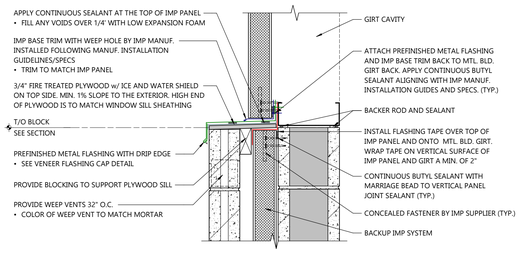
4 / A4.2 LOW RAKE DETAIL
SCALE: 1 1/2" = 1'-0"



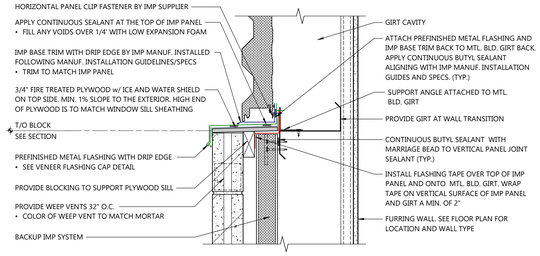
FLASHING @ WINDOWS
(SIM TO TYP. FLASHING @ VENEER)

TYP. FLASHING @ VENEER

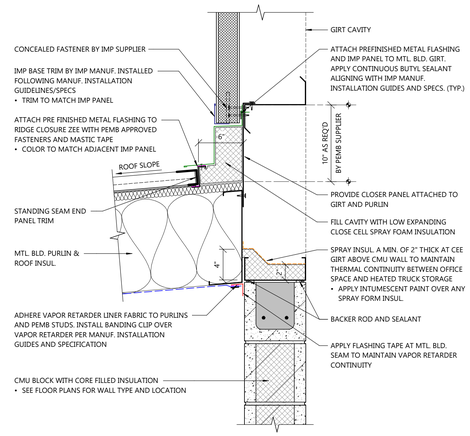
1 / A4.2 VENEER FLASHING CAP DETAIL
SCALE: 1 1/2" = 1'-0"



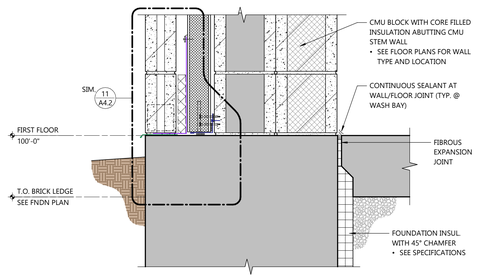
9 / A4.2 T/O BLOCK DETAIL (CMU BACKUP)
SCALE: 1 1/2" = 1'-0"



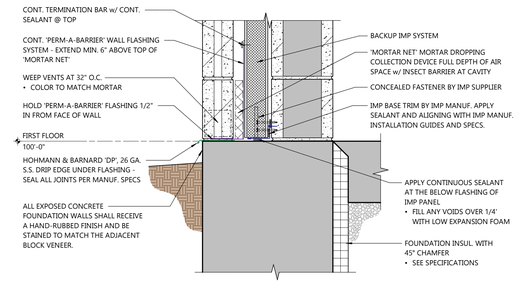
7 / A4.2 T/O BLOCK DETAIL (OPEN GIRT CAVITY)
SCALE: 1 1/2" = 1'-0"



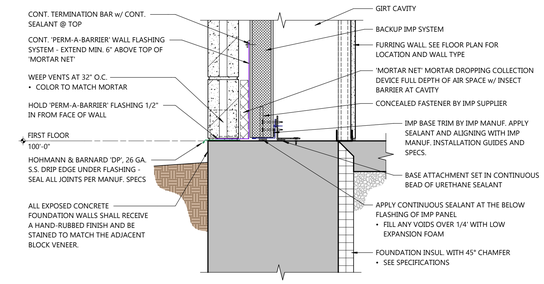
10 / A4.2 HIGH EAVE/WALL DETAIL
SCALE: 1 1/2" = 1'-0"



14 / A4.2 BASE DETAIL (CMU BACKUP)
SCALE: 1 1/2" = 1'-0"



13 / A4.2 BASE DETAIL (CMU BACKUP)
SCALE: 1 1/2" = 1'-0"



11 / A4.2 BASE DETAIL (OPEN GIRT CAVITY)
SCALE: 1 1/2" = 1'-0"

ARCHITECTURAL DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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SHEET NUMBER
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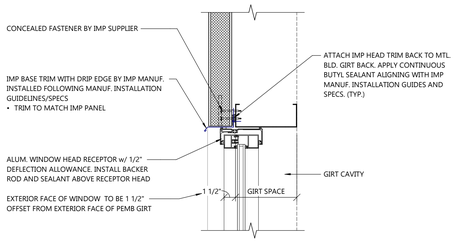
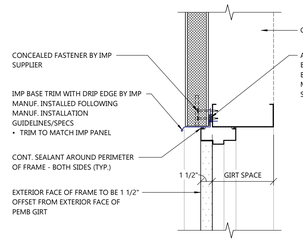
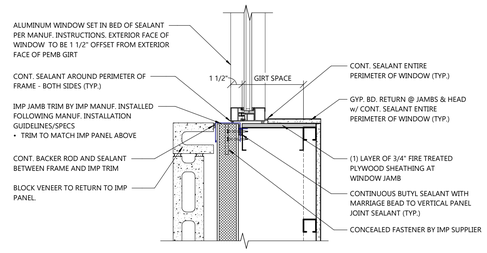


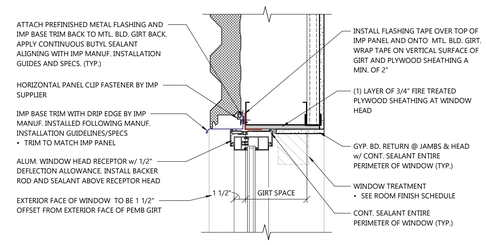
4 A4.3 WINDOW HEAD DETAIL @ TRUCK STR.
SCALE: 1 1/2" = 1'-0"



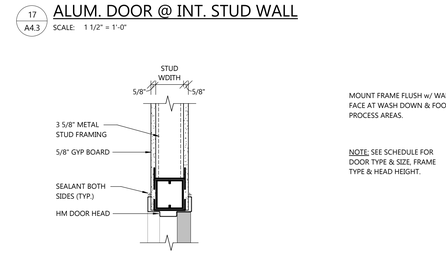
3 A4.3 WINDOW HEAD DETAIL @ TRUCK STR.
SCALE: 1 1/2" = 1'-0"



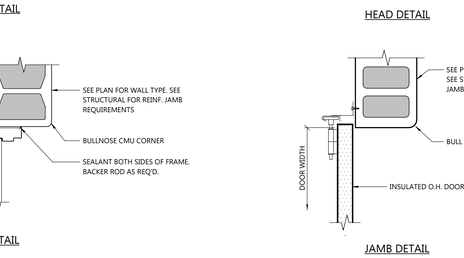
2 A4.3 LOW DOOR JAMB DETAIL @ OFFICE
SCALE: 1 1/2" = 1'-0"



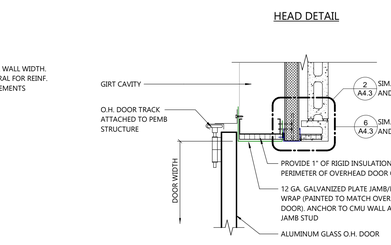
1 A4.3 WINDOW/DOOR HEAD DETAIL @ OFFICE
SCALE: 1 1/2" = 1'-0"



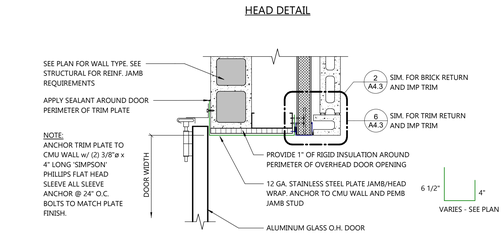
8 A4.3 WINDOW JAMB DETAIL @ TRUCK STR.
SCALE: 1 1/2" = 1'-0"



7 A4.3 DOOR JAMB DETAIL @ TRUCK STR.
SCALE: 1 1/2" = 1'-0"



6 A4.3 HIGH DOOR JAMB DETAIL @ OFFICE
SCALE: 1 1/2" = 1'-0"



5 A4.3 WINDOW JAMB DETAIL @ OFFICE
SCALE: 1 1/2" = 1'-0"

12 A4.3 WINDOW SILL DETAIL @ TRUCK STR.
SCALE: 1 1/2" = 1'-0"

11 A4.3 THERMAL BREAK @ EXT. DOOR
SCALE: 1 1/2" = 1'-0"

10 A4.3 WINDOW SILL DETAIL
SCALE: 1 1/2" = 1'-0"

9 A4.3 WINDOW SILL DETAIL @ OFFICE
SCALE: 1 1/2" = 1'-0"

17 A4.3 ALUM. DOOR @ INT. STUD WALL
SCALE: 1 1/2" = 1'-0"

HEAD DETAIL

HEAD DETAIL

HEAD DETAIL

HEAD DETAIL

18 A4.3 HM DOOR @ INT. STUD WALL
SCALE: 1 1/2" = 1'-0"

JAMB DETAIL

JAMB DETAIL

JAMB DETAIL

JAMB DETAIL

16 A4.3 HM DOOR @ INT. MASONRY WALL
SCALE: 1" = 1'-0"

15 A4.3 OVERHEAD DOOR - INT. MASONRY WALL
SCALE: 1" = 1'-0"

14 A4.3 OVERHEAD DOOR - METAL W/IMP
SCALE: 1" = 1'-0"

13 A4.3 GLASS OVERHEAD - MASONARY W/METAL/IMP
SCALE: 1" = 1'-0"

ARCHITECTURAL DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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JOB NUMBER
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SHEET NUMBER
A4.3

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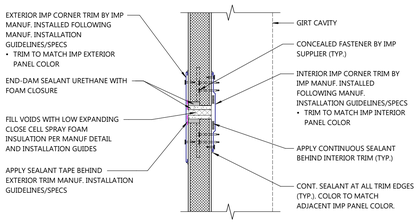
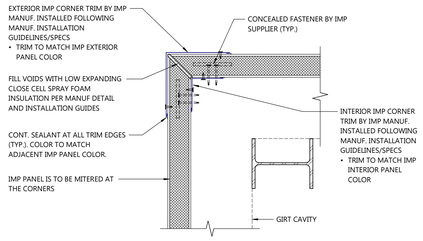
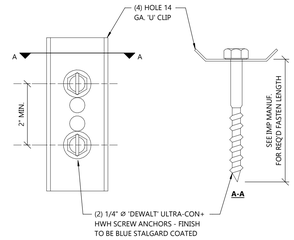


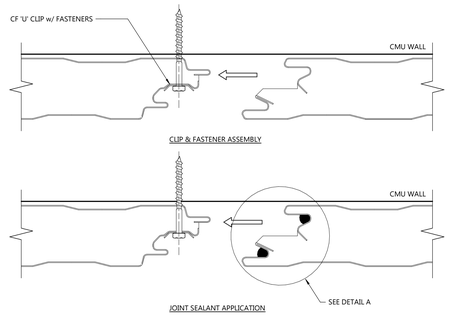
4 / A4.4 JOINT PANEL TRIM DETAIL
SCALE: 1 1/2" = 1'-0"

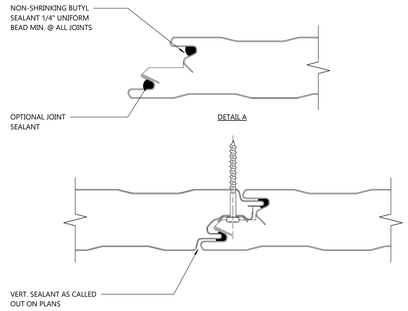


3 / A4.4 OUTSIDE CORNER IMP DETAIL
SCALE: 1 1/2" = 1'-0"

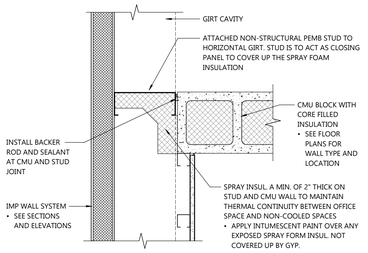


2 / A4.4 CF 'U' CLIP w/ FASTENERS
SCALE: 6" = 1'-0"

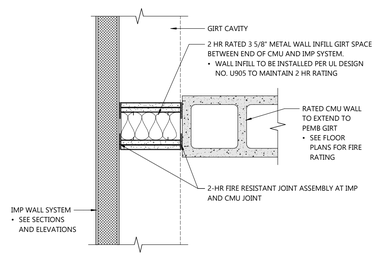




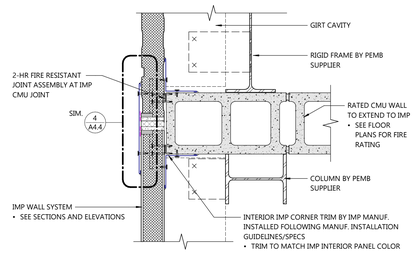
1 / A4.4 IMP ANCHOR DETAIL
SCALE: 3" = 1'-0"



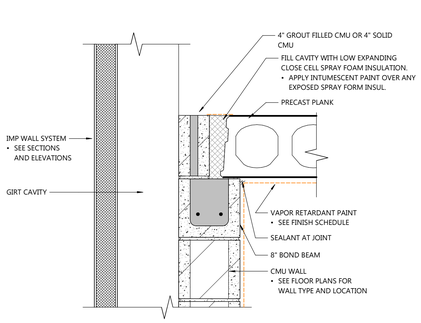
7 / A4.4 THERMAL CONTINUITY TO EXT. WALL
SCALE: 1 1/2" = 1'-0"



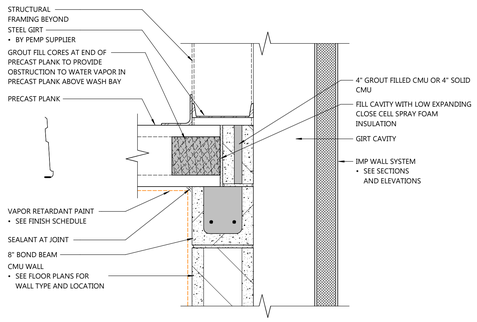
6 / A4.4 RATED CONTINUITY TO EXT. WALL
SCALE: 1 1/2" = 1'-0"



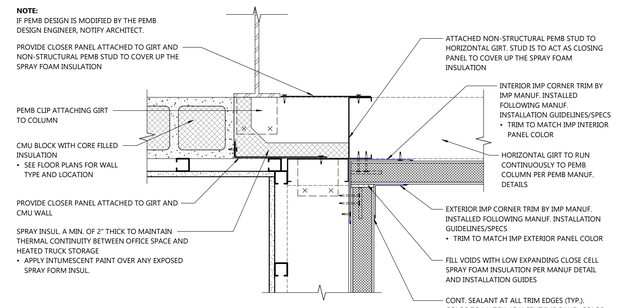
5 / A4.4 RATED CONTINUITY TO EXT. JOINT
SCALE: 1 1/2" = 1'-0"



10 / A4.4 DETAIL
SCALE: 1 1/2" = 1'-0"



9 / A4.4 DETAIL
SCALE: 1 1/2" = 1'-0"



8 / A4.4 INSIDER CORNER GIRT DETAIL
SCALE: 1 1/2" = 1'-0"

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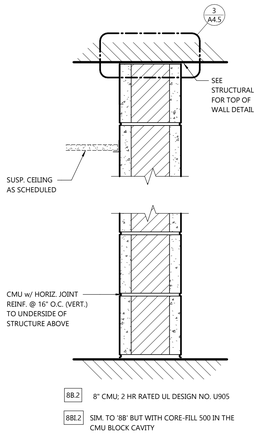
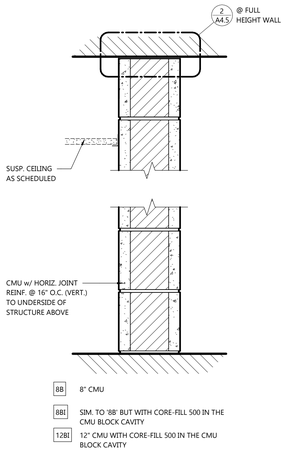
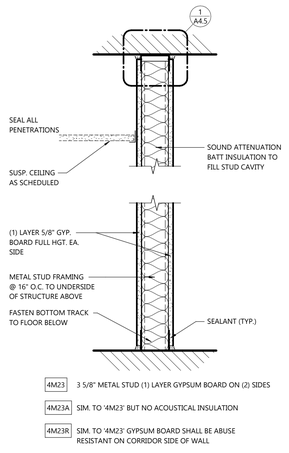


INTERIOR WALL TYPE - 8B.2



INTERIOR WALL TYPE - 8B/12B



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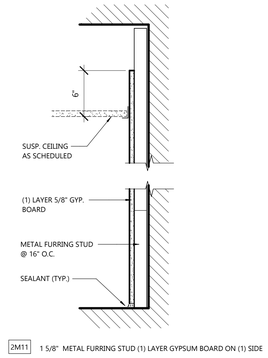
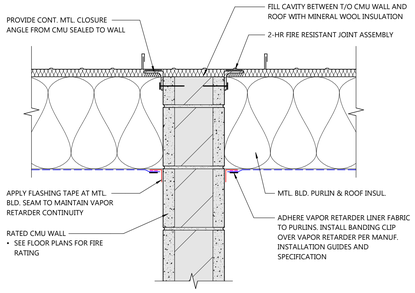
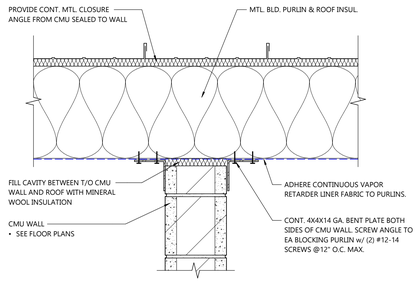


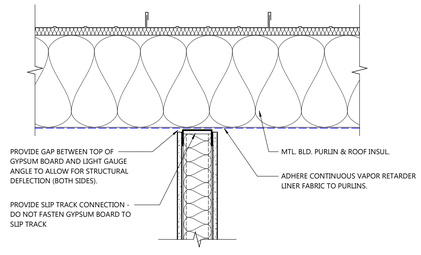
INTERIOR WALL TYPE - 2M11



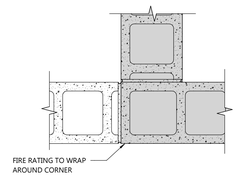
3 A4.5 RATED CMU HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



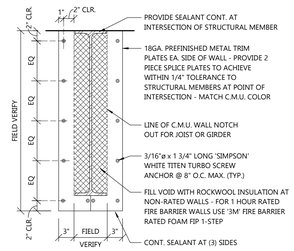
2 A4.5 CMU HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



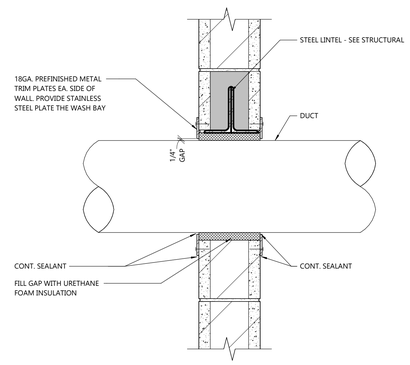
1 A4.5 METAL STUD HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



6 A4.5 RATED CMU CORNER
SCALE: 1 1/2" = 1'-0"

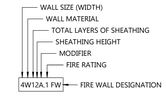


5 A4.5 METAL FRAME POCKET AT CMU WALL DETAIL
SCALE: 1" = 1'-0"



4 A4.5 DUCT PENETRATION - CMU WALL
SCALE: 1 1/2" = 1'-0"

INTERIOR PARTITION TAG KEY



WALL SIZE (WIDTH)			
TAG VALUE	BLOCK/CMU	METAL STUD	WOOD STUD
1	-	7/8"	3/4"
2	-	1 5/8"	1 1/2"
3	-	2 1/2"	-
4	3 5/8"	3 5/8"	3 1/2"
6	5 5/8"	6"	5 1/2"
8	7 5/8"	8"	7 1/4"
10	9 5/8"	-	-
12	11 5/8"	-	-

FIRE RATING	
FW	FIRE WALL
FB	FIRE BARRIER
FP	FIRE PARTITION
.1	(1) HOUR RATED
.2	(2) HOUR RATED
.3	(3) HOUR RATED
.4	(4) HOUR RATED

WALL MATERIAL	
B	BLOCK/CMU
M	METAL STUD
P	PRECAST
W	WOOD STUD

SHEATHING HEIGHT	
1	6" ABOVE CEILING (1 SIDE)
2	6" ABOVE CEILING (1) SIDE, FULL HEIGHT (1) SIDE
3	FULL HEIGHT BOTH SIDES

MODIFIER	
A	NO INSULATION
B	BRACED TO STRUCT.
P	PARTIAL HEIGHT
R	ABUSE RESISTANT

GENERAL NOTES

- ALLOW FOR DEFLECTION AT TOP OF WALL IN NON-LOAD BEARING APPLICATIONS.
- HOLD GYP. BD. OFF FLOOR 5/8" TO PREVENT WICKING. PROVIDE CONTINUOUS NON-HARDENING ACOUSTICAL CAULKING BEADS ON EACH SIDE OF THE BOTTOM STUD RUNNER AT THE THREE-WAY INTERSECTION BETWEEN THE RUNNER, FLOOR AND DRYWALL.
- MULTIPLE LAYER OF GYPSUM BOARD ARE TO BE APPLIED WITH STAGGERED JOINTS.
- LABEL ALL FIRE RATED PARTITIONS ACCORDING TO THEIR RATING WITH STENCILED RED LETTERS. 4" HIGH MIN. AND 1/2" STROKE. LABEL FIRE RATING JUST ABOVE THE FINISHED CEILING, OR AT 10'-0" AFF FOR SPACES WITHOUT FINISHED CEILING AT INTERVALS OF NOT MORE THAN 10'-0" APART AND AT LEAST TWICE ON EACH PARTITION.
- SEAL ALL VOIDS AND PENETRATIONS IN FIRE RATED WALLS AS REQUIRED TO MAINTAIN CONTINUOUS FIRE RATING.
- REFER TO ROOM FINISH SCHEDULE FOR WALLS W/ LEVEL 5 DRYWALL.
- UL RATED ASSEMBLY NUMBER MAY BE CHANGED AND SUBMITTED FOR REVIEW BY ARCHITECT. REFERENCE ACTUAL UL RATED ASSEMBLY FOR ALL MATERIAL AND TYPE REQUIREMENTS AS THOSE SHOWN ON THESE PLANS ARE ONLY A SUMMARY FOR REFERENCE.

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A4.5

ARCHITECTURAL INTERIOR WALL TYPES

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4/1/2026 11:14:25 AM

ONLINE CERTIFICATIONS DIRECTORY

Design No. U419
BXUV.U419
Fire Resistance Ratings - ANSI/UL 263

Page Bottom

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- Where this field involves areas, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each assembly included in this Search group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

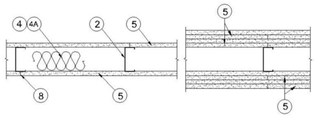
Fire-resistance Ratings - ANSI/UL 263

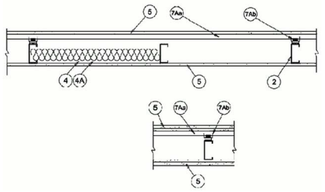
See General Information for Fire-resistance Ratings - ANSI/UL 263

Design No. U419

January 27, 2014

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





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

1A. **Framing Members* - Floor and Ceiling Runner** — Not shown - In lieu of Item 1 — For use with Item 2B, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™ Track

CRACO MFG INC — SmartTrack™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track

PHILLIPS MFG CO L L C — Viper25™ Track

1B. **Framing Members* - Floor and Ceiling Runner** — Not shown - In lieu of Item 1 — For use with Item 2C, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™ Track

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track

PHILLIPS MFG CO L L C — Viper20™ Track

1C. **Framing Members* - Floor and Ceiling Runners** — (Not shown) — In lieu of Item 1 - Channel shaped, attached to floor and ceiling with fasteners 24 in. OC. max.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

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

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

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTRAK

DMFCWBS L L C — ProTRAK

MBA BUILDING SUPPLIES INC — ProSTRAK

RAM SALES L L C — Ram ProSTRAK

SOUTHEASTERN STUD & COMPONENTS INC — ProTRAK

STEEL STRUCTURAL SYSTEMS L L C — Tri-S ProTRAK

1F. **Framing Members* - Floor and Ceiling Runner** — Not shown - In lieu of Item 1 — For use with Item 2F, proprietary channel shaped runners, minimum width to accommodate stud size, with 1- 1/8 in. long legs fabricated from min 0.015 in. (min bare metal thickness) galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

SUPER STUD BUILDING PRODUCTS — The Edge

1G. **Framing Members* - Floor and Ceiling Runner** — For use with Item 2G, proprietary channel shaped runners, minimum width to accommodate stud size attached to floor and ceiling with fasteners 24 in. OC max.

STUDCO BUILDING SYSTEMS — CROCSTUD Track

1H. **Floor and Ceiling Runners** — (Not shown) — Channel shaped, fabricated from min 0.02 in. galv steel, min width to accommodate stud size, with min 1 in. long legs, for use with studs specified below and fabricated from min 0.02 in. galv steel or thicker, attached to floor and ceiling with fasteners spaced max 24 in. OC.

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™ Track VT100.

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

TELLING INDUSTRIES L L C — TRUE-TRACK™

1J. **Framing Members* - Floor and Ceiling Runner** — Not shown - In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 3-5/8 in. deep attached to floor and ceiling with fasteners 24 in. OC max.

TELLING INDUSTRIES L L C — Viper25™ Track

1K. **Framing Members* - Floor and Ceiling Runner** — Not shown - In lieu of Item 1 — For use with Item 2J, proprietary channel shaped runners, 1-1/4 in. wide by 3-5/8 in. deep fabricated from min 0.020 in. thick galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

TELLING INDUSTRIES L L C — Viper20™ Track

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

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

2B. **Framing Members* - Steel Studs** — (As an alternate to Item 2, For use with Items SC or SI) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a ½ in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper25™

CRACO MFG INC — SmartStud™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™

PHILLIPS MFG CO L L C — Viper25™

2C. **Framing Members* - Steel Studs** — Not shown - In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.020 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights.

CALIFORNIA EXPANDED METAL PRODUCTS CO — Viper20™

MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper20™

PHILLIPS MFG CO L L C — Viper20™

2D. **Framing Members*— Steel Studs** — In lieu of Item 2 - Channel shaped studs, min depth as indicated under Item 5, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

ALLSTEEL & GYPSUM PRODUCTS INC — Type SUPREME Framing System

CONSOLIDATED FABRICATORS CORP, BUILDING PRODUCTS DIV — Type SUPREME Framing System

QUAIL RUN BUILDING MATERIALS INC — Type SUPREME Framing System

SCAFCO STEEL STUD MANUFACTURING CO — Type SUPREME Framing System

STEEL CONSTRUCTION SYSTEMS INC — Type SUPREME Framing System

UNITED METAL PRODUCTS INC — Type SUPREME Framing System

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

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD

DMFCWBS L L C — ProSTUD

MBA BUILDING SUPPLIES INC — ProSTUD

RAM SALES L L C — Ram ProSTUD

SOUTHEASTERN STUD & COMPONENTS INC — ProSTUD

STEEL STRUCTURAL SYSTEMS L L C — Tri-S ProSTUD

2F. **Framing Members* - Steel Studs** — Not shown - In lieu of Item 2 — proprietary channel shaped steel studs, minimum width indicated under Item 5, 1-1/4 in. deep fabricated from min 0.015 in. (mm bare metal thickness) galvanized steel. Studs 3/8 in. to 3/4 in. less in lengths than assembly heights.

SUPER STUD BUILDING PRODUCTS — The Edge

2G. **Framing Members* - Steel Studs** — Not shown - In lieu of Item 2 - proprietary channel shaped studs, minimum width indicated under Item 5, Studs to be cut 3/8 to 3/4 in less than the assembly height.

STUDCO BUILDING SYSTEMS — CROCSTUD

2H. **Framing Members*— Steel Studs** — (Not shown, As an alternate to Item 2) — Fabricated from min. 0.015 in. (mm bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

TELLING INDUSTRIES L L C — TRUE-STUD™

2I. **Framing Members* - Steel Studs** — (As an alternate to Item 2, For use with Items SC or SL) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height and installed with a ½ in. gap between the end of the stud and track at the bottom of the wall. For direct attachment of gypsum board only.

TELLING INDUSTRIES L L C — Viper25™

2J. **Framing Members* - Metal Studs** — Not shown - In lieu of Item 2 — proprietary channel shaped steel studs, min depth as indicated under Item 5, spaced a max if 24 in. OC, fabricated from min 0.020 in. thick galv steel. Studs cut 3/8 in. to 3/4 in. less in lengths than assembly heights

TELLING INDUSTRIES L L C — Viper20™

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

4. **Batts and Blankets*** — (Required as indicated under Item 5) — Mineral wool batts, friction fitted between studs and runners. Min nom thickness as indicated under Item 5. See **Batts and Blankets (BKNW or BJ1Z) Categories** for names of Classified companies.

4A. **Batts and Blankets*** — (Optional) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets (BKNW or BJ7Z) Categories** for names of Classified companies.

5. **Gypsum Board*** — Gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints in adjacent layers (multilayer systems) staggered a min of 12 in. The thickness and number of layers for the 1 hr, 2 hr, 3 hr and 4 hr ratings are as follows:

Gypsum Board Protection on Each Side of Wall

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

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR; WRC, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCrS, SHX, WRX or WRC; 3/4 in. thick Types IP-X3 or ULTRACODE

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

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or WRC; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCrS, SHX, WRX, WRC or; 3/4 in. thick Types IP-X3 or ULTRACODE

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

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

CGC INC — Type SHX.

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

USG MEXICO S A DE C V — Type SHX.

5B. **Gypsum Board*** — (Not Shown) - As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 in. or ¾ in. may be used as alternate to all 5/8 in. or ¾ in. shown in Item 5, Wallboard Production on Each Side of Wall table. Nom 5/8 in. or ¾ in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Gypsum board secured to 20 MSG steel studs Item 2A with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. To be used with Lead Batten Strips (see Item 11) or Lead Discs or Tabs (see Item 12).

RAY-BAR ENGINEERING CORP — Type RB-LBG

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

CGC INC — Type SCX.

UNITED STATES GYPSUM CO — Type SCX, SGX.

USG MEXICO S A DE C V — Type SCX.

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

UNITED STATES GYPSUM CO — Type USGX.

5E. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

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

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

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

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR;, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCrS, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

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

boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. Vertical joints are to be centered over studs and staggered one stud cavity on opposite sides of studs. (Horizontal Application) - The gypsum board is to be installed on each side of the studs with 1 in. long Type S coated steel screws spaced 8 in. OC starting 4 in. from the edge of the board at the vertical edges and 12 in. OC starting 6 in. from the edge of the board at the center of each board. Gypsum boards are to be secured to the top and bottom track with screws spaced 8 in. OC starting 4 in. from the board edge. Fasteners shall not penetrate through both the stud and the track at the same time. All horizontal joints are to be backed as outlined under section VI of Volume 1 in the Fire Resistive Directory.

CGC INC — Type SCX.

UNITED STATES GYPSUM CO — Type SCX, SGX.

USG MEXICO S A DE C V — Type SCX.

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

UNITED STATES GYPSUM CO — Type USGX.

5E. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, (not to be used with Item 3). Nominal 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 (or No. 6 by 1-1/4 in. long bugle head fine driller) steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field.

NEW ENGLAND LEAD BURNING CO INC, DBA NELCO — Nelco

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

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

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

Gypsum Board Protection on Each Side of Wall

Rating, Hr	Min Stud Depth, in. Item 2E	No. of Layers & Thickness of Panel	Min Thkns of Insulation (Item 4)
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	1-5/8	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional

CGC INC — 1/2 in. thick Type C, IP-X2 or IPC-AR;, 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCrS, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

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

USG MEXICO S A DE C V — 1/2 in. thick Type C, IP-X2, IPC-AR or; 5/8 in. thick Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCrS, SHX, or; 3/4 in. thick Types IP-X3 or ULTRACODE

5H. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in or 5/8 in thick products are specified. For direct attachment only to steel studs Item 2A, (not to be used with Item 3) - Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. Gypsum board secured to 20 MSG steel studs Item 2B with 1-1/4 in. long Type S-12 steel screws spaced 8 in. OC at perimeter and 12 in. OC in the field. For Joint Compound see Item 5. To be used with Lead Batten Strips (see Item 11A) or Lead Discs (see Item 12A).

MAYCO INDUSTRIES INC — Type X-Ray Shielded Gypsum

5I. **Gypsum Board*** — (As an alternate to Item 5) - Nom. 5/8 in. thick gypsum panels with beveled, square or tapered edges installed as described in Item 5. Steel stud minimum depth shall be as indicated in Item 5.

CGC INC — Type ULX

UNITED STATES GYPSUM CO — Type ULX

USG MEXICO S A DE C V — Type ULX

5J. **Gypsum Board*** — (Not Shown) - (As an alternate to Item 5 when used as the base layer on one or both sides of wall when 1/2 in. or 5/8 in thick products are specified, For direct attachment only to steel studs Item 2A, not to be used with Item 3). Nom 5/8 in. thick lead backed gypsum panels with beveled, square or tapered edges, applied vertically. Vertical joints centered over studs and staggered min 1 stud cavity on opposite sides of studs. Wallboard secured to studs with 1-1/4 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead batten strips required behind vertical joints of lead backed gypsum wallboard and optional at remaining stud locations. Lead batten strips, min 2 in. wide, max 8 ft long with a max thickness of 0.14 in. placed on the face of studs and attached to the stud with construction adhesive and two 1 in. long Type S-12 pan head steel screws, one at the top of the strip and one at the bottom of the strip. Lead discs, nominal 3/8 in. diam by max 0.085 in. thick. Compression fitted or adhered over the screw heads. Lead batten strips and discs to have a purity of 99.9% meeting the Federal specification QQ-L-201f, Grade "C".

RADIATION PROTECTION PRODUCTS INC — Type RPP - Lead Lined Drywall

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

7. **Furring Channels** — (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws. Not for use with Item 5A and 5E.

7A. **Framing Members*** — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel, 2-9/16 in. or 2-23/32 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 5. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7A) to studs (Item 2). Clips spaced max. 48 in. OC. RSIC-1 and RSIC-V (2.75) clips secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. RSIC-V and RSIC-V (2.75) clips secured to studs with No. 8 x 5/16 in. minimum self-drilling, S-12 steel screw through the center hole. Furring channels are friction fitted into clips. RSIC-1 and RSIC-V clips for use with 2-9/16 in. wide furring channels. RSIC-1 (2.75) and RSIC-V (2.75) clips for use with 2-23/32 in. wide furring channels.

PAC INTERNATIONAL INC — Types RSIC-1, RSIC-V, RSIC-1 (2.75), RSIC-V (2.75).

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

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

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Ba) to one side of studs (Item 2) only. Clips spaced 48 in. OC., and secured to studs with two No. 8 x 2-1/2 in. diam drywall screws, one through the hole at each end of the clip. Furring channels are friction fitted into clips.

KINETICS NOISE CONTROL INC — Type Isomax

7C. **Framing Members*** — Optional - Not Shown - Used as an alternate method to attach resilient channels (Item 7). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the steel stud with min. 1 in. long Type S-12 steel screws through the center hole of the clip and the resilient channel flange.

7D. **Framing Members*** — (Not Shown) — (Optional on one or both sides, not shown, for single or double layer systems) — As an alternate to Item 7, furring channels and Steel Framing Members as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced max. 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 5. Gypsum board attached to furring channels as described in Item 6. Not for use with Item 5A and 5E.

b. **Steel Framing Members*** — Used to attach furring channels (Item 7Aa) to studs (Item 2). Clips spaced max. 48 in. OC. GENIECLIPS secured to studs with No. 8 x 1-1/2 in. minimum self-drilling, S-12 steel screw through the center grommet. Furring channels are friction fitted into clips.

PLITEQ INC — Type GENIECLIP

7E. **Steel Framing Members** — (Optional, Not Shown)* - Furring channels and resilient sound isolation clip as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel. Spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item 5. Ends of adjoining channels overlapped 6 in. and nested together. Channels spaced 6 in. from perimeter of wall (Item 2) and 12 in. OC. max. (but not from overlap edge). Gypsum board attached to furring channels as described in Item 4. Side joint furring channels shall be attached to studs with RESILMOUNT Sound Isolation Clips - located approximately 2

TOILET ROOM ACCESSORY SPECS:

GENERAL NOTES:
- SEE KEYED TOILET ROOM ACCESSORY LEGEND FOR MODEL NUMBERS, FINISH, AND COLORS
- GENERAL CONTRACTOR SHALL PROVIDE BLOCKING AS REQ'D AT ALL ACCESSORY LOCATIONS
- GENERAL CONTRACTOR SHALL VERIFY ROUGH OPENING REQ'S FOR ALL RECESSED EQUIPMENT/ACCESSORIES

MANUFACTURER:
- BOBRICK WASHROOM EQUIPMENT, INC.

PRODUCTS:
- GRAB BARS, TISSUE DISPENSERS, TOWEL DISPENSERS, MIRRORS, SOAP DISPENSERS, ETC.

TOILET PARTITION SPECIFICATION:

MANUFACTURER:
- SCRANTON

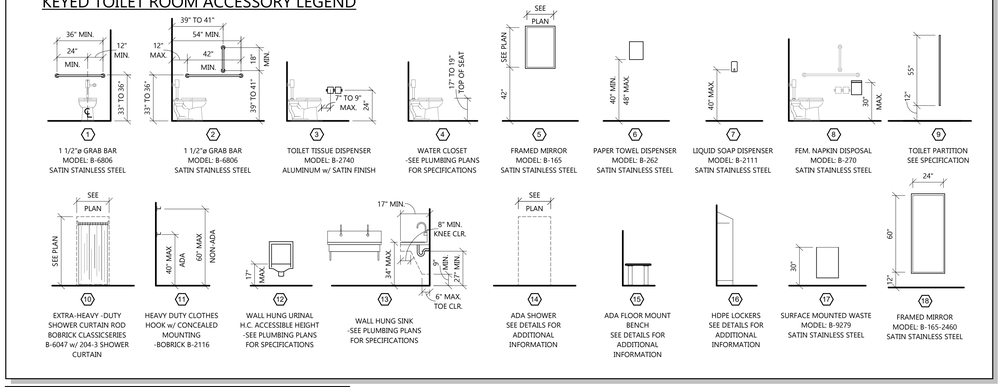
PRODUCT:
- HDNY HIDERS TOILET PARTITIONS AND URINAL SCREENS

CONSTRUCTION:
- PANEL AND DOORS:
  - HDPE SOLID PLASTIC COLOR
  - THICKNESS = 1"
- PILASTERS:
  - HDPE SOLID PLASTIC COLOR
  - THICKNESS = 1"
- HARDWARE:
  - CONTINUOUS BRACKET - ALUMINUM
  - STRIKE - ALUMINUM
  - STIRRUP BRACKET - ALUMINUM
  - LATCHES - OCCUPANCY INDICATOR
  - SHOES - PLASTIC PILASTER
  - HINGES - CONTINUOUS ALUMINUM, SELF CLOSING

FINISH:
- BLACK

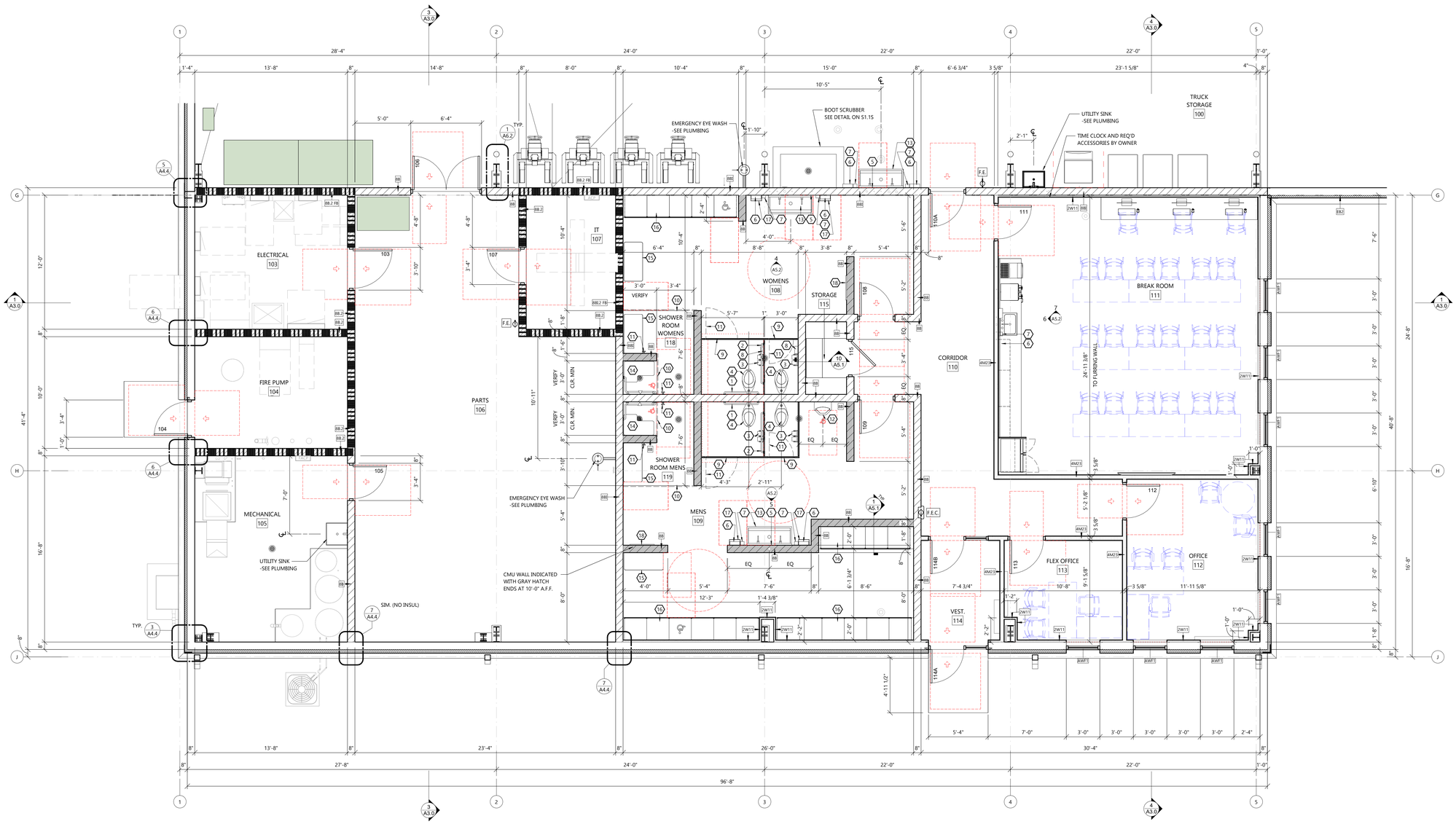
WARRANTY:
- 25 YEAR

KEYED TOILET ROOM ACCESSORY LEGEND



TOILET ROOM NOTES:

- 6 1/2" MAXIMUM SINK DEPTH
- INSULATE PIPES BELOW COUNTERTOPS (WATER AND WASTE LINES) W/ PVC MOLDED PROTECTION (BY PLUMBING CONTRACTOR)
- MANUAL FLUSH VALVE FOR URINAL MUST NOT EXCEED 44" IN HEIGHT
- ALL DIMENSIONS SHOWN ARE FROM STUD TO STUD



NORTH

ENLARGED OFFICE FIRST FLOOR PLAN

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

0' 4' 8'

ARCHITECTURAL ENLARGED PLANS

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EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

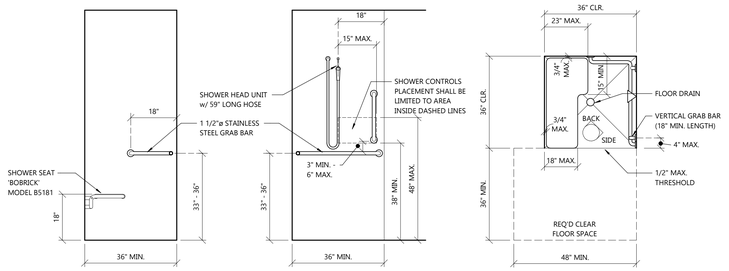
NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

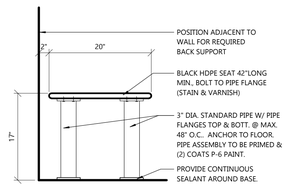
SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A5.0



3 A5.1 ADA SHOWER
SCALE: 1/2" = 1'-0"



2 A5.1 ADA BENCH DETAIL - FLOOR MOUNTED
SCALE: 1" = 1'-0"

LOCKER SPECIFICATION:

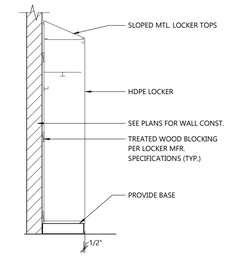
MANUFACTURER:
- SCRANTON

MODEL:
- STANDARD - 24" x 24" x 72" STD.

CONSTRUCTION:
- MANUFACTURER'S STANDARD CONSTRUCTION PRACTICE
- BODY PANELS: HDPE SOLID PLASTIC COLOR 1" THICKNESS
- DOORS AND FRAMES: HDPE SOLID PLASTIC COLOR 1" THICKNESS
- HINGES: 2" FIVE KNUCKLE, FULL LOOP
- FASTENERS: ZINC PLATED

OPTIONS:
- RECESSED HANDLE AND LATCH w/ NONPROTRUDING LATCH LIFTER CONTAINING STRIKE AND EYE FOR PADLOCK
- FULL LATTICE MESH VENTING ON DOOR
- EQUIPMENT - (1) DOUBLE PRONG CEILING HOOK, (2) SINGLE PRONG WALL HOOKS AND NUMBER PLATES AT EACH LOCKER.
- FILLER PANELS AS REQUIRED
- ALL ACCESSORIES AND TRIM REQUIRED FOR A COMPLETE INSTALLATION
- PROVIDE INDIVIDUAL SLOPED TOPS
- PROVIDE 4" BASE

FINISH:
- BLACK



1 A5.1 LOCKER DETAIL
SCALE: 1/2" = 1'-0"

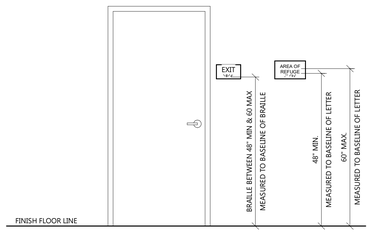
INTERIOR SIGNAGE BID SPECIFICATION:

MANUFACTURER:
- BASIS OF DESIGN: 2/90 SIGNS SLIDE COLLECTION (OR EQUAL)
  - a. ALTERNATE MANUFACTURERS MUST DEMONSTRATE EQUAL MATERIALS, FUNCTIONALITY, MODULARITY, AND ADA COMPLIANCE.

CONSTRUCTION:
- PROVIDE INTERIOR IDENTIFICATION, DIRECTIONAL, INFORMATIONAL, AND ADA-REQUIRED SIGNS. SIGNS SHALL COMPLY WITH CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN, INCLUDING TACTILE COPY AND GRADE 2 BRAILLE.
- SIGN ASSEMBLIES SHALL INCLUDE A COORDINATED SYSTEM OF RAILS, INSERTS, PLAQUES, AND END CAPS/BACKERS ALLOWING FIELD-REPLACEABLE GRAPHICS WITHOUT REPLACING THE ENTIRE SIGN.
- INSERTS MAY BE ABS, ALUMINUM, LAMINATE, PETG, ACRYLIC, OR POLYCARBONATE, WITH DIRECT-PRINT, SUBSURFACE PRINT, OR APPLIED TACTILE GRAPHICS MATCHING THE BASIS-OF-DESIGN PERFORMANCE. COLORS, SIZES, AND TYPOGRAPHY SHALL MATCH THE DESIGN INTENT AND OWNER'S STANDARDS.
- PROVIDE MANUFACTURER'S STANDARD MOUNTING OPTIONS SUITABLE FOR EACH SIGN TYPE AND FIELD CONDITION. CONTRACTOR SHALL VERIFY SUBSTRATE CONDITIONS PRIOR TO INSTALLATION.
- SUBMIT SHOP DRAWINGS, PRODUCT DATA, AND ONE FULL-SIZE SAMPLE OF EACH MAJOR SIGN TYPE FOR APPROVAL. SAMPLES MAY BE RETAINED AS PART OF THE PROJECT.
- FABRICATION SHALL ENSURE SMOOTH EDGES, CONSISTENT FINISHES, TIGHT JOINTS, AND DURABLE COLOR COATINGS RESISTANT TO FADING, SCRATCHING, AND NORMAL CLEANING. ALL TACTILE CHARACTERS MUST MEET ADA HEIGHT, STROKE, CONTRAST, AND FINISH CRITERIA.
- INSTALL SIGNS PLUMB, LEVEL, AND AT CONSISTENT HEIGHTS PER PLANS AND ADA REQUIREMENTS. CONTRACTOR SHALL PROTECT SURROUNDING FINISHES AND REPAIR ANY INSTALLATION DAMAGE.
- PROVIDE ALL NECESSARY HARDWARE, FASTENERS, ADHESIVES, AND ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION. FINISH ALL VISIBLE FASTENERS TO MATCH THE SIGN SYSTEM.
- AT PROJECT COMPLETION, PROVIDE ALL SPARE INSERTS OR ADDITIONAL SIGNAGE IDENTIFIED IN THE SIGN MESSAGE SCHEDULE, AND DELIVER ALL MAINTENANCE INSTRUCTIONS TO THE OWNER.

MISC.:
- FINISHES SHOULD BE SELECTED BY OWNER AND APPROVED BY ARCHITECT/DESIGNER FROM STANDARD OPTIONS AVAILABLE.
- FINAL QUANTITY TO BE SELECTED BY OWNER AND APPROVED BY ARCHITECT/DESIGNER.
- SIGNAGE VENDOR TO MEET WITH OWNER TO COORDINATE ALL ROOMS, NUMBERS, NAMES, AND FINAL DESIGN PRIOR TO FABRICATION

WARRANTY:
- 2 YEAR - WORKMANSHIP AND MATERIAL WARRANTY



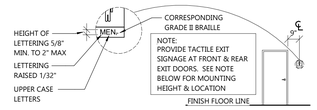
OTHER REGULATORY SIGNAGE

4 A5.1 REGULATORY SIGNAGE
SCALE: 1/4" = 1'-0"

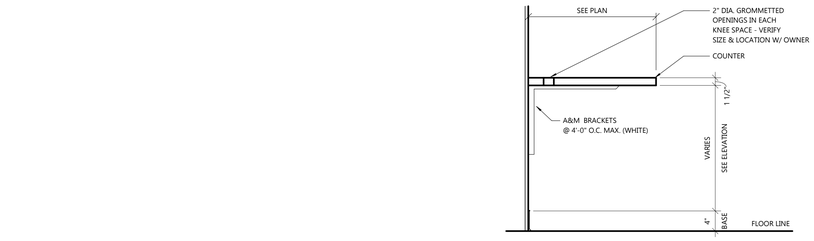
WALL SIGNAGE (TYP.)

SIGNAGE AT EXT. DOORS w/ DEAD BOLTS

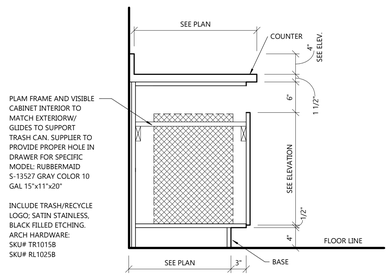
SIGN SHALL HAVE UPPERCASE RAISED LETTERING w/ BACKGROUND OF CONTRASTING COLOR - LETTERING HGT: 1" (25 mm.)



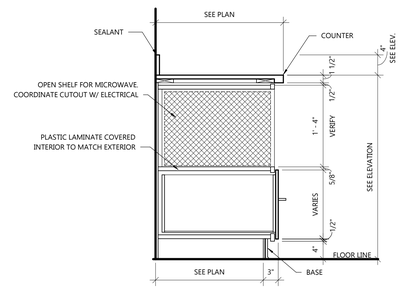
GENERAL NOTE:
ALL WALL MOUNTED SIGNAGE TO BE LOCATED 9" TO THE CENTERLINE OF THE SIGN ON THE LATCH SIDE OF DOOR CLEAR OF DOOR-SWING AND MOUNTED AT 48" MIN ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED FROM THE BASELINE OF THE LOWEST LINE OF BRAILLE CELLS AND 60" MAX ABOVE FINISH FLOOR OR GROUND SURFACE MEASURED FROM THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS. SIGN SHALL BE LOCATED SO THAT A CLEAR FLOOR SPACE OF 18" MINIMUM BY 18" MINIMUM IS CENTERED ON THE TACTILE CHARACTERS AND CLEAR OF THE DOOR-SWING IN THE CLOSED AND 45 DEGREE OPEN POSITION. CHARACTERS AND THEIR BACKGROUND SHALL HAVE A NON-GLARE FINISH. CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND



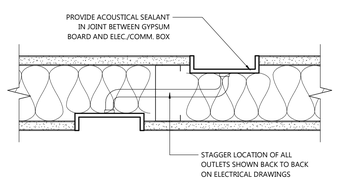
7 A5.1 COUNTER DETAIL
SCALE: 1" = 1'-0"



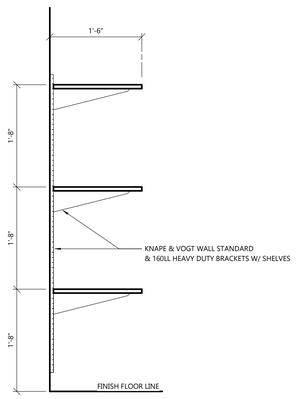
6 A5.1 CASEWORK DETAIL - TRASH
SCALE: 1" = 1'-0"



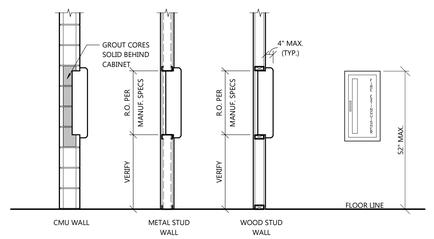
5 A5.1 BASE CABINET DETAIL
SCALE: 1" = 1'-0"



11 A5.1 ELECTRICAL OUTLET TREATMENT
SCALE: 3" = 1'-0"



10 A5.1 SHELVING DETAIL
SCALE: 1" = 1'-0"



FIRE EXTINGUISHER / CABINET SPECIFICATION:

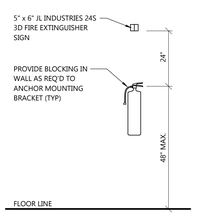
MANUFACTURER:
- JL INDUSTRIES, INC.

PRODUCT: FIRE EXTINGUISHER CABINET
- MODEL 'AMBASSADOR' 1017V10
- PROVIDE 'FIRE-FX' FIRE RATED TUB OPTION WHEN LOCATED IN RATED WALLS (1 & 2 HOUR-RATED)
- PROVIDE BLACK VERTICAL LETTERING SPELLING 'FIRE EXTINGUISHER' ON CABINET DOOR

FIRE EXTINGUISHER:
- 'COSMIC' 10E 10 lb. CAPACITY ; 4A-80BC RATING

MISC.:
- PAINT CABINET TO MATCH ADJACENT WALL FINISH

9 A5.1 FIRE EXTINGUISHER CABINET
SCALE: 1/2" = 1'-0"



FIRE EXTINGUISHER SPECIFICATION:

MANUFACTURER:
- JL INDUSTRIES, INC.

PRODUCT: FIRE EXTINGUISHER
- 'COSMIC' 10E 10 lb. CAPACITY ; 4A-80BC RATING

BRACKET:
- MARK 'MB846' WALL BRACKET

8 A5.1 FIRE EXTINGUISHER
SCALE: 1/4" = 1'-0"

ARCHITECTURAL INTERIOR DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A5.1

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INTERIOR PAINT SCHEME - TRUCK STORAGE:

ALL INTERIOR WALK DOORS TO BE PAINTED PA-EPX-1 U.N.O.

ALL EXTERIOR WALK DOORS TO BE PAINTED PA-EPX-1, U.N.O

ALL CMU WALLS FROM FINISHED FLOOR TO EXTENDS TO BE PAINTED PA-EPX-1 (SEE DETAILS FOR ADDITIONAL INFORMATION)

ALL EXPOSED STEEL COLUMNS & BEAMS TO BE PAINTED PA-EPX-1 TO 3'-4" AFF U.N.O.

ALL EXPOSED STEEL COLUMNS & BEAMS TO BE PAINTED PA-8 3'-4" TO ROOF FRAMING U.N.O.

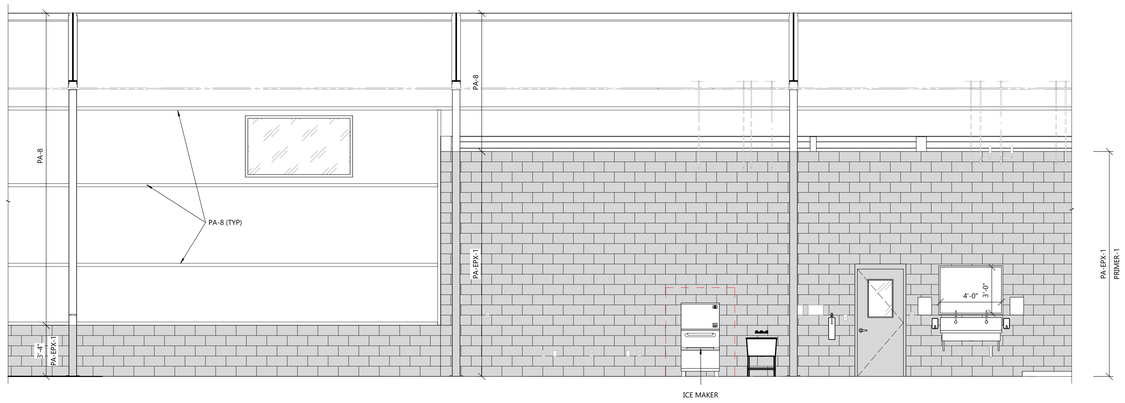
ALL EXPOSED GIRT FRAMING TO BE PAINTED PA-8

EXPOSED PEMB STRUCTURE TO BE PAINTED PA-8

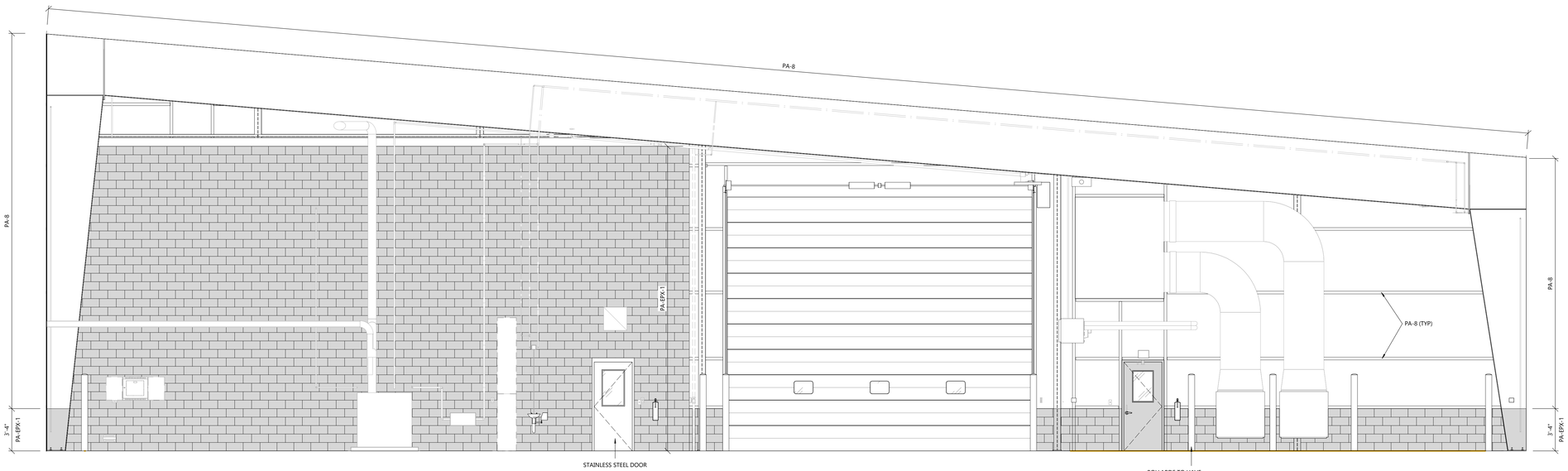
ALL EXPOSED DUCTWORK TO BE PAINTED PA-8

ALL CONDUIT TO REMAIN UNPAINTED

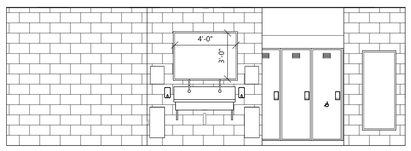
*SEE MATERIAL LEGEND FOR PAINT SPECIFICATIONS



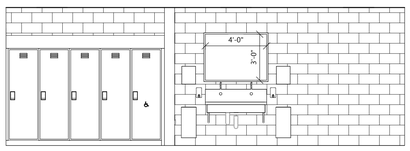
1 A5.2 TRUCK STORAGE 100 (S)
SCALE: 1/4" = 1'-0"



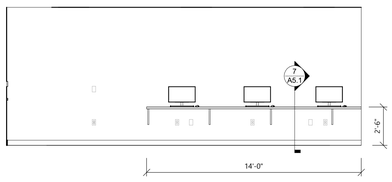
2 A5.2 TRUCK STORAGE 100 (E)
SCALE: 1/4" = 1'-0"



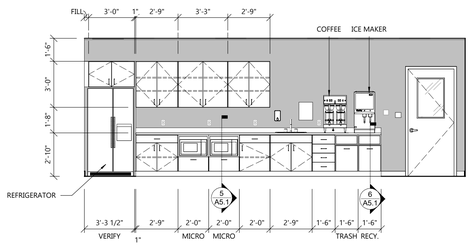
5 A5.2 MEN'S 109 (S)
SCALE: 1/4" = 1'-0"



4 A5.2 WOMEN'S 108 (N)
SCALE: 1/4" = 1'-0"



7 A5.2 BREAK ROOM 111 (N)
SCALE: 1/4" = 1'-0"



6 A5.2 BREAK ROOM 111 (W)
SCALE: 1/4" = 1'-0"

INTERIOR PAINT SCHEME - WASH BAY:

ALL INTERIOR WALK DOORS TO REMAIN UNPAINTED (STAINLESS STEEL). (SEE PLAN FOR ADDITIONAL COMMENTS/ DETAIL)

ALL EXTERIOR WALK DOORS TO REMAIN UNPAINTED (STAINLESS STEEL). (SEE PLAN FOR ADDITIONAL COMMENTS/ DETAIL)

ALL WALLS FROM FINISHED FLOOR TO 9'-4" A.F.F. TO BE PAINTED PA-URE-1 (SEE DETAILS FOR ADDITIONAL INFORMATION)

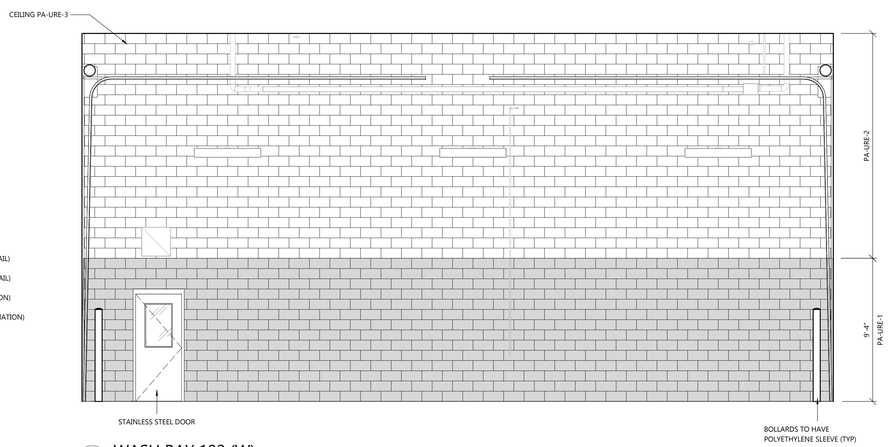
ALL WALLS FROM 9'-4" A.F.F. TO CEILING/ ROOF DECK TO BE PAINTED PA-URE-2 (SEE DETAILS FOR ADDITIONAL INFORMATION)

PRECAST CAP CEILING TO BE PAINTED PA-URE-3

ALL EXPOSED DUCTWORK TO REMAIN UNPAINTED

ALL CONDUIT TO REMAIN UNPAINTED

*SEE MATERIAL LEGEND FOR PAINT SPECIFICATIONS



3 A5.2 WASH BAY 102 (W)
SCALE: 1/4" = 1'-0"

ARCHITECTURAL INTERIOR ELEVATIONS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A5.2

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LAMINATE-CLAD CABINET SPECIFICATION:

CABINETRY SHALL COMPLY WITH THE SPECIFIED GRADE OF WORK AND SECTIONS OF THE CURRENT EDITION OF THE ARCHITECTURAL WOODWORK INSTITUTE (AWI) QUALITY STANDARDS

STYLE: FULL OVERLAY

CONSTRUCTION:

- TYPICAL CABINET CONSTRUCTION:
  - BASE CABINET:
    - 24" DEEP OVERALL, TYPICAL, U.N.O. ON PLANS OR ELEVATIONS
    - OVERALL HEIGHT AS NOTED ON PLANS OR ELEVATIONS
    - 3" DEEP x 4" HIGH TOE KICK SPACE
    - TYPICAL FULL OVERLAY GAPS
      - 1/4" GAP BETWEEN TOP OF DOOR/DRAWER & UNDERSIDE OF COUNTERTOP
      - 1/8" GAP BETWEEN DOOR/DRAWER PANELS
      - 1/8" GAP (OR LESS) BETWEEN BOTTOM OF DOOR/DRAWER & TOE KICK SPACE
    - ADJUSTABLE SHELF HOLES (WHERE SHELVES ARE INDICATED) - STANDARD 5MM DIA. & 32MM SPACING, TYPICAL U.N.O.
      1. HARDWARE: SEE OPTIONS BELOW
  - UPPER CABINET
    - 12" DEEP OVERALL, TYPICAL, U.N.O. ON PLANS OR ELEVATIONS
    - OVERALL HEIGHT AS NOTED ON PLANS OR ELEVATIONS
    - ADJUSTABLE SHELF HOLES - STANDARD 5MM DIA. & 32MM SPACING, TYPICAL U.N.O.
      1. HARDWARE: SEE OPTIONS BELOW
  - DOORS & DRAWER FRONTS:
    - EDGEBANDED LAMINATE, SAME PATTERN, COLOR, AND THICKNESS BOTH FACE AND BACK w/ PVC EDGES (CORE: 3/4" PARTICLEBOARD OR MDF)
  - DRAWER SIDES & BACKS:
    - SINGLE SPECIES SOLID LUMBER (1/2" THICKNESS MIN.)
  - DRAWER BOTTOMS:
    - HARDWOOD VENEER PLYWOOD (1/4" THICKNESS MIN.)

LAMINATE MATERIALS:

- EXPOSED SURFACES:
  - HIGH PRESSURE DECORATIVE LAMINATE-CLAD AS INDICATED:
  - HORIZONTAL SURFACES (OTHER THAN TOPS) = HGS
  - VERTICAL SURFACES = VGP
  - EDGES = 3MM PVC MATCHING LAMINATE IN COLOR PATTERN AND FINISH
- MATERIAL FOR SEMI-EXPOSED SURFACES:
  - THERMOSET DECORATIVE OVERLAY.

HARDWARE:

- HINGES:
  - FRAMELESS, CONCEALED, THREE-DIMENSIONAL ADJUSTMENT
    - BLUM 'CLIPtop' 110°
    - PROVIDE ANGLE RESTRICTION CLIPS AS REQ'D
- ADJUSTABLE SHELF SUPPORTS:
  - ADJUSTABLE SHELF MULTIPLE HOLE SHELF SUPPORT (MIN. 5MM DIA., DUAL PINS w/ 32MM SPACING)
    1. BASIS OF DESIGN: 'BAINBRIDGE MNFG., INC. #32201 SHELF SUPPORT'
  - ADJUSTABLE METAL SHELF STANDARDS (RECESSED FLUSH)
    1. BASIS OF DESIGN: 'ROCKLER #GRP1348_1 SHELF-STANDARD'
       a. LENGTH VARIES PER APPLICATION
       b. VERIFY COLOR SELECTION w/ ARCHITECT TO COMPLIMENT CABINET DESIGN
- WIRE PULLS (OR AS SPECIFIED ON INTERIOR ELEVATIONS):
  - BACK MOUNTED, 4" LONG, 5/16" DIAMETER
  - FINISH: BRUSHED CHROME
- DRAWER SLIDES:
  - SIDE MOUNTED, FULL EXTENSION, ZINC PLATED w/ STEEL BALL BEARINGS
    - ACCURIDE 3832
    - ACCURIDE 3640-A HEAVY DUTY
  - RATED FOR THE FOLLOWING LOADS:
    - TRASH DRAWER BASE = 200 lbf
- LOCKS:
  - REMOVABLE CORE, DISC TUMBLER, CAM STYLE w/ STRIKE

MISC.:

- PROVIDE MIN. (1) ADJUSTABLE SHELF PER CABINET
- MIN. (2) FOR CABINETS GREATER THAN 30" HIGH
  - SEE ELEVATION FOR ADDITIONAL SHELF COUNTS
- FASTEN CABINET TO WALL SURFACE WITH WASHER HEAD CABINET SCREWS IN ALIGNED PATTERN WHEN EXPOSED TO VIEW
- TOE KICK SHALL BE PROVIDED. SEE FINISH SCHEDULE FOR MATERIAL

FINISH:

- SEE MATERIAL LEGEND

COUNTERTOP / WINDOW SILL SPECIFICATION:

STYLE:
- PLASTIC LAMINATE COUNTERTOPS / WINDOW SILLS

CONSTRUCTION:
- LAMINATE
  - HIGH PRESSURE DECORATIVE LAMINATE, HGP GRADE
- CORE MATERIAL
  - 3/4" PARTICLE BOARD, ANSI A208.1, GRADE M-2 (TYP.)
  - 3/4" PARTICLE BOARD, ANSI A208.1, GRADE M-2 EXTERIOR GLUE AT WINDOW SILLS AND SINK LOCATIONS
- CONFIGURATION
  - BACKSPLASH AND SIDE SPLASH TO BE SQUARE EDGE
  - FRONT EDGE STYLE TO BE SQUARE EDGE (SILLS) STANDARD EDGE (COUNTERTOPS)

MISC.:
- PROVIDE 2" DIA. PLASTIC GROMMETS THROUGH COUNTERTOPS AT EQUIPMENT LOCATIONS w/ RECEPTACLES BELOW COUNTER (VERIFY EQUIPMENT LOCATIONS w/ OWNER)

FINISH:
- SEE MATERIAL LEGEND

EPOXY FLOOR FINISH SPECIFICATION (EPX-1):

PROTECTIVE INDUSTRIAL POLYMERS QUARTZCAST EPOXY FLOOR FINISH (EPX-1)

1. EPOXY FLOORING. PREPARE CONCRETE FLOOR BY MANUFACTURER'S SPECIFICATIONS. WORK AREA TO BE HEATED TO 60-90°F FOR A PERIOD OF 3 DAYS PRIOR TO AND 2 DAYS AFTER INSTALLATION.
3. FLOORING CONTRACTOR TO PERFORM A MOISTURE TEST ON THE CONCRETE SLAB TO CONFIRM CONDITIONS MEET MANUFACTURER'S REQUIREMENTS PRIOR TO INSTALLING THE FLOOR.
4. INSTALL PROTECT 1200 WR EPOXY TINTED PRIMER (USE SAME COLOR PIGMENTS IN THE PRIMER AS IN THE BASECOAT TO MAKE IT EASIER TO STANDARDIZE THE FINAL COLOR). BASECOAT (SEE MANUFACTURER'S APPLICATION INSTRUCTIONS) AND GLOSSGRIP TOP COAT WITH TEXTURE AS SELECTED BY OWNER. EXPANSION AND CONTROL JOINTS TO BE CUT IN EPOXY FLOOR AT SAME LOCATION AS CONCRETE FLOOR JOINTS & FILLED WITH FLEXIBLE POLYURETHANE SEALANT.
5. SUBMIT COLOR AND TEXTURE SAMPLES & MANUFACTURER'S TECHNICAL DATA FOR APPROVAL. ALL MATERIALS ARE TO BE OBTAINED FROM A SINGLE MANUFACTURER WITH NOT LESS THAN 10 YEARS OF EXPERIENCE AND THE CONTRACTOR SHALL HAVE COMPLETED AT LEAST 5 PROJECTS OF SIMILAR SIZE IN PRIOR 2 YEARS.
6. MANUFACTURER/CONTRACTOR SHALL FURNISH A NON-PRORATED WARRANTY COVERING BOTH MATERIALS AND WORKMANSHIP FOR A 2 YEAR PERIOD FROM DATE OF INSTALLATION.

SEALED CONCRETE SPECIFICATION:

SEALED CONCRETE (SC-1) - CORVIXX POLYMERS - CXE-600 - TWO COMPONENT, WATER-BASED EPOXY PRIMER
- SEE MANUFACTURER'S INSTALLATION FOR COMPLETE INSTRUCTIONS AND GUIDELINES
- PRODUCT IS USED AS A CLEAR SEALER FOR CONCRETE FLOORS
- PROVIDE MOCKUP OF INSTALLATION FOR OWNER REVIEW & APPROVAL. THIS MOCKUP MUST OCCUR ON SURFACE WITH REPRESENTATIVE CONCRETE FINISH AND CONCRETE SURFACE PREPARATION.
- CONCRETE SURFACES MUST BE A MINIMUM OF 28 DAYS OLD AT TIME OF APPLICATION
- PROPER SURFACE PREPARATION IS CRITICAL. THE FLOOR SHALL BE CLEANED OF ALL OIL, GREASE, DUST, CURING COMPOUNDS, ETC. MECHANICALLY PREPARE FLOOR SURFACE BY SHOT BLASTING, GRINDING, OR SCARIFYING FLOOR SURFACE TO MANUFACTURER RECOMMENDATIONS.
- PRIOR TO APPLICATION OF PRODUCT, JOINTS & CRACKS SHALL BE SEALED PER PROJECT SPECIFICATIONS
- MIX PART A AND PART B TOGETHER AND APPLY MATERIAL TO FLOOR SURFACE PER MANUFACTURER GUIDELINES

SEALED CONCRETE (SC-3) - EUCLID CHEMICAL COMPANY - BARACADE SILANE 40 - SILANE-BASED WATER REPELLENT
- SEE MANUFACTURER'S INSTALLATION FOR COMPLETE INSTRUCTIONS AND GUIDELINES
- PRODUCT IS A CLEAR PENETRATING SEALER CONSISTING OF 100% SILANE
- PROVIDE MOCKUP OF INSTALLATION FOR OWNER REVIEW & APPROVAL. THIS MOCKUP MUST OCCUR ON SURFACE WITH REPRESENTATIVE CONCRETE FINISH AND CONCRETE SURFACE PREPARATION.
- CONCRETE SURFACES MUST BE A MINIMUM OF 28 DAYS OLD AT TIME OF APPLICATION
- CONCRETE SURFACE MUST BE STRUCTURALLY SOUND, CLEAN, DRY FREE OF DUST, DIRT, PAINT, EFFLORESCENCE, LAITANCE CURING COMPOUNDS AND OTHER CONTAMINANTS THAT WILL PREVENT PROPER PENETRATION OF PENETRATING WATER REPELLANT
- PRIOR TO APPLICATION OF PRODUCT, JOINTS & CRACKS SHALL BE SEALED PER PROJECT SPECIFICATIONS
- APPLY TWO COATS PER MANUFACTURER'S RECOMMENDATIONS UTILIZING LOW PRESSURE AIRLESS SPRAY EQUIPMENT. AFTER THE SURFACE ABSORBS FIRST COAT, APPLY WET ON WET BEFORE THE FIRST COAT DRIES. DO NOT ALLOW THE MATERIAL TO PUDDLE AND REMOVE EXCESS MATERIAL WITH SQUEEGEE OR BROOM.

POLISHED CONCRETE SPECIFICATION:

POLISHED CONCRETE (PC-1) - CORVIXX POLYMERS - WATER BASED PRIMER
- FLOORING CONTRACTOR SHALL HOLD PRE-INSTALLATION CONFERENCE WITH G.C. & CONCRETE CONTRACTOR PRIOR TO INSTALLATION

DO NOT PLACE ANY MATERIALS ON THE CONCRETE SURFACE THAT MAY CAUSE STAINING, ETCHING, OR SCRATCHING

POLISHED CONCRETE IS TO MEET PERFORMANCE REQUIREMENTS TO ACHIEVE THE FOLLOWING:
- ABRASION RESISTANCE: ASTM C779, METHOD A, HIGH RESISTANCE (NO MORE THAN 0.008 INCH WEAR IN 30 MINUTES)
- REFLECTIVITY: INCREASE OF 35% AS DETERMINED BY STANDARD GLOSS METER
- WATERPROOF PROPERTIES: PRELIM TEST METHOD 11.4, 70% OR GREATER REDUCTION IN ABSORPTION
- HIGH TRACTION RATING: NFSI 101-A, ANSI B-101.1 2009 NON-SLIP PROPERTIES

DESIGN REQUIREMENTS INCLUDE:
- HARDENED CONCRETE PROPERTIES:

MINIMUM CONCRETE COMPRESSIVE STRENGTH = 3500 PSI,
NORMAL WEIGHT CONCRETE (NO LIGHTWEIGHT AGGREGATE)
NON-AIR ENTRAINED
MAXIMUM W/CM RATIO OF .50
- PLACEMENT REQUIREMENTS INCLUDE:

NATURAL CONCRETE SLUM OF 4 INCHES - 5 INCHES (ADMIXTURES MAY BE USED)
FLATNESS REQUIREMENTS (1. OVERALL FF50; 2. LOCAL FF40)
- HARD-STEEL TROWELED (3 PASSES) CONCRETE: NO BURNISHING MARKS (FINISH TO ACI 302.1R, CLASS 5 FLOOR)
- CURING OPTIONS INCLUDE:

MEMBRANE FORMING CURING COMPOUNDS (ACRYLIC CURING AND SEALING COMPOUNDS NOT RECOMMENDED)
SHEET MEMBRANE (POLYETHYLENE FILM NOT RECOMMENDED)
DAMP CURING (SEVEN DAY CURE)
NON-MEMBRANE CURING COMPOUND

POLISHED CONCRETE FINISHING PRODUCT INCLUDE: HARDENER, JOINT FILLER, OIL REPELLENT SEALER, CLEANING SOLUTION, STAIN GUARD SEALER (SEE SPECS ON T2-SHEET FOR MORE INFORMATION)

CONSTRUCT FIELD MOCK-UPS IN ACCORDANCE WITH SECTION 01 45 00. ALLOW 24 HOURS FOR INSPECTION OF MOCK-UP BEFORE PROCEEDING WITH WORK

MOCK-UP WILL SHOW SPECIFIED LEVEL OF AGGREGATE EXPOSURE AS:
- CLASS B - FINE AGGREGATE (SALT/ PEPPER) FINISH - EXPOSE THE FINE AGGREGATE SUCH AS SAND AND SMALL AGGREGATE WITH THE CONCRETE. THE DEPTH OF THE GRIND WILL DEPEND GREATLY ON THE PLACEMENT AND FINISHING PROCEDURES. GENERALLY, THIS LEVEL OF CUT CAN BE ACHIEVED WITHIN 1/16" OF THE SURFACE
- SHEEN IS TO BE LEVEL 3 SEMI-POLISHED (MEDIUM HIGH REFLECTIVE) AS DETERMINED BY A GLOSS READING OF 25-70 (400-800 GRIT)

INSTALLATION IS TO BE OBTAINED FROM A SINGLE INSTALLER w/ NOT LESS THAN 10 YEARS OF EXPERIENCE OF SIMILAR WORK DESCRIBED IN THIS SECTION. MANUFACTURER IS TO BE CAPABLE OF PROVIDING FIELD SERVICE REPRESENTATION DURING CONSTRUCTION AND APPROVING APPLICATION METHOD

EXECUTION INCLUDES:
- PROPER PREPARATION AS SPECIFIED
- INSTALLATION OF FLOOR SURFACE POLISHING, DYE PROCESSING, AND FINISHING
- DIAMOND POLISHING CONCRETE FLOOR SURFACES AS SPECIFIED
- APPLICATION OF FGS HARDENER PLUS
- REMOVAL OF DEFECTS AND RE-POLISH AS NECESSARY
- PROVIDE FINISHED EDGES OF FLOOR FINISH ADJOINING ADJACENT MATERIALS

SUBMIT WARRANTY DOCUMENTS SPECIFIED, OPERATIONS AND MAINTENANCE DATA, INSTRUCTIONS OF MAINTENANCE RENEWAL OF APPLIED TREATMENTS, PROTOCOLS AND PRODUCT SPECIFICATIONS FOR JOINT FILING, CRACK REPAIR AND/ OR SURFACE REPAIR

MATERIAL LEGEND

CODE	FINISH GROUP	MANUF	STYLE	COLOR	SIZE	NOTES
FLOOR FINISHES						
EPX-1	EPOXY	PROTECTIVE INDUSTRIAL POLYMERS	PIP PROTECT BC-263 W/ GLOSS GRIP	TORGINOL QB-1008 405	--	KEY EPOXY EDGE AT EPX-1 TO PC-1 TRANSITION. CONTACT: DAVE HADDON 630-943-6095
PA-EPX-3	EPOXY PAINT	SHERWIN WILLIAMS	MACROPOXY 646	SAFETY YELLOW	--	IF SC-3 IS USED IN TRUCK STORAGE 100, INSTALL STRIPING BEFORE WATER REPELLANT
PC-1	POLISHED CONCRETE	CORVIXX POLYMERS	WATER BASED PRIMER	CXE-600	--	SEALER INSTALLED OVER MECHANICALLY POLISHED CONCRETE
SC-1	SEALED CONCRETE	CORVIXX POLYMERS	CXE-600 WATER-BASED PRIMER	--	--	SEE SPECIFICATION THIS PAGE FOR ADDITIONAL INFORMATION
SC-2	SEALED CONCRETE	ASHFORD	ASHFORD FORMULA	--	--	TWO COATS, TROWELED CONCRETE FINISH
SC-3	SEALED CONCRETE	EUCLID CHEMICAL	SILANE BASED WATER REPELLENT	BARACADE SILANE 40	--	SEE SPECIFICATION THIS PAGE FOR ADDITIONAL INFORMATION.
FLOOR BASE						
FCB-1	FLASH COVE BASE	PROTECTIVE INDUSTRIAL POLYMERS	PIP PROTECT BC-263	TORGINOL QB-1008 405	4"H	--
VB-1	VINYL BASE	TARKETT/JOHNSONITE	COVED CB-TA4	GATEWAY TA4	4"H x 1/8" THICK	120' ROLL
WALL FINISHES						
CG-1	CORNER GUARD	INPRO CORP	SURFACE MOUNTED 304 STAINLESS STEEL CORNER GUARD / END WALL PROTECTOR - 16 GUAGE	NO. 4 SATIN	4"H x 3.5"WING x 1/8"RAD.	INSTALL WITH PL PREMIUM HEAVY DUTY ADHESIVE, ABOVE BASE
PA-3	PAINT	SHERWIN WILLIAMS	SATIN FINISH	SW7015 REPOSE GRAY	--	GENERAL PAINT
PA-4	PAINT	SHERWIN WILLIAMS	SATIN FINISH	SW7019 GAUNTLET GRAY	--	OFFICE ACCENT
PA-5	PAINT	SHERWIN WILLIAMS	SATIN FINISH	SW9059 SILKEN PEACOCK	--	BREAKROOM ACCENT
PA-6	PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7069 IRON ORE	--	OFFICE HM FRAMES
PA-7	PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7015 REPOSE GRAY	--	RESTROOM PAINT
PA-8	PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7757 HIGH REFLECTIVE WHITE	--	TRUCK STORAGE EXPOSED FRAMING
PA-EPX-1	EPOXY PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7019 GAUNTLET GRAY	--	TRUCK STORAGE CMU & HM FRAMES/DOORS
PA-EPX-4	EPOXY PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7015 REPOSE GRAY	--	SHOWER, PARTS & IT PAINT
PA-URE-1	URETHANE PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7019 GAUNTLET GRAY	--	WASH BAY LOWER
PA-URE-2	URETHANE PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FLINISH	SW7757 HIGH REFLECTIVE WHITE	--	WASH BAY UPPER
PRIMER-1	PRIMER	SHERWIN WILLIAMS	--	MOISTURE BARRIER VAPOR PRIMER/SEALER	--	--
UNF	UNFINISHED	--	--	--	--	--
CEILING FINISHES						
ACT-1	ACOUSTIC CEILING TILE	ARMSTRONG	CIRRUS 584 - ANGLED TEGULAR	WHITE	24" x 24 x 3/4"	USE 15/16" PRELUDE GRID IN WHITE
ACT-2	ACOUSTIC CEILING TILE	ARMSTRONG	CERAMAGUARD 605 - SQUARE LAY IN	WHITE	24" x 48" x 5/8"	USE 15/16" ALUMINUM PRELUDE GRID IN WHITE
ES-1	EXPOSED STRUCTURE	--	--	UNFINISHED	--	--
PA-1	PAINT	SHERWIN WILLIAMS	FLAT FINISH	SW 7005 PURE WHITE	--	--
PA-URE-3	PAINT	SHERWIN WILLIAMS	SEMI-GLOSS FINISH	SW7757 HIGH REFLECTIVE WHITE	--	WASH BAY CEILING
VCGB-1	VINYL COVERED GYP. BOARD	GOLD BOND	GRIDSTONE GYPSUM CEILING PANELS	WHITE	24" x 24" x 1/2"	USE 15/16" ALUMINUM PRELUDE GRID IN WHITE
CASEWORK, COUNTERTOPS & SILLS						
PLAM-1	PLASTIC LAMINATE	WILSONART	FIELDSTONE FINISH	LAKESHORE 5046K-15	--	SEE SPECIFICATION
PLAM-2	PLASTIC LAMINATE	WILSONART	FINE VELVET FINISH	FLORENCE WALNUT 7993-38	--	SEE SPECIFICATION
PLAM-3	PLASTIC LAMINATE	WILSONART	LINEARITY FINISH	STAIN STAINLESS 4803-16	--	SEE SPECIFICATION
OTHER						
DR-1	WOOD DOOR	VT INDUSTRIES	PLAIN SLICED RED OAK	UMBER UM24	--	SEE SPECIFICATION
WT-1	WINDOW TREATMENT	INPRO/WT SHADE	MANUAL ROLLER SHADE 5% OPACITY, REGULAR ROLL, SEALED HEMBAR, LOOPED CHAIN	245-89 GREY/BLACK	FIELD VERIFY	SILVER FASCIA FRONT AND BACK

ROOM FINISH SCHEDULE

ROOM #	ROOM NAME	FLOORS		WALLS				CEILING	EXPOSED STRUCTURE		CASEWORK		WINDOW		H.M.		REMARKS
		FLOOR	BASE	NORTH	SOUTH	EAST	WEST		ROOF, FLOOR FRAMING	BELOW ROOF, FLOOR FRAMING	COUNTER	CABINET	SILL	TREATMENT	DOORS	FRAMES	
100	TRUCK STORAGE	SC-1, EPX-1, PA-EPX-3	--	UNF, PA-EPX-1, PA-8	UNF, PA-EPX-1, PA-8, PRIMER-1	UNF, PA-EPX-1, PA-8	UNF, PA-EPX-1, PA-8	--	PA-8	PA-8, PA-EPX-1	--	--	--	--	PA-EPX-1	PA-EPX-1	1, 4, 5, 6, 7, 8, 9
102	WASH BAY	SC-1	--	PA-URE-1, PA-URE-2	PA-URE-1, PA-URE-2	PA-URE-1, PA-URE-2	PA-URE-1, PA-URE-2	--	PA-URE-3	--	--	--	--	--	--	--	3
103	ELECTRICAL	SC-2	--	UNF	UNF	UNF	UNF	--	ES-1	ES-1	--	--	--	--	PA-EPX-1	PA-EPX-1	
104	FIRE PUMP	SC-2	--	UNF	PRIMER-1	UNF	UNF	--	ES-1	ES-1	--	--	--	--	PA-EPX-1	PA-EPX-1	5
105	MECHANICAL	SC-2	--	UNF	UNF	UNF	UNF	--	ES-1	ES-1	--	--	--	--	PA-EPX-1	PA-EPX-1	
106	PARTS	SC-2	--	PA-EPX-4	PA-EPX-4	PA-EPX-4, PRIMER-1	PA-EPX-4, PRIMER-1	--	ES-1	ES-1	--	--	--	--	PA-EPX-1	PA-EPX-1	5
107	IT	SC-2	--	PA-EPX-4	PA-EPX-4	PA-EPX-4, PRIMER-1	PA-EPX-4	--	ES-1	ES-1	--	--	--	--	PA-EPX-1	PA-EPX-1	2, 5
108	WOMENS	PC-1	VB-1	PA-7	PA-7	PA-7	PA-7	VCGB-1	--	--	--	--	--	--	--	PA-6	
109	MENS	PC-1	VB-1	PA-7	PA-7	PA-7	PA-7	VCGB-1	--	--	--	--	--	--	--	PA-6	
110	CORRIDOR	PC-1	VB-1	PA-3	PA-3	PA-3	PA-3	ACT-1	--	--	--	--	--	--	PA-6	PA-6	
111	BREAK ROOM	PC-1	VB-1	PA-3	PA-3	PA-3	PA-5	ACT-1, PA-1	--	--	PLAM-1	PLAM-2	PLAM-3	WT-1	--	PA-6	
112	OFFICE	PC-1	VB-1	PA-3	PA-3	PA-4	PA-3	ACT-1	--	--	--	--	PLAM-3	WT-1	--	PA-6	
113	FLEX OFFICE	PC-1	VB-1	PA-3	PA-4	PA-3	PA-3	ACT-1	--	--	--	--	PLAM-3	WT-1	--	PA-6	
114	VEST.	PC-1	VB-1	PA-3	PA-3	PA-3	PA-3	ACT-1	--	--	--	--	--	--	--	--	
115	STORAGE	PC-1	VB-1	PA-3	PA-3	PA-3	PA-3	ACT-1	--	--	--	--	--	--	--	PA-6	
116	COLD STORAGE	SC-2	--	UNF	UNF	UNF	UNF	--	--	--	--	--	--	--	PA-EPX-1	PA-EPX-1	
118	SHOWER ROOM WOMENS	EPX-1	FCB-1	PA-EPX-4	PA-EPX-4	PA-EPX-4	PA-EPX-4	ACT-2	--	--	--	--	--	--	--	--	
119	SHOWER ROOM MENS	EPX-1	FCB-1	PA-EPX-4	PA-EPX-4	PA-EPX-4	PA-EPX-4	ACT-2	--	--	--	--	--	--	--	--	

REMARKS:
1. ANY CMU IN TRUCK STORAGE TO BE PAINTED PA-EPX-1, SEE ELEVATIONS
2. 3/4" FIRE TREATED PLYWOOD OVER WALL FINISH AND PAINTED PA-3 WITH PLYWOOD GRADE STAMP VISIBLE. SEE ELECTRICAL SYSTEMS PLANS FOR LOCATION.
3. INSTALL SEALANT AT WALL TO FLOOR INTERSECTION. JOINT TO BE WATERTIGHT DUE TO WASH FUNCTION OCCURRING IN THIS ROOM.
4. SC-3 AS ALTERNATE DEDUCT TO SC-1; SEE ALTERNATE BIDS
5. SEE FINISH FLOOR PLAN FOR AREAS REQUIRING MOISTURE VAPOR BARRIER PRIMER
6. PA-EPX-3 ON JIB CRANE CURB
7. EXPOSED DUCTWORK TO BE PAINTED PA-8
8. PRIMED PEMB FRAMING TO BE PAINTED, SEE ELEVATIONS AND FINISH SCHEDULE
9. EPX-1 TO BE USED AT BOOTWASH

GENERAL NOTES:
- REFER TO FLOOR FINISH PLANS, REFLECTED CEILING PLANS, AND INTERIOR ELEVATIONS FOR MATERIALS WHEN MORE THAN ONE FINISH IS SCHEDULED.
- INTERIOR OFFICE PAINT TO BE SW SUPER PAINT ACRYLIC LATEX: SEE FRONT SPECS FOR MORE INFORMATION
- ROOM FINISH SCHEDULE DESCRIBES FIELD APPLIED FINISHES ONLY, IT DOES NOT INCLUDE SHOP APPLIED COATINGS OR MANUFACTURER APPLIED FINISHES.
- EXPOSED STRUCTURE DEFINITION FOR "ROOF, FLOOR FRAMING": INCLUDES ALL DECK, JOISTS, BEAMS & COLUMNS THAT ARE IN FRAMING DEPTH.
- EXPOSED STRUCTURE DEFINITION FOR "BELOW ROOF, FLOOR FRAMING": INCLUDES ALL EXPOSED STRUCTURE BELOW FRAMING DEPTH (COLUMNS, WALL FRAMING).
- ALL GYPSUM BOARD BULKHEADS TO BE PAINTED PA-1
- WOOD DOORS TO BE WD-1
- ANY HOLLOW METAL FRAME & DOOR INSIDE OFFICE AREA TO BE PA-6
- ELEC. SWITCHES/OUTLETS/DEVICES TO BE WHITE
- EXPOSED CONDUIT UNPAINTED UNLESS NOTED OTHERWISE.
- ALL GYPSUM BOARD SHALL BE INSTALLED IN ACCORDANCE W/ THE GYPSUM CONSTRUCTION HANDBOOK. LEVEL OF FINISH AS PER GA-214 ARE AS FOLLOWS:
  LEVEL 1: INTERIOR AND EXTERIOR WALL: CONCEALED AND ABOVE CEILINGS
  LEVEL 3: ALL EXPOSED BELOW CEILING AREAS WITH HEAVY OR MEDIUM TEXTURE.
  LEVEL 4: ALL EXPOSED BELOW CEILING AREAS WITH FLAT PAINT, SMOOTH OR LIGHT TEXTURE OR WALL COVERINGS UNLESS OTHERWISE NOTED.
  DRYWALL TEXTURE: SMOOTH

SEALANT SCHEDULE

LOCATION	MFR	PRODUCT	DESCRIPTION
EXTERIOR			
WINDOW, DOOR, LOUVER OPENINGS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
DIFFERENT MATERIALS MEET	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
ROOF OPENINGS	TREMCO	GUTTER SEAL	SYNTHETIC RUBBER AND RESIN SEALANT
EAVES AND SOFFITS	TREMCO	GUTTER SEAL	SYNTHETIC RUBBER AND RESIN SEALANT
THRESHOLDS TO SUBSTRATE	TREMCO	BUTYL SEALANT	MULTI-COMPONENT SEALANT
VENEER & CMU CONTROL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRECAST CONCRETE PANEL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRECAST CONCRETE PANEL JOINTS (USDA)	MANUS	MANUS- BOND 75AMC	POLYETHER CONCRETE JOINT SEALANT
PRECAST TO MASONRY JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
INSULATED METAL PANEL BASE CHANNEL TO FOUNDATION	TREMCO	BUTYL SEALANT	MULTI-COMPONENT SEALANT
	TREMCO	440 TAPE	BUTYL SEALANT TAPE
INSULATED METAL PANEL TO BASE CHANNELS	SIKA	SIKALASTOMER - 511	NON-SKINNING BUTYL SEALANT
INSULATED METAL PANEL TO PANEL JOINTS	SIKA	SIKALASTOMER - 511	NON-SKINNING BUTYL SEALANT
TRAFFIC SURFACE JOINTS (I.E. CONCRETE PAVEMENT, SIDEWALKS & PADS)	TREMCO	VULKEM 45 SSL	ONE PART POURABLE SELF-LEVELING POLYURETHANE SEALANT
INTERIOR			
COUNTERTOP AND BACKSPLASH	TREMCO	TREMSIL 200	
PLUMBING FIXTURE PERIMETER	TREMCO	TREMSIL 200	
UNDER DRYWALL PARTITION BASE TRACK	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
INTERIOR DOOR AND WINDOW FRAMES	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
WALL ANGLE AT SUSPENDED CEILINGS	DAP	ALEX PLUS	PAINTABLE ACRYLIC LATEX - SILICONIZED SEALANT
CMU CONTROL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
EXPOSED CONCRETE SAWCUT JOINTS	PPG	SL/85	TWO PART SELF-LEVELING POLYUREA SEALANT
CONCRETE CONSTRUCTION AND POUR JOINTS	PPG	SL/60	TWO PART SELF-LEVELING POLYUREA SEALANT
PRECAST CONCRETE PANEL JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
PRECAST TO MASONRY JOINTS	TREMCO	DYMONIC FC	ONE PART HIGH PERFORMANCE POLYURETHANE SEALANT
INSULATED METAL PANEL AND TOP OF CONCRETE CURB JOINT	TREMCO	DYMERIC 240FC	MULTI-COMPONENT CHEMICALLY CURING POLYURETHANE SEALANT
INSULATED METAL PANEL AND TRIM ELEMENTS JOINT	TREMCO	SPECTREM 2	ONE PART SILICONE SEALANT

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A6.0

ARCHITECTURAL SCHEDULES

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GLAZING SCHEDULE

GLAZING SHALL MEET THE FOLLOWING STANDARDS AND GUIDELINES AS APPLICABLE FOR EACH TYPE:

A. INTERNATIONAL BUILDING CODE 2021:
   1. **SECTION 1015.8 -** WINDOW MANUFACTURER TO PROVIDE WINDOW OPENING CONTROL DEVICE WHERE THE OPENINGS ARE LOCATED WITH A SILL LESS THAN 36" OFF THE FLOOR LINE AND GREATER THAN 72" FROM EXTERIOR GRADE OR BALCONY SURFACE. PROVIDE WINDOW FALL PREVENTION DEVICES THAT COMPLY WITH ASTM F2090
   2. **SECTION 2406 -** PROVIDE TEMPERED GLAZING AT REQUIRED LOCATIONS

B. AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION:
   1. **AAMA 800 -** VOLUNTARY SPECIFICATIONS AND TEST METHODS FOR SEALANTS.

C. ASTM INTERNATIONAL (ASTM):
   1. **ASTM C 509 -** SPECIFICATION FOR ELASTOMERIC CELLULAR PREFORMED GASKET AND SEALING MATERIAL.
   2. **ASTM C 864** - SPECIFICATION FOR DENSE ELASTOMERIC COMPRESSION SEAL GASKETS, SETTING BLOCKS, AND SPACERS.
   3. **ASTM C 920** - SPECIFICATION FOR ELASTOMERIC JOINT SEALANTS.
   4. **ASTM C 1036 -** SPECIFICATION FOR FLAT GLASS.
   5. **ASTM C 1048 -** SPECIFICATION FOR HEAT-TREATED FLAT GLASS - KIND HS, KIND FT COATED AND UNCOATED GLASS.
   6. **ASTM C 1087 -** TEST METHOD FOR LIQUID-APPLIED SEALANTS WITH ACCESSORIES USED IN STRUCTURAL GLAZING SYSTEMS.
   7. **ASTM C 1115 -** SPECIFICATION FOR DENSE ELASTOMERIC SILICONE RUBBER GASKETS AND ACCESSORIES.
   8. **ASTM C 1172 -** SPECIFICATION FOR LAMINATED ARCHITECTURAL FLAT GLASS.
   9. **ASTM C 1281 -** SPECIFICATION FOR PREFORMED TAPE SEALANTS FOR GLAZING APPLICATIONS.
   10. **ASTM C 1330 -** SPECIFICATION FOR CYLINDRICAL SEALANT BACKING FOR USE WITH COLD LIQUID APPLIED SEALANTS.
   11. **ASTM C 1376 -** SPECIFICATION FOR PYROLYTIC AND VACUUM DEPOSITION COATINGS ON GLASS.
   12. **ASTM E 774 -** SPECIFICATION FOR THE CLASSIFICATION OF THE DURABILITY OF SEALED INSULATING GLASS UNITS.
   13. **ASTM E 1300 -** PRACTICE FOR DETERMINING LOAD RESISTANCE OF GLASS IN BUILDINGS.
   14. **ASTM E 2190 -** STANDARD SPECIFICATION FOR INSULATING GLASS UNIT PERFORMANCE AND EVALUATION.

D. CODE OF FEDERAL REGULATIONS:
   1. **16 CFR 1201 -** SAFETY STANDARD FOR ARCHITECTURAL GLAZING MATERIALS.

E. GLASS ASSOCIATION OF NORTH AMERICA (GANA):
   1. GLAZING MANUAL.
   2. LAMINATED GLASS DESIGN GUIDE.
   3. ENGINEERING STANDARDS MANUAL.

F. THE INSULATING GLASS MANUFACTURERS ALLIANCE (IGMA):
   1. **IGMA TB-3001 -** SLOPED GLAZING GUIDELINES.
   2. **IGMA TM-3000 -** GLAZING GUIDELINES FOR SEALED INSULATING GLASS UNITS.

G. NATIONAL FENESTRATION RATING COUNCIL (NFRC):
   1. **NFRC 100 -** PROCEDURE FOR DETERMINING FENESTRATION PRODUCT THERMAL PROPERTIES.
   2. **NFRC 200 -** PROCEDURE FOR DETERMINING FENESTRATION PRODUCT SOLAR HEAT GAIN COEFFICIENTS AT NORMAL INCIDENCE.

H. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):
   1. **NFPA 80 -** FIRE DOORS AND WINDOWS.
   2. **NFPA 252 -** FIRE TESTS OF DOOR ASSEMBLIES.
   3. **NFPA 257 -** FIRE TEST FOR WINDOW ASSEMBLIES.

GLAZING SHALL HAVE WARRANTY AS APPLICABLE :

A. WARRANTY FOR COATED-GLASS PRODUCTS: MANUFACTURER'S STANDARD FORM, SIGNED BY COATED-GLASS PRODUCT PRIMARY MANUFACTURER OR MANUFACTURER/FABRICATOR, AS APPLICABLE, AGREEING TO REPLACE COATED-GLASS UNITS THAT DISPLAY PEELING, CRACKING, AND OTHER DETERIORATION IN METALLIC COATING UNDER NORMAL USE, WITHIN **(10)** YEARS OF DATE OF MANUFACTURE.

B. WARRANTY FOR LAMINATED GLASS: MANUFACTURER'S STANDARD FORM, SIGNED BY LAMINATED-GLASS PRODUCT MANUFACTURER/FABRICATOR, AGREEING TO REPLACE LAMINATED-GLASS UNITS THAT DISPLAY EDGE SEPARATION, DELAMINATION, AND BLEMISHES EXCEEDING THOSE ALLOWED BY ASTM C 1172, WITHIN **(5)** YEARS OF DATE OF MANUFACTURE.

C. WARRANTY FOR INSULATING GLASS: MANUFACTURER'S STANDARD FORM, SIGNED BY INSULATING-GLASS PRODUCT MANUFACTURER/FABRICATOR, AGREEING TO REPLACE INSULATING-GLASS UNITS THAT EXHIBIT FAILURE OF HERMETIC SEAL UNDER NORMAL USE EVIDENCED BY THE OBSTRUCTION OF VISION BY DUST, MOISTURE, OR FILM ON INTERIOR SURFACES OF GLASS, WITHIN **(10)** YEARS OF DATE OF MANUFACTURE.

INSULATED GLAZING UNITS

IG-1: INSULATING GLASS UNIT DOUBLE GLAZED TINTED SOLAR CONTROL

- INDOOR LITE:
  - TYPE I, CLASS I, QUALITY Q3
  - CONDITION A
  - FLOAT GLASS, KIND HS (HEAT STRENGTHENED) OR FLOAT GLASS, KIND FT (FULLY TEMPERED) PER CODE REQUIREMENTS TBD BY GLAZING SUPPLIER
- OUTDOOR LITE:
  - TYPE I, CLASS II, QUALITY Q3
  - CONDITION A
  - FLOAT GLASS, KIND HS (HEAT STRENGTHENED) OR FLOAT GLASS, KIND FT (FULLY TEMPERED) PER CODE REQUIREMENTS TBD BY GLAZING SUPPLIER

- PRODUCT:
  VITRO ARCHITECTURAL GLASS
  - **SOLARBAN 60 ON OPTIGRAY** SURFACE #(2) 1/4" 6MM + AIR 10% / ARGON 90% MIX 1/2" + CLEAR 1/4" 6MM
- PERFORMANCE:
  - U-VALUE WINTER NIGHT = .24
  - U-VALUE SUMMER DAY = .22
  - SHADING COEFFICIENT SC = .34
  - SOLAR HEAT GAIN COEFFICIENT SHGC = .30
  - VISIBLE LIGHT TRANSMITTANCE VLT = 50%
  - EXTERIOR VISIBLE REFLECTANCE = 8%
  - INTERIOR VISIBLE REFLECTANCE = 11%

- PRODUCT:
  GUARDIAN ARCHITECTURAL GLASS
  - **SN68 ON CRYSTALGRAY** SURFACE #(2) 1/4" 6MM + AIR 10% / ARGON 90% MIX 1/2" + CLEAR 1/4" 6MM
- PERFORMANCE:
  - U-VALUE WINTER NIGHT = .245
  - U-VALUE SUMMER DAY = .22
  - SHADING COEFFICIENT SC = .33
  - SOLAR HEAT GAIN COEFFICIENT SHGC = .29
  - VISIBLE LIGHT TRANSMITTANCE VLT = 48%
  - EXTERIOR VISIBLE REFLECTANCE = 8%
  - INTERIOR VISIBLE REFLECTANCE = 11%

FLOAT GLASS NON-INSULATED

GL-1: CLEAR FLOAT GLASS

- LITE:
  - TYPE I, CLASS I, QUALITY Q3
  - CONDITION A, 1/4" 6MM
  - FLOAT GLASS, KIND HS (HEAT STRENGTHENED) OR FLOAT GLASS, KIND FT (FULLY TEMPERED) PER CODE REQUIREMENTS TBD BY GLAZING SUPPLIER

DOOR HARDWARE KEY

	HINGES			
	DESCRIPTION / FINISH	**Ives**	**Hager**	**McKinney**	**Stanley**
H1	STANDARD (626)	5BB1	BB1279	TA2714	FBB179
H2	HEAVY (626)	5BB1HW	BB1168	T4A3786	FBB168
H3	STANDARD (630)	5BB1 SS	BB1191	TA2314	FBB191
H4	HEAVY (630)	5BB1HW SS	BB1199	T4A3386	FBB199

	CONTINUOUS HINGES			
	DESCRIPTION / FINISH	**Roton (Hager)**	**McKinney**	**Select**	**Pemko**
H5	AL. GEAR TYPE (MATCH)	780-112HD	MCK-12HD	SL-11HD	CFMHD
H6	AL. GEAR TYPE (630)	780-224HD	MCK-224HD	SL-24HD600	CFMHD
H7	SS PIN/BARREL (630)	790-900	MCK-PM300	SL-300	SPDFM

	LOCKSETS			
	DESCRIPTION / FINISH	**Schlage ND Series (RHO)**	**Sargent 10X-Line (LL)**	**Best 9K (15D)**
L1	ENTRANCE (626)	ND53PD	10XG05	9K AB
L2	CLASSROOM (626)	ND70PD	10XG37	9K R
L3	PRIVACY (626)	ND40S	10XU65	9K L
L4	STOREROOM (626)	ND80PD	10XG04	9K D
L5	RIM CYLINDER (626)	20-022	34 SERIES	1E-72
L6	INSTITUTIONAL TRIM (626)	ND82PD	10XG17	9K W
L7	MORTISE CYLINDER (626)	20-001	40 SERIES	1E-74
L8	DEADBOLT (626)	B660P	480 SERIES	83T SERIES
L9	PASSAGE (626)	ND10S	10XU15	9K N
L10	EXIT ONLY-BLANK (626)	ND25D	10XG15-3	9K Y
L11	EXIT ONLY-LEVER (626)	ND12D	10XG13	9K NX
L12	DUMMY TRIM (626)	ND170	10XU94-2	9K 1DT
		Sargent 8200 (L)		
L13	MORTISE PRIVACY (626)	66 PRIVACY + 49 OCC INDICATOR		

	STOPS			
	DESCRIPTION / FINISH	**Ives**	**Hager**	**Rockwood**
S1	FLOOR MTD. (626)	FS436	241F	441
S2	WALL MTD. (626)	WS407CCV	236W	409

	OVERHEAD STOPS			
	DESCRIPTION / FINISH	**Glynn-Johnson**	**Sargent**	**Rixson**
S3	HD SURFACE MTD. (630)	90 Series	590	9 Series
S4	HD CONCEALED (630)	100 Series	690	1 Series
S5	STD. CONCEALED (630)	410 Series	1530	2 Series
S6	STD. SURFACE MTD. (630)	450 Series	1540	10 Series

	CLOSERS			
	DESCRIPTION / FINISH	**LCN**	**Sargent**	**Norton**
C1	PULL SIDE REG. (689)	4040 XP REG	351 O	7501
C2	PULL SIDE HOLD-OPEN (689)	4040XP H	351 H	7501H
C3	PUSH SIDE REG. (689)	4040XP EDA	351 P10	PR7501
C4	PUSH SIDE w/ STOP (689)	4040XP CUSH	351 PS	CLP7501
C5	PUSH SIDE HOLD-OPEN (689)	4040XP HCUSH	351 PSH	CLP75DTH
C6	PUSH SIDE EXT. DOORS (689)	4040XP SCUSH	351 CPS	UNI7501
C7	DROP PLATE (689)	4040XP-18PA	351-D	7788

	EXIT DEVICES				
		VonDuprin		**Sargent**	
	DESCRIPTION / FINISH	Med./Wide Stile	Narrow Stile	Med./Wide Stile	Narrow Stile
E1	RIM - EXIT ONLY (626)	98/99EO	33EO	8810	8500 Series
E2	RIM - LEVER (626)	98/99Lx996L	33Lx360L	8813 ETL	8500 Series
E3	SURF. RODS - LEVER (626)	98/9927Lx996L	3327Lx360L	8713 ETL	8500 Series
E4	CON. RODS - LEVER (626)	98/9947Lx996L	3347Lx360L	8613 ETL	8400 Series
E5	RIM - EXIT ONLY (630)	98EO		8810	
E6	RIM - LEVER (630)	98Lx996L		8813 ETL	
E7	SURF. RODS - LEVER (630)	9827Lx996L		8713 ETL	
E8	ELEC LATCH RETRACT (630)	QEL-LX-RX-98/99L		54-55-56-8800	

When a cylinder lockset is scheduled with an exit device, trim w/ cylinder should be provided. If no cylinder lockset is scheduled, trim shall be blank escutcheon (unless specified otherwise)

	PUSH-PULL / KICKPLATES			
	DESCRIPTION / FINISH	**Rockwood**	**Hager**	**Ives**
PP1	PUSH PLATE (630)	70C	30S	8200 4"x16"
PP2	PULL w/ PLATE (630)	106x70C	33E	8302
PP3	PUSH/PULL BAR (630)	BF159/47	160D	9190-12
PP4	OFFSET PULL (630)	BF156	12	8190
K1	KICKPLATE 8"x2"LDW (630)	K1050-B4E	190S	8400
K2	KICKPLATE 32"x2"LDW (630)	K1050-B4E	190S	8400

	WEATHERSTRIP, SWEEPS, & THRESHOLDS			
	DESCRIPTION	**National Guard**	**Reese**	**Pemko**
T1	ALUM. THERMAL THRESHOLD	8424	528A	252x2 FG
T2	SS SADDLE THRESHOLD	-	212S	154SS
T3	SS THERMAL THRESHOLD	-	-	252-.355FG
T4	THRESHOLD w/ SEAL	950N	-	
SW1	SWEEP	200NA	772	315N
WS1	WEATHERSTRIP	160VA	DS106C	294AV
WS2	SMOKE SEAL	5050B	797B	588
ADB	AUTO DOOR BOTTOM	335N	-	-

	MISC. HARDWARE			
	DESCRIPTION	**Ives**	**Rockwood**	**KAWNEER**
CO1	COORDINATOR (626 Chrome)	COR Series	2600 Series	
CO2	COORDINATOR (Painted Black)	COR Series	2600 Series	
FB1	AUTO - METAL (626)	FB31P	284Z	
FB2	AUTO - WOOD (626)	FB41P	294B	
FB3	MANUAL - METAL (626)	FB458	555	
FB4	MANUAL - WOOD (626)	FB358	557	
FB5	AUTO - SS (630)	-	284B	
B1	SURFACE BOLT - SS (630)	-	580 - 12" (24" at doors > 7')	
RL1	ROLLERLATCH (630)	RL32	592	
LP1	LATCH PADDLE DEVICE (630)			AR4590
		VonDuprin	**Sargent**	
RM1	REMOVABLE MULLION (626)	KR4954	L980	
		Pemko	**Zero International**	
AS1	"T" ASTRAGAL	355CS	-	
AS2	SECURITY ASTRAGAL	-	#43SP	
AS3	SECURITY ASTRAGAL (630)	-	#43STST	

	MOTORIZED DOOR OPTIONS			
	OPERATION DESCRIPTION			
RC	RADIO CONTROLLED			
3B	3 PUSH BUTTON			
CW	COUNTERWEIGHT OPERATING SYSTEM			
M	MANUAL			
MS	MOTION SENSOR			
T	TIMER			
	LIFT DESCRIPTION			
MFV	MAX FULL VERTICAL			
HLV	HIGH LIFT PARTIAL VERTICAL			
STD	STANDARD			
LHR	LOW HEAD-ROOM			

	ACCESS CONTROL			
	DESCRIPTION	**VonDuprin**	**HES**	**Securitron**
ES1	ELECT STRIKE AT RIM EXIT DEVICE (630)	6300 (24VDC)	9500/9600 Series (24VDC)	N/A
ES2	ELECT STRIKE AT STD. LOCKSET (630)	6211 (24VDC)	1006 Series (24VDC)	UNL (24VDC)
ES3	SPACER BRACKET (628)	1/2" ALUM SPACER	9000-ASB	-
PT1	POWER TRANSFER (689)	EPT	-	-
PT2	POWER TRANSFER (630)	CEPT	-	-
		LCN		
MH1	MAG HOLD OPEN (630)	SEM7850		
CR	CARD READER	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
DC	DOOR CONTACT	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
RE	REQUEST TO EXIT	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
ML	MAGNETIC LOCK	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
PS	POWER SUPPLY	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		

ALUMINUM DOOR SCHEDULE

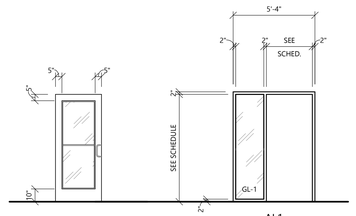
DOOR NO.	ROOM NO.	ROOM NAME	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR TYPE	FRAME TYPE	FIRE RATING	UNDERCUT OR GRILLE (W x H)	HINGE	LOCKSET	STOPS	CLOSER	EXIT DEVICES	PUSH-PULL / KICK	W.S., SWEEP, THRESHOLD	MISC.	ACCESS CONTROL	REMARKS
114A	114	VEST.	3'-0"	7'-0"	AD6	AF4	--	--	H5	L5	S5	C6, C7	E1	PP4	T1, SW1, WS1	--	CR, DC, ES3	
114B	114	VEST.	3'-0"	7'-0"	AD6	AF4	--	--	H5	--	S5	C6, C7	--	PP3	--	--	--	

HM/WOOD/SS DOOR SCHEDULE

DOOR NO.	ROOM NO.	ROOM NAME	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR TYPE	FRAME TYPE	FIRE RATING	UNDERCUT OR GRILLE (W x H)	HINGE	LOCKSET	STOPS	CLOSER	EXIT DEVICES	PUSH-PULL / KICK	W.S., SWEEP, THRESHOLD	MISC.	ACCESS CONTROL	REMARKS
100B	100	TRUCK STORAGE	3'-0"	7'-0"	MD3E	SSF1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	CR, DC, ES2	1
100C	100	TRUCK STORAGE	3'-0"	7'-0"	MD3E	SSF1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	CR, DC, ES2	1
100E	100	TRUCK STORAGE	3'-0"	7'-0"	MD3E	SSF1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	CR, DC, ES2	1
102A	102	WASH BAY	3'-0"	7'-0"	SSD1	SSF2	--	--	H3	L9	S6	C1	--	K2	TW, SW1, WS1	--	--	
103	103	ELECTRICAL	3'-6"	7'-6"	MD1	HM1	90 MIN.	--	H1	L2	--	C3	E2	K1	WS2	--	--	
104	104	FIRE PUMP	3'-0"	7'-0"	MD1E	HM1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	--	1
105	105	MECHANICAL	3'-0"	7'-0"	MD1	HM2	--	--	S1	L9	--	--	--	K1	--	--	--	
106	106	PARTS	6'-0"	7'-6"	(2)MD1	HM1	--	--	H1	L9	S6	--	--	K2	--	FB3	--	2
107	107	IT	3'-0"	7'-0"	MD1	HM2	90 MIN.	--	H1	L4	--	C3	--	K1	WS2	--	CR, DC, ES2	
108	108	WOMENS	3'-0"	7'-0"	WD1	HM2	--	--	H1	--	S2	C1	--	K2	--	--	PP1, PP2	
109	109	MENS	3'-0"	7'-0"	WD1	HM2	--	--	H1	--	S2	C1	--	PP1, PP2	--	--	--	
110A	110	CORRIDOR	3'-0"	7'-0"	MD3	HM2	--	--	S1	L2	S2	C1	--	K2	--	--	--	
111	111	BREAK ROOM	3'-0"	7'-0"	WD3	HM1	--	--	H1		S2	--	--	--	--	--	--	
112	112	OFFICE	3'-0"	7'-0"	WD1	HM1	--	--	H1	L1	S2	--	--	--	--	--	--	
113	113	FLEX OFFICE	3'-0"	7'-0"	WD1	HM1	--	--	H1	L1	S2	--	--	--	--	--	--	
115	115	STORAGE	3'-0"	7'-0"	WD1	HM2	--	--	H1	L9	--	--	--	--	--	--	--	
116B	116	COLD STORAGE	3'-0"	7'-0"	MD3E	SSF1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	--	1
116C	116	COLD STORAGE	3'-0"	7'-0"	MD3E	SSF1	--	--	H6	L4	S4	C6	--	K2	T3, SW1, WS1	--	--	1

REMARKS:
1. MATCH ADJACENT IMP/METAL PANEL COLOR. SEE FINISH SCHEDULE AND ELEVATIONS.
2. SEE FLOOR PLAN FOR ACTIVE LEAF VS INACTIVE LEAF. DOOR LEAD WITH DOOR CLEARANCE INDICATES ACTIVE LEAF.
3. LOCATE THE MOTION SENSOR ON THE APPROACH SIDE OF THE OVERHEAD DOOR. PROVIDE WALL-MOUNTED SWITCH TO DISCONNECT POWER TO THE MOTION SENSOR. COORDINATE MOTION SENSOR WIRING AND LOCATION WITH OVERHEAD DOOR SUPPLIER AND EC. SEE ELECTRICAL PLANS FOR SWITCH LOCATION.
4. PROVIDE WALL-MOUNTED SWITCH TO DISCONNECT POWER TO THE OVERHEAD DOOR OPERATOR - SEE ELECTRICAL PLANS FOR LOCATION.
5. LOCATE OVERHEAD DOOR MOTOR OUTSIDE OF WASH BAY TO PREVENT CORROSION OF EQUIPMENT

GENERAL NOTES:
- THE OWNER WOULD LIKE TO MATCH THE EXISTING KEYING SYSTEM AT THEIR CURRENT FACILITY. CONTRACTOR TO COORDINATE WITH THE OWNER AND PROVIDE A KEYING SYSTEM THAT MATCHES THEIR CURRENT FACILITIES SPECS

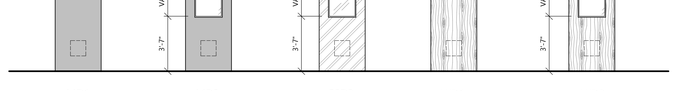


AD6

500 WIDE STILE ALUMINUM DOOR
INTERIOR GLAZING: GL-1
EXTERIOR GLAZING: IG-1

AL1

ALUM. DOOR ELEV.



MD1
HOLLOW METAL DOOR

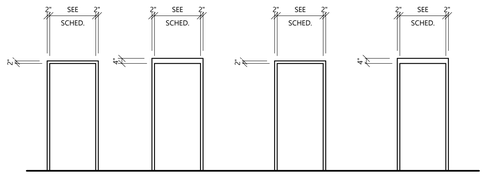
MD3
HOLLOW METAL DOOR
INTERIOR GLAZING: GL-1
EXTERIOR GLAZING: IG-1

SSD3
STAINLESS STEEL DOOR
INTERIOR GLAZING: GL-1
EXTERIOR GLAZING: IG-1

WD1
SOLID CORE WOOD DOOR

WD3
SOLID CORE WOOD DOOR
INTERIOR GLAZING: GL-1

METAL DOOR ELEVATIONS

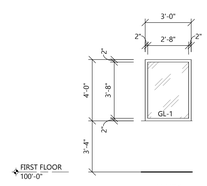


HM1
HOLLOW METAL FRAME

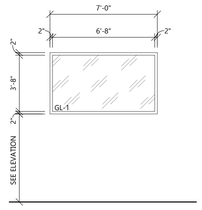
HM2
HOLLOW METAL FRAME

SSF1
STAINLESS STEEL FRAME

SSF2
STAINLESS STEEL FRAME



AWF1



AWF2

METAL DOOR FRAME ELEVATIONS

ALUMINUM WINDOW FRAME ELEVATIONS

SOLID CORE WOOD DOOR SPECIFICATIONS:

MANUFACTURER:
- VT INDUSTRIES - HERITAGE COLLECTION

CONSTRUCTION:
- 5 PLY CONSTRUCTION w/ STILES AND RAILS BONDED TO CORE
- PARTICLE BOARD CORE OR STRUCTURAL COMPOSITE LUMBER CORE PER MANUFACTURER RECOMMENDATIONS w/ HARDWOOD EDGES TO MATCH FACE SPECIES AS REQ'D FOR CUTOUTS
- MINERAL CORE w/ HARDWOOD EDGES TO MATCH FACE SPECIES AS REQ'D FOR FIRE RATED DOORS
- SPECIES IDENTIFIED ON MATERIAL LEGEND, PLAIN SLICED WDMA CUSTOM GRADE w/ GRADE A FACES STANDARD DUTY DOOR UNLESS NOTED OTHERWISE
- VENEER LEAVES TO BE BOOK MATCH, RUNNING MATCH PAIR AND SET MATCH @ DOORS IN SAME OPENING OR FRAME
- PROVIDE BLOCKING AS REQ'D TO ELIMINATE THROUGH BOLTING OF ALL HARDWARE
- PROVIDE MANUF. STANDARD FLUSH WOOD BEAD AT LITES & GRILLES (WDMA OPTION: M1)
- ALL RATED DOORS ARE TO BE CATEGORY A, POSITIVE PRESSURE, UL10C
- FINISH: SEE MATERIAL LEGEND

WARRANTY:
- LIFETIME

STAINLESS STEEL DOOR SPECIFICATION:

MANUFACTURER:
- LAFORCE STAINLESS STEEL DOORS (APPROVED EQUIVALENT - WEILAND)

CONSTRUCTION:
- DOORS
  - DOOR SKIN TO BE 16 ga., 304 STAINLESS STEEL
  - FULLY WELDED EDGES
  - CORES TO BE 1 1/2" THICK RIGID POLYURETHANE, R VALUE = 11
  - MANUF. SHALL PROVIDE FLUSH, SEALED, & CLOSED STAINLESS STEEL TOPS AND BOTTOMS ON DOORS
  - MANUF. SHALL PROVIDE VERTICAL STEEL STIFFENED DOORS
- FRAMES
  - FULL WELDED FRAMES
  - VERTICAL GRAIN
  - MIN. 16 ga. @ INTERIOR FRAMES
  - MIN. 14 ga. @ EXTERIOR FRAMES

- GENERAL REQUIREMENTS
  - ALL DOORS & FRAMES TO BE REINFORCED AND PREPARED FOR HARDWARE
  - PROVIDE BACK BOXES FOR ALL ELECTRICAL DOOR HARDWARE
  - ALL REINFORCEMENT TO BE MIN. 12 ga.
  - PROVIDE WELDED-IN BASE ANCHORS
  - PROVIDE (3) SURFACE APPLIED SILENCERS PER JAMB @ ALL STAINLESS STEEL DOOR FRAMES
  - PROVIDE STAINLESS STEEL FRAME FOR LITES & GRILLES
  - FINISH #4 SATIN
  - PROVIDE RATED DOORS & FRAMES AS SCHEDULED
  - DOOR FRAME TO BE CARBON FREE. REMOVE ALL RUST FROM FRAME.
  - STAINLESS STEEL:
    - PROVIDE 316 STAINLESS STEEL COMPONENTS, FRAMES, ETC... AT THE WASH BAY

WARRANTY:
- 10 YEARS

HOLLOW METAL DOOR & FRAME SPECIFICATIONS:

MANUFACTURER:
- CURRIES (APPROVED EQUIVALENT: STEELCRAFT)

CONSTRUCTION:
- DOORS
  - INTERIOR: 70T SERIES, MIN. 18 GA. w/ POLYSTYRENE CORE.
  - EXTERIOR: 70T SERIES, MIN. 16 GA. w/ POLYSTYRENE CORE & FLUSH TOP CAP, ASTM C1363 OPERABLE R-VALUE = 2.1.
  - EXTERIOR (WHERE INDICATED BY AN "E" SUFFIX ON DOOR TAG; I.E., "MD1E"): 74T SERIES, MIN. 16 GA. w/ 22 GA. STIFFENERS @ 6" CENTERS w/ FIBERGLASS INSULATION AND FLUSH TOP CAP, ASTM C1363 OPERABLE R-VALUE = 1.8

- FRAMES
  - 'M' PROFILE w/ CONT. WELD FACE SEAMS AT FULL WIDTH OF JAMB
  - MIN. 16 ga. @ INTERIOR FRAMES
  - MIN. 14 ga. @ EXTERIOR FRAMES w/ URETHANE FOAM INSUL.

- GENERAL REQUIREMENTS
  - ALL EXTERIOR DOORS AND FRAMES TO BE GALVANIZED
  - ALL DOORS & FRAMES TO HAVE BAKED ON PRIMER FINISH
  - ALL DOORS & FRAMES TO BE REINFORCED AND PREPARED FOR HARDWARE
  - ALL REINFORCEMENT TO BE MIN. 12 ga.
  - PROVIDE WELDED-IN BASE ANCHORS
  - PROVIDE (3) SILENCERS PER JAMB @ ALL METAL DOOR FRAMES
  - PROVIDE BITUMINOUS COATING ON INT. FACE OF FRAMES IN MASONRY WALLS
  - PROVIDE METAL FRAME FOR LITES & GRILLES
  - PAINT LITE FRAMES TO MATCH DOOR FRAMES

WARRANTY:
- PROVIDE AND COMPLY WITH MANUFACTURER'S STANDARD WARRANTY. REFER TO MANUFACTURER'S OR VENDOR'S WEBSITE FOR FULL WARRANTY TERMS AND CONDITIONS.

EXTERIOR ALUM. STOREFRONT SPECIFICATIONS:

MANUFACTURER:
- KAWNEER

PRODUCT:
- TRIFAB VG 451T THERMALLY BROKEN FRAMING SYSTEM

CONSTRUCTION:
- 2" x 4 1/2" DEEP FRAMING MEMBERS.
  a. ASTM B 221; 6063-T5 ALLOY AND TEMPER
- CENTER GLAZING SYSTEM
- SUPPLIER TO VERIFY ALL WIND LOAD AND DEFLECTION CRITERIA AND PROVIDE ALL ACCESSORIES AND REINFORCEMENT AS REQ'D BY APPLICABLE CODES AND FOR A COMPLETE INSTALLATION
- SUPPLIER TO PROVIDE AND INSTALL ANY REQ'D BRAKE METAL PANELS AS REQ'D TO COVER ANY STRUCTURE, FRAMING, OR ADJACENT / INTERVENING CONSTRUCTION
- PROVIDE CONT. EXTRUDED SILL FLASHING AT EACH EXT. FRAMING UNIT
- PROVIDE CONT. EXTRUDED, THERMALLY BROKEN HEAD RECEPTOR AT EACH FRAMING UNIT
- PROVIDE CONT. EXTRUDED, THERMAL FLAT FILLER TO JAMB MEMBERS
- WHERE ALUMINUM WILL CONTACT DISSIMILAR METALS, PROTECT AGAINST GALVANIC REACTIONS BY PAINTING CONTACT SURFACES WITH PRIMER OR BY APPLYING SEALANT OR TAPE PER MANUF. SPEC'S COLOR:
  a. COLD STORAGE BUILDING:
     FINISH TO BE KAWNEER PERMANODIC AA-M12C22A31, AAMA 611, ARCHITECTURAL CLASS II CLEAR ANODIC COATING COLOR TO BE #17 CLEAR

WARRANTY:
- PROVIDE AND COMPLY WITH MANUFACTURER'S STANDARD WARRANTY. REFER TO MANUFACTURER'S OR VENDOR'S WEBSITE FOR FULL WARRANTY TERMS AND CONDITIONS.

GENERAL DOOR AND FRAME NOTES:

- ALL DOORS SHALL MEET A.D.A. REQUIREMENTS
- ALL DOOR THRESHOLDS SHALL NOT EXCEED 1/2" IN HEIGHT
- VERIFY FRAME DEPTHS W/ WALL THICKNESS. PROVIDE WRAP AROUND FRAMES AT STUD WALLS
- PROVIDE SEALANT BOTH SIDES OF DOOR FRAMES, WHERE DIFFERENT MATERIALS MEET AND FOR WEATHER TIGHTNESS
- GENERAL CONTRACTOR TO VERIFY SIZE OF ALL EQUIPMENT (ELECTRICAL, MECHANICAL, KITCHEN, LAUNDRY, ETC.) SELECTED FOR THE PROJECT TO DETERMINE THAT ALL DOORS (INCLUDING PATH OF TRAVEL) ARE OF ADEQUATE SIZE TO ACCOMMODATE INSTALLATION AND REPLACEMENT
- VERIFY ALL ROUGH OPENING REQUIREMENTS WITH MANUFACTURERS DRAWINGS
- SEE SHEET A0.1 FOR GENERAL BUILDING SPECIFICATIONS
- DOOR, FRAME AND HARDWARE SCHEDULE TO BE PROVIDED BY HARDWARE SUPPLIER FOR A/E REVIEW - NUMBERING SYSTEM AND NOMENCLATURE SHALL MATCH THOSE FOUND IN CONSTRUCTION DOCUMENTS
- HARDWARE SUPPLIER IS RESPONSIBLE FOR COORDINATING KEYING REQUIREMENTS WITH OWNER
- ALUMINUM SUPPLIER SHALL FURNISH AND INSTALL ALL HARDWARE FOR ALUMINUM DOORS AS NOTED ON PLANS - THE SAME MANUFACTURERS AND MODELS SHALL BE USED FOR BOTH ALUMINUM AND OTHER DOOR HARDWARE
- CONTRACTOR TO PROVIDE PRODUCTS AND SYSTEMS COMPLETE WITH ALL ACCESSORIES, TRIM, FIN

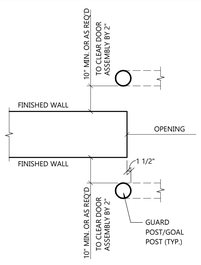
GUARD POST/GOAL POST SCHEDULE

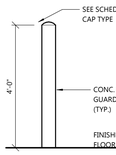
MARK	ELEVATION	CAP STYLE	BASE CONN. TYPE	PIPE MATL.	PIPE DIA.	COLOR	REMARKS
GP-A	GP-A	STYLE B	TYPE A	GALV. STEEL	6"	SAFETY YELLOW	2
GP-B	GP-B	STYLE B	TYPE A	GALV. STEEL	6"	SAFETY YELLOW	2
GP-C	GP-B	STYLE B	TYPE F	GALV. STEEL	6"	SAFETY YELLOW	2
GP-D	GP-B	STYLE B	TYPE A	S.S.	6"	SAFETY YELLOW	

(1) ONE COAT PRIMER AND TWO COATS OF FINISH PAINT; VERIFY COLOR WITH OWNER.
(2) PAINT WITH ONE COAT OF PRIMER AND PROVIDE POLYETHYLENE SLEEVE PROTECTORS. VERIFY COLOR WITH OWNER.

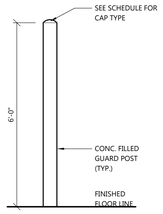
GUARD POST AND GOAL POST NOTES:

- SEE FLOOR PLAN FOR DOOR AND OPENING DIMENSIONS.
- ALL PENETRATION WELDS USED IN THE FABRICATION OF GUARD AND GOAL POSTS SHALL BE GROUND SMOOTH. STAINLESS WELDS SHALL BE POLISHED TO MATCH FINISH OF PIPE OR BETTER.
- FILLET WELDS SHALL BE UNIFORM IN SHAPE AND APPEARANCE. REMOVE ALL SLAG, SPATTER, RUST, LOOSE SCALE, OIL AND DIRT BEFORE PAINTING.

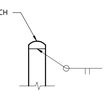




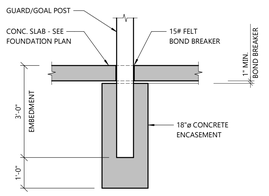
GP ELEVATION A



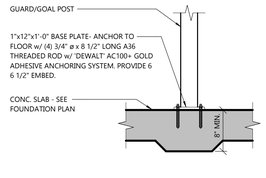
GP ELEVATION B



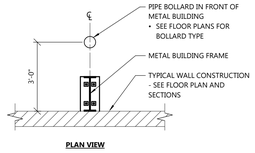
GP CAP STYLE B



GP BASE CONNECTION TYPE A

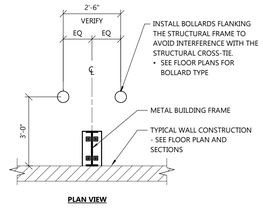


GP BASE CONNECTION TYPE F



PLAN VIEW

2 A6.2 COLUMN & BOLLARD DETAIL
SCALE: 3/8" = 1'-0"



PLAN VIEW

1 A6.2 COLUMN & BOLLARD DETAIL
SCALE: 3/8" = 1'-0"

DOOR HARDWARE KEY

HINGES

	DESCRIPTION / FINISH	Ives	Hager	McKinney	Stanley
H1	STANDARD (626)	5BB1	BB1279	TA2714	FBB179
H2	HEAVY (626)	5BB1HW	BB1168	T4A3786	FBB168
H3	STANDARD (630)	5BB1 SS	BB1191	TA2314	FBB191
H4	HEAVY (630)	5BB1HW SS	BB1199	T4A3386	FBB199

CONTINUOUS HINGES

	DESCRIPTION / FINISH	Roton (Hager)	McKinney	Select	Pemko
H5	AL. GEAR TYPE (MATCH)	780-112HD	MCK-112HD	SL-11HD	CFMHD
H6	AL. GEAR TYPE (630)	780-224HD	MCK-225HD	SL-224HD600	CFMHD
H7	SS PIN/BARREL (630)	790-900	MCK-FM300	SL-300	SPDFM

LOCKSETS

	DESCRIPTION / FINISH	Schlage ND Series (RHO)	Sargent 10X-Line (LL)	Best 9K (15D)
L1	ENTRANCE (626)	ND53PD	10XG05	9K AB
L2	CLASSROOM (626)	ND70PD	10XG37	9K R
L3	PRIVACY (626)	ND40S	10XU65	9K L
L4	STOREROOM (626)	ND80PD	10XG04	9K D
L5	RIM CYLINDER (626)	20-022	34 SERIES	1E-72
L6	INSTITUTION (626)	ND82PD	10XG17	9K W
L7	MORTISE CYLINDER (626)	20-001	40 SERIES	1E-74
L8	DEADBOLT (626)	B660P	480 SERIES	83T SERIES
L9	PASSAGE (626)	ND10S	10XU15	9K N
L10	EXIT ONLY-BLANK (626)	ND25D	10XG15-3	9K Y
L11	EXIT ONLY-LEVER (626)	ND12D	10XG13	9K NX
L12	DUMMY TRIM (626)	ND170	10XU94-2	9K 1DT
			Sargent 8200 (L)	
L13	MORTISE PRIVACY (626)		66 PRIVACY + 49 OCC INDICATOR	

STOPS

	DESCRIPTION / FINISH	Ives	Hager	Rockwood
S1	FLOOR MTD. (626)	FS436	241F	441
S2	WALL MTD. (626)	WS407CCV	236W	409

OVERHEAD STOPS

	DESCRIPTION / FINISH	Glynn-Johnson	Sargent	Rixson
S3	HD SURFACE MTD. (630)	90 Series	590	9 Series
S4	HD CONCEALED (630)	100 Series	690	1 Series
S5	STD. CONCEALED (630)	410 Series	1530	2 Series
S6	STD. SURFACE MTD. (630)	450 Series	1540	10 Series

CLOSERS

	DESCRIPTION / FINISH	LCN	Sargent	Norton
C1	PULL SIDE REG. (689)	4040 XP REG	351 O	7501
C2	PULL SIDE HOLD-OPEN (689)	4040XP H	351 H	7501H
C3	PUSH SIDE REG. (689)	4040XP EDA	351 P10	PR7501
C4	PUSH SIDE w/ STOP (689)	4040XP CUSH	351 PS	CLP7501
C5	PUSH SIDE HOLD-OPEN (689)	4040XP HCUSH	351 PSH	CLP7501H
C6	PUSH SIDE EXT. DOORS (689)	4040XP SCUSH	351 CPS	UNIT7501
C7	DROP PLATE (689)	4040XP-18PA	351-D	7788

EXIT DEVICES

		VonDuprin		Sargent	
	DESCRIPTION / FINISH	Med./Wide Stile	Narrow Stile	Med./Wide Stile	Narrow Stile
E1	RIM - EXIT ONLY (626)	98/99EO	33EO	8810	8500 Series
E2	RIM - LEVER (626)	98/99Lx996L	33Lx360L	8813 ETL	8500 Series
E3	SURF. RODS - LEVER (626)	98/9927Lx996L	3327Lx360L	8713 ETL	8500 Series
E4	CON. RODS - LEVER (626)	98/9947Lx996L	3347Lx360L	8613 ETL	8400 Series
E5	RIM - EXIT ONLY (630)	98EO		8810	
E6	RIM - LEVER (630)	98Lx996L		8813 ETL	
E7	SURF. RODS - LEVER (630)	9827Lx996L		8713 ETL	
E8	ELEC LATCH RETRACT (630)	QEL-LX-RX-98/99L		54-55-56-8800	

When a cylinder lockset is scheduled with an exit device, trim w/ cylinder should be provided. If no cylinder lockset is scheduled, trim shall be blank escutcheon (unless specified otherwise).

PUSH-PULL / KICKPLATES

	DESCRIPTION / FINISH	Rockwood	Hager	Ives
PP1	PUSH PLATE (630)	70C	30S	8200 4"x16"
PP2	PULL w/ PLATE (630)	106x70C	33E	8302
PP3	PUSH-PULL BAR (630)	BF1584?	160D	9190-12
PP4	OFFSET PULL (630)	BF156	12	8190
K1	KICKPLATE 8"x2"LDW (630)	K1050-B4E	190S	8400
K2	KICKPLATE 32"x2"LDW (630)	K1050-B4E	190S	8400

WEATHERSTRIP, SWEEPS, & THRESHOLDS

	DESCRIPTION	National Guard	Reese	Pemko
T1	ALUM. THERMAL THRESHOLD	8424	5282A	252x2 FG
T2	SS SADDLE THRESHOLD		2125	154SS
T3	SS THERMAL THRESHOLD		-	252-35SFG
T4	THRESHOLD w/ SEAL	950N	-	-
SW1	SWEEP	200NA	772	315N
WS1	WEATHERSTRIP	160VA	DS106C	294AV
WS2	SMOKE SEAL	5050B	797B	588
ADB	AUTO DOOR BOTTOM	335N	-	-

MISC. HARDWARE

	DESCRIPTION	Ives	Rockwood	KAWNEER
CO1	COORDINATOR (626 Chrome)	COR Series	2600 Series	
CO2	COORDINATOR (Painted Black)	COR Series	2600 Series	
FB1	AUTO - METAL (626)	FB31P	2842	
FB2	AUTO - WOOD (626)	FB41P	2948	
FB3	MANUAL - METAL (626)	FB458	555	
FB4	MANUAL - WOOD (626)	FB358	557	
FB5	AUTO - SS (630)	-	2848	
B1	SURFACE BOLT - SS (630)	-	580 - 12" (24" at doors > 7')	
RL1	ROLLERLATCH (630)	RL32	592	
LP1	LATCH PADDLE DEVICE (630)	-	-	AR4590
		VonDuprin	**Sargent**	
RM1	REMOVABLE MULLION (626)	KR4954	L980	
		Pemko	**Zero International**	
AS1	'T' ASTRAGAL	355CS		
AS2	SECURITY ASTRAGAL	-	#43SP	
AS3	SECURITY ASTRAGAL (630)	-	#43STST	

MOTORIZED DOOR OPTIONS

	OPERATION DESCRIPTION		
RC	RADIO CONTROLLED		
3B	3 PUSH BUTTON		
CW	COUNTERWEIGHT OPERATING SYSTEM		
M	MANUAL		
MS	MOTION SENSOR		
T	TIMER		
	LIFT DESCRIPTION		
MFV	MAX FULL VERTICAL		
HLV	HIGH LIFT PARTIAL VERTICAL		
STD	STANDARD		
LHR	LOW HEAD-ROOM		

ACCESS CONTROL

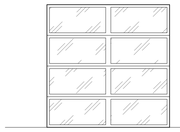
	DESCRIPTION	VonDuprin	HES	Securitron
ES1	ELECT STRIKE AT RIM EXIT DEVICE (630)	6300 (24VDC)	9500/9600 Series (24VDC)	N/A
ES2	ELECT STRIKE AT STD. LOCKSET (630)	6211 (24VDC)	1006 Series (24VDC)	UNL (24VDC)
ES3	SPACER BRACKET (628)	1/2" ALUM SPACER	9000-ASB	-
PT1	POWER TRANSFER (689)	EPT	-	-
PT2	POWER TRANSFER (630)	CEPT	-	-
		LCN		
MH1	MAG HOLD OPEN (630)	SEM7850		
CR	CARD READER	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
DC	DOOR CONTACT	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
RE	REQUEST TO EXIT	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
ML	MAGNETIC LOCK	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		
PS	POWER SUPPLY	BY DOOR SECURITY CONTRACTOR - SEE ELECT. PLANS		

SPECIALTY DOOR SCHEDULE

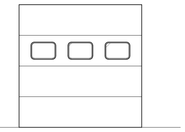
DOOR NO.	ROOM NO.	ROOM NAME	DOOR LOCATION / OPENING WIDTH	OPENING HEIGHT	DOOR TYPE	FRAME TYPE	FIRE RATING	ACCESS CONTROL	DOOR OPTIONS OPERATION	DOOR OPTIONS LIFT	REMARKS
100A	100	TRUCK STORAGE	24'-0"	20'-0"	OH2	--	--	--	3B, MS, T	HLV	1,3,4
100D	100	TRUCK STORAGE	24'-0"	20'-0"	OH2	--	--	--	3B, MS, T	HLV	1,3,4
102B	102	WASH BAY	24'-0"	20'-0"	OH1	--	--	--	3B, T	HLV	5
102C	102	WASH BAY	24'-0"	20'-0"	OH1	--	--	--	3B	HLV	5
116A	116	COLD STORAGE	24'-0"	16'-0"	OH2	-	--	--	3B, T	HLV	1
116D	116	COLD STORAGE	24'-0"	16'-0"	OH2	-	--	--	3B, T	HLV	1
116E	116	COLD STORAGE	14'-0"	14'-0"	OH2	-	--	--	3B, T	HLV	1

REMARKS:
1. MATCH ADJACENT IMP/METAL PANEL COLOR. SEE FINISH SCHEDULE AND ELEVATIONS.
2. SEE FLOOR PLAN FOR ACTIVE LEAF VS INACTIVE LEAF. DOOR LEAD WITH DOOR CLEARANCE INDICATES ACTIVE LEAF.
3. LOCATE THE MOTION SENSOR ON THE APPROACH SIDE OF THE OVERHEAD DOOR. PROVIDE WALL-MOUNTED SWITCH TO DISCONNECT POWER TO THE MOTION SENSOR. COORDINATE MOTION SENSOR WIRING AND LOCATION WITH OVERHEAD DOOR SUPPLIER AND EC. SEE ELECTRICAL PLANS FOR SWITCH LOCATION.
4. PROVIDE WALL-MOUNTED SWITCH TO DISCONNECT POWER TO THE OVERHEAD DOOR OPERATOR - SEE ELECTRICAL PLANS FOR LOCATION.
5. LOCATE OVERHEAD DOOR MOTOR OUTSIDE OF WASH BAY TO PREVENT CORROSION OF EQUIPMENT

GENERAL NOTES:
- THE OWNER WOULD LIKE TO MATCH THE EXISTING KEYING SYSTEM AT THEIR CURRENT FACILITY. CONTRACTOR TO COORDINATE WITH THE OWNER AND PROVIDE A KEYING SYSTEM THAT MATCHES THEIR CURRENT FACILITIES SPECS



OH1
INSULATED ALUM. OVERHEAD DOOR



OH2
INSULATED STEEL OVERHEAD DOOR
(3) VISION LITES BY DOOR SUPPLIER

SECTIONAL OVERHEAD DOOR SPECIFICATIONS:

MANUFACTURER:
- OVERHEAD DOOR CORPORATION

PRODUCT:
- SERIES 592 HEAVY DUTY

CONSTRUCTION:
- 2" THICK PANEL w/ THERMAL BREAK, R VALUE = 17.5
- 2" GALV. ANGLE MOUNTED LIFT TRACK (3" AT DOORS 18'x18' AND LARGER)
- LIFT OPTIONS:
  - (SEE DOOR SCHEDULE FOR LIFT OPTION TYPE)
- OPERATION OPTIONS:
  - (SEE DOOR SCHEDULE FOR OPERATION OPTION TYPE)
- 50,000 CYCLE SPRINGS
- SIDE MOUNTED HEAVY DUTY GEAR REDUCTION SYSTEM FOR MOTOR OPERATED DOORS
- COLOR TO BE WHITE, UNLESS NOTED OTHERWISE - SEE SCHEDULE AND ELEVATIONS
  - SUBMIT SAMPLES TO ARCHITECT FOR FINAL SELECTION
- PROVIDE INSULATED THERMAL ACRYLIC WINDOWS AS SCHEDULED/NOTED
- PROVIDE INTERIOR SIDE LOCK
- MOTOR OPTIONS:
  - 1 hp, 208 VOLT 4.8 FLA 3 PHASE
  - 1 hp, 480 VOLT 2.1 FLA 3 PHASE
- THE OVERHEAD DOOR SUPPLIER SHALL COUNTY FOR ALL APPLICABLE WIND LOADS. PROVIDE ANY REQUIRED PANEL REINFORCEMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND SPECIFICATION. SEE STRUCTURAL SPECIFICATION FOR DESIGNED WIND LOADS

WARRANTY:
- 10 YEARS - DELAMINATION

ALUM OVERHEAD DOOR SPECIFICATIONS:

MANUFACTURER:
- OVERHEAD DOOR CORPORATION

PRODUCT:
- SERIES 521 ALUMINUM DOOR

CONSTRUCTION:
- 1 5/8" THICK PANEL w/ THERMAL BREAK, R VALUE = 3.43
- 2" S.S. ANGLE MOUNTED LIFT TRACK (3" AT DOORS 18'x18' AND LARGER)
- LIFT OPTIONS:
  - (SEE DOOR SCHEDULE FOR LIFT OPTION TYPE)
- OPERATION OPTIONS:
  - (SEE DOOR SCHEDULE FOR OPERATION OPTION TYPE)
- 50,000 CYCLE SPRINGS
- SIDE MOUNTED HEAVY DUTY GEAR REDUCTION SYSTEM FOR MOTOR OPERATED DOORS
- COLOR: ANODIZED ALUM
  - SUBMIT SAMPLES TO ARCHITECT FOR FINAL SELECTION
- PROVIDE INSULATED THERMAL ACRYLIC WINDOWS AS SCHEDULED/NOTED
- PROVIDE INTERIOR SIDE LOCK
- MOTOR OPTIONS:
  - LARGER THAN 8'x10'
    - 1 hp, 480 VOLT 2.1 FLA 3 PHASE
- THE OVERHEAD DOOR SUPPLIER SHALL ACCOUNT COUNTY FOR ALL APPLICABLE WIND LOADS. PROVIDE ANY REQUIRED PANEL REINFORCEMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND SPECIFICATION. SEE STRUCTURAL SPECIFICATION FOR DESIGNED WIND LOADS

WARRANTY:
- 1 YEAR - PARTS AND COMPONENTS

ARCHITECTURAL SPECIALTY DOOR SCHEDULE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
A6.2

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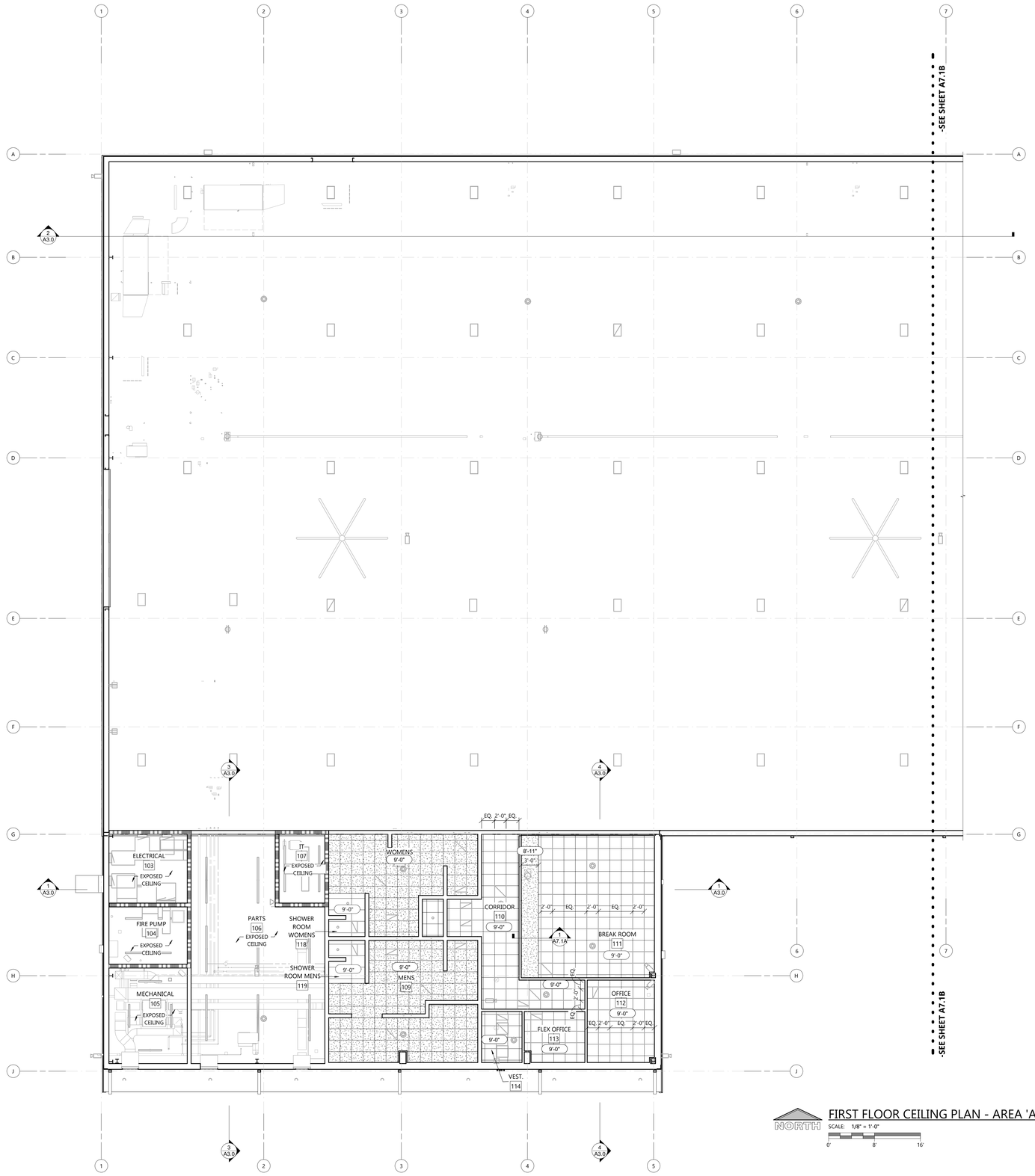
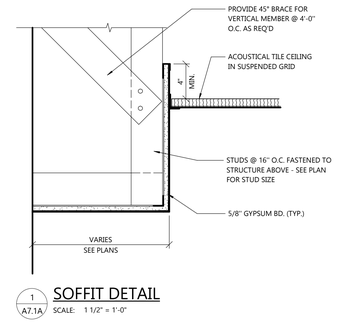
SYMBOLS LEGEND

- ACOUSTICAL TILE CEILING PANELS -SEE ROOM FINISH SCHEDULE FOR TYPE
- GYPSUM BOARD CEILING -SEE ROOM FINISH SCHEDULE
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- RECESSED EMERGENCY LIGHT
- CEILING SUPPLY GRILLE - SEE HVAC PLANS
- CEILING RETURN, TRANSFER OR EXHAUST GRILLE - SEE HVAC PLANS
- CEILING SLOT DIFFUSER -SEE HVAC PLANS
- X'-X" DESIGNATES CEILING/BULKHEAD HEIGHT A.F.F.
- EXIT LIGHT
- OCCUPANCY SENSOR
- CEILING MOUNTED SPEAKER
- FIRE ALARM SPEAKER UNIT
- H HEAT DETECTOR
- S SMOKE DETECTOR
- ES ELEVATOR SMOKE DETECTOR
- EXTERIOR EMERGENCY LIGHTING

GENERAL NOTES

- ACOUSTICAL CEILING TILES LESS THAN 1 1/2" ARE NOT TO BE INSTALLED. CEILING CONTRACTOR SHALL USE 2x4 CEILING TILE FRACTIONS (SAME TILE MFR/MODEL) AS THE 2x2 TILE TO AVOID NARROW CEILING TILE INSTALLATIONS.





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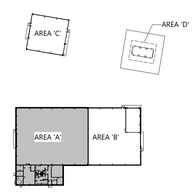
SCALE: 1 1/2" = 1'-0"

NORTH

FIRST FLOOR CEILING PLAN - AREA 'A'' - MAIN BUILDING
SCALE: 1/8" = 1'-0"
0' 8' 16'



KEY PLAN

ARCHITECTURAL FIRST FLOOR REFLECTED CEILING PLAN - AREA 'A'' - MAIN BUILDING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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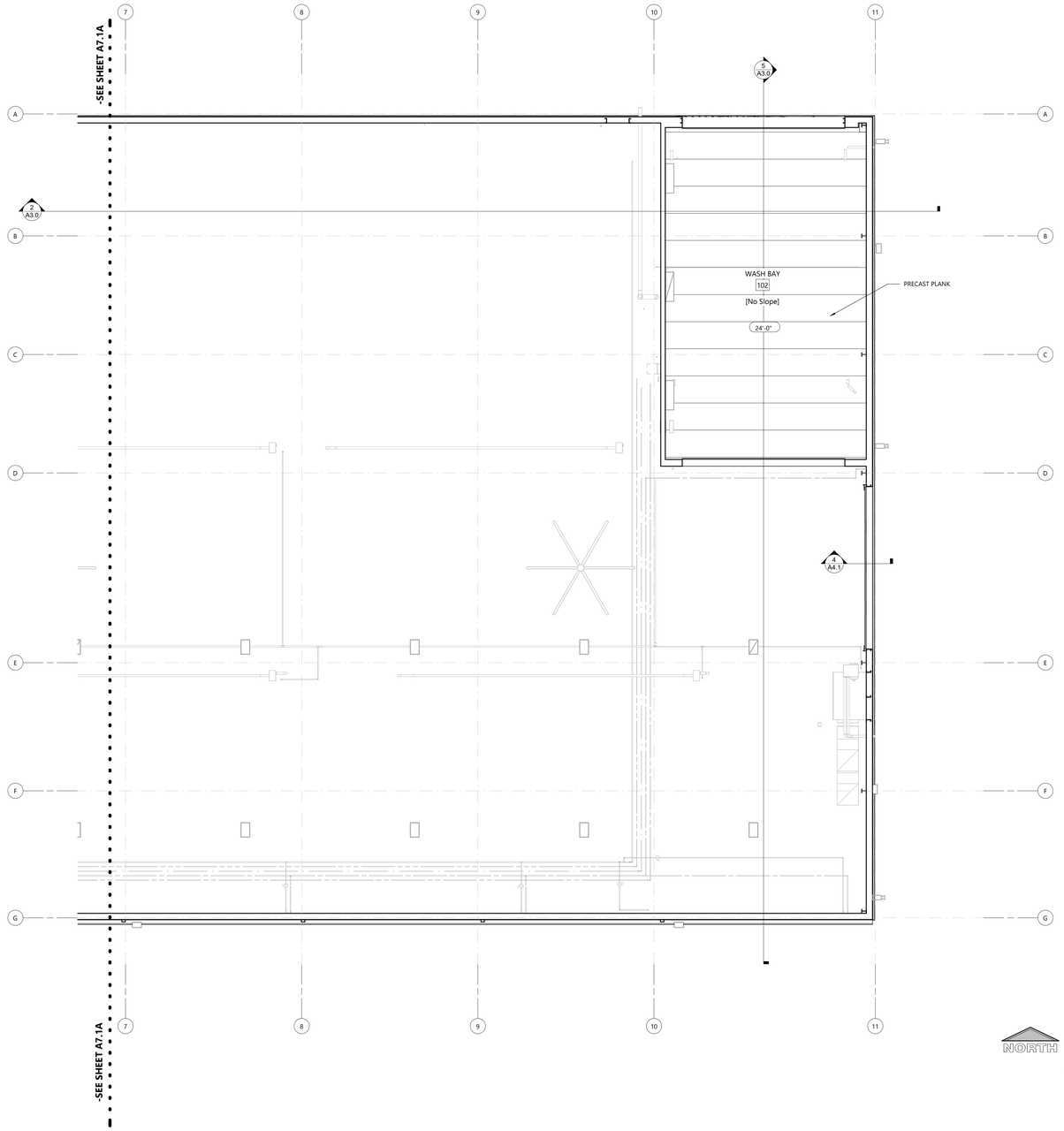

NORTH

FIRST FLOOR CEILING PLAN - AREA 'B' - MAIN BUILDING

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

0' 8' 16'

SYMBOLS LEGEND

- ACOUSTICAL TILE CEILING PANELS -SEE ROOM FINISH SCHEDULE FOR TYPE
- GYPSUM BOARD CEILING -SEE ROOM FINISH SCHEDULE
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- LIGHT FIXTURE - SEE ELECTRICAL PLANS
- RECESSED EMERGENCY LIGHT
- CEILING SUPPLY GRILLE - SEE HVAC PLANS
- CEILING RETURN, TRANSFER OR EXHAUST GRILLE - SEE HVAC PLANS
- CEILING SLOT DIFFUSER -SEE HVAC PLANS
- X'-X" DESIGNATES CEILING/BULKHEAD HEIGHT A.F.F.
- E EXIT LIGHT
- OCCUPANCY SENSOR
- CEILING MOUNTED SPEAKER
- FIRE ALARM SPEAKER UNIT
- H HEAT DETECTOR
- S SMOKE DETECTOR
- ES ELEVATOR SMOKE DETECTOR
- EXTERIOR EMERGENCY LIGHTING

GENERAL NOTES

- ACOUSTICAL CEILING TILES LESS THAN 1 1/2" ARE NOT TO BE INSTALLED. CEILING CONTRACTOR SHALL USE 2x4 CEILING TILE FRACTIONS (SAME TILE MFR/MODEL) AS THE 2x2 TILE TO AVOID NARROW CEILING TILE INSTALLATIONS.

KEY PLAN

ARCHITECTURAL FIRST FLOOR REFLECTED CEILING PLAN - AREA 'B' - MAIN BUILDING

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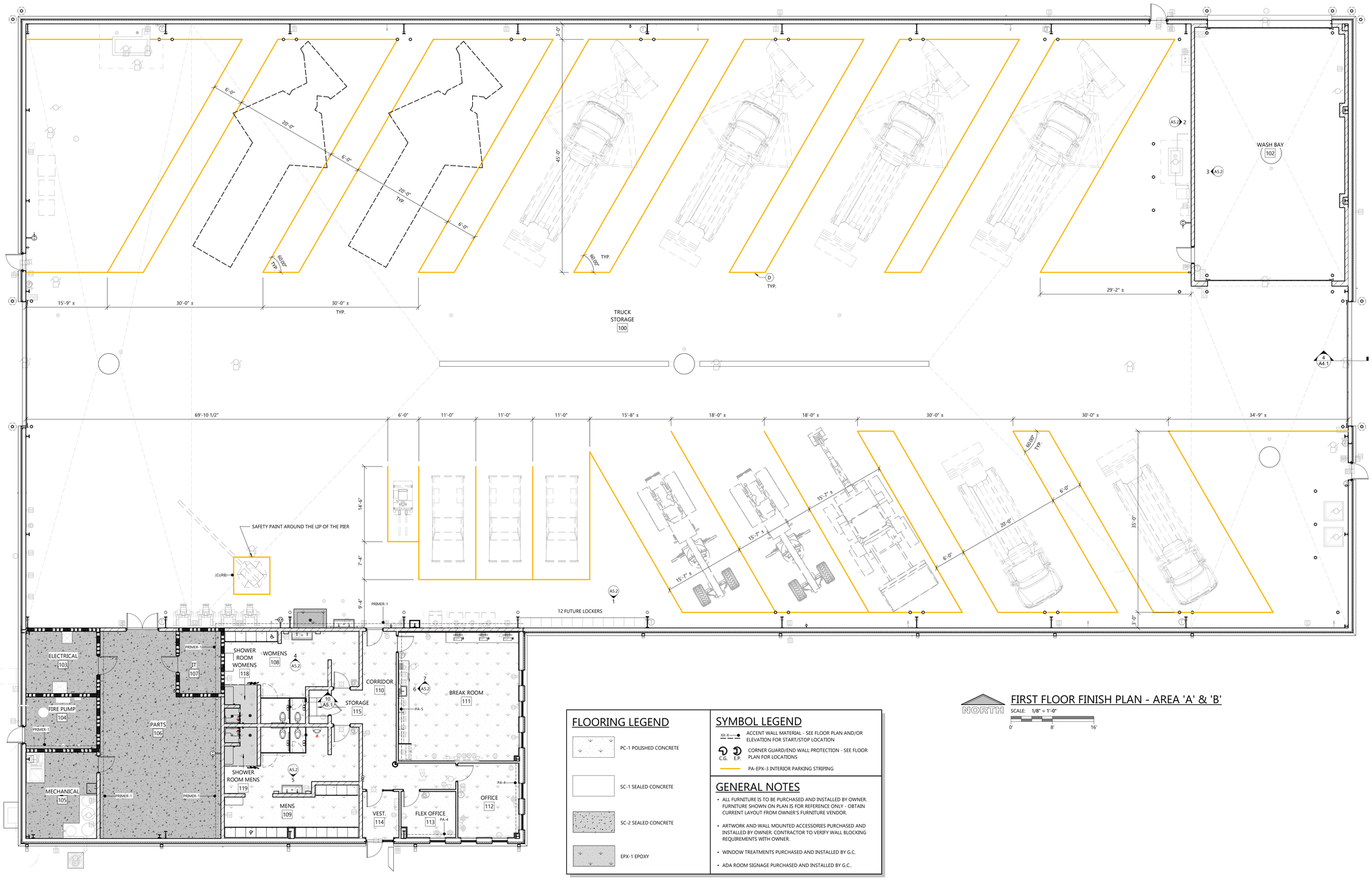

FLOORING LEGEND

- PC-1 POLISHED CONCRETE
- SC-1 SEALED CONCRETE
- SC-2 SEALED CONCRETE
- EPX-1 EPOXY

SYMBOL LEGEND

- ACCENT WALL MATERIAL - SEE FLOOR PLAN AND/OR ELEVATION FOR START/STOP LOCATION
- C.G. E.P. CORNER GUARD/END WALL PROTECTION - SEE FLOOR PLAN FOR LOCATIONS
- PA-EPX-3 INTERIOR PARKING STRIPING

GENERAL NOTES

- ALL FURNITURE IS TO BE PURCHASED AND INSTALLED BY OWNER. FURNITURE SHOWN ON PLAN IS FOR REFERENCE ONLY - OBTAIN CURRENT LAYOUT FROM OWNER'S FURNITURE VENDOR.
- ARTWORK AND WALL MOUNTED ACCESSORIES PURCHASED AND INSTALLED BY OWNER. CONTRACTOR TO VERIFY WALL BLOCKING REQUIREMENTS WITH OWNER.
- WINDOW TREATMENTS PURCHASED AND INSTALLED BY G.C.
- ADA ROOM SIGNAGE PURCHASED AND INSTALLED BY G.C..

FLOOR PLAN KEYNOTES

D PROPOSED INTERIOR PARKING STRIPING (PA-EPX-3). CONTRACTOR TO PROPOSE STRIPING LAYOUT FOR OWNER'S APPROVAL PRIOR TO PAINTING. CONTRACTOR TO ENSURE PARKING STALL SIZES CONFORM WITH LOCAL AND STATE CODES.

NORTH

FIRST FLOOR FINISH PLAN - AREA 'A' & 'B'

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

0' 8' 16'

KEY PLAN

ARCHITECTURAL FIRST FLOOR FINISH PLAN

EXCEL
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100 Camelot Drive
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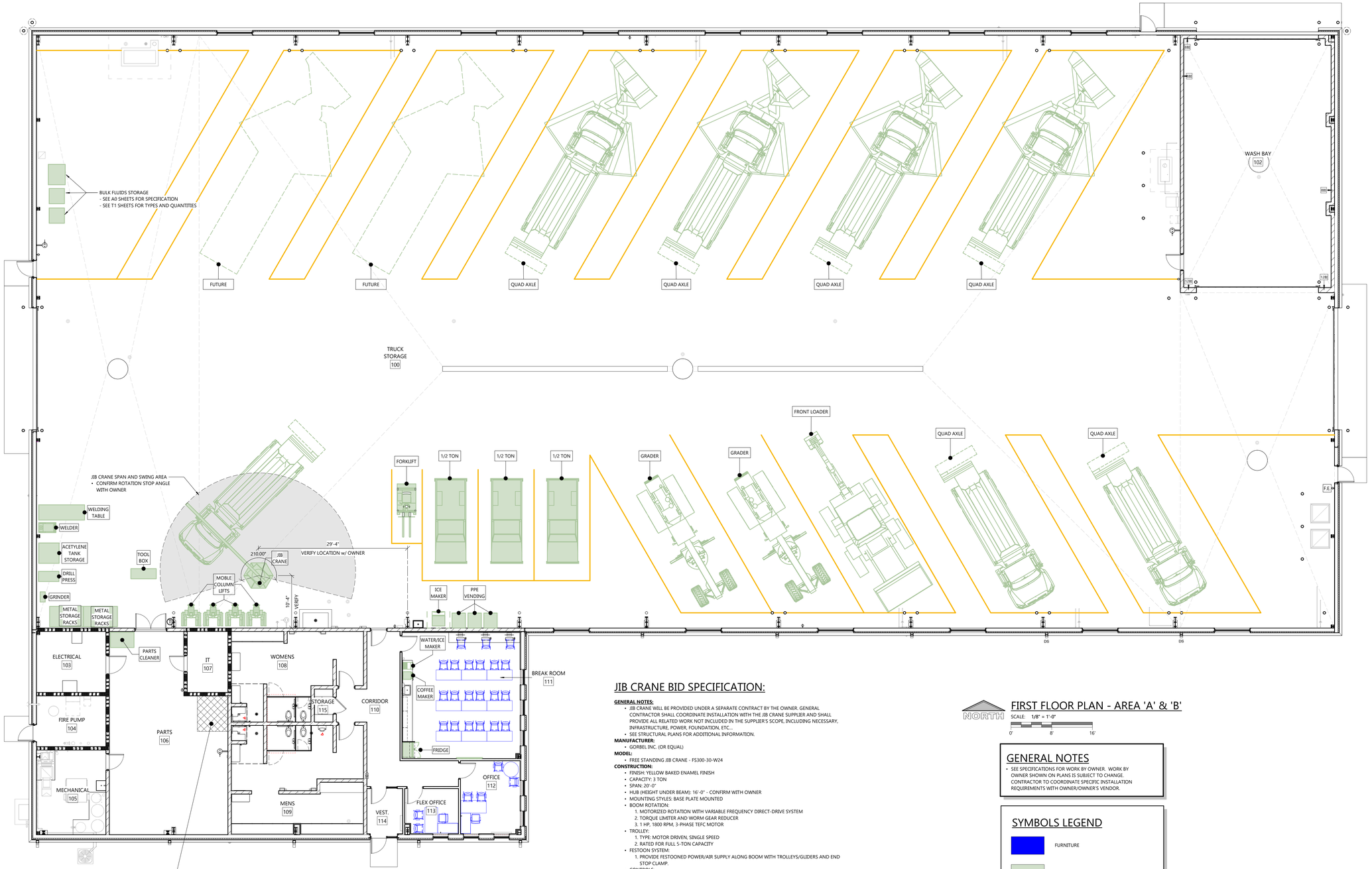


JIB CRANE BID SPECIFICATION:

GENERAL NOTES:
- JIB CRANE WILL BE PROVIDED UNDER A SEPARATE CONTRACT BY THE OWNER. GENERAL CONTRACTOR SHALL COORDINATE INSTALLATION WITH THE JIB CRANE SUPPLIER AND SHALL PROVIDE ALL RELATED WORK NOT INCLUDED IN THE SUPPLIER'S SCOPE, INCLUDING NECESSARY, INFRASTRUCTURE, POWER, FOUNDATION, ETC..
- SEE STRUCTURAL PLANS FOR ADDITIONAL INFORMATION.

MANUFACTURER:
- GORBEL INC. (OR EQUAL)

MODEL:
- FREE STANDING JIB CRANE - FS300-30-W24

CONSTRUCTION:
- FINISH: YELLOW BAKED ENAMEL FINISH
- CAPACITY: 3 TON
- SPAN: 20'-0"
- HUB (HEIGHT UNDER BEAM): 16'-0" - CONFIRM WITH OWNER
- MOUNTING STYLES: BASE PLATE MOUNTED
- BOOM ROTATION:
  1. MOTORIZED ROTATION WITH VARIABLE FREQUENCY DIRECT-DRIVE SYSTEM
  2. TORQUE LIMITER AND WORM GEAR REDUCER
  3. 1 HP, 1800 RPM, 3-PHASE TEFC MOTOR
- TROLLEY:
  1. TYPE: MOTOR DRIVEN, SINGLE SPEED
  2. RATED FOR FULL 5-TON CAPACITY
- FESTOON SYSTEM:
  1. PROVIDE FESTOONED POWER/AIR SUPPLY ALONG BOOM WITH TROLLEYS/GLIDERS AND END STOP CLAMP.
- CONTROLS:
  1. PENDANT REMOTE WITH HOIST UP/DOWN, TROLLEY FORWARD/REVERSE, EMERGENCY STOP; NEMA 12 ENCLOSURE; 460V, 3-PHASE.
  2. WIRELESS RADIO REMOTE

MISC:
- PROVIDE FREE STANDING JIB CRANE ROTATION STOPS
- COORDINATE ANCHOR BOLT ANCHORAGE REQUIREMENTS WITH FOUNDATION DESIGN

INSTALLATION AND QC:
- INSTALL PER MANUFACTURER SPECIFICATION AND DETAILS DO NOT MODIFY CRANE COMPONENTS IN ANY MANNER WITHOUT ADVANCE WRITTEN APPROVAL BY CRANE MANUFACTURER
- PERFORM FIELD QUALITY CONTROL TESTING AS RECOMMENDED BY MANUFACTURER
- CLEAN SURFACES. IF NECESSARY, TOUCH-UP PAINT DAMAGE, SCRATCHES, AND BLEMISHES WITH MANUFACTURER PROVIDED MATCHING PAINT. PROTECT CRANE FROM OTHER CONSTRUCTION OPERATIONS.

TRAINING:
- PROVIDE DEMONSTRATION AND TRAINING SESSION FOR OWNER'S REPRESENTATIVE COVERING OPERATION AND MAINTENANCE.

WARRANTY:
- 10 YEAR STANDARD MANUFACTURES WARRANTY
  1. DEFECTS IN MATERIAL AND WORKMANSHIP
  2. WEARABLE PARTS (TROLLEY AND END TRUCK WHEELS ONLY)
- 2 YEARS OR 4,000 HOURS WARRANTY FOR MOTORIZED TRACTOR PRODUCTS.

2021 IFC 3409.1 TIRE PILE DIMENSION
WHERE TIRES ARE STORED ON-TREAD, THE DIMENSION OF THE PILE IN THE DIRECTION OF THE WHEEL HOLE SHALL BE NOT MORE THAN 50 FEET (15,240mm). TIRES STORED ADJACENT TO OR ALONG ONE WALL SHALL NOT EXTEND MORE THAN 25 FEET (7620mm FROM THAT WALL. OTHER PILES SHALL BE NOT MORE THAN 50 FEET (15,240mm) IN WIDTH.

NORTH

FIRST FLOOR PLAN - AREA 'A' & 'B'

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

0' 8' 16'

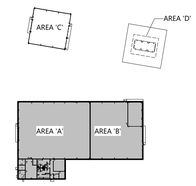
GENERAL NOTES

- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.

SYMBOLS LEGEND

FURNITURE

EQUIPMENT, APPLIANCES AND STORAGE



KEY PLAN

ARCHITECTURAL FIRST FLOOR FURNITURE/EQUIPMENT PLAN

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

A9.1

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STRUCTURAL SPECIFICATIONS

BASIC STRUCTURAL REQUIREMENTS

A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS.
B. SUBSTITUTIONS
   1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
   2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
C. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS, PROJECT CLOSEOUT DOCUMENTS:
   1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES ON ARCHITECTURAL PLANS FOR ADDITIONAL REQUIREMENTS.
   2. DESIGN DRAWINGS SHALL NOT BE USED AS SHOP DRAWINGS.
   3. THE CONTRACTOR SHALL PREPARE A SCHEDULE OF ALL ITEMS TO BE SUBMITTED FOR A/E REVIEW. SCHEDULE SHALL SHOW ITEMS TO BE SUBMITTED AND ANTICIPATED DATE OF SUBMISSION. THIS SUBMITTAL SCHEDULE SHALL BE GIVEN TO THE A/E WITHIN 20 DAYS OF AWARD OF CONTRACT.
   4. IF SHOP DRAWINGS REQUIRE AN EXPEDITED REVIEW PROCESS, CONTACT A/E PRIOR TO SUBMITTING THE SHOP DRAWINGS TO MAKE THE APPROPRIATE ARRANGEMENT.
   5. STRUCTURAL AND ARCHITECTURAL PLANS SHOW DIMENSIONS AND ELEVATIONS TO SIGNIFICANT WORKING POINTS. SHOP DRAWING DETAILERS AND SUPPLIERS ARE RESPONSIBLE FOR THE DETERMINATION OF ALL DIMENSIONS, PITCHES, ELEVATIONS, ETC., BEYOND THOSE NOTED ABOVE AS NECESSARY TO THOROUGHLY DETAIL/FABRICATE THEIR WORK. CONTACT A/E WITH ANY DISCREPANCIES FOUND.
   6. IN NO CASE SHALL CHANGES BE MADE TO WORK SHOWN OR PROCEDURE SPECIFIED ON STRUCTURAL PLANS UNLESS FIRST APPROVED IN WRITING BY A/E. REVIEW OF SHOP DRAWINGS BY A/E DOES NOT CONSTITUTE ACCEPTANCE OF A DESIGN CHANGE. PROPOSED CHANGES BY CONTRACTOR MUST BE SUBMITTED IN RFI FORMAT AND MUST BE APPROVED IN THE SAME MANNER. CONTRACTOR REQUESTING CHANGE MAY BE BILLED ON A TIME AND EXPENSE BASIS BY A/E FOR ALL REDESIGN WORK, FOR ALL NEW SKETCHES PREPARED, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO THE CHANGES.
   7. CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
      a. SOILS AND SUBGRADE:
         i. GEOTECHNICAL REPORT
         ii. COMPACTION TEST REPORTS
      b. CONCRETE:
         i. MIX DESIGNS
         ii. TEST REPORTS FOR SLUMP, AIR ENTRAINMENT AND COMPRESSIVE STRENGTH
         iii. FOUNDATION POUR SCHEDULE, INCLUDING YARDS TO BE PLACED
         iv. SLAB ON GRADE POUR SCHEDULE, INCLUDING YARDS TO BE PLACED AND JOINT LAYOUT PLAN.
         v. REINFORCING FOR FOUNDATIONS
         vi. REINFORCING FOR SLAB ON GRADE, INCLUDING SUPPLEMENTAL REINFORCING AT REENTRANT CORNERS, OBSTRUCTIONS, AND DOORS/OPENINGS
      c. MASONRY:
         i. CONCRETE MASONRY UNITS
         ii. MASONRY REINFORCING
      d. PRECAST CONCRETE (PROVIDE "PRELIMINARY" AND "FOR RECORD" SUBMITTALS):
         i. PLANK
      e. COLUMN ANCHOR BOLTS
      f. POST INSTALLED ANCHORS
      g. STEEL:
         i. STRUCTURAL STEEL
         ii. MISCELLANEOUS STEEL AT CURB MOUNTED ROOF TOP UNITS, AND H-FRAMED PENETRATIONS (SUBMIT ONLY AFTER QUANTITIES, LOCATIONS, AND DIMENSIONS HAVE BEEN COORDINATED AND VERIFIED WITH CONTRACTOR REQUIRING PENETRATIONS)
         iii. MISCELLANEOUS STEEL FABRICATIONS
      h. PRE-ENGINEERED METAL BUILDING:
         i. PRELIMINARY REACTIONS AND BASE CONDITIONS
         ii. FINAL BUILDING REACTIONS AND DRAWINGS
      i. FUEL ISLAND CANOPY AND FOUNDATIONS
      j. FIRE PUMP PIT
      k. JIB CRANE
         i. REACTIONS AND BASE CONDITIONS
D. DELEGATED DESIGN SUBMITTALS:
   1. CONTRACTOR SHALL FURNISH COMPLETE AND DETAILED SHOP DRAWINGS AND SUBMITTALS FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD.
   2. COMPONENTS AND SYSTEMS DESIGNED AS A DELEGATED DESIGN SUBMITTAL MUST INCLUDE A CALCULATION PACKAGE STAMPED AND SIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE THE PROJECT WILL BE CONSTRUCTED PRIOR TO SUBMITTAL FOR APPROVAL TO THE ENGINEER OF RECORD.
   3. THE FOLLOWING ITEMS ARE DESIGNATED AS DELEGATED DESIGN SUBMITTALS. DELEGATED DESIGN SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE A/E FOR REVIEW. IN NO CASE SHALL ANY OF THE DELEGATED DESIGN SUBMITTAL ITEMS BE INSTALLED PRIOR TO REVIEW BY A/E AND APPLICABLE BUILDING OFFICIALS.
      a. PRECAST CONCRETE (PROVIDE "PRELIMINARY" AND "FOR RECORD" SUBMITTALS):
         i. PLANK
         ii. EXCEL ENGINEERING OFFERS PRECAST CONCRETE ENGINEERING AND DETAILING SERVICES INCLUDING ERECTION DRAWINGS, SHOP DRAWINGS, AND MATERIAL DRAWINGS. EXCEL WILL MEET PRECAST FABRICATOR'S DESIGN STANDARDS FOR ENGINEERING AND DRAWING PREPARATION. PLEASE CONTACT MATTHEW PETERSON AT matthew.peterson@excelengineer.com 920-322-1615 TO DISCUSS PROJECT AND OBTAIN A QUOTE TO INCLUDE IN THE BID FOR PREPARATION OF THESE DRAWINGS.
      b. PRE-ENGINEERED METAL BUILDING:
         i. PRELIMINARY REACTIONS AND BASE CONDITIONS
         ii. FINAL BUILDING REACTIONS AND DRAWINGS
      b. FUEL ISLAND CANOPY AND FOUNDATIONS
      c. FIRE PUMP PIT
      d. JIB CRANE
         i. REACTIONS AND BASE CONDITIONS
E. FINISHING AND PAINTING
   1. SEE DIVISION 09 91 00 FINISH AND PAINTING FOR ADDITIONAL REQUIREMENTS.
F. GENERAL STRUCTURAL NOTES:
   1. IN THE FOLLOWING NOTES, THE TERM "CONTRACTOR" REFERS TO ALL CONTRACTORS, SUBCONTRACTORS, AND SUPPLIERS ENGAGED IN THE EXECUTION OF WORK SHOWN ON THESE PLANS. THE TERM "A/E" REFERS TO EXCEL ENGINEERING, INC.
   2. CONTRACTOR SHALL CROSS CHECK WITH ARCHITECTURAL, HVAC AND PLUMBING PLANS FOR ADDITIONAL DETAILS, DIMENSIONS, ELEVATIONS, OPENINGS, INSERTS, BRICK LEDGES, ETC. NOTIFY A/E OF ANY CONFLICTS BEFORE BEGINNING WORK.
   3. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE IN ORDER TO ENSURE THE SAFETY OF THE BUILDING, WORKMEN, AND OCCUPANTS DURING CONSTRUCTION (MEANS & METHODS OF CONSTRUCTION). THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF SHORING, UNDERPINNING, AND TEMPORARY BRACING, AS NECESSARY. A/E MAY BILL CONTRACTOR ON A TIME AND EXPENSE BASIS FOR ADDITIONAL WORK, FOR ALL NEW SKETCHES, AND FOR ALL ADDITIONAL REVIEW TIME RELATED TO MEANS & METHODS.
   4. WHERE DETAILS ARE CALLED FOR IN ONE AREA OF THE BUILDING THEY SHALL BE DUPLICATED AT SIMILAR CONDITIONS, UNLESS SHOWN OTHERWISE.
   5. IN THE EVENT OF ANY CONFLICT BETWEEN PLANS, DETAILS, STRUCTURAL NOTES, STRUCTURAL AND ARCHITECTURAL DRAWINGS, AND SPECIFICATIONS, CONTRACTOR SHALL BRING THE CONFLICT TO THE A/E'S ATTENTION. CONTRACTOR SHALL BID THE MOST EXPENSIVE INSTALLATION CALLED OUT.
   6. THESE STRUCTURAL PLANS DEPICT A STRUCTURAL FRAMING SYSTEM AND THE MAJOR COMPONENTS OF THAT SYSTEM. MINOR ITEMS SUCH AS POURSTOPS, DECK SUPPORT ANGLES AT COLUMNS, FRAMES AT FLOOR AND ROOF DECK OPENINGS, ETC., SHALL BE SUPPLIED BY THE CONTRACTOR AS NEEDED TO PROVIDE A COMPLETE SYSTEM.
   7. BOTTOM OF FOOTING ELEVATION SHALL BE A MINIMUM OF 4'-0" BELOW ADJACENT EXTERIOR GRADE. NOTIFY A/E OF ANY FOOTING ELEVATION CHANGE REQUIRED IN ORDER TO PROVIDE 4'-0" FROST PROTECTION BEFORE PLACING FOOTINGS.
   8. FOUNDATION SHORING AND/OR UNDERPINNING SHALL BE DESIGNED BY THE CONTRACTOR TO LIMIT HORIZONTAL AND VERTICAL MOVEMENT OF EXISTING CONSTRUCTION TO 3/16".
G. POST-INSTALLED ANCHORS:
   1. CONTRACTOR SHALL PROVIDE EXCEL ENGINEERING WITH SPECIFICATIONS AND DESIGN INFORMATION FOR ALL ALTERNATE ANCHORS. CONTRACTOR SHALL MAKE ARRANGEMENTS TO COMPENSATE EXCEL ENGINEERING FOR THE EXTRA WORK INVOLVED.
   2. CLEAN SURFACES THOROUGHLY PRIOR TO INSTALLATION. PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULTS FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.
   3. DO NOT BEGIN INSTALLATION UNTIL SUBSTRATES HAVE BEEN PROPERLY PREPARED. IF SUBSTRATE PREPARATION IS THE RESPONSIBILITY OF ANOTHER INSTALLER, NOTIFY CONTRACTOR OF UNSATISFACTORY PREPARATION BEFORE PROCEEDING.
   4. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS AND AS REQUIRED BY APPLICABLE CODE.
   5. APPLY ANCHOR ITEMS NEATLY, WITH ANCHORS MOUNTED PLUMB AND LEVEL UNLESS OTHERWISE INDICATED.
   6. EXCEL ENGINEERING RESERVES THE RIGHT TO REQUIRE THE ANCHOR MANUFACTURER'S REPRESENTATIVE TO DEMONSTRATE PROPER INSTALLATION PROCEDURES FOR POST-INSTALLED ANCHORS AND TO OBSERVE CONTRACTOR'S INSTALLATION PROCEDURES, AT NO EXTRA COST TO OWNER.
   7. EXCEL ENGINEERING RESERVES THE RIGHT TO REQUIRE PULLOUT OR SHEAR TESTS TO DETERMINE ADEQUACY OF ANCHORS, AT NO EXTRA COST TO OWNER.

DIVISION 03 CONCRETE

03 30 00 CAST-IN-PLACE CONCRETE

A. DESIGN AND CONSTRUCTION OF ALL CAST-IN-PLACE CONCRETE WORK SHALL CONFORM TO ACI 318 BUILDING CODE AND CRSI MANUAL OF STANDARD PRACTICE.
B. PREPARATION OF THE SUBGRADE AND BASE COURSE/DRAINAGE LAYER FOR CONCRETE SLAB ON GRADE CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF GEOTECHNICAL REPORT OR CONSTRUCTION DOCUMENTS.
C. DESIGN MIXES SHALL BE IN ACCORDANCE WITH ASTM C94.
   1. SEE CONCRETE MIX DESIGN SCHEDULE ON PLANS.
   2. SEE SPECIFICATIONS ON CIVIL PLANS FOR DESIGN MIXES ASSOCIATED WITH EXTERIOR CONCRETE FLATWORK SHOWN ON THE CIVIL PLANS.
E. PLACE SLABS ON GRADE WITH POUR JOINT, CONSTRUCTION JOINT, OR SAW JOINT AS INDICATED ON THE PLANS. SAW CUT TO BE DONE WITH EARLY ENTRY SAW AND WITHIN 1 TO 4 HOURS AFTER CONCRETE IS PLACED.
F. EXTERIOR SLABS ON GRADE SHALL BE SEPARATED FROM BUILDINGS WITH CONTINUOUS 1/2" FIBER EXPANSION JOINT AND/OR 1/4" FIBER EXPANSION JOINT AT DECORATIVE MASONRY UNITS. INTERIOR SLABS SHALL BE SEPARATED FROM FOUNDATION WALLS AND PIERS WITH FORM RELEASE AGENT, 15 LB. FELT OR AS DETAILED ON PLANS.
G. MAINTAIN FLOOR LEVEL AT WALLS AND PITCH SURFACES UNIFORMLY TO DRAINS UNLESS INDICATED OTHERWISE ON PLANS.
H. THE SLAB-ON-GRADE FLOOR FLATNESS/LEVELNESS SHALL MEET TO THE FOLLOWING CRITERIA:
   1. TOP OF FLOOR ELEVATION SHALL BE WITHIN 3/4" OF DESIGN ELEVATION IN ACCORDANCE TO ACI 117 TOLERANCES.
   2. THE SPECIFIED OVERALL VALUE FOR THE FLOOR FLATNESS/LEVELNESS PER ACI 117 AND ASTM E1155 IS AS FOLLOWS
      a. NONCRITICAL MECHANICAL ROOMS, NONPUBLIC AREAS, AND PARKING - FF20 / FL15.
      b. CARPETED AREAS IN COMMERCIAL OFFICE, INDUSTRIAL BUILDING - FF25 / FL20.
      c. THIN-SET FLOORING, WAREHOUSE, POLISHED CONCRETE - FF35 / FL25.
      d. CRITICAL AREAS AS INDICATED ON PLAN - >FF50 / >FL50.
   3. THE MINIMUM LOCAL VALUE FOR THE FLOOR FLATNESS/LEVELNESS SHALL NOT BE LESS THAN 67% OF THE SPECIFIED OVERALL VALUE.
   4. CONTRACTOR SHALL REPLACE AREAS THAT DO NOT MEET THESE CRITERIA.
I. CONCRETE CURING.
   1. ALL CONCRETE IS TO BE CURED A MINIMUM OF 7 DAYS BY ONE OF THE FOLLOWING METHODS:
      a. STANDARD — UNLESS NOTED OTHERWISE IN ARCHITECTURAL PLANS
         i. DISSIPATING CURING COMPOUND USING EUCLID KUREZ DR VOX.
         ii. WET CURE ABSORPTIVE COVER USING ARMORLON TRANSGUARD 4000/2000 PER MANUFACTURER'S SPECIFICATION.
         iii. WET CURE PONDING WITH WATER OR CONTINUOUS SPRINKLING/FOGGING OF WATER/WATER-FOG SPRAY.
      b. CURE AND SEAL— SEE ARCHITECTURAL ROOM FINISH SCHEDULE FOR LOCATIONS
         i. WATER BASED (VERY LOW ODOR, VOC CONTENT OF 88 g/l OR LESS) — PROVIDE EUCLID CHEMICAL WATER BASED CURE AND & SEAL, SUPER DIAMOND CLEAR VOX.
J. CONCRETE FLOOR FINISHING: DO NOT PLACE ANY MATERIALS ON THE CONCRETE SURFACE THAT MAY CAUSE STAINING, ETCHING OR SCRATCHING
   1. TROWEL FINISH: APPLY TO ALL INTERIOR MONOLITHIC SLAB SURFACES THAT ARE EXPOSED TO VIEW AND SLAB SURFACES TO BE COVERED WITH RESILIENT FLOORING, CARPET, PAINT, OR OTHER THIN FILM-FINISH COATING SYSTEM.
   2. BROOM FINISH: APPLY TO ALL EXTERIOR STOOPS, LANDINGS, STEPS, AND RAMPS.
   3. POLISHED CONCRETE: HARD-STEEL TROWELED (3 PASSES) CONCRETE, NO BURNISHING MARKS (FINISH TO ACI 302.1R, CLASS 5 FLOOR). SEE ARCHITECTURAL ROOM FINISH SCHEDULE FOR LOCATIONS.
K. CONCRETE WALLS SHALL HAVE JOINTS AS DETAILED ON PLANS.
L. CONCRETE WALL FINISHING.
   1. ALL EXPOSED FOUNDATION WALLS TO HAVE TIES AND FINS REMOVED AND RECEIVE THE FOLLOWING FINISHES PER ACI 301-20, 5.3.3.3 AND 5.3.3.4.
      a. AS-CAST FINISHES - USE FORM-FACING MATERIALS MEETING THE REQUIREMENTS OF 4.2.1.1. UNLESS OTHERWISE SPECIFIED, PRODUCE AS-CAST FORMED FINISHES TO COMPLY WITH THE FOLLOWING:
         i. SURFACE FINISH-3.0 (SF-3.0);
            (A). PATCH VOIDS LARGER THAN 3/4 IN. WIDE OR 1/2 IN. DEEP
            (B). REMOVE PROJECTIONS LARGER THAN 1/8 IN.
            (C). PATCH TIE HOLES
            (D). SURFACE TOLERANCE CLASS A AS SPECIFIED IN ACI 117
      b. RUBBED FINISHES — REMOVE FORMS AS EARLY AS PERMITTED BY 2.3.2 AND PERFORM NECESSARY REPAIRS AND PATCHING:
         i. SMOOTH-RUBBED FINISH - PRODUCE SMOOTH-RUBBED FINISH NO LATER THAN THE DAY FOLLOWING FORMWORK REMOVAL. WET THE SURFACE AND RUB IT WITH AN ABRASIVE SUCH AS CARBORUNDUM BRICK UNTIL UNIFORM COLOR AND TEXTURE ARE PRODUCED. IF INSUFFICIENT CEMENT PASTE CAN BE DRAWN FROM THE CONCRETE ITSELF AT THE RUBBING PROCESS, USE A GROUT MADE WITH CEMENTITIOUS MATERIALS FR OM THE SAME SOURCES AS USED FOR IN-PLACE CONCRETE. APPLY PER LOCATIONS INDICATED ON PLANS
M. BACKFILLING OF FOUNDATIONS:
   1. BACKFILLING OF OPPOSITE SIDES OF UNBRACED FOUNDATION WALLS SHALL MAINTAIN A MAXIMUM 2 FOOT DIFFERENTIAL IN ELEVATION PRIOR TO ACHIEVING FINAL SPECIFIED GRADE.
   2. TEMPORARY CONSTRUCTION BRACING DURING BACKFILLING.
      a. FOUNDATION WALLS WITH PERMANENT TOP LATERAL SUPPORTS SHALL BE TEMPORARILY BRACED UNTIL TOP SUPPORT SYSTEMS ARE INSTALLED. TEMPORARY CONSTRUCTION BRACING SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR.
      b. THE BOTTOM OF THE BASEMENT WALLS SHALL BE TEMPORARILY BRACED UNTIL THE BASEMENT FLOOR SLAB IS IN PLACE. TEMPORARY CONSTRUCTION BRACING SHALL BE DESIGNED AND INSTALLED BY THE CONTRACTOR.
N. ALL REINFORCING BARS SHALL BE ASTM A615 GRADE 60. THICKNESS OF CONCRETE COVER OVER REINFORCEMENT SHALL BE NOT LESS THAN 3" WHERE CONCRETE IS DEPOSITED AGAINST THE GROUND WITHOUT THE USE OF FORMS AND NOT LESS THAN 1 1/2" FOR UP TO #5, 2" FOR #6 TO #10 IN ALL OTHER LOCATIONS. ALL REINFORCING SHALL BE LAPPED 48 DIAMETERS FOR UP TO #6 BARS, 62 DIAMETERS FOR #7 TO #9 BARS, 68 DIAMETERS FOR #10 BARS OR AS NOTED ON THE DRAWINGS AND EXTENDED AROUND CORNERS WITH CORNER BARS. PLACING AND DETAILING OF STEEL REINFORCING AND REINFORCING SUPPORTS SHALL BE IN ACCORDANCE WITH CRSI AND ACI MANUAL AND STANDARD PRACTICES. THE REINFORCEMENT SHALL NOT BE PAINTED AND MUST BE FREE OF GREASE/OIL, DIRT OR DEEP RUST WHEN PLACED IN THE WORK. ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A1064. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB, UNLESS INDICATED OTHERWISE.
O. WATERSTOPS: (FIRE PROTECTION WELL COORDINATE WITH FP CONTRACTOR)
   1. CONTINUOUS FLEXIBLE WATERSTOPS: PROVIDED FOR EMBEDDING IN CONCRETE TO PREVENT PASSAGE OF FLUIDS THROUGH JOINTS, WITH FACTORY FABRICATED CORNERS, INTERSECTIONS, AND DIRECTIONAL CHANGES.
      a. STANDARD: SIKA GREENSTREAK PVC NO. 705 (6" RIBBED WITH CENTER BULB).
      b. CHEMICAL RESISTANT: SIKA WESTEC ENVIROSTOP TPE-R NO. 619 (6" RIBBED WITH CENTER BULB).
   2. CONTINUOUS RETROFIT WATERSTOPS: PROVIDED FOR EMBEDDING IN CONCRETE TO PREVENT PASSAGE OF FLUIDS THROUGH JOINTS, WITH FACTORY FABRICATED CORNERS, INTERSECTIONS, AND DIRECTIONAL CHANGES.
      a. STANDARD: SIKA GREENSTREAK PVC NO. 655 (RETROFIT SYSTEM WITH HARDWARE).
      b. CHEMICAL RESISTANT: SIKA WESTEC ENVIROSTOP TPE-R NO. 697 (RETROFIT SYSTEM).
   3. CONTINUOUS SELF-EXPANDING WATERSTOPS: MANUFACTURED RECTANGULAR, BUTYL RUBBER WITH SODIUM BENTONITE OR OTHER HYDROPHILIC POLYMERS, FOR ADHESIVE BONDING TO CONCRETE.
      a. STANDARD: SIKA SWELLSTOP 3/4" x 1".
      b. CHEMICAL RESISTANT: NOT PERMITTED.
P. COORDINATE INTERIOR CONCRETE HOUSEKEEPING PAD SIZES WITH RESPECTIVE CONTRACTORS. THE TOP OF PAD SHALL BE LEVEL UNLESS SPECIFIED OTHERWISE ON PLANS. THE THICKNESS INDICATED ON PLANS SHALL BE AT HIGHEST FLOOR ELEVATION FOR PADS ON TOP OF SLOPED FLOORS. PADS INSTALLED ON PRECAST DECK WITH TOPPING, TO BE PLACED AFTER PRECAST TOPPING HAS BEEN POURED.
Q. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. IN HOT, DRY, AND WINDY WEATHER, APPLY AN EVAPORATION-CONTROL COMPOUND ACCORDING TO MANUFACTURER'S INSTRUCTIONS AFTER SCREEDING AND BULL FLOATING, BUT BEFORE POWER FLOATING AND TROWELING.
R. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT. TESTS WILL BE PERFORMED ACCORDING TO ACI 301-20. CAST AND LABORATORY CURE ONE SET OF FOUR STANDARD CYLINDERS FOR EACH COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIX UP TO 25 CU. YD., PLUS ONE SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF. PERFORM COMPRESSIVE-STRENGTH TESTS ACCORDING TO ASTM C 39. TEST TWO SPECIMENS AT 7 DAYS AND TWO SPECIMENS AT 28 DAYS. PERFORM SLUMP TESTING ACCORDING TO ASTM C 143. PROVIDE ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
S. TEST RESULTS WILL BE REPORTED IN WRITING TO ARCHITECT, READY-MIX PRODUCER, AND CONTRACTOR WITHIN 24 HOURS AFTER TESTS. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF CONCRETE BATCH IN STRUCTURE, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7-DAY TESTS AND 28-DAY TESTS.

03 41 00 PRECAST CONCRETE

A. DESIGN AND CONSTRUCTION OF ALL PRECAST WORK SHALL CONFORM TO PCI AND ACI STANDARDS.
B. DESIGN LOADS SHALL CONFORM TO DESIGN LOADS INDICATED ON PLANS AND APPLICABLE CODES. PROVIDE PRECAST COMPONENTS WITH FIRE RATINGS AS INDICATED ON PLANS.
C. PRECAST SUPPLIER SHALL INCLUDE ERECTION, GROUTING, SAWING OF OPENINGS AT NEW AND EXISTING PRECAST. PRECAST SUPPLIER SHALL INCLUDE SEALING OF ALL PRECAST TO PRECAST JOINTS, AND CAULKING OF ALL PRECAST TO OTHER MATERIAL JOINTS AT ALL EXPOSED AREAS. SEALANT SHALL BE AS SPECIFIED IN SECTION 07 92 00.
D. DRAWINGS:
   1. EXCEL ENGINEERING OFFERS PRECAST CONCRETE ENGINEERING AND DETAILING SERVICES INCLUDING ERECTION DRAWINGS, SHOP DRAWINGS, AND MATERIAL DRAWINGS. EXCEL WILL MEET PRECAST FABRICATOR'S DESIGN STANDARDS FOR ENGINEERING AND DRAWING PREPARATION. PLEASE CONTACT MATTHEW PETERSON AT matthew.peterson@excelengineer.com 920-322-1615 TO DISCUSS PROJECT AND OBTAIN A QUOTE TO INCLUDE IN THE BID FOR PREPARATION OF THESE DRAWINGS.
   2. SHOP DRAWINGS:
      a. DRAWINGS SHALL BE COMPLETE AND INCLUDE PLANS, ELEVATIONS, CROSS SECTIONS AND DETAILS OF ALL BUILDING COMPONENTS AND ACCESSORIES TO BE FURNISHED BY THE PRECAST SUPPLIER.
      b. APPROVAL OF SHOP AND ERECTION DRAWINGS IS AN APPROVAL OF GENERAL DESIGN ONLY AND DOES NOT RELIEVE THE PRECAST SUPPLIER FROM THE NECESSITY OF MAKING, WITHOUT COST, CHANGES OR CORRECTIONS DUE TO ERRORS IN FABRICATION, OR RESULTING FROM ERRORS IN SHOP AND/OR ERECTION DRAWING DIMENSIONS.
      c. VERIFY ALL DIMENSIONS AND COORDINATE ALL OPENINGS WITH OTHER WORK.
      d. ONE PRECAST SUPPLIER WILL BE RESPONSIBLE FOR COORDINATING ENGINEERING, DRAFTING, AND SHOP DRAWING SUBMITTALS IN THE EVENT THAT PRECAST COMPONENTS WILL BE PROVIDED BY MORE THAN ONE SUPPLIER.
   3. APPROVAL DRAWINGS FOR THE AUTHORITY HAVING JURISDICTION (AHJ):
      a. THE PRECAST SUPPLIER SHALL FURNISH DRAWINGS AND COMPLETE DESIGN CALCULATIONS OF ALL STRUCTURAL COMPONENTS THAT ARE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER ACCEPTABLE TO THE AHJ TO EXCEL ENGINEERING, INC. FOR REVIEW AND APPROVAL.
      b. SUBMITTAL REQUIREMENTS SHALL BE AS SPECIFIED IN SECTION 01 33 23.
   4. AS-BUILT DRAWINGS:
      a. AT THE CONCLUSION OF THE PROJECT, THE PRECAST SUPPLIER SHALL SUBMIT ONE (1) COMPLETE SET OF UP-TO-DATE SHOP DRAWINGS INCLUDING ALL PREVIOUSLY APPROVED FIELD CHANGES IN THE DRAWINGS TO THE CONTRACTOR. THE CONTRACTOR SHALL INCLUDE THIS SET OF PLANS WITH THE PROJECT AS-BUILT PLANS.
      b. AT THE CONCLUSION OF THE PROJECT, THE PRECAST SUPPLIER SHALL ELECTRONICALLY SUBMIT A COMPLETE SET OF PIECE PRODUCTION TICKETS AND FINAL DESIGN CALCULATIONS INCLUDING ANY DISCREPENCIES/REMEDIALS FROM THE NON-CONFORMANCE REPORTS FOR ALL PRECAST COMPONENTS TO EXCEL ENGINEERING FOR RECORD.
E. FINISHES
   1. SEE ARCHITECTURAL PLANS FOR FINISHES.
   2. PRECAST PATCHING AND REPAIR MUST BE COMPLETED PRIOR TO PRECAST SURFACES BEING TURNED OVER TO FIELD APPLIED FINISH CONTRACTOR. GC TO COORDINATE TRANSITION MEETING AND ACCEPTANCE OF PRECAST SURFACE FINISH BETWEEN CONTRACTORS.

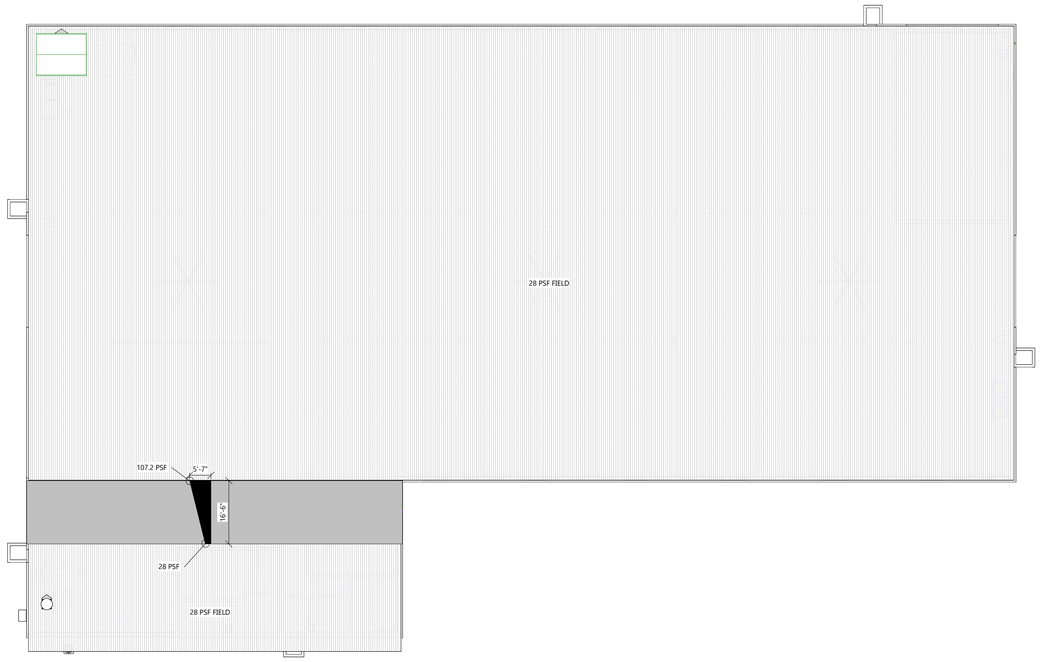
03 60 00 GROUT

A. NONMETALLIC, SHRINKAGE-RESISTANT GROUT SHALL BE ASTM C1107/C1107M, FACTORY-PACKAGED, NONMETALLIC AGGREGATE GROUT, NONCORROSIVE AND NONSTAINING, MIXED WITH WATER TO A CONSISTENCY SUITABLE FOR APPLICATION.
B. GROUT TO BE USED UNDER BEARING PLATES AND COLUMN BASE PLATES. PACK GROUT SOLIDLY BETWEEN BEARING SURFACES AND PLATES SO NO VOIDS REMAIN. NEATLY FINISH EXPOSED SURFACES, PROTECT GROUT AND ALLOW TO CURE. COMPLY WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS FOR GROUTING.
C. MINIMUM COMPRESSIVE STRENGTH: 8000 PSI AT 28 DAYS.
D. FOR GROUT USED TO FILL MASONRY CORES SEE DIVISION 04 MASONRY.

DIVISION 04 MASONRY

04 20 00 UNIT MASONRY

A. MASONRY CONSTRUCTION AND MATERIALS SHALL COMPLY WITH LOCAL AND STATE CODE REQUIREMENTS, SPECIFICATIONS OF NCMA, MASONRY STANDARDS JOINT COMMITTEE'S SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530.1/ASCE 6/TMS 602) AND THE FOLLOWING.
   1. UNITS SHALL BE FLUSH FACED AND/OR ARCHITECTURAL FACED AS SHOWN ON THE DRAWINGS.
   2. UNIT DIMENSIONS SHALL BE EQUAL TO STANDARD UNIT CMU AS MANUFACTURED BY NORTHFIELD BLOCK COMPANY, OR COUNTY MATERIALS CORPORATION. CHIPPED, CRACKED AND BROKEN UNITS SHALL NOT BE USED.
   3. UNIT PROPERTIES SHALL MEET THE NORMAL WEIGHT-ASTM C90 SPECIFICATION. EXCEPTION: MEDIUM WEIGHT OR LIGHT WEIGHT MAY BE USED AT 2-HOUR RATED WALLS. SEE ARCHITECTURAL PLANS FOR 2-HOUR RATED WALL LOCATIONS.
      a. UNITS MUST HAVE A MINIMUM UNIT COMPRESSIVE STRENGTH OF 2,600 PSI WITH MINIMUM CORESPONDING DESIGN VALUES:
      b. DESIGN MASONRY COMPRESSIVE STRENGTH (f'm): 2,250 PSI
   4. MORTAR SHALL BE TYPE M OR S PORTLAND-CEMENT LIME MIX WITH INTEGRAL WATER REPELLENT ADMIXTURE (ADMIXTURE TO BE FROM THE SAME MANUFACTURER AS THE MASONRY UNITS) PER MANUFACTURERS RECOMMENDATIONS ON EXTERIOR MASONRY. USE TYPE M BELOW GRADE.
   5. UNITS SHALL BE LAID IN RUNNING BOND. SINGLE WYTHE OR BACKUP WYTHE WALLS SHALL HAVE STANDARD WEIGHT GALVANIZED "LOX ALL" OR EQUAL LADDER TYPE REINFORCING AT 16" ON CENTER. PROVIDE CONTINUITY AT WALL INTERSECTIONS BY USING PREFABRICATED T-SHAPED LADDER TYPE REINFORCING. PROVIDE CONTINUITY AT ALL CORNERS BY USING PREFABRICATED L-SHAPED LADDER TYPE REINFORCING. LAP ALL REINFORCEMENT 6". VERTICAL AND HORIZONTAL REINFORCING BARS SHALL BE ASTM A615 GRADE 60.
   6. EXTERIOR MASONRY SHALL BE MADE WITH INTEGRAL WATER REPELLENT UNITS (ADMIXTURE TO BE FROM SAME MANUFACTURER AS THE MORTAR).
   7. PROVIDE WRITTEN PLANT CERTIFICATION TO EXCEL ENGINEERING PRIOR TO START OF CONSTRUCTION THAT INTEGRAL WATER REPELLANT ADMIXTURE HAS BEEN INCLUDED IN THE MASONRY AND MORTAR PRODUCTS USED FOR THIS PROJECT. CERTIFICATION TO SPECIFICALLY NAME THIS PROJECT.
   8. UNITS SHALL HAVE CONCAVE TOOL JOINTS FOR WEATHER TIGHTNESS. JOINTS SHALL BE CLEAN, STRAIGHT, PLUMB, LEVEL AND UNIFORM.
   9. ALL MASONRY WORK SHALL BE PERFORMED BY SKILLED WORKMEN IN A COMPETENT MANNER AND SHALL BE PROPERLY INSPECTED.
B. POUR BOND BEAMS FULL WITH 2,500 PSI, GROUT PER ASTM C476 AND REINFORCE WITH MINIMUM 1 #4 DEFORMED REINFORCING BAR PER 4" THICKNESS OR AS DETAILED ON THE DRAWINGS. LAP LENGTHS OF HORIZONTAL BARS TO BE 48 BAR DIAMETERS. STRUCTURAL BOND BEAM LINTELS SHALL HAVE NO LAPPED SPLICES.
C. WHERE PRECAST OR POURED IN PLACE REINFORCED MASONRY LINTELS ARE PROVIDED, MAINTAIN MINIMUM 8" SOLID BEARING ON EACH SIDE OF OPENING BY FILLING CORES WITH GROUT (3) COURSES BELOW BEARING OR AS INDICATED ON PLANS.
D. WHERE DRAWINGS CALL FOR CORE OR CORES OF BLOCK TO BE REINFORCED VERTICALLY, TAKE CARE THAT SAID CORE(S) ARE KEPT CLEAR AND FREE OF MORT



NORTH

SNOW DRIFT PLAN - MAIN BUILDING

SCALE: 1/16" = 1'-0"

0' 16' 32'

STRUCTURAL DESIGN CRITERIA

GOVERNING CODES:

2025 WISCONSIN COMMERCIAL BUILDING CODE (USING THE 2021 INTERNATIONAL BUILDING CODE WITH AMENDMENTS)
ALL LOADS SHOWN ON PLANS ARE UNFACTORED
LOAD COMBINATION UTILIZED ARE FROM ASCE 7-16

ROOF SNOW LOAD (PER SECTION 1608 AND ASCE 7-16 SECTION 7)

GROUND SNOW LOAD (Pg) (PER FIGURE 1608.2)			40 PSF
ROOF SNOW LOAD (PER SECTION 1608 AND ASCE 7-16 SECTION 7)	MAIN BUILDING	SNOW IMPORTANCE FACTOR (Is)	1.0 (RISK CATEGORY II)
		THERMAL FACTOR (Ct)	1.0
		SNOW EXPOSURE FACTOR (Ce)	1.0
		FLAT ROOF SNOW LOAD (Pf)	28 PSF
		SLOPED ROOF SNOW LOAD (Ps)	28 PSF
	COLD STORAGE	SNOW IMPORTANCE FACTOR (Is)	1.0 (RISK CATEGORY II)
		THERMAL FACTOR (Ct)	1.2
		SNOW EXPOSURE FACTOR (Ce)	1.0
		FLAT ROOF SNOW LOAD (Pf)	33.6 PSF
		SLOPED ROOF SNOW LOAD (Ps)	33.6 PSF
UNBALANCED SNOW LOADING PER ASCE 7-16 (SECTION 7.6)			
SNOW DRIFT PER ASCE 7-16, (SECTIONS 7.7 AND 7.8)			
SLIDING SNOW LOADING PER ASCE 7-16, (SECTION 7.9)			

ROOF RAIN LOAD

DESIGN RAINFALL INTENSITY FOR 100-YEAR 15-MINUTE DURATION EVENT (I) (PER SECTION 1611 & ASCE 7-16 SECTION 8)	6.01 IN/HR

ROOF LIVE LOAD

MINIMUM ROOF LIVE LOAD PER SECTION 1607.14	20 PSF

ROOF DEAD LOADS AND DEFLECTION REQUIREMENTS

PRE-ENGINEERED METAL BUILDING (PEMB)	DEAD LOAD	PER PEMB MANUFACTURER
	COLLATERAL - PRIMARY	5 PSF
	COLLATERAL - SECONDARY	3 PSF
	MAXIMUM DEAD LOAD FOR RESISTING WIND UPLIFT	PER PEMB MANUFACTURER
	ROOF DEFLECTION REQUIREMENTS	L/240 LL L/180 TL

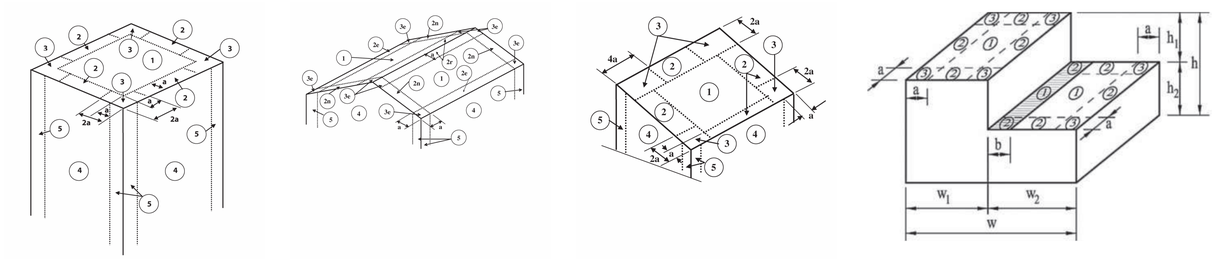
FLOORS AND MEZZANINES			*UNIFORM* **(See Note 1 for LL > 50 PSF)**	*CONCENTRATED*
PRECAST CONCRETE PLANK	LIVE LOAD	TYPICAL (UNLESS NOTED OTHERWISE)	20 PSF	-
	MISCELANEOUS DEAD LOAD		5 PSF (PLUS PRECAST SELF-WT.)	
	COLLATERAL		3 PSF	
	DEFLECTION REQUIREMENTS (MIN.)		L/240 LL, L/180 TL	
SLAB ON GRADE	LIVE LOAD	OFFICE - LIVE LOAD + 20 PSF PARTITION	70 PSF	2,000 LBS
		GARAGE	AASHTO HS20	

LATERAL

WIND LOADS AND DESIGN DATA	DESIGN PARAMETERS:				
	PER ASCE 7-16	BASIC WIND SPEED = 106 MPH (RISK CATEGORY II)			
		WIND EXPOSURE = "C"			
		ANALYSIS PROCEDURE: DIRECTIONAL PROCEDURE PER ASCE 7-16 CHAPTER 27			
		INTERNAL PRESSURE COEFFICIENT = + OR - 0.18			
	MINIMUM WIND LOADS PER ASCE 7-16:				
		MWFRS: 16.0 PSF ON HORIZONTAL AND VERTICAL PROJECTION			
		COMPONENT AND CLADDING: + OR - 16.0 PSF NORMAL TO SURFACE			
	COMPONENT AND CLADDING PRESSURES/SUCTIONS FOR EFFECTIVE AREAS <= 10 S.F. AS FOLLOWS:				
		MAIN BUILDING	EDGE STRIP: ROOF (a) = 13.0 FT, (0.2h) = 6.6 FT, (0.6h) = 19.6 FT; WALL (a) = 13.0 FT		
			ZONE:	(+) PRESSURE	(-) SUCTION
			1' (ROOF)	16.0 PSF	30.5 PSF
			2' (ROOF)	16.0 PSF	42.4 PSF
			2 (ROOF)	16.0 PSF	35.2 PSF
			3' (ROOF)	16.0 PSF	66.2 PSF
			3 (ROOF)	16.0 PSF	47.1 PSF
			4 (WALL)	25.7 PSF	27.8 PSF
			5 (WALL)	25.7 PSF	34.3 PSF
		COLD STORAGE	EDGE STRIP: ROOF (a) = 7.5 FT, (0.2h) = 4.2 FT, (0.6h) = 12.6 FT; WALL (a) = 7.5 FT		
			ZONE:	(+) PRESSURE	(-) SUCTION
			1' (ROOF)	16.0 PSF	24.1 PSF
			1 (ROOF)	16.0 PSF	41.9 PSF
			2 (ROOF)	16.0 PSF	55.3 PSF
			3 (ROOF)	16.0 PSF	75.3 PSF
			4 (WALL)	24.1 PSF	26.1 PSF
			5 (WALL)	24.1 PSF	32.1 PSF
		PRESSURES/SUCTIONS MAY BE REDUCED FOR AREAS > 10 S.F. PER ASCE 7-16			
	COMPONENT AND CLADDING PRESSURES FOR ROOFTOP STRUCTURES AND EQUIPMENT (PER ASCE 7-16 SECTION 30.10 AND SECTION 29.4.1):				
		HORIZONTAL PRESSURE = 45.2 PSF (GCr = 1.9 HORIZONTAL), VERTICAL (UPLIFT) SUCTION = -35.7 PSF (GCr = 1.5 VERTICAL)			
		PRESSURES/SUCTIONS (GCr) MAY BE REDUCED BASED ON UNIT AREA PER ASCE 7-16 SECTIONS 29.4.1			
SEISMIC LOADS AND DESIGN DATA	SEISMIC IMPORTANCE FACTOR, Ie = 1.00 (RISK CATEGORY = II)				
	MAPPED RESPONSE COEFFICIENTS =		S(S) = 0.052		S(1) = 0.037
	SPECTRAL RESPONSE COEFFICIENTS =		S(DS) = 0.055		S(D1) = 0.059
	SITE CLASS = D (VERIFIED)				
	SEISMIC DESIGN CATEGORY = A				
	ANALYSIS PROCEDURE: SDC A PER ASCE 7-16 SECTION 11.7				
STABILITY LOADS	INTERIOR PARTITIONS 5 PSF				

ALLOWABLE SOIL BEARING PRESSURE

THE VERIFIED SOIL BEARING CAPACITY IS 4,000 PSF FOR THE MAIN BUILDING AND COLD STORAGE BUILDING. THE VERIFIED SOIL BEARING CAPACITY IS 3000 PSF FOR THE FUEL STATION. THESE VALUES ARE AS DETERMINED BY THE GEOTECHNICAL REPORT PREPARED BY INTERTEK PSI PROJECT NUMBER 00942598.



FLAT/HIP/GABLE/MANSARD ROOF <7° | **GABLE ROOF** | **MONOSLOPE ROOF** | **STEPPED ROOF**

COMPONENTS AND CLADDING WIND ZONES

NOT TO SCALE

EXCEL

Always a Better Plan

100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S0.2

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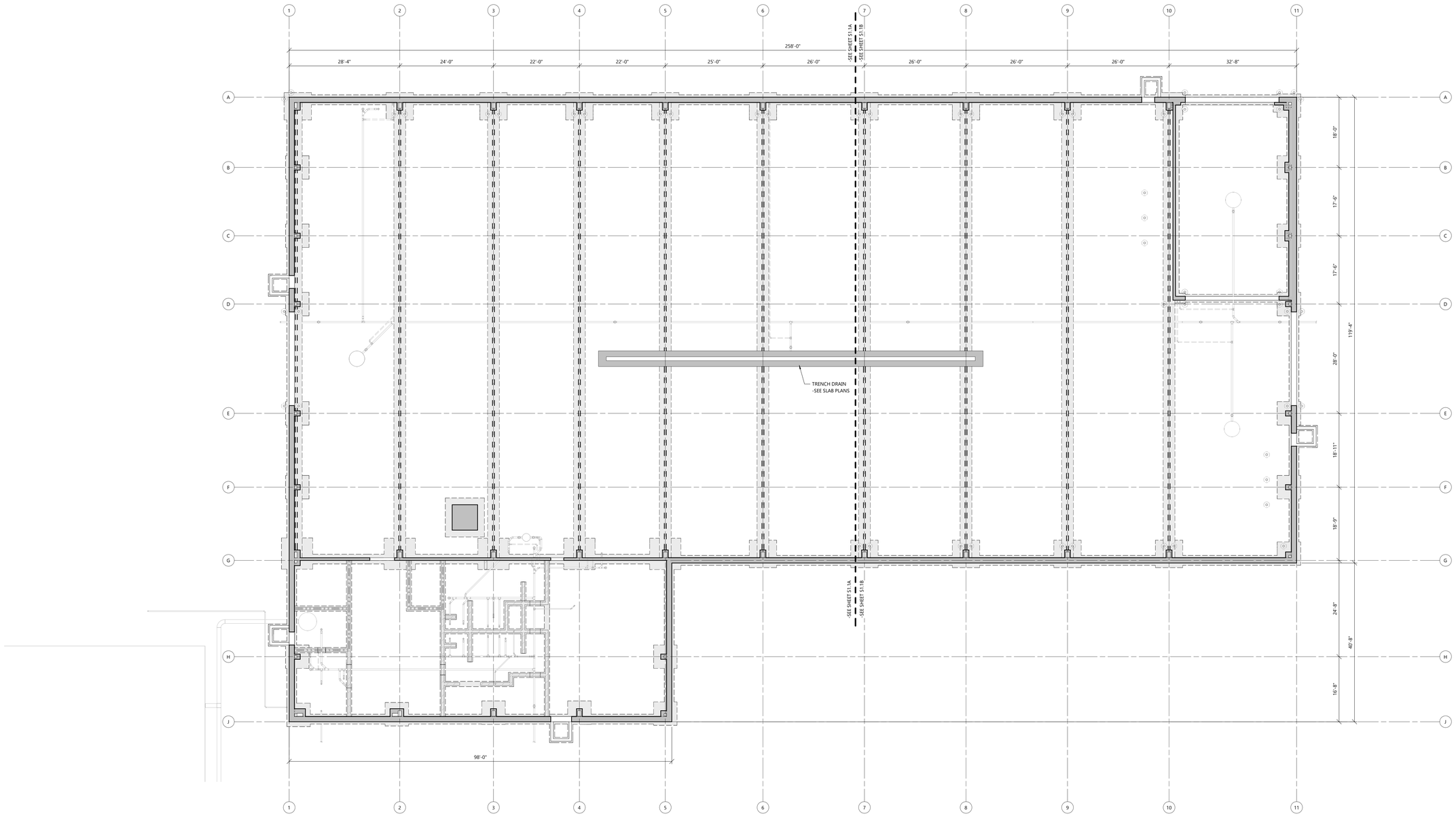
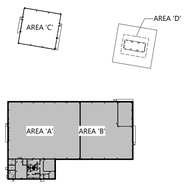


NORTH

OVERALL FOUNDATION PLAN-MAIN BUILDING

SCALE: 3/32" = 1'-0"

0' 8' 16'



KEY PLAN

STRUCTURAL OVERALL FOUNDATION PLAN

EXCEL

Always a Better Plan

100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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JOB NUMBER

250041200

SHEET NUMBER

S1.0

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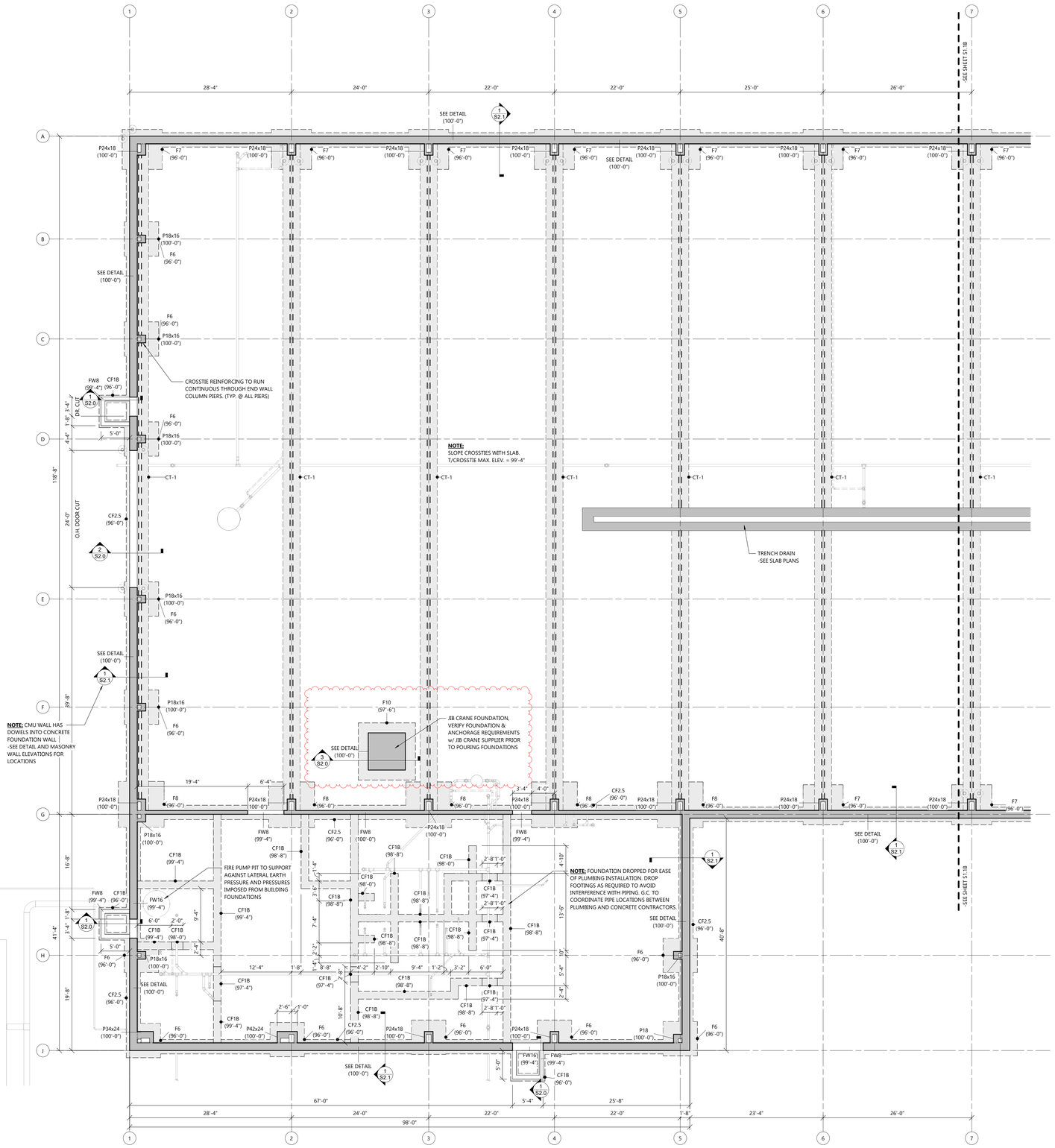
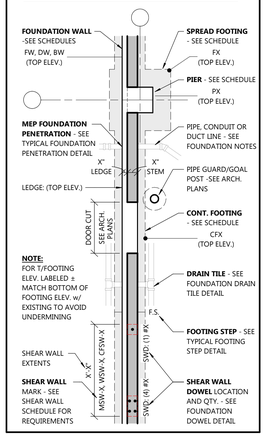


FOUNDATION PLAN LEGEND



FOUNDATION NOTES

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- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.

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- FOUNDATION/SLAB SUBGRADE MATERIALS AND PREPARATION SHALL BE PER RECOMMENDATIONS OF GEOTECHNICAL REPORT (U.N.O.).
- FOUNDATION BACKFILL AND PREPARATION SHALL BE COMPACTED GRANULAR MATERIAL PER RECOMMENDATIONS OF GEOTECHNICAL REPORT (U.N.O.).
- **NOTE** - OVEREXCAVATION DOWN TO SUITABLE BEARING SOILS AND REPLACEMENT WITH ENGINEERED STRUCTURAL FILL OR CONCRETE SLURRY MAY BE REQUIRED PER GEOTECHNICAL REPORT.
- CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS BELOW FOOTINGS/FOUNDATIONS TO VERIFY THE NET ALLOWABLE SOIL BEARING CAPACITY MEETS OR EXCEEDS THE SPECIFIED VALUE IN THE STRUCTURAL DESIGN CRITERIA CONTRACTOR SHALL PROVIDE DOCUMENTATION OF PASSING SOIL BEARING TESTING TO ENGINEER UPON COMPLETION. IT IS RECOMMENDED THAT THE GEOTECHNICAL FIRM USED TO PERFORM THE SUBSURFACE SOIL INVESTIGATION BE ENGAGED FOR THE FIELD QUALITY CONTROL TESTS.
- **NOTE** - POSSIBLE BEDROCK WAS ENCOUNTERED AT DEPTHS OF 7 TO 14 FEET BELOW THE EXISTING GROUND SURFACE
- FOUNDATION WALL CONTRACTION AND CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN. SEE S2 SHEETS FOR JOINT REQUIREMENTS.
- SEE S2 SHEETS FOR ADDITIONAL FOUNDATION DETAILS NOT REFERENCED ON FOUNDATION PLANS.
- SEE SPECIFICATIONS FOR PERIMETER FOUNDATION INSULATION AND FOUNDATION DRAINAGE PANEL THICKNESS.
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- SEE CIVIL PLANS AND SPECIFICATIONS ON CIVIL PLANS FOR ALL EXTERIOR CONCRETE FLATWORK NOT SPECIFICALLY SHOWN/DETAILED ON THE STRUCTURAL PLANS.
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- SEE S2 SHEETS FOR SLAB TYPES.
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- PIPE, CONDUIT AND DUCT LINES SHOWN ON THIS PLAN ARE FOR GENERAL LAYOUT INTENT PURPOSES ONLY. REFER TO THE CIVIL/MEP PLANS FOR SPECIFIC INFORMATION.

PEMB FOUNDATION NOTES

- PRE-ENGINEERED METAL BUILDING (PEMB) ANCHOR BOLTS TO BE LOCATED PER METAL BUILDING ANCHOR BOLT PLAN IN CONJUNCTION w/ STRUCTURAL FOUNDATION PLAN.
- HAIRPIN REINFORCING AT COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE HAIRPINS SHALL NOT BE CUT OR REMOVED.
- CROSS TIE REINFORCING BETWEEN COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE CROSS TIES SHALL NOT BE CUT OR REMOVED.
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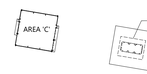
DO NOT FORM FOUNDATIONS, PRODUCE SHOP DRAWINGS, OR FABRICATE REBAR UNTIL FINAL PEMB SHOP DRAWINGS AND BASE REACTIONS HAVE BEEN APPROVED BY EXCEL AND FINAL COORDINATION IS COMPLETE.



KEY PLAN

STRUCTURAL FOUNDATION PLAN - AREA 'A'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
S1.1A

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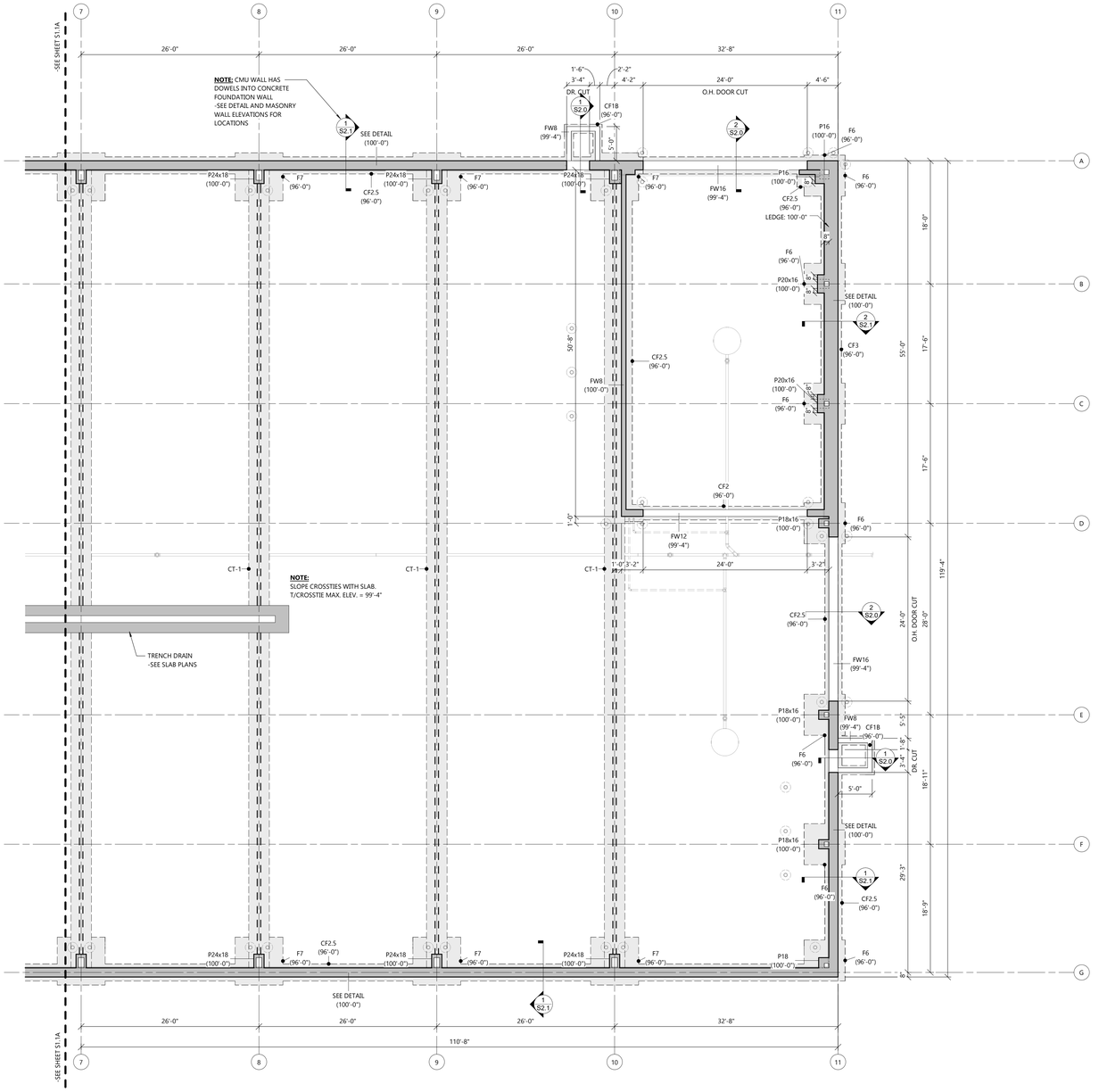


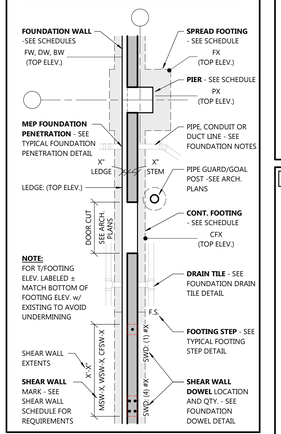
NORTH

FOUNDATION PLAN - AREA "B"

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

0' 8' 16'

FOUNDATION PLAN LEGEND



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PEMB FOUNDATION NOTES

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KEY PLAN

STRUCTURAL FOUNDATION PLAN - AREA 'B'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
S1.1B

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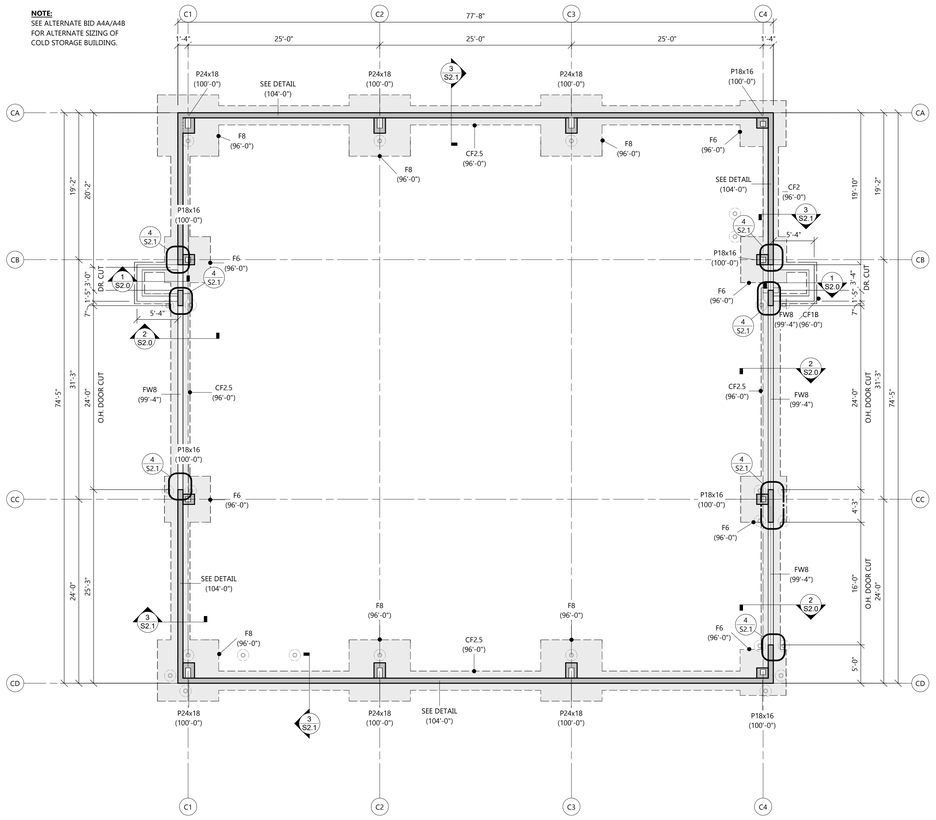
NOTE:
SEE ALTERNATE BID A4A/A4B FOR ALTERNATE SIZING OF COLD STORAGE BUILDING.



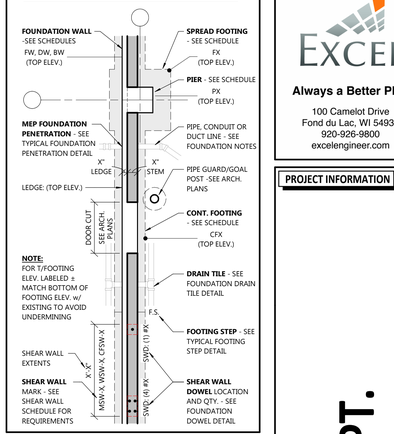
NORTH

FOUNDATION PLAN - AREA "C"

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

0' 8' 16'

FOUNDATION PLAN LEGEND



FOUNDATION NOTES

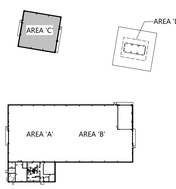
- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.

GEOTECHNICAL REPORT REQUIREMENTS:

- CONTRACTOR TO READ, REVIEW AND FOLLOW ALL RECOMMENDATIONS LISTED IN GEOTECHNICAL REPORT (U.N.O.). SEE STRUCTURAL DESIGN CRITERIA FOR GEOTECHNICAL REPORT REFERENCE.
- FOUNDATION/SLAB SUBGRADE MATERIALS AND PREPARATION SHALL BE PER RECOMMENDATIONS OF GEOTECHNICAL REPORT (U.N.O.).
- FOUNDATION BACKFILL AND PREPARATION SHALL BE COMPACTED GRANULAR MATERIAL PER RECOMMENDATIONS OF GEOTECHNICAL REPORT (U.N.O.).
- **NOTE** - OVEREXCAVATION DOWN TO SUITABLE BEARING SOILS AND REPLACEMENT WITH ENGINEERED STRUCTURAL FILL OR CONCRETE SLURRY MAY BE REQUIRED PER GEOTECHNICAL REPORT.
- CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS BELOW FOOTINGS/FOUNDATIONS TO VERIFY THE NET ALLOWABLE SOIL BEARING CAPACITY MEETS OR EXCEEDS THE SPECIFIED VALUE IN THE STRUCTURAL DESIGN CRITERIA. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF PASSING SOIL BEARING TESTING TO ENGINEER UPON COMPLETION. IT IS RECOMMENDED THAT THE GEOTECHNICAL FIRM USED TO PERFORM THE SUBSURFACE SOIL INVESTIGATION BE ENGAGED FOR THE FIELD QUALITY CONTROL TESTS.
  - **NOTE** - POSSIBLE BEDROCK WAS ENCOUNTERED AT DEPTHS OF 7 TO 14 FEET BELOW THE EXISTING GROUND SURFACE
- FOUNDATION WALL CONTRACTION AND CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN. SEE S2 SHEETS FOR JOINT REQUIREMENTS.
- SEE S2 SHEETS FOR ADDITIONAL FOUNDATION DETAILS NOT REFERENCED ON FOUNDATION PLANS.
- SEE SPECIFICATIONS FOR PERIMETER FOUNDATION INSULATION AND FOUNDATION DRAINAGE PANEL THICKNESS.
- COORDINATE AND VERIFY ALL UNDERGROUND WORK PRIOR TO POURING CONCRETE FLOOR SLAB.
- SEE CIVIL PLANS AND SPECIFICATIONS ON CIVIL PLANS FOR ALL EXTERIOR CONCRETE FLATWORK NOT SPECIFICALLY SHOWN/DETAILED ON THE STRUCTURAL PLANS.
- SEE S2 SHEETS FOR TOP OF PIER/FOOTING AND CONTROL JOINT AT COLUMN LOCATIONS.
- SEE S2 SHEETS FOR SLAB TYPES.
- SEE ARCHITECTURAL FLOOR PLANS FOR TAGS OF ALL GUARDPOSTS & GOALPOSTS. GUARDPOST & GOALPOST SCHEDULE & DETAILS LOCATED ON A6 SHEETS.
- PIPE, CONDUIT AND DUCT LINES SHOWN ON THIS PLAN ARE FOR GENERAL LAYOUT INTENT PURPOSES ONLY. REFER TO THE CIVIL/MEP PLANS FOR SPECIFIC INFORMATION.

PEMB FOUNDATION NOTES

- PRE-ENGINEERED METAL BUILDING (PEMB) ANCHOR BOLTS TO BE LOCATED PER METAL BUILDING ANCHOR BOLT PLAN IN CONJUNCTION w/ STRUCTURAL FOUNDATION PLAN.
- HAIRPIN REINFORCING AT COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE HAIRPINS SHALL NOT BE CUT OR REMOVED.
- CROSS TIE REINFORCING BETWEEN COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE CROSS TIES SHALL NOT BE CUT OR REMOVED.
- ARCHITECT/ENGINEER TO APPROVE FOUNDATION DETAILS w/ FINAL METAL BUILDING REACTIONS AND BASE PLATE LAYOUTS PRIOR TO POURING BUILDING FOUNDATIONS.
- **DO NOT FORM FOUNDATIONS, PRODUCE SHOP DRAWINGS, OR FABRICATE REBAR UNTIL FINAL PEMB SHOP DRAWINGS AND BASE REACTIONS HAVE BEEN APPROVED BY EXCEL AND FINAL COORDINATION IS COMPLETE.**



KEY PLAN

STRUCTURAL FOUNDATION PLAN - AREA 'C' - COLD STORAGE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S1.1C

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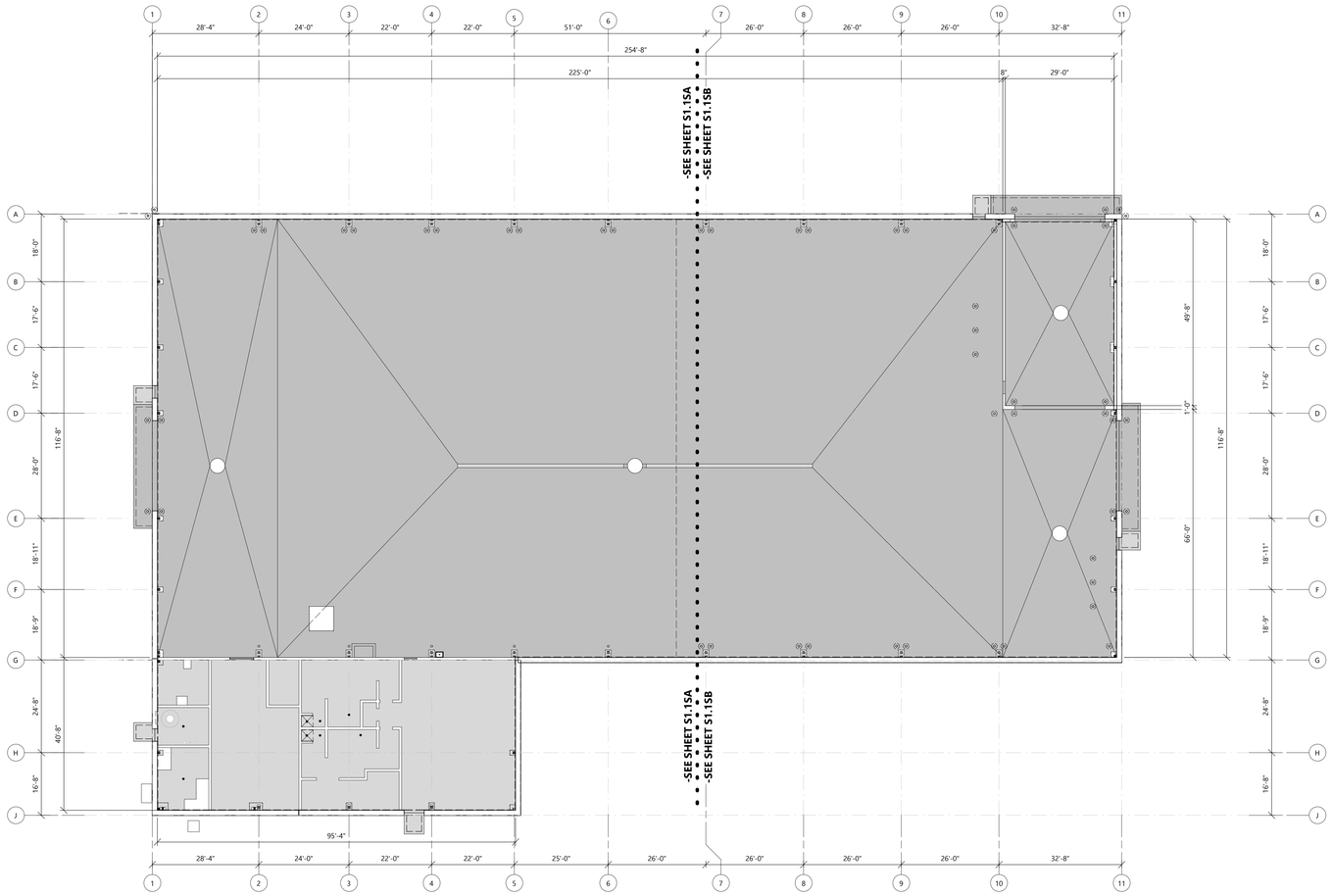
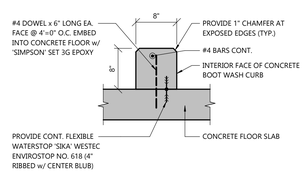


OVERALL FIRST FLOOR SLAB PLAN

NORTH

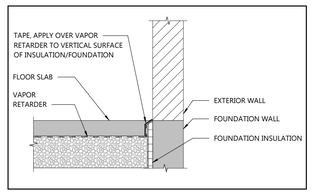
SCALE: 1/16" = 1'-0"

0' 16' 32'



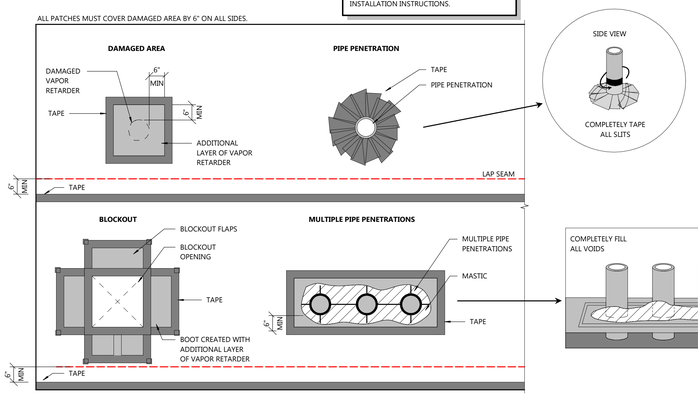
2 S1.1S **BOOT SCRUBBING CURB DETAIL**

SCALE: 1" = 1'-0"



INSTALLATION OF VAPOR RETARDER UNDER SLAB REQUIRES SEALING OF ALL PENETRATIONS AND PERIMETERS. REFERENCE MANUFACTURER INSTALLATION INSTRUCTIONS.

ALL PATCHES MUST COVER DAMAGED AREA BY 6" ON ALL SIDES.



1 S1.1S **VAPOR RETARDER - PIPE PENETRATION**

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

KEY PLAN

STRUCTURAL CONCRETE FLOOR SLAB PLAN

GENERAL NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- G.C. TO HOLD PRECONSTRUCTION MEETING PRIOR TO POURING ALL SLOPED FLOOR AREAS TO DISCUSS WITH OWNER/ARCHITECT.
- SEE CIVIL PLANS AND SPECIFICATIONS FOR ALL EXTERIOR CONCRETE FLATWORK NOT SPECIFICALLY SHOWN/DETAILED ON THE STRUCTURAL PLANS.
- SEE CONCRETE SLAB ON GRADE SCHEDULE ON S2 SHEETS FOR SLAB REQUIREMENTS.
- SEE SLAB ON GRADE REINFORCING AT DOORS/OPENINGS DETAIL ON S2 SHEETS FOR ADDITIONAL SLAB REINFORCING.
- SEE SUPPLEMENTAL REINFORCING DETAIL ON S2 SHEETS FOR ADDITIONAL SLAB REINFORCING.
- SEE CONCRETE SLAB ON GRADE SCHEDULE AND DETAILS FOR SLAB JOINT REQUIREMENTS.
- CONSTRUCTION JOINTS (C.J.) SHOWN ON PLAN MAY BE CHANGED TO POUR JOINTS (P.J) AT CONTRACTORS DISCRETION.
- TOP OF FLOOR SLAB IS TOP OF FINISHED SURFACE. OFFSET THE TOP OF CONCRETE AS REQUIRED TO SUIT FLOOR FINISH MATERIAL.
- COORDINATE PLAN WITH ARCHITECTURAL FLOOR PLANS FOR WALL AND DOOR LOCATIONS.
- AT ALL HIGH POINTS IN FLOOR, PROVIDE EASED EDGE. SEE FLOOR SCREED DETAIL ON S2 SHEETS.
- ALL DISHED DRAINS HAVE A DIAMETER OF 3'-0" UNLESS OTHERWISE NOTED ON PLAN.
- VAPOR RETARDER REQUIRED UNLESS NOTED OTHERWISE.
- DO NOT TERMINATE A SAWCUT JOINT INTO ANOTHER SAWCUT JOINT (CREATING A "T" CONDITION). SAWCUT JOINTS MUST CONTINUE THRU OTHER SAWCUT JOINTS UNTIL THEY TERMINATE INTO A POUR JOINT OR SLAB EDGE.

SLAB-ON-GRADE KEYNOTES

1. INTERIOR CONCRETE HOUSEKEEPING PAD SUPPORTING MEP EQUIPMENT. COORDINATE SIZE WITH MEP CONTRACTOR. PAD TO BE 3-1/2" THICK UNLESS NOTED OTHERWISE. SEE "TYPICAL INTERIOR HOUSEKEEPING PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
2. INTERIOR CONCRETE EQUIPMENT PAD - SEE "TYPICAL INTERIOR EQUIPMENT PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
3. STOOP SLAB - SEE STRUCTURAL PLAN FOR REQUIREMENTS.
4. APRON SLAB - SEE CIVIL PLANS FOR REQUIREMENTS

SLAB-ON-GRADE JOINT LEGEND

SAWCUT JOINT (S.J.)

CONSTRUCTION JOINT (C.J.)

POUR JOINT (P.J.)

4" THICK CONCRETE SLAB (SG4)

8" THICK CONCRETE SLAB (SG8)

EXCEL

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PROJECT INFORMATION

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PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S1.1S

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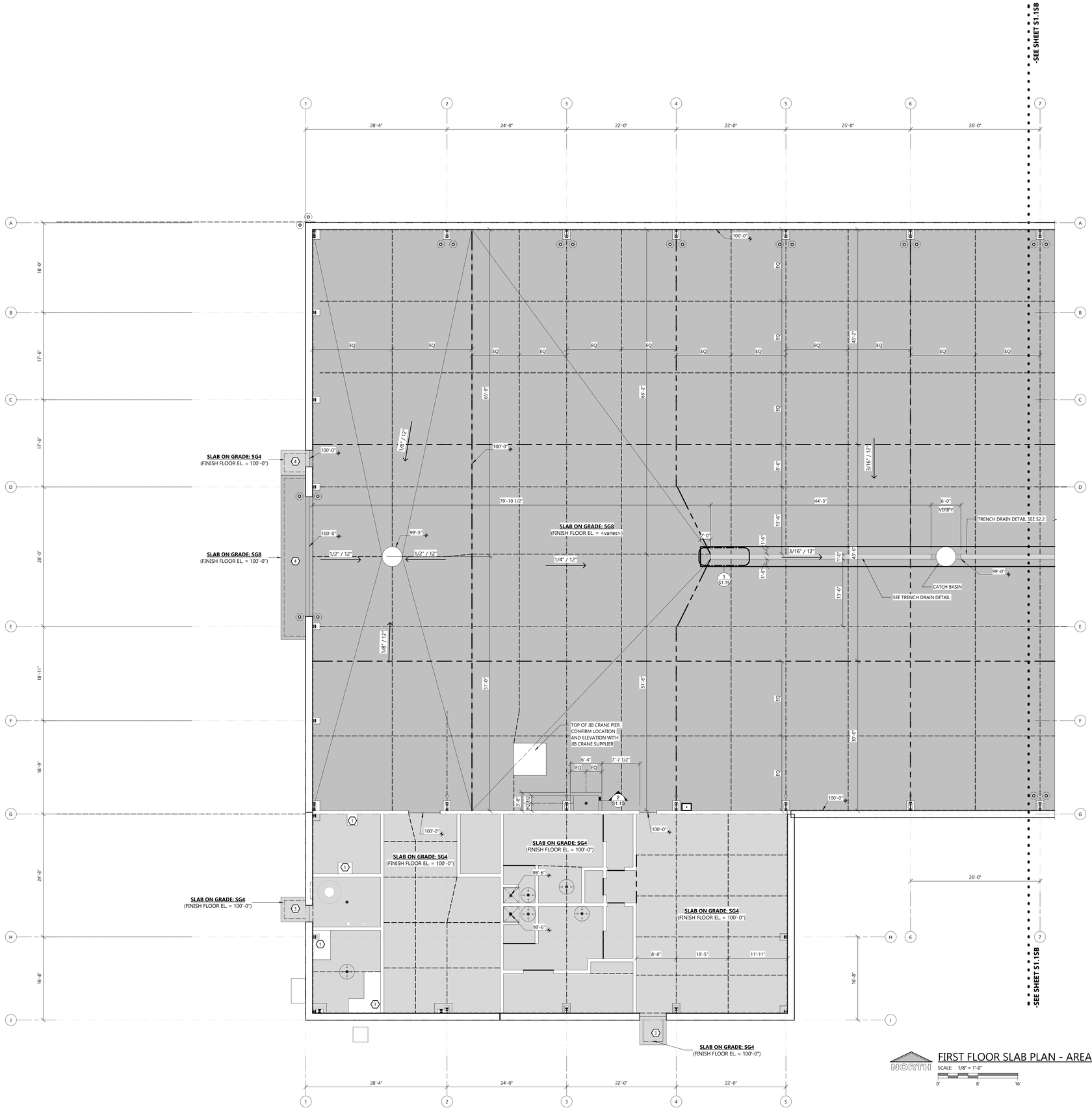

FIRST FLOOR SLAB PLAN - AREA "A"

KEY PLAN

STRUCTURAL CONCRETE FLOOR SLAB PLAN - AREA 'A'

GENERAL NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
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- SEE SUPPLEMENTAL REINFORCING DETAIL ON S2 SHEETS FOR ADDITIONAL SLAB REINFORCING.
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- CONSTRUCTION JOINTS (C.J.) SHOWN ON PLAN MAY BE CHANGED TO POUR JOINTS (P.J) AT CONTRACTORS DISCRETION.
- TOP OF FLOOR SLAB IS TOP OF FINISHED SURFACE. OFFSET THE TOP OF CONCRETE AS REQUIRED TO SUIT FLOOR FINISH MATERIAL.
- COORDINATE PLAN WITH ARCHITECTURAL FLOOR PLANS FOR WALL AND DOOR LOCATIONS.
- AT ALL HIGH POINTS IN FLOOR, PROVIDE EASED EDGE. SEE FLOOR SCREED DETAIL ON S2 SHEETS.
- ALL DISHED DRAINS HAVE A DIAMETER OF 3'-0" UNLESS OTHERWISE NOTED ON PLAN.
- VAPOR RETARDER REQUIRED UNLESS NOTED OTHERWISE.
- DO NOT TERMINATE A SAWCUT JOINT INTO ANOTHER SAWCUT JOINT (CREATING A "T" CONDITION). SAWCUT JOINTS MUST CONTINUE THRU OTHER SAWCUT JOINTS UNTIL THEY TERMINATE INTO A POUR JOINT OR SLAB EDGE.

SLAB-ON-GRADE KEYNOTES

1. INTERIOR CONCRETE HOUSEKEEPING PAD SUPPORTING MEP EQUIPMENT. COORDINATE SIZE WITH MEP CONTRACTOR. PAD TO BE 3-1/2" THICK UNLESS NOTED OTHERWISE. SEE "TYPICAL INTERIOR HOUSEKEEPING PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
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3. STOOP SLAB - SEE STRUCTURAL PLAN FOR REQUIREMENTS.
4. APRON SLAB - SEE CIVIL PLANS FOR REQUIREMENTS

SLAB-ON-GRADE JOINT LEGEND

- SAWCUT JOINT (S.J.)
- CONSTRUCTION JOINT (C.J.)
- POUR JOINT (P.J.)
- 4" THICK CONCRETE SLAB (SG4)
- 8" THICK CONCRETE SLAB (SG8)

EXCEL

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920-926-9800
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PROJECT INFORMATION

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SHEET NUMBER

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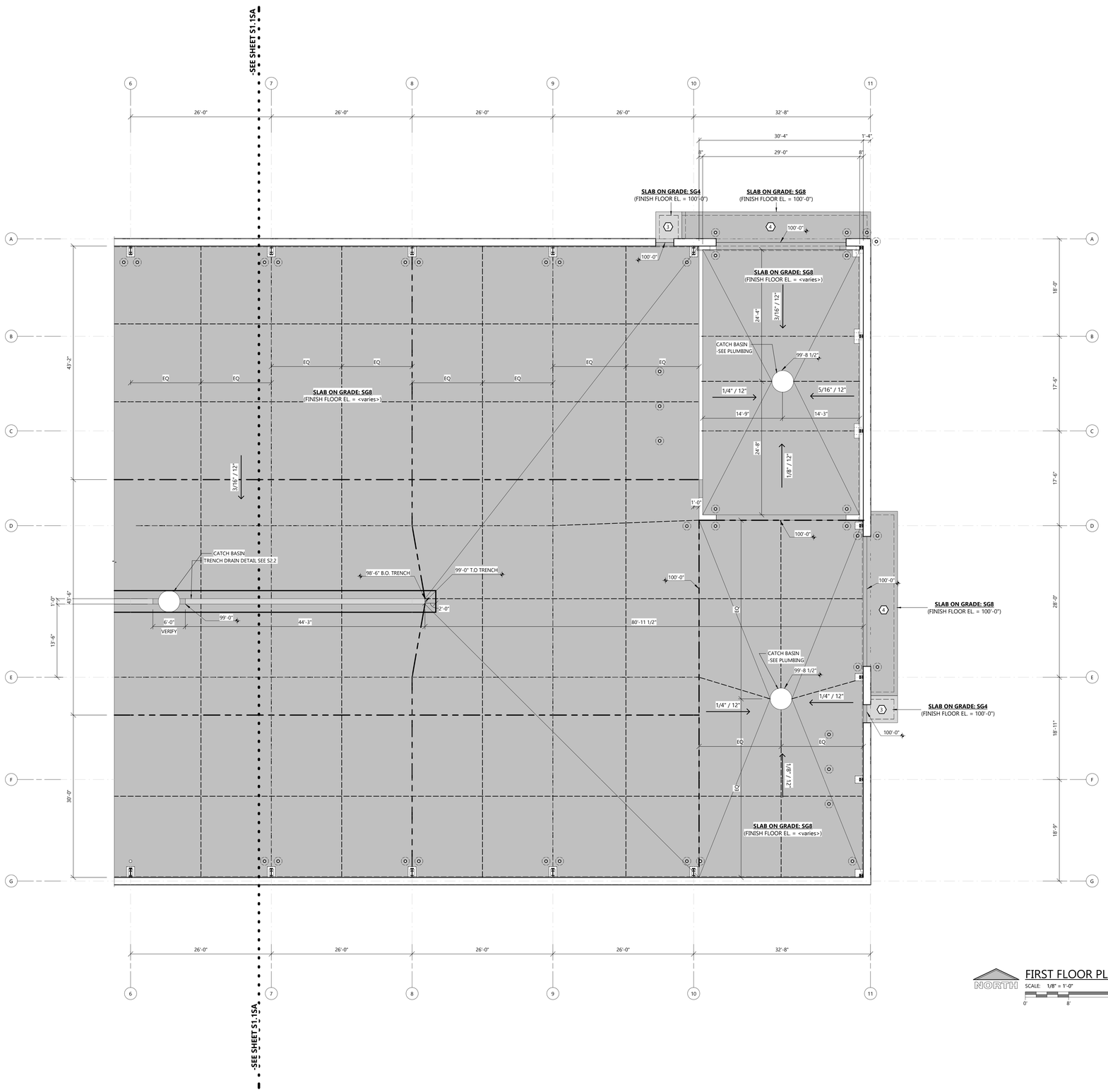

GENERAL NOTES

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- AT ALL HIGH POINTS IN FLOOR, PROVIDE EASED EDGE. SEE FLOOR SCREED DETAIL ON S2 SHEETS.
- ALL DISHED DRAINS HAVE A DIAMETER OF 3'-0" UNLESS OTHERWISE NOTED ON PLAN.
- VAPOR RETARDER REQUIRED UNLESS NOTED OTHERWISE.
- DO NOT TERMINATE A SAWCUT JOINT INTO ANOTHER SAWCUT JOINT (CREATING A "T" CONDITION). SAWCUT JOINTS MUST CONTINUE THRU OTHER SAWCUT JOINTS UNTIL THEY TERMINATE INTO A POUR JOINT OR SLAB EDGE.

SLAB-ON-GRADE KEYNOTES

1. INTERIOR CONCRETE HOUSEKEEPING PAD SUPPORTING MEP EQUIPMENT. COORDINATE SIZE WITH MEP CONTRACTOR. PAD TO BE 3-1/2" THICK UNLESS NOTED OTHERWISE. SEE "TYPICAL INTERIOR HOUSEKEEPING PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
2. INTERIOR CONCRETE EQUIPMENT PAD - SEE "TYPICAL INTERIOR EQUIPMENT PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
3. STOOP SLAB - SEE STRUCTURAL PLAN FOR REQUIREMENTS.
4. APRON SLAB - SEE CIVIL PLANS FOR REQUIREMENTS

SLAB-ON-GRADE JOINT LEGEND

- SAWCUT JOINT (S.J.)
- CONSTRUCTION JOINT (C.J.)
- POUR JOINT (P.J.)
- 4" THICK CONCRETE SLAB (SG4)
- 8" THICK CONCRETE SLAB (SG8)

NORTH

FIRST FLOOR PLAN - AREA 'B'

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

0' 8' 16'

KEY PLAN

STRUCTURAL CONCRETE FLOOR SLAB PLAN - AREA 'B'

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

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IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
S1.1SB

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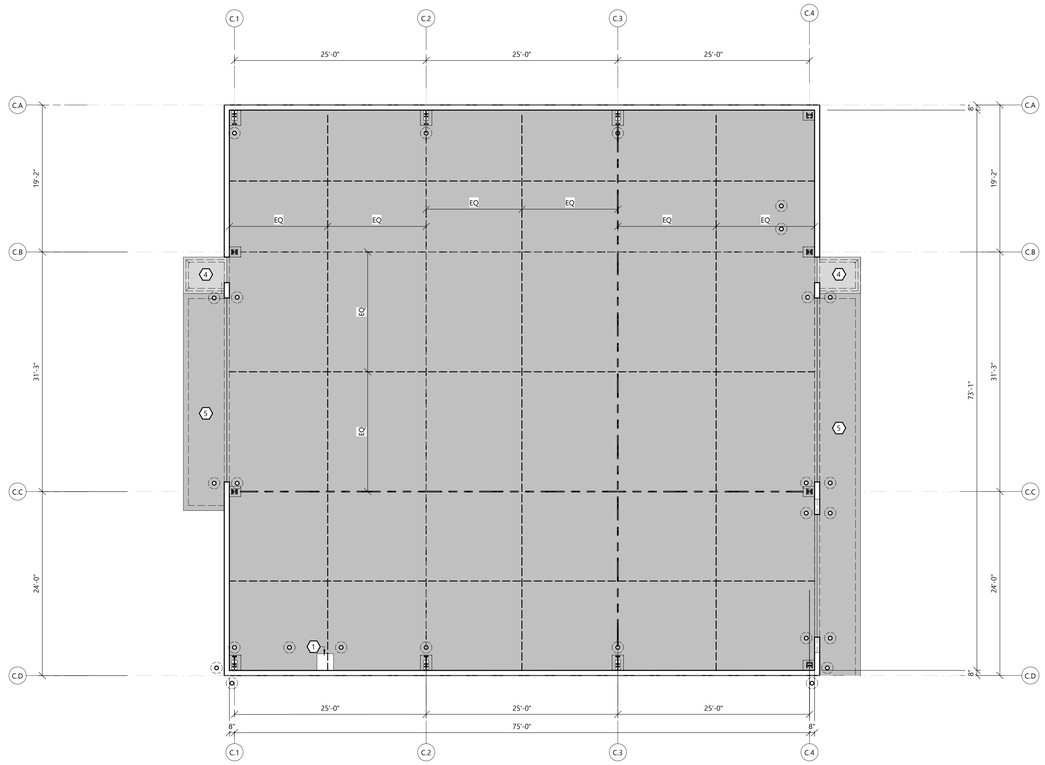

NORTH

FIRST FLOOR PLAN - COLD STORAGE - AREA 'C'

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

0' 8' 16'

GENERAL NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- G.C. TO HOLD PRECONSTRUCTION MEETING PRIOR TO POURING ALL SLOPED FLOOR AREAS TO DISCUSS WITH OWNER/ARCHITECT.
- SEE CIVIL PLANS AND SPECIFICATIONS FOR ALL EXTERIOR CONCRETE FLATWORK NOT SPECIFICALLY SHOWN/DETAILED ON THE STRUCTURAL PLANS.
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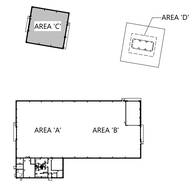
- COORDINATE PLAN WITH ARCHITECTURAL FLOOR PLANS FOR WALL AND DOOR LOCATIONS.
- AT ALL HIGH POINTS IN FLOOR, PROVIDE EASED EDGE. SEE FLOOR SCREED DETAIL ON S2 SHEETS.
- ALL DISHED DRAINS HAVE A DIAMETER OF 3'-0" UNLESS OTHERWISE NOTED ON PLAN.
- VAPOR RETARDER REQUIRED UNLESS NOTED OTHERWISE.
- DO NOT TERMINATE A SAWCUT JOINT INTO ANOTHER SAWCUT JOINT (CREATING A "T" CONDITION). SAWCUT JOINTS MUST CONTINUE THRU OTHER SAWCUT JOINTS UNTIL THEY TERMINATE INTO A POUR JOINT OR SLAB EDGE.

SLAB-ON-GRADE KEYNOTES

1. INTERIOR CONCRETE HOUSEKEEPING PAD SUPPORTING MEP EQUIPMENT. COORDINATE SIZE WITH MEP CONTRACTOR. PAD TO BE 3-1/2" THICK UNLESS NOTED OTHERWISE. SEE "TYPICAL INTERIOR HOUSEKEEPING PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
2. INTERIOR CONCRETE EQUIPMENT PAD - SEE "TYPICAL INTERIOR EQUIPMENT PAD DETAIL" ON S2 SHEETS FOR REQUIREMENTS.
3. STOOP SLAB - SEE STRUCTURAL PLAN FOR REQUIREMENTS.
4. APRON SLAB - SEE CIVIL PLANS FOR REQUIREMENTS

SLAB-ON-GRADE JOINT LEGEND

- SAWCUT JOINT (S.J.)
- CONSTRUCTION JOINT (C.J.)
- POUR JOINT (P.J.)
- 4" THICK CONCRETE SLAB (SG4)
- 8" THICK CONCRETE SLAB (SG8)



KEY PLAN

STRUCTURAL CONCRETE FLOOR SLAB PLAN - AREA 'C'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

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PROFESSIONAL SEAL

SHEET DATES

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IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S1.1SC

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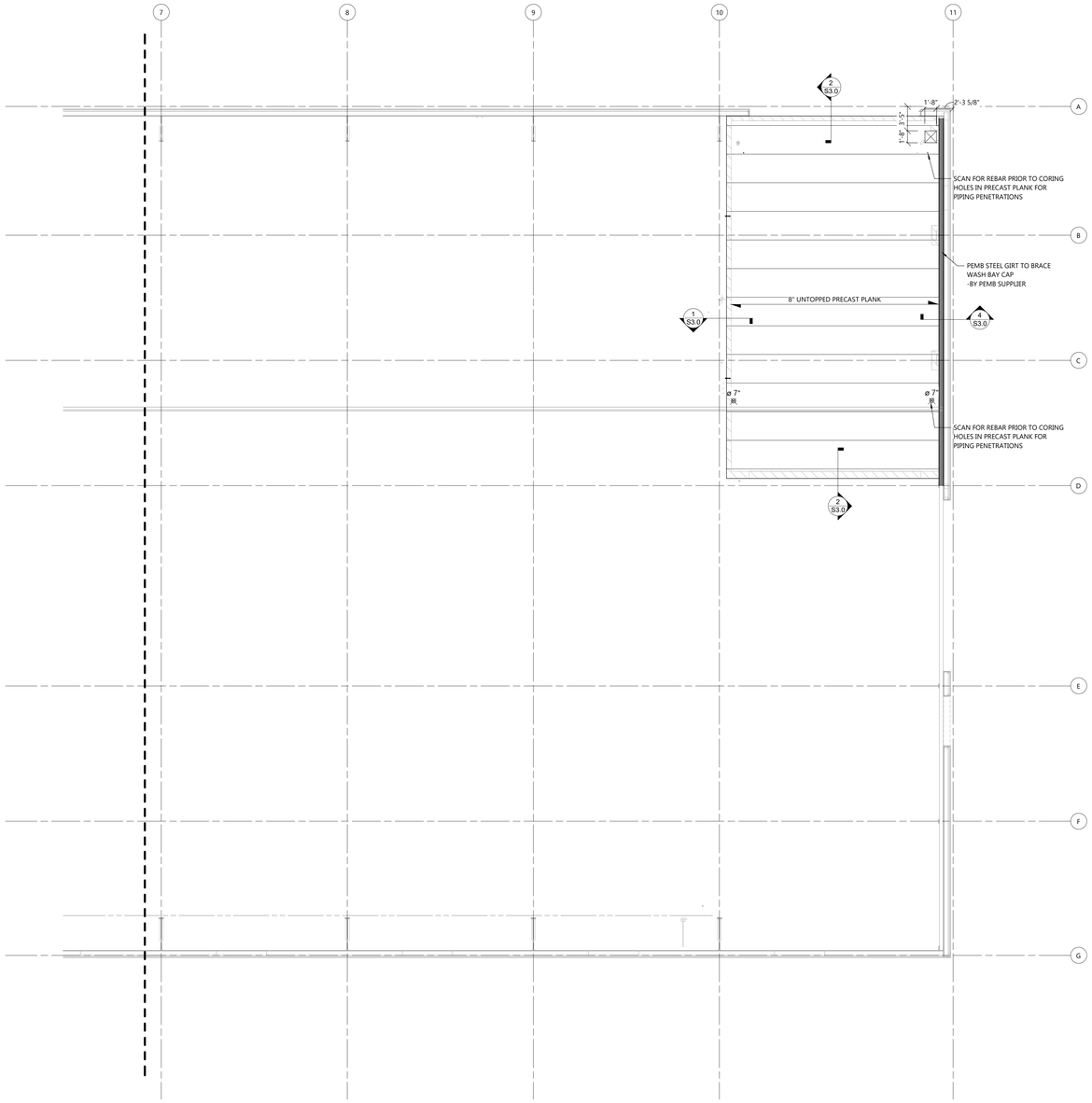

NORTH

WASH BAY CAP FRAMING PLAN- AREA "B"

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

0' 8' 16'

MASONRY GENERAL NOTES

- MASONRY WALL REQUIREMENTS NOT SHOWN ON FRAMING PLANS. SEE S5 SHEETS FOR ALL MASONRY ELEMENTS (REINFORCING, GROUTING, BOND BEAMS, LINTELS, ETC.)
- LOCATIONS OF GROUTED/REINFORCED MASONRY IS TO BE MARKED BY MASONRY CONTRACTOR FOR FIELD COORDINATION BETWEEN TRADES. SEE MASONRY MARKING REQUIREMENTS DETAIL ON S5 SHEETS.

PRECAST FLOOR NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- PRECAST SUPPLIER TO DESIGN THE FOLLOWING ELEMENTS FOR LATERAL AND GRAVITY LOADS PROVIDED:
  - PRECAST FLOOR PLANKS
  - PRECAST CONNECTIONS
  - **NOTE:** DESIGN FOR ALL LOADS SHOWN ON FRAMING PLANS AND S0 SHEETS. SEE SPECIFICATIONS FOR REQUIREMENTS OF DELEGATED DESIGN SUBMITTALS. STAMPED PLANS AND CALCULATIONS TO BE SUBMITTED TO EXCEL ENGINEERING FOR REVIEW PRIOR TO FABRICATION.
- PRECAST PLANK JOINT LINES SHOWN ON PLANS ARE SCHEMATIC AND SHOWN FOR GENERAL INTENT PURPOSES ONLY TO INDICATE SPAN DIRECTION. FINAL JOINT LOCATIONS TO BE DETERMINED BY PRECAST DESIGNER IN COORDINATION w/ PENETRATIONS, OPENINGS, & EDGE CONDITIONS.
- VERIFY SIZE AND LOCATION OF ALL MECHANICAL OPENINGS SHOWN ON PLANS (SHOP INSTALLED AND FIELD CUT/CORED) WITH MECHANICAL CONTRACTOR PRIOR TO FABRICATION.
- CUTTING/CORING OF PRECAST ELEMENTS IS NOT PERMITTED EXCEPT AS EXPLICITLY SHOWN ON PLANS OR BY WRITTEN APPROVAL FROM EXCEL ENGINEERING. CONTACT EXCEL FOR ANY ADDITIONAL REQUIRED PENETRATIONS, NOT SHOWN ON PLANS, PRIOR TO INSTALLATION/CUTTING/CORING.

KEY PLAN

STRUCTURAL WASH BAY CAP FRAMING PLAN AREA "B"

EXCEL
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100 Camelot Drive
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excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S1.2B

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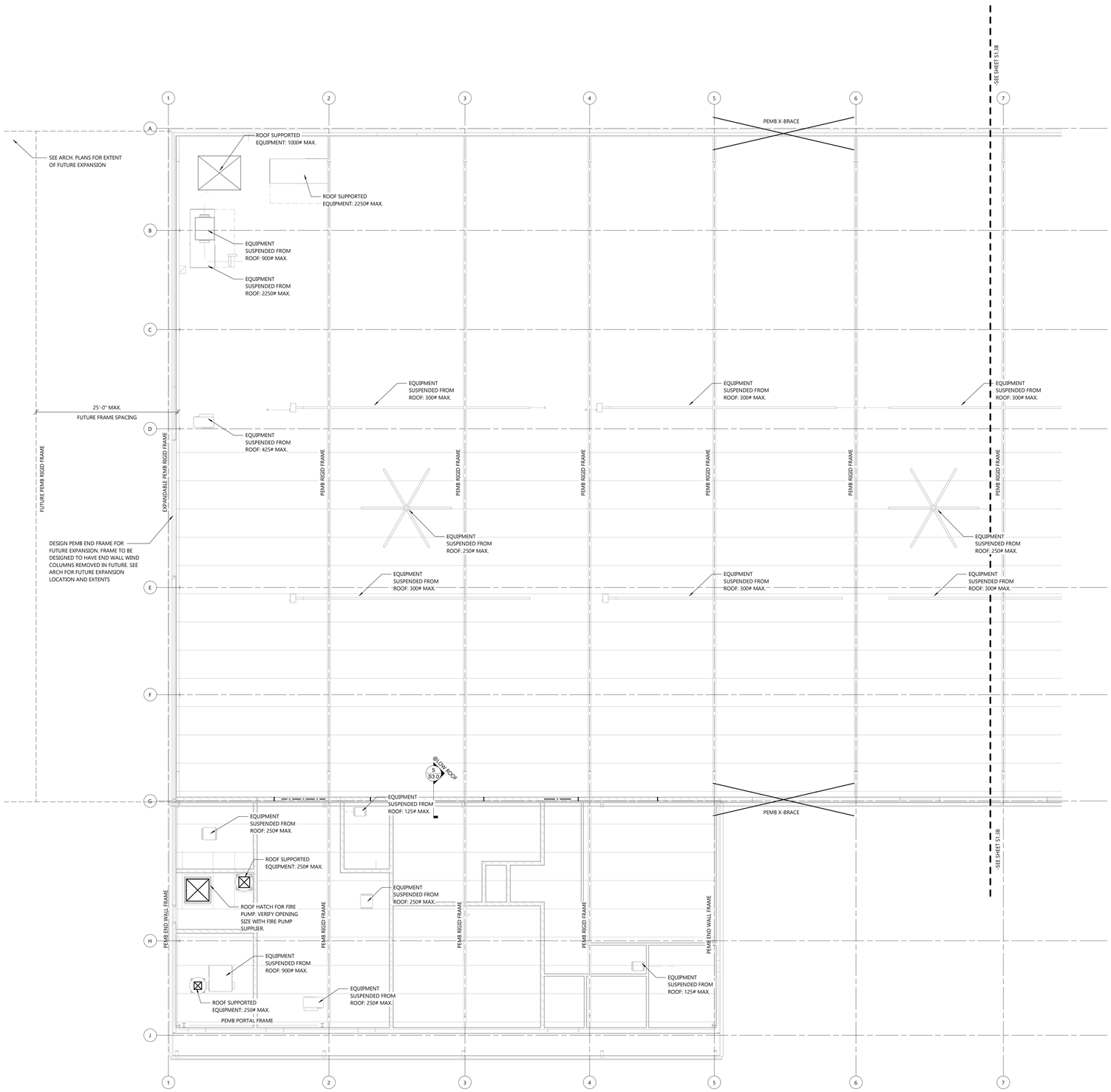


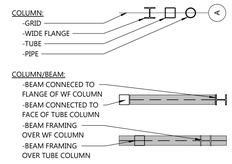
NORTH

ROOF FRAMING PLAN - AREA 'A'

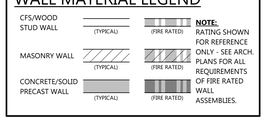
SCALE: 1/8" = 1'-0"

0' 8' 16'

STEEL FRAMING PLAN LEGEND



WALL MATERIAL LEGEND



NOTE: RATING SHOWN FOR REFERENCE ONLY - SEE ARCH. PLANS FOR ALL REQUIREMENTS OF FIRE RATED WALL ASSEMBLIES.

PEMB FRAMING NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- CONTRACTOR SHALL NOT SUPPORT AND GRAVITY OR LATERAL LOADS FROM PEMB w/o APPROVAL FROM PEMB SUPPLIER
- SEE MECHANICAL DRAWINGS FOR OPENINGS IN METAL DECK. VERIFY OPENINGS WITH MECHANICAL CONTRACTOR. FINAL QUANTITY, LOCATIONS, AND DIMENSIONS SHALL BE COORDINATED WITH THE MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR.
- SEE S5 SHEETS FOR MASONRY ELEVATION KEY PLAN AND MASONRY WALL ELEVATIONS/DETAILS.
- CONTRACTOR TO VERIFY ALL EQUIPMENT WEIGHTS AND LOCATIONS FOR EQUIPMENT SUPPORTED FROM PEMB PRIOR TO INSTALLATION OF EQUIPMENT.

MASONRY GENERAL NOTES

- MASONRY WALL REQUIREMENTS NOT SHOWN ON FRAMING PLANS. SEE S5 SHEETS FOR ALL MASONRY ELEMENTS (REINFORCING, GROUTING, BOND BEAMS, LINTELS, ETC.)
- LOCATIONS OF GROUTED/REINFORCED MASONRY IS TO BE MARKED BY MASONRY CONTRACTOR FOR FIELD COORDINATION BETWEEN TRADES. SEE MASONRY MARKING REQUIREMENTS DETAIL ON S5 SHEETS.

KEY PLAN

STRUCTURAL ROOF FRAMING PLAN - AREA 'A'

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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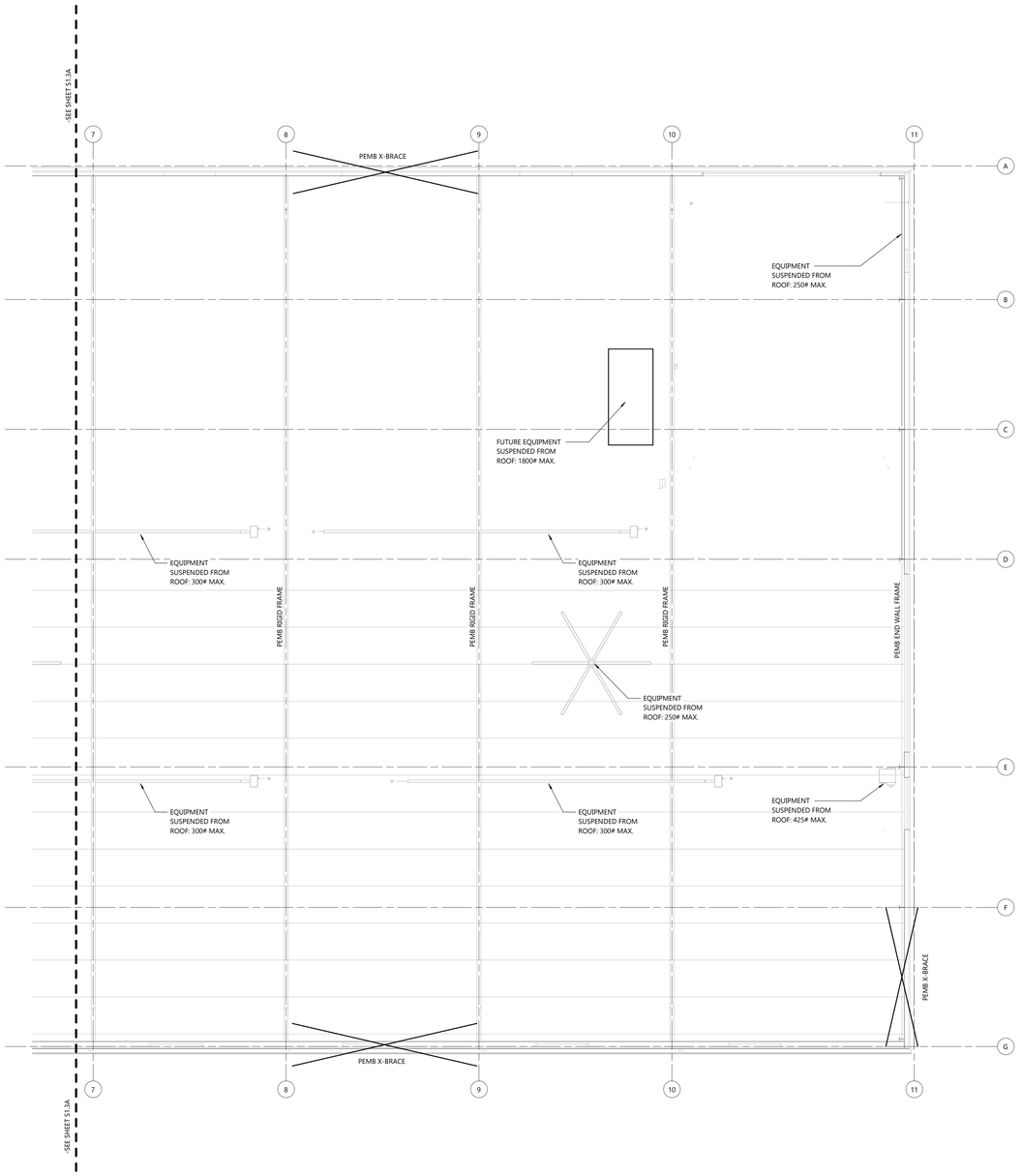


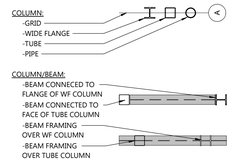
NORTH

ROOF FRAMING PLAN - AREA 'B'

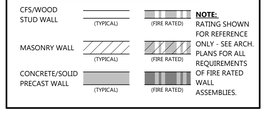
SCALE: 1/8" = 1'-0"

0' 8' 16'

STEEL FRAMING PLAN LEGEND



WALL MATERIAL LEGEND



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KEY PLAN

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EXCEL

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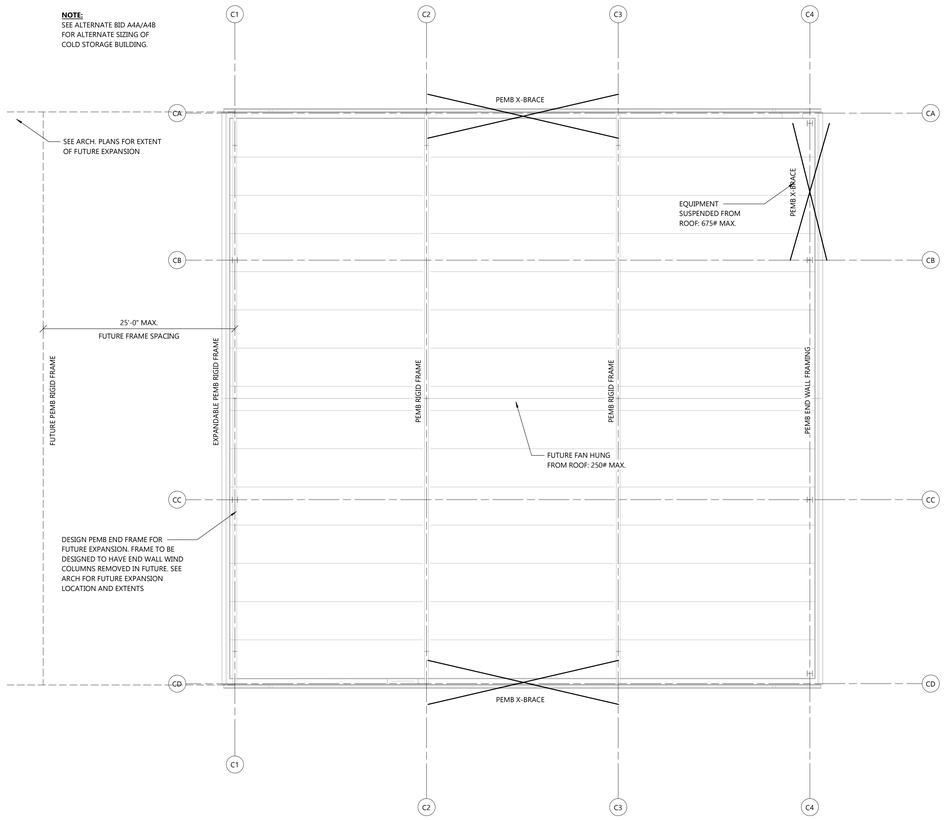


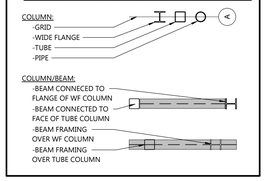
NORTH

ROOF FRAMING PLAN - AREA 'C'

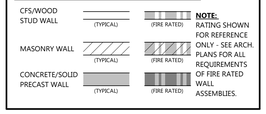
SCALE: 1/8" = 1'-0"

0' 8' 16'

STEEL FRAMING PLAN LEGEND



WALL MATERIAL LEGEND



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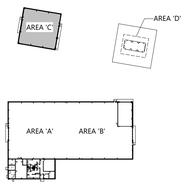

KEY PLAN

STRUCTURAL ROOF FRAMING PLAN - AREA 'C' - COLD STORAGE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

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SHEET NUMBER

S1.3C

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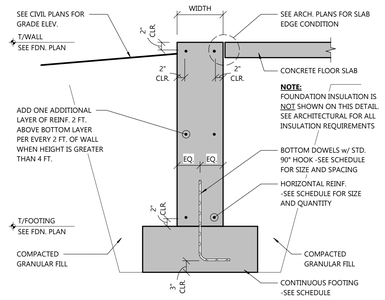
FROST WALL SCHEDULE

NOTES:
- SEE TYPICAL FROST WALL DETAIL FOR TYPICAL CONSTRUCTION & NOTES.
- SEE FOUNDATION PLAN FOR TOP OF WALL & LEDGE (IF APPLICABLE) ELEVATIONS.
- SEE STRUCTURAL SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.

MARK	WIDTH	HORIZONTAL REINFORCING	BOTTOM DOWEL	REMARKS
FW8	8"	(2) #4 TOP & BOT.	#4 x 21" + HOOK @ 18" O.C.	
FW12	12"	(2) #5 TOP & BOT.	#4 x 21" + HOOK @ 18" O.C.	
FW16	16"	(3) #5 TOP & BOT.	#4 x 21" + HOOK @ 18" O.C.	

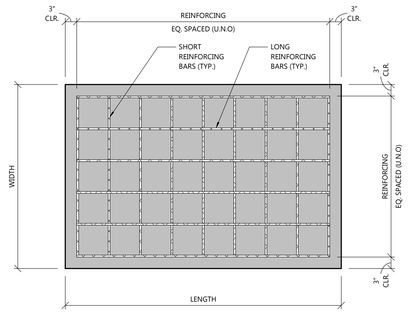


TYPICAL FROST WALL DETAIL
NOT TO SCALE

SPREAD FOOTING SCHEDULE

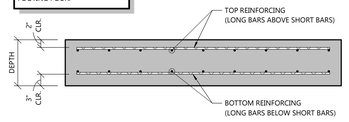
NOTES:
- ALL FOOTINGS ARE CENTERED ON PIER UNLESS DIMENSIONED OTHERWISE. IF PIER IS NOT REQUIRED, ALL FOOTINGS ARE CENTERED ON COLUMN GRID LINE INTERSECTIONS UNLESS DIMENSIONED OTHERWISE.
- SEE TYPICAL SPREAD FOOTING DETAIL FOR TYPICAL CONSTRUCTION & NOTES.
- SEE FOUNDATION PLAN FOR TOP OF FOOTING ELEVATIONS.
- SEE FOUNDATION PLAN FOR FOOTING ORIENTATION.
- SEE COLUMN SCHEDULE FOR COLUMN ANCHOR BOLT INFORMATION (WHERE APPLICABLE).
- SEE STRUCTURAL SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.

MARK	FOOTING SIZE			REINFORCING - LONG BARS		REINFORCING - SHORT BARS		REMARKS
	LENGTH	WIDTH	DEPTH	BOTTOM	TOP	BOTTOM	TOP	
F6	6'-0"	6'-0"	12"	(9) #4 BARS	-	(9) #4 BARS	-	
F7	7'-0"	7'-0"	16"	(8) #5 BARS	-	(8) #5 BARS	-	
F8	8'-0"	8'-0"	18"	(11) #5 BARS	-	(11) #5 BARS	-	
F10	10'-0"	10'-0"	24"	(12) #6 BARS	(12) #6 BARS	(12) #6 BARS	(12) #6 BARS	



PLAN VIEW

NOTE: SEE PIER AND WALL SCHEDULES FOR DOWELS TO BE CAST IN w/ FOOTING POUR.



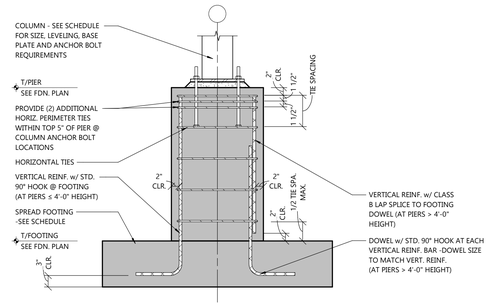
SECTION VIEW

TYPICAL SPREAD FOOTING DETAIL
NOT TO SCALE

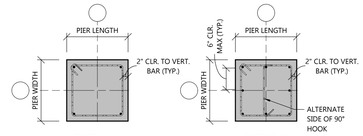
PIER SCHEDULE

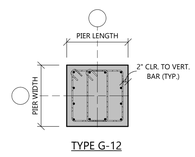
NOTES:
- ALL PIERS ARE CENTERED ON COLUMN GRID LINE INTERSECTIONS UNLESS DIMENSIONED OTHERWISE.
- SEE TYPICAL PIER DETAIL FOR TYPICAL CONSTRUCTION & NOTES.
- SEE FOUNDATION PLAN FOR TOP OF PIER ELEVATIONS.
- SEE FOUNDATION PLAN FOR PIER ORIENTATION.
- SEE COLUMN SCHEDULE FOR COLUMN ANCHOR BOLT INFORMATION.
- VERTICAL REINF. BARS SHALL BE EQUALLY SPACED, U.N.O.
- SEE REINFORCING TOP VIEW DETAILS FOR ORIENTATION OF VERITCAL REINFORCING.
- HORIZONTAL TIES SHALL MEET REQ'S OF ACI 318-7.10.5.3 FOR LATERAL SUPPORT OF VERTICAL REINFORCING.
- SEE STRUCTURAL SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.

MARK	SIZE		REINFORCING			REMARKS
	LENGTH	WIDTH	TYPE	VERTICAL REINFORCING	HORIZONTAL TIES	
RECTANGULAR						
P16	16"	16"	A-4	(4) #5	#3 @ 10" O.C.	
P18	18"	18"	A-4	(4) #6	#3 @ 10" O.C.	
P18x16	18"	16"	A-4	(4) #6	#3 @ 10" O.C.	
P20x16	20"	16"	A-4	(4) #6	#3 @ 10" O.C.	
P24x18	24"	18"	B-8	(8) #6	(2) SETS #3 @ 10" O.C.	
P34x24	34"	24"	G-12	(12) #6	(2) SETS #3 @ 10" O.C.	
P42x24	42"	24"	G-12	(12) #6	(2) SETS #3 @ 10" O.C.	



TYPICAL PIER DETAIL
NOT TO SCALE





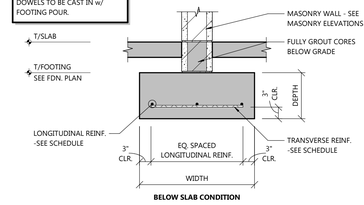
PIER REINFORCING TYPES
NOT TO SCALE

CONTINUOUS FOOTING SCHEDULE

NOTES:
- ALL FOOTINGS ARE CENTERED ON FOUNDATION WALLS UNLESS DIMENSIONED OTHERWISE.
- SEE TYPICAL CONTINUOUS FOOTING DETAIL FOR TYPICAL CONSTRUCTION & NOTES.
- SEE FOUNDATION PLAN FOR TOP OF FOOTING ELEVATIONS.
- SEE STRUCTURAL SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.

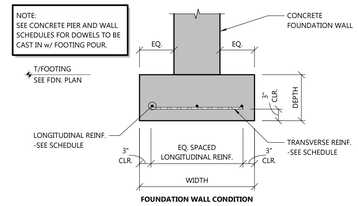
MARK	FOOTING SIZE		REINFORCING		REMARKS
	WIDTH	DEPTH	LONGITUDINAL	TRANSVERSE	
CF1B	1'-4"	12"	(2) #4 BARS	-	
CF2	2'-0"	12"	(2) #5 BARS	-	
CF2.5	2'-6"	12"	(3) #5 BARS	-	
CF3	3'-0"	12"	(3) #5 BARS	-	

NOTE: SEE MASONRY SCHEDULES FOR DOWELS TO BE CAST IN w/ FOOTING POUR.



BELOW SLAB CONDITION

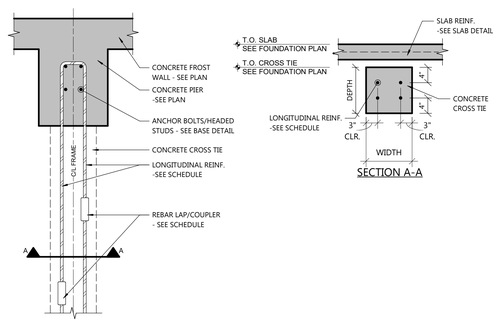
NOTE: SEE CONCRETE PIER AND WALL SCHEDULES FOR DOWELS TO BE CAST IN w/ FOOTING POUR.



FOUNDATION WALL CONDITION

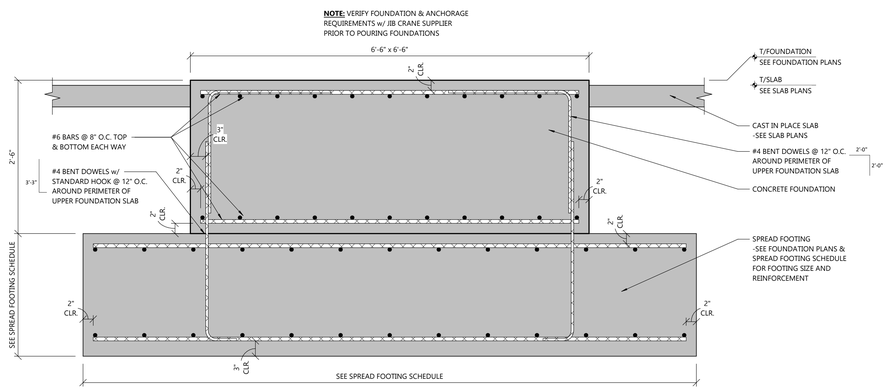
TYPICAL CONTINUOUS FOOTING DETAIL
NOT TO SCALE

CROSS TIE SCHEDULE					
MARK	CROSS TIE SIZE		REINFORCEMENT		REMARKS
	WIDTH	DEPTH	LONGITUDINAL	REBAR LAP/COUPLER	
CT-1	1'-0"	1'-0"	(4) #5 BARS	REBAR LAP	

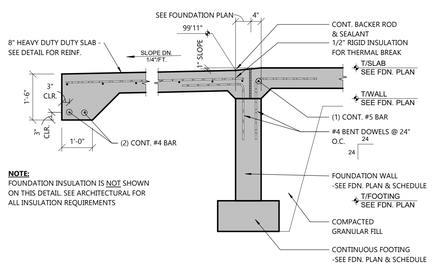


SECTION A-A

TYP. CROSS TIE DETAIL
NOT TO SCALE

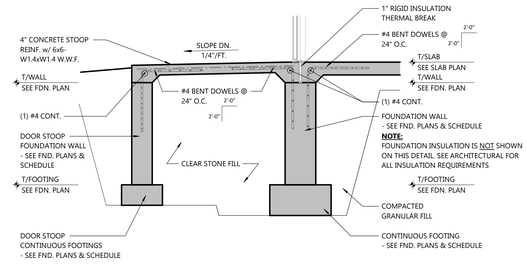


3 S2.0 **DETAIL**
SCALE: 1" = 1'-0"



NOTE: FOUNDATION INSULATION IS NOT SHOWN ON THIS DETAIL. SEE ARCHITECTURAL FOR ALL INSULATION REQUIREMENTS

2 S2.0 **HEAVY DUTY APRON DETAIL**
SCALE: 1/2" = 1'-0"



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1 S2.0 **DOOR STOOP DETAIL**
SCALE: 1/2" = 1'-0"

STRUCTURAL FOUNDATION SCHEDULES AND DETAILS

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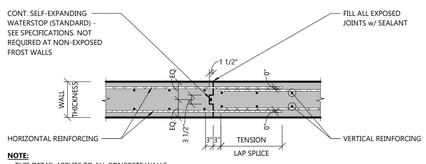
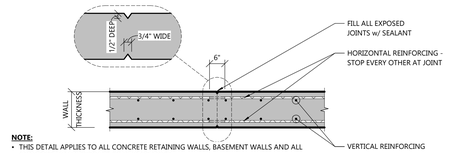


NOTE:
- THIS DETAIL APPLIES TO ALL CONCRETE WALLS
- SEE WALL SCHEDULES/DETAILS FOR REQUIRED REINFORCING SIZE, SPACING, CLEAR DIMENSIONS, ETC.
- JOINT LOCATIONS ARE NOT SHOWN ON PLANS. PROVIDE JOINTS AT:
  - 120'-0" O.C. MAXIMUM
  - ADDITIONAL JOINTS AS REQUIRED BY CONTRACTOR

WALL CONSTRUCTION JOINT

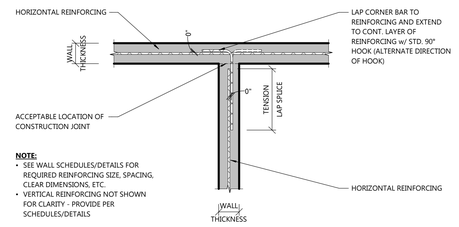


NOTE:
- THIS DETAIL APPLIES TO ALL CONCRETE RETAINING WALLS, BASEMENT WALLS AND ALL CONCRETE WALLS EXPOSED TO 2'-0" OR MORE.
- SEE WALL SCHEDULES/DETAILS FOR REQUIRED REINFORCING SIZE, SPACING, CLEAR DIMENSIONS, ETC.
- JOINT LOCATIONS ARE NOT SHOWN ON PLANS. PROVIDE JOINTS AT:
  - 25'-0" O.C. MAXIMUM
  - 15'-0" MAXIMUM FROM EACH CORNER/INTERSECTION
  - MATCH CONCRETE CONTROL JOINT w/ STRUCTURAL MASONRY WALL CONTROL JOINTS ABOVE (IF APPLICABLE). NOT REQUIRED AT MASONRY VENEER JOINTS

WALL CONTRACTION JOINT

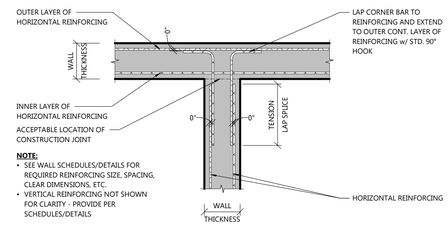
TYPICAL CONCRETE WALL JOINTS

NOT TO SCALE



NOTE:
- SEE WALL SCHEDULES/DETAILS FOR REQUIRED REINFORCING SIZE, SPACING, CLEAR DIMENSIONS, ETC.
- VERTICAL REINFORCING NOT SHOWN FOR CLARITY - PROVIDE PER SCHEDULES/DETAILS

WALL INTERSECTION w/ SINGLE LAYER OF HORIZONTAL REINFORCING



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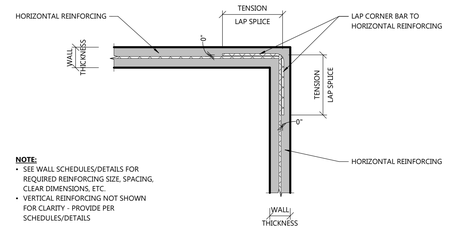
WALLS INTERSECTION w/ DOUBLE LAYER OF HORIZONTAL REINFORCING



NOTE:
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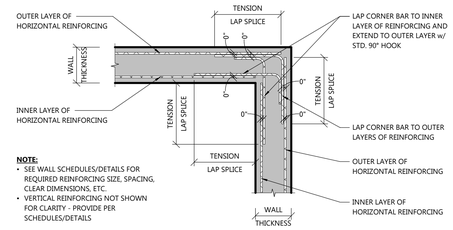
- VERTICAL REINFORCING NOT SHOWN FOR CLARITY - PROVIDE PER SCHEDULES/DETAILS

WALL CORNER w/ SINGLE LAYER OF HORIZONTAL REINFORCING



NOTE:
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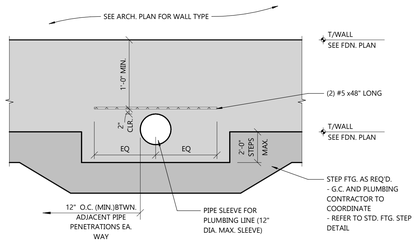
- VERTICAL REINFORCING NOT SHOWN FOR CLARITY - PROVIDE PER SCHEDULES/DETAILS

WALL CORNER w/ DOUBLE LAYER OF HORIZONTAL REINFORCING

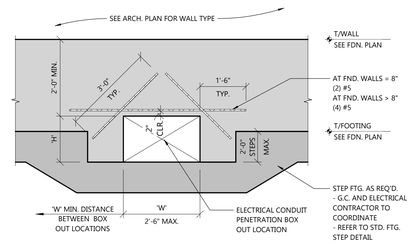
TYPICAL CONCRETE WALL CORNER/INTERSECTION REINFORCING DETAILS

NOT TO SCALE



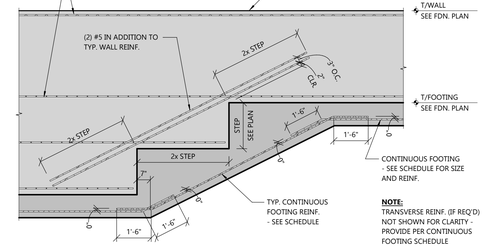
FDN. WALL AT PLUMBING PENETRATIONS

NOT TO SCALE



FDN. WALL AT ELECTRICAL CONDUIT PENETRATIONS

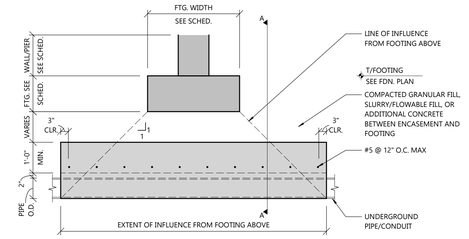
NOT TO SCALE



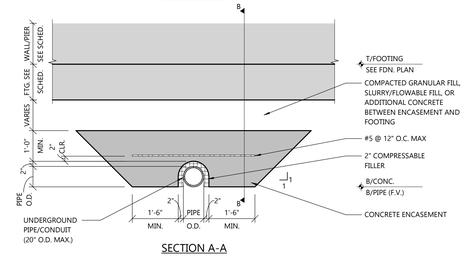
NOTE:

STEPPED FOOTING DETAIL

NOT TO SCALE



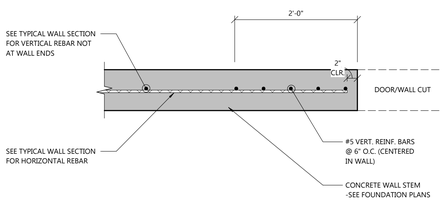
SECTION B-B



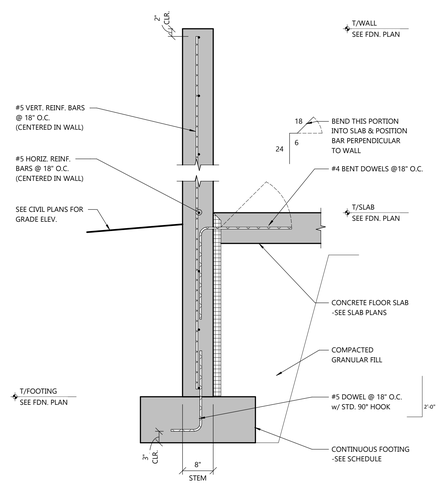
SECTION A-A

PIPE BELOW FOOTING ENCASEMENT DETAIL

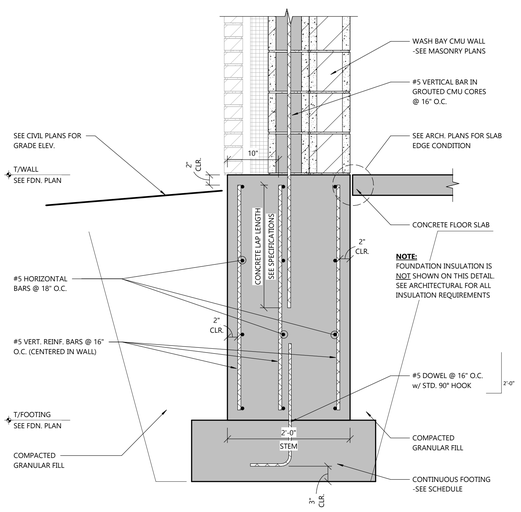
NOT TO SCALE



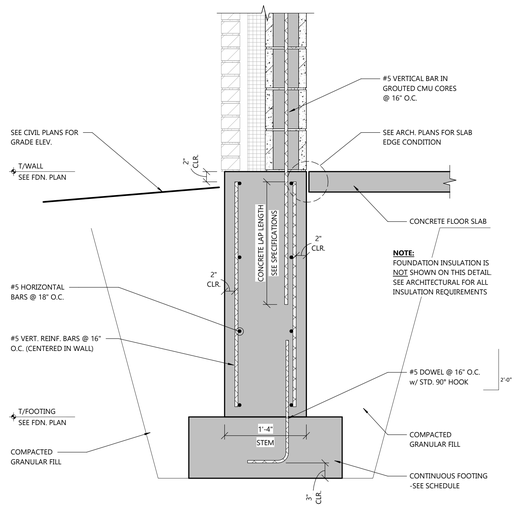
4 S2.1 DETAIL
SCALE: 1" = 1'-0"



3 S2.1 DETAIL
SCALE: 3/4" = 1'-0"



2 S2.1 DETAIL
SCALE: 1" = 1'-0"



1 S2.1 DETAIL
SCALE: 1" = 1'-0"

STRUCTURAL FOUNDATION DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
S2.1

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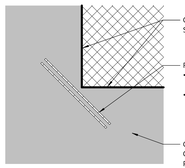
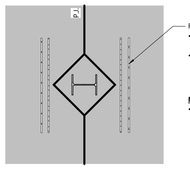
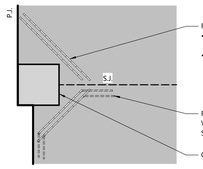


TYPICAL REENTRANT CORNER



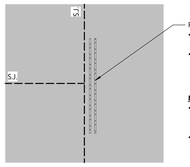
COLUMN WITH POUR JOINT IN SINGLE DIRECTION



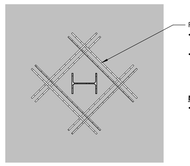
REENTRANT CORNER AT CONCRETE PIER

SUPPLEMENTAL SLAB ON GRADE REINF. NOTES:

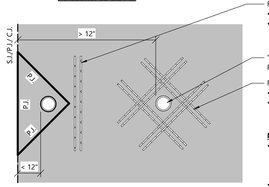
- SLAB REINFORCING NOT SHOWN FOR CLARITY - SEE CONCRETE SLAB ON GRADE SCHEDULE AND DETAILS FOR REQUIREMENTS
- UNDER NO CIRCUMSTANCES SHOULD REBAR CROSS A CONTROL JOINT
- ALL CLEAR DIMENSIONS / SPACING NOT LISTED CAN BE ASSUMED TO BE 2"



DISCONTINUOUS JOINT REINFORCING



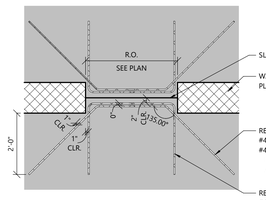
COLUMN WITHOUT POUR JOINT



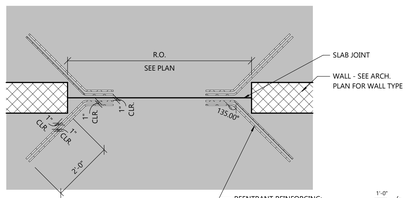
SLAB OBSTRUCTIONS

SUPPLEMENTAL SLAB ON GRADE REINFORCING DETAIL

NOT TO SCALE

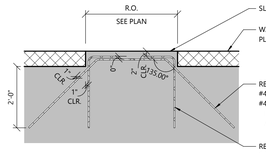


OPENINGS < 6'-0"

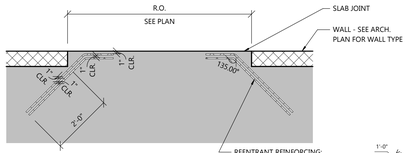


OPENINGS ≥ 6'-0"

DOOR/OPENING CONDITIONS WITH SLAB JOINT LOCATED BETWEEN WALL



OPENINGS < 6'-0"



OPENINGS ≥ 6'-0"

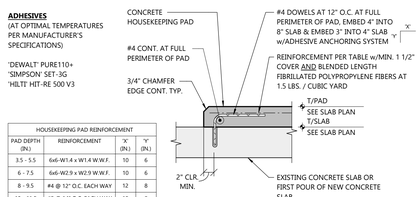
DOOR/OPENING CONDITIONS WITH SLAB JOINT LOCATED FLUSH TO ONE SIDE OF WALL

SLAB ON GRADE REINFORCING AT DOORS/OPENINGS DETAIL

NOT TO SCALE

ADHESIVES
(AT OPTIMAL TEMPERATURES PER MANUFACTURER'S SPECIFICATIONS)

'DEWALT' PURE110+
'SIMPSON' SET-3G
'HILTI' HIT-RE 500 V3



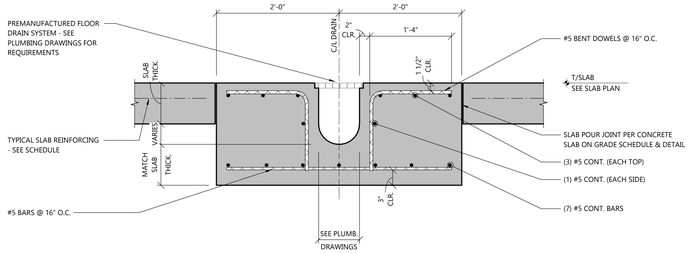
HOUSEKEEPING PAD REINFORCEMENT			
PAD DEPTH (IN.)	REINFORCEMENT	"X" (IN.)	"Y" (IN.)
3.5 - 5.5	6x6-W1.4 x W1.4 W.W.F.	10	6
6 - 7.5	6x6-W2.9 x W2.9 W.W.F.	10	6
8 - 9.5	#4 @ 12" O.C. EACH WAY	12	8
10 - 11.5	#5 @ 14" O.C. EACH WAY	12	8
12 - 14	#5 @ 12" O.C. EACH WAY	12	8

TYPICAL INTERIOR HOUSEKEEPING PAD DETAIL

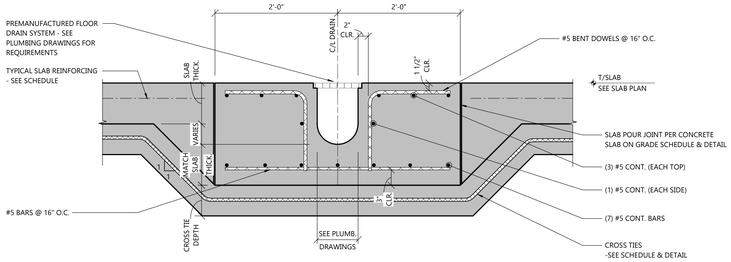
NOT TO SCALE

ISOLATED PREMANUFACTURED TRENCH DRAIN DETAIL

NOT TO SCALE



TYPICAL

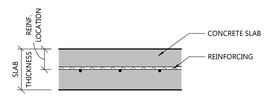


@ CROSSTIES

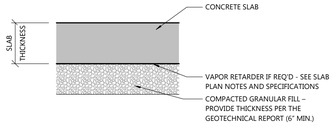
CONCRETE SLAB ON GRADE SCHEDULE

NOTES:
- SEE STRUCTURAL SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
- "EARLY-ENTRY" SAWCUT JOINTS ARE DEFINED AS SAWCUTTING 1 TO 4 HOURS AFTER PLACMENT USING A DRY-CUT SAW WITH A SKID PLATE (1 HOUR IN HOT WEATHER & 4 HOURS IN COLD WEATHER).
- "WET-CUT" SAWCUT JOINTS ARE NOT PERMITTED.
- MICRO FIBER REINFORCING = FRC - BI BLEND 300 FIBRILATED MICRO FIBERS (ASTM C116 TYPE III)
- MACRO FIBER REINFORCING = FORTA FERRO MACRO FIBERS (ASTM 116 TYPE III). FINAL FIBER DOSAGE MUST BE VERIFED w/ FIBER REINFORCING & CONSULTING, LLC' AND INCLUDED IN CONCRETE MIX SUBMITTAL - CONTACT: DAN LARGE AT 262-685-7749 OR DAN.LARGE@FRCLLC.US

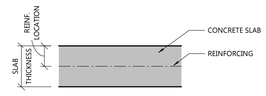
		CONCRETE						SLAB JOINTING					BELOW SLAB INSULATION			
			REINFORCING					SAWCUT JOINT (SJ)		CONSTRUCTION JOINT (CJ)		POUR JOINT (PJ)				
			STEEL			FIBER										
MARK	DESCRIPTION	THICKNESS	REINFORCING	LOCATION	-	TYPE	DOSAGE	TYPE	MAX. JOINT SPACING	TYPE	MAX. JOINT SPACING	TYPE	TOTAL THICKNESS	MIN. COMP. STRENGTH	REQUIRED FINISH FLOOR ELEVATION COORDINATION	REMARKS
SG4	4" LIGHT DUTY	4"	6x6 W1.4xW1.4	CENTERED	-	NONE	-	SJ-A	10'-0"	CJ-B	40'-0"	PJ-B	-	-	-	
SG8	8" HEAVY DUTY	8"	#5 @ 16" O.C. EA. WAY	CENTERED	-	NONE	-	SJ-B	16'-0"	CJ-A	60'-0"	PJ-A	-	-	-	



SINGLE LAYER OF REBAR



TYPICAL CONCRETE SLAB ON GRADE



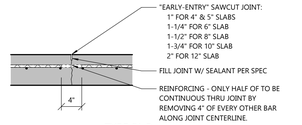
SINGLE LAYER WELDED WIRE FABRIC

CONCRETE SLAB ON GRADE DETAIL

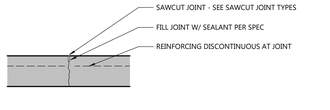
NOT TO SCALE

REINFORCING DETAIL

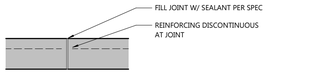
NOT TO SCALE



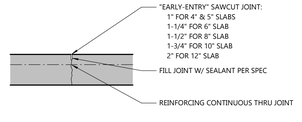
TYPE SJ-B



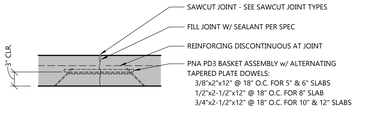
TYPE CJ-B



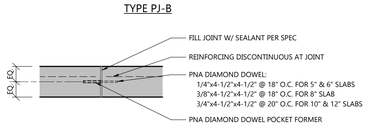
TYPE PJ-B



TYPE SJ-A



TYPE CJ-A



TYPE PJ-A

SAWCUT JOINT TYPES

NOT TO SCALE

CONSTRUCTION JOINT TYPES

NOT TO SCALE

POUR JOINT TYPES

NOT TO SCALE

STRUCTURAL SLAB ON GRADE SCHEDULES AND DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

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JOB NUMBER
250041200

SHEET NUMBER
S2.2

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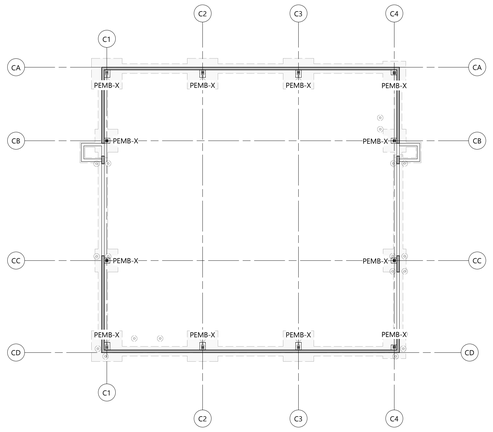
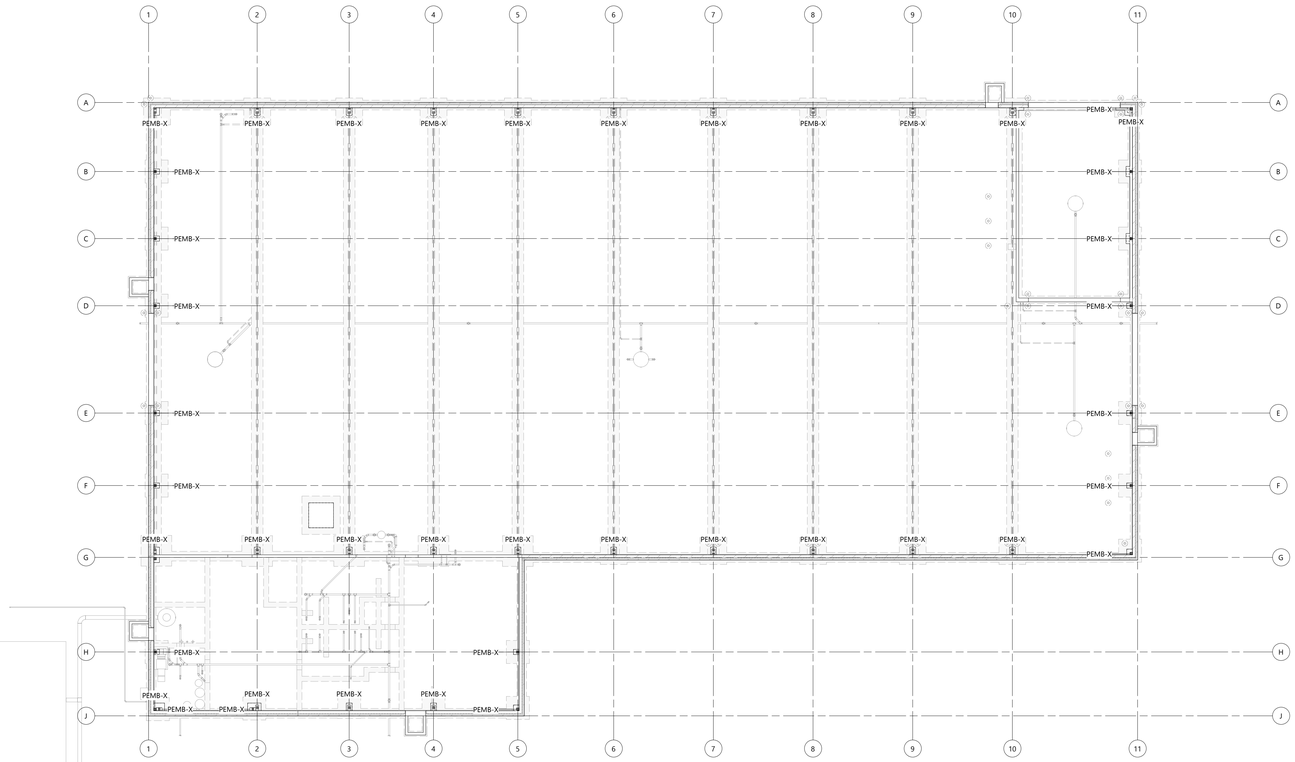


NORTH

PEMB BASE PLAN - AREA 'C'

SCALE: 1/16" = 1'-0"

0' 16' 32'



NORTH

PEMB BASE PLAN - AREA 'A' & 'B'

SCALE: 1/16" = 1'-0"

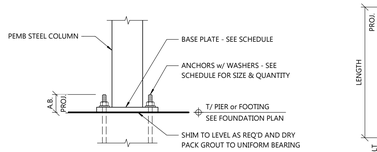
0' 16' 32'

PEMB COLUMN BASE SCHEDULE

NOTES:
- BASE PLATE CONFIGURATION PER PEMB SUPPLIER.
- ALL ANCHOR BOLTS SHALL BE INSTALLED FREE OF DIRT, OIL, OR ANY OTHER CONTAMINANTS WHICH MAY DESTROY OR REDUCE BOND TO CONCRETE PER SSPC-SP1.
- ANCHOR BOLTS SHALL BE PLACED IN FORMS PRIOR TO POURING CONCRETE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ANCHOR BOLTS. ANCHOR BOLT MUST NOT BE PUSHED INTO ALREADY POURED CONCRETE.

	BASE CONDITION			BASE PLATE (PER PEMB DWG.)			BASE ANCHOR			
		GROUT		TYPE	SIZE			SIZE		
MARK	TYPE	REQ'D	THICK.	(SEE PEMB)	W	L	TYPE	DIA.	EMBED.	REMARKS
PEMB-X		No			VARIES	VARIES		3/4"	VARIES	

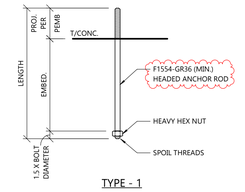
NOTE:
METAL BUILDING COLUMN ANCHOR ROD DIAMETERS & LOCATIONS ARE TO BE PER METAL BUILDING SUPPLIER'S COLUMN ANCHOR BOLT PLAN IN CONJUNCTION WITH THE FOUNDATION PLAN.



TYPE - 1

PEMB COLUMN BASE CONDITION TYPES

NOT TO SCALE

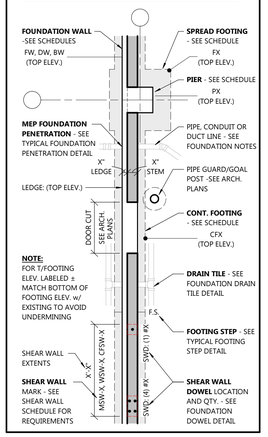


TYPE - 1

PEMB COLUMN ANCHOR TYPES

NOT TO SCALE

FOUNDATION PLAN LEGEND



PEMB FOUNDATION NOTES

- PRE-ENGINEERED METAL BUILDING (PEMB) ANCHOR BOLTS TO BE LOCATED PER METAL BUILDING ANCHOR BOLT PLAN IN CONJUNCTION w/ STRUCTURAL FOUNDATION PLAN.
- HAIRPIN REINFORCING AT COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE HAIRPINS SHALL NOT BE CUT OR REMOVED.
- CROSS TIE REINFORCING BETWEEN COLUMNS NOTED ON PLANS IS REQUIRED TO MAINTAIN THE STRUCTURAL STABILITY OF THE BUILDING. THESE CROSS TIES SHALL NOT BE CUT OR REMOVED.
- ARCHITECT/ENGINEER TO APPROVE FOUNDATION DETAILS w/ FINAL METAL BUILDING REACTIONS AND BASE PLATE LAYOUTS PRIOR TO POURING BUILDING FOUNDATIONS.
- **DO NOT FORM FOUNDATIONS, PRODUCE SHOP DRAWINGS, OR FABRICATE REBAR UNTIL FINAL PEMB SHOP DRAWINGS AND BASE REACTIONS HAVE BEEN APPROVED BY EXCEL AND FINAL COORDINATION IS COMPLETE.**

PEMB ANCHOR BOLT NOTES

- ANCHOR BOLT LAYOUT AND SCHEDULE IS BASED ON DRAWINGS/REACTIONS PROVIDED TO EXCEL BY PEMB SUPPLIER DATED FEB. XX, 202X. ANY UPDATES AFTER THIS DATE HAVE NOT BEEN ACCOUNTED FOR IN ANCHOR BOLT/FOUNDATION DESIGN AND MUST BE VERIFIED BY EXCEL PRIOR TO ANY WORK.
- PEMB SUPPLIER TO DESIGN PEMB STRUCTURE FOR LATERAL AND GRAVITY LOADS PROVIDED:
  - **NOTE:** DESIGN FOR ALL LOADS SHOWN ON FRAMING PLANS AND SD SHEETS. SEE SPECIFICATIONS FOR REQUIREMENTS OF DELEGATED DESIGN SUBMITTALS. STAMPED PLANS AND CALCULATIONS TO BE SUBMITTED TO EXCEL ENGINEERING FOR REVIEW PRIOR TO FABRICATION.
- ALL PEMB ANCHOR BOLTS MUST BE CAST-IN-PLACE. POST INSTALLED ANCHORS WILL NOT BE ACCEPTED.
- PEMB BASE PLATE DETAIL REFERS TO BUILDING SUPPLIER ANCHOR BOLT PLANS & DETAILS.
- VERIFY BOLT PROJECTION WITH PEMB SUPPLIER.
- PIER OUTLINES & ANCHOR BOLT LOCATIONS ARE FOR GENERAL REFERENCE. SEE FOUNDATION PLAN & PEMB DRAWINGS FOR FINAL DIMENSIONAL INFORMATION.

KEY PLAN

STRUCTURAL PEMB BASE CONDITION REQUIREMENTS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

S2.3

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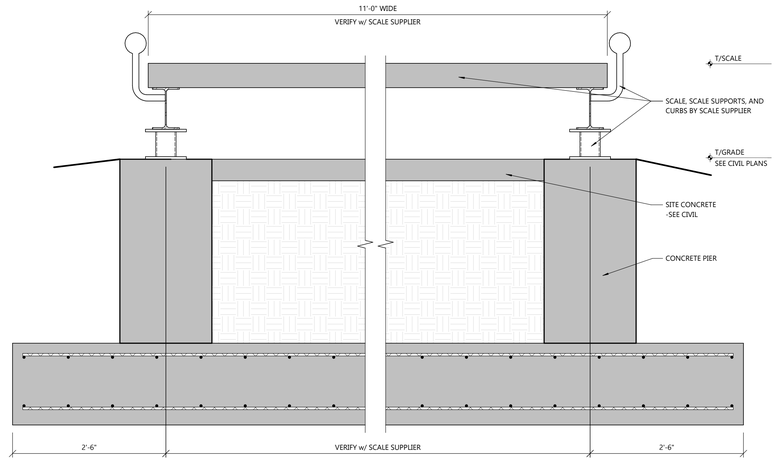
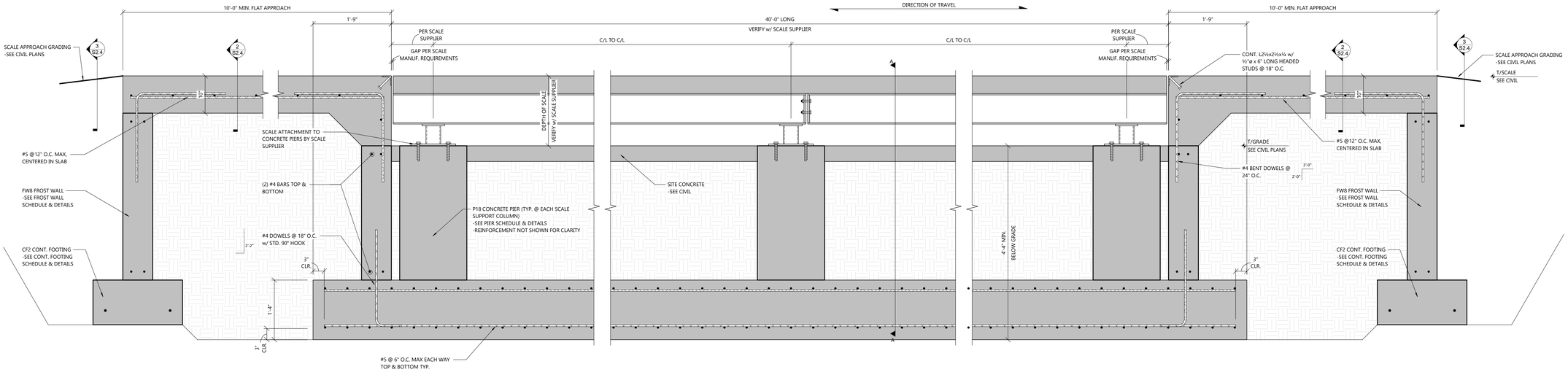
NOTE:
SEE ALTERNATE BID A3 FOR ALTERNATE PRICE FOR INSTALLATION OF SCALE FOUNDATION.

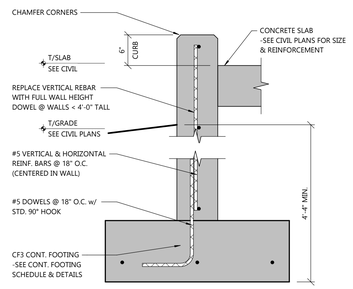
NOTE:
DO NOT FORM FOUNDATIONS, PRODUCE SHOP DRAWINGS, OR FABRICATE REBAR UNTIL SCALE SHOP DRAWINGS HAVE BEEN APPROVED BY EXCEL AND FINAL COORDINATION IS COMPLETE



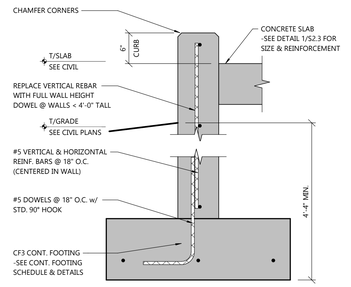
SECTION A-A



1 S2.4 **TRUCK SCALE**
SCALE: 1" = 1'-0"



3 S2.4 **SCALE SLOPED APPROACH CURB DETAIL**
SCALE: 1" = 1'-0"



2 S2.4 **SCALE FLAT APPROACH CURB DETAIL**
SCALE: 1" = 1'-0"

STRUCTURAL TRUCK SCALE DETAILS

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EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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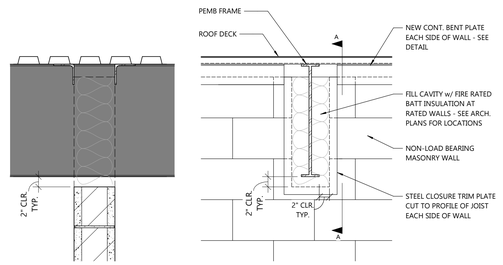

SECTION A-A
@ PEMB FRAME

3 S3.0 PEMB FRAME POCKET AT NB MASONRY WALL
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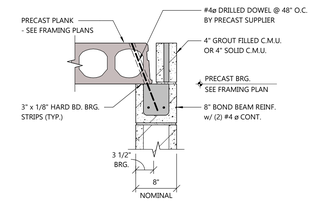

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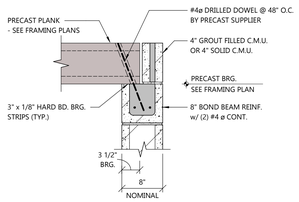

1 S3.0 DETAIL
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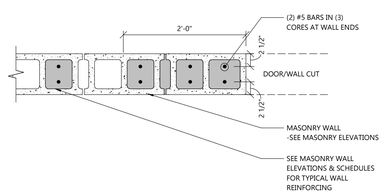

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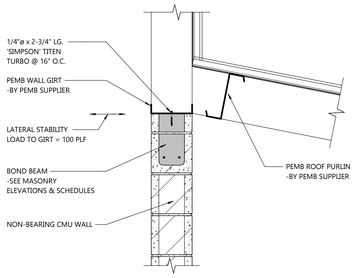
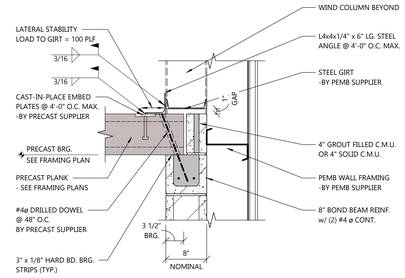


5 S3.0 DETAIL
SCALE: 1" = 1'-0"



4 S3.0 DETAIL
SCALE: 1" = 1'-0"

STRUCTURAL FRAMING DETAILS

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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SHEET NUMBER
S3.0

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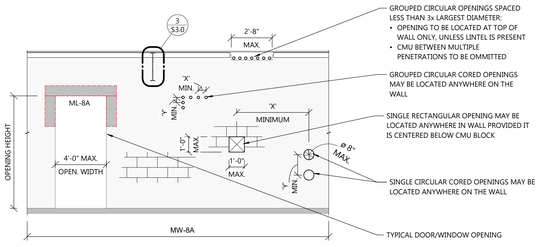
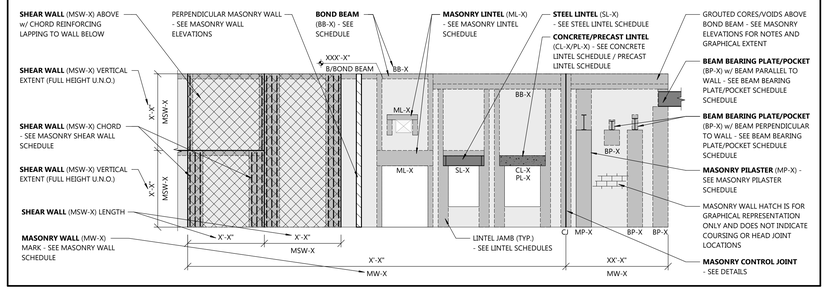


NOTES:
- ANY OPENING NOT MEETING THE PARAMETERS IN THIS DETAIL IS NOT PERMITTED AND REQUIRES A LINTEL.
- OPENINGS THROUGH WALL/LINTEL/SHEARWALL/PILASTER/BEARING POCKET EXTENTS ARE NOT PERMITTED.
- MAXIMUM SIZE AND MINIMUM SPACING REQUIREMENTS:
  - OPENING SIZE (WIDTH, HEIGHT, DIAMETER) AS NOTED ABOVE
  - "X" = 3x LARGEST OPENING WIDTH/DIAMETER
  - "Y" = 2x LARGEST OPENING HEIGHT/DIAMETER

TYPICAL UNREFERENCED INTERIOR NON LOAD BEARING MASONRY WALL

NOT TO SCALE

MASONRY WALL ELEVATION SYMBOLS



MASONRY WALL NOTES

- SEE DESIGN LOADS ON S0 SHEETS FOR ALL DESIGN LOADS NOT SHOWN ON PLANS.
- SEE GENERAL BUILDING SPECIFICATIONS ON A0 SHEETS AND STRUCTURAL SPECIFICATIONS ON S0 SHEETS FOR MATERIAL SPECIFICATIONS NOT SHOWN ON PLANS.
- LOCATIONS OF GROUTED/REINFORCED MASONRY IS TO BE MARKED BY MASONRY CONTRACTOR FOR FIELD COORDINATION BETWEEN TRADES. SEE MASONRY MARKING REQUIREMENTS DETAIL ON S5 SHEETS.
- SEE ARCHITECTURAL PLANS FOR LOCATIONS OF ALL DOOR AND WINDOW OPENINGS - DIMENSIONS ARE INTENTIONALLY NOT SHOWN ON THIS PLAN.
- DIMENSIONS OF LINTELS FOR MEP PENETRATIONS ARE FOR LOCATING THE STRUCTURAL COMPONENTS (I.E. BEAM AND JAMBS) ONLY. PENETRATION TO BE BELOW MASONRY BEAM AND BETWEEN MASONRY JAMBS AS SHOWN ON MASONRY ELEVATIONS. DIMENSIONS ARE **NOT** SHOWN FOR THE REQUIRED PENETRATION/MASONRY OPENING SIZE. COORDINATE INSTALLATION METHOD AND REQUIRED PENETRATION/MASONRY OPENING SIZE PRIOR TO INSTALLATION.
- PENETRATION OF MASONRY ELEMENTS (WALL, SHEAR WALL, LINTEL, JAMB, BOND BEAM, BEARING POCKET, PILASTER, ETC.) IS NOT PERMITTED EXCEPT AS EXPLICITLY SHOWN ON MASONRY PLANS/ELEVATIONS OR BY WRITTEN APPROVAL FROM EXCEL ENGINEERING. CONTACT EXCEL FOR ANY ADDITIONAL REQUIRED PENETRATIONS, NOT SHOWN ON PLANS, PRIOR TO INSTALLATION/CUTTING/CORING.
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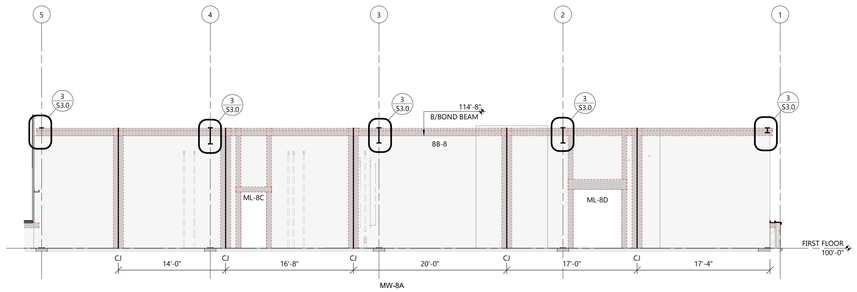
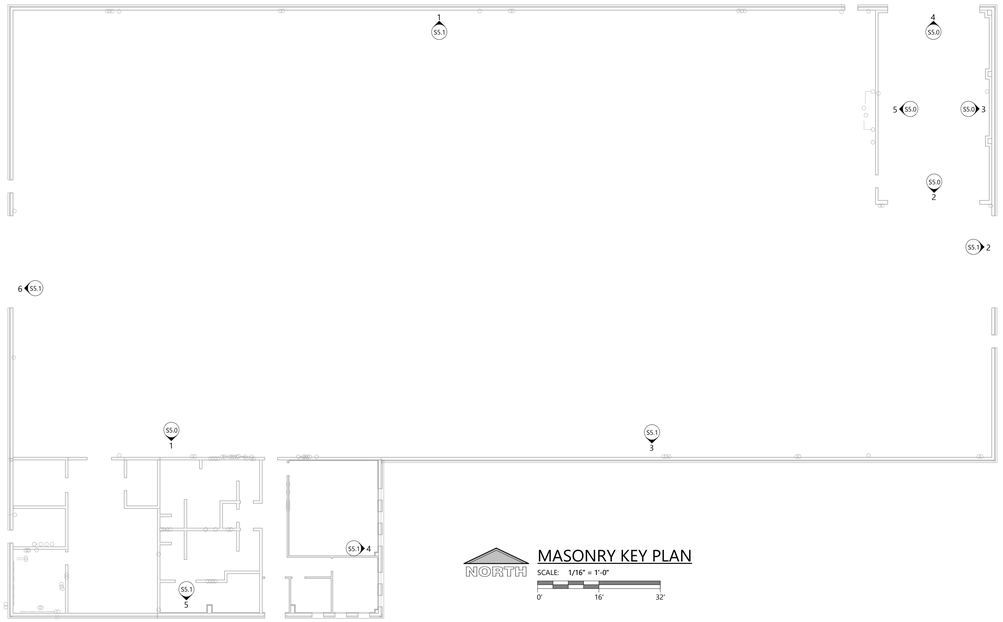
- PROVIDE HORIZONTAL JOINT REINFORCEMENT AT TOP & BOTTOM OF MASONRY WALL OPENINGS. EXTEND 24" (MIN.) PAST EDGE OF OPENINGS. SEE SPECIFICATIONS FOR REQUIREMENTS.
- PROVIDE CONTINUOUS HORIZONTAL JOINT REINFORCEMENT WITHIN 16" OF TOP OF ALL MASONRY WALLS. SEE SPECIFICATIONS FOR REQUIREMENTS.

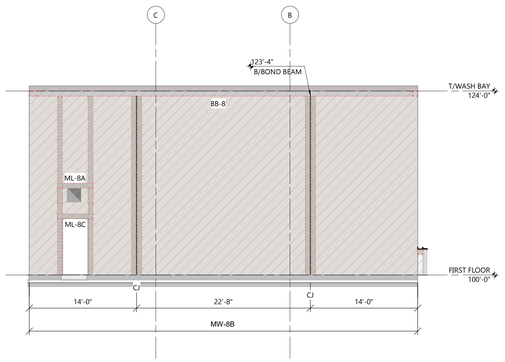


1 S5.0 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"

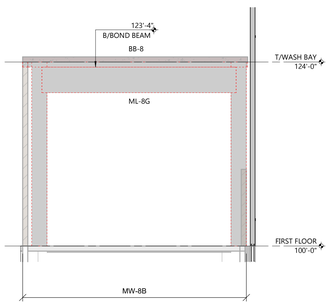


NORTH

MASONRY KEY PLAN
SCALE: 1/16" = 1'-0"
0' 16' 32'



5 S5.0 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"



4 S5.0 MASONRY ELEVATION
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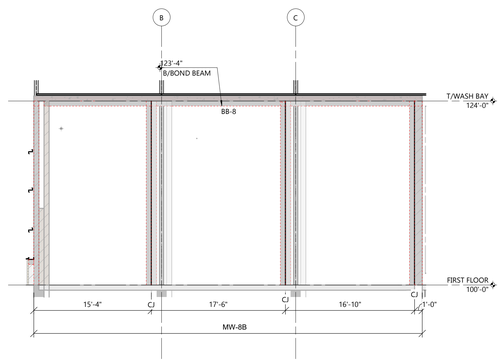

3 S5.0 MASONRY ELEVATION
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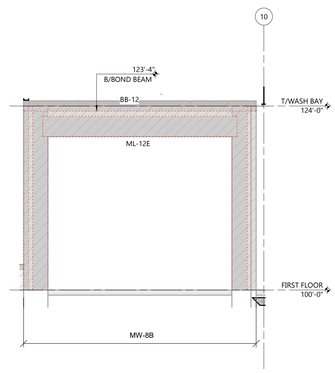

2 S5.0 MASONRY ELEVATION
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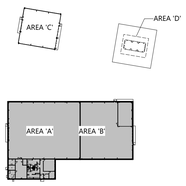

KEY PLAN

STRUCTURAL MASONRY ELEVATIONS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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JOB NUMBER
250041200

SHEET NUMBER
S5.0

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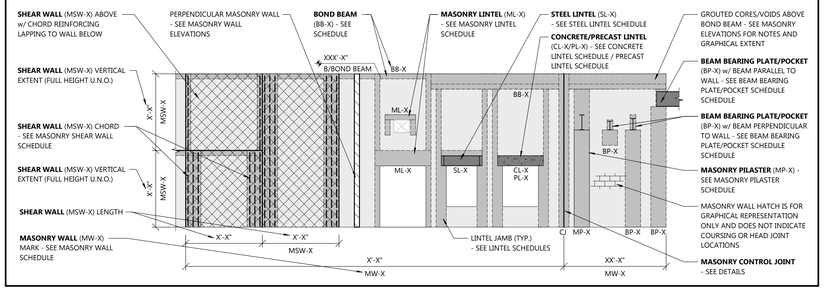
MASONRY WALL ELEVATION SYMBOLS



MASONRY WALL NOTES

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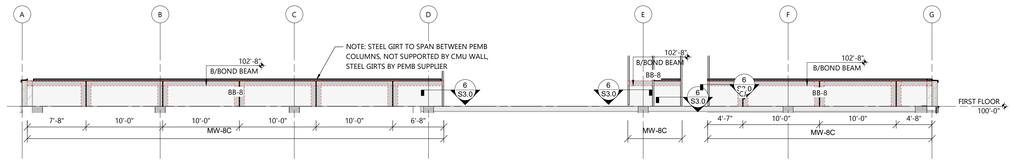
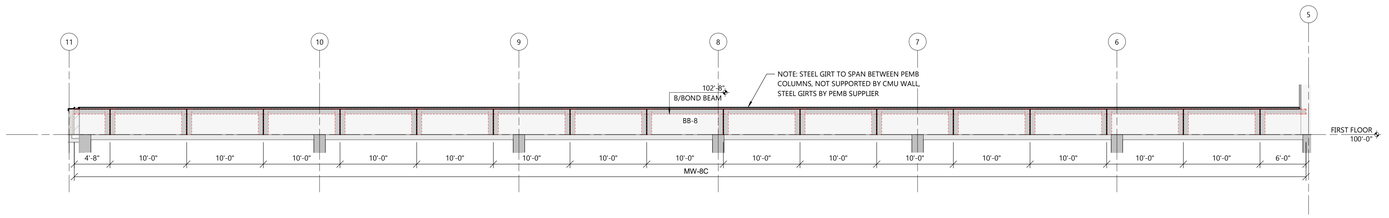


2 S5.1 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"



3 S5.1 MASONRY ELEVATION
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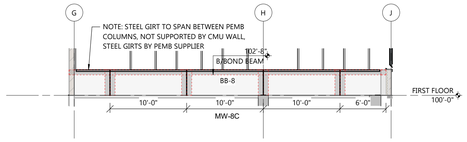
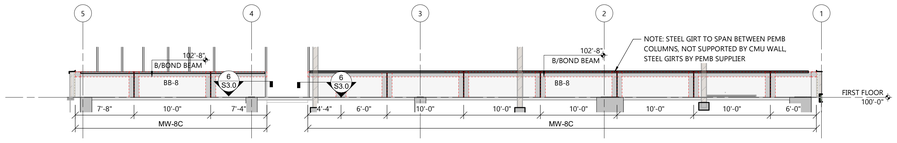


4 S5.1 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"



5 S5.1 MASONRY ELEVATION
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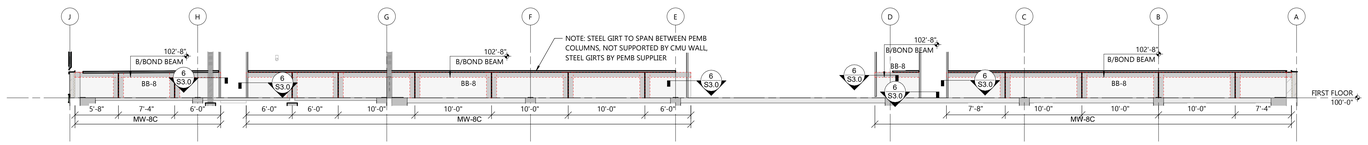
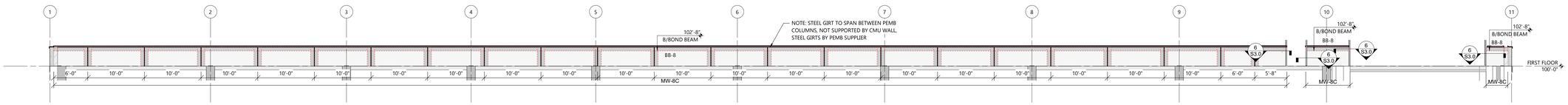


6 S5.1 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"



1 S5.1 MASONRY ELEVATION
SCALE: 1/8" = 1'-0"

KEY PLAN

STRUCTURAL MASONRY ELEVATIONS

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
S5.1

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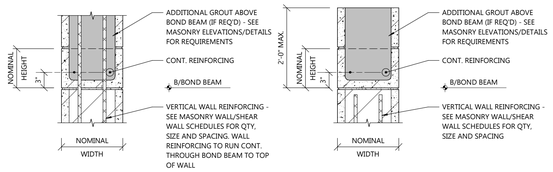
MASONRY BOND BEAM SCHEDULE

NOTES:
- SEE SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.
- BOND BEAM HEIGHT LISTED IS MINIMUM.
- SEE MASONRY ELEVATIONS FOR ADDITIONAL GROUT ABOVE BOND BEAM.

MARK	SIZE		REINFORCING	REMARKS
	NOMINAL WIDTH	NOMINAL HEIGHT		
BB-8	8"	8"	(2) #4	
BB-12	1'-0"	8"	(2) #5	



TYPICAL BOND BEAM

TOP OF WALL BOND BEAM

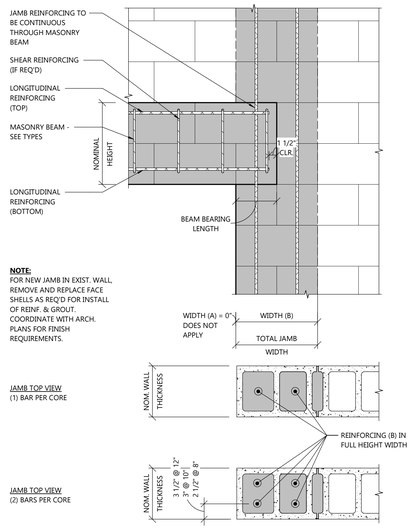
MASONRY BOND BEAM DETAIL

NOT TO SCALE

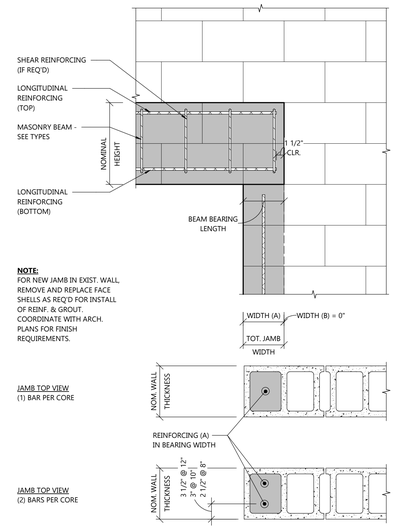
MASONRY LINTEL SCHEDULE

NOTES:
- SEE SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.
- GROUT DEPTH BELOW LINTEL BEARING NOTED AS SOLID REFERS TO GROUTED CORES/VOIDS CONTINUOUS FROM BEAM/LINTEL BEARING TO FOUNDATION/STRUCTURAL SUPPORT BELOW. SEE MASONRY ELEVATION FOR GRAPHICAL EXTENT.

MARK	NOMINAL WALL THICKNESS	MASONRY BEAM						GROUT DEPTH BELOW LINTEL BEARING		TOTAL JAMB WIDTH (A+B)	MASONRY JAMB								
		SIZE		REINFORCING		BEARING LENGTH	TYPE				BELOW LINTEL BEARING (A)				FULL HEIGHT (B)				REMARKS
		NOMINAL WIDTH	NOMINAL HEIGHT	LONGITUDINAL	SHEAR						WIDTH (A)	REINFORCING (A) QTY. IN EACH CORE	REINFORCING (A) SIZE	REINFORCING (A) TOTAL QTY.	WIDTH (B)	REINFORCING (B) QTY. IN EACH CORE	REINFORCING (B) SIZE	REINFORCING (B) TOTAL QTY.	
ML-8A	8"	8"	8"	(2) #4	-	8"	A	2'-0"		8"	8"	0	-	0					
ML-8C	8"	8"	8"	(2) #4	-	8"	A		SOLID	8"					8"	1	#5	1	
ML-8D	8"	8"	1'-4"	(2) #4	-	8"	A		SOLID	8"					8"	1	#5	1	
ML-8G	8"	8"	3'-4"	(2) #6	-	8"	A		SOLID	2'-0"					2'-0"	2	#5	6	
ML-12E	1'-0"	1'-0"	2'-8"	(2) #6	-	8"	A		SOLID	2'-0"					2'-0"	2	#5	6	



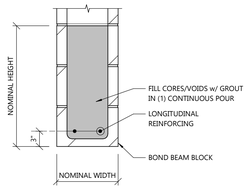
CASE 1: LINTEL JAMB [WIDTH (B)] FULL HEIGHT



CASE 2: LINTEL JAMB [WIDTH (A)] BELOW BEARING ONLY

MASONRY LINTEL DETAIL

NOT TO SCALE



TYPE - A

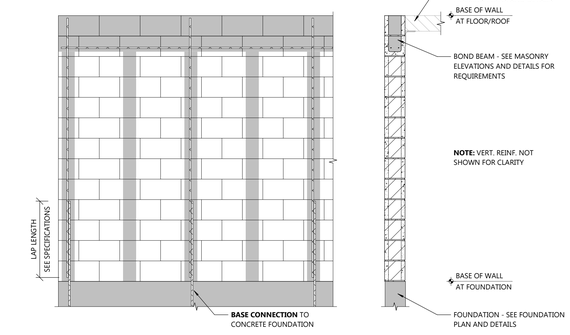
MASONRY LINTEL TYPES

NOT TO SCALE

MASONRY WALL SCHEDULE

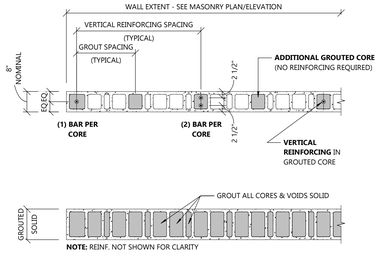
NOTES:
- SEE SPECIFICATIONS FOR CONSTRUCTION MATERIAL REQUIREMENTS.
- HORIZONTAL REINFORCING IN SCHEDULE IS IN ADDITION TO MINIMUM HORIZONTAL REINFORCING - SEE SPECIFICATIONS FOR MINIMUM REQUIRED HORIZONTAL REINFORCING.

MARK	NOMINAL WALL THICKNESS	BOND PATTERN	VERTICAL REINFORCING	GROUTED CORE SPACING	ADDITIONAL HORIZONTAL REINFORCING	BASE CONNECTION	REMARKS
MW-8A	8"	RUNNING BOND	NOT REQ'D	48" O.C.	NOT REQ'D	MORTAR TO CONCRETE	
MW-8B	8"	RUNNING BOND	#5 @ 48" O.C.	MATCH REINF. SPACING	NOT REQ'D	MORTAR TO CONCRETE	
MW-8C	8"	RUNNING BOND	#5 @ 16" O.C.	MATCH REINF. SPACING	NOT REQ'D	DOWEL TO FOUNDATION STEM	



ELEVATION

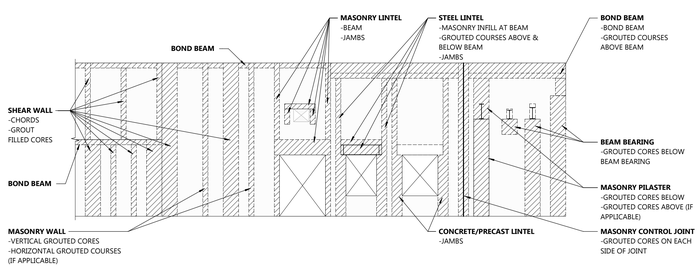
SECTION



TOP VIEW

MASONRY WALL DETAIL

NOT TO SCALE



NOTES:
- MASONRY CONTRACTOR IS REQUIRED TO MARK ALL LOCATIONS OF GROUTED/REINFORCED CORES NOTED ABOVE.
  - EXCEPTION: MASONRY WALL FACES THAT ARE ARCHITECTURALLY EXPOSED AND UNPAINTED SHALL NOT BE MARKED. CARE SHALL BE TAKEN TO COORDINATE LOCATIONS OF GROUTED/REINFORCED CORES WITH ALL TRADES.
- MARKS SHALL BE MADE ON FACE OF UNFINISHED MASONRY AND BE ON A MINIMUM OF ONE SIDE OF WALL.
- MARKING TO BE DIAGONAL LINES MADE WITH WIDE WHITE PAINT MARKER (OR SIMILAR) AND SPACED APPROXIMATELY 3" TO 8" O.C.

MASONRY MARKING REQUIREMENTS

NOT TO SCALE

STRUCTURAL MASONRY SCHEDULES

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
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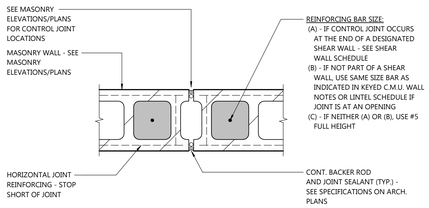
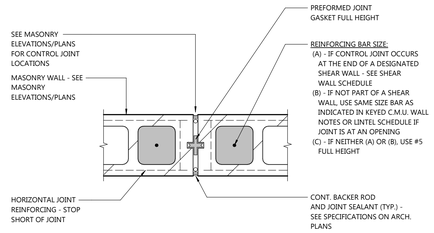


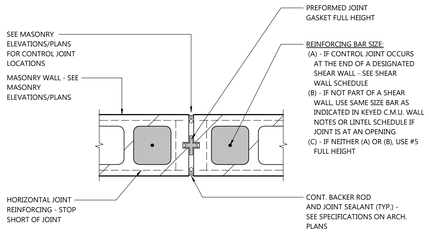
A TYP. CONTROL JOINT

NOT TO SCALE
NOTE: FOR USE AT NON-RATED WALLS ONLY



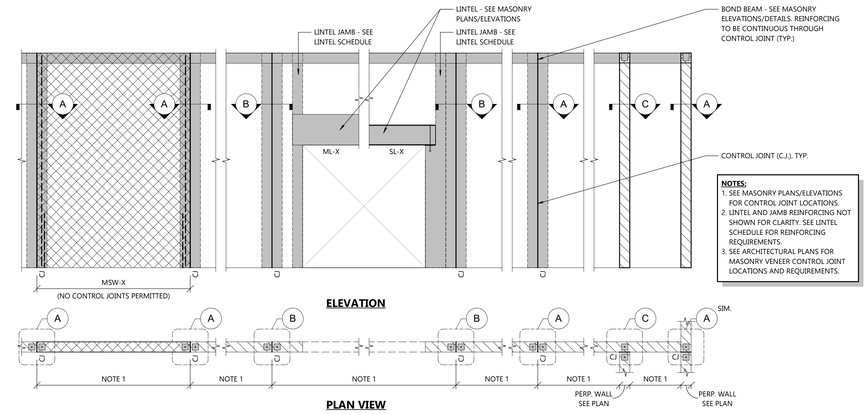
A TYP. CONTROL JOINT

NOT TO SCALE
NOTE: FOR USE AT WALLS UP TO 2 HR. RATED



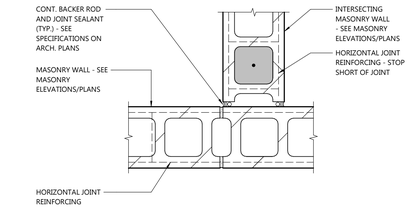
B CONTROL JOINT AT DOOR/WINDOW

NOT TO SCALE
NOTE: FOR USE AT WALLS UP TO 2 HR. RATED WHERE CONTROL JOINT IS ADJACENT TO A DOOR OR WINDOW



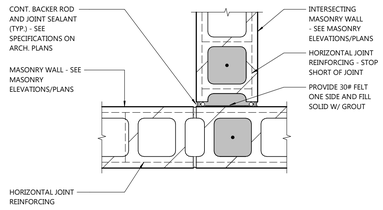
MASONRY CONTROL JOINT LEGEND

NOT TO SCALE



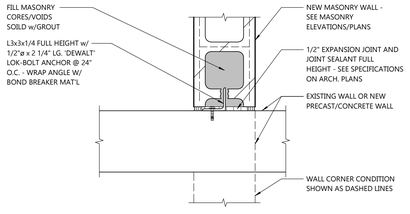
C CONTROL JOINT AT INTERSECTING WALL

NOT TO SCALE
NOTE: FOR USE AT NON-RATED WALLS ONLY



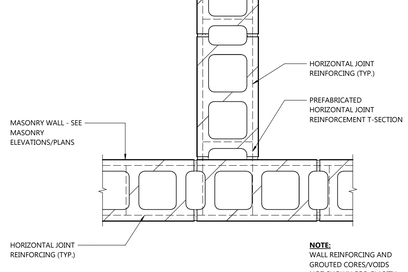
C CONTROL JOINT AT INTERSECTING WALL

NOT TO SCALE
NOTE: FOR USE AT WALLS UP TO 4 HR. RATED



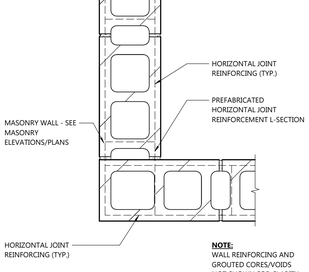
CONTROL JOINT AT NON-MASONRY/EXISTING WALL

NO SCALE
(NOT REF. ON PLANS)



TYPICAL MASONRY INTERSECTING WALL DETAIL

NOT TO SCALE
(NOT REF. ON PLANS)



TYPICAL MASONRY CORNER DETAIL

NOT TO SCALE
(NOT REF. ON PLANS)

STRUCTURAL MASONRY CONTROL JOINT DETAILS

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100 Camelot Drive
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PLUMBING SPECIFICATIONS

DIVISION 22 PLUMBING

22 05 00 BASIC PLUMBING REQUIREMENTS

A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS AND DIVISION OF WORK DESCRIPTION.
B. SUBSTITUTIONS
1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
3. WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ ENGINEER
4. CONTRACTOR SHALL ASSUME ALL COORDINATION RESPONSIBILITIES FOR SUBSTITUTE EQUIPMENT INCLUDING COORDINATION ACROSS TRADES AND COORDINATION OF PREVIOUSLY REVIEWED AND APPROVED SHOP DRAWING SUBMITTALS, SHOULD THESE SHOP DRAWINGS BE AFFECTED BY THE SUBSTITUTED EQUIPMENT.
C. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS:
1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS.
2. PLUMBING CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
a. PIPING
b. PIPE IDENTIFICATION
c. FIXTURES
d. INSULATION
1). MICA INSULATION STANDARDS PLATES
e. HANGERS
f. DRAINS AND CLEANOUTS
g. VALVES
1). VALVE STEM EXTENSIONS
h. BACKFLOW PREVENTERS
i. WATER HEATERS
j. WATER HEATER FLUES
k. PUMPS
l. COMPRESSED AIR PIPING
m. COMPRESSED AIR EQUIPMENT AND FILTERS
n. WATER TREATMENT EQUIPMENT
o. INTERCEPTORS
p. WELL
3. PROJECT CLOSEOUT
a. PROVIDE PLUMBING EQUIPMENT OPERATING AND MAINTENANCE MANUALS TO THE OWNER PER IMC 364.0313(3).
4. "AS-BUILT" DRAWINGS SHALL BE MARKED ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
D. FINISHING AND PAINTING
1. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
E. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
F. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
G. REGULATORY REQUIREMENTS
1. PROVIDE CERTIFICATE OF COMPLIANCE FROM AUTHORITY HAVING JURISDICTION INDICATING APPROVAL BACKFLOW PREVENTION DEVICE'S TESTING AND INSTALLATION.
2. PERFORM WORK PER STATE OF WISCONSIN CHAPTER SPS 382, "DESIGN, CONSTRUCTION, INSTALLATION, SUPERVISION, AND INSPECTION OF PLUMBING", AND "STANDARD SPECIFICATION FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN".
3. PERFORM WORK PER THE VERSION OF THE ENERGY CODE AS ADOPTED WITHIN THE JURISDICTION.
H. VERIFY CONNECTION REQUIREMENTS AND DRAINAGE DISCHARGE LOCATIONS FOR EQUIPMENT FURNISHED BY OTHERS WITH FINAL SHOP DRAWINGS.
I. COORDINATE INSTALLATION OF PLUMBING WORK WITH ALL OTHER CONTRACTORS ON PROJECT TO AVOID CONFLICTS WITH OTHER WORK.
J. STRUCTURAL PENETRATIONS
1. OPENINGS THRU BEAMS OR COLUMNS OR ANY OTHER STRUCTURAL MEMBER ARE NOT PERMITTED UNLESS APPROVED BY STRUCTURAL ENGINEER.
K. FIRE RATED INTERIOR WALL AND FLOOR PIPE PENETRATIONS
1. SLEEVE REQUIRED FOR PENETRATION OF CONCRETE AND MASONRY WALLS AND FLOORS.
2. SEAL OPENING AROUND PIPE WITH A UL-APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
3. FIRE-RESISTIVE JOINT SYSTEM PRODUCTS BY THE SAME MANUFACTURER AS BEING USED ON THE REMAINDER OF THE PROJECT.
4. INSULATION SHALL BE CONTINUOUS THROUGH THE PENETRATION FOR INSULATED SYSTEMS.
5. PROVIDE UL ASSEMBLY PENETRATION NUMBER TO AHJ COMPLIANT WITH BUILDING UL ASSEMBLY 30 DAYS PRIOR TO INSTALLATION IF REQUIRED BY AHJ.
L. ESCUTCHEONS
1. INSTALL ONE-PIECE (TWO PIECE FOR EXISTING PIPING) POLISHED CHROME PLATED STEEL ESCUTCHEONS AT PENETRATIONS EXPOSED IN FINISHED ROOMS (ROOMS WHICH DON'T HAVE UNFINISHED CONCRETE FLOORS).
2. ESCUTCHEONS NOT REQUIRED WHERE INSULATION BUTTED TO WALL/CEILING FULLY COVERS THE SLEEVE/WALL OPENING AND INSULATION IS CAULKED AT WALL/CEILING.
3. ESCUTCHEONS WITH SPRINGS FOR WALL AND CEILING LOCATIONS.
4. ID TO CLOSELY FIT AROUND PIPE/INSULATION, OD THAT COMPLETELY COVERS THE OPENING.
5. ESCUTCHEONS REQUIRED IN CABINETS AND CASEWORK.
6. SEE DETAILS FOR ESCUTCHEONS IN HARSH ENVIRONMENT ROOMS.
M. PROTECT PIPING AGAINST ENTRY OF FOREIGN MATTER DURING CONSTRUCTION. PROVIDE TEMPORARY END CAPS AND SEALS.
N. USE ONLY NEW MATERIAL, FREE OF DEFECTS, RUST AND SCALE, AND MEETING THE LATEST REVISION OF THE ASTM SPECIFICATIONS.
O. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FROM INSIDE AND OUTSIDE OF PIPE AND FITTINGS BEFORE ASSEMBLY.
P. PROJECT COMPLETION
1. CLEAN FIXTURES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
2. REMOVE, CLEAN AND REPLACE AERATORS AFTER FLUSHING WATER PIPING.
3. FURNISH THE NECESSARY SKILLED, QUALIFIED PERSONNEL FOR OPERATING THE SYSTEM FOR A TOTAL OF TWO (2) HOURS. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS, DOCUMENTING THE DATE, TIME INVOLVED, PEOPLE IN ATTENDANCE AND HAVE THE OWNER'S REPRESENTATIVE ATTEST IN WRITING FOR EACH SESSION HELD.

22 05 13 MOTORS AND ELECTRICAL WORK

A. STARTERS
1. SEE ELECTRICAL STARTER DISCONNECT SCHEDULE ON PLANS.

22 05 19 METERS AND GAUGES

A. HARSH ENVIRONMENT ROOMS
1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS (I.E. THERMOMETER AND PRESSURE GAUGE SCALE RANGES).
2. PRESSURE GAUGES:
a. TRERICE 620B PBF STAINLESS STEEL CASE, PHOSPHOR BRONZE TUBE, BRASS SOCKET, 4-1/2" DIAMETER, ACRYLIC WINDOW.
b. GAUGE COCK: NIBCO T-560-S6-R-66-LL, THREADED ONE PIECE REDUCED PORT, 1/4" STAINLESS STEEL BALL VALVE.
c. TRERICE 872-S STAINLESS STEEL PRESSURE SNUBBER.
3. THERMOMETER
a. TRERICE 80030 STAINLESS STEEL 3 1/2" DIAMETER CASE, LIQUID ACTUATED, ADJUSTABLE ANGLE, ACRYLIC SNAP IN WINDOW WITH O-RING SEAL.
B. PRESSURE GAUGES AND THERMOMETERS
1. MANUFACTURERS: TRERICE, U.S. GAUGE, ASHCROFT, MARSH, WEISS, WEKSLER.
2. PRESSURE GAUGES
a. GENERAL PURPOSE: TRERICE 600CB PBF CERTIFIED LEAD-FREE CAST ALUMINUM CASE, PHOSPHOR BRONZE BOURDON TUBE, 4-1/2" DIAMETER; TRERICE 872-2 LEAD FREE BRASS PRESSURE SNUBBER.
1). GAUGE COCK: APOLLO 77FLF-100 LEAD FREE FULL PORT THREADED BRASS VALVE, 150 PSI SWP, 400 DEG F MAXIMUM TEMPERATURE.
b. COMPRESSED AIR: TRERICE 600CB CAST ALUMINUM CASE, PHOSPHOR BRONZE BOURDON TUBE, A-1/2" DIAMETER, APOLLO 77C-101-01 GAUGE COCK AND TRERICE 870-1 PULSATION DAMPER.
3. STEM THERMOMETERS:
a. GENERAL PURPOSE: TRERICE BX9, ASTM E1, ORGANIC SPIRIT LIQUID FILL, CAST ALUMINUM CASE WITH EPOXY FINISH, CAST ALUMINUM ADJUSTABLE JOINT WITH POSITIVE LOCKING DEVICE, 9" SCALE, 3/4" NPT BRASS STEM, WITH EXTENSIONS AS REQUIRED FOR INSULATION.
b. PROVIDE THERMOWELL FOR ALL THERMOMETERS. BRASS IN COPPER TUBING, STAINLESS STEEL IN STAINLESS STEEL PIPE. SIZE AND INSERTION LENGTH FOR APPLICATION. PROVIDE HEAT TRANSFER MEDIUM.
c. BRASS SEPARABLE SOCKETS FOR THERMOMETER STEMS WITH OR WITHOUT EXTENSIONS AS REQUIRED AND WITH CAP AND CHAIN.
4. SCALE RANGES AND MINIMUM INCREMENT AS FOLLOWS:
a. COLD WATER: 0-100 PSIG/ 1 PSIG; 0-100 DEG F/ 1 DEG F
b. HOT WATER: 0-100 PSIG/ 1 PSIG; 0-160 DEG F/ 2 DEG F.
c. BOOSTED PRESSURE WATER: 100-400 PSIG/10 PSIG; 20-180 DEG / 2 DEG F
d. COMPRESSED AIR: 0-300 PSIG/5 PSIG.
5. EXTEND NIPPLES TO ALLOW INSULATION CLEARANCE.
6. INSTALL WHERE READ FROM NORMAL OPERATING LEVEL. INSTALL VERTICAL TO 45 DEGREES OFF VERTICAL.
7. CALIBRATE FOR ACCURACY.

22 05 29 PIPE AND EQUIPMENT HANGERS AND SUPPORTS

A. HARSH ENVIRONEMNT ROOMS
1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS.
2. SEE PROCESS ROOM HANGER DETAILS.
3. ALL MATERIALS SHALL BE STAINLESS STEEL.
4. DO NOT USE RIBBED HANGER SHIELDS UNDER PVC JACKET.
B. MANUFACTURERS: B-LINE, EMPIRE INDUSTRIES, GLOBAL PIPE HANGER PRODUCTS, GRINNELL, NATIONAL PIPE HANGER, UNI STRUT.
C. ANGLES, CHANNELS, AND BEAMS: ASTM A36 AND A572 AS REQUIRED.
D. HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING.
E. ATTACHMENT TO METAL DECK: HANGERS MAY BE ANCHORED TO METAL FLOOR/ROOF DECK IF ALL THE FOLLOWING CONDITIONS ARE MET:
1. MAXIMUM HANGER LOAD OF 50 LBS.
2. ANCHORED TO BOTTOM OF DECK FLUTES, NOT UPPER FLUTE.
3. ANCHOR LENGTH SHALL EXCEED DECK DEPTH.
F. FASTENER SYSTEM
1. PULL-OUT TENSION AND SHEAR CAPACITIES APPROPRIATE FOR SUPPORTED LOADS AND BUILDING MATERIALS.
2. POWDER-ACTUATED FASTENERS: THREADED-STEEL STUD, FOR USE IN CONCRETE.
3. MECHANICAL: EXPANSION ANCHORS: INSERT-WEDGE TYPE, ZINC-COATED STEEL (STAINLESS IN HARSH ENVIRONMENT ROOMS), FOR USE IN CONCRETE. MINIMUM 1 1/2" EMBEDMENT.
G. PIPE HANGERS AND SUPPORTS
1. SEE DETAILS ON PLANS FOR ADDITIONAL PIPE HANGER SPECIFICATIONS.
2. SEE SCHEDULE ON PLANS FOR HANGER SPACING.
3. PLACE HANGERS WITHIN 12" OF EACH HORIZONTAL ELBOW.
4. PROVIDE NON-CONDUCTING DIELECTRIC SEPARATION WHEREVER DISSIMILAR METALS MAY MAKE CONTACT.
5. CONFORM TO ASME B31.9 AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) SP-58-2009.
6. INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT. ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO PROVIDE INDICATED PIPE SLOPES.
7. PROVIDE SWAY BRACING ON HORIZONTAL DRAINAGE PIPES ABOVE GRADE 4" AND LARGER AT ALL CHANGES IN DIRECTION GREATER THAN 45 DEG WITHIN 12" OF CHANGE IN DIRECTION.
8. PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR HANGERS IN DIRECT CONTACT WITH COPPER PIPING.
9. PRE-INSULATED SUPPORT INSERT
a. TPS THERMAL THERMA-PHEN
1). PHENOLIC FOAM INSERT WITH ALL SERVICE JACKET AND SELF-SEALING LAP SEAL.
2). DENSITY MINIMUM 2.5 LB/CU.FT., R=6 / NOMINAL INCH AT 75 DEG F.
3). COMPRESSIVE STRENGTH AT 10% DEFORMATION > 32 PSI.
4). WATER ABSORPTION = <3.0%
5). <5.0 PERM
6). ASTM E-84 COMPLIANT UP TO 2" THICKNESS.
7). SERVICE TEMPERATURE: 0 TO 220 DEG F.
b. ARMACELL ARMAFIX ECOLIGHT ELASTOMERIC FOAM PIPE SUPPORT.
1). PET-FOAM LOAD BEARING CORE, ELASTOMERIC FOAM SHELL, PVC FOIL EXTERIOR CLADDING, SELF-ADHESIVE CLOSURE.
2). DENSITY 6-7 LB/CU.FT., R=4 / NOMINAL INCH AT 75 DEG F.
3). COMPRESSIVE STRENGTH 220 PSI.
4). ASTM E-84 COMPLIANT FOR UP TO 1" PIPING.
5). ENVIRONMENT TEMPERATURE: => 50 DEG F.
6). SERVICE TEMPERATURE: 32 TO 176 DEG F.
c. BUCKAROOS COOLDRY (360 DEGREE)
1). PHENOLIC FOAM INSULATED SADDLE WITH RIBBED SHIELD AND SELF-SEALING LAP SEAL.
2). DENSITY MINIMUM 3.75 LB/CU.FT., R=5.9 / NOMINAL INCH AT 75 DEG F.
3). COMPRESSIVE STRENGTH 40 PSI.
4). 0.0 PERM WITH INTEGRAL VAPOR BARRIER.
5). ASTM E-84 COMPLIANT AT ALL THICKNESSES.
6). SERVICE TEMPERATURE: 0 TO 210 DEG F.
10. PROVIDE VAPOR BARRIER FOR COLD PIPING WHERE NOT INTEGRAL TO SUPPORT ASSEMBLY.
11. PROVIDE RIBBED HANGER SHIELD WHERE NOT INTEGRAL TO PRE-INSULATED SUPPORT INSERT OR SUPPORT ASSEMBLY.
H. STRUT SYSTEM
1. COMPLY WITH THE LATEST REVISION OF MFMA STANDARDS PUBLICATION NUMBER MFMA-3, "METAL FRAMING STANDARDS PUBLICATION".
2. INSTALL STRUT IN ACCORDANCE WITH MFMA-102 "GUIDELINES FOR THE USE OF METAL FRAMING"; IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S RECOMMENDATIONS, AND WITH RECOGNIZED INDUSTRY PRACTICES.
3. COLD FORMED LOW CARBON STEEL METAL FRAMING CHANNEL STRUT: B-LINE TYPE B CHANNEL.
4. 1-5/8 INCHES WIDE IN VARYING HEIGHTS AND WELDED COMBINATIONS AS REQUIRED TO MEET LOAD CAPACITIES.
5. MANUFACTURER'S STANDARD FINISH OR PLAIN FINISH UNLESS INSTALLED IN WET LOCATIONS.
6. FRAMING INSTALLED WET LOCATIONS SHALL BE ONE OF THE FOLLOWING:
a. TYPE 304 STAINLESS STEEL STRUT, FITTINGS AND HARDWARE.
I. EQUIPMENT PIPE STANDS: FABRICATED STAND CONSISTING OF STRUCTURAL STEEL MEMBERS SUPPORTED BY PIPE SUPPORTS. HOT DIP GALVANIZE AFTER FABRICATION WHERE EXPOSED TO WEATHER.
J. CONCRETE PADS
1. COORDINATE FINAL EQUIPMENT CONCRETE PAD SIZE REQUIREMENTS. PADS SHALL EXTEND MINIMUM 4" BEYOND EQUIPMENT FOOTPRINT.

22 05 48 VIBRATION ISOLATION

A. DESIGN REQUIREMENTS
1. MANUFACTURERS: PEABODY, MASON, AND AMBER/BOOTH.
2. HOT DIP GALVANIZE, APPLY A NEOPRENE COATING ON, OR USE STAINLESS STEEL PARTS FOR ISOLATION DEVICES EXPOSED TO THE WEATHER OR USED IN HIGH HUMIDITY AREAS.
B. FLEXIBLE PIPE CONNECTORS
1. METAL HOSE (MANUFACTURERS: MASON, METRAFLEX, TWIN CITY HOSE): 1" MAXIMUM OFFSET ON EACH SIDE OF INSTALLED CENTER LINE. MINIMUM 12" LONG OR AS REQUIRED TO PROVIDE REQUIRED OFFSET.
a. PROVIDE WATER APPLICATIONS:
1). STAINLESS STEEL INNER HOSE, AND BRAIDED EXTERIOR SLEEVE, PRESSURE RATING OF 125 PSI WSP AT 450 DEGREES F.
2). ANSI/NSF-61 ANNEX G RATED ASSEMBLY.
b. COMPRESSED GAS APPLICATIONS:
1). STAINLESS STEEL INNER HOSE, AND BRAIDED EXTERIOR SLEEVE, PRESSURE RATING OF 150 PSI WSP AT 450 DEGREES F.

22 05 53 MECHANICAL IDENTIFICATION

A. HARSH ENVIRONMENT ROOMS
1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS.
2. VALVE TAGS: 1-1/2" DIAMETER 22 GAUGE TYPE 316 STAINLESS STEEL TAG WITH STAMPED BLACK LETTERS AND TYPE 304 STAINLESS STEEL CHAIN AND S HOOKS.
3. PIPE IDENTIFICATION
a. PIPE MARKERS
1). MANUFACTURERS: MARKING SERVICES MS-995 MAXILAR, BRADY B-689, SETON ULTRA-MARK WRAP AROUND.
2). LAYER OF POLYESTER FILM AND PROTECTIVE FILM WITH PRINTED GRAPHICS LAMINATED BETWEEN THE TWO LAYERS. TOP LAYER TO PROVIDE UV AND FADE PROTECTION.
3). MARKERS MECHANICALLY APPLIED BY WRAPPING COMPLETELY AROUND THE PIPE AND SEALING EDGE WITH AN ADHESIVE SEALING STRIP, OR STRAPPING ONTO THE PIPE SURFACE WITH MARKING SERVICES NO. 15710, 15711 OR 15712 STAINLESS STEEL STRAPS.
4). GLUE EDGES TO INSULATION JACKET.
B. NAMEPLATES
1. MANUFACTURERS: MARKING SERVICES, AND SETON SETONFLEX.
2. 3/4" HIGH, 1/16" THICK PLASTIC WITH ENGRAVED WHITE LETTERS ON BLACK BACKGROUND COLOR, SCREW OR ADHESIVE MOUNTING.
3. PROVIDE AT CONTROL PANELS AND STARTERS.
C. VALVE TAGS
1. MANUFACTURERS: MARKING SERVICES, W.H. BRADY, AND SETON NAME PLATE COMPANY.
2. 20 GAUGE BRASS TAG WITH STAMPED BLACK LETTERS.
a. 1-1/2" DIAMETER UNLESS OTHERWISE REQUIRED TO BE LARGER BY LOCAL CODE OR LETTERING REQUIREMENTS.
b. ATTACH WITH #6 SOLID BRASS BEAD CHAIN AND S HOOK.
c. PROVIDE TAG SHAPE OTHER THAN ROUND AS REQUIRED BY LOCAL CODE REQUIREMENTS FOR WATER OTHER THAN POTABLE.
d. LETTERING SHALL BE MINIMUM 1/2" TALL.
3. PROVIDE TYPEWRITTEN LETTER SIZE CHART.
4. COORDINATE VALVE TAG NOMENCLATURE/NUMBERING SEQUENCE/STARTING NUMBER WITH OWNER PRIOR TO ORDERING TAGS.
5. ALL VALVES SHALL BE TAGGED UNLESS OTHERWISE INDICATED BELOW:
a. SHUT-OFF, BALANCING AND DRAIN VALVES FOR TERMINAL EQUIPMENT DO NOT HAVE TO BE TAGGED BUT MUST BE SCHEDULED ON VALVE CHART.
b. FIXTURE STOPS SHALL NOT BE TAGGED.
D. PIPE IDENTIFICATION
1. INDOOR SELF-ADHESIVE PIPE MARKERS
a. MANUFACTURERS: MARKING SERVICES MS-900, BRADY B-736, SETON OPTI-CODE.
b. FLEXIBLE PVC FILM WITH PRESSURE SENSITIVE ACRYLIC ADHESIVE BACKING WITH PRINTED MARKINGS.
c. SECURE WITH 2" WIDE TAPE WITH ARROWS INDICATING FLOW.
2. COLOR, OVERALL SIZE AND LETTER HEIGHT SHALL CONFORM TO ASME A13.1-LATEST VERSION "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS" UNLESS OTHERWISE REQUIRED BY LOCAL CODE.
3. IDENTIFY PIPE SERVICE, FLOW DIRECTION, AND PRESSURE.
4. LABEL PIPING DOWNSTREAM OF BACKFLOW PREVENTERS FOR INTENDED USE.
5. LOCATIONS
a. LOCATE TO FACE GREATEST POINT OF VISIBILITY. ALL ADJACENT LABELS TO BE INSTALLED NEATLY IN A ROW. COORDINATE WITH ALL TRADES.
b. LOCATE IDENTIFICATION NOT-TO-EXCEED 50 FEET FOR EXPOSED PIPING UNLESS A SHORTER DISTANCE IS OTHERWISE REQUIRED BY LOCAL CODE.
c. LOCATE IDENTIFICATION NOT-TO-EXCEED 25 FEET FOR PIPING ABOVE CEILINGS.
d. MINIMUM ONE LOCATION PER ROOM.
e. INSTALL IDENTIFICATION AFTER PIPING AND INSULATION IS COMPLETE TO ENSURE MAXIMUM VISIBILITY OF THE IDENTIFICATION SYSTEM.
f. BEHIND ACCESS PANELS AND ALL OTHER ACCESSIBLE POINTS OF SERVICE.
g. ON BOTH SIDES WHERE PIPES PENETRATE WALLS, FLOORS OR CEILINGS.
h. NEAR EACH VALVE AND CONTROL DEVICE.
i. AT EACH MAJOR PIECE OF EQUIPMENT.

22 07 00 INSULATION

A. HARSH ENVIRONMENT ROOMS
1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS.
2. VALVES, FITTINGS, AND FLANGE COVERS: 30 MIL PVC JACKET.
B. GENERAL
1. SEE INSULATION SCHEDULES ON PLANS FOR ADDITIONAL INFORMATION.
2. WHEN INSTALLED IN RETURN AIR PLENUMS INSULATION SYSTEMS AND JACKETS SHALL MEET UL-723/ASTM E84 REQUIREMENTS OF MAX. FIRE HAZARD CLASSIFICATION OF 25, AND MAX. FLAME SPREAD, FUEL CONTRIBUTED, AND SMOKE DEVELOPED OF 50.
3. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND MICA PUBLICATION "NORTH AMERICAN COMMERCIAL AND INDUSTRIAL STANDARDS", LATEST EDITION.
4. PROVIDE COMPLETED MICA INSULATION STANDARDS PLATES FOR EACH INSULATION SYSTEM BEING INSTALLED, LISTING ALL MATERIALS BEING USED.
5. CONTINUE INSULATION WITHOUT INTERRUPTIONS THROUGH WALLS AND FLOOR PENETRATIONS AND HANGERS.
C. FIBERGLASS (F.G.) INSULATION
1. INSULATION IN CONTACT WITH STAINLESS STEEL SHALL MEET ASTM C795 THERMAL INSULATION FOR USE IN CONTACT WITH AUSTENITIC STAINLESS STEEL AND MIL-I-24244 INSULATION WITH SPECIAL CORROSION, CHLORIDE AND FLUORIDE REQUIREMENTS.
2. RIGID PIPING
a. O.C. FIBERGLAS PIPE INSULATION, KNAUF EARTHWOOL PIPE INSULATION, JOHNS MANVILLE MICRO-LOK.
b. SINGLE OR DOUBLE ADHESIVE SELF-SEALING LAP SYSTEM FOR LONGITUDINAL JOINT, PRESSURE SENSITIVE BUTT STRIP SEALS, ALL SERVICE JACKET VAPOR BARRIER COVERING.
c. 3.5-5.5 LB/CU.FT., R=4.3 / NOMINAL INCH AT 75 DEG F.
d. MAX 850 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
e. COMPRESSIVE STRENGTH AT 10% DEFORMATION 125 LB/S.F.
f. VALVES, FITTINGS, AND FLANGE COVERS:
1). ZESTON 2000/300 SERIES, CEEL-CO 300 SERIES, PROTO LOSMOKE PVC JACKET
2). HIGH IMPACT 30 MIL WHITE PVC WITH PRECUT FIBERGLASS INSERTS. MAX TEMP 150 DEG
D. FIBERGLASS (F.G.) INSULATION OVER PVC PIPE WITHIN RETURN AIR PLENUM FOR ASTM E-84 COMPLIANCE
1. RIGID PIPING:
a. JOHNS MANVILLE MICRO-LOK HP.
b. SINGLE OR DOUBLE ADHESIVE SELF-SEALING LAP SYSTEM FOR LONGITUDINAL JOINT, PRESSURE SENSITIVE BUTT STRIP SEALS, ALL SERVICE JACKET VAPOR BARRIER COVERING.
c. 3.5-5.5 LB/CU.FT., R=4.3 / NOMINAL INCH AT 75 DEG F.
d. MAX 850 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
e. COMPRESSIVE STRENGTH AT 10% DEFORMATION 125 LB/S.F.
f. ACCEPTABLE FOR UP TO 16" SCHEDULE 40 PVC PIPING.
g. ACCEPTABLE FOR UP TO 8" SCHEDULE 80 PVC PIPING.
h. VALVES, FITTINGS, AND FLANGE COVERS:
1). ZESTON 2000/300 SERIES, CEEL-CO 300 SERIES, PROTO LOSMOKE PVC JACKET
2). HIGH IMPACT 30 MIL WHITE PVC WITH PRECUT FIBERGLASS INSERTS. MAX TEMP 150 DEG
E. POLYISOCYANURATE
1. PIPE
a. ITW TRYMER 1800 OR EQUIVALENT
b. AGED 'K' VALUE 0.19 PER INCH PER ASTM C518, 1.8 LB/CU. FT., -297 TO 300 DEG F SERVICE TEMPERATURE, 21 PSI COMPRESSIVE STRENGTH PER ASTM D1621, WATER ABSORPTION LESS THAN 0.7% BY VOLUME PER ASTM C272, 4 PERM PER ASTM E96.
c. PROVIDE MANUFACTURER PREFORMED INSULATION OVER VALVES AND FITTINGS.
d. FILM/TAPE
1). ITW SARAN 560 CX FILM AND TAPE OR ZERO PERM VAPOR RETARDER JACKETING.
2). INSTALL OVER ENTIRE INSULATION SYSTEM.
3). MAX 0.01 PERM PER ASTM E96.
4). MAX FLAME SPREAD/SMOKE DEVELOPED 25/50 PER ASTM E84.
2. PIPE HT
a. HITHERM HT-450 OR EQUIVALENT
b. AGED 'K' VALUE 0.18 PER INCH PER ASTM C518, 2.45 LB/CU. FT., -190 TO 450 DEG F CONTINUOUS SERVICE TEMPERATURE, 30 PSI COMPRESSIVE STRENGTH PER ASTM D1621, WATER ABSORPTION LESS THAN 2% BY VOLUME PER ASTM D-2842.
c. PROVIDE MANUFACTURER PREFORMED INSULATION OVER VALVES AND FITTINGS.
d. INSTALL MFR APPROVED TAPE/WRAP OVER ENTIRE INSULATION SYSTEM.
F. ELASTOMERIC FOAM INSULATION
1. SEAL BUTT JOINTS WITH ADHESIVE.
2. PIPE
a. MANUFACTURERS: AEROFLEX AEROCEL SSPT, K-FLEX INSUL-LOCK DS, ARMACELL AP/ARMAFLEX BLACK LAPSEAL.
b. EPDM/PVC BASE ELASTOMERIC FOAM MATERIAL
c. DUAL TAPE CLOSURE
d. MAX. 'K' VALUE 0.245 AT 75 DEG F
e. MAX. CONTINUOUS TEMPERATURE 220 DEG F
f. MAX. 0.05 PERM PER ASTM E96
g. MAX. FIRE/SMOKE DEVELOPED OF 25/50 PER ASTM E84 FOR UP TO 2" THICK.
h. PROVIDE MANUFACTURER PREFORMED INSULATION OVER VALVES AND FITTINGS
i. FIELD CUTTING AND GLUING LONGITUDINAL JOINT NOT PERMITTED.
G. JACKETS
1. PVC
a. ZESTON, CEEL-CO, PROTO LOSMOKE PVC JACKET
b. 30 MIL WHITE PVC. MAX TEMP 150 DEG F.
c. FULLY ADHERE JOINT WITH SOLVENT WELDED ADHESIVE. CIRCUMFERENTIAL SEAMS MINIMUM 1" OVERLAP. LOCATE JOINT AT LEAST VISIBLE SIDE OF PIPE.
d. PROVIDE SLIP JOINTS PERIODICALLY ON LONG RUNS OF STRAIGHT PIPE BY INCREASING CIRCUMFERENTIAL OVERLAP TO MINIMUM 8" AND APPLYING A FLEXIBLE WHITE SEALANT IN THE OVERLAP AREA.
H. PIPE INSULATION REQUIREMENTS
1. INSULATE ENTIRE PIPING SYSTEM INCLUDING VALVES AND FITTINGS PER MICA INSULATION STANDARDS PLATES.
2. SEAL ALL INSULATION ENDS.

22 08 00 COMMISSIONING OF PLUMBING

A. SEE DIVISION 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR ADDITIONAL REQUIREMENTS.
B. COMMISSIONING TESTING PREPARATION
1. PLUMBING CONTRACTOR MUST CONFIRM THEIR AVAILABILITY TO BE ON-SITE FOR THE COMMISSIONING.
2. PROVIDE A SERVICE TECHNICIAN FAMILIAR WITH THE PROJECT ON-SITE DURING COMMISSIONING TO ASSIST COMMISSIONING PROVIDER WITH EQUIPMENT FUNCTIONAL TESTING.
3. COMPLETE PREFUNCTIONAL CHECKLISTS TO CERTIFY THAT PLUMBING SYSTEMS, SUBSYSTEMS AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED, AND STARTED AND THAT THEY ARE OPERATING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPROVED DETAILS.
4. CERTIFY THAT PLUMBING INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, POINT-TO-POINT CHECKOUT HAS BEEN SUCCESSFULLY COMPLETED AND SYSTEMS ARE OPERATING IN ACCORDANCE WITH THEIR DESIGN SEQUENCE OF OPERATION, CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. CERTIFY THAT ALL SENSORS ARE OPERATING WITHIN SPECIFIED ACCURACY AND ALL SYSTEMS ARE SET TO AND MAINTAINED AT DESIGN POINTS AS REQUIRED BY THE DESIGN DOCUMENTS.
5. CERTIFY THAT TAB PROCEDURES HAVE BEEN COMPLETED AND THAT TAB REPORTS HAVE BEEN SUBMITTED, DISCREPANCIES CORRECTED, AND CORRECTIVE WORK APPROVED.
6. SET SYSTEMS, SUBSYSTEMS, AND EQUIPMENT INTO OPERATING MODE TO BE TESTED IN ACCORDANCE WITH APPROVED TEST PROCEDURES (EXAMPLE: NORMAL SHUTDOWN, NORMAL AUTO POSITION, NORMAL MANUAL POSITION, UNOCCUPIED CYCLE, EMERGENCY POWER, AND ALARM CONDITIONS).
C. SCOPE OF FUNCTIONAL TESTING
1. EQUIPMENT FUNCTIONAL TESTING SHALL DEMONSTRATE THAT THE INSTALLATION AND OPERATION OF PLUMBING SYSTEMS, SUBSYSTEMS AND EQUIPMENT ARE OPERATING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. FUNCTIONAL TESTING SHALL INCLUDE ALL MODES OF THE SEQUENCE OF OPERATION, INCLUDING UNDER FULL-LOAD AND PARTIAL-LOAD CONDITIONS.
2. EQUIPMENT TO BE TESTED
a. GWH-1
b

PLUMBING SPECIFICATIONS (CONT.)

2). STAINLESS STEEL BALL, TEFLON SEATS AND STUFFING BOX RING, LEVER HANDLE
3). THREE PIECE SOCKET WELDED ENDS: APOLLO MODEL 86A-200. 3,000 PSI WOG

22 40 00 PLUMBING FIXTURES

A. FIXTURES
1. SEE SCHEDULES FOR ADDITIONAL INFORMATION.
2. LIKE FIXTURE TYPE (FAUCETS, FLUSH VALVES, WATER CLOSETS, URINALS, LAVS, ETC.) SHALL BE THE PRODUCT OF THE SAME MANUFACTURER.
3. SAFETY COVERS OVER EXPOSED WASTE AND SUPPLY PIPING AT ADA ACCESSIBLE FIXTURES SHALL BE LAV-GUARD BY TRUEBRO OR EQUIVALENT.

B. INSTALLATION
1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PROVIDE CHROME PLATED RIGID SUPPLIES TO FIXTURES WITH STOPS, REDUCERS, AND ESCUTCHEONS UNLESS OTHERWISE NOTED IN SCHEDULES AND DETAILS.
   a. STOPS SHALL BE LISTED BY THE MANUFACTURER FOR USE IN RECIRCULATING HOT WATER SYSTEMS AT TEMPERATURE NOTED IN WATER HEATER SCHEDULE.
3. SEAL FIXTURES TO WALL AND FLOOR SURFACES WITH MILDEW-RESISTANT SILICONE SEALANT, COLOR TO MATCH FIXTURE.
4. INSTALL BARRIER-FREE FIXTURES IN COMPLIANCE WITH LOCAL CODES AND FEDERAL ADA ACCESSIBILITY GUIDELINES.
5. EXPOSED TRAPS, PIPING, AND ESCUTCHEONS SHALL BE CHROME PLATED BRASS UNLESS OTHERWISE NOTED IN SCHEDULES AND DETAILS.
6. ADJUST LAVATORY/HAND SINK THERMOSTATIC MIXING VALVE TO 105 DEG F MAXIMUM OUTLET TEMPERATURE.
7. ADJUST LAVATORY TEMPERATURE LIMIT STOPS TO 105 DEG F MAXIMUM OUTLET TEMPERATURE.
8. ADJUST SHOWER VALVE TEMPERATURE LIMIT STOPS TO 110 DEG F MAXIMUM OUTLET TEMPERATURE.
9. SHOWER BASES TO BE SET FULLY IN BED OF GROUT/MORTAR IF NOT IN CONTACT WITH SUBFLOOR.
10. BATHTUBS TO BE SET FULLY IN BED OF GROUT/MORTAR.

22 95 00 TESTING, ADJUSTING AND BALANCING

A. SYSTEM BALANCING PERFORMED BY HVAC BALANCING CONTRACTOR. COORDINATE SCOPE AND TIMING OF BALANCING WITH BALANCING CONTRACTOR UNDER HC. ASSIST CONTRACTOR IN LOCATING REQUIRED BALANCING VALVES.

B. QUALITY ASSURANCE
1. PERFORM TOTAL SYSTEM BALANCE IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.
2. THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR SHALL BE AN INDEPENDENT COMPANY SPECIALIZING IN THE TESTING, ADJUSTING, AND BALANCING OF SYSTEMS WITH MINIMUM THREE YEARS EXPERIENCE AND NOT ASSOCIATED WITH THE SUPPLIERS OF EQUIPMENT OR THE INSTALLING CONTRACTOR.
3. PERFORM WORK UNDER SUPERVISION OF AABC CERTIFIED TEST AND BALANCE ENGINEER OR NEBB CERTIFIED TESTING, BALANCING AND ADJUSTING SUPERVISOR.
4. INSTRUMENTS SHALL BE CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER.

C. SUBMITTALS
1. CONTRACTOR SHALL SUBMIT THE FINAL TESTING AND BALANCING REPORT PRIOR TO PROJECT COMPLETION AND IN ADVANCE OF DATE OF OCCUPANCY. SUBMIT REPORTS ON AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE OR NEBB FORMS.
2. SUBMIT THE DESIGN AND ACTUAL DATA FOR EACH SCHEDULED PIECE OF EQUIPMENT: PUMP RPM, BHP, AMPERAGE; PUMP DIFFERENTIAL PRESSURE AND FLOWS; EQUIPMENT FLOW RATES AND PRESSURE DROPS.

D. INSTALLATION TOLERANCES
1. BALANCE VALVES: ADJUST FLOW THRU BALANCE VALVE TO WITHIN PLUS 10 PERCENT OF DESIGN.
2. IF NO FLOW RATE IS INDICATED ON PLANS, FOLLOW REQUIREMENTS OF 22 11 00 WATER PIPING AND VALVES — WATER PIPING BALANCING.

E. ADJUSTING
1. INSTRUMENTS SHALL BE CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER.
2. PERMANENTLY MARK SETTINGS OF VALVES. SET AND LOCK MEMORY STOPS.
3. AFTER ADJUSTMENT, TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR THAT SUCH DISRUPTION HAS BEEN RECTIFIED.
4. LEAVE SYSTEMS IN PROPER WORKING ORDER, REPLACING BELT GUARDS, CLOSING ACCESS DOORS, CLOSING DOORS TO ELECTRICAL SWITCH BOXES, AND RESTORING THERMOSTATS TO SPECIFIED SETTINGS.

F. HOT WATER SYSTEM BALANCE
1. ADJUST WATER DISTRIBUTION SYSTEMS BY MEANS OF BALANCING VALVES TO PROVIDE DESIGN QUANTITIES.
2. USE INSTALLED FLOW METERS OR OTHER METERED FITTINGS AND/OR PRESSURE GAUGES TO DETERMINE FLOW RATES FOR SYSTEM BALANCE.
3. SELF-REGULATING BALANCE VALVES DO NOT REQUIRE FIELD BALANCING.

G. PUMPS.
1. WITH VARIABLE FREQUENCY DRIVES: ADJUST PUMP VFD SPEED TO ACHIEVE DESIGN FLOW.
2. PUMPS GREATER THAN 5 HP WITHOUT VARIABLE FREQUENCY DRIVES: THROTTLE BALANCE VALVE TO ACHIEVE DESIGN FLOW. IF THROTTLING RESULTS IN GREATER THAN 5 PERCENT OF THE NAMEPLATE HP DRAW ABOVE THAT IF THE IMPELLER WERE TRIMMED, CALCULATE IMPELLER SIZE AND INFORM PLUMBING CONTRACTOR. PLUMBING CONTRACTOR SHALL HAVE IMPELLER TRIMMED AND REINSTALL. TAB SHALL RETEST AFTER TRIMMED IMPELLER IS INSTALLED.

H. INOPERABLE EQUIPMENT/SYSTEMS
1. IF ANY EQUIPMENT/SYSTEMS ARE INOPERABLE AT TIME OF TESTING, RETURN TO THE SITE AND TEST SUCH SYSTEMS WHEN THEY BECOME OPERABLE AND SUBMIT THE ASSOCIATED DATA AT THAT TIME.

I. EXISTING SYSTEMS
1. REBALANCE ENTIRE SYSTEM TO ENSURE MINIMUM FLOW RATE PER REQUIREMENTS OF 22 11 00 WATER PIPING AND VALVES — WATER PIPING BALANCING IS PROVIDED AT ALL BALANCE VALVES.

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. ● HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
P0.2

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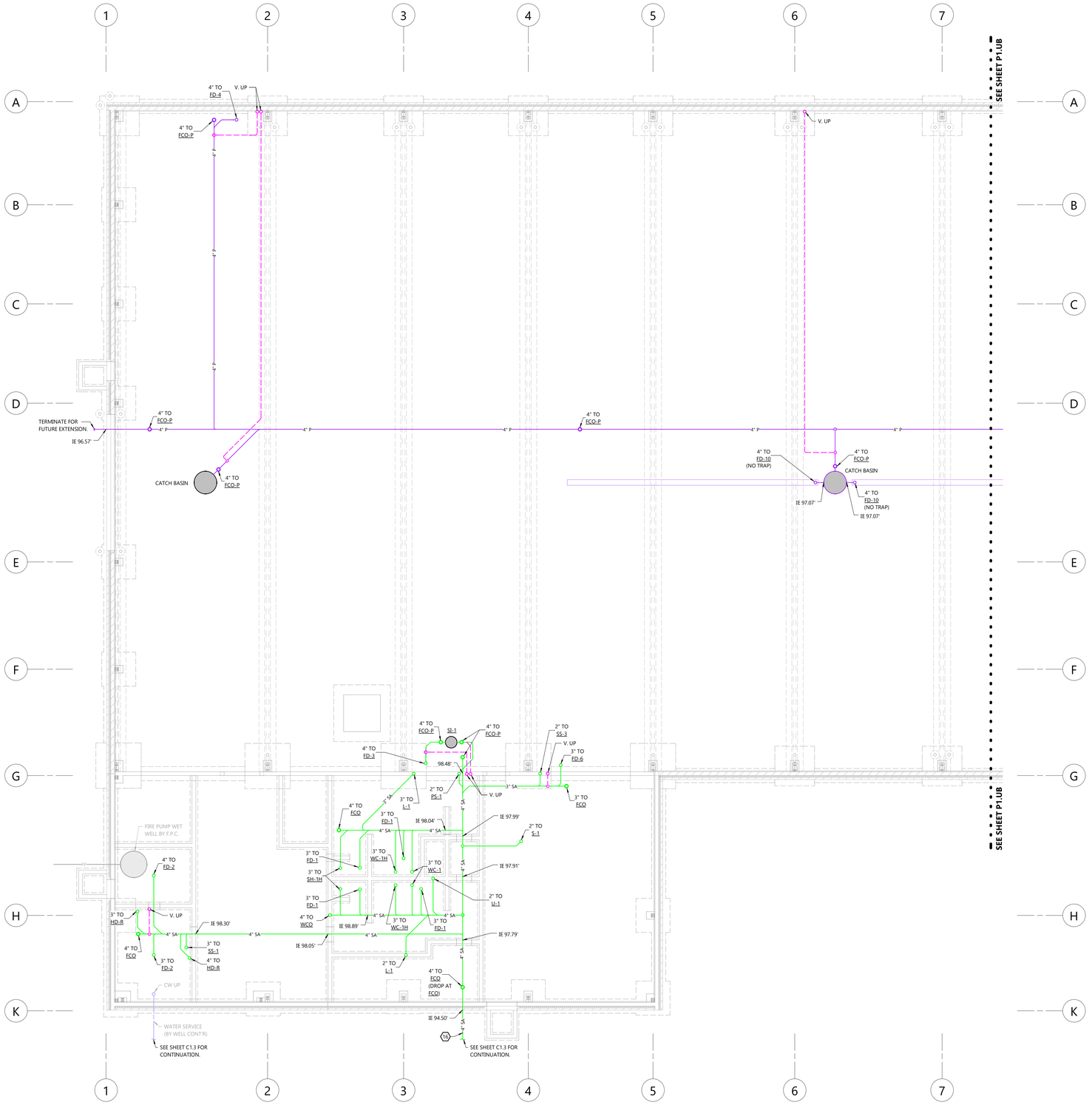

NORTH

UNDERGROUND PLAN - AREA 'A'

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

0' 8' 16'

GENERAL NOTES:

- NO UNDERGROUND BUILDING DRAIN PIPING SHALL BE INSTALLED UNTIL BUILDING SEWERS ARE BROUGHT TO THE BUILDING AND INVERT ELEVATIONS VERIFIED. COSTS INCURRED FOR FAILURE TO DO SO SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- PIPING SHALL BE CONCEALED WHEREVER POSSIBLE. WHERE NOT POSSIBLE, LOCATIONS AND ROUTING SHALL BE APPROVED BY ARCHITECT/OWNER PRIOR TO INSTALLATION.
- INSTALL CLEANOUTS AT STACKS WHICH PENETRATE THE LOWEST FLOOR LEVEL 28" AFF UNLESS NOTED OTHERWISE. IN WALLS BEHIND WATER CLOSETS, LOCATE WCO MIN. 2" ABOVE TOP OF GRAB BAR. WCO SHALL NOT INTERFERE WITH GRAB BAR MOUNTING SYSTEM.
- FLOOR AND WALL CLEANOUT LOCATIONS NOT PERMITTED TO BE MOVED WITHOUT APPROVAL OF ARCHITECT/ENGINEER.
- SEE ARCHITECTURAL A5 SHEETS FOR ADA RELATED INSTALLATION DETAILS.
- SEE STRUCTURAL S1 SHEETS FOR FLOOR DRAIN RIM ELEVATIONS.
- PENETRATE MASONRY WALLS PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY.
- INSTALL HOSE BIBBS AT 18" AFF UNLESS NOTED OTHERWISE.

KEYNOTES:

NOT ALL KEYNOTES MAY APPEAR ON PLAN.

1. CONCRETE PAD.
2. INTAKE AND EXHAUST FLUES UP TO VENTS THRU ROOF. INSTALL PER MANUFACTURER REQUIREMENTS.
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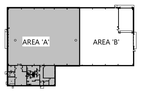

KEY PLAN

PLUMBING UNDERGROUND PLAN - AREA 'A'

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

P1.UA

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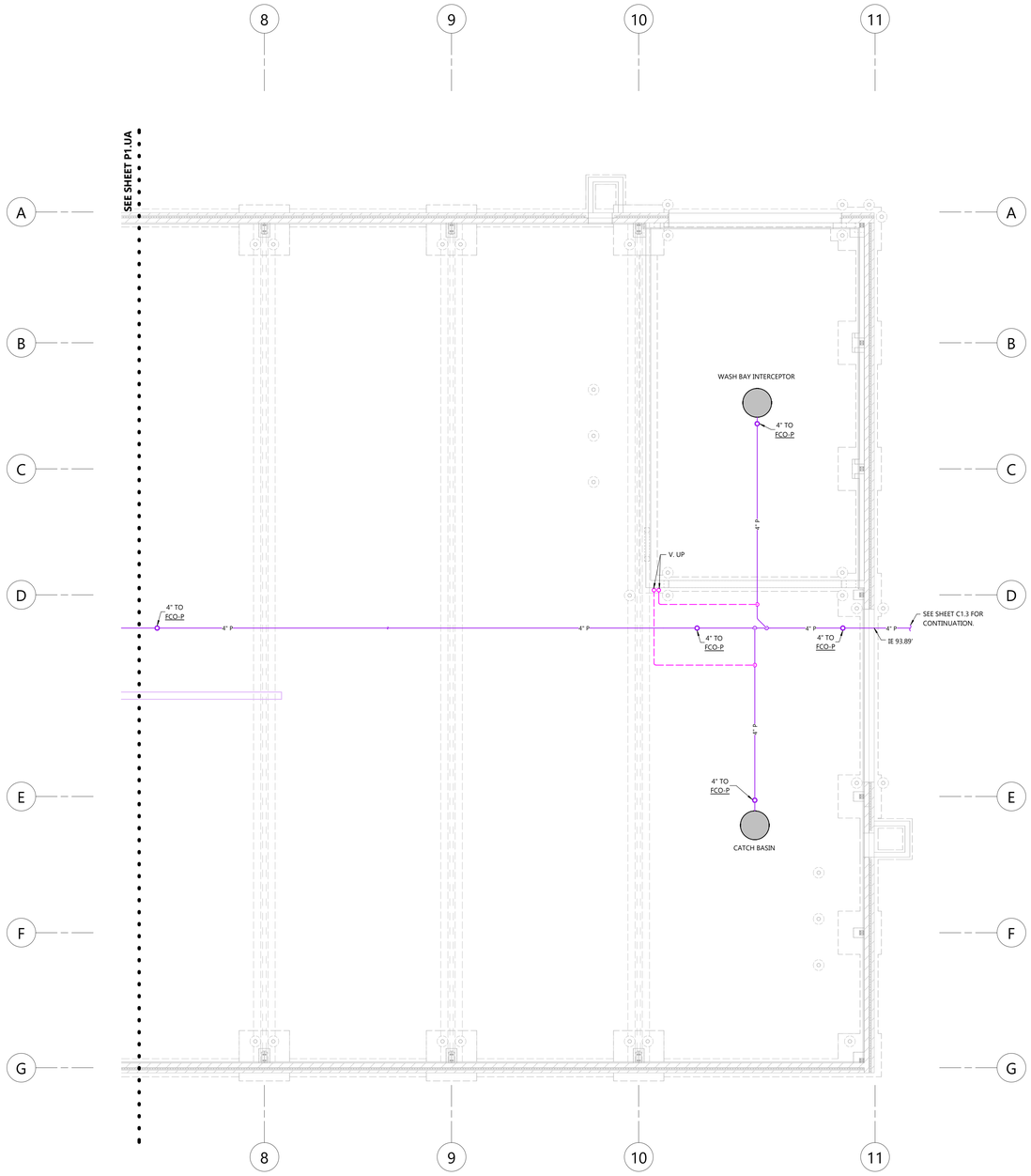

NORTH

UNDERGROUND PLAN - AREA 'B'

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

0' 8' 16'

GENERAL NOTES:

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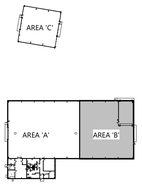

KEY PLAN

PLUMBING UNDERGROUND PLAN - AREA 'B'

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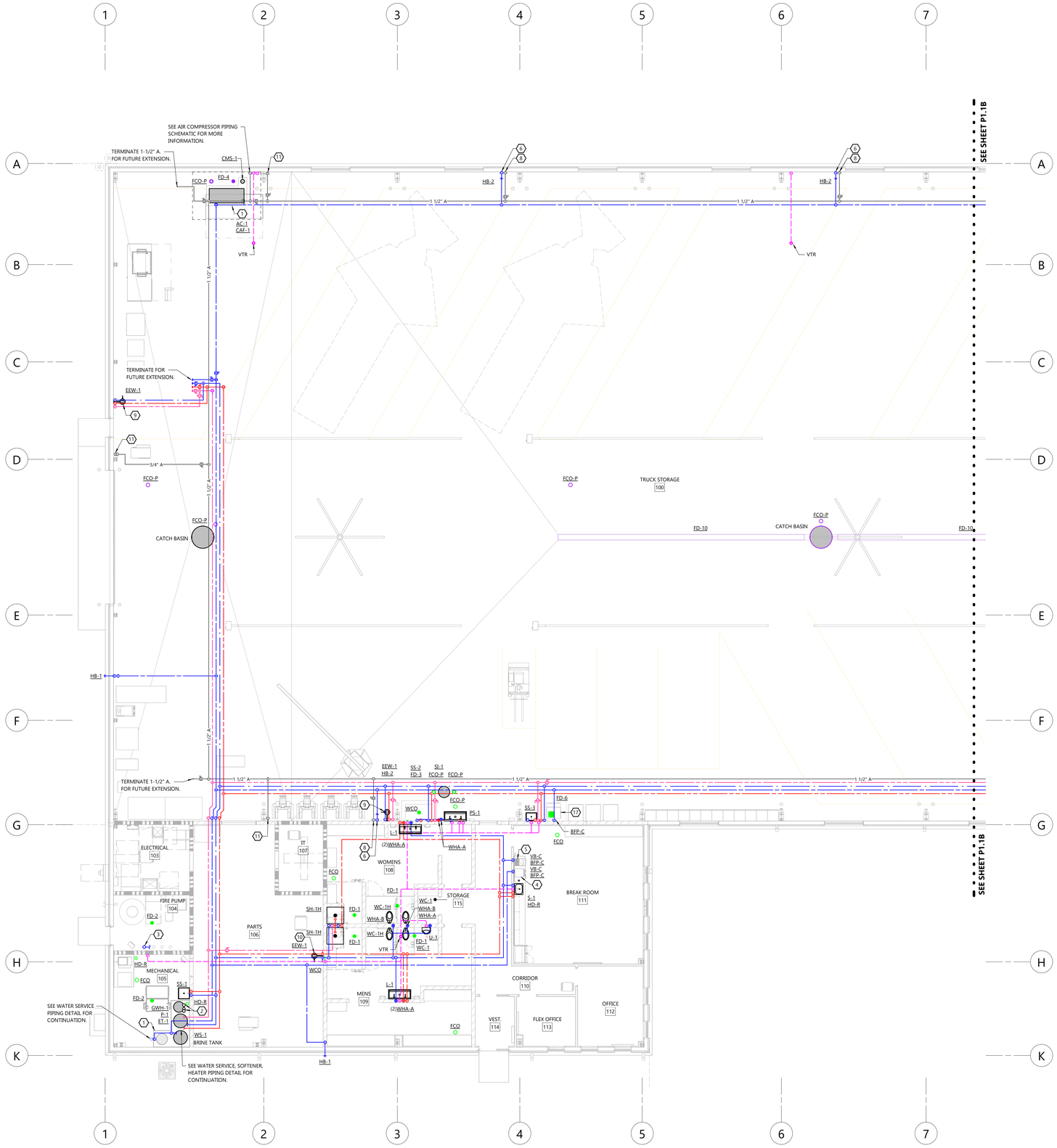

NORTH

FIRST FLOOR PLAN - AREA 'A'

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JOB NUMBER

250041200

SHEET NUMBER

P1.1A

KEY PLAN

PLUMBING FIRST FLOOR PLAN - AREA 'A'

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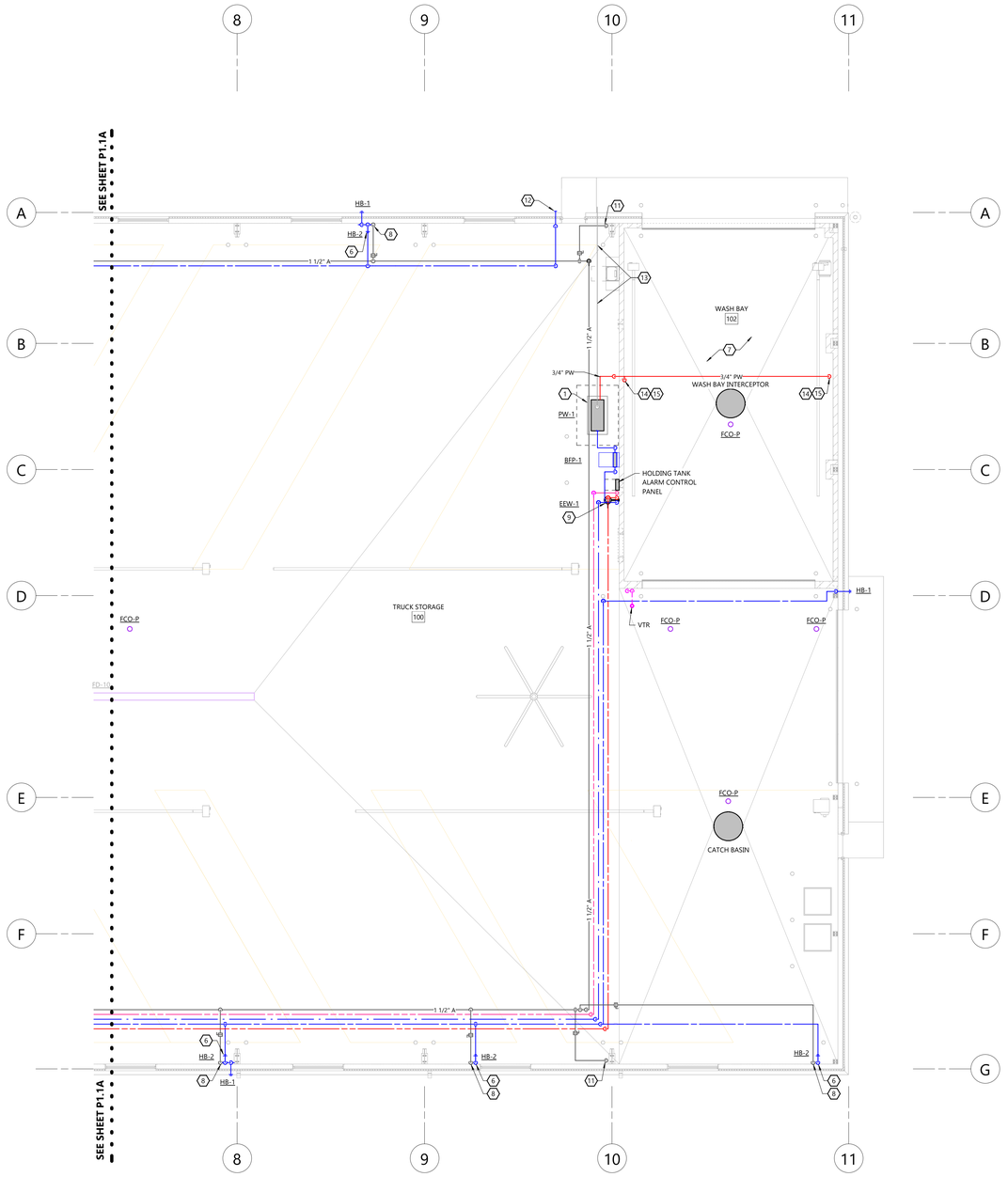

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IFB	MAR. 31, 2026

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250041200

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P1.1B

KEY PLAN

PLUMBING FIRST FLOOR PLAN - AREA 'B'

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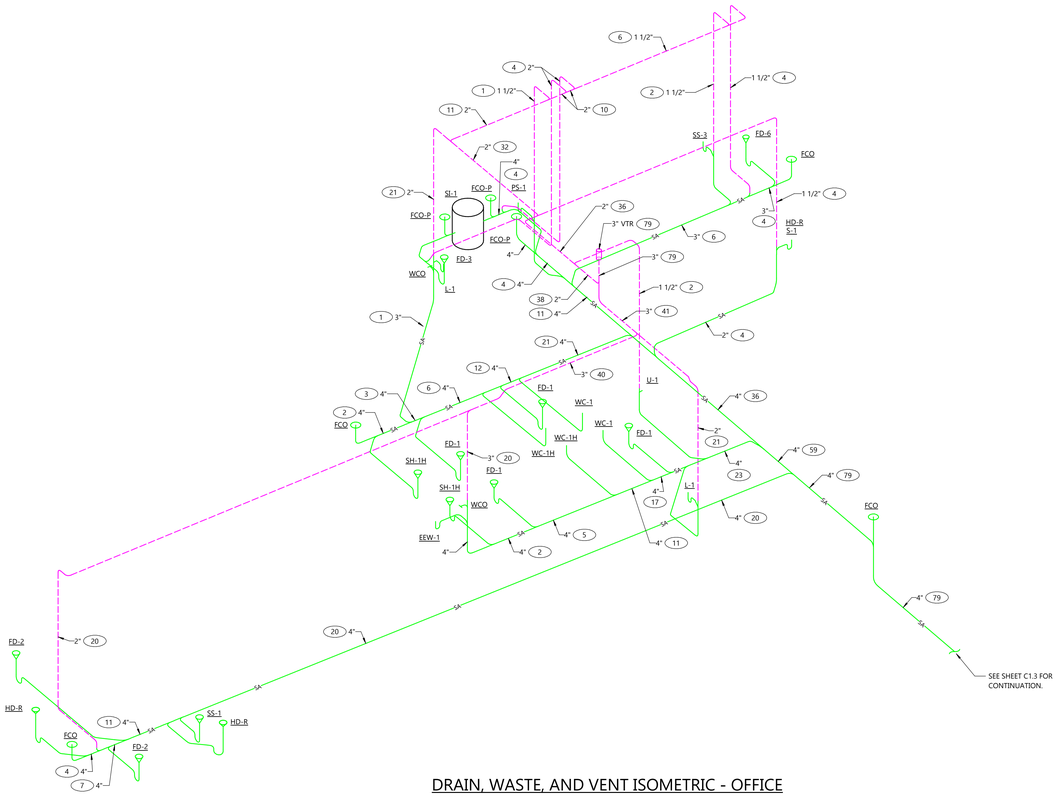
GENERAL NOTES:

- SEE FLOOR PLANS AND FIXTURE UNIT SCHEDULE FOR RUNOUT TRAP SIZE TO FIXTURE.

FIXTURE UNITS

QTY	FIXTURE	WASTE			COLD WATER			HOT WATER			TOTAL WATER	
		UNITS	TOTAL	TRAP SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTAL	BRANCH SIZE	UNITS	TOTAL
1	FUTURE CONNECTIONS: HARD WATER (DIVERSITY TAKEN INTO ACCOUNT)	-	-	-	8	8	-	-	-	-	8	8
1	FUTURE CONNECTIONS	16	16	-	14	14	-	5.5	5.5	-	17.5	17.5
1	PRESSURE WASHER	-	-	-	14	14	1-1/4"	-	-	-	14	14
12	3/4" HOSEBIBB (DIVERSITY TAKEN INTO ACCOUNT)	-	-	-	8	8	3/4"	-	-	-	8	8
1	COFFEE MAKER	-	-	-	0.5	0.5	1/2"	-	-	-	0.5	0.5
1	BOOT SCRUBER BASIN	-	-	-	2	2	1/2"	2	2	1/2"	3	3
5	FLOOR DRAIN- 3"	3	15	3"	-	-	-	-	-	-	-	-
8	FLOOR DRAIN- 4" & LARGER	4	32	4"	-	-	-	-	-	-	-	-
1	HUB DRAIN - 2"	3	3	2"	-	-	-	-	-	-	-	-
2	HUB DRAIN - 3"	4	8	3"	-	-	-	-	-	-	-	-
1	HUB DRAIN - 4"	6	6	4"	-	-	-	-	-	-	-	-
2	WATER-DISPENSER/ICEMAKER	-	-	-	0.5	1	1/2"	-	-	-	0.5	1
2	LAV	1	2	1 1/4"	1	2	1/2"	1	2	1/2"	1.5	3
2	SHOWER/HEAD	2	4	2"	2	4	1/2"	2	4	1/2"	3	6
1	SINK- BREAKROOM (1 COMP.)	1	1	1 1/2"	1.5	1.5	1/2"	1.5	1.5	1/2"	2	2
1	SINK- 2-STATION HANDWASH	1	1	1 1/2"	1	1	1/2"	1	1	1/2"	1.5	1.5
1	SINK- SERVICE- 2"	2	2	2"	2	2	1/2"	2	2	1/2"	3	3
1	SINK- SERVICE- 3"	3	3	3"	2	2	1/2"	2	2	1/2"	3	3
1	URINAL- WASHDOWN	2	2	-	2	2	3/4"	-	-	-	2	2
4	WATER CLO- FLUSHOMETER	6	24	-	6.5	26	1"	-	-	-	6.5	26
48	TOTAL		119			88			20			98.5



DRAIN, WASTE, AND VENT ISOMETRIC - OFFICE

NOT TO SCALE

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PLUMBING DRAIN, WASTE, AND VENT ISOMETRICS AND SCHEDULES

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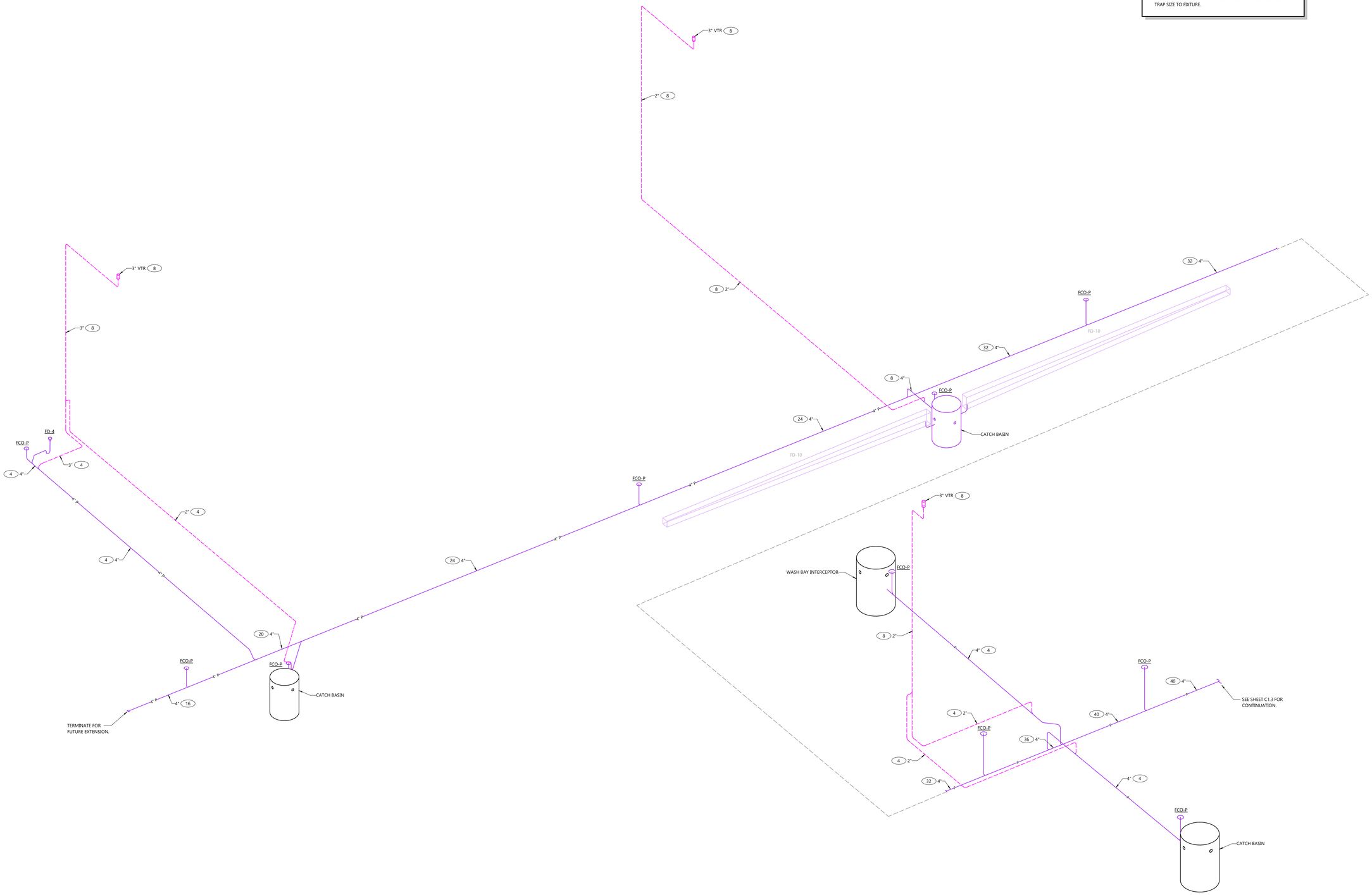

DRAIN, WASTE, AND VENT ISOMETRIC - TRUCK STORAGE

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PLUMBING DRAIN, WASTE, AND VENT ISOMETRICS

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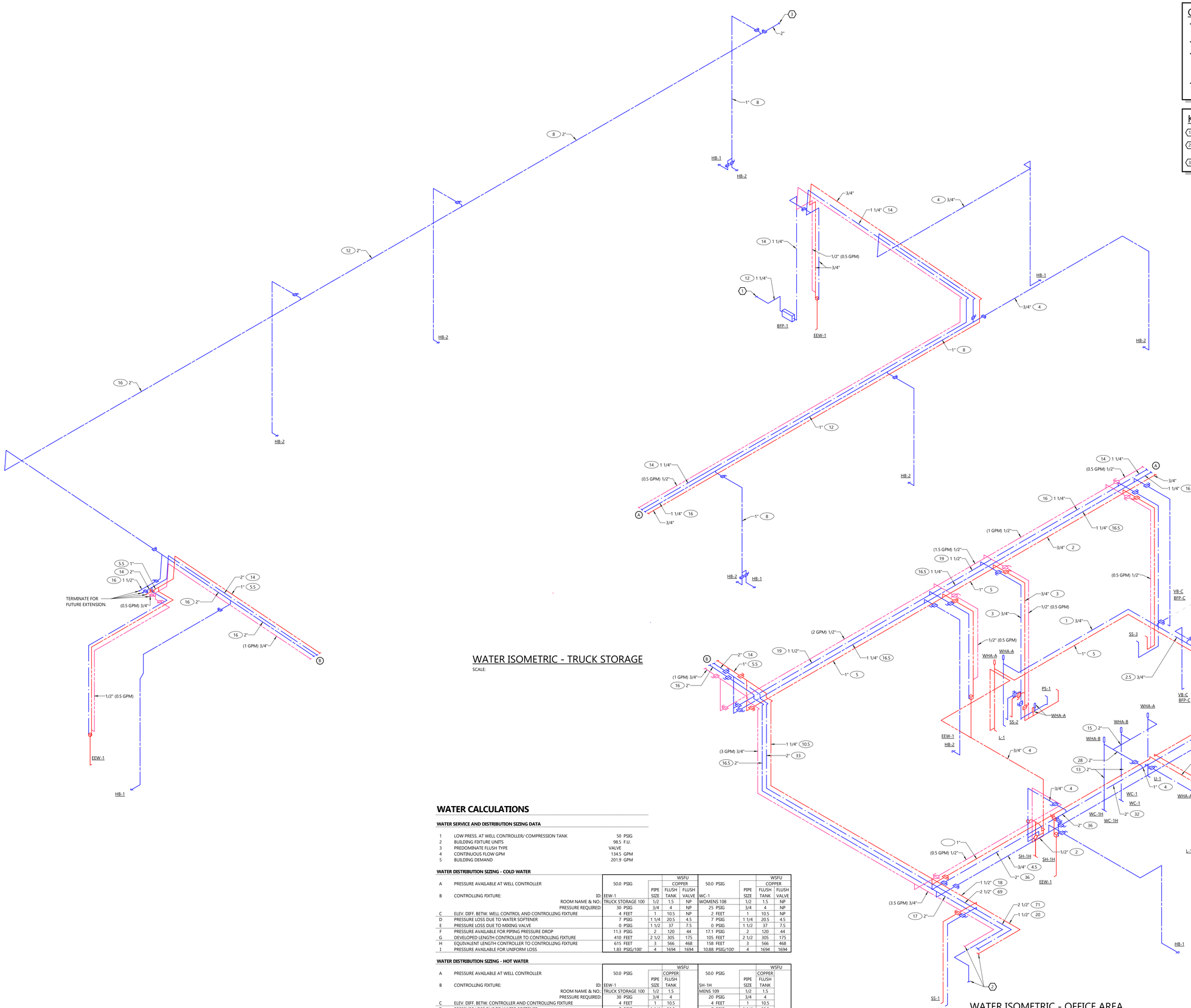

WATER ISOMETRIC - TRUCK STORAGE

SCALE:

WATER ISOMETRIC - OFFICE AREA

NOT TO SCALE

WATER CALCULATIONS

WATER SERVICE AND DISTRIBUTION SIZING DATA

1	LOW PRESS. AT WELL CONTROLLER/ COMPRESSION TANK	50 PSIG
2	BUILDING FIXTURE UNITS	98.5 F.U.
3	PREDOMINATE FLUSH TYPE	VALVE
4	CONTINUOUS FLOW GPM	134.5 GPM
5	BUILDING DEMAND	201.9 GPM

WATER DISTRIBUTION SIZING - COLD WATER

				WSFU				WSFU		
				COPPER				COPPER		
A	PRESSURE AVAILABLE AT WELL CONTROLLER	50.0 PSIG				50.0 PSIG				
			PIPE	FLUSH	FLUSH		PIPE	FLUSH	FLUSH	
B	CONTROLLING FIXTURE: ID:	EEW-1	SIZE	TANK	VALVE	WC-1	SIZE	TANK	VALVE	
	ROOM NAME & NO.:	TRUCK STORAGE 100	1/2	1.5	NP	WOMENS 108	1/2	1.5	NP	
	PRESSURE REQUIRED:	30 PSIG	3/4	4	NP	25 PSIG	3/4	4	NP	
C	ELEV. DIFF. BETW. WELL CONTROL AND CONTROLLING FIXTURE	4 FEET	1	10.5	NP	2 FEET	1	10.5	NP	
D	PRESSURE LOSS DUE TO WATER SOFTENER	7 PSIG	1 1/4	20.5	4.5	7 PSIG	1 1/4	20.5	4.5	
E	PRESSURE LOSS DUE TO MIXING VALVE	0 PSIG	1 1/2	37	7.5	0 PSIG	1 1/2	37	7.5	
F	PRESSURE AVAILABLE FOR PIPING PRESSURE DROP	11.3 PSIG	2	120	44	17.1 PSIG	2	120	44	
G	DEVELOPED LENGTH CONTROLLER TO CONTROLLING FIXTURE	410 FEET	2 1/2	305	175	105 FEET	2 1/2	305	175	
H	EQUIVALENT LENGTH CONTROLLER TO CONTROLLING FIXTURE	615 FEET	3	566	468	158 FEET	3	566	468	
I	PRESSURE AVAILABLE FOR UNIFORM LOSS	1.83 PSIG/100'	4	1694	1694	10.88 PSIG/100'	4	1694	1694	

WATER DISTRIBUTION SIZING - HOT WATER

				WSFU				WSFU	
				COPPER				COPPER	
A	PRESSURE AVAILABLE AT WELL CONTROLLER	50.0 PSIG				50.0 PSIG			
			PIPE	FLUSH			PIPE	FLUSH	
B	CONTROLLING FIXTURE: ID:	EEW-1	SIZE	TANK		SH-1H	SIZE	TANK	
	ROOM NAME & NO.:	TRUCK STORAGE 100	1/2	1.5		MENS 109	1/2	1.5	
	PRESSURE REQUIRED:	30 PSIG	3/4	4		20 PSIG	3/4	4	
C	ELEV. DIFF. BETW. CONTROLLER AND CONTROLLING FIXTURE	4 FEET	1	10.5		4 FEET	1	10.5	
D	PRESSURE LOSS DUE TO WATER SOFTENER	7 PSIG	1 1/4	20.5		7 PSIG	1 1/4	20.5	
E	PRESSURE LOSS DUE TO MIXING VALVE	0 PSIG	1 1/2	37		0 PSIG	1 1/2	37	
F	PRESSURE AVAILABLE FOR PIPING PRESSURE DROP	11.3 PSIG	2	120		21.3 PSIG	2	120	
G	DEVELOPED LENGTH CONTROLLER TO CONTROLLING FIXTURE	435 FEET	2 1/2	305		280 FEET	2 1/2	305	
H	EQUIVALENT LENGTH CONTROLLER TO CONTROLLING FIXTURE	653 FEET	3	566		420 FEET	3	566	
I	PRESSURE AVAILABLE FOR UNIFORM LOSS	1.73 PSIG/100'	4	1694		5.06 PSIG/100'	4	1694	

GENERAL NOTES:

- SEE FIXTURE UNIT SCHEDULE ON SHEET P3.0 AND DETAILS FOR RUNOUT PIPING SIZE TO FIXTURE.
- SYSTEM SIZED BASED ON EXPECTED OPERATIONAL DIVERSITY.
- PROVIDE ADDITIONAL AIR CHAMBERS AND/OR WATER HAMMER ARRESTORS AT EACH FIXTURE/CONNECTION/TERMINATION AS REQUIRED BY LOCAL CODE AND/OR DETAILS. NOT SHOWN FOR CLARITY.
- REDUCE AS REQUIRED TO SIZES INDICATED FOR BRANCH LOOP CONNECTIONS TO FLOW SPLITTER UNITS.

KEYNOTES:

1. SEE PRESSURE WASHER PIPING SCHEMATIC FOR CONTINUATION.
2. SEE WATER SERVICE, SOFTENER, HEATER PIPING DETAIL FOR CONTINUATION.
3. SEE HIGH VOLUME HOSE DETAIL FOR CONTINUATION.

PLUMBING WATER ISOMETRICS AND CALCULATIONS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
P3.2

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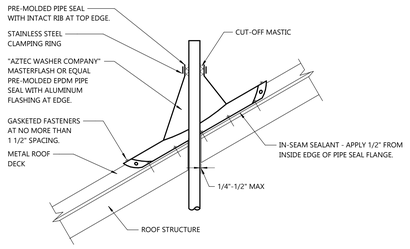
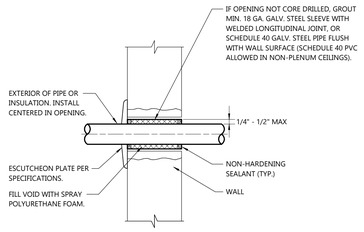


5 P4.0 METAL ROOF PIPE PENETRATION DETAIL
NOT TO SCALE



EXPOSED IN FINISHED ROOMS

CONCEALED SIDE OF WALL EXPOSED IN MECH. EQUIP. ROOM, OR OUTDOORS

4 P4.0 PIPE PENETRATION THRU MASONRY OR CONCRETE WALL
NOT TO SCALE

MAX. SPACING BETWEEN PIPE SUPPORTS AND MIN. HANGER ROD SIZES

PIPE SIZE	STEEL			COPPER			CAST IRON (2)	PVC CPVC	PEX	MIN. ROD	
	WATER	VAPOR	NAT. GAS	WATER	VAPOR	NAT. GAS				METAL PIPE	PLASTIC PIPE
1/4"-1/2"	7'	8'	6'	5'	6'	5'	4'	32"		3/8"	3/8"
3/4"	7'	9'	8'	5'	7'	5'	4'	32"		3/8"	3/8"
1"	7'	9'	8'	6'	8'	5'	4'	32"		3/8"	3/8"
1 1/4"	7'	9'	10'	7'	9'	5'	4'	32"		3/8"	3/8"
1 1/2"	9'	12'	10'	8'	10'	5'	4'	32"		3/8"	3/8"
2"	10'	12'	10'	8'	11'	5'	4'	32"		3/8"	3/8"
2 1/2"	11'	12'	10'	9'	12'	5'	4'	32"		3/8"	3/8"
3"	12'	12'	10'	10'	12'	5'	4'	32"		3/8"	3/8"
4"	12'	12'	10'	12'	12'	5'	4'	-		3/8"	3/8"
6"	12'	12'	10'	12'	12'	5'	4'	-		3/8"	3/8"
8"	12'	12'	-	-	-	5'	4'	-		1/2"	3/8"
10"	12'	12'	-	-	-	-	4'	-		1/2"	3/8"
12"	12'	12'	-	-	-	-	4'	-		5/8"	3/8"
14"	12'	12'	-	-	-	-	4'	-		5/8"	3/8"
16"	12'	12'	-	-	-	-	4'	-		3/4"	3/8"
18"	12'	12'	-	-	-	-	4'	-		3/4"	3/8"
20"	12'	12'	-	-	-	-	4'	-		7/8"	3/8"
24"	12'	12'	-	-	-	-	4'	-		1"	3/8"
MAX VERT. (1)	15'	15'	-	10'	10'	15'	10'	4'		-	-

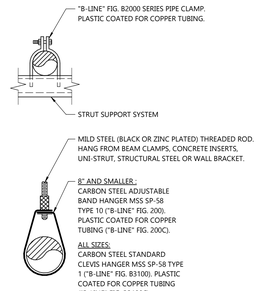
MSS = MANUFACTURER'S STANDARDIZATION SOCIETY
- INSTALL ADDITIONAL HANGERS WITHIN 12" OF ELBOWS AND TEES AND AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGES AND STRAINERS 2 1/2" AND LARGER.
(1) SUPPORT AT MINIMUM EVERY FLOOR LEVEL OR SPACING LISTED.
(2) SPACING MAY BE INCREASED TO 10' FOR 10' PIPE LENGTHS.

MAX. HANGER ROD CAPACITY

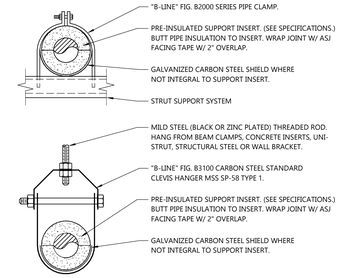
ROD DIA.	MAX LOAD
3/8"	600#
1/2"	1,100#
5/8"	1,800#
3/4"	2,700#
7/8"	3,700#
1"	4,900#

- MAX LOAD IS WEIGHT ALLOWED PER EACH ROD.

3 P4.0 PIPE SUPPORT AND HANGER ROD SCHEDULE
NOT TO SCALE



2 P4.0 UNINSULATED PIPE HANGER DETAILS
NOT TO SCALE

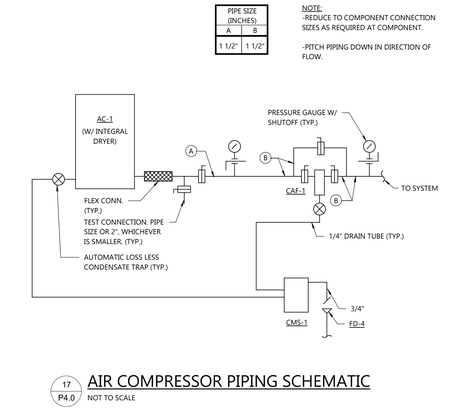


1 P4.0 INSULATED PIPE HANGER DETAILS
NOT TO SCALE

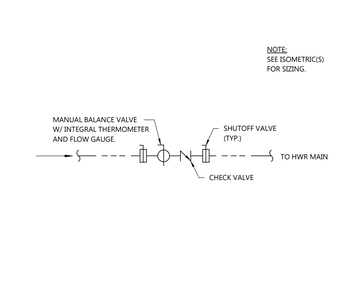
10 P4.0 AIR PIPING DRIP LEG/BLOWDOWN DETAIL
NOT TO SCALE

9 P4.0 SERVICE/PRERINSE FAUCET PIPING DETAIL
NOT TO SCALE

8 P4.0 GARAGE CATCH BASIN DETAIL (WITHOUT TRENCH)
NOT TO SCALE

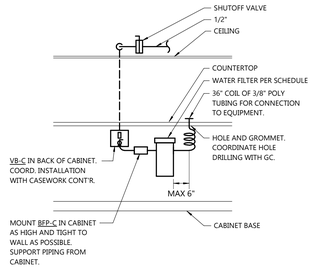


7 P4.0 GARAGE CATCH BASIN DETAIL (WITH TRENCH)
NOT TO SCALE

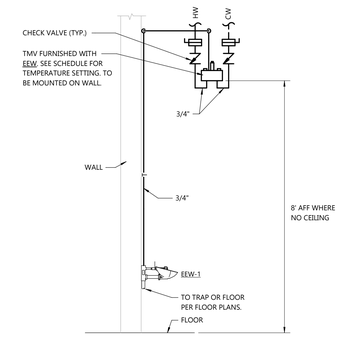


6 P4.0 ANGLE STOP DETAIL
NOT TO SCALE

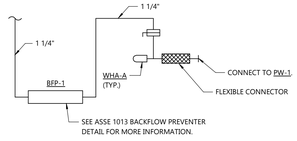
15 P4.0 VALVE BOX-C WITH DRAIN CONNECTION DETAIL
NOT TO SCALE



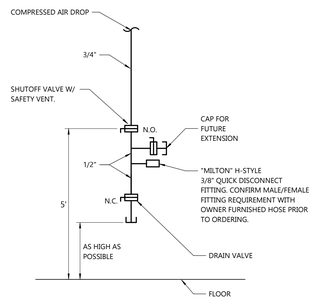
14 P4.0 VALVE BOX-C CONNECTION DETAIL
NOT TO SCALE



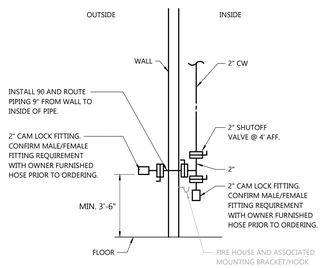
13 P4.0 EEW PIPING DETAIL
NOT TO SCALE



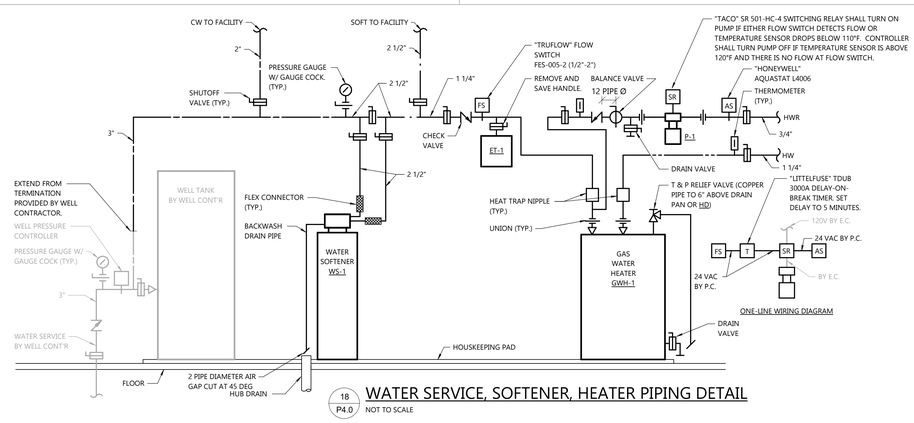
12 P4.0 PRESSURE WASHER PIPING SCHEMATIC
NOT TO SCALE



11 P4.0 GARAGE AIR DROP DETAIL
NOT TO SCALE



19 P4.0 HIGH VOLUME HOSE DETAIL
NOT TO SCALE



18 P4.0 WATER SERVICE, SOFTENER, HEATER PIPING DETAIL
NOT TO SCALE

PIPE SIZE (INCHES)	
A	B
1 1/2"	1 1/2"

NOTE:
-REDUCE TO COMPONENT CONNECTION SIZES AS REQUIRED AT COMPONENT.

-PITCH PIPING DOWN IN DIRECTION OF FLOW.

17 P4.0 AIR COMPRESSOR PIPING SCHEMATIC
NOT TO SCALE

16 P4.0 HOT WATER RETURN BALANCE ASSEMBLY DETAIL
NOT TO SCALE

PLUMBING DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
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W9590 GIVENS RD. • HORTONVILLE, WI 54944

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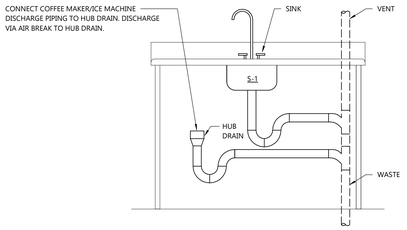
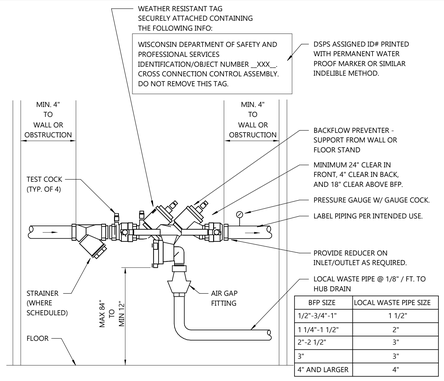
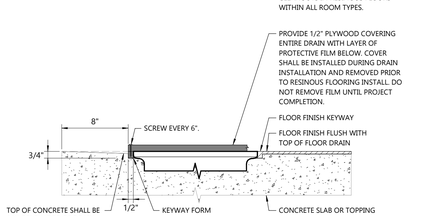


5 P4.1 HUB DRAIN VERTICAL WET VENT PIPING DETAIL
NOT TO SCALE

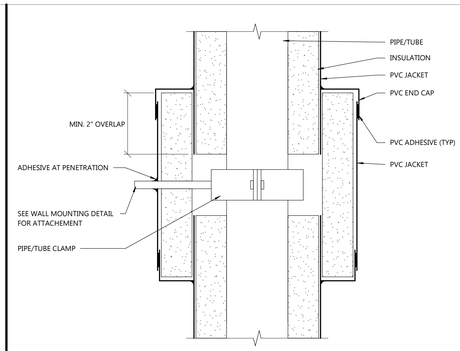


BFP SIZE	LOCAL WASTE PIPE SIZE
1/2"-3/4"-1"	1 1/2"
1 1/4"-1 1/2"	2"
2"-2 1/2"	3"
3"	3"
4" AND LARGER	4"

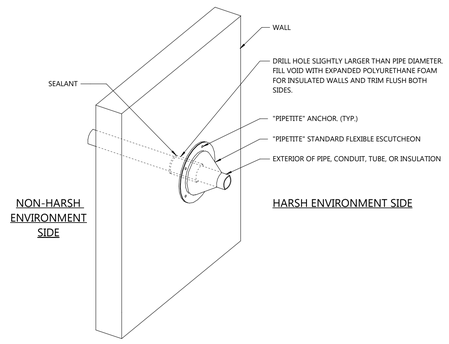
4 P4.1 BACKFLOW PREVENTER DETAIL
NOT TO SCALE



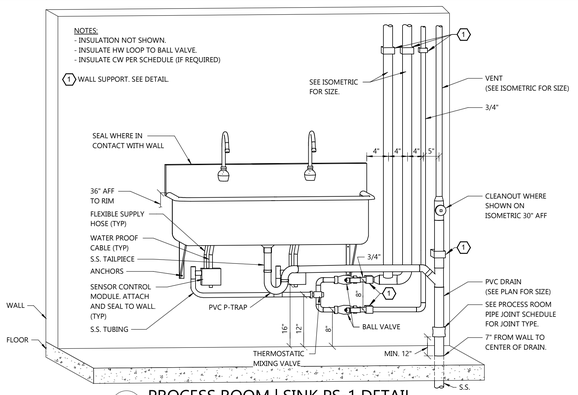
3 P4.1 GENERAL BUILDING FLOOR DRAIN/ FLOOR CLEANOUT KEYWAY DETAIL (RESINOUS FLOOR)
NOT TO SCALE



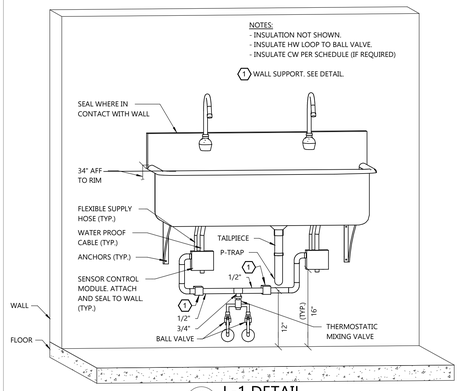
2 P4.1 HARSH ENVIRONMENT INSULATION OVER CLAMP DETAIL
NOT TO SCALE



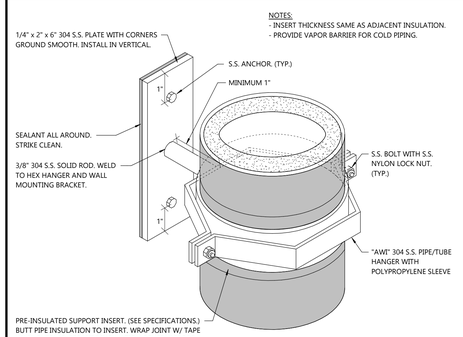
1 P4.1 HARSH ENVIRONMENT WALL PENETRATION DETAIL
NOT TO SCALE



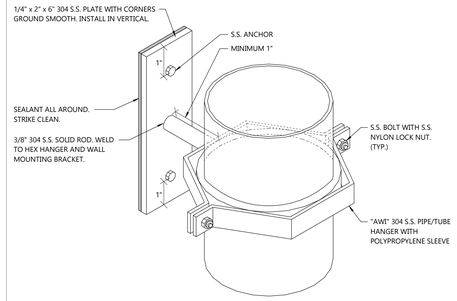
9 P4.1 PROCESS ROOM | SINK PS-1 DETAIL
NOT TO SCALE



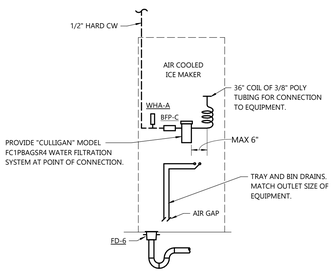
8 P4.1 L-1 DETAIL
NOT TO SCALE



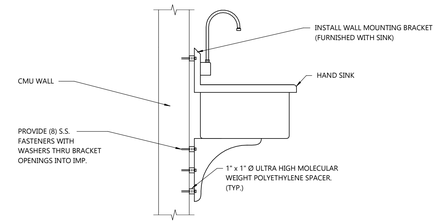
7 P4.1 HARSH ENVIRONMENT CONCRETE WALL PIPE/TUBE SUPPORT DETAIL
NOT TO SCALE



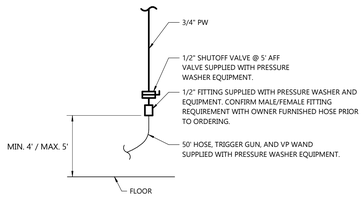
6 P4.1 HARSH ENVIRONMENT CONCRETE WALL PIPE/TUBE SUPPORT DETAIL
NOT TO SCALE



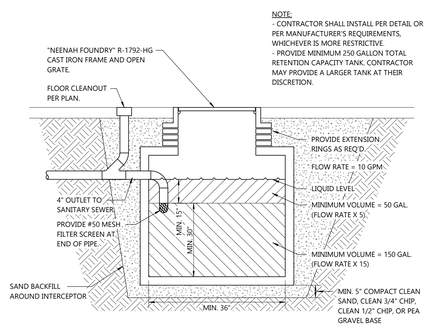
15 P4.1 ICE/WATER MAKER DETAIL
NOT TO SCALE



14 P4.1 COLUMBIA 531 SERIES SINK SUPPORT DETAIL
NOT TO SCALE



13 P4.1 PRESSURE WASHER DROP DETAIL
NOT TO SCALE

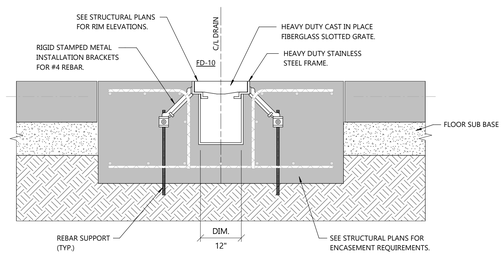


12 P4.1 WASHBAY INTERCEPTOR DETAIL
NOT TO SCALE

PIPE MATERIALS	JOINT LOCATION	
	UNDERGROUND	ABOVEGROUND
PVC TO STAINLESS STEEL	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES
CPVC TO STAINLESS STEEL	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES
POLYPROPYLENE TO S.S.	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES	DALLAS SPECIALTY HI-TEMP/CHEMICAL RESISTANT SHEAR RING COUPLINGS HTCRSR SERIES
S.S. TO S.S.	WELDED	WELDED

HARSH ENVIRONMENT ROOM PIPE JOINT SCHEDULE

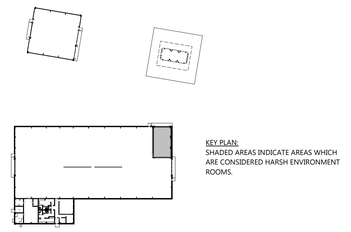
11 P4.1
NOT TO SCALE



19 P4.1 DURA TRENCH TRENCH DRAIN DETAIL (CONCRETE FLOOR)
NOT TO SCALE

GENERAL NOTES:
- HARSH ENVIRONMENT ROOM DETAILS OTHER THAN SHOWN SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.
- CLEAN WALLS WHERE CORE DRILLING IS DONE FOR INSTALLATION OF THIS WORK.
- ALL PIPE, TUBE AND CONDUIT SUPPORTS SHALL BE INSTALLED AT THE SAME HEIGHT. COORDINATE WITH ALL CONTRACTORS.
- SEALANT IN HARSH ENVIRONMENT ROOMS SHALL BE AN INDUSTRIAL GRADE SILICONE SEALANT MEETING FDA REG. NO. 21 CFR 177.2600 AND USDA FOR FEDERALLY INSPECTED MEAT AND POULTRY PLANTS EQUIVALENT TO SIL-BOND RTV 4500 ACETOXY.

17 P4.1 HARSH ENVIRONMENT NOTES
NOT TO SCALE



HARSH ENVIRONMENT ROOM KEY PLAN

GENERAL BUILDING DETAILS (STANDARD DETAILS) | HARSH ENVIRONMENT ROOM DETAILS

PLUMBING STANDARD & HARSH ENVIRONMENT ROOM DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

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LAVATORY SCHEDULE (L)

NO.	MOUNTING	OVERALL SIZE	LAV MODEL	DRAIN		SUPPLY STOP		FAUCET		
				TYPE	MODEL	TYPE	MODEL	TYPE	GPM	MODEL
1	WALL HUNG	48" x 20"	SANI-LAV 5A2A-0.5	GRID	COLUMBIA 1001	HANDLE	BRASSCRAFT KTCR19X C/1-12A C	SENSOR	0.5	COLUMBIA ES2RL-0.5 (1)

- ACCEPTABLE MANUFACTURERS:
  -LAV: SLOAN, ELKAY, COLUMBIA, SANI-LAV.
  -FAUCETS: SLOAN, ELKAY, COLUMBIA.
  -DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT, PASCO.
  -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.
- ALL WETTED PARTS SHALL BE LEAD FREE COMPLIANT.
- FAUCETS WITH VANDAL RESISTANT AERATOR.
(1) BACKSPLASH MOUNTED AC POWERED SENSOR OPERATED GOOSENECK FAUCET AT EACH STATION FURNISHED BY FIXTURE MANUFACTURER AND INSTALLED BY P.C.
PROVIDE 3/4" WATTS LFMMV ASSE 1070 LISTED THERMOSTATIC MIXING VALVE OR EQUAL.

PROCESS SINK SCHEDULE (PS)

NO.	SINK				FAUCET							
	COMPARTMENT		OVERALL SIZE	MODEL	NO. FAUCETS	NO. HOLES	SPOUT		GPM	HANDLE	FINISH	SPRAY	MODEL
	NO.	DEPTH					REACH	HEIGHT					
1	1	5"	48" x 20"	SANI-LAV 5A2A-0.5	2	2	7.5"	10"	0.5	SENSOR	CHROME	NO	COLUMBIA ES2RL-0.5 (4)(7)

- ACCEPTABLE MANUFACTURERS:
  -SINK: SLOAN, ELKAY, COLUMBIA, SANI-LAV.
  -FAUCETS: SLOAN, ELKAY, COLUMBIA.
  -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.
  -DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT, PASCO.
- 18 GA. 304 S.S. SINK, BALL VALVE SHUTOFF AND RIGID TUBING PER DETAILS. PROVIDE EACH COMPARTMENT WITH STAINLESS STEEL STRAINER AND STAINLESS STEEL TAILPIECE (ELKAY LK-18B), AND 1-1/2" "P" TRAP (SEE NOTES BELOW AND DETAILS FOR MATERIAL REQUIREMENTS).
(4) SINK WITH RAISED OUTER RIM, FULL LENGTH HIGH BACKSPLASH, BRUSHED FINISH ON EXPOSED SURFACES, STAINLESS STEEL GRID STRAINER (COLUMBIA 1010), STAINLESS STEEL TAILPIECE, P-TRAP PER DETAIL AND MOUNTING CLIP. BACKSPLASH MOUNTED AC POWERED SENSOR OPERATED GOOSENECK FAUCET AT EACH STATION FURNISHED BY FIXTURE MANUFACTURER AND INSTALLED BY P.C.
(7) PROVIDE 3/4" "WATTS" LFMMV ASSE 1070 LISTED THERMOSTATIC MIXING VALVE OR EQUAL.

AIR COMPRESSOR SCHEDULE (AC)

NO.	TYPE	MOD.	CAPACITY (ACFM)	FULL LOAD PRESSURE (PSIG)	TOTAL HP	VOLUMETRIC EFFICIENCY (PERCENT)	COOLING AIR (CFM)	FOOD GRADE OIL	ENCLOS-URE	NOISE db(A)	MINIMUM SCCR kA	MODEL	REMARKS
1	SCREW	VFD	102	125	20	91	1,325	NO	YES	68	35	QGSV-20-TMD	QUINCY

- ACCEPTABLE MANUFACTURERS: ATLAS COPCO, GARDNER DENVER, KAESER, QUINCY, SULLAIR, ZEKS.
- SEE MOTOR SPECIFICATIONS FOR MOTOR REQUIREMENTS.
- PROVIDE WITH "GARDNER DENVER" SMD12T LOSS-LESS CONDENSATE DRAIN AND DIFFERENTIAL PRESSURE INDICATION.
- PROVIDE AFTERCOOLER.
- PROVIDE 98% (10 MICRON) CARTRIDGE FILTER AT AIR INLET.

COMPRESSED AIR FILTER SCHEDULE (CAF)

NO.	SERVICE	TYPE	WATER DROPLET PPM W/W	PARTICLE SIZE MICRON	OIL REMOVAL PPM W/W	CFM	CONNECTION SIZE (INCHES)	MODEL	REMARKS
1	COMPRESSOR DISCHARGE	COALESCING	-	0.5	-	85	1 1/2"	M18-04-BL00B	WILKERSON

- ACCEPTABLE MANUFACTURERS: BALSTON, DOMINIC HUNTER, GARDNER DENVER, KAESER, QUINCY, ZEKS.

CONDENSATE MANAGEMENT SYSTEM SCHEDULE (CMS)

NO.	MAX. CAPACITY (CFM)	SIZE			MEDIA LIFE (HRS)	OUTLET SIZE (INCHES)	MODEL	REMARKS
		LENGTH (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)				
1	120	10.1	8.5	19.7	5,000	3/4	SEP120ST	SEPURA

- ACCEPTABLE MANUFACTURERS: SEPURA, QUINCY, GARDNER DENVER.
- PROVIDE ADDITIONAL INLET CONNECTIONS AS REQUIRED BY THE SYSTEM.

EMERGENCY EYE WASH SCHEDULE (EEW)

NO.	MOUNTING	BOWL MAT'L	BOWL COVER	FACE SPRAY	OPERATION	PIPE SUPPORT MAT'L	WALL BRACKET MAT'L	VALVE & TRIM MAT'L	FLOW RATE GPM	TMV SETTING DEG. F	MODEL	REMARKS
1	WALL	STAINLESS	NO	NO	HAND	-	CAST ALUM.	BRASS	5.1	80	S192248	BRADLEY (1)

- ACCEPTABLE MANUFACTURERS: BRADLEY, GUARDIAN, HAWS, SPEAKMAN.
- PROVIDE "BRADLEY" S19-2000 THERMOSTATIC MIXING VALVE COMPLIANT WITH ASSE 1071.
(1) PROVIDE CHROME PLATED/STAINLESS STEEL YOKE ASSEMBLY WITH EYE WASH HEADS AND SPRAYHEAD COVERS, STRAINER, MANUALLY OPERATED 1/2" STAY-OPEN BRONZE/STAINLESS STEEL BODY BALL VALVE, 1 1/4" WASTE CONNECTION, AND WALL MOUNTABLE IDENTIFICATION SIGN.

EXPANSION TANK SCHEDULE (ET)

NO.	MOUNTING	TANK TYPE	CONN. SIZE	TANK CAP. (GAL.)	ACCEPT. CAPACITY (GAL.)	PRECHARGE PRESSURE (PSIG)	WORKING PRESSURE (PSIG)	MAX. TEMP (DEG F)	MAX. FLOW (GPM)	DIA.	HEIGHT	WEIGHT FILLED (LBS.)	MODEL	REMARKS
1	PIPE	DIAPHRAGM	3/4"	4.8	2.5	50	150		-	11"	14.5"	31	PH 12	FLEXCON

- ACCEPTABLE MANUFACTURERS: FLEXCON, AMTROL, WESSELS, ZILMET, CALEFACTIO, TACO.

HOSE BIBB SCHEDULE (HB)

NO.	LOCATION	FREEZE PROOF	BACKFLOW PREVENTER	WALL FLANGE	CONTROL	MISC.	MFR/MODEL
1	EXTERIOR	YES	INTEG. ASSE 1052	YES	HANDLE	-	WOODFORD 27
2	INTERIOR	NO	INTEG. ASSE 1011	YES	HANDLE	-	WOODFORD 24

- ACCEPTABLE MANUFACTURERS: CHICAGO, MIFAB, NIBCO, PRIER, WATTS, WOODFORD.

LAVATORY SCHEDULE (L)

NO.	MOUNTING	OVERALL SIZE	LAV MODEL	DRAIN		SUPPLY STOP		FAUCET		
				TYPE	MODEL	TYPE	MODEL	TYPE	GPM	MODEL
1	WALL HUNG	48" x 20"	SANI-LAV 5A2A-0.5	GRID	COLUMBIA 1001	HANDLE	BRASSCRAFT KTCR19X C/1-12...	SENSOR	0.5	COLUMBIA ES2RL-0.5 (1)

- ACCEPTABLE MANUFACTURERS:
  -LAV: SLOAN, ELKAY, COLUMBIA, SANI-LAV.
  -FAUCETS: SLOAN, ELKAY, COLUMBIA.
  -DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT, PASCO.
  -STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.
- ALL WETTED PARTS SHALL BE LEAD FREE COMPLIANT.
- FAUCETS WITH VANDAL RESISTANT AERATOR.
(1) BACKSPLASH MOUNTED AC POWERED SENSOR OPERATED GOOSENECK FAUCET AT EACH STATION FURNISHED BY FIXTURE MANUFACTURER AND INSTALLED BY P.C.
PROVIDE 3/4" WATTS LFMMV ASSE 1070 LISTED THERMOSTATIC MIXING VALVE OR EQUAL.

SERVICE SINK SCHEDULE (SS)

NO.	MOUNTING	BASIN				FAUCET			
		MAT'L	SIZE	RIM GUARD	MODEL	PIPING EXPOSURE	BACKFLOW PREVENTER	GPM	MFR/MODEL
1	FLOOR	DURASTONE	24"x24"x10"	(1)	MUSTEE 63M	CONCEALED	WATTS SERIES 8	5-7	CHICAGO 305
2	FLOOR	(3)	-	-	-	EXPOSED	WATTS SERIES 8	5-8	CHICAGO 835
3	FLOOR	STAINLESS STEEL	31"x20"x45.5"	-	SANI-LAV 532FF	CONCEALED	-	2.0	INCLUDED WITH SINK

- ACCEPTABLE MANUFACTURERS:
  -BASIN: MUSTEE, FIAT, KOHLER, WILLIAMS.
  -FAUCET: CHICAGO, DELTA, KOHLER, AMERICAN STANDARD, SYMMONS. T&S BRASS.
  -DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT.
- FLOOR SERVICE SINKS WITH 3" BRASS DRAIN, STAINLESS STEEL 3 MOP HOLDER HANGER, HEAVY DUTY 5/8" DIAMETER REINFORCED RUBBER HOSE, AND STAINLESS STEEL HOSE BRACKET.
(1) BUMPER GUARDS ON EXPOSED RIMS.
(3) CURB/ BASIN PROVIDED BY G.C. COORDINATE DRAIN LOCATION.

SHOWER SCHEDULE (SH)

NO.	MODULE							CONTROL TRIM W/ HEAD	SHOWER HEAD W/ ARM	TEMP. PRESS VALVE (3)	SHOWER FLOW GPM	HAND SHOWER
	MAT'L	ADA COMPLIANT	SIZE	SEAT	DRAIN	ENCLOSURE	MODEL					
1H	(1)	YES	(1)	(1)	(8)	(1)	(1)	K-T23949-4	-	K-8304-KS	2.5	(2)

- ACCEPTABLE MANUFACTURERS:
  -MODULE: KOHLER, AKER, AQUAGLASS, AMERICAN STANDARD, BRADLEY, BEST BATH.
  -SUPPLIES: KOHLER, POWERS, DELTA.
- ALL MODEL NUMBERS BASED ON KOHLER UNLESS INDICATED OTHERWISE.
(1) ENCLOSURE FIELD BUILT.
(2) K-72414-Y MULTIFUNCTION HANDSHOWER, K-98341 24" SLIDE BAR W/ K-45982 60" HOSE AND K-98350 WALL SUPPLY ELBOW. PROVIDE WITH K-9660 HAND HELD SHOWER VACUUM BREAKER (ASSE 1014).
(3) VALVE SHALL BE A PRESSURE-BALANCED VALVE COMPLYING WITH ASSE 1016 OR ASME A112.18.1/CSA B125.1 WITH TEMPERATURE LIMITING STOP, AND SPECIFICALLY DESIGNED TO PROVIDE THERMAL SHOCK AND SCALD PROTECTION AT THE FLOW RATE OF THE SHOWERHEAD BEING USED.
(8) PROVIDE "SIOUX CHIEF" 821-2005PSQ MATTE STAINLESS STEEL SHOWER DRAIN IN FLOOR PER ARCHITECTURAL DETAIL.

PIPE SCHEDULE

| SERVICE | LOCATION | PIPE SIZE | COPPER | | | | | | | | | PEX | | | PVC | | | | ALUMINUM | | | STAINLESS STEEL | | | | | | | | | | | | | |

BACKFLOW PREVENTER / VACUUM BREAKER SCHEDULE (BFP)

NO.	GPM	P.D. (PSI)	INDIRECT WASTE REQ'D	SIZE	MAX. OP TEMP. DEG. F.	TYPE	MAX. HAZ.	BFP/VB PRESS.	APPLICATION	ASSE STD.	MODEL	REMARKS
C	1	10.0	YES	3/8"	130	BFP FOR CARB. BEVERAGES	-	-	CARB. BEV. DISPENSER, ICE MACHINE	1022	SD-3	WATTS (1)
1	4.0	10.0	YES (6)	3/4"	180	REDUCED PRESS. PRINCIPLE BFP	HIGH	CONTIN.	PRESSURE WASHER	1013	975XL3	ZURN (1)

- ACCEPTABLE MANUFACTURERS: WATTS, AMES, ZURN/WILKINS, APOLLO, MIFAB.
(1) LEAD FREE BODY.
(6) PROVIDE AIR GAP FITTING.

SINK SCHEDULE (S)

NO.	SINK					FAUCET						
	COMPARTMENT		MOUNTING	OVERALL SIZE	MODEL	NO. HOLES	SPOUT		GPM	HANDLE	FINISH	SPRAY	MODEL
	NO.	DEPTH					REACH	HEIGHT					
1	1	10"	SELF-RIMMING	22" x 19.5"	ELKAY DLR-2219-10	1	8.5"	5"	1.5	SINGLE	CHROME	YES	AM. STD. 7077.300

- ACCEPTABLE MANUFACTURERS:
-SINK: KOHLER, AMERICAN STANDARD, CRANE, ELKAY, JUST.
-FAUCETS: KOHLER, CHICAGO, AMERICAN STANDARD, T&S BRASS, DELTA.
-STOPS AND SUPPLIES: KOHLER, BRASSCRAFT, DEARBORN, KEENEY, MCGUIRE.
-DRAINS AND TRAPS: KOHLER, DEARBORN, KEENEY, MCGUIRE, BRASSCRAFT, PASCO.
- SELF-RIMMING 18 GA. 304 S.S. SINK, ANGLE SUPPLIES WITH HANDLE STOPS WITH BRASS STEMS (BRASSCRAFT KTCR19X C/1-12A C). PROVIDE EACH COMPARTMENT WITH STAINLESS STEEL STRAINER AND STAINLESS STEEL TAILPIECE (ELKAY LK-35B), AND 1-1/2" 17 GAUGE "P" TRAP W/ CLEANOUT (MCGUIRE 8912).
- VERIFY SINK CUTOUT SIZE WILL FIT IN COUNTERTOP WITH CABINET SHOP DRAWINGS PRIOR TO ORDERING.

INTERIOR SOLIDS INTERCEPTOR SCHEDULE (SI)

NO.	SIZE L x W x H	GPM	SOLID CAPACITY (GALLONS)	LIQUID CAPACITY (GALLONS)	INLET & OUTLET SIZE	MAT'L	RECESS	EXTENSION	MODEL	REMARKS
1	24.5"x24.5"x23"	75	7	-	4"	(1)	NONE	NO	AARDVARK AA-4	STRIEM

- ACCEPTABLE MANUFACTURERS: SCHIER, STRIEM, ENDURA, J.R. SMITH, WATTS, GREEN TURTLE, MIFAB.
- FULLY RECESSED INTERCEPTORS TOPS FLUSH WITH FLOOR, AND ANCHOR FLANGE.
(1) HIGH DENSITY POLYETHYLENE BODY.

URINAL SCHEDULE (U)

NO.	MOUNTING	OPER-ATING SYSTEM	RIM HT. A.F.F.	GAL. PER FLUSH	MIN. PRESS. PSIG	FIXTURE		FLUSH VALVE			
						MFR	MODEL	OPERATOR	INSTALL	MFR	MODEL
1	WALL HUNG	WASHDOWN	(1)	1/8	20	ZURN	Z-5755 (4)	SENSOR	EXPOSED	HYDROTEK	HE8200 (3)(5)

- ACCEPTABLE MANUFACTURERS:
-URINAL: TOTO, KOHLER, AMERICAN STANDARD, ZURN, SLOAN.
-FLUSH VALVE: SLOAN, ZURN, DELANY, HYDROTEK, KOHLER, AMERICAN STANDARD.
-CARRIER AND SUPPORT: J.R. SMITH, JOSAM, WADE, ZURN, MIFAB, SIOUX CHIEF.
- VITREOUS CHINA.
- WASHOUT URINALS WITH REMOVABLE STAINLESS STEEL STRAINER (KOHLER K-9183).
(1) SEE ARCHITECTURAL PLANS.
(3) BATTERY POWERED.
(4) ASYMMETRIC BACKWALL.
(5) 1,500,000 ON/OFF CYCLES, UP TO 10 YEARS W/ (4) AA BATTERIES.

THERMOSTATIC MIXING VALVE SCHEDULE (TMV)

NO.	SERVICE	INLETS	OUTLET	MIN. FLOW (GPM)	MAX. FLOW (GPM)	ACTUAL FLOW (GPM)	ACT. P.D. (PSI)	INLET CONDITIONS				RECIRC RATE (GPM)	TEMP. SETTING (DEG F)	MODEL	REMARKS
								COLD (DEG F)	PRESS. (PSIG)	HOT (DEG F)	PRESS. (PSIG)				
1	LAVATORY	3/8"	3/8"	0.25	3.0	0.5	3	40	-	130	-	NA	105	LFG480-11	POWERS (1)

- ACCEPTABLE MANUFACTURERS: LEONARD, SYMMONS, WATTS, POWERS.
- LEAD FREE BODY, REMOVABLE CARTRIDGE WITH STRAINER, STAINLESS STEEL SPRING, EPDM O-RINGS AND SOLID WAX THERMOSTAT ASSEMBLY.
- P.C. SHALL FIELD ADJUST TMV TO TEMPERATURE SETTING INDICATED IN SCHEDULE.
(1) POINT OF USE TMV SHALL COMPLY WITH ASSE 1070.

VALVE BOX SCHEDULE (VB)

NO.	SERVICE	MOUNTING	VALVE	BOX MATERIAL	WATER INLET SIZE	WATER OUTLET SIZE	DRAIN SOCKET SIZE	MODEL	REMARKS
C	COFFEE/ICE MAKER	RECESSED	1/4 TURN	PLASTIC	1/2" COLD	1/4" COMP.	-	37687	OATEY (1)

- ACCEPTABLE MANUFACTURERS: OATEY, SIOUX CHIEF, SYMMONS, GUY GRAY.
- ABS PLASTIC BOX AND FRAME, GALVANIZED STEEL MOUNTING BRACKET, BRASS VALVE BODY, INTEGRAL WATER HAMMER ARRESTOR AND TRIM.
- BOX SHALL BE RATED FOR THE WALL SYSTEM IN WHICH IT IS INSTALLED.
(1) PROVIDE "CULLIGAN" MODEL FC1PBAGSR4 WATER FILTRATION SYSTEM AT POINT OF CONNECTION.

WATER CLOSET SCHEDULE (WC)

NO.	MT'G	MIN. MaP (1)	ACTUAL MaP (1)	MIN. PRESS. PSIG	FLUSH TYPE	GPF	BOWL			FLUSH VALVE W/ VACUUM BREAKER OR TANK STYLE	FLUSH VALVE OR SUPPLY STOP MFR/MODEL	SEAT
							MFR/MODEL	RIM HT. A.F.F.	PIPING CONNECTION			
1	FLOOR	800	1000	25	VALVE	1.6	KOHLER K-96053	15-1/4"	1-1/2" TOP SPUD	SENSOR	HYDROTEK HE8200 (3)	BEMIS 1655 SSCT
1H	FLOOR	800	1000	25	VALVE	1.6	KOHLER K-96057	16-5/8"	1-1/2" TOP SPUD	SENSOR	HYDROTEK HE8200 (3)	BEMIS 1655 SSCT

- ACCEPTABLE MANUFACTURERS:
-BOWL: TOTO, KOHLER, AMERICAN STANDARD, CRANE, ELJER, MANSFIELD.
-FLUSH VALVE: SLOAN, ZURN, DELANY, HYDROTEK, KOHLER, AMERICAN STANDARD.
-SUPPLY STOPS: BRASSCRAFT, CHICAGO, KOHLER, DEARBORN, KEENEY, MCGUIRE.
-SEAT: TOTO, KOHLER, BEMIS, SPERZEL, OLSONITE, AMERICAN STANDARD, CHURCH.
- WATER SAVING, SIPHON JET ELONGATED VITREOUS CHINA WATER CLOSET BOWL WITH WHITE SOLID PLASTIC OPEN FRONT SEAT WITH SELF-SUSTAINING CHECK HINGE.
- FLOOR SET WATER CLOSETS WITH BOLT CAPS.
- CONTROLS FOR ADA ACCESSIBLE FIXTURES SHALL BE ON THE OPEN SIDE.
(1) MAXIMUM PERFORMANCE (MaP) RATING PER VERITEC CONSULTING INC. AND KOELLER AND COMPANY. PROVIDE MaP RATING INFORMATION WITH PRODUCT SUBMITTAL.
(3) 1,500,000 ON/OFF CYCLES, UP TO 10 YEARS W/ (4) AA BATTERIES.

CLEANOUT SCHEDULE

NO.	LOCATION	SIZES	BODY MAT'L	PLUG MAT'L	ACCESS COVER		MISC.	FIGURE	REMARKS
					MAT'L	MISC.			
FCO	FINISHED ROOMS W/O CARPET (3)	2" - 6"	C.I.	ABS	N.B.	-	-	Z-1400	ZURN
FCO-P	TRUCK STORAGE / WASH BAY	2" - 6"	S.S.	PVC	S.S.	GASKETED	ROUND	PCO-300	PLUMBING CREATIONS (4)

- ACCEPTABLE MANUFACTURERS: J.R. SMITH, SCHIER, JOSAM, WADE, ZURN, MIFAB.
- RECESSED TAPER THREAD PLUG WITH SLOTTED RECESS.
(3) FINISHED ROOMS ARE ROOMS WITH CARPET OR FLOOR TILE OR ROOMS ACCESSIBLE BY A DOOR LESS THAN 42" WIDE.
(4) "PLUMBING CREATIONS" MANUFACTURERS REPRESENTATIVE - JIM PISKULA (262) 349-0744.
"KUSEL", "APT" AND "AWI" ARE APPROVED EQUIVALENTS. ALL OTHER MANUFACTURERS REQUIRE APPROVAL BEFORE BIDDING.
"KUSEL" MANUFACTURERS REPRESENTATIVE - COLIN KING (612) 916-9119.

DRAIN SCHEDULE

NO.	TYPE	APPLICATION	OUTLET SIZE	BODY MAT'L	STRAINER/TOP		MISC.	MODEL	REMARKS
					MAT'L	SIZE			
FD-1	FLOOR	PEDESTRIAN TRAFFIC	2"-3" (2)	CAST IRON	N. B. "TYPE B"	6" DIA	VERTICAL ADJUSTMENT	ZN-415-BZ1	ZURN (19)
FD-2	FLOOR	EQ. RM. / MED. DUTY	2"-4" (2)	CAST IRON	CAST IRON	7" DIA	-	Z-507	ZURN (19)
FD-3	FLOOR	BOOT SCRUBBER	2"-3" (2)	ST. STEEL	ST. STEEL	8.5" DIA	1/8" PERF. BASKET (16)	JSR-710-PDG	PLUMBING CREATIONS (3)
FD-4	FLOOR	INTEGRAL FUNNEL	2"-4" (2)	CAST IRON	NICKEL BRONZE	9" DIA	-	3510	J.R. SMITH
FD-6	FLOOR	FLOOR SINK	2"-4" (2)	CAST IRON	3/4 N.B. GRATE	12" SQ	ALUM. DOME	861-23X	SIOUX CHIEF
FD-10	TRENCH	TRUCK STORAGE	4"	(5)	(7)	44"-3" x 14"	-	STP3S12	DURA TRENCH
HD-R	HUB DRAIN	INDIRECT WASTE	(2)	-	PROVIDE 1 PIPE SIZE INCREASE ON END OF PIPE, TERMINATE RIM 2" A.F.F. OR PAD.				

- ACCEPTABLE MANUFACTURERS: ZURN, J.R. SMITH, JOSAM, WADE, WATTS, SCHIER, KUSEL, SIOUX CHIEF, MIFAB. BLUCHER NOT PERMITTED.
(2) AS NOTED ON DRAWINGS.
(3) "PLUMBING CREATIONS" MANUFACTURERS REPRESENTATIVE - JIM PISKULA (262) 349-0744.
"KUSEL", "APT" AND "AWI" ARE APPROVED EQUIVALENTS. ALL OTHER MANUFACTURERS REQUIRE APPROVAL BEFORE BIDDING.
"KUSEL" MANUFACTURERS REPRESENTATIVE - COLIN KING (612) 916-9119.
(4) PROVIDE GASKETED SOLID COVER, DRAIN GRATE AND DEBRIS BASKET.
(5) POLYESTER FIBER REINFORCED POLYMER CONCRETE BODY, INTERLOCKING ENDS AND SQUARE BOTTOM. PROVIDE WITH END BOTTOM OUTLET, AND SLOPE AT 1/8" PER FT. STARTING DEPTH OF TRENCH DRAIN TO BE 6" DEEP.
(7) HEAVY DUTY LOAD BEARING 2 PROFILE STAINLESS STEEL FRAME W/ ANCHORS 18" OC AND 14" HEAVY DUTY FIBERGLASS GRATING (14B24FG) WITH CLASS D RATING.
(13) PROVIDE SCHEDULE 10 STAINLESS STEEL TAIL PIECE AND P-TRAP. WELD TO DRAIN OUTLET.
(16) PERIMETER DRAINAGE GRATE.
(19) PROVIDE BARRIER TYPE INSERT DRAIN TRAP SEAL COMPLIANT WITH ASSE 1072.

WATER HAMMER ARRESTOR SCHEDULE (WHA)

NO.	OVERALL LENGTH	CONNECTION SIZE (NPT)	PRECHARGE PRESSURE PSI	CAPACITY CUBIC INCHES	MAX. SYSTEM PRESSURE PSIG	MODEL	MFR
A	6.25"	1/2"	60	5	150	SC-500A	PRECISION PLUMBING PRODUCTS
B	7.25"	3/4"	60	7	150	SC-750B	PRECISION PLUMBING PRODUCTS
C	9.5"	1"	60	11	150	SC-1000C	PRECISION PLUMBING PRODUCTS
D	9.25"	1"	60	20	150	SC-1250D	PRECISION PLUMBING PRODUCTS
E	11"	1"	60	29	150	SC-1500E	PRECISION PLUMBING PRODUCTS
F	12"	1"	60	36	150	SC-2000F	PRECISION PLUMBING PRODUCTS

- ACCEPTABLE MANUFACTURERS: J.R. SMITH, JOSAM, MIFAB, OATEY, PRECISION PLUMBING PRODUCTS, WADE, WATTS, ZURN-WILKINS.
- DEVICE SHALL MEET ASSE 1010 AND "PDI" STANDARD WH201.
- NOT ALL WHA SCHEDULED ARE USED ON THE PROJECT.

PLUMBING SCHEDULES

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. ● HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
P5.1

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FIRE PROTECTION SPECIFICATIONS

DIVISION 21 FIRE PROTECTION

21 05 00 BASIC FIRE PROTECTION REQUIREMENTS

A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS AND DIVISION OF WORK DESCRIPTION.
B. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS:
   1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS.
   2. FIRE PROTECTION CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
      a. ALL SCHEDULED EQUIPMENT
      b. SPRINKLER SYSTEM/FIRE PROTECTION PLANS
         1). INCLUDE A 3D DRAWING FILE SUITABLE FOR IMPORT INTO REVIT OR NAVISWORKS.
      c. HANGERS
      d. PIPE IDENTIFICATION
      e. FIRE PUMP
   3. AS-BUILT DRAWINGS SHALL BE MARKED ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
   4. PROVIDE "AS-BUILT" DRAWINGS TO THE OWNER IN AUTOCAD FORMAT.
C. FINISHING AND PAINTING
   1. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE PIPING OR EQUIPMENT TO THE SATISFACTION OF THE OWNER.
D. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
E. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
F. FULLY COOPERATE WITH OTHER TRADES AND FURNISH ANY INFORMATION NECESSARY TO PERMIT THE WORK OF ALL TRADES TO BE INSTALLED WITH LEAST POSSIBLE INTERFERENCE OR DELAY.
G. COORDINATE WORK WITH OTHER CONTRACTORS AND MAKE ADJUSTMENTS TO THE FIRE PROTECTION SYSTEM INSTALLATION WHERE IT WILL BE INSTALLED IN CLOSE PROXIMITY TO THE WORK OF OTHER TRADES.
H. IF THE FPC INSTALLS WORK BEFORE COORDINATING IT WITH OTHER TRADES SO AS TO CAUSE INTERFERENCE WITH WORK OF OTHER TRADES, THE FPC SHALL MAKE NECESSARY CHANGES IN THE WORK TO CORRECT THE CONDITION WITHOUT EXTRA CHARGES.
I. PROVIDE ALL CUTTING AND PATCHING NECESSARY FOR FIRE PROTECTION WORK INSTALLATION UNLESS THIS WORK IS IDENTIFIED TO BE THE WORK OF OTHER CONTRACTORS. PATCHING SHALL MATCH ADJACENT SURFACES.
J. FIRE RATED INTERIOR WALL AND FLOOR PIPE PENETRATIONS
   1. SLEEVE REQUIRED FOR PENETRATION OF CONCRETE AND MASONRY WALLS AND FLOORS.
   2. SEAL OPENING AROUND PIPE WITH A UL APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
   3. FIRE-RESISTIVE JOINT SYSTEM PRODUCTS BY THE SAME MANUFACTURER AS BEING USED ON THE REMAINDER OF THE PROJECT.
   4. PROVIDE UL ASSEMBLY PENETRATION NUMBER TO AHJ COMPLIANT WITH BUILDING UL ASSEMBLY 30 DAYS PRIOR TO INSTALLATION IF REQUIRED BY AHJ.
K. SEE PLANS FOR ADDITIONAL WALL AND FLOOR PENETRATION DETAILS.
L. ESCUTCHEONS
   1. INSTALL ONE-PIECE (TWO PIECE FOR EXISTING PIPING) POLISHED CHROME PLATED STEEL ESCUTCHEONS AT PENETRATIONS EXPOSED IN FINISHED ROOMS (ROOMS WHICH DON'T HAVE UNFINISHED CONCRETE FLOORS).
   2. ESCUTCHEONS WITH SPRINGS FOR WALL AND CEILING LOCATIONS.
   3. ID TO CLOSELY FIT AROUND PIPE/INSULATION, OD THAT COMPLETELY COVERS THE OPENING.
   4. ESCUTCHEONS NOT REQUIRED WHERE INSULATION BUTTED TO WALL/CEILING FULLY COVERS THE SLEEVE/WALL OPENING AND INSULATION IS CAULKED AT WALL/CEILING.
   5. ESCUTCHEONS REQUIRED IN CABINETS AND CASEWORK.
   6. SEE DETAILS FOR ESCUTCHEONS IN HARSH ENVIRONMENT ROOMS.
M. PROVIDE A COMPLETE DESIGN/BUILD FIRE PROTECTION SYSTEM FOR THE PROPOSED PROJECT.
N. THE REQUIREMENTS OF MUNICIPAL AND STATE CODES, LAWS, ORDINANCES AND REGULATIONS, AND NFPA ARE MADE PART OF THESE SPECIFICATIONS AND SHALL BE COMPLIED WITH AS FAR AS THEY APPLY TO THE WORK.
O. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING AND SIZING THE DISTRIBUTION SYSTEMS BY HYDRAULIC CALCULATION, AND SHALL PROVIDE THE NECESSARY ENGINEERING DRAWINGS AND CALCULATIONS TO OBTAIN ACCEPTANCE OF ALL AUTHORITIES HAVING JURISDICTION.
   1. IF CONTRACTOR CALCULATES DIFFERENT HORSEPOWER FOR FIRE PUMP THAN ENGINEER'S ESTIMATE, NOTIFY EXCEL ENGINEERING DIRECTLY AT TIME OF BID SUBMISSION.
P. DESIGN COORDINATION
   1. REVIEW DESIGN AND PROJECT SCOPE AND INFORM EXCEL ENGINEERING INC OF ANY SPRINKLER SYSTEM IMPACTS ON BUILDING DESIGN WITHIN 7 DAYS OF CONTRACTOR SELECTION.
   2. IF FIRE PROTECTION DESIGN REQUIRES ANY MODIFICATIONS OR ADDITIONS TO THE BUILDING AFTER CONSTRUCTION BEGINS, IN ORDER TO MEET THE SPRINKLER SYSTEM REQUIREMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF MODIFICATIONS OR ADDITIONS OR SHALL SPECIFICALLY NOTE IN THE BID THE WORK REQUIRED.
Q. COMPLETE DESIGN AND SUBMIT FOR APPROVAL TO AUTHORITIES HAVING JURISDICTION WITHIN 60 DAYS OF CONTRACT AWARD. CONSTRUCTION REWORK COSTS INCURRED BY OTHER CONTRACTORS DUE TO FAILURE BY FPC TO OBTAIN APPROVAL IN A TIMELY MANNER SHALL BE BORNE BY THE FIRE PROTECTION CONTRACTOR.
R. DRAWINGS INDICATING NEW FIRE PROTECTION SYSTEMS TO BE INSTALLED WITH PIPE SIZES, ETC., AND COPY OF SYSTEMS HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE FOLLOWING FOR REVIEW:
   1. EXCEL ENGINEERING
   2. NUMBER OF PRINTS AS REQUIRED TO LOCAL FIRE DEPARTMENT AUTHORITY.
   3. NUMBER OF PRINTS AS REQUIRED TO OWNER'S INSURING AUTHORITY.
   4. PROVIDE A COPY OF ALL REVIEW COMMENTS FROM LOCAL FIRE DEPARTMENT AUTHORITY AND OWNER'S INSURING AUTHORITY, ALONG WITH ANY RESPONSE TO SAID COMMENTS, TO EXCEL ENGINEERING FOR THEIR RECORDS.
S. FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR STATE OF WISCONSIN AND/OR LOCAL SUBMITTAL AND PLAN REVIEW FEES.
T. FIRE PROTECTION CONTRACTOR SHALL BE LICENSED BY THE STATE OF WISCONSIN TO FURNISH AND INSTALL FIRE PROTECTION SYSTEMS.
U. LEAVE SYSTEM IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
   1. FURNISH THE NECESSARY SKILLED, QUALIFIED PERSONNEL FOR OPERATING THE SYSTEM FOR A TOTAL OF TWO (2) HOURS UPON COMPLETION OF ALL WORK AND TESTS.
   2. INSTRUCT THE OWNER'S REPRESENTATIVE FULLY IN THE OPERATION, ADJUSTMENT AND MAINTENANCE OF EQUIPMENT FURNISHED.
   3. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS, DOCUMENTING THE DATE, TIME INVOLVED, PEOPLE IN ATTENDANCE AND HAVE THE OWNER'S REPRESENTATIVE ATTEST IN WRITING FOR EACH SESSION HELD.
V. TESTS AND INSPECTIONS
   1. CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING AND CERTIFICATION OF SYSTEMS AND ORDERING INSPECTIONS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
   2. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF AND TO THE SATISFACTION OF THE OWNER OR AN AUTHORIZED REPRESENTATIVE.
   3. INSPECTIONS SHALL BE MADE BY THE OWNER'S AUTHORIZED REPRESENTATIVE AND INSPECTORS HAVING JURISDICTION.

21 05 13 ELECTRICAL WORK

A. FURNISH AND INSTALL ALL ALARM, FLOW AND TAMPER SWITCHES, PRE-ACTION SYSTEM CONTROL PANEL AND DETECTORS, CLEAN AGENT SYSTEM CONTROL PANEL AND DETECTORS, AND THE INTERFACE WIRING BETWEEN THEM. ALL DEVICES SHALL BE 110 VAC. PROVIDE TRANSFORMERS AS REQUIRED IF VOLTAGE REQUIREMENT IS LOWER THAN 110 VAC.
B. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO WIRE FROM THE AUTOMATIC SPRINKLER SYSTEM, COMPONENTS TO THE BUILDING FIRE ALARM SYSTEM.

21 05 29 SUPPORTS AND HANGERS

A. PROVIDE PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH NFPA 13.
B. WASH BAY
   1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS.
   2. SEE PROCESS ROOM HANGER DETAILS.
   3. STRUT SYSTEMS ARE NOT PERMITTED.
   4. ALL MATERIALS SHALL BE STAINLESS STEEL.
   5. USE OF THREADS SHALL BE MINIMIZED.
   6. ATTACHMENT TO PROCESS EQUIPMENT FRAMING SHALL BE WELDED.
C. HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING.
D. ATTACHMENT TO METAL DECK: HANGERS MAY BE ANCHORED TO METAL FLOOR/ROOF DECK IF ALL THE FOLLOWING CONDITIONS ARE MET:
   1. MAXIMUM HANGER LOAD OF 50 LBS.
   2. ANCHORED TO BOTTOM OF DECK FLUTES, NOT UPPER FLUTE.
   3. ANCHOR LENGTH SHALL EXCEED DECK DEPTH.

21 05 53 IDENTIFICATION

A. WASH BAY
   1. THE FOLLOWING SPECIFICATIONS FOR PROCESS ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO PROCESS ROOM ITEMS.
   2. PIPE IDENTIFICATION
      a. PIPE MARKERS
         1). MANUFACTURERS: MARKING SERVICES MS-995 MAXILAR, BRADY B-689, SETON ULTRA-MARK WRAP AROUND.
         2). LAYER OF POLYESTER FILM AND PROTECTIVE FILM WITH PRINTED GRAPHICS LAMINATED BETWEEN THE TWO LAYERS. TOP LAYER TO PROVIDE UV AND FADE PROTECTION.
         3). MARKERS MECHANICALLY APPLIED BY WRAPPING COMPLETELY AROUND THE PIPE AND SEALING IN PLACE WITH AN ADHESIVE SEALING STRIP, OR STRAPPING ONTO THE PIPE SURFACE WITH MARKING SERVICES NO. 15710, 15711 OR 15712 STAINLESS STEEL STRAPS.
         4). GLUE EDGES TO PIPE.
B. PROVIDE IDENTIFICATION PER NFPA 13.

21 13 13 PIPING

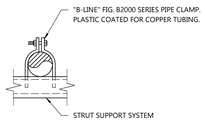
A. DESIGN REQUIREMENTS: ALL SYSTEM COMPONENTS SHALL BE RATED FOR THE MAXIMUM WORKING PRESSURE TO WHICH THEY ARE EXPOSED BUT NOT LESS THAN 175 PSIG.
B. PIPE AND FITTINGS: PROVIDE PER NFPA 13.
C. WASH BAY:
   1. ALL PIPING IN PROCESS ROOMS SHALL BE COLD PRESS MECHANICAL JOINT SCHEDULE 10 STAINLESS STEEL.
   2. SEAL GAP AT COLD PRESS FITTINGS WITH "TREMCO" VULKEM 116 SEALANT.
D. COORDINATION
   1. COORDINATE LOCATIONS OF PIPING WITH PIPING, DUCTWORK, CONDUIT AND EQUIPMENT OF OTHER CONTRACTORS.
   2. REVIEW DRAWINGS FOR EXACT LOCATION OF PIPE SPACES, CEILING HEIGHTS, CEILING GRID, LIGHT FIXTURES AND GRILLES BEFORE INSTALLING PIPING.
   3. INSTALL WITH SUFFICIENT CLEARANCES FOR INSTALLATION OF OTHER CONTRACTOR'S WORK.
   4. PIPING SHALL NOT OBSTRUCT SERVICE CLEARANCES REQUIRED FOR EQUIPMENT AND VALVES.
   5. PIPING SHALL NOT BE INSTALLED BELOW OR WITHIN 45 DEG OF LIGHT EDGE.
   6. DO NOT ROUTE PIPING ABOVE TRANSFORMERS, PANELBOARDS, MOTOR CONTROL CENTERS, SWITCHBOARDS OR OTHER ELECTRICAL DISTRIBUTION EQUIPMENT.
   7. ROUTE MAINS AROUND ELECTRICAL AND COMPUTER ROOMS. ONLY PIPING SERVING THESE ROOMS ALLOWED IN THE ROOMS.
E. PREPARE EXPOSED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES NOT PREFINISHED, READY FOR FINISH PAINTING.
F. INSTALLATION
   1. INSTALL PIPE AND FITTINGS IN ACCORDANCE WITH NFPA 13, MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOGNIZED INDUSTRY PRACTICES.
   2. INSTALL PIPING TO CONSERVE BUILDING SPACE AND NOT INTERFERE WITH USE OF SPACE. CONCEAL PIPING WITHIN WALLS AND CHASES OR ABOVE CEILINGS.
   3. INSTALL PIPING PARALLEL TO WALLS AND CEILINGS AND AT HEIGHTS WHICH DO NOT OBSTRUCT WINDOWS, DOORWAYS, STAIRWAYS, OR PASSAGEWAYS. OFFSET OR REROUTE PIPING TO CLEAR INTERFERENCES WHICH DEVELOP IN THE FIELD.
   4. INSTALL PIPING LEVEL, TAKING INTO ACCOUNT DRAINAGE REQUIREMENTS. PIPING SHALL NOT FOLLOW ROOF PITCH WHERE PITCH CHANGES.
      a. AREAS OF EXPOSED STRUCTURE MAY FOLLOW ROOF PITCH, LOCATIONS OF AUXILIARY DRAINS SHALL BE APPROVED BY ARCHITECT DURING DESIGN.
   5. INSTALL SPRINKLERS TO MISS ALL LIGHTS, GRILLES AND ANY OTHER CEILING OBSTRUCTIONS.
   6. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
   7. LOCATE SPRINKLERS AND PIPING PARALLEL TO STRUCTURAL MEMBERS IN AREAS OF EXPOSED STRUCTURE.
   8. DRAIN POINTS IN SYSTEM LOCATED IN FINISHED/PUBLIC AREAS WITH EXPOSED STRUCTURE NOT PERMITTED WITHOUT WRITTEN APPROVAL BY ARCHITECT.
   9. OPEN ENDS OF ALL PIPES SHALL BE KEPT CLOSED DURING CONSTRUCTION.
   10. PROVIDE MOUNTABLE METAL BOX OF SPARE HEADS WITH PROPER WRENCH FOR HEAD REPLACEMENT.
   11. PROVIDE WIRE GUARDS ON SPRINKLERS LOCATED BELOW 84 INCHES AFF.
   12. PROVIDE PRESSURE GAUGE AT SPRINKLER MAIN AND AT TOP OF SYSTEM.
   13. PROVIDE PROTECTIVE SLEEVE COVERING WHERE STEEL PIPING IS EMBEDDED IN MASONRY OR CONCRETE.
   14. PROVIDE CLEARANCE FOR ACCESS TO VALVES AND PIPING SPECIALTIES.
   15. ROUTE FIRE PUMP TEST DISCHARGE BACK INTO STORAGE TANK WHERE A TANK IS PROVIDED.
G. PIPING SYSTEM LEAK TESTS
   1. CONDUCT PRESSURE TEST WITH WATER. IF LEAKS ARE FOUND, REPAIR THE AREA WITH NEW MATERIALS AND REPEAT THE TEST.
   2. TEST PIPING IN SECTIONS OR ENTIRE SYSTEM AS REQUIRED BY SEQUENCE OF CONSTRUCTION. DO NOT CONCEAL PIPE UNTIL IT HAS BEEN SUCCESSFULLY TESTED. PROVIDE TEMPORARY RESTRAINTS AT FITTINGS OR EXPANSION JOINTS IF REQUIRED FOR THE ADDITIONAL PRESSURE LOAD UNDER TEST. ENTIRE TEST MUST BE WITNESSED BY THE DIVISION'S REPRESENTATIVE.
   3. USE CLEAN WATER AND REMOVE AIR FROM THE PIPING BEING TESTED WHERE POSSIBLE. MEASURE AND RECORD TEST PRESSURE AT THE HIGH POINT IN THE SYSTEM.
   4. ALL PRESSURE TESTS ARE TO BE DOCUMENTED ON NFPA CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FORMS.
   5. TEST SYSTEM AT 175 PSI FOR 2 HOURS SHOWING NO LEAKAGE.

21 13 15 SPECIALTIES

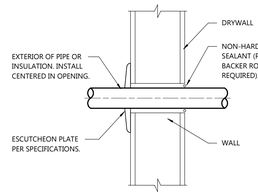
A. ZONE CONTROL VALVES
   1. MANUFACTURERS: NIBCO, KENNEDY, MILWAUKEE.
   2. 2" AND UNDER: NIBCO KT-585-70-UL & KT-580-70-UL. TWO-PIECE BRONZE BALL VALVE WITH CHROME PLATED BALL, BLOWOUT PROOF STEM, REINFORCED TFE SEATS, UL LISTED, 175 PSI WWP.
   3. 2-1/2" AND OVER: NIBCO F-607-RW, GATE VALVE, IRON BODY, BRONZE TRIM, RISING STEM, HANDWHEEL OS & Y, DUCTILE IRON RESILIENT WEDGE, FLANGED ENDS, UL LISTED, 175 PSI WWP.
B. DRAIN (BALL) VALVES
   1. MANUFACTURERS: NIBCO, APOLLO, CRANE, HAMMOND, WATTS.
   2. NIBCO 585-70HC OR EQUIVALENT BRONZE TWO PIECE BODY, STAINLESS STEEL BALL AND TRIM, FULL PORT, LEVER HANDLE, THREADED ENDS.
   3. PROVIDE DRAIN VALVES AT ALL LOW AND TRAPPED AREAS OF SYSTEM AND WHERE REQUIRED TO DRAIN RISERS.
   4. PROVIDE 3/4" HOSE CONNECTION WITH CAP AT EACH DRAIN CONNECTION.
C. VALVE TAMPER SWITCHES
   1. MANUFACTURERS: POTTER MODEL OSYSU-2, NOTIFIER, GRINNELL.
   2. OUTSIDE SCREW AND YOKE VALVE, SUPERVISORY SWITCH WITH DIE CAST ALUMINUM COVER, TAMPER RESISTANT SCREWS AND TWO SETS OF CONTACTS, 120V AC, UL LISTED.
   3. CONTACTS TO BE NORMALLY OPEN, CLOSED WHEN VALVE IS CLOSED.
D. FLOW SWITCH
   1. MANUFACTURER: POTTER MODEL VSR-F, NOTIFIER, GRINNELL.
   2. VANE TYPE WATER FLOW ALARM SWITCH WITH ADJUSTABLE RETARD, TWO SETS OF CONTACTS, CAST ALUMINUM HOUSING, 120V AC, UL LISTED.
   3. PROVIDE EACH FLOW SWITCH WITH A MEANS OF TESTING FLOW THRU IT.
   4. PROVIDE A VALVE UPSTREAM OF EACH FLOW SWITCH IN THE SAME BRANCH AS THE FLOW SWITCH.
   5. AUDIBLE / VISUAL ALARM AT FIRE DEPARTMENT CONNECTION BY FIRE ALARM SUPPLIER.
E. PRESSURE GAUGES
   1. MANUFACTURERS: TRERICE, U.S. GAUGE, ASHCROFT, MARSH, WEISS, WEKSLER.
   2. PRESSURE GAUGES:
      a. GENERAL PURPOSE: TRERICE 600CB PBF CERTIFIED LEAD FREE CAST ALUMINUM CASE, PHOSPHOR BRONZE BOURDON TUBE, 4-1/2" DIAMETER; TRERICE 872-1PBF LEAD FREE BRASS PRESSURE SNUBBER.
         1). GAUGE COCK: APOLLO 77FLF-100 LEAD FREE FULL PORT THREADED BRASS VALVE, 150 PSI SWP, 400 DEG F MAXIMUM TEMPERATURE.
F. FIRE DEPARTMENT CONNECTION
   1. HOSE THREADS TO MATCH LOCAL FIRE DEPARTMENT.
G. BACKFLOW PREVENTER
   1. PROVIDE APPROVED BACKFLOW PREVENTER FOR CONNECTION TO THE WATER SYSTEM.
H. INSPECTOR'S TEST CONNECTION
   1. COMPLETE WITH TEST AND DRAIN VALVES, SIGHT GLASS, 3/4" HOSE CONNECTION, AND SMOOTH BORE CORROSION RESISTANT ORIFICE GIVING A FLOW EQUIVALENT TO ONE SPRINKLER.
   2. PROVIDE INSPECTOR'S TEST CONNECTION FROM MOST REMOTE END OF SYSTEM.

21 13 17 AUTOMATIC SPRINKLER SYSTEMS

A. SYSTEM DESCRIPTION
   1. PROVIDE AUTOMATIC SPRINKLER SYSTEM TO PROTECT BUILDING AREA INDICATED.
   2. SYSTEM DESIGN SHALL CONFORM TO SYSTEM SCHEDULE ON THE DRAWINGS, AND COMPLY WITH NFPA 13 AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION.
      a. DEVIATIONS FROM THESE DOCUMENTS SHALL BE COMMUNICATED IN WRITING AT TIME OF BID SUBMITTAL.
   3. UL LISTED AND LABELED SYSTEM COMPONENTS RATED FOR 175 PSIG MINIMUM OPERATING PRESSURE.
   4. INCLUDE INSIDE AND OUTSIDE HOSE STREAMS IN THE DESIGN OF THE HYDRAULICALLY CALCULATED SPRINKLER SYSTEMS.
   5. SIMILAR COMPONENT ITEMS SHALL BE BY THE SAME MANUFACTURER.
   6. VALVE CLOSURE TIME SHALL NOT EXCEED LIMITATIONS SET BY NFPA 13.
B. SPRINKLERS
   1. MANUFACTURERS: VIKING, CENTRAL, TYCO.
   2. SEE SCHEDULE ON PLANS.
   3. MAY USE FLEXIBLE PENDENT SYSTEM (WET) AS LISTED FOR THE OCCUPANCY HAZARD OF THE SPACE BEING PROTECTED.



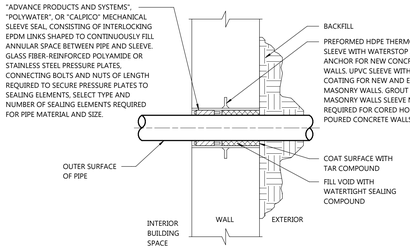
1 FP0.1 UNINSULATED PIPE HANGER DETAILS
NOT TO SCALE



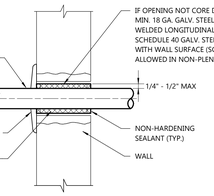
EXPOSED IN FINISHED ROOMS

CONCEALED SIDE OF WALL EXPOSED IN MECH. EQUIP. ROOM, OR OUTDOORS

2 FP0.1 PIPE PENETRATION THRU STUD WALL
NOT TO SCALE



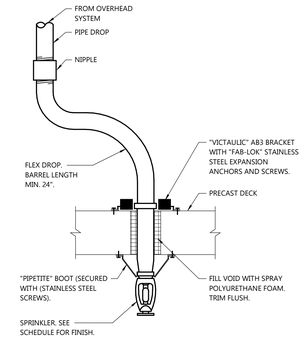
PIPE PENETRATION THRU BELOW GRADE EXTERIOR WALL
4 FP0.1 NOT TO SCALE



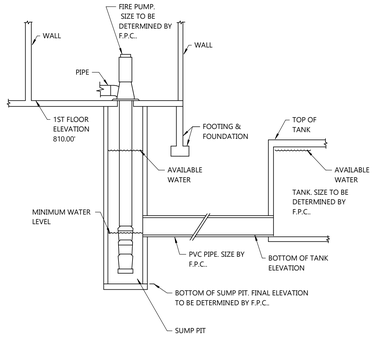
EXPOSED IN FINISHED ROOMS

CONCEALED SIDE OF WALL EXPOSED IN MECH. EQUIP. ROOM, OR OUTDOORS

PIPE PENETRATION THRU MASONRY OR CONCRETE WALL
3 FP0.1 NOT TO SCALE



6 FP0.1 PRECAST SPRINKLER PENETRATION DETAIL
NOT TO SCALE



NOTE:
THE FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BEDROCK REMOVAL REQUIRED FOR THE COMPLETE INSTALLATION OF THE FIRE WATER STORAGE TANKS AND FIRE SUMP PIT. ALL SYSTEM COMPONENTS SHALL BE INSTALLED TO PROVIDE PROTECTION TO THE MAXIMUM FROST DEPTH.

5 FP0.1 FIRE PUMP SCHEMATIC
NOT TO SCALE

LEGEND

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS.

SYM.	ABBR.	IDENTIFICATION	SYM.	ABBR.	IDENTIFICATION
MISCELLANEOUS					
	ELEV	ELEVATION			CONNECT TO EXISTING
		EQUIPMENT BY OTHERS. CONNECTION BY FPC.			DETAIL OR SECTION NUMBER / SHEET NUMBER
ABBREVIATIONS					
	AFF	ABOVE FINISHED FLOOR		IE	INVERT ELEVATION
	AFG	ABOVE FINISHED GRADE		IMP	INSULATED METAL PANEL
	ALT	ALTERNATE		NIC	NOT IN CONTRACT
	BJ	BETWEEN JOISTS		NTS	NOT TO SCALE
	DN	DOWN		OC	ON CENTER
	EC	ELECTRICAL CONTRACTOR		PC	PLUMBING CONTRACTOR
	EX	EXISTING		RC	REFRIGERATION CONTRACTOR
	FDC	FIRE DEPARTMENT CONNECTION		SS	STAINLESS STEEL
	FPC	FIRE PROTECTION CONTRACTOR		TJ	THRU JOISTS
	FUT	FUTURE		TTS	TIGHT TO STRUCTURE
	GC	GENERAL CONTRACTOR / CONSTRUCTION MANAGER		TYP	TYPICAL
	HC	HVAC CONTRACTOR		WP	WEATHER PROOF
FIRE RATED WALLS					
		FIRE - 1 HOUR			FIRE - 3 HOUR
		FIRE - 2 HOUR			FIRE - 4 HOUR

ELECTRICAL / FIRE ALARM COORDINATION SCHEDULE

EQUIPMENT/DEVICE	LOCATION	HP	VOLT	PH.	STARTER TYPE	STARTER LOCATION	STARTER MIN. SCCR RATING	STARTER FURN. BY	DISCONNECT DISCONNECT	DISCONNECT FURN. BY	FIRE ALARM MONITORING QUANT. (2)	FIRE ALARM MONITORING NOTES	REMARKS
FLOW SWITCHES	104	-	-	-	-	-	-	-	-	-	1	-	-
TAMPER SWITCHES	104	-	-	-	-	-	-	-	-	-	1	(1)	-
FIRE PUMP	104	(6)	480	3	(7)	104	100 kA	FPC	NR	-	-	-	-
JOCKEY PUMP	104	(8)	480	3	COMB	104	-	FPC	NR	-	-	-	-
STORAGE TANK MAKE-UP WTR CONTROL VALVE	104	-	120	1	-	104	-	-	-	-	-	-	(13)

STARTER TYPE:
INTEG = INTEGRAL: PROVIDED INTEGRAL WITH EQUIPMENT.
RELAY = UL LISTED MOTOR RATED RELAY WITH SEPARATE ENTRANCES FOR INPUT AND OUTPUT CONTACTS (RIBT SERIES), AND LED STATUS INDICATOR. CONTACT RATING, CONFIGURATION, AND COIL VOLTAGE SUITABLE FOR APPLICATION.
COMB = COMBINATION: COMBINE MAGNETIC STARTER AND NON-FUSED DISCONNECT SWITCH IN COMMON ENCLOSURE. LOCKABLE IN OPEN POSITION. MOLDED CAST TYPE MOTOR CIRCUIT PROTECTOR (MAGNETIC PROTECTION ONLY).
VFD = VARIABLE FREQUENCY DRIVE.

FURNISHED BY:
EM = EQUIPMENT MANUFACTURER
FPC = FIRE PROTECTION CONTRACTOR
EC = ELECTRICAL CONTRACTOR

DISCONNECT:
NR = NOT REQUIRED
R = REQUIRED

REMARKS:
REC. = RECEPTACLE

(1) FIRE PROTECTION CONTRACTOR TO DETERMINE IF TAMPER SWITCHES ARE REQUIRED.
(2) QUANTITY IS ESTIMATED. FPC TO PROVIDE QUANTITY AS REQUIRED BY SYSTEM. PROVIDE ANY ADDITIONAL DEVICES RELATED TO THE WORK NOT SHOWN ON THE DRAWINGS. FPC SHALL PROVIDE POWER AND CONTROL WIRING INSTALLED PER ELECTRICAL SPECIFICATIONS FOR ANY DEVICES NOT LISTED.
(6) 100 HP. HORSEPOWER IS ESTIMATED. CONTRACTOR RESPONSIBLE TO PROVIDE HORSEPOWER AS REQUIRED FOR SYSTEM REQUIREMENTS. IF CONTRACTOR CALCULATES DIFFERENT HORSEPOWER THAN ENGINEER'S ESTIMATE, NOTIFY EXCEL ENGINEERING DIRECTLY AT TIME OF BID SUBMISSION.
(7) FIRE PUMP CONTROL PANEL PROVIDED BY FIRE PROTECTION CONTRACTOR SHALL BE LISTED AS A SERVICE RATED DISCONNECT WITH SOFT START. PROVIDE INTEGRAL AUTOMATIC TRANSFER SWITCH.
(8) 1-3 HP. HORSEPOWER IS ESTIMATED. CONTRACTOR RESPONSIBLE TO PROVIDE HORSEPOWER AS REQUIRED FOR SYSTEM REQUIREMENTS AND COORDINATING WITH ELECTRICAL CONTRACTOR IF SINGLE PHASE INSTEAD OF THREE PHASE.
(13) SOLENOID OPERATED CONTROL VALVE AND ASSOCIATED WIRING BY FPC.

DESIGN CRITERIA

| DESIGNATION | SYSTEM TYPE | HAZARD/ COMM

KEYNOTES:

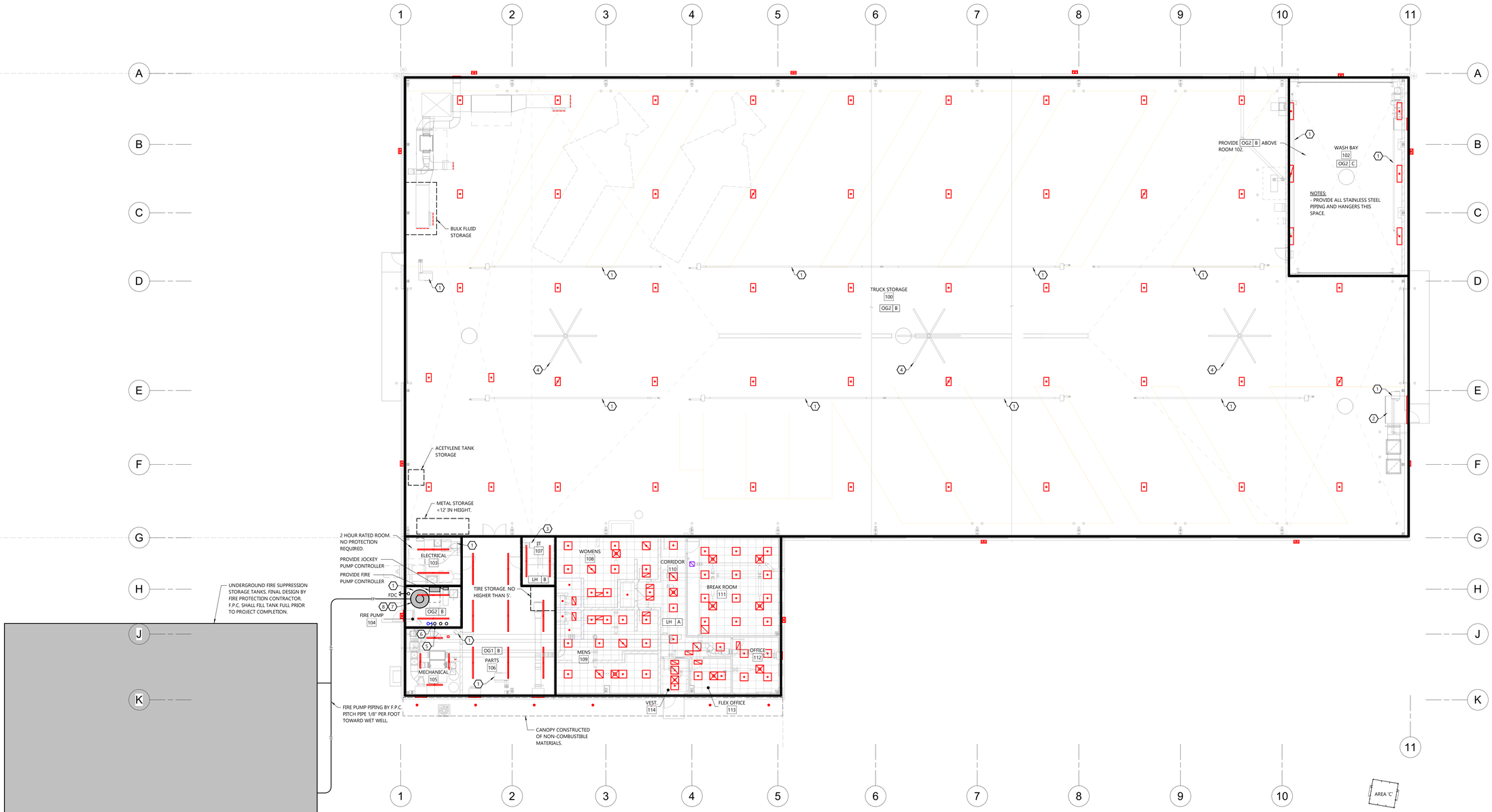
NOT ALL KEYNOTES MAY APPEAR ON PLAN.

1. PROVIDE INTERMEDIATE/HIGH TEMP SPRINKLERS NEAR UNIT HEATER AS REQUIRED BY CODE.
2. PROVIDE SPRINKLER COVERAGE UNDER HVAC EQUIPMENT/DUCTWORK AS REQUIRED BY CODE.
3. ONLY BRANCH PIPING SUPPLYING SPRINKLER IN THIS ROOM IS PERMITTED.
4. HIGH VOLUME LOW SPEED FAN (HVLS) - PROVIDE SPRINKLERS PER NFPA 13 - 2016 - SECTION 12.1.4 REQUIREMENTS. PROVIDE MIN. 3'-0" VERTICAL CLEARANCE FROM BLADES TO DEFLECTOR.
5. DISCHARGE FIRE PUMP TEST HEADER BACK INTO WET WELL. PROVIDE (1) 8" AND (1) 4" RECEPTOR SLEEVES TO WET WELL.
6. PROVIDE WATER SUPPLY CONTROL VALVE FLOAT SYSTEM AND ALL REQUIRED ACCESSORIES. EXTEND FROM TERMINATION PROVIDED BY P.C.
7. FIRE PUMP BY F.P.C.
   WET WELL BY F.P.C.
8. ROOF HATCH FOR MAINTENANCE ON FIRE PUMP. ENSURE THAT ROOF HATCH IS CENTERED ABOVE FIRE PUMP.

X X — X: INDICATES DESIGN CRITERIA DESIGNATION (SEE SCHEDULE); X: INDICATES SPRINKLER DESIGNATION (SEE SCHEDULE)

GENERAL NOTES:

- SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
- PIPING SHALL BE CONCEALED WHEREVER POSSIBLE. WHERE NOT POSSIBLE, LOCATIONS AND ROUTING SHALL BE APPROVED BY ARCHITECT/OWNER PRIOR TO INSTALLATION.
- VERIFY OVERHEAD DOOR AND EQUIPMENT/DUCTWORK LOCATIONS WITH ARCHITECTURAL AND HVAC PLANS. PROVIDE SPRINKLERS AT THESE LOCATIONS PER NFPA 13.
- SEE HVAC SHEETS FOR AREAS THAT ARE USED AS A RETURN AIR PLENUM. PROVIDE PLENUM RATED CONSTRUCTION.
- PENETRATE MASONRY WALLS PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY.
- OPENINGS THROUGH BEAMS OR COLUMNS OR ANY OTHER STRUCTURAL MEMBER ARE NOT PERMITTED UNLESS APPROVED BY STRUCTURAL ENGINEER.



NORTH

FIRST FLOOR PLAN

SCALE: 3/32" = 1'-0"

0' 8' 16'

KEY PLAN

FIRE PROTECTION FIRST FLOOR PLAN

EXCEL

Always a Better Plan

100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

FIRE PROTECTION DRAWINGS ARE SCOPE IN NATURE. FIRE PROTECTION CONTRACTOR SHALL SUBMIT AND STAMP FINAL DESIGN DRAWINGS AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

FP1.1

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HVAC SPECIFICATIONS

DIVISION 23 HVAC

23 05 00 BASIC HVAC REQUIREMENTS

A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS.
B. SUBSTITUTIONS
1. SEE DIVISION 01 25 13 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
3. WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ENGINEER.
4. CONTRACTOR SHALL ASSUME ALL COORDINATION RESPONSIBILITIES FOR SUBSTITUTE EQUIPMENT INCLUDING COORDINATION ACROSS TRADES AND COORDINATION OF PREVIOUSLY REVIEWED AND APPROVED SHOP DRAWING SUBMITTALS, SHOULD THESE SHOP DRAWINGS BE AFFECTED BY THE SUBSTITUTED EQUIPMENT.
C. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS, PROJECT CLOSEOUT DOCUMENTS:
1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS
2. CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
a. DUCTWORK
b. DUCTWORK ACCESSORIES
c. INSULATION
d. PIPING
e. PIPE HANGERS
f. VALVES AND STRAINERS
g. GRILLES
h. LOUVERS AND WALL CAPS
i. ROOF HOODS AND ROOF CAPS
j. FANS
k. ELECTRIC WALL, CABINET AND UNIT HEATERS
l. GAS PRESSURE REGULATORS
m. MAKEUP AIR UNITS
n. GAS FURNACE AND ASSOCIATED CONDENSING UNITS
o. GAS UNIT HEATERS
p. RADIANT GAS UNIT HEATERS
q. ENERGY RECOVERY UNITS
r. DESTRATIFICATION FANS
s. TEMPERATURE CONTROLS
t. TEST AND BALANCE REPORT
3. PROJECT CLOSEOUT
a. DOCUMENTATION: PROVIDE VENTILATION SYSTEM DOCUMENTATION PER ASHRAE 62.1-2007, SECTION 7.2.6.
b. PROVIDE RECORD DRAWINGS TO THE OWNER IN AUTOCAD AND PDF FORMAT.
c. PROVIDE HVAC EQUIPMENT OPERATING AND MAINTENANCE MANUALS TO THE OWNER PER SPS 364.0313(3).
D. FINISHING AND PAINTING
1. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
E. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
F. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
G. COORDINATE INSTALLATION OF HVAC WORK WITH THE OTHER CONTRACTORS TO AVOID CONFLICTS WITH OTHER WORK.
H. VERIFY CONNECTION REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS WITH FINAL SHOP DRAWINGS.
I. STRUCTURAL PENETRATIONS
1. OPENINGS THRU BEAMS OR COLUMNS OR ANY OTHER STRUCTURAL MEMBER ARE NOT PERMITTED UNLESS APPROVED BY STRUCTURAL ENGINEER.
J. FIRE RATED INTERIOR WALL AND FLOOR PIPE PENETRATIONS
1. SLEEVE REQUIRED FOR PENETRATION OF CONCRETE AND MASONRY WALLS AND FLOORS.
2. SEAL OPENING AROUND PIPE WITH A UL APPROVED FIRE-STOP SYSTEM HAVING AN F-RATING NOT LESS THAN THE HOURLY RATING OF THE ASSEMBLY BEING PENETRATED.
3. FIRE-RESISTIVE JOINT SYSTEM PRODUCTS BY THE SAME MANUFACTURER AS BEING USED ON THE REMAINDER OF THE PROJECT.
4. INSULATION SHALL BE CONTINUOUS THRU THE PENETRATION FOR REFRIGERATION SUCTION PIPING.
5. PROVIDE UL ASSEMBLY PENETRATION NUMBER TO AHJ COMPLIANT WITH BUILDING UL ASSEMBLY 30 DAYS PRIOR TO INSTALLATION IF REQUIRED BY AHJ.
K. ESCUTCHEONS
1. INSTALL ONE-PIECE (TWO PIECE FOR EXISTING PIPING) POLISHED CHROME PLATED STEEL ESCUTCHEONS AT PENETRATIONS EXPOSED IN FINISHED ROOMS (ROOMS WHICH DONT HAVE UNFINISHED CONCRETE FLOORS).
2. ESCUTCHEONS NOT REQUIRED WHERE INSULATION BUTTED TO WALL/CEILING FULLY COVERS THE SLEEVE/WALL OPENING AND INSULATION IS CAULKED AT WALL/CEILING.
3. ESCUTCHEONS WITH SPRINGS FOR WALL AND CEILING LOCATIONS.
4. ID TO CLOSELY FIT AROUND PIPE/INSULATION, OD THAT COMPLETELY COVERS THE OPENING.
L. PROJECT COMPLETION
1. INSTALL CLEAN SET OF FILTERS IN ALL UNITS AT TIME OF TESTING AND BALANCING.
2. CLEAN GRILLES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
3. PROVIDE OPERATING INSTRUCTIONS FOR A TOTAL OF EIGHT (8) HOURS. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS AND OBTAIN OWNER SIGNOFF THAT INSTRUCTIONS HAVE BEEN COMPLETED.
M. GAS SERVICE
1. COORDINATE INSTALLATION OF GAS SERVICE WITH GAS UTILITY. CONTACT GAS UTILITY TO ARRANGE SERVICE AND ASSIST OWNER IN APPLYING FOR NEW SERVICE.
2. GAS SERVICE COST BY OWNER.
3. GAS COMPANY
a. WE ENERGIES -
b. CONTACT: JODI BRICE
1). OFFICE: 920-380-3346
2). EAMIL: JODI.BRICE@WE-ENERGIES.COM

23 05 13 MOTORS AND ELECTRICAL WORK

A. MOTORS
1. MANUFACTURERS: GENERAL ELECTRIC, LOUIS ALLIS, MARATHON, AND BALDOR.
2. MOTORS LESS THAN 250 WATTS: EQUIPMENT MANUFACTURER'S STANDARD AND NEED NOT CONFORM TO THESE SPECIFICATIONS.
3. OPEN DRIP-PROOF TYPE EXCEPT TOTALLY ENCLOSED FAN COOLED FOR THE FOLLOWING MOTORS:
a. DRAW THRU AIR HANDLING UNITS
b. WHERE NOTED ON EQUIPMENT SCHEDULES
4. DESIGN FOR CONTINUOUS OPERATION IN 40 DEGREES C ENVIRONMENT AND FOR TEMPERATURE RISE IN ACCORDANCE WITH NEMA MG 1 LIMITS.
5. SINGLE PHASE POWER (PERMANENT-SPLIT CAPACITOR MOTORS) WITH STARTING TORQUE EXCEEDING ONE FOURTH OF FULL LOAD TORQUE AND STARTING CURRENT UP TO SIX TIMES FULL LOAD CURRENT. CLASS A (50 DEGREES C TEMPERATURE RISE) INSULATION, MINIMUM 1.0 SERVICE FACTOR, PRELUBRICATED SLEEVE OR BALL BEARINGS, AUTOMATIC RESET OVERLOAD PROTECTOR.
6. THREE PHASE POWER (SQUIRREL CAGE MOTORS) WITH STARTING TORQUE BETWEEN 1 AND 1-1/2 TIMES FULL LOAD TORQUE AND STARTING CURRENT SIX TIMES FULL LOAD CURRENT. NEMA DESIGN B MOTOR AND INSULATION SYSTEM. MINIMUM 1.15 SERVICE FACTOR FOR OPEN DRIP-PROOF MOTORS, 1.0 (MINIMUM) FOR OTHER TYPES. MINIMUM 85% NOMINAL POWER FACTOR UNDER RATED LOAD CONDITIONS. GREASE LUBRICATED ANTI-FRICTION BALL BEARINGS, RATED FOR MINIMUM AFBMA 9, L-10 LIFE OF 200,000 HOURS.
B. STARTERS
1. SEE ELECTRICAL STARTER DISCONNECT SCHEDULE ON PLANS.

23 05 29 PIPE AND EQUIPMENT HANGERS AND SUPPORTS

A. MANUFACTURERS: B-LINE, EMPIRE INDUSTRIES, GLOBAL PIPE HANGER PRODUCTS, GRINNELL, NATIONAL PIPE HANGER, UNI STRUT.
B. HOT DIP GALVANIZED HANGERS, RODS, AND ACCESSORIES AFTER FABRICATION WHICH ARE EXPOSED TO WEATHER.
C. ANGLES, CHANNELS, AND BEAMS: ASTM A36 AND A572 AS REQUIRED.
D. HANGERS SHALL NOT BE ATTACHED TO JOIST BRIDGING.
E. ATTACHMENT TO METAL DECK: HANGERS MAY BE ANCHORED TO METAL FLOOR/ROOF DECK IF ALL THE FOLLOWING CONDITIONS ARE MET:
a. MAXIMUM HANGER LOAD OF 50 LBS.
b. ANCHORED TO BOTTOM OF DECK FLUTES, NOT UPPER FLUTE.
c. ANCHOR LENGTH SHALL NOT EXCEED DECK DEPTH.
F. PIPE HANGERS AND SUPPORTS
1. SEE DETAILS ON PLANS FOR ADDITIONAL PIPE HANGER SPECIFICATIONS.
2. SEE SCHEDULE ON PLANS FOR HANGER SPACING.
3. CONFORM TO ASME B31.9 AND MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) SP-58-2009.
4. INSTALL HANGERS AND SUPPORTS SO PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT. ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO PROVIDE INDICATED PIPE SLOPES.
5. PRE-INSULATED SUPPORT INSERT
a. ARMACELL ARMAFIX ECOLIGHT ELASTOMERIC FOAM PIPE SUPPORT.
1). PET-FOAM LOAD BEARING CORE, ELASTOMERIC FOAM SHELL, PVC FOIL EXTERIOR CLADDING, SELF-ADHESIVE CLOSURE.
2). DENSITY 6-7 LB/CU.FT., R=4 / NOMINAL INCH AT 75 DEG F.
3). COMPRESSIVE STRENGTH 220 PSI.
4). ASTM E-84 COMPLIANT FOR UP TO 1" PIPING.
5). ENVIRONMENT TEMPERATURE: => 50 DEG F.
6). SERVICE TEMPERATURE: 32 TO 176 DEG F.
7). USE FOR REFRIGERANT LINES, COOLING COIL DRAIN LINES
b. PROVIDE VAPOR BARRIER FOR COLD PIPING WHERE NOT INTEGRAL TO SUPPORT ASSEMBLY.
c. PROVIDE HANGER SHIELD WHERE NOT INTEGRAL TO SUPPORT ASSEMBLY.
G. STRUT SYSTEM
1. COMPLY WITH THE LATEST REVISION OF MFMA STANDARDS PUBLICATION NUMBER MFMA-3, "METAL FRAMING STANDARDS PUBLICATION".
2. INSTALL STRUT IN ACCORDANCE WITH MFMA-102 "GUIDELINES FOR THE USE OF METAL FRAMING"; IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S RECOMMENDATIONS, AND WITH RECOGNIZED INDUSTRY PRACTICES.
3. COLD FORMED LOW CARBON STEEL METAL FRAMING CHANNEL STRUT: B-LINE TYPE B CHANNEL.
4. MANUFACTURER'S STANDARD FINISH OR PLAIN FINISH UNLESS INSTALLED OUTDOORS, OR IN WET LOCATIONS.
5. FRAMING INSTALLED OUTDOORS OR WET LOCATIONS SHALL BE ONE OF THE FOLLOWING:
a. EXTRUDED ALUMINUM ALLOY 6063 T6, ALL FITTINGS AND HARDWARE SHALL BE TYPE 304 STAINLESS STEEL.
b. PRE-GALVANIZED STEEL MILL GALVANIZED TO G90. ALL FITTINGS AND HARDWARE SHALL BE ZINC PLATED TO ASTM B633.
c. TYPE 304 STAINLESS STEEL STRUT, FITTINGS AND HARDWARE.
6. FRAMING INSTALLED IN HARSH ENVIRONMENT ROOM SHALL BE THE FOLLOWING:
a. TYPE 304 STAINLESS STEEL STRUT, FITTINGS AND HARDWARE.H
7. 1-5/8 INCHES WIDE IN VARYING HEIGHTS AND WELDED COMBINATIONS AS REQUIRED TO MEET LOAD CAPACITIES.
H. EQUIPMENT PIPE STANDS: CONTRACTOR FABRICATED STAND CONSISTING OF STRUCTURAL STEEL MEMBERS SUPPORTED BY PIPE SUPPORTS. HOT DIP GALVANIZE AFTER FABRICATION WHERE EXPOSED TO WEATHER.
I. CONCRETE PADS:
1. COORDINATE FINAL EQUIPMENT CONCRETE PAD SIZE REQUIREMENTS. PADS SHALL EXTEND MINIMUM 4" BEYOND EQUIPMENT FOOTPRINT.

23 05 48 VIBRATION ISOLATION

A. DESIGN REQUIREMENTS
1. MANUFACTURERS: PEABODY, MASON, AND AMBER/BOOTH.
2. HOT DIP GALVANIZE, APPLY A NEOPRENE COATING ON, OR USE STAINLESS STEEL PARTS FOR ISOLATION DEVICES EXPOSED TO THE WEATHER OR USED IN HIGH HUMIDITY AREAS.
B. VIBRATION ISOLATORS
1. TYPE 1 - NEOPRENE PAD: 40-45 DUROMETER, RIBBED OR WAFFLED ON BOTH SURFACES, STEEL SHIM PLATES BETWEEN LAYERS WHEN MULTIPLE LAYERS ARE REQUIRED.
2. SPRINGS: NATURAL FREQUENCY 40% OR LESS THAN THE LOWEST OPERATING SPEED OF THE EQUIPMENT. MINIMUM 95% ISOLATION EFFICIENCY. SPRING LATERAL STIFFNESS GREATER THAN .75 TIMES THE RATED VERTICAL STIFFNESS. SPRING TRAVEL 50% BEYOND RATED LOAD.

23 05 53 MECHANICAL IDENTIFICATION

A. PIPE IDENTIFICATION
1. INDOOR SELF-ADHESIVE PIPE MARKERS
a. MANUFACTURERS: MARKING SERVICES MS-900, BRADY B-736, SETON OPTI-CODE.
b. FLEXIBLE PVC FILM WITH PRESSURE SENSITIVE ACRYLIC ADHESIVE BACKING WITH PRINTED MARKINGS.
c. SECURE BOTH ENDS WITH DIRECTIONAL ARROW TAPE INDICATING FLOW DIRECTION.
1). 1" WIDE FOR PIPE/INSULATION O.D. LESS THAN OR EQUAL TO 2".
2). 2" WIDE FOR PIPE/INSULATION O.D. GREATER THAN 2".
2. COLOR, OVERALL SIZE AND LETTER HEIGHT SHALL CONFORM TO ASME A13.1- 2007 "SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS".
3. IDENTIFY PIPE SERVICE, FLOW DIRECTION, AND PRESSURE.
4. NOMENCLATURE TO MATCH NAME ON DRAWING LEGEND.
5. LOCATIONS
a. LOCATE TO FACE GREATEST POINT OF VISIBILITY. ALL ADJACENT LABELS TO BE INSTALLED NEATLY IN A ROW. COORDINATE WITH ALL TRADES.
b. LOCATE IDENTIFICATION NOT-TO-EXCEED 50 FEET FOR EXPOSED PIPING.
c. LOCATE IDENTIFICATION NOT-TO-EXCEED 25 FEET FOR PIPING ABOVE CEILINGS.
d. MINIMUM ONE LOCATION PER ROOM.
e. INSTALL IDENTIFICATION AFTER PIPING AND INSULATION IS COMPLETE TO ENSURE MAXIMUM VISIBILITY OF THE IDENTIFICATION SYSTEM.
f. BEHIND ACCESS PANELS AND ALL OTHER ACCESSIBLE POINTS OF SERVICE
g. NEAR LOCATIONS WHERE PIPES PENETRATE WALLS, FLOORS OR CEILINGS.
h. NEAR EACH VALVE AND CONTROL DEVICE.
i. AT EACH MAJOR PIECE OF EQUIPMENT.

23 07 00 INSULATION

A. GENERAL
1. SEE INSULATION SCHEDULES ON PLANS FOR ADDITIONAL INFORMATION.
2. INSULATION, INSULATION SYSTEM AND JACKETS SHALL MEET UL-723/ASTM E84 REQUIREMENTS OF MAX. FIRE HAZARD CLASSIFICATIONS OF 25, AND MAX. FLAME SPREAD, FUEL CONTRIBUTED, AND SMOKE DEVELOPED OF 50 WHEN INSTALLED IN A RETURN AIR PLENUM.
3. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND MICA PUBLICATION "NATIONAL COMMERCIAL AND INDUSTRIAL STANDARDS", LATEST EDITION.
4. CONTINUE INSULATION WITHOUT INTERRUPTIONS THROUGH WALLS AND FLOOR PENETRATIONS AND HANGERS.
B. FIBERGLASS (F.G.) INSULATION
1. FLEX. F.G.:
a. O.C. SOFTR DUCT WRAP, KNAUF FRIENDLY FEEL DUCT WRAP, CERTAINTEED SOFTTOUCH, JOHNS MANVILLE MICROLITE EQ FSK DUCT WRAP.
b. GLASS FIBER INSULATION FACTORY LAMINATED TO FRK/FSK VAPOR RETARDER. LISTED THICKNESS IS NOMINAL.
c. 0.75 LB/CU. FT., R=3.3 / NOMINAL INCH AT 75 DEG F.
d. MAX 250 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
2. RIGID F.G.
a. GLASS FIBER INSULATION WITH FACTORY APPLIED FRK VAPOR RETARDER.
b. R=3.7 / NOMINAL INCH AT 75 DEG F.
c. MAX 450 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
d. INDOOR DUCTWORK:
1). O.C. TYPE 703, CERTAINTEED CERTAPRO CB 300, JOHNS MANVILLE 814
2). 3 LB./CU.FT., COMPRESSIVE STRENGTH AT 10% DEFORMATION 25 LB./S.F.
e. EQUIPMENT:
1). O.C. TYPE 705, CERTAINTEED CERTA PRO CB 600, JOHNS MANVILLE 817,
2). 6 LB./CU.FT., COMPRESSIVE STRENGTH AT 10% DEFORMATION 200 LB./S.F.
3. SEMI-RIGID F.G.:
a. O.C. FIBERGLAS PIPE AND TANK INSULATION, KNAUF PIPE AND TANK INSULATION,
b. MINIMUM PIPE SIZE 10" AND LARGER.
c. ALL SERVICE JACKET VAPOR BARRIER COVERING, INSULATION ADHERED WITH THE END GRAIN PERPENDICULAR TO THE JACKET.
d. 3 LB./CU.FT., R=3.7 / NOMINAL INCH AT 75 DEG F.
e. MAX 650 DEG F, JACKET MAX 150 DEG F, 0.02 PERM.
f. COMPRESSIVE STRENGTH AT 10% DEFORMATION 125 LB./S.F.
4. ACOUSTICAL DUCT LINING
a. O.C. QUIETR ROTARY DUCT LINER, KNAUF EQUIPMENT LINER M, CERTAINTEED TOUGHGARD 2, JOHNS MANVILLE LINATEX.
b. DUCT LINER COMPLYING WITH ASTM C1071, NFPA 90A AND 90B.
c. LINING'S MUST MEET ASTM C1338, ASTM G21 FUNGI TEST AND ASTM G22 BACTERIA TEST.
d. AIR STREAM SURFACES SHALL BE EVALUATED IN ACCORDANCE WITH THE "EROSION TEST" IN UL 181 AND SHALL NOT BREAK AWAY, CRACK, PEEL, FLAKE OFF, OR SHOW EVIDENCE OF DELAMINATION OR CONTINUED EROSION UNDER TEST CONDITIONS.
e. EDGE COAT ALL TRANSVERSE JOINTS AND EXPOSED EDGES.
f. R= 4.2 /INCH AT 75 DEG F.
g. MAX 250 DEG F
C. ELASTOMERIC FOAM INSULATION
1. SEAL BUTT JOINTS WITH ADHESIVE. INSTALL PER MANUFACTURER INSTRUCTIONS.
2. PIPE
a. MANUFACTURERS: AEROFLEX AEROCEL SSPT, K-FLEX INSUL-LOCK DS, ARMACELL AP/ARMAFLEX BLACK LAPSEAL,
b. EPDM/PVC BASE ELASTOMERIC FOAM MATERIAL
c. DUAL TAPE CLOSURE
d. MAX 'K' VALUE 0,245 AT 75 DEG F
e. MAX. CONTINUOUS TEMPERATURE 220 DEG F
f. MAX 0.05 PERM PER ASTM E96
g. MAX. FIRE/SMOKE DEVELOPED OF 25/50 PER ASTM E84 FOR UP TO 2" THICK.
h. PROVIDE MANUFACTURER PREFORMED INSULATION OVER VALVES AND FITTINGS
D. JACKETS
1. PVC:
a. ZESTON, CEELCO, PROTO LOSMOKE PVC JACKET
b. 30 MIL WHITE PVC. MAX TEMP 150 DEG F.
c. FULLY ADHERE JOINT WITH SOLVENT WELDED ADHESIVE. CIRCUMFERENTIAL SEAMS MINIMUM 1" OVERLAP, LONGITUDINAL SEAMS MINIMUM 1.5" OVERLAP. LOCATE JOINT AT LEAST VISIBLE SIDE OF PIPE.
d. PROVIDE SLIP JOINTS PERIODICALLY ON LONG RUNS OF STRAIGHT PIPE BY INCREASING CIRCUMFERENTIAL OVERLAP TO MINIMUM 8" AND APPLYING A FLEXIBLE WHITE SEALANT IN THE OVERLAP AREA.
2. LAMINATED
a. INDOORS
1). ALUMAGUARD LITE
2). REINFORCED SELF-ADHESIVE UV RESISTANT FOIL/POLYMER LAMINATE.
3). 0 PERMEANCE AND WATER VAPOR TRANSMISSION, 9 MIL THICK, MIN. 62.4 LB/IN. PEEL ADHESION TO PRIMED STEEL PER ASTM D1000, 45 LB/INCH TENSILE, 21 LB PUNCTURE RESISTANCE.
E. DUCT INSULATION REQUIREMENTS
1. INSULATE FITTINGS, JOINTS, FLANGES, FLEXIBLE CONNECTIONS, DAMPERS, AND IN-LINE ACCESSORIES WITHOUT INTERNAL LINING/INSULATION WITH SAME MATERIAL AND THICKNESS AS SPECIFIED FOR THE DUCT SYSTEM. STOP AND POINT INSULATION AROUND ACCESS DOORS AND DAMPER OPERATORS TO ALLOW OPERATION WITHOUT DISTURBING WRAPPING.
F. PIPE INSULATION REQUIREMENTS
1. INSULATE STRUCTURES PIPING SYSTEM INCLUDING VALVES AND FITTINGS PER LATEST EDITION MICA INSULATION STANDARDS PLATES.
2. SEAL ALL INSULATION ENDS.
3. INSULATION IS NOT REQUIRED ON PIPING, VALVES, ETC. LOCATED WITHIN RADIATION ENCLOSURES, AND BODIES OF HOT WATER AUTO VALVES 2-1/2" AND SMALLER.

23 08 00 COMMISSIONING OF HVAC

A. SEE DIVISION 01 91 13 GENERAL COMMISSIONING REQUIREMENTS FOR ADDITIONAL REQUIREMENTS.
B. SEE DIVISION 23 90 00 TEMPERATURE CONTROLS FOR ADDITIONAL REQUIREMENTS.
C. COMMISSIONING TESTING PREPARATION
1. HC AND TEMPERATURE CONTROL CONTRACTOR MUST CONFIRM THEIR AVAILABILITY TO BE ON-SITE FOR THE COMMISSIONING.
2. PROVIDE A SERVICE TECHNICIAN FAMILIAR WITH THE PROJECT ON-SITE DURING COMMISSIONING TO ASSIST COMMISSIONING PROVIDER WITH EQUIPMENT FUNCTIONAL TESTING.
3. COMPLETE PREFUNCTIONAL CHECKLISTS TO CERTIFY THAT HVAC SYSTEMS, SUBSYSTEMS AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED, AND STARTED AND THAT THEY ARE OPERATING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPROVED SUBMITTALS.
4. CERTIFY THAT HVAC INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED, POINT-TO-POINT CHECKOUT HAS BEEN SUCCESSFULLY COMPLETED, AND SYSTEMS ARE OPERATING IN ACCORDANCE WITH THEIR DESIGN SEQUENCE OF OPERATION; CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. CERTIFY THAT ALL SENSORS ARE OPERATING WITHIN SPECIFIED ACCURACY AND ALL SYSTEMS ARE SET TO AND MAINTAINING SET POINTS AS REQUIRED BY THE DESIGN DOCUMENTS.
5. CERTIFY THAT TAB PROCEDURES HAVE BEEN COMPLETED AND THAT TAB REPORTS HAVE BEEN SUBMITTED, DISCREPANCIES CORRECTED, AND CORRECTIVE WORK APPROVED.
6. SET SYSTEMS, SUBSYSTEMS, AND EQUIPMENT INTO OPERATING MODE TO BE TESTED IN ACCORDANCE WITH APPROVED TEST PROCEDURES (EXAMPLE: NORMAL SHUTDOWN, NORMAL AUTO POSITION, NORMAL MANUAL POSITION, UNOCCUPIED CYCLE, EMERGENCY POWER, AND ALARM CONDITIONS).
D. SCOPE OF FUNCTIONAL TESTING
1. EQUIPMENT FUNCTIONAL TESTING SHALL DEMONSTRATE THAT THE INSTALLATION AND OPERATION OF HVAC SYSTEMS, SUBSYSTEMS AND EQUIPMENT ARE OPERATING IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. FUNCTIONAL TESTING SHALL INCLUDE ALL MODES OF THE SEQUENCE OF OPERATION, INCLUDING UNDER FULL-LOAD AND PARTIAL-LOAD CONDITIONS.
2. EQUIPMENT TO BE TESTED
a. ALL EQUIPMENT IN STARTER SCHEDULE AND ALL ITEMS IN TEMPERATURE CONTROL SPEC.
E. COMMISSIONING PROVIDER WILL PROVIDE A PRELIMINARY COMMISSIONING REPORT.

23 11 23 NATURAL GAS PIPING AND ACCESSORIES

A. HARSH ENVIRONMENT ROOMS
1. THE FOLLOWING SPECIFICATIONS FOR HARSH ENVIRONMENT ROOMS SHALL TAKE PRECEDENCE OVER OTHER SPECIFICATIONS FOR SIMILAR ITEMS. WHERE OTHER SPECIFICATIONS LIST ADDITIONAL DETAIL, THOSE ADDITIONAL DETAILS SHALL ALSO APPLY TO HARSH ENVIRONMENT ROOM ITEM.
2. SHUTOFF VALVES
a. BALL VALVES 2" AND SMALLER
1). JOMAR T-SS-1000N-4B
2). TWO PIECE, FULL PORT, THREADED, STAINLESS STEEL BODY.
3). CHR STAINLESS STEEL BALL, S.S. LOCKING LEVER HANDLE AND STEM.
4). PRESSURE/TEMPERATURE RATING 150 PSI, 450 DEG F.
B. PIPING
1. INSTALL INSPECT, TEST, AND PURGE GAS PIPING IN CONFORMANCE WITH NFPA 54, UTILITY COMPANY AND ALL OTHER GOVERNING CODES.
2. MAKE BRANCH CONNECTIONS TO THE MAIN FROM THE TOP OR SIDE.
C. GAS VALVES
1. UL LISTED FOR USE AS NATURAL GAS SHUTOFF.
2. BALL VALVES (MANUFACTURERS: NIBCO S85/580-70UL, WATTS B6000UL): BRONZE BODY, THREADED ENDS, CHROME PLATED BRONZE BALL, FULL/CONVENTIONAL PORT, TEFLON SEAT, BLOWOUT-PROOF STEM, TWO-PIECE CONSTRUCTION, 150 PSIG WORKING PRESSURE.
3. PLUG VALVES: (MANUFACTURERS: DEZURIK PEC, HOMESTEAD SERIES 612): CAST IRON BODY, FLANGED ENDS, BRONZE BEARINGS, ELECTROLESS NICKEL PLATED CAST IRON PLUG WITH HYCAR RESILIENT PLUG SEAL, BUNA-N STEM SEAL PACKING, LEVER ACTUATOR, 175 PSIG WOG.
4. PROVIDE A MAIN GAS LINE SHUTOFF VALVE IMMEDIATELY AFTER THE METER CONNECTION.
D. GAS PRESSURE REGULATORS
1. FOR REGULATORS INSTALLED INDOORS, PIPE THE RELIEF VALVE VENT FULL SIZE TO THE OUTSIDE OF THE BUILDING AT A NON-HAZARDOUS LOCATION. INCREASE VENT SIZE ONE PIPE SIZE IF VENT LENGTH EXCEEDS 10 FEET. TERMINATE WITH AN ELBOW DOWN WITH A SCREEN OVER THE OPENING. DO NOT COMBINE VENTS.
2. MAXITROL 325 SERIES WITH VENT LIMITER ARE PERMITTED FOR INDOOR APPLICATIONS WHERE SUPPLYING LESS THAN 300,000 BTUH.
3. FOR REGULATORS INSTALLED OUTDOORS, POSITION THE REGULATOR SO THE RELIEF VALVE VENT IS FACING DOWN OR INSTALL ELBOW FACING DOWN A MINIMUM 10 FEET FROM AN OUTSIDE AIR INTAKE AND 5 FEET FROM A GAS FLUE DISCHARGE.
4. IF GAS PRESSURE IS GREATER THAN 2PSI, PROVIDE OVERPRESSURE PROTECTION DEVICES PER IFGC 416.

23 31 13 DUCTWORK

F. PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS OF SMACNA - HVAC DUCT CONSTRUCTION STANDARDS, NFPA 90A.
G. GENERAL
1. SEAL ALL OUTSIDE AIR DUCT JOINTS WATERTIGHT WITH SILICONE SEALANT.
2. PAINT THE INSIDE OF ALL DUCTS VISIBLE THROUGH GRILLES IN ROOMS WITH CEILINGS WITH DULL BLACK PAINT.
3. CERTAIN VERTICAL AND HORIZONTAL OFFSETS ARE INDICATED IN DUCTS TO INDICATE THE GENERAL POSITION REALTIONSHIP OF THE DUCTWORK SYSTEMS; PROVIDE ADDITIONAL OFFSETS AS REQUIRED TO COORDINATE WITH THE INSTALLATION OF OTHER SYSTEMS, CEILINGS AND STRUCTURE. THE DRAWINGS SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF DUCTWORK.
4. PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.
5. LOCATE DUCTS WITH SUFFICIENT SPACE AROUND EQUIPMENT TO ALLOW NORMAL OPERATING AND MAINTENANCE ACTIVITIES.
6. INCREASE DUCT SIZES GRADUALLY, NOT EXCEEDING 15 DEGREES WHENEVER POSSIBLE. 30 DEGREE MAXIMUM.
7. ROUND DUCTS MAY BE SUBSTITUTED FOR RECTANGULAR IF SIZED IN ACCORDANCE WITH ASHRAE TABLES OF EQUIVALENT RECTANGULAR AND ROUND DUCTS.
H. ROUND DUCTWORK
1. CONCEALED BRANCH DUCTWORK TO GRILLES AND DIFFUSERS MAY BE LONGITUDINAL LOCKSEAM. ALL OTHER ROUND DUCTWORK SHALL BE SPIRAL LOCKSEAM WITH FITTINGS AND COUPLINGS MINIMUM 2 GAUGES HEAVIER THAN DUCT.
I. FLEXIBLE DUCTWORK
1. MANUFACTURERS: THERMAFLEX, FLEXMASTER, CLEVAFLEX.
2. U.L. 181 LISTED CLASS 1 FACTORY FABRICATED FLEXIBLE AIR DUCT, COMPLY WITH NFPA 90A, FLAME SPREAD OF 25 OR LESS, SMOKE DEVELOPED RATING OF 50 OR LESS.
3. MINIMUM PRESSURE RANGE -1/2" TO 4" W.C., TEMPERATURE RANGE 0-200 DEG F.
4. ACOUSTIC: THERMAFLEX M-KE OR G-KM, FLEXMASTER TYPE 1 OR 6
a. POLYETHYLENE, SPUNBOUND NYLON OR CHLORINATED POLYETHYLENE LINER.
b. DUCTWORK TO HAVE TESTED ACOUSTICAL PERFORMANCE NOT LESS THAN 2 DB LESS THAN THE TYPES SPECIFIED.
5. SEMI-RIGID FLEXIBLE ALUMINUM DUCTWORK NOT PERMITTED.
6. SUPPLY DUCTWORK SHALL BE INSULATED WITH FIBERGLASS INSULATION, MINIMUM R VALUE 4, WITH VAPOR BARRIER JACKET WITH MAXIMUM 0.10 PERM RATING
7. CONNECT TO SUPPLY DUCTWORK BY SLIDING CORE OVER COLLAR, TAPE JOINT WITH MINIMUM 3 WRAPS OF TAPE, AND APPLY METAL BAND CLAMP OR PANDUIT. FOR INSULATED DUCTWORK, PULL INSULATION AND OUTER JACKET BACK INTO POSITION, AND TAPE WITH MINIMUM 3 WRAPS OF TAPE BETWEEN FLEX DUCT AND DUCT INSULATION.
8. CONNECT TO GRILLES AND RETURN AND TRANSFER DUCTWORK WITH METAL BAND CLAMP OR PANDUIT.
9. MAXIMUM LENGTH FROM DUCTWORK TO GRILLES OR SLOTS 8'-0" WITH ONE 90 DEG ELBOW.
10. DO NOT RUN THROUGH WALLS OR PARTITIONS.
J. DUCTWORK SEALANTS
1. MANUFACTURERS: HARDCAST SURE-GRIP 404 SOLVENT BASED DUCT SEALANT OR EQUIVALENT.
a. SYNTHETIC RUBBER RESIN BASE.
b. -20 TO 200 DEG F.
c. PRESSURE CLASSES UP TO 10" W.C., MEETING SEAL CLASS A.
d. MAXIMUM FLAME SPREAD OF 25, SMOKE DEVELOPED OF 50.
e. APPLY MINIMUM 20-MIL THICK WET FILM AT TEMPERATURES BETWEEN 35-100 DEG F.
2. HARDCAST ALUMA-GRIP 701 OR EQUIVALENT PRESSURE SENSITIVE DUCT JOINT ROLLED SEALANT MAY BE USED IN PLACE OF MASTIC. SEALANT SHALL COMPLY WITH THE FOLLOWING:
a. MILL FINISH ALUMINUM SUSTRATE WITH GRAY ADHESIVE.
b. MINIMUM 30 MIL THICK
c. MIN. 17 LB PER LINEAR INCH PEEL STRENGTH
d. MAX FLAME SPREAD OF 25, MAX SMOKE DEVELOPED

HVAC SPECIFICATIONS (CONT.)

b. DO NOT INSTALL COMMUNICATION WIRING IN RACEWAY AND ENCLOSURES CONTAINING CLASS 1 OR OTHER CLASS 2 WIRING.
c. INSTALL A LIGHTNING ARRESTOR WHEN A CABLE ENTERS OR EXITS A BUILDING BETWEEN THE LINES AND GROUND.

12. IDENTIFICATION OF HARDWARE AND WIRING
a. LABEL ALL WIRING AND CABLING, INCLUDING THAT WITHIN FACTORY-FABRICATED PANELS, AT EACH END WITHIN 2" OF TERMINATION WITH THE DDC ADDRESS OR TERMINATION NUMBER.
b. PERMANENTLY LABEL OR CODE EACH POINT/OBJECT OF FIELD TERMINAL STRIPS TO SHOW THE INSTRUMENT OR ITEM SERVED.

Q. DUCT SMOKE DETECTORS AND THE INTERLOCK REQUIRED FOR AIR HANDLING EQUIPMENT SHUTDOWN ARE FURNISHED AND INSTALLED UNDER ELECTRICAL SPECIFICATIONS OR BY THE EQUIPMENT MANUFACTURER.

R. INSTALLATION
1. INSTALL EQUIPMENT, PIPING, AND WIRING/RACEWAY PARALLEL TO BUILDING LINES (I.E., HORIZONTAL, VERTICAL AND PARALLEL TO WALLS) WHEREVER POSSIBLE.
2. INSTALL ALL EQUIPMENT IN READILY ACCESSIBLE LOCATIONS AS DEFINED BY CHAPTER 1, ARTICLE 100, PART A OF THE NATIONAL ELECTRICAL CODE (NEC).
3. THE CONTRACTOR SHALL PROTECT ALL WORK AND MATERIAL FROM DAMAGE BY HIS WORK OR EMPLOYEES, AND SHALL BE LIABLE FOR ALL DAMAGE THUS CAUSED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK AND EQUIPMENT UNTIL FINALLY INSPECTED, TESTED, AND ACCEPTED. THE CONTRACTOR SHALL PROTECT ANY MATERIAL THAT IS NOT IMMEDIATELY INSTALLED.
5. TEST AND BALANCE: FURNISH ALL TOOLS NECESSARY TO INTERFACE TO THE CONTROL SYSTEM FOR TEST AND BALANCE PURPOSES. PROVIDE A QUALIFIED TECHNICIAN TO ASSIST IN THE TEST AND BALANCE PROCESS.

S. FIELD QUALITY CONTROL
1. INSPECT, TEST, AND ADJUST FIELD-ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, AND TO ASSIST IN FIELD TESTING.
2. PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS:
a. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER UNIT OPERATION. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST.
b. TEST AND ADJUST CONTROLS AND SAFETIES.
c. TEST CALIBRATION OF ELECTRONIC CONTROLLERS BY DISCONNECTING INPUT SENSORS AND SIMULATING OPERATION WITH COMPATIBLE SIGNAL GENERATOR.
d. TEST EACH POINT THROUGH ITS FULL OPERATING RANGE TO VERIFY THAT SAFETY AND OPERATING CONTROL SET POINTS ARE AS REQUIRED.
e. TEST EACH CONTROL LOOP TO VERIFY STABLE MODE OF OPERATION AND COMPLIANCE WITH SEQUENCE OF OPERATION. ADJUST PID ACTIONS.
f. TEST EACH SYSTEM FOR COMPLIANCE WITH SEQUENCE OF OPERATION.
g. TEST SOFTWARE AND HARDWARE INTERLOCKS.

T. CALIBRATING AND ADJUSTING:
1. CALIBRATE INSTRUMENTS.
2. MAKE THREE-POINT CALIBRATION TEST FOR BOTH LINEARITY AND ACCURACY FOR EACH ANALOG INSTRUMENT.
3. CALIBRATE EQUIPMENT AND PROCEDURES USING MANUFACTURER'S WRITTEN RECOMMENDATIONS AND INSTRUCTION MANUALS. USE TEST EQUIPMENT WITH ACCURACY AT LEAST DOUBLE THAT OF INSTRUMENT BEING CALIBRATED.
4. CONTROL SYSTEM INPUTS AND OUTPUTS:
a. CHECK ANALOG INPUTS AT 0, 50, AND 100 PERCENT OF SPAN.
b. CHECK ANALOG OUTPUTS USING MILLIAMPPERE METER AT 0, 50, AND 100 PERCENT OUTPUT.
c. CHECK DIGITAL INPUTS USING JUMPER WIRE.
d. CHECK DIGITAL OUTPUTS USING OHMMETER TO TEST FOR CONTACT MAKING OR BREAKING.
e. CHECK RESISTANCE TEMPERATURE INPUTS AT 0, 50, AND 100 PERCENT OF SPAN USING A PRECISION-RESISTANT SOURCE.
5. TEMPERATURE:
a. CALIBRATE RESISTANCE TEMPERATURE TRANSMITTERS AT 0, 50, AND 100 PERCENT OF SPAN USING A PRECISION-RESISTANCE SOURCE.
b. CALIBRATE TEMPERATURE SWITCHES TO MAKE OR BREAK CONTACTS.

U. TRAINING
1. PROVIDE A MINIMUM OF TWO ONSITE TRAINING CLASSES, 4 HOURS EACH SEPARATED BY TWO WEEKS, AT THE COMPLETION OF CALIBRATING AND ADJUSTING AND COMMISSIONING FOR PERSONNEL DESIGNATED BY THE OWNER.
2. RECORD ALL OPERATING INSTRUCTIONS TO A DIGITAL FILE FORMAT (MP4 OR MPEG) AND PROVIDE A COPY TO OWNER ON A LABELED USB FLASH DRIVE. INCLUDE THE INSTALLATION FILE FOR A COMPATIBLE VIDEO PLAYER ON THE DRIVE.
3. PROVIDE DOCUMENTATION OF ITEMS COVERED IN TRAINING EITHER IN HARD COPY OR ELECTRONIC FORMAT.
4. TRAIN THE OWNER DESIGNATED DAY-TO-DAY OPERATORS TO ENABLE THEM TO:
a. PROFICIENTLY OPERATE THE SYSTEM
b. ADJUST AND CHANGE SYSTEM SETPOINTS, TIME SCHEDULES, AND HOLIDAY SCHEDULES
c. UNDERSTAND SYSTEM DRAWINGS, AND OPERATION AND MAINTENANCE MANUAL
d. UNDERSTAND THE JOB LAYOUT AND LOCATION OF CONTROL COMPONENTS
5. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SYSTEM TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO THREE VISITS TO PROJECT DURING OTHER THAN NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

23 90 10 SEQUENCE OF OPERATION

A. CONTRACTOR IS RESPONSIBLE FOR:
1. ALL POWER AND CONTROL WIRING TO ACTUATORS AND PANELS NOT SPECIFICALLY CALLED OUT ON THE PLANS.
2. ALL DATA CABLING AND WIRING FROM PANEL TO PANEL PANELS TO EQUIPMENT, AND OTHER COMMUNICATION WIRING REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
3. ALL INTERLOCK POWER AND CONTROL WIRING BETWEEN COMPONENTS OF SYSTEMS FURNISHED OR INSTALLED BY THIS CONTRACTOR TO MAKE FULLY FUNCTIONAL.

B. PROVIDE ALL SENSORS NECESSARY TO ACHIEVE SPECIFIED SEQUENCES AND ADDITIONAL SENSORS WHERE SPECIFIED. PROVIDE READOUT OF ALL SENSORS AT OPERATOR WORKSTATION.

C. WHERE TEMPERATURE SENSORS HAVE ADJUSTABLE SETPOINT TEMPERATURE PROVIDE WITH LOWEST COOLING AND HIGHEST HEATING ROOM SETPOINTS TO LIMIT ROOM SETPOINT ADJUSTMENT AT SENSOR.

D. PROVIDE OUTSIDE AIR TEMPERATURE AND RELATIVE HUMIDITY SENSOR FOR BUILDING TO BE USED FOR ALL SEQUENCES AND PROVIDE GLOBAL READOUT AT EACH SCREEN.

E. PROVIDE WIRING TO ALL 24 VAC ACTUATORS AT MOTOR OPERATED DAMPERS PROVIDED BY ROOF EXHAUSTER MANUFACTURERS. PROVIDE SIGNAL TO OPEN DAMPER WHEN ROOF EXHAUSTER IS TURNED ON.

F. OFFICE -GF-1, ERU-1 AND IF-5
1. PROVIDE TEMPERATURE SENSOR FOR:
a. ROOM FOR EACH ZONE DAMPER: WITH SETPOINT ADJUSTMENT, MANUAL "OCCUPIED" OVERRIDE SWITCH, TEMPERATURE READOUT, SETPOINT INDICATION.
1). LOCKING HEAVY-DUTY GUARD, TRANSPARENT PLASTIC; MOUNTED ON SEPARATE BASE.
b. DISCHARGE AIR. LOCATE 10 FEET DOWNSTREAM OF UNIT DISCHARGE.
2. PROVIDE DUCT STATIC PRESSURE SENSOR FOR;
a. FURNACE DISCHARGE
3. FURNISH MOTOR OPERATED DAMPER AND PROVIDE ACTUATOR FOR:
a. OUTSIDE AIR: MODULATING NORMALLY CLOSED
b. RETURN AIR: MODULATING NORMALLY OPEN
c. ZONE DAMPERS: MODULATING NORMALLY OPEN
d. BYPASS DAMPER: MODULATING NORMALLY CLOSED
4. PROVIDE DAMPER ACTUATOR FOR
a. ECONOMIZER MIXING BOX: MODULATING
5. HEATING AND COOLING SETPOINTS CAN BE SET NO CLOSER THAN 3 DEG F.
6. MINIMUM 5 MINUTE HEATING AND COOLING ON AND OFF TIME AND DELAY BETWEEN TURNING ADDITIONAL STAGES ON.
7. LOCKOUT MECHANICAL COOLING AT OUTSIDE AIR TEMPERATURE BELOW 60 DEG F.
8. LOCKOUT HEATING AT OUTSIDE AIR TEMPERATURE ABOVE 70 DEG F.
9. LOCKOUT HEATING AND COOLING WHEN FAN IS OFF.
10. PROVIDE OCCUPIED / UNOCCUPIED SCHEDULE FOR UNIT THRU THE THERMOSTAT.
11. PROVIDE SEPARATE UNOCCUPIED / OCCUPIED SETPOINTS FOR HEATING AND COOLING.
12. UNOCCUPIED CYCLE:
a. FAN OFF, HEATING AND COOLING OFF, OUTSIDE AIR DAMPER CLOSED, RETURN AIR DAMPER OPEN, BYPASS DAMPER OPEN, INTERLOCKED IF-5 OFF, ENERGY RECOVERY UNIT OFF
13. NIGHT CYCLE
a. TURN FAN AND HEATING ON WHEN THE ROOM AIR TEMPERATURE IN ROOM 111 DROPS BELOW UNOCCUPIED SETPOINT. 3 DEG F DEADBAND.
b. TURN FAN AND COOLING ON WHEN THE ROOM AIR TEMPERATURE IN ROOM 111 RISES ABOVE UNOCCUPIED SETPOINT. 2 DEG F DEADBAND.
c. OUTSIDE AIR DAMPER CLOSED AND RETURN AIR DAMPER OPEN
d. ZONE DAMPERS AND BYPASS DAMPER PER OCCUPIED CYCLE CONTROL
e. ENERGY RECOVERY UNIT OFF AND ASSOCIATED DAMPERS CLOSED.
f. INTERLOCKED IF-5 OFF.
14. PREOCCUPIED CYCLE
a. PROVIDE OPTIMUM START. CONTROL START TIME SO THE ROOM WILL ARRIVE AT OCCUPIED TEMPERATURE AT SCHEDULED OCCUPIED TIME.
b. CONTROL HEATING, COOLING, DAMPERS AND INTERLOCKS PER NIGHT CYCLE
c. PREOCCUPIED CYCLE UNTIL OCCUPIED ROOM SETPOINT IN ROOM 111 IS REACHED.
15. OCCUPIED CYCLE:
a. SUPPLY FAN OPERATE CONTINUOUSLY
b. OPEN OUTSIDE AIR DAMPER TO MINIMUM POSITION AND RETURN AIR DAMPER TO MAXIMUM RETURN AIR POSITION.
c. ENERGY RECOVERY UNIT ON AND OPEN ASSOCIATED DAMPERS.
d. ZONE SYSTEM CONTROL
1). TURN ON HEATING AND COOLING STAGES BY THERMOSTAT "VOTING".
2). IF ANY ZONE IS MORE THAN 4 DEGREES BELOW SETPOINT, TURN HEATING ON.
3). BASE VOTING RIGHTS OF INDIVIDUAL THERMOSTATS ON PERCENTAGE OF TOTAL UNIT AIRFLOW AND HOW FAR ZONE IS OFF SETPOINT.
4). ZONE DAMPER CONTROL
a). ROOM TEMPERATURE ABOVE SETPOINT:
(i) DISCHARGE AIR TEMPERATURE ABOVE 75 DEG F: INDEX ZONE DAMPER TO MINIMUM CLOSED POSITION.
(ii) DISCHARGE AIR TEMPERATURE BELOW 75 DEG F: MODULATE ZONE DAMPER TO MAINTAIN SPACE TEMPERATURE.
b). ROOM TEMPERATURE BELOW SETPOINT:
(i) DISCHARGE AIR TEMPERATURE BELOW 75 DEG F: INDEX ZONE DAMPER TO MINIMUM CLOSED POSITION.
(ii) DISCHARGE AIR TEMPERATURE ABOVE 75 DEG F: MODULATE ZONE DAMPER TO MAINTAIN SPACE TEMPERATURE.
5). CONTROL BYPASS DAMPER TO MAINTAIN CONSTANT DUCT STATIC PRESSURE.
16. ECONOMIZER AND IF-5
a. WHEN OUTSIDE AIR TEMPERATURE DROPS BELOW 68 DEG F, MODULATE THE OUTSIDE AND RETURN AIR MOTOR OPERATED DAMPERS TO MAINTAIN 55 DEG F DISCHARGE AIR TEMPERATURE AS FIRST STAGE COOLING.
b. WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 70 DEG F, MECHANICAL COOLING SHALL BE FIRST STAGE OF COOLING.
c. IF-5 CONTROLLED BY GF-1.
17. TURN UNIT TO UNOCCUPIED CYCLE IF DISCHARGE AIR TEMPERATURE DROPS BELOW 40 DEG F.
18. RETURN DUCT SMOKE DETECTOR FURNISHED BY ELECTRICAL CONTRACTOR. WIRING TO GAS FURNACE DISCONNECT TO SHUTDOWN FAN ON DETECTION BY EC. CONTROL CONTRACTOR SHALL WIRE TO SMOKE DETECTOR AND MONITOR CONDITION AND INDEX ALL COMPONENTS TO UNOCCUPIED POSITIONS ON ALARM.
19. MOUNT AND WIRE ALL CONTROL WIRING ASSOCIATED WITH THE FURNACES AND CONDENSING UNITS AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

G. TRUCK STORAGE HEATING — GUHS AND RGUHS:
1. PROVIDE STAND-ALONE PROGRAMMABLE CONTROLLER.
2. PROVIDE DOOR SWITCH FOR EACH OVERHEAD DOORS.
3. PROVIDE OUTSIDE AIR TEMPERATURE SENSOR.
4. PROVIDE ROOM TEMPERATURE SENSORS FOR:
a. GUH-2
b. GUH-3
c. RGUH-1
d. RGUH-2
e. RGUH-3A AND RGUH-3B
f. RGUH-4A AND RGUH-4B
g. RGUH-5
h. RGUH-6
5. PROVIDE OCCUPIED AND UNOCCUPIED SCHEDULE.
6. PROVIDE OCCUPIED AND UNOCCUPIED HEATING SETPOINTS.
7. TURN FIRST AND SECOND STAGES OF HEAT ON RGUHS WITH A DROP IN ROOM TEMPERATURE 1 AND 2 DEG F BELOW SETPOINT RESPECTIVELY. TURN FIRST AND SECOND STAGES OFF WITH A RISE IN SPACE TEMPERATURE 2 AND 1 DEG F ABOVE SETPOINT RESPECTIVELY.
8. TURN GUH ON WITH A DROP IN ROOM TEMPERATURE 2 DEG F BELOW SETPOINT. TURN GUH OFF WHEN ROOM TEMPERATURE IS 2 DEG F ABOVE SETPOINT.
9. OVERHEAD DOOR TEMPERATURE SETBACK AND LOCKOUT.
a. SETBACK HEATING SETPOINT TO 55 DEG F WHEN DOOR SWITCH HAS BEEN OPEN FOR 10 OR MORE MINUTES.
b. DISABLE HEATING IF OUTSIDE AIR TEMPERATURE IS ABOVE 55 DEG F.
10. PROVIDE ALL WIRING AND ADDITIONAL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

H. WASH BAY HEATING — RGUH 7A AND 7B:
1. PROVIDE STAND ALONE PROGRAMMABLE CONTROLLER.
2. PROVIDE NEMA 4X DOOR SWITCH.
3. PROVIDE TEMPERATURE SENSOR FOR OUTSIDE AIR.
4. PROVIDE NEMA 4X ROOM TEMPERATURE SENSOR:
a. RGUH-7A AND RGUH-8
5. PROVIDE OCCUPIED AND UNOCCUPIED SCHEDULE.
6. PROVIDE OCCUPIED AND UNOCCUPIED HEATING SETPOINTS.
7. TURN FIRST AND SECOND STAGES OF HEAT ON WITH A DROP IN ROOM TEMPERATURE 1 AND 2 DEG F BELOW SETPOINT RESPECTIVELY. TURN FIRST AND SECOND STAGES OFF WITH A RISE IN SPACE TEMPERATURE 2 AND 1 DEG F ABOVE SETPOINT RESPECTIVELY.
8. OVERHEAD DOOR TEMPERATURE SETBACK AND LOCKOUT.
a. SETBACK HEATING SETPOINT TO 55 DEG F WHEN DOOR SWITCH HAS BEEN OPEN FOR 10 OR MORE MINUTES.
b. DISABLE HEATING IF OUTSIDE AIR TEMPERATURE IS ABOVE 55 DEG F.
9. PROVIDE ALL WIRING AND ADDITIONAL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

I. TRUCK STORAGE - GUH-1:
1. PROVIDE 7 DAY PROGRAMMABLE ROOM THERMOSTAT.
2. TURN HEATER ON WITH A DROP IN ROOM TEMPERATURE 2 DEG F BELOW SETPOINT. TURN HEATER OFF WHEN ROOM TEMPERATURE IS 2 DEG F ABOVE SETPOINT.
3. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

J. TRUCK STORAGE CONTINUOUS VENTILATION - ERU-2 AND ERC-1:
1. PROVIDE THERMOSTAT FOR OUTSIDE AIR TEMPERATURE LOCKOUTH.
2. PROVIDE TEMPERATURE SENSOR FOR DISCHARGE AIR.
3. ERU-1 AND ERC-1 OPERATION:
a. ERU-2 OPERATE CONTINUOUSLY
b. LOCKOUT ERC-1 WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 55 DEG F.
c. WHEN OUTSIDE TEMPERATURE IS BELOW 55 DEG F., MODULATE ELECTRIC REHEAT COIL TO MAINTAIN DISCHARGE TEMPERATURE.

K. TRUCK STORAGE - MAU-1,2 AND IF 7, 8:
1. CONTROLS ARE PROVIDED WITH UNIT. SEE MAKEUP AIR UNIT SCHEDULE.
2. MOUNT AND WIRE REMOTE CONTROL PANEL AND ANY OTHER CONTROLS ASSOCIATED WITH UNIT.
a. PROVIDE OCCUPIED/UNOCCUPIED SCHEDULE.
3. MOUNT AND WIRE OUTSIDE AIR TEMPERATURE SENSOR BELOW ROOF IN OUTSIDE AIR DUCT. SEE DETAIL 13/H3.0 FOR MORE INFORMATION.
4. MOUNT AND WIRE DISCHARGE AIR TEMPERATURE SENSOR IN THE DISCHARGE AIR DUCT.
5. INTERLOCK IF-7 TO TURN ON WHENEVER MAU-1 IS ON.
6. INTERLOCK IF-8 TO TURN ON WHENEVER MAU-2 IS ON.
7. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT WHICH SHALL OPEN WHEN IF-7 OPERATES.
8. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT WHICH SHALL OPEN WHEN IF-8 OPERATES.
9. OPEN DAMPER WHEN IF-7 IS ON AND CLOSE DAMPER WHEN IF-7 IS OFF.
10. OPEN DAMPER WHEN IF-8 IS ON AND CLOSE DAMPER WHEN IF-8 IS OFF.
11. HUMIDITY CONTROL
a. PROVIDE OUTSIDE AIR THERMOSTAT.
b. PROVIDE HUMIDISTAT.
c. TURN ON MAU-1 AND MAU-2 WHEN HUMIDITY RISES ABOVE SETPOINT.
1). DISABLE HUMIDISTAT WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 45 DEG F.
12. EMERGENCY VENTILATION — MAU-1 AND MAU-2
a. PROVIDE GAS DETECTION SYSTEM.
b. PRIORITIZE EMERGENCY VENTILATION OVER OCCUPANCY CYCLES.
c. PROVIDE CO AND NO2 SENSORS IN SPACE IN COMPLIANCE WITH CODE REQUIREMENTS FOR PARKING GARAGE. PROVIDE QUANTITIES, LOCATIONS, AND MOUNTING HEIGHTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
d. ON A RISE IN CO CONCENTRATION ABOVE 25 PPM OR NO2 CONCETRATION ABOVE 0.7 PPM, TURN ON MAU1 AND MAU-2 AND TURN ON WARNING INDICATOR.
e. ON A RISE IN CO CONCENTRATION ABOVE 100 PPM OR NO2 CONCETRATION ABOVE 2 PPM, AND TURN ON ALARM INDICATOR.
f. ON A FAILURE ON ANY CO/NO2 SENSRO, TURN ON SYSTEM MALFUNCTION INDICATOR AND TURN MAU-1 AND MAU-2 ON.
13. MOUNT AND WIRE REMOTE CONTROL PANELS AND ANY OTHER CONTROLS ASSOCIATED WITH UNIT.
14. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

L. TRUCK STORAGE HVLS FANS - DF-1 THRU 3:
1. MOUNT AND WIRE SENSORS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. MOUNT AND WIRE NETWORK FAN CONTROLLER AND ALL CONTROL WIRING ASSOCIATED WITH THE UNIT.
3. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

ELECTRICAL ROOM - IF-1:
4. MOUNT AND WIRE CONTROLLER AND ANY OTHER DEVICES FURNISHED WITH FAN.
5. FAN SHALL RUN CONTINUOUSLY. MODULATE FAN FROM MINIMUM SPEED TO MAXIMUM SPEED AS RROM TEMPERATURE RISES FROM 75 DEG-F TO 85 DEG-F.
6. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

M. IT - IF-2:
1. MOUNT AND WIRE CONTROLLER AND ANY OTHER DEVICES FURNISHED WITH FAN.
2. TURN ON FAN WHEN TEMPERATURE RISES ABOVE 72 DEG-F. MODULATE FAN FROM MINIMUM SPEED TO MAXIMUM SPEED AS ROOM TEMPERATURE RISES FROM 72 DEG-F TO 85 DEG-F.
3. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

N. PARTS - IF-3:
1. MOUNT AND WIRE CONTROLLER AND ANY OTHER DEVICES FURNISHED WITH FAN.
2. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT AND OUTSIDE AIR INTAKE LOUVER WHICH SHALL OPEN WHEN IF-3 OPERATES.
3. TURN ON FAN WHEN TEMPERATURE RISES ABOVE 72 DEG-F. MODULATE FAN FROM MINIMUM SPEED TO MAXIMUM SPEED AS ROOM TEMPERATURE RISES FROM 72 DEG-F TO 85 DEG-F.
4. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

O. FIRE PUMP - IF-4:
1. MOUNT AND WIRE CONTROLLER AND ANY OTHER DEVICES FURNISHED WITH FAN.
2. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT AND OUTSIDE AIR INTAKE LOUVER WHICH SHALL OPEN WHEN IF-4 OPERATES.
3. TURN ON FAN WHEN TEMPERATURE RISES ABOVE 72 DEG-F. MODULATE FAN FROM MINIMUM SPEED TO MAXIMUM SPEED AS ROOM TEMPERATURE RISES FROM 72 DEG-F TO 85 DEG-F.
4. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

P. WASH BAY - IF-6:
1. MOUNT AND WIRE CONTROLLER AND ANY OTHER DEVICES FURNISHED WITH FAN.
2. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT WHICH SHALL OPEN WHEN IF-6 OPERATES.
3. TURN ON FAN WHEN TEMPERATURE RISES ABOVE 72 DEG-F. MODULATE FAN FROM MINIMUM SPEED TO MAXIMUM SPEED AS ROOM TEMPERATURE RISES FROM 72 DEG-F TO 85 DEG-F.
4. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

Q. COLD STORAGE - IF-9:
1. SHALL RUN CONTINUOUSLY.
2. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT WHICH SHALL OPEN WHEN IF-9 OPERATES.
3. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

R. COLD STORAGE - IF-10:
1. FURNISH AND INSTALL A TWO POSITION OPERATED DAMPER AND ACTUATOR IN THE EXHAUST DUCT AND OUTSIDE AIR INTAKE LOUVER WHICH SHALL OPEN WHEN IF-10 OPERATES.
2. EMERGENCY VENTILATION
a. PROVIDE GAS DETECTION SYSTEM.
b. PRIORITIZE EMERGENCY VENTILATION OVER OCCUPANCY CYCLES.
c. PROVIDE CO AND NO2 SENSORS IN SPACE IN COMPLIANCE WITH CODE REQUIREMENTS FOR PARKING GARAGE. PROVIDE QUANTITIES, LOCATIONS, AND MOUNTING HEIGHTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
d. ON A RISE IN CO CONCENTRATION ABOVE 25 PPM OR NO2 CONCETRATION ABOVE 0.7 PPM, TURN ON IF-10 AND TURN ON WARNING INDICATOR.
e. ON A RISE IN CO CONCENTRATION ABOVE 100 PPM OR NO2 CONCETRATION ABOVE 2 PPM, AND TURN ON ALARM INDICATOR.
f. ON A FAILURE ON ANY CO/NO2 SENSRO, TURN ON SYSTEM MALFUNCTION INDICATOR AND TURN IF-10 ON.
3. OPEN OUTSIDE AIR INTAKE AND IF-10 DAMPER WHEN FAN OPERATES.
4. PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

S. FLEX OFFICE 113 — EBB-1:
1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT AND INSTALL ALL CONTROL WIRING ASSOCIATED WITH THE UNITS AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

T. OFFICE 122 — EBB-2:
1. INTEGRATE HEATER CONTROL INTO ZONE DAMPER THERMOSTAT AS SECOND STAGE OF HEATING.
2. PROVIDE ALL WIRING AND ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

U. ELECTRIC UNIT HEATER - ELH-1 AND 2:
1. MOUNT AND WIRE THERMOSTAT AND ALL CONTROL WIRING ASSOCIATED WITH THE UNITS AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE OPERATIONAL SYSTEM.

V. VEST. 114 - ECUH-1:
1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT AND INSTALL ALL CONTROL WIRING ASSOCIATED WITH THE UNITS AND PROVIDE ANY ADDITIONAL DEVICES NECESSARY FOR A COMPLETE
2. PROVIDE SEPARATE UNOCCUPIED / OCCUPIED SETPOINTS. OCCUPIED SCHEDULE SHALL MATCH GF-1 OCCUPIED SCHEDULE.
3. TURN ON HEATER WHEN SPACE TEMPERATURE DROPS BELOW OCCUPIED/UNOCCUPIED SETPOINT.
4. DEADBAND 2 DEG F

23 95 00 TESTING, ADJUSTING AND BALANCING

A. QUALITY ASSURANCE
1. PERFORM TOTAL SYSTEM BALANCE IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS, AND ASHRAE STANDARD 111.
2. THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR SHALL BE AN INDEPENDENT COMPANY SPECIALIZING IN THE TESTING, ADJUSTING, AND BALANCING OF SYSTEMS WITH MINIMUM THREE YEARS EXPERIENCE AND NOT ASSOCIATED WITH THE SUPPLIERS OF EQUIPMENT OR THE INSTALLING CONTRACTOR.
3. PERFORM WORK UNDER SUPERVISION OF AABC CERTIFIED TEST AND BALANCE ENGINEER OR NEBB CERTIFIED TESTING, BALANCING AND ADJUSTING SUPERVISOR.

B. SUBMITTALS
1. CONTRACTOR SHALL SUBMIT THE FINAL TESTING AND BALANCING REPORT PRIOR TO PROJECT COMPLETION AND IN ADVANCE OF DATE OF OCCUPANCY. THE FINAL TESTING AND BALANCING REPORT SHALL COMPLY WITH SPS 364.0313. SUBMIT REPORTS ON AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE OR NEBB FORMS.
2. SUBMIT THE DESIGN AND ACTUAL DATA FOR EACH SCHEDULED PIECE OF EQUIPMENT: MODEL; SUPPLY, RETURN, AND OUTSIDE AIR FLOWS; STATIC PRESSURE PROFILES OF AIR HANDLING UNIT COMPONENTS AND ALL FANS; FAN RPM, BHP, AMPERAGE; FAN AND MOTOR SHEAVE, DIAMETER, BORE AND MAKE; BELT SIZE AND QUANTITY; MOTOR SHEAVE CENTER LINE AND OPERATOR DISTANCE; ROOM AIR FLOW; TERMINAL UNIT MAXIMUM AND MINIMUM AIRFLOWS; EQUIPMENT FLOW RATES AND PRESSURE DROPS.

C. INSTALLATION TOLERANCES
1. AIR HANDLING SYSTEMS: ADJUST SUPPLY SYSTEMS TO WITHIN PLUS OR MINUS 5 PERCENT OF DESIGN AND RETURN AND EXHAUST SYSTEMS TO PLUS OR MINUS 10 PERCENT OF DESIGN.
2. AIR OUTLETS AND INLETS: ADJUST TOTAL AIR FLOW TO SPACE TO WITHIN PLUS 10 PERCENT AND MINUS 5 PERCENT OF DESIGN.
3. ADJUST OUTLETS AND INLETS IN SPACE TO WITHIN PLUS OR MINUS 10 PERCENT OF DESIGN.

D. PLUMBING HOT WATER SYSTEM BALANCE
1. HOT WATER SYSTEM INSTALLED BY PLUMBING CONTRACTOR SHALL BE BALANCED AS PART OF THE HVAC BALANCING CONTRACT. SEE PLUMBING SHEET FOR SPECIFICATIONS AND REQUIRED FLOWS.

E. AIR SYSTEM BALANCE
1. VARY TOTAL SYSTEM AIR QUANTITIES BY ADJUSTING FAN SPEEDS. VARY BRANCH AIR QUANTITIES BY DAMPER REGULATION.
2. ADJUST SETTINGS ON DIRECT DRIVE FANS WITH ECM MOTORS AS REQUIRED TO ACHIEVE DESIGN AIRFLOW.
3. ADJUST OUTSIDE AIR, RETURN AIR, AND EXHAUST AIR AUTOMATIC DAMPERS FOR DESIGN CONDITIONS.
4. TEST AIR HANDLING UNITS AT MINIMUM AND 100% OUTSIDE AIR.
5. BALANCE UNIT AT MEDIAN FILTER PRESSURE DROP (0.5" W.C. FOR PREFILTERS, 1.25" FOR FINAL FITLER) BY BLANKING OFF PORTIONS OF FILTER BANK TO ACHIEVE PRESSURE DROP.
6. FOR BELT DRIVE FANS WITH A VFD, ADJUST BELT AND SHEAVES TO ACHIEVE DESIGN AIRFLOW WITH VFD AT 60 HERTZ. VFD IS NOT TO BE USED FOR INITIAL BALANCING
7. SET VAV BOXES TO MAXIMUM AND MINIMUM AIR FLOW SETTINGS.

F. FANS WITH FIXED MOTOR SHEAVES - TEST THE FAN EQUIPMENT. IF THE DESIGN CONDITIONS ARE NOT OBTAINED, CALCULATE THE FINAL FIXED MOTOR SHEAVE AND/OR BELTS REQUIRED TO OBTAIN DESIGN CONDITIONS. HEATING CONTRACTOR SHALL OBTAIN THE FINAL FIXED MOTOR SHEAVE AND BELT(S) FROM THE FAN MANUFACTURER AND TURN THEM OVER TO THE TAB CONTRACTOR FOR INSTALLATION.

G. WISCONSIN SPS 364.0313 REQUIREMENTS
1. DOCUMENT THE AMOUNT OF OUTDOOR AIR BEING PROVIDED AND TURN THIS DOCUMENT OVER TO THE OWNER.
2. AIR SYSTEM BALANCING SHALL BE ACCOMPLISHED PER PARAGRAPH 364.0313(1)(A) GUIDELINES.

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTINVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
H0.2

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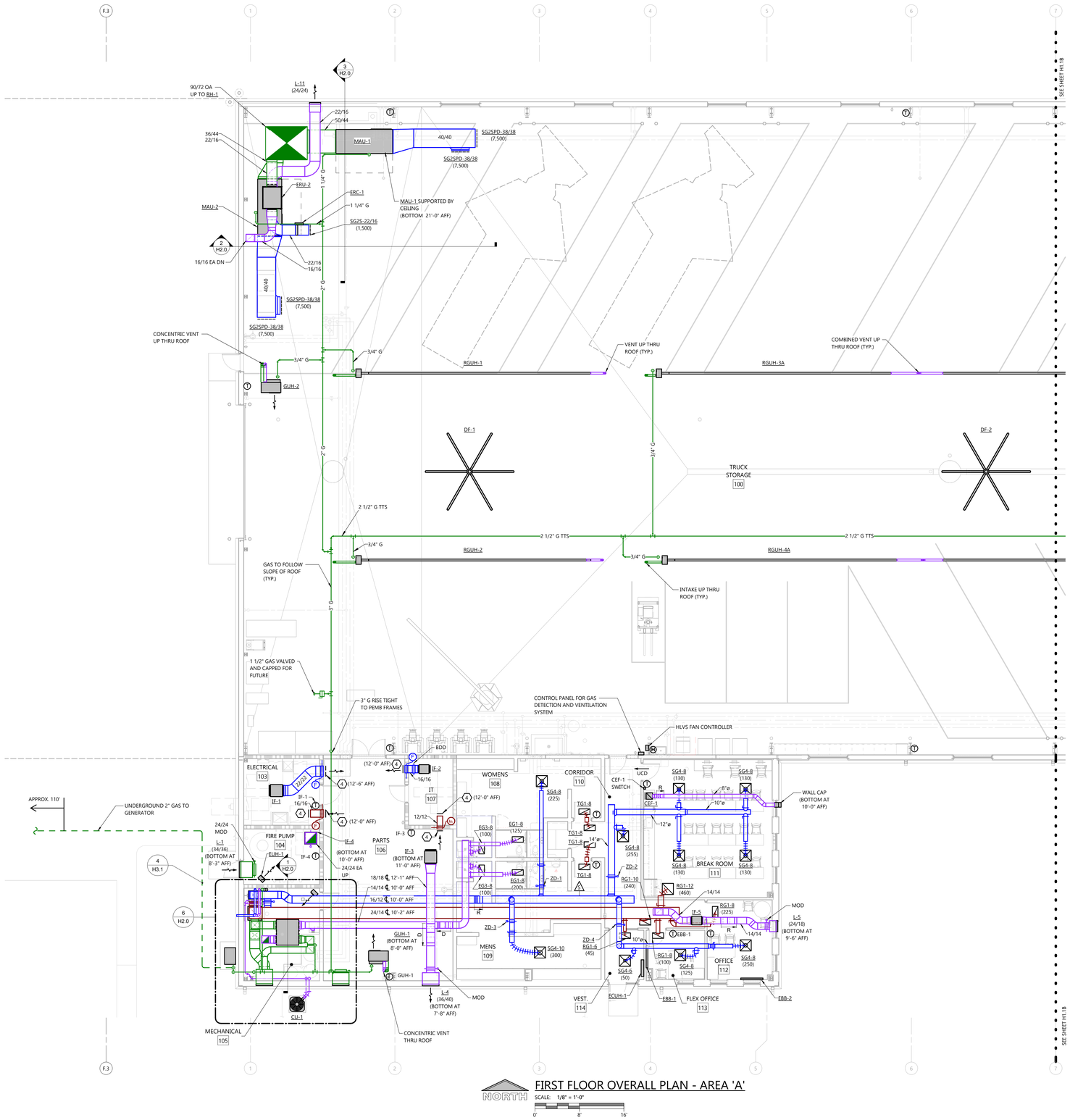

FIRST FLOOR OVERALL PLAN - AREA 'A'

GENERAL NOTES

- DUCT FITTINGS SHALL BE TYPE SHOWN ON PLAN OR CALLED OUT BY KEYNOTE. SEE DETAIL 1/H3.0 FOR ADDITIONAL FITTING DETAIL.
- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
- PENETRATE MASONRY WALLS PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS ARE REFERENCED ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- COORDINATE LOCATION OF ALL EXPOSED PIPING AND DUCTWORK WITH OWNER PRIOR TO INSTALLATION.
- IF DUCT SYSTEMS ARE USED FOR TEMPORARY HEAT, PROVIDE TEMPORARY FILTERS AT RETURN AIR OPENINGS AND INSTALL FILTERS IN THE UNITS EQUIVALENT TO THE EFFICIENCY OF THE SPECIFIED FILTERS FOR THE UNIT. IF PROPER EFFICIENCY FILTERS ARE NOT INSTALLED IN UNIT, UNIT AND ALL DUCTWORK DOWNSTREAM OF UNIT SHALL BE CLEANED BEFORE TEST AND BALANCE.

KEYNOTES

- (A)-(H) SEE DUCT FITTING DETAILS 1/H3.0
- (1) CONCRETE PAD
- (2) VERIFY LOCATION WITH OWNER
- (3) WWM OVER DUCT OPENING

GAS LOAD SUMMARY

ITEM	MBH INPUT	REQUIRED PRESSURE (1)
GF-1	120	4.5" W.C.
GUH-1	150	5" W.C.
GUH-2	250	5" W.C.
GUH-3	250	5" W.C.
RGUH-1	175	6"-14" W.C.
RGUH-2	175	6"-14" W.C.
RGUH-3A	175	6"-14" W.C.
RGUH-3B	175	6"-14" W.C.
RGUH-4A	175	6"-14" W.C.
RGUH-4B	175	6"-14" W.C.
RGUH-5	175	6"-14" W.C.
RGUH-6	175	6"-14" W.C.
RGUH-7A	125	6"-14" W.C.
RGUH-7B	125	6"-14" W.C.
GWH-1	100	7" W.C.
PW-1	365	11" W.C.
GENERATOR	4,177	15-20" W.C.
MAU-1	1,600	14" W.C.
MAU-2	1,600	14" W.C.
TOTAL	10,262	
FUTURE	2,000	
GRAND TOTAL	12,262	

- GAS PRESSURE AT METER = 2 PSIG
- PROVIDE GAS PRESSURE REGULATOR AT EACH PIECE OF EQUIPMENT LISTED ABOVE.
- CONNECT TO EACH PIECE OF EQUIPMENT LISTED ABOVE.

(1) VERIFY PRESSURE REQUIRED WITH ACTUAL EQUIPMENT INSTALLED ON PROJECT BEFORE SIZING REGULATOR.

KEY PLAN

HVAC FIRST FLOOR PLAN - AREA 'A'

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTAGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTINVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

H1.1A

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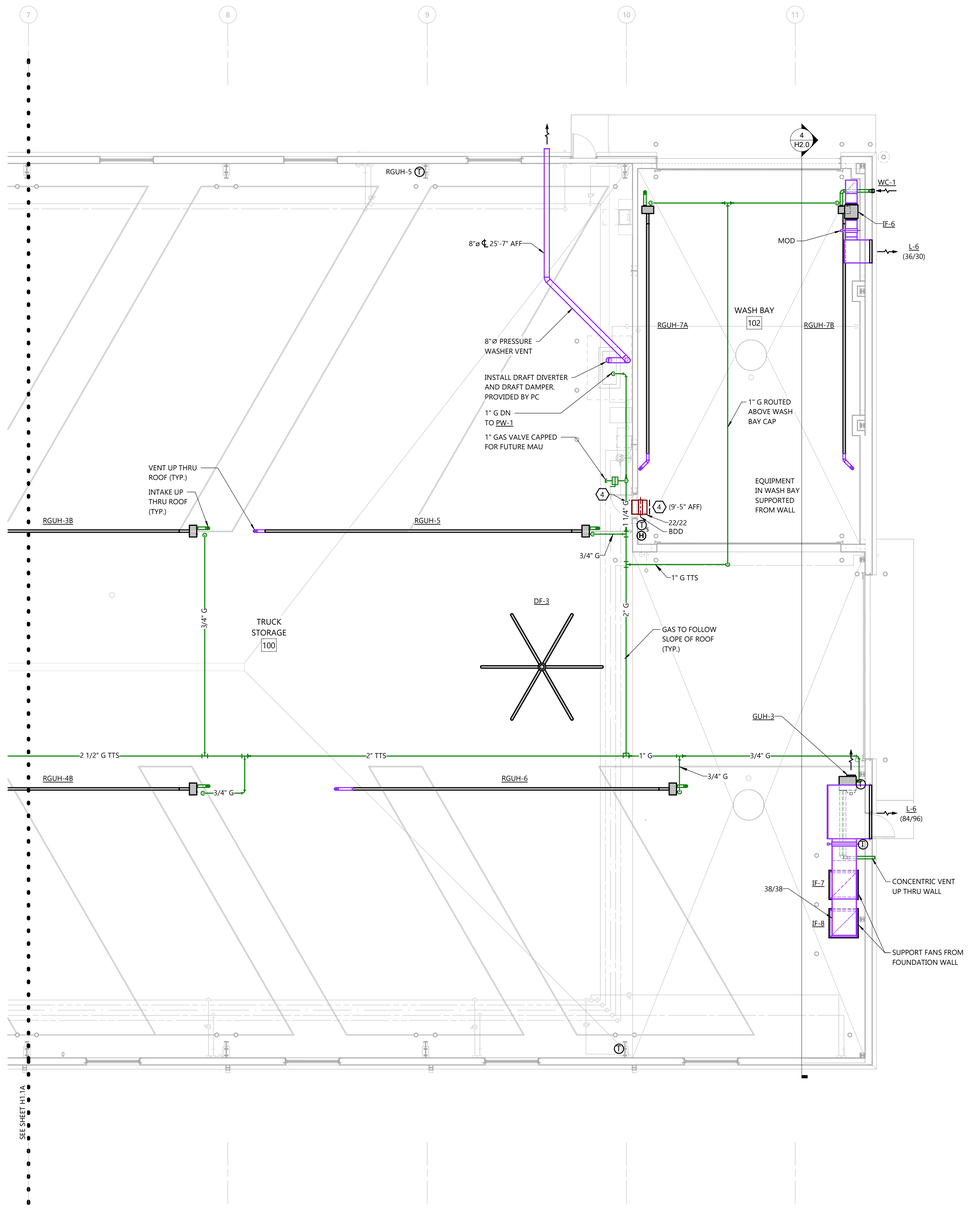

NORTH

FIRST FLOOR OVERALL PLAN - AREA 'B'

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

0' 8' 16'

GENERAL NOTES

- DUCT FITTINGS SHALL BE TYPE SHOWN ON PLAN OR CALLED OUT BY KEYNOTE. SEE DETAIL 1/H3.0 FOR ADDITIONAL FITTING DETAIL.
- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
- PENETRATE MASONRY WALLS PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
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- COORDINATE LOCATION OF ALL EXPOSED PIPING AND DUCTWORK WITH OWNER PRIOR TO INSTALLATION.
- IF DUCT SYSTEMS ARE USED FOR TEMPORARY HEAT, PROVIDE TEMPORARY FILTERS AT RETURN AIR OPENINGS AND INSTALL FILTERS IN THE UNITS EQUIVALENT TO THE EFFICIENCY OF THE SPECIFIED FILTERS FOR THE UNIT. IF PROPER EFFICIENCY FILTERS ARE NOT INSTALLED IN UNIT, UNIT AND ALL DUCTWORK DOWNSTREAM OF UNIT SHALL BE CLEANED BEFORE TEST AND BALANCE.

KEYNOTES

- (A) - (11) SEE DUCT FITTING DETAILS 1/H3.0
- (2) CONCRETE PAD
- (3) VERIFY LOCATION WITH OWNER
- (4) WWM OVER DUCT OPENING

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SHEET NUMBER

H1.1B

KEY PLAN

HVAC FIRST FLOOR PLAN - AREA 'B'

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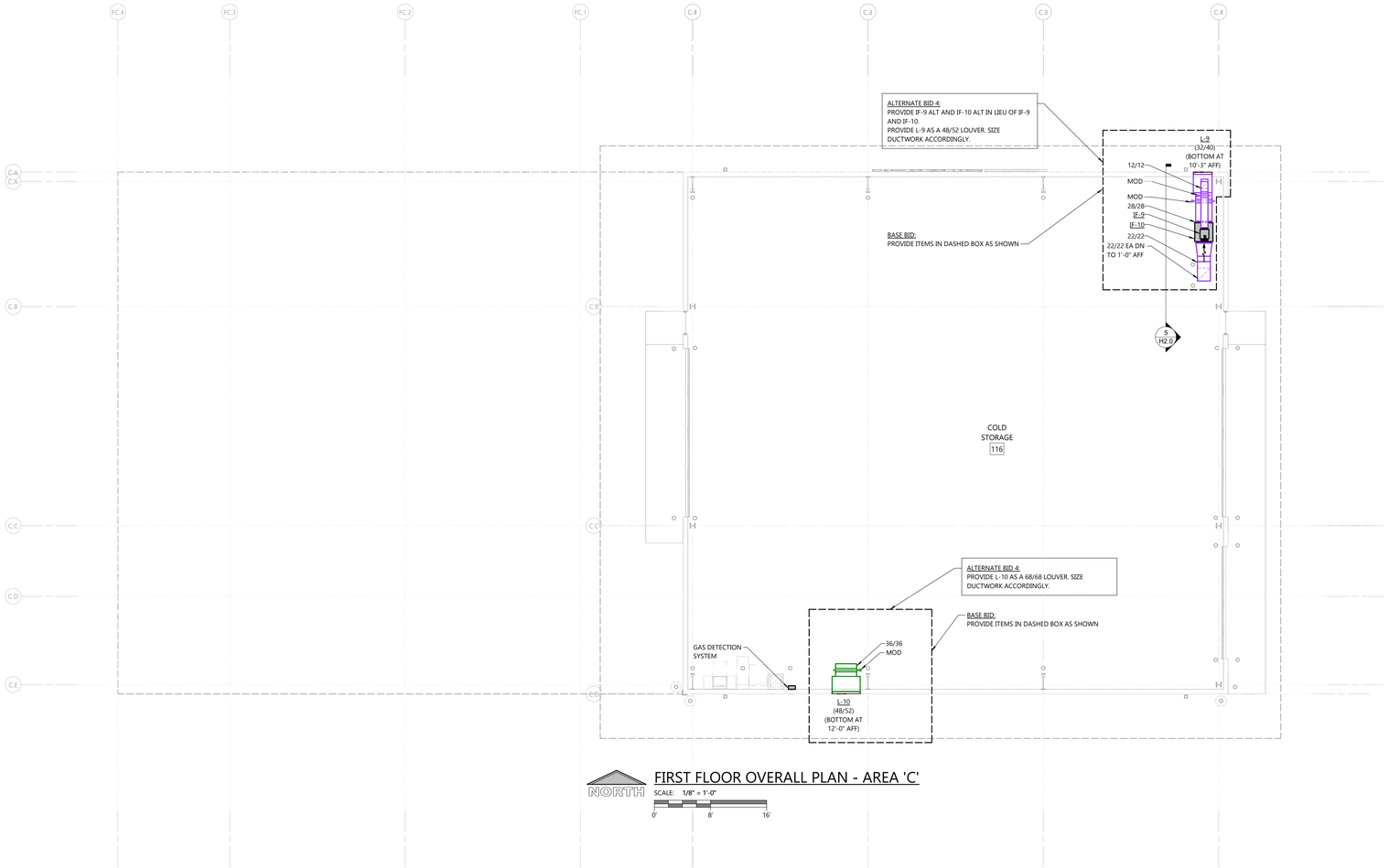

NORTH

FIRST FLOOR OVERALL PLAN - AREA 'C'

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

0' 8' 16'

GENERAL NOTES

- DUCT FITTINGS SHALL BE TYPE SHOWN ON PLAN OR CALLED OUT BY KEYNOTE. SEE DETAIL 1/H3.0 FOR ADDITIONAL FITTING DETAIL.
- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
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KEYNOTES

- (A - XX) SEE DUCT FITTING DETAILS 1/H3.0
- (2) CONCRETE PAD
- (3) VERIFY LOCATION WITH OWNER
- (4) WWM OVER DUCT OPENING

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:

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SHEET NUMBER

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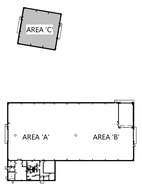

KEY PLAN

HVAC FIRST FLOOR PLAN - AREA 'C'

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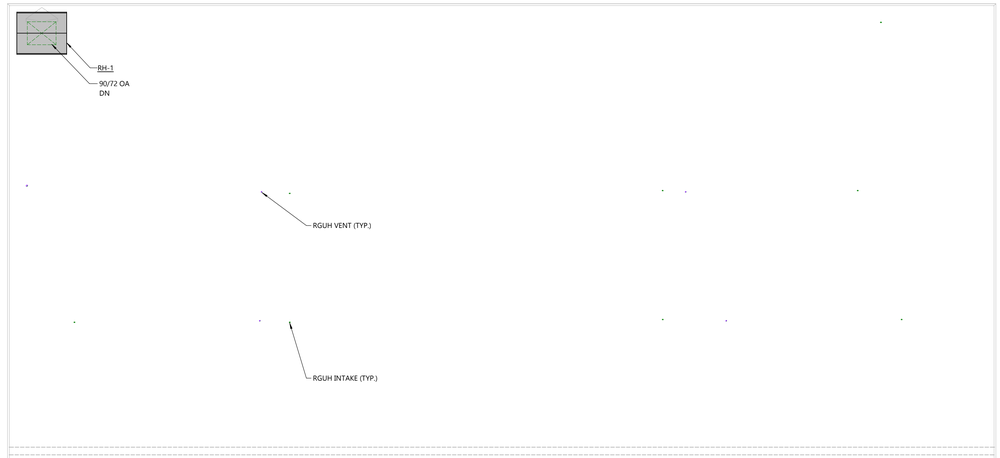

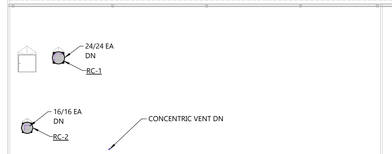

NORTH

OVERALL ROOF PLAN

SCALE: 1/16" = 1'-0"

0' 16' 32'

GENERAL NOTES

- VERIFY BUILDING OPENING AND CURB SIZES LISTED ON PLANS WITH ACTUAL EQUIPMENT SCHEDULED AND SUPPLIED. COORDINATE REQUIRED OPENING SIZES AND LOCATIONS WITH CONTRACTORS PROVIDING OPENING. SCHEDULES AND ACTUAL EQUIPMENT SIZES SHALL TAKE PRECEDENCE OVER SIZES SHOWN ON PLANS.
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- TERMINATE ALL UNIT HEATER INTAKES/FLUES MINIMUM 10'-0" FROM EDGE OF ROOF.
- TERMINATE ALL GAS REGULATOR VENTS MINIMUM 10'-0" FROM EDGE OF ROOF. VENTS SHALL NOT BE TERMINATED OUT EXTERIOR WALLS
- DASHED LINES AROUND EXHAUST TERMINATIONS INDICATE 10'-0" REQUIRED CLEARANCE TO OUTSIDE AIR INTAKES.

KEYNOTES

2 NOT USED

3 VERIFY LOCATION WITH OWNER

4 WWM OVER DUCT OPENING

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PROJECT INFORMATION

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W9590 GIVENS RD. • HORTINVILLE, WI 54944

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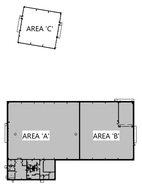
250041200

SHEET NUMBER

H1.3AB



KEY PLAN

HVAC ROOF PLAN

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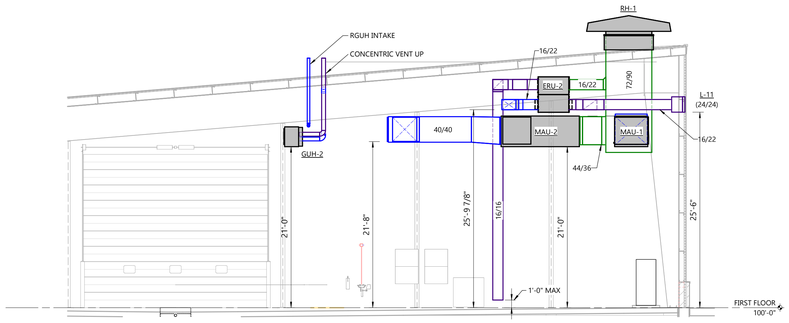
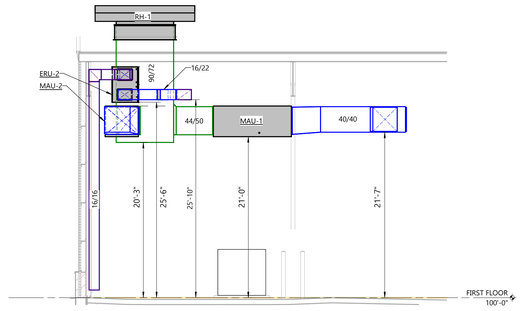
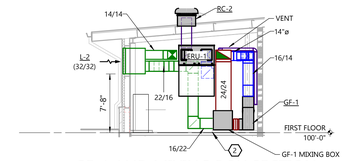


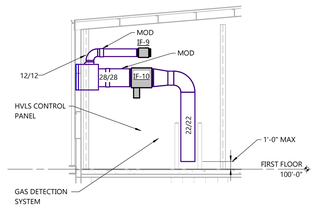
3 H2.0 MAU-2 SECTION
SCALE: 1/8" = 1'-0"



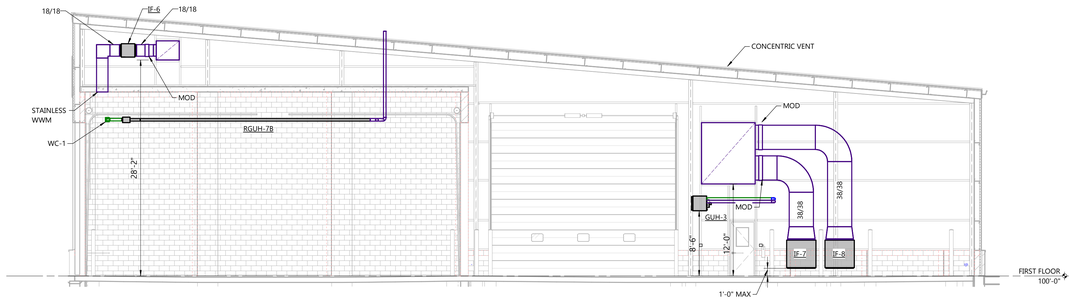
2 H2.0 MAU-1 SECTION
SCALE: 1/8" = 1'-0"



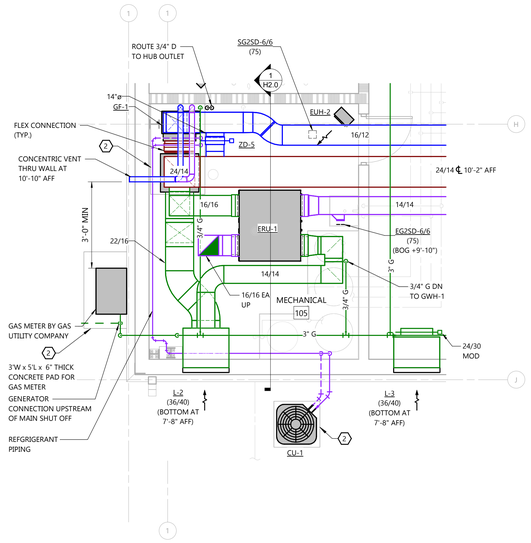
1 H2.0 GF-1 AND MIXING BOX SECTION
SCALE: 1/8" = 1'-0"



5 H2.0 COLD STORAGE VENTILATION SECTION
SCALE: 1/8" = 1'-0"



4 H2.0 WASH BAY SECTION
SCALE: 1/8" = 1'-0"



6 H2.0 MECHANICAL ROOM ENLARGED VIEW
SCALE: 1/4" = 1'-0"
0' 4' 8'

HVAC SECTIONS AND ENLARGED PLANS

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PROJECT INFORMATION

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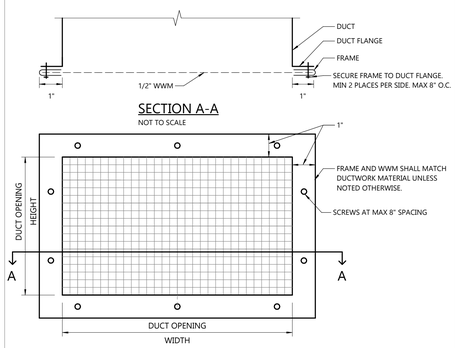
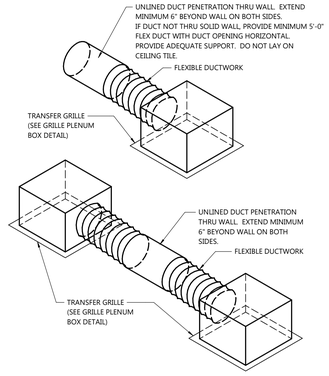
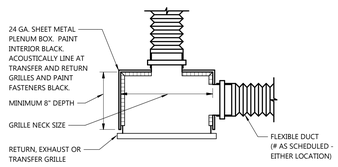


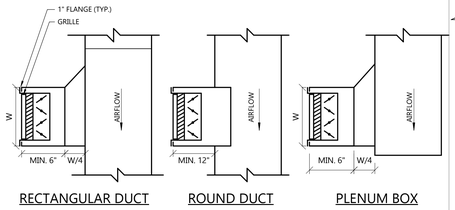
5 H3.0 WWM SCREEN OVER OPENING DETAIL
NOT TO SCALE



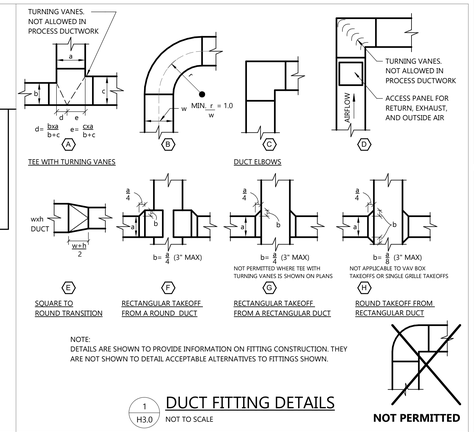
4 H3.0 TRANSFER DUCT DETAIL
NOT TO SCALE



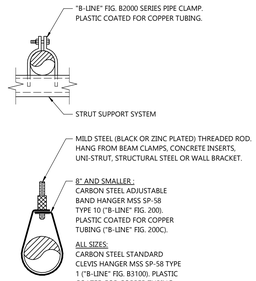
3 H3.0 GRILLE PLENUM BOX DETAIL
NOT TO SCALE



2 H3.0 DUCT/PLENUM MOUNTED GRILLE DETAIL
NOT TO SCALE



1 H3.0 DUCT FITTING DETAILS
NOT TO SCALE



10 H3.0 UNINSULATED PIPE HANGER DETAILS
NOT TO SCALE

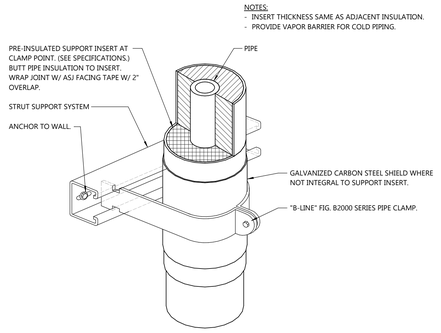
MAX. SPACING BETWEEN PIPE SUPPORTS AND MIN. HANGER ROD SIZES									
PIPE SIZE	STEEL			COPPER			PVC CPVC	PEX	MIN. ROD
	WATER	VAPOR	NAT. GAS	WATER	VAPOR				METAL PIPE	PLASTIC PIPE
1/4"-1/2"	7'	8'	6'	5'	6'	4'	32"		3/8"	3/8"
3/4"	7'	9'	8'	5'	7'	4'	32"		3/8"	3/8"
1"	7'	9'	8'	6'	8'	4'	32"		3/8"	3/8"
1 1/4"	7'	9'	10'	7'	9'	4'	32"		3/8"	3/8"
1 1/2"	9'	12'	10'	8'	10'	4'	32"		3/8"	3/8"
2"	10'	12'	10'	8'	11'	4'	-		3/8"	3/8"
2 1/2"	11'	12'	10'	9'	12'	4'	-		3/8"	3/8"
3"	12'	12'	10'	10'	12'	4'	-		3/8"	3/8"
4"	12'	12'	10'	12'	12'	4'	-		3/8"	3/8"
6"	12'	12'	10'	12'	12'	4'	-		5/8"	3/8"
8"	12'	12'	-	-	-	4'	-		1/2"	3/8"
10"	12'	12'	-	-	-	4'	-		1/2"	3/8"
12"	12'	12'	-	-	-	4'	-		5/8"	3/8"
14"	12'	12'	-	-	-	4'	-		5/8"	3/8"
16"	12'	12'	-	-	-	4'	-		3/4"	3/8"
MAX VERT. (1)	15'	15'	-	10'	10'	10'	10'	-	-	-

(1) SUPPORT AT MINIMUM EVERY FLOOR LEVEL OR SPACING LISTED.
MSS = MANUFACTURER'S STANDARDIZATION SOCIETY
- INSTALL ADDITIONAL HANGERS WITHIN 12" OF ELBOWS AND TEES AND AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGES AND STRAINERS 2 1/2" AND LARGER.

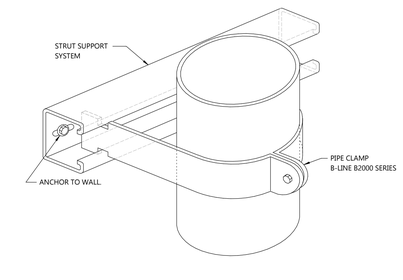
MAX. HANGER ROD CAPACITY	
ROD DIA.	MAX LOAD (1)
3/8"	600#
1/2"	1,100#
5/8"	1,800#
3/4"	2,700#

(1) MAX LOAD IS WEIGHT ALLOWED PER EACH ROD.

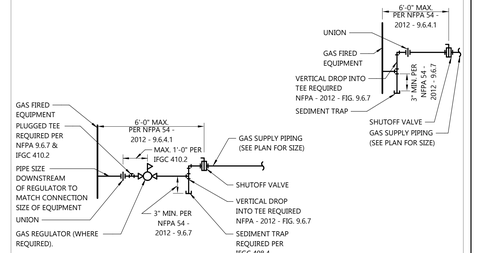
9 H3.0 PIPE SUPPORT AND HANGER ROD SCHEDULE
NOT TO SCALE



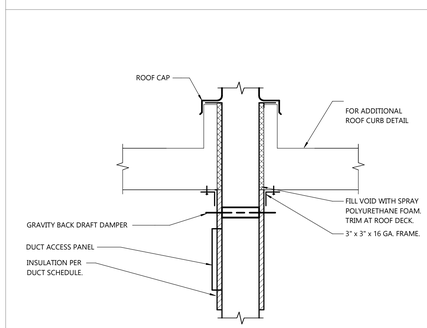
8 H3.0 INSULATED PIPE/TUBE SUPPORT DETAIL
NOT TO SCALE



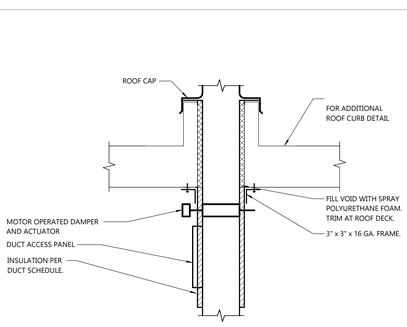
7 H3.0 WALL PIPE/TUBE SUPPORT DETAIL
NOT TO SCALE



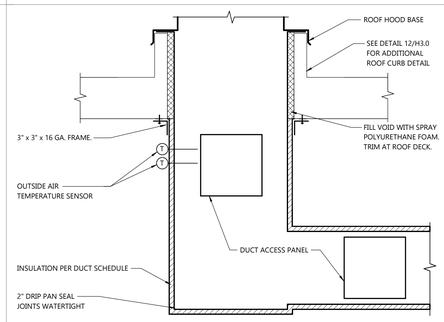
6 H3.0 GAS PIPE CONNECTION DETAIL
NOT TO SCALE



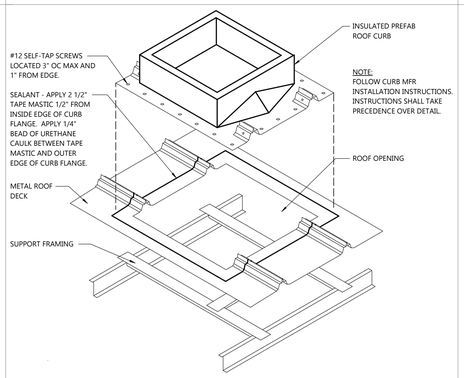
15 H3.0 ROOF CAP DETAIL
NOT TO SCALE



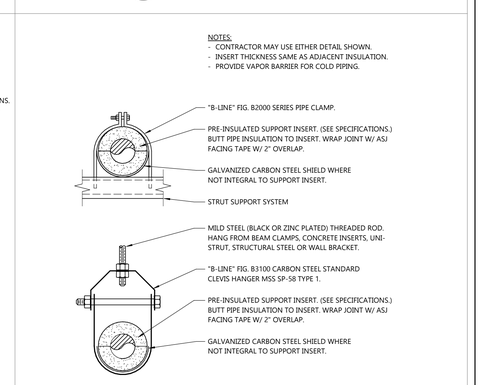
14 H3.0 ROOF CAP DETAIL
NOT TO SCALE



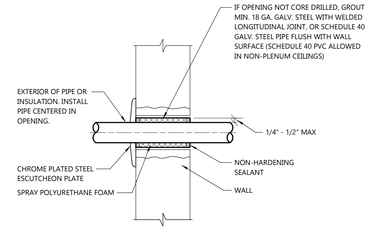
13 H3.0 ROOF HOOD DETAIL
NOT TO SCALE



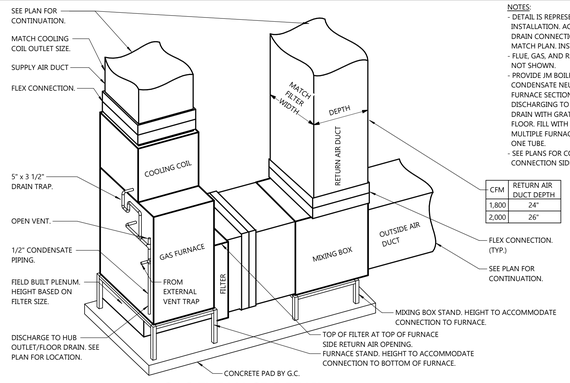
12 H3.0 TYPICAL METAL ROOF CURB DETAIL
NOT TO SCALE



11 H3.0 INSULATED PIPE HANGER DETAILS
NOT TO SCALE



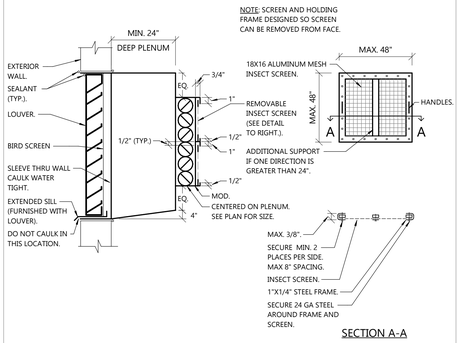
PIPE PENETRATION THRU MASONRY OR CONCRETE WALL
20 H3.0 NOT TO SCALE



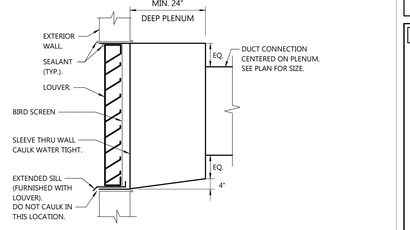
CFM	RETURN AIR DUCT DEPTH
1,800	24"
2,000	26"

NOTES:
- DETAIL IS REPRESENTATIVE OF INSTALLATION. ACTUAL RETURN DUCT AND DRAIN CONNECTION SIDES MAY NOT MATCH PLAN. INSTALL ON SIDES PER PLAN.
- FLUE, GAS, AND REFRIGERANT PIPING ARE NOT SHOWN.
- PROVIDE JM BOILER WORKS JM-2 CONDENSATE NEUTRALIZING TUBE IN FURNACE SECTION DRAIN PIPING IF DISCHARGING TO A NON-PVC DRAIN OR DRAIN WITH GRATE. ANCHOR TUBE TO FLOOR. FILL WITH WATER BEFORE USE. MULTIPLE FURNACES MAY BE PIPED TO ONE TUBE.
- SEE PLANS FOR CORRECT RETURN AIR CONNECTION SIDE.

GAS FURNACE DETAIL
18 H3.0 NOT TO SCALE



17 H3.0 LOUVER DETAIL
NOT TO SCALE



16 H3.0 LOUVER DETAIL
NOT TO SCALE

HVAC DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTINVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
H3.0

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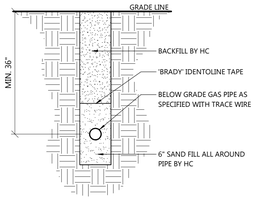
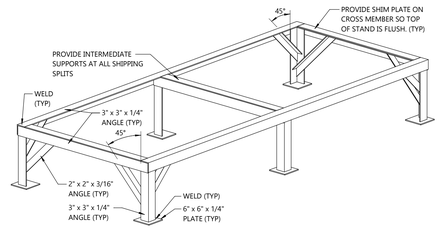
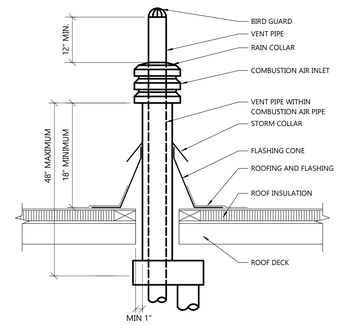


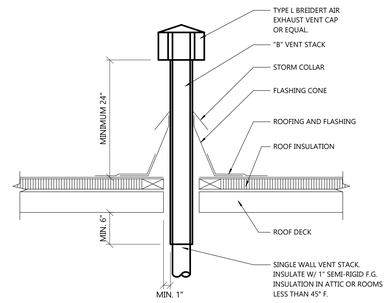
4 H3.1 UNDERGROUND GAS PIPE DETAIL
NOT TO SCALE



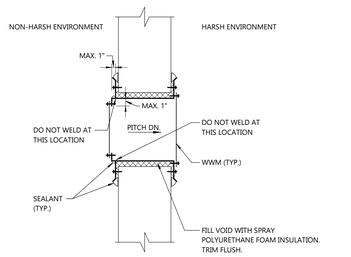
3 H3.1 EQUIPMENT STAND DETAIL
NOT TO SCALE



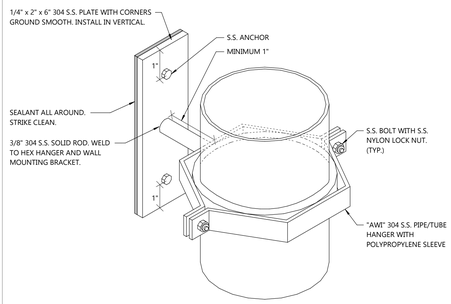
GAS UNIT HEATER
CONCENTRIC VENT THRU ROOF DETAIL
2 H3.1
NOT TO SCALE



1 H3.1 GAS UNIT HEATER VENT THRU ROOF DETAIL
NOT TO SCALE

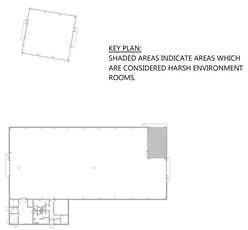


HARSH ENVIRONMENT CMU/PRECAST
TRANSFER DETAIL
14 H3.1
NOT TO SCALE



APPLICATIONS:
- UNINSULATED PIPE/TUBE

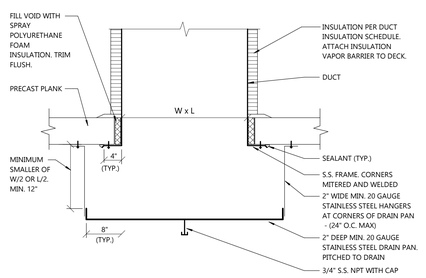
HARSH ENVIRONMENT
CONCRETE WALL PIPE/TUBE SUPPORT DETAIL
13 H3.1
NOT TO SCALE



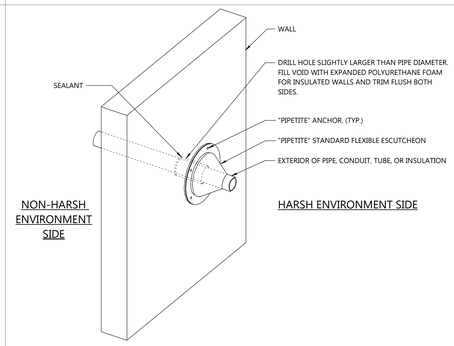
HARSH ENVIRONMENT ROOM KEY PLAN
12 H3.1
NOT TO SCALE

GENERAL NOTES:
- HARSH ENVIRONMENT ROOM DETAILS OTHER THAN SHOWN SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.
- CLEAN WALLS WHERE CORE DRILLING IS DONE FOR INSTALLATION OF THIS WORK.
- ALL PIPE, TUBE AND CONDUIT SUPPORTS SHALL BE INSTALLED AT THE SAME HEIGHT. COORDINATE WITH ALL CONTRACTORS.
- SEALANT IN HARSH ENVIRONMENT ROOMS SHALL BE AN INDUSTRIAL GRADE SILICONE SEALANT MEETING FDA REG. NO. 21 CFR 177.2600 AND USDA FOR FEDERALLY INSPECTED MEAT AND POULTRY PLANTS EQUIVALENT TO SIL-BOND RTV 4500 ACETOXY.
- USE OF THREADS SHALL BE MINIMIZED.

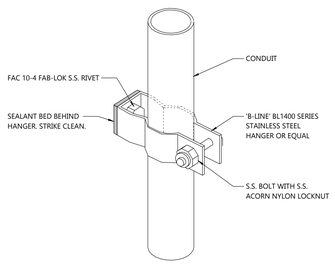
HARSH ENVIRONMENT NOTES
11 H3.1
NOT TO SCALE



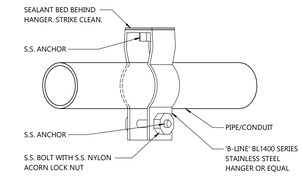
HARSH ENVIRONMENT
PRECAST RETURN/EXHAUST DETAIL
19 H3.1
NOT TO SCALE



HARSH ENVIRONMENT
WALL PENETRATION DETAIL
18 H3.1
NOT TO SCALE



HARSH ENVIRONMENT
CONDUIT WALL MOUNTING DETAILS
17 H3.1
NOT TO SCALE



ALLOWABLE APPLICATIONS
- ALL CONDUIT SIZES

HARSH ENVIRONMENT
CEILING CONDUIT SUPPORT DETAIL
16 H3.1
NOT TO SCALE

HVAC DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

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W9590 GIVENS RD. • HORTINVILLE, WI 54944

PROFESSIONAL SEAL

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JOB NUMBER
250041200

SHEET NUMBER
H3.1

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ELECTRICAL/STARTER/DISCONNECT SCHEDULE

SYM.	ELECTRICAL DATA HP	KW	FLA	MCA	MOP	VOLT	PH.	STARTER TYPE	LOCATION	FURN. BY	AUX. CONTACT	ACCESS-ORIES	SMOKE DETECTOR	DISCONNECT DIS-CONNECT	FURN. BY	REMARKS
MAU-1 (TRUCK STORAGE)	-	-	-	18.4	30	460	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
MAU-1 CONVENIENCE RECEPTACLE	-	-	-	-	-	120	1	-	IN MAU	EM	-	-	-	NR	-	-
MAU-2 (TRUCK STORAGE)	-	-	-	18.4	30	460	3	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
MAU-2 CONVENIENCE RECEPTACLE	-	-	-	-	-	120	1	-	IN MAU	EM	-	-	-	NR	-	-
GF-1 (OFFICE)	-	-	-	14.4	20	120	1	INTEG.	INTEGRAL	EM	-	-	(9)	R (8)	EC	(22)
CU-1 (OFFICE)	-	-	-	30.5	50	208	1	INTEG.	INTEGRAL	EM	-	-	-	R, F	EC	-
ERU-1 (OFFICE)				15	20	120	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
ERU-2 (TRUCK STORAGE)				7.7	15	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
IF-1 (ELECTRICAL)	3/4	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-2 (IT)	1/2	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-3 (PARTS)	3/4	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-4 (FIRE PUMP)	3/4	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-5 (OFFICE RELIEF)	1/4	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-6 (WASH BAY)	1	-	-	-	-	208	1	RELAY	(28)	HC	-	-	-	R	EM	-
IF-7 (TRUCK STORAGE)	7 1/2	-	-	-	-	460	3	COMB.	(28)	HC	-	-	-	R	EM (2)	-
IF-8 (TRUCK STORAGE)	7 1/2	-	-	-	-	460	3	COMB.	(28)	HC	-	-	-	R	EM (2)	-
IF-9 (COLD STORAGE)	1/15	-	-	-	-	120	1	RELAY	(28)	HC	-	-	-	R	EM (2)	-
IF-9 ALT (COLD STORAGE)	1/3	-	-	-	-	120	1	RELAY	(28)	HC	-	-	-	R	EM (2)	(32)
IF-10 (COLD STORAGE)	1 1/2	-	-	-	-	208	3	COMB.	(29)	HC	-	-	-	R	EM (2)	-
IF-10 ALT (COLD STORAGE)	3	-	-	-	-	208	3	COMB.	(29)	HC	-	-	-	R	EM (2)	(32)
CEF-1 (BREAK ROOM)	-	-	-	-	-	120	1	TIMER	SEE ELEC. DWG	EC	-	-	-	R	EM	-
GUH-1 (PARTS)	1/6	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	R	EC	(22)
GUH-2 (TRUCK STORAGE)	1/3	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	R	EC	(22)
GUH-3 (TRUCK STORAGE)	1/3	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	R	EC	(22)
RGUH-1 (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-2 (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-3A (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-3B (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-4A (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-4B (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-5 (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-6 (TRUCK STORAGE)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-7A (WASH BAY)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
RGUH-7B (WASH BAY)	-	-	4.8	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	NR	-	REC. (22)
DF-1 (TRUCK STORAGE)	3/4	-	-	-	-	460	3	VFD	AT FAN	EM	-	-	-	R	EC	(25)
DF-2 (TRUCK STORAGE)	3/4	-	-	-	-	460	3	VFD	AT FAN	EM	-	-	-	R	EC	(25)
DF-3 (TRUCK STORAGE)	3/4	-	-	-	-	460	3	VFD	AT FAN	EM	-	-	-	R	EC	(25)
DESTRATIFICATION FAN CONTROL PANEL (TRUCK STORAGE)	-	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	-	-	REC.
GAS DETECTION CONTROL PANEL (TRUCK STORAGE)	-	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	-	-	-
GAS DETECTION CONTROL PANEL (COLD STORAGE)	-	-	-	-	-	120	1	INTEG.	INTEGRAL	EM	-	-	-	-	-	-
ERC-1 (TRUCK STORAGE)	-	6.0	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R, F	EM	-
EBB-1 (FLEX OFFICE)	-	1	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
EBB-2 (OFFICE)	-	1	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
ECUH-1 (VEST.)	-	3	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	-
EUH-1 (FIRE PUMP)	-	3	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	(22)
EUH-2 (MECHANICAL)	-	3	-	-	-	208	1	INTEG.	INTEGRAL	EM	-	-	-	R	EM	(22)

STARTER TYPE:
INTEG.= INTEGRAL; PROVIDED INTEGRAL WITH EQUIPMENT.
RELAY= UL LISTED MOTOR RATED RELAY WITH SEPARATE ENTRANCES FOR INPUT AND OUTPUT CONTACTS (RIBT SERIES), OVERRIDE SWITCH AND LED STATUS INDICATOR.
CONTACT RATING, CONFIGURATION, AND COIL VOLTAGE SUITABLE FOR APPLICATION.
MAN= MANUAL; NEMA ICS 2, AC GENERAL PURPOSE CLASS A MANUALLY OPERATED, FULL-VOLTAGE CONTROLLER WITH QUICK MAKE AND BREAK TOGGLE ACTION AND DOUBLE BREAK SILVER ALLOY CONTACTS. BIMETALLIC OR MELTING ALLOY TYPE THERMAL OVERLOAD UNITS. NEMA ICS 6 GENERAL PURPOSE FLUSH MOUNTED ENCLOSURE WITH STAINLESS STEEL COVER PLATE IN FINISHED AREAS AND TYPE 1 SURFACE MOUNTED IN UNFINISHED AREAS.
MAG= MAGNETIC; NEMA ICS 2, AC GENERAL PURPOSE CLASS A MAGNETIC ACROSS-THE-LINE CONTROLLER, DOUBLE BREAK SILVER ALLOY CONTACTS. NEMA SOLID STATE OVERLOAD RELAY WITH USER SELECTABLE SETTINGS, CLASS 10, 20, AND 30; BUILT-IN MEMORY TO PREVENT HOT MOTOR RESTART, OPERATING TEMPERATURE: -20 DEGREE C TO +70 DEGREE C. PHASE CURRENT LOSS PROTECTION. PHASE CURRENT UNBALANCE PROTECTION (ADJUSTABLE 20-50%). PROVIDE NEMA ICS 6, TYPE 1 ENCLOSURE AUXILIARY CONTACT(S) AS REQUIRED FOR CONTROL. PROVIDE 120V, 60 HZ, SECONDARY, 100VA FUSED MINIMUM, TRANSFORMER IN EACH STARTER. FUSED PRIMARY AND SECONDARY, BOND UNFUSED LEG OF SECONDARY TO ENCLOSURE.
COMB= COMBINATION: COMBINE MAGNETIC STARTER AND NON-FUSED DISCONNECT SWITCH IN COMMON ENCLOSURE. LOCKABLE IN OPEN POSITION, MOLDED CAST TYPE MOTOR CIRCUIT PROTECTOR (MAGNETIC PROTECTION ONLY).

FURNISHED BY:
EM = EQUIPMENT MANUFACTURER
HC = HEATING CONTRACTOR
EC = ELECTRICAL CONTRACTOR

ACCESSORIES:
HOA = HAND-OFF-AUTO
PL =LED PILOT LIGHT
PB = PUSH BUTTON

DISCONNECT:
NR= NOT REQUIRED
R = REQUIRED
F = FUSED

REMARKS:
REC.=RECEPTACLE

- ACCEPTABLE MANUFACTURERS: ALLEN BRADLEY, CUTLER HAMMER, SQUARE D, GENERAL ELECTRIC.
- VERIFY VOLTAGE AND PHASE WITH ELECTRICAL CONTRACTOR BEFORE ORDERING EQUIPMENT.
- FURNISH MOTOR STARTERS TO E.C. FOR INSTALLATION AND WIRING WHEN THE STARTER SCHEDULE CALLS FOR H.C. TO FURNISH.
- NEMA RATINGS OF COMPONENTS SHALL BE SUITABLE FOR THE ENVIROMENT THEY ARE MOUNTED IN (NEMA 3R FOR OUTDOORS, NEMA 4X FOR WASHDOWN, ETC)

(1) SEE SCHEDULE.
(2) DISCONNECT FACTORY MOUNTED AND PREWIRED BY EQUIPMENT MANUFACTURER.
(8) DISCONNECT SHALL BE A MANUAL STARTER WITH AUX CONTACTS FOR SMOKE DETECTOR SHUTDOWN OF UNIT.
(9) SMOKE DETECTOR IN RETURN DUCT FURNISHED AND INSTALLED BY EC. EC SHALL MONITOR SMOKE DETECTOR THRU FIRE ALARM PANEL AND WIRE TO SHUT DOWN UNIT ON DETECTION.
(22) EMERGENCY POWER.
(25) FAN FURNISHED WITH CONTACTORS TO SHUT DOWN FAN ON FIRE ALARM SIGNAL INDICATING FIRE SPRINKLER FLOW. EC TO PROVIDE SHUTDOWN SIGNAL AND WIRING FROM FIRE ALARM PANEL.
(28) MOUNT RELAY ON WALL NEAR ELECTRICAL PANEL THAT SERVES FAN. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR.
(29) MOUNT ON WALL NEAR GAS DETECTION SYSTEM THAT SERVES FAN.
(32) ALTERNATE BID 4.

GAS FURNACE AND CONDENSING UNIT SCHEDULE (G.F. & C.U.)

NO.	POSITION	CFM	O.A. CFM	FURNACE MBH IN	MBH OUT	NO. OF STAGES	E.S.P. " W.C.	MOCP	FILTER SIZE (1)	MODEL	COOLING COIL CAPACITY (MBH) SENS.	TOTAL	MODEL	CONDENSING UNIT NO.	MCA	MOCP	VOLT.	DOE 2023 SEER2 (10)	AHRI 210/240 SEER2	MODEL	REMARKS
1	UPFLOW	1,800	750 (11)	120	117	MOD	0.7	20	20 (2)	SERIES 120 59MN7C120C24 (3)(4)	39.6	56.4	CVAVA6024XMA	1	30.5	50	208/1	13.4 SEER2	15.5 SEER2	26TPA860W003 (5)	CARRIER

- ACCEPTABLE MANUFACTURERS: CARRIER, TRANE, LENNOX, BRYANT.
- MULTI-SPEED ECM BLOWER MOTOR, TWO-SPEED INDUCER MOTOR AND TWO-STAGE GAS VALVE.
- CONTRACTOR RESPONSIBLE FOR COMBUSTION AIR AND VENT PIPE SIZING BASED ON ACTUAL EQUIVALENT LENGTH OF INSTALLATION.
- PROVIDE EXTERNAL VENT TRAP KIT PER MFR RECOMMENDATIONS. PROVIDE WITH CONCENTRIC VENT TERMINATION KIT FOR HORIZONTAL VENTING.
- COOLING CAPACITY BASED ON 80/67 EAT AND 95 DEG F CONDENSING TEMPERATURE.
- R-454B CONDENSING UNIT WITH SCROLL COMPRESSOR, 5 YEAR LIMITED COMPRESSOR WARRANTY FOR COMMERCIAL INSTALLATION, INTERNAL THERMAL OVERLOAD, FILTER DRIER, LOW AND HIGH PRESSURE SWITCHES, CYCLE PROTECTOR (5 MINUTE DELAY), AND TIME DELAY RELAY TO BRIEFLY CONTINUE INDOOR FAN OPERATION AFTER COMPRESSOR SHUTS OFF.
- PROVIDE REFRIGERANT LEAK DETECTION DISSIPATION SYSTEM WITH REFRIGERANT SENSOR, LEAK DISSIPATION CONTROL BOARD, AND ASSOCIATED POWER AND CONTROL WIRE HARNESSES.
- PROVIDE PRECHARGED REFRIGERANT LINE SET. LINES SIZED BY CONDENSING UNIT MANUFACTURER.
- PROVIDE SHUTOFF VALVES AT THE CONDENSING UNIT INLET AND OUTLET FOR ALL SYSTEMS WITH A REFRIGERANT CHARGE GREATER THEN 6.6 LBS.
- IF REFRIGERANT EQUIVALENT LINE LENGTH EXCEEDS 80' OR 20' VERTICAL DIFFERENCE, PROVIDE CRANKCASE HEATER, COMPRESSOR START ASSIST CAPACITOR AND RELAY, AND LIQUID LINE SOLENOID VALVE.

(1) FILCAB MEDIA FILTER CABINET WITH FILCAR FILTER WITH MERV 8 RATING.
(2) PROVIDE BOTTOM AND SIDE RETURN CONNECTION. SEE GAS FURNACE CONNECTION DETAIL.
(3) PROVIDE INFINITY THERMOSTAT OR EQUIVALENT.
(4) PROVIDE WITH MICROMETL ECONOMIZER BOX AND DAMPERS WITH MODULATING DAMPER MOTORS, W7220 JADE INTEGRATED ECONOMIZER MODULE, DISCHARGE AND OUTSIDE AIR SENSOR.
(10) UNITS SHALL COMPLY WITH D.O.E. 2023 AHRI 210/240, SEER2 REQUIREMENTS.
(11) OUTSIDE AIR PROVIDED BY ENERGY RECOVERY UNIT.

ENERGY RECOVERY UNIT (E.R.U.)

NO.	OUTSIDE AIR FAN CFM	EXT. SP	DRIVE TYPE	MOTOR HP	EXHAUST FAN CFM	EXT. SP	DRIVE TYPE	MOTOR HP	WINTER EXHAUST AIR EAT	EXHAUST AIR LAT	OUTSIDE AIR EAT	OUTSIDE AIR LAT	MIN. EFF.	MBH	SUMMER EXHAUST AIR EAT	EXHAUST AIR LAT	OUTSIDE AIR EAT	OUTSIDE AIR LAT	MIN. EFF.	MBH	CURB HEIGHT BY MFR.	CURB TYPE	ELECTRICAL MCA	MOP	VOLT/ PHASE	NEMA 3R DISC	DEFROST CONTROL	WEIGHT (LBS.)	MODEL	ACCESS.	REMARKS
1	750	0.5	DIRECT	182 W	600	0.5	DIRECT	135 W	68/51	-/-	-15/-16	41/35	83.9%	56	76/63	-/-	87/75	80/69	70.4%	19	-	-	15.1	20	120/1	YES	-	800	HE15	(1)(3)(5)(7)	RENEWAIRE
2	1,415	0.5	DIRECT	565 W	1,415	0.5	DIRECT	560 W	68/51	-/-	-15/-16	39/33	65.8%	108	-	-	-	-	-	-	-	-	7.7	15	208/1	YES	-	800	HE15	(3)(5)(6)(7)	RENEWAIRE

- ACCEPTABLE MANUFACTURERS: GREENHECK, RENEWAIRE.
- PROVIDE WITH ASHRAE STD 52.2 MERV 8 T.A. FILTERS FOR THE OUTSIDE AIR AND EXHAUST AIR STREAMS.
- ENERGY RECOVERY WHEEL SHALL BE AIR CERTIFIED, INSULATED CABINET WITH INTERIOR SHEET METAL LINER.
- PROVIDE HANGING BRACKET KIT AND HANGING SPRING VIBRATION ISOLATION KIT.

(1) PROVIDE WITH INDEPENDENT BLOWER CONTROL OPTION.
(3) PROVIDE DISCONNECT SWITCH AND MOTORIZED OUTSIDE AIR (AT UNIT INLET) AND EXHAUST (AT UNIT DISCHARGE) DAMPERS PREWIRED TO OPEN WITH FAN OPERATION.
(5) PROVIDE SINGLE POINT WIRING CONNECTION.
(6) PROVIDE WITH INTEGRAL BYPASS DAMPER FOR ECONIMIZING, CONTROLLED BY OA DRY BULB.
(7) DIRECT DRIVE FANS WITH SOLID STATE SPEED CONTROL KIT OR ECM MOTORS.

VIBRATION ISOLATION SCHEDULE

TYPE OF EQUIPMENT	ON GRADE ISO. & BASE TYPE	ON GRADE MIN. DEFL. (INCHES)	ON SUPPORTING STRUCTURE ISO. & BASE TYPE	MIN. DEFLECTION (INCHES) FLR SPAN OR COLUMN SPACING 20'	30'	40'
PACKAGED AIR HANDLING UNITS W/ INTERNAL FAN ISOLATION	1	0.25	1	0.25	0.25	0.25
FURNACES	-	-	1 (2)	0.20	0.20	0.20

- SEE SPECIFICATIONS FOR DESCRIPTION OF ISOLATOR AND BASE TYPES
- EQUIPMENT WITH MOTORS CONTROLLED BY VARIABLE FREQUENCY DRIVES SHALL HAVE SPRING DEFLECTION SELECTED BASED ON LOWEST LISTED RPM.

DUCTWORK AND DUCTWORK INSULATION SCHEDULE

SERVICE	LOCATION	DUCT MAT'L	SMACNA PRESS. CLASS	INSULATION RECTANGULAR DUCT	INSULATION ROUND DUCT	INSUL. JACKET
SUPPLY GF-1	EXPOSED	GALV. ST.	+1"	1" A.L.D. (1)	1.5" SEMI-RIGID F.G.	LAMINATED
SUPPLY GF-1	CONCEALED	GALV. ST.	+1"	1" A.L.D. (1)	1.5" FLEX. F.G.	N.R.
SUPPLY MAU-1 AND 2	EXPOSED IN ROOM SERVED	GALV. ST.	+2"	N.R.	N.R.	N.R.
RETURN GF-1	CONCEALED AND EXPOSED	GALV. ST.	-1"	1" A.L.D. (1) (10)	N.R.	N.R.
OUTSIDE AND MIXED AIR	EXPOSED	GALV. ST.	-1"	2" RIGID F.G.	2" SEMI-RIGID F.G.	LAMINATED
OUTSIDE AIR DOWNSTREAM OF ERU-1 AND 2	CONCEALED	GALV. ST.	+1"	2" RIGID F.G.	2" SEMI-RIGID F.G.	LAMINATED
TRANSFER	CONCEALED AND EXPOSED	GALV. ST.	+1/2"	1" A.L.D. (1)	N.R.	N.R.
TRANSFER WASH BAY	EXPOSED	STAIN. ST. (7)	+1/2"	N.R.	N.R.	N.R.
EXHAUST UPSTREAM OF IF-10	EXPOSED	GALV. ST.	-1"	N.R.	N.R.	N.R.
EXHAUST DOWNSTREAM OF IF-1, 2	EXPOSED	GALV. ST.	-1"	N.R.	N.R.	N.R.
EXHAUST DOWNSTREAM OF IF-3, 4, 7, 8, 9, 10	EXPOSED	GALV. ST.	+1"	1.5" RIGID F.G. (2)	1.5" SEMI-RIGID F.G.(2)	LAMINATED
EXHAUST IF-6	EXPOSED	STAIN. ST. (7)	-1"	N.R.	N.R.	N.R.
EXHAUST DOWNSTREAM OF CEF-1	CONCEALED	GALV. ST.	+1"	N.R.	N.R.	N.R.
EXHAUST UPSTREAM OF ERU-1 AND 2	ALL	GALV. ST.	-1"	N.R.	N.R.	N.R.
EXHAUST DOWNSTREAM OF ERU-2	EXPOSED	GALV. ST.	+1"	1.5" RIGID F.G.	1.5" SEMI-RIGID F.G.	LAMINATED
EXHAUST DOWNSTREAM OF ERU-1 AND IF-5	CONCEALED	GALV. ST.	+1"	1.5" FLEX. F.G. (11)	1.5" FLEX. F.G. (11)	N.R.
GAS UNIT HEATER INTAKES	ALL (EXCEPT IN WASH BAY)	SEE SCHEDULE	-	N.R.	1.5" RIGID F.G.	LAMINATED

N.R. = NOT REQUIRED
EXPOSED = VISIBLE FROM OCCUPIED SPACE, DOES NOT INCLUDE DUCTWORK IN MECHANICAL ROOMS. DUCTWORK IN ROOMS WITH CLOUD CEILINGS ARE CLASSIFIED AS EXPOSED.
CONCEALED = HIDDEN FROM VIEW BY WALLS AND CEILINGS. INCLUDES DUCTWORK IN MECHANICAL ROOMS.
MATERIALS:
GALV. STEEL: ASTM A653, LOCK FORMING QUALITY, 1.25 OUNCES/ S.F. ZINC COATING (G90 IN ACCORDANCE WITH ASTM A90 BOTH SIDES).
STAINLESS STEEL: ASTM A240/A240M, TYPE 304.
- ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK SHALL BE SEALED PER 2021 IECC 403.12.1.

(1) DUCT DIMENSIONS ARE SHEET METAL DIMENSIONS AND INCLUDE LINING.
(2) INSULATE FROM 18" UPSTREAM OF THE BACKDRAFT OR MOTOR OPERATED DAMPER TO THE POINT WHERE THE DUCT EXITS THE BUILDING.
(7) 28 MILL ROLLED FINISH, BUTT WELD LONGITUDINAL AND TRANSVERSE JOINTS. 24" DIAMETER OR 24/24 AND LARGER TIG WELD INTERIOR JOINT. CAP, NITROGEN PURGE AND FULLY PENETRATE TIG WELD SMALLER DUCTWORK.
WELD FINISH:
- DUCT INTERIOR (DUCTS 24" DIAMETER OR 24/24 AND LARGER): SMOOTH (SMOOTH, CROWN AND SOME SLIGHT RIPPLES PRESENT, WELD IS NOT FLUSH WITH PARENT MATL, DISCOLORATION GONE).
- DUCT EXTERIOR (WHERE INSULATED): AS WELDED (CROWN, RIPPLES AND DISCOLORATION PRESENT).
- DUCT EXTERIOR (WHERE NOT INSULATED): SMOOTH (SMOOTH, CROWN AND SOME SLIGHT RIPPLES PRESENT, WELD IS NOT FLUSH WITH PARENT MATL, DISCOLORATION GONE).

EVERY WELDER ON THE PROJECT SHALL PROVIDE SAMPLE WELD PRIOR TO PERFORMING ANY SS WELDS ON THE PROJECT FOR APPROVAL BY OWNER.
ALL FINAL WELDS WILL BE SUBJECT TO REVIEW TO MEET SAMPLE WELD QUALITY.

(10) A.L.D. NOT REQUIRED BEYOND 20' OF GAS FURNACES AND 5 TON OR SMALLER ROOFTOP UNITS.
(11) PROVIDE RIGID OR SEMI-RIGID F.G. INSULATION AT DUCT PENETRATIONS THRU MASONRY OR PRECAST WALLS TO MINIMUM 6" BEYOND WALL FACE.

PIPE SCHEDULE

SERVICE	PIPE SIZE	STEEL PIPE BLACK STEEL	STEEL PIPE GALVANIZED	STEEL PIPE ASTM GR. B A53 F	A53 E	A106 S	STEEL PIPE SCHEDULE	STEEL FITTINGS CAST IRON THREADED ASTM A126/ANSI B16.4	STEEL FITTINGS MALLEABLE IRON THREADED ASME/ANSI B16.3	STEEL FITTINGS FORGED STEEL SOCKET WELDED ASTM A105 GRADE B/ANSI B16.11	STEEL FITTINGS STAINLESS CARBON STEEL WELDED ASTM A234, GR. WPR/ ANSI 16.9	STEEL FITTINGS COLD PRESS MECHANICAL JOINT	STEEL FITTINGS COUPLING JOINT	CLASS	COPPER PIPE ASTM B88 TYPE L HARD DRAWN	COPPER PIPE ASME B16.22 WROUGHT COPPER PRECHARGED LINE SET	COPPER FITTINGS SOLDER / BRAZING	COPPER FITTINGS COLD PRESS MECHANICAL JOINT	COPPER FITTINGS COUPLING JOINT	PLASTIC PIPE PRESSURE RATED	PLASTIC PIPE NON-PRESSURE RATED SCHEDULE	PLASTIC FITTINGS PVC ASTM D1784, D1785, D2672	PLASTIC FITTINGS CPVC ASTM D1784, F411	PLASTIC FITTINGS PVC ASTM D2464, D2467, D1784	PLASTIC FITTINGS CPVC ASTM F437, F439, D1784	STAINLESS STEEL PIPE ASTM A312 304 316	STAINLESS STEEL PIPE SCHEDULE	STAINLESS STEEL TUBE 16 GAUGE 304	STAINLESS STEEL FITTINGS ASTM A403, GR. WP304 BUTT WELDED THREADED	STAINLESS STEEL FITTINGS COLD PRESS MECHANICAL JOINT	PEX	PE	MISC
GAS (≤ 5 PSIG)	1/2" - 2"	X		X	X	X	40	X	X	X	X			125/150																					
GAS (≤ 5 PSIG)	2 1/2" - 8"	X		X	X	X	40				X			150																					
GAS REGULATOR VENTS	ALL SIZES	X		X	X	X	40	X	X	X	X			125/150																					
GAS (≤ 5 PSIG) IN WASH BAY	ALL SIZES																											X	(14)	(15)					
GAS (BELOW GRADE)	ALL																																	(17)	
REFR. SUCTION AND LIQ. ≤ 5 TONS	ALL															X																			
COOLING COIL COND. DRAIN	ALL		X	X	X	X	40	X	X					125						X	40	X	X	(3)	(19)									
FURNACE HX COND. DRAIN	ALL																			X	40	X	X	(3)	(19)									

(3) ASTM F656 SOLVENT WELD WITH ASTM D2564 CLEAR SOLVENT CEMENT.
(14) SCHEDULE 10 FOR WELDED PIPE, 0.07" WALL THICKNESS CTS PIPE MFD BY FITTING MFR FOR COLD PRESS MECHANICAL JOINTS .
(15) WELD FINISH SHALL BE SMOOTH, CROWN AND SOME SLIGHT RIPPLES PRESENT, WELD IS NOT FLUSH WITH PARENT MAT'L, DISCOLORATION GONE. NITROGEN PURGE DURING WELDING.
(17) BLACK/YELLOW STRIPED MDPE PRESSURE PIPE MFD IN ACCORDANCE WITH ASTM D2513 FROM PE 3408/3608 OR 3408/4710 (MFR: JM EAGLE) WITH MAGNETIC DETECTABLE CONDUCTOR TRACE WIRE IMPRINTED WITH "GAS PIPE". SOCKET FUSION, BUTT FUSION, SADDLE FUSION, MECHANICAL FITTINGS OR ELECTROFUSION. HEAT-FUSION OR COMPRESSION-TYPE MECHANICAL JOINTS.
(19) ASTM F656 SOLVENT WELD WITH ASTM F493 CLEAR SOLVENT CEMENT.

PIPE INSULATION SCHEDULE

SERVICE	LOCATION	INSULATION NONE REQUIRED	INSULATION RIGID F.G.	INSULATION ELASTOMERIC FOAM	INSULATION POLYISO HT-450	INSULATION CLOSED CELL GLASS	INSULATION POLYSTYRENE	JACKET NONE REQUIRED	JACKET PVC	JACKET ALUMINUM	JACKET STAINLESS STEEL	PIPE SIZE < 1"	PIPE SIZE 1" - 1.25"	PIPE SIZE 1.5" - 3"	PIPE SIZE 4" - 6"	PIPE SIZE > 6"
REFRIGERATION SUCTION	OUTDOORS		X						X			1/2"	1"	1"	1"	1"
REFRIGERATION SUCTION	INDOORS		X						X			1/2"	1"	1"	1"	1"
REFRIGERATION LIQUID	ALL	X							X			-	-	-	-	-
COOLING COIL COND. DRAIN	UNCOOLED ROOMS		X						X			1/2"	1/2"	1/2"	1/2"	1/2"

GAS APPLIANCE VENTING SCHEDULE

APPLIANCE	SERVICE	LISTING	CONTINUOUS FLUE TEMP RATING	VENT PRESSURE RATING	GAS APPL. CAT.	MATERIAL
CONDENSING FURNACE	INTAKE	-	-	-	IV	PVC. ASTM D1785 SCH 40 PIPE, ASTM D2466 SCH 40 FITTINGS, ASTM D2564 CEMENT
	VENT	-	-	-	IV	(3) (8)
RGUH	INTAKE	-	-	-	-	24 GAUGE GALVANIZED STEEL, -1" W.C.
	VENT INSIDE	-	-	POSITIVE	III	ASTM A527 22 GA GALV. STEEL (1) (4)
	VENT OUTSIDE	UL 441	400 DEG F	NEU., NEG.	II	B VENT (ALUM. INNER PIPE, AIR SPACE, GALV. STEEL OUTER PIPE) (2)
DIRECT VENT SEALED COMB. UNIT HEATERS	INTAKE	-	-	-	-	24 GAUGE GALVANIZED STEEL, -1" W.C.
	VENT INSIDE	-	-	POSITIVE\	III	ASTM A527 22 GA GALV. STEEL (1) (4)
	VENT OUTSIDE	UL 441	400 DEG F	NEU., NEG.	II	B VENT (ALUM. INNER PIPE, AIR SPACE, GALV. STEEL OUTER PIPE) (2)
RGUH IN WASHBAY	INTAKE	-	-	-	-	18 GAUGE STAINLESS STEEL, -1" W.C. (6)
	VENT INSIDE	-	-	POSITIVE	III	SELKIRK PS DOUBLE WALL VENT, STAINLESS STEEL, 1" AIR SPACE
PRESSURE WASHERS	VENT	UL 1738	480 DEG F	POSITIVE	III	SELKIRK PS DOUBLE WALL VENT, ALUMINIZED STEEL, 1" AIR SPACE

- MAINTAIN UL LISTED CLEARANCES TO COMBUSTIBLE MATERIALS.
- INSTALL IN ACCORDANCE WITH WISCONSIN CHAPTER SPS 365.0501 [NFPA 54 FOR GAS].
- TERMINATE STACKS AT A MINIMUM 3' ABOVE ROOF AND 2' HIGHER THAN ANY RIDGE, PEAK OR PARAPET WITHIN 10'.

(1) SEAL JOINTS WITH TEMPERATURE RESISTANT SEALANT.
(2) PROVIDE UL LISTED STAINLESS STEEL SUPPORT ACCESSORIES. (CARBON STEEL ACCESSORIES ARE NOT PERMITTED)
(3) INSULATE VENT WITH 1/2" ELASTOMERIC CLOSED CELL INSULATION WHEN LOCATED IN ATTIC AND UNHEATED SPACES.
(4) INSULATE EXHAUST VENT WITH 1" RIGID F.G. INSULATION WHEN LOCATED IN ATTIC AND UNHEATED SPACES OR IF VENT LENGTH EXCEEDS 15'.
(6) WELDED JOINTS.
(8) VENT PIPE SHALL COMPLY WITH UL 1738, U.S. STANDARD FOR VENTING GAS-BURNING APPLIANCES CATEGORIES II, III, IV AND WITH EQUIPMENT MFRS INSTALLATION INSTRUCTIONS.

MAKE-UP AIR UNIT SCHEDULE (MAU)

NO.	TYPE	SUPPLY FAN CFM MAX	CFM MIN.	OA CFM MAX	OA CFM MIN.	EXT. SP	DRIVE TYPE	MAX BHP	MOTOR HP	MOD. TYPE	HEATING CFM	EAT F	LAT F	MBH IN	MBH OUT	BURNER MOD.	FILTERS	ACCESS SIDE (Z)	ELECTR. CONN.	ELECTRICAL MCA	MOP	VOLT/ PHASE	NEMA 3R DISC	CONTROLS UNIT	GAS	DAMPER	WEIGHT (LBS)	MODEL	ACCESSORIES	REMARKS
1	DIRECT	14,200	14,200	14,200	14,200	.75	DIRECT	7.6	10	VFD (1)(21)	14,200	-15	81	1,600	1,472	ELECT. MOD.	(10)	RIGHT	RIGHT (24)	18.4	30	460/3	NO	(31)	(40)	(50)	2,000	DGX-P127-H32	(63)(65)(67)	GREENHECK
2	DIRECT	14,200	14,200	14,200

ELECTRIC BASEBOARD SCHEDULE (E.B.B.)

NO.	MBH	KW	CABINET HEIGHT	CABINET DEPTH	CABINET LENGTH	HEIGHT A.F.F.	CONTROL	MODEL	REMARKS
1	3.4	1.00	6-3/4"	2.8"	48"	6"	REMOTE TSTAT (1)	BKOC	"BERKO"
2	3.4	1.00	6-3/4"	2.8"	48"	6"	REMOTE TSTAT (1)	BKOC	"BERKO"

- ACCEPTABLE MANUFACTURERS: BERKO, Q-MARK, MARKEL, TRANE.
- MIN. 22 GAUGE STEEL ENCLOSURE WITH BAKED ENAMEL FINISH (COLOR FROM MFR'S STD CHART), 18 GAUGE REMOVABLE FRONT COVER, AND BLANK SECTIONS,ADJUSTABLE END CAPS, ADJUSTABLE JOINER SECTIONS AND INSIDE AND OUTSIDE CORNER SECTIONS FOR A COMPLETE INSTALLATION.
- BUILT-IN PREWIRED AUTOMATIC RESET OVERHEATING PROTECTION, DISCONNECT SWITCH, AND RACEWAY AND JUNCTION BOXES AT THE ENDS.

(1) PROVIDE TRANSFORMER RELAY FOR REMOTE THERMOSTAT CONTROL - SEE SPECIFICATIONS.

LOUVER SCHEDULE (L.)

NO.	SERVES	APPLICATION	CFM	SIZE D	SIZE W	SIZE H	FREE AREA S.F.	MAX. APD " W.C.	SCREEN	MAT'L	FRAME	FINISH	MODEL	REMARKS
1	FIRE PUMP	O.A. NON-DUCT	2,000	6	34	36	4.1	0.04	BIRD	ALUM.	CHANNEL	(1)	EME520DDE	"RUSKIN" (2)
2	GF-1 AND ERU-1	O.A. DUCTED	1,800	6	36	40	5.3	0.02	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
3	PARTS	O.A. NON-DUCT	2,500	6	36	40	5.3	0.04	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
4	PARTS	E.A. DUCTED	2,500	6	36	40	5.3	0.04	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
5	OFFICE	E.A. DUCTED	1,000	6	18	24	1.2	0.11	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
6	WASH BAY	E.A. DUCTED	3,000	6	36	30	3.4	0.12	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
7	TRUCK STORAGE	E.A. DUCTED	30,000	6	84	96	32.8	0.13	BIRD	ALUM.	CHANNEL	(1)	EME520DDE	"RUSKIN" (2)
8	TRUCK STORAGE	E.A. DUCTED	1,500	6	24	24	1.6	0.13	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
9	COLD STORAGE	E.A. DUCTED	4,300	6	32	40	4.6	0.13	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
10	COLD STORAGE	O.A. NON-DUCT	4,300	6	48	52	9.7	0.03	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)
11	TRUCK STORAGE	E.A. DUCTED	1,500	6	24	24	1.6	0.13	BIRD	ALUM.	CHANNEL	(1)	ELF6375DX	"RUSKIN" (2)

- ACCEPTABLE MANUFACTURERS: GREENHECK, RUSKIN, CARNES, TITUS, AMERICAN WARMING AND VENTILATING, IAC, CESCO, POTTORFF.
- BIRD SCREEN: 1/2"x 1/2" 19 GAUGE GALVANIZED WIRE.
- INSECT SCREEN: 18x16 ALUMINUM MESH.
- INTAKE LOUVERS SHALL MEET CLASS A REQUIREMENTS WHEN RATED ACCORDING TO AMCA 511-99 AND TESTED PER AMCA 500-L-99.

(1) PROVIDE WITH PRIMED FINISH. FINISH PAINTING TO BE BY OTHERS.
(2) PROVIDE WITH EXTENDED SILL.

ROOF HOOD SCHEDULE (RH)

NO.	SERVICE	CFM	THROAT SIZE W	THROAT SIZE L	MAX. APD " WC.	MAT'L	DAMPER	PAINTED FINISH	SCREEN	INSUL. CURB HEIGHT (4)	MODEL	REMARKS
1	O.A. INTAKE	31,500	72	90	0.06	ALUM.	-	-	BIRD	24	FGI	"GREENHECK" (3)

- ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, CARNES, ACME, TWIN CITY FAN.
- BIRD SCREEN: 1/2"x 1/2" 19 GAUGE GALVANIZED WIRE.

(3) PROVIDE "RPS" METAL BUILDING ROOF CURB OR EQUAL. CONFIRM METAL ROOF TYPE AND PITCH.
(4) DUCTWORK SHALL BE CONTINUOUS THRU CURB. IF NO DUCTWORK SHOWN, CURB SHALL HAVE INTERIOR LINER TO CONCEAL INSULATION

ROOF CAP SCHEDULE

NO.	SERVICE	TYPE	THROAT	CFM	APD.	SCREEN	DAMPER	MODEL	REMARKS
1	PARTS	PITCHED	24	2,500	0.07	INSECT	NO	GRSR	"GREENHECK" (1)(2)(3)
2	ERU-1	PITCHED	16	600	0.02	INSECT	NO	GRSR	"GREENHECK" (1)(2)(3)

- ACCEPTABLE MANUFACTURERS: GREENHECK, CARNES, AMERICAN ALDES, DRYER JACK.

(1) PROVIDE 18" HIGH ROOF CURB.
(2) PROVIDE "RPS" METAL BUILDING ROOF CURB OR EQUAL. CONFIRM METAL ROOF TYPE AND PITCH.
(3) COLOR PROVIDED BY ARCHITECT.

WALL CAP SCHEDULE (W.C.)

NO.	SERVICE	THROAT (IN.)	MAX. CFM	MAX APD (IN. WC)	SCREEN	DAMPER	MODEL	REMARKS
1	INTAKE	4	60	0.08	-	NO	WC-4	"GREENHECK"

- ACCEPTABLE MANUFACTURERS: GREENHECK, CARNES, TWIN CITY FAN.

SUPPLY GRILLE SCHEDULE (S.G.)

NO.	TYPE	CFM RANGE	NECK/ FACE SIZE	INLET DUCT DIA.	MAT'L	VOL. DMPR	FINISH	FRAME	THROW	MODEL	REMARKS
2S	DBL DEFL.	SEE DWG	(2)	-	STEEL	(1)	WHITE	SURFACE MOUNT	DBL DEFL. (4)	520	"PRICE"
2SP	DBL DEFL.	SEE DWG	(2)	-	STEEL	(1)	PRIMED	SURFACE MOUNT	DBL DEFL. (4)	520	"PRICE"
4-6	PLAQUE	0-75	24 X 24	6"	STEEL	(1)	WHITE	LAY-IN (3)	4-WAY	SPD	"PRICE"
4-8	PLAQUE	76-275	24 X 24	8"	STEEL	(1)	WHITE	LAY-IN (3)	4-WAY	SPD	"PRICE"
4-10	PLAQUE	276-375	24 X 24	10"	STEEL	(1)	WHITE	LAY-IN (3)	4-WAY	SPD	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR, GREENHECK.

(1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: SG1S-8D IS SG1S-8 WITH A DAMPER.
(2) NECK SIZE INDICATED ON PLAN AT GRILLE IDENTIFICATION.
(3) NUMBER OF THROW DIRECTION INDICATED ON PLAN BY GRILLE SHADING. SHADED QUADRANT DOES NOT HAVE AIRFLOW.
(4) FRONT BLADES IN THE HORIZONTAL DIRECTION.

RETURN GRILLE SCHEDULE (RG)

NO.	TYPE	MAX. CFM	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	VOL. DMPR	FINISH	FRAME	MODEL	REMARKS
1-6	LOUVERED	75	22 X 10	6"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
1-8	LOUVERED	250	22 X 10	8"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
1-10	LOUVERED	450	22 X 10	10"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
1-12	LOUVERED	750	22 X 22	12"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR, GREENHECK.

(1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: RG1S-8D IS RG1S-8 WITH A DAMPER.
(3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION.

TRANSFER GRILLE SCHEDULE (TG)

NO.	TYPE	MAX CFM	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	FINISH	FRAME	MODEL	REMARKS
1-8	LOUVERED	170	22 X 10	8"	STEEL	WHITE	LAY-IN (3)	530	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR, GREENHECK.

(3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION.

EXHAUST GRILLE SCHEDULE (EG)

NO.	TYPE	CFM RANGE	NECK/ FACE SIZE	FLEX. DUCT. DIA.	MAT'L	VOL. DMPR	FINISH	FRAME	MODEL	REMARKS
1-8	LOUVERED	76-250	22 X 10	8"	STEEL	(1)	WHITE	LAY-IN (3)	530	"PRICE"
1S-8	LOUVERED	76-250	12 X 12	8"	STEEL	(1)	WHITE	SURFACE MOUNT	530	"PRICE"
2S	LOUVERED	SEE DWG.	(2)	-	STEEL	(1)	WHITE	SURFACE MOUNT	530 (4)	"PRICE"
3-8	LOUVERED	76-250	22 X 10	8"	ALUM.	(1)	WHITE	LAY-IN (3)	630	"PRICE"

- ACCEPTABLE MANUFACTURERS: PRICE, TITUS, CARNES, METALAIRE, ANEMOSTAT, KRUEGER, NAILOR, GREENHECK.

(1) VOLUME DAMPER AT THE GRILLE INDICATED BY A "D" AFTER THE GRILLE DESIGNATION. EXAMPLE: EG1S-8D IS EG1S-8 WITH A DAMPER.
(2) NECK SIZE INDICATED ON PLAN AT GRILLE IDENTIFICATION.
(3) SURFACE MOUNT BORDER WITH NO SCREW HOLES FOR LAY-IN APPLICATION.
(4) BLADES IN HORIZONTAL DIRECTION.

INLINE FAN SCHEDULE (IF)

NO.	AREA SERVED	CFM	SP " WC	MAX. BHP	MOTOR HP	FAN RPM	DRIVE	VFD	DISC.	MAX. SONES	FAN ORIENTATION	DISCH. CONFIG. (5)	INSUL. HOUSING	GUARD INLET	GUARD OUTLET	MODEL	REMARKS
1	ELECTRICAL	1,300	0.30	0.13	3/4	725	DIRECT (1B)	NO	(3)	4.3	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-160-VG	GREENHECK (10)
2	IT	800	0.30	0.08	1/2	968	DIRECT (1B)	NO	(3)	4.3	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-120-VG	GREENHECK (10)
3	PARTS	2,500	0.40	0.51	3/4	1,118	DIRECT (1B)	NO	(3)	11.1	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-160-VG	GREENHECK (10)
4	FIRE PUMP	2,000	0.40	0.34	3/4	969	DIRECT (1B)	NO	(3)	8.3	VERTICAL	IN-LINE	NO	YES	NO	SQ-160-VG	GREENHECK (10)
5	OFFICE RELIEF	1,000	0.03	0.12	1/4	1,392	DIRECT (1B)	NO	(3)	8.1	HORIZONTAL	IN-LINE	YES	NO	NO	SQ-100-VG	GREENHECK
6	WASH BAY	3,000	0.40	0.75	1	1,281	DIRECT (1B)	NO	(3)	14.1	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-160-VG (B)(9)	GREENHECK (10)
7	TRUCK STORAGE	14,200	0.40	4.62	7 1/2	611	BELT (6)	NO	(3)	24.0	VERTICAL	INLINE	NO	YES	NO	BSQ-360	GREENHECK
8	TRUCK STORAGE	14,200	0.40	4.62	7 1/2	611	BELT (6)	NO	(3)	24.0	VERTICAL	IN-LINE	NO	YES	NO	BSQ-360	GREENHECK
9	COLD STORAGE	300	0.40	0.04	1/15	1,736	DIRECT (1A)	NO	(3)	6.1	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-7-VG	GREENHECK
9 ALT	COLD STORAGE	600	0.40	0.09	1/3	2,325	DIRECT (1A)	NO	(3)	10.7	HORIZONTAL	IN-LINE	NO	YES	NO	SQ-7-VG	GREENHECK (11)
10	COLD STORAGE	4,000	0.50	1.16	1 1/2	966	BELT (6)	NO	(3)	15.3	HORIZONTAL	IN-LINE	NO	NO	NO	BSQ-200	GREENHECK
10 ALT	COLD STORAGE	8,400	0.50	2.12	3	618	BELT (6)	NO	(3)	16.3	HORIZONTAL	IN-LINE	NO	NO	NO	BSQ-300	GREENHECK (11)

- ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, TWIN CITY, FANTECH.
- PERMANENTLY LUBRICATED SEALED BALL BEARING MOTORS MOUNTED ON VIBRATION ISOLATORS OUT OF THE AIRSTREAM. SEE MOTOR SPEC FOR ADDITIONAL REQUIREMENTS.
- FAN SHALL BEAR THE AMCA CERTIFIED RATINGS SEAL FOR SOUND AND AIR PERFORMANCE.
- PROVIDE NEOPRENE ISOLATOR FOR FANS WITH MOTORS LESS THAN OR EQUAL TO 1/3 HP, SPRING ISOLATOR FOR FANS WITH MOTORS GREATER THAN 1/3 HP.

MOTOR

(1A) PROVIDE DIRECT DRIVE FANS WITH ECM MOTOR. AIRFLOW SET MANUALLY AT MOTOR.
(1B) PROVIDE DIRECT DRIVE FANS WITH ECM MOTOR, ACCEPT A 0-10 VDC SIGNAL.

DISCONNECT

(3) PROVIDE PRE-WIRED DISCONNECT SWITCH OR TWIST LOCK PLUG.

MISC

(5) IN DIRECTION OF AIRFLOW.
(6) BELT DRIVE FANS WITH MOTOR OUTSIDE OF THE AIRSTREAM, BELT GUARD, INSULATED MOTOR COVER.
(8) PROVIDE WITH TEFC MOTOR.
(9) PROVIDE FAN WITH HI-PRO POLYESTER COATING, SUITABLE FOR CORROSIVE ENVIRONMENT, AND SPRING ISOLATOR.
(10) PROVIDE VARI-GREEN CONTROL, INDOOR AIR QUALITY TEMPERATURE AND HUMIDITY CONTROLLER.
(11) PART OF ALTERNATE BID 4.

CABINET EXHAUST FAN SCHEDULE (C.E.F.)

NO.	AREA SERVED	TYPE	CFM	S.P. W.C.	RPM	MOTOR WATTS	MAX. SONES	DUCT COLLAR SIZE (IN.)	MODEL	TERMINATION TYPE	TERMINATION THROAT (INCHES)	TERMINATION APD.	TERMINATION SCREEN	TERMINATION DAMPER	MODEL	REMARKS
1	BREAKROOM	CEILING	200	0.38	1000	59	3.5	8	SP-A250 (3)(7)	WALL	8	0.05	BIRD	NO	WC-8	"GREENHECK" (2)(5)

- ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, PENN-BARRY, CARNES, TWIN CITY FAN.
- PROVIDE SPEED CONTROL MOUNTED ON FAN HOUSING. INTERNAL PLUG-IN DISCONNECT AND BACKDRAFT DAMPER.

(2) FAN WITH ACOUSTIC INSULATION AND HANGING VIBRATION ISOLATOR KIT.
(3) PROVIDE WHITE ALUMINUM GRILLE.

DESTRATIFICATION FAN SCHEDULE (D.F.)

NO.	CFM	FAN DIA.	BLADE HEIGHT	RPM	MAX. AMPS	HP	WATTS	PROTECTIVE CAGE	SECONDARY SUPPORT CABLE	WEIGHT (LBS.)	MODEL	REMARKS
1	110,000	16'	23'-0"	81	-	3/4	-	NO	YES	200	DS-6	"GREENHECK" (2)
2	110,000	16'	23'-0"	81	-	3/4	-	NO	YES	200	DS-6	"GREENHECK" (2)
3	110,000	16'	23'-0"	81	-	3/4	-	NO	YES	200	DS-6	"GREENHECK" (2)

- ACCEPTABLE MANUFACTURERS: KELLEY, MACRO-AIR.
- PROVIDE WITH DOWNROD LENGTH AS REQUIRED TO MEET SCHEDULED BLADE HEIGHT.
- PROVIDE HVLS CONTROLS KITS, INCLUDES TWO TEMPERATURE SENSORS, CONTROLS PANEL AND ADVANCED TOUCHSCREEN WITH SURFACE MOUNTING KIT.
  - WINTER MODE: FAN TO MODULATE TO MAINTAIN 10 DEG F DIFFERENCE BETWEEN FLOOR AND CEILING TEMPERATURES. MAX WINTER SPEED OF 50%.
  - SUMMER MODE: TURN ON FAN WHEN ROOM TEMPERATURE RISES ABOVE 75 DEG F. MODULATE FAN FROM MIMIMUN SPPED TO MAXIMUM SPEED AS ROOM TEMPERATURE RISES FROM 75 DEG F TO 85 DEG F.

(2) VFD MOUNTED AT FAN, IN LINE FUSING WITH DISCONNECT.
(5) PROVIDE IFAN NETWORK CONTROLS TO PROVIDE CENTRALIZED FAN CONTROL OF ALL FANS. PROVIDE 4 WIRE CABLES TO FANS.

GAS UNIT HEATER SCHEDULE (GUH)

NO.	CFM	ESP " W.C.	MBH IN	MBH OUT	MOTOR HP	VOLT. (7)	DRIVE	CONTROL	TYPE	VENT DIA.	COMB. INLET DIA.	WGHT	MODEL	REMARKS
1	2,140	0	150	123	1/6	120	DIRECT	(3)	SEP. COMBUSTION	4" (6)	-	200	PTX	MODINE
2	3,995	0	250	207	1/3	120	DIRECT	(3)	SEP. COMBUSTION	6" (6)	-	350	PTX	MODINE (8)
3	3,995	0	250	207	1/3	120	DIRECT	(3)	SEP. COMBUSTION	6" (6)	-	350	PTX	MODINE (8)

- ACCEPTABLE MANUFACTURERS: REZNOR, MODINE, TRANE.

(2) ALL STAINLESS STEEL CONSTRUCTION.
(3) CONTROL BY REMOTE THERMOSTAT - SEE SPECIFICATIONS.
(5) PROVIDE STAINLESS STEEL HEAT EXCHANGER AND VERTICAL CONCENTRIC VENT KIT.
(6) PROVIDE LISTED CATEGORY III VENT TERMINAL CAP, SEE PLANS FOR HORIZONTAL OR VERTICAL.
(7) PROVIDE STEPDOWN TRANSFORMER AS REQUIRED.
(8) PROVIDE WITH VERTICAL LOUVERS, 60 DEG DOWNTURN NOZZLE, DUCT FLANGE.

RADIANT GAS UNIT HEATER SCHEDULE (RGUH)

NO.	FIRING TYPE	MBH INPUT	STAGES	MTG. HT. (FT.)	MTG. ANGLE (DEG.)	TUBE LENGTH (FT.)	NO. OF SIDE SHIELDS	STARTING/ RUNNING AMPS	WEIGHT (LBS.)	MODEL	REMARKS
1	INDIRECT	175	2	23'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
2	INDIRECT	175	2	20'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
3A	INDIRECT	175	2	23'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
3B	INDIRECT	175	2	20'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
4A	INDIRECT	175	2	23'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
4B	INDIRECT	175	2	20'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
5	INDIRECT	175	2	23'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
6	INDIRECT	175	2	20'-6"	0	40	0	4.8 / 1.1	250	HL3-40-175	"DETROIT RADIANT" (1)(3)
7A	INDIRECT	125	2	20'-0"	0	30	1	4.8 / 1.1	200	HL2-30-125-SS	"DETROIT RADIANT" (1)(3)
7B	INDIRECT	125	2	20'-0"	0	30	1	4.8 / 1.1	200	HL2-30-125-SS	"DETROIT RADIANT" (1)(3)

- ACCEPTABLE MANUFACTURERS: DETROIT RADIANT, REZNOR.
- PROVIDE WITH "U" AND "L" HEAT EXCHANGER TUBES PER PLAN, REFLECTOR CAP COVERS.

(1) PROVIDE POLISHED ALUM. REFLECTOR, COATED ALUMINIZED STEEL COMB. CHAMBER AND TUBES, 0.95 EMISSIVITY BLACK COATING.
(2) PROVIDE POLISHED 304 STAINLESS STEEL REFLECTOR AND END CAPS, COATED 409 STAINLESS STEEL COMB. CHAMBER, COATED 304 STAINLESS STEEL TUBES, STAINLESS STEEL HANGARS.
(3) PROVIDE HURP RELAYS FOR COMBINED CONTROL - SEE SPECIFICATIONS.

ELECTRIC REHEAT COIL SCHEDULE (E.R.C.)

NO.	CFM	EAT DEG F	MIN. LAT DEG F	MAX. APD " W.C.	MIN. MBH	COIL KW	VOLTAGE	SIZE W	SIZE H	REMARKS
1	1,500	43.1	55	0.1	19.4	6	208	22	16	GREENHECK.

- ACCEPTABLE MANUFACTURERS: BRASCH, INDEECO, MARKEL, GREENHECK.
- FLANGED OPEN COIL, AUTOMATIC PRIMARY AND MANUAL SECONDARY RESET THERMAL CUTOUT, FUSED CONTROL CIRCUIT TRANSFORMER, AIRFLOW PROVING SWITCH, DOOR INTERLOCK DISCONNECT SWITCH, AND SUBCIRCUIT OVERCURRENT PROTECTION FOR COILS GREATER THAN 48 AMPS. CONTROL PANEL IN A NEMA 1 ENCLOSURE WITH HINGED ACCESS DOOR.
- PWM WITH SOLID STATE RELAY OR SCR CONTROL BY COIL MFR TO ACCEPT A 0-10 VDC OR 4-20 MA SIGNAL FROM CONTROL CONTRACTOR TO VARY COIL CAPACITY.

ELECTRIC UNIT HEATER SCHEDULE - (E.U.H.)

NO.	CFM	HTG KW	MBH	EAT F	LAT F	THERMOSTAT	HEIGHT ABOVE FLOOR	DIFFUSER	RPM	MOTOR H.P.	MODEL	REMARKS
1	350	3	10.2	60	87	REMOTE MTD. (2)	10'-4"	-	1600	1/100	HJHAA	"BERKO"
2	350	3	10.2	60	87	REMOTE MTD. (2)	10'-0"	-	1600	1/100	HJHAA	"BERKO"

- ACCEPTABLE MANUFACTURERS: Q-MARK, MARKEL, BERKO, TRANE.
- PROVIDE ALL UH'S WITH PREWIRED DISCONNECT SWITCH, PREWIRED AUTOMATIC RESET THERMAL OVERLOAD PROTECTION, PREWIRED CONTACTORS AND CONTROL CIRCUIT TRANSFORMERS, FAN DELAY RELAY, AND TOTALLY ENCLOSED MOTOR WITH PERMANENTLY LUBRICATED BEARINGS.
- EXPOSED CABINET SURFACE SHALL BE MIN. 18 GAUGE WITH BAKED ENAMEL FINISH.

(2) PROVIDE WITH 24 VOLT CONTROL TRANSFORMER FOR USE WITH A REMOTE THERMOSTAT. PROVIDE WITH A HONEYWELL MODEL CT50K1028E OR EQUIVALENT LOW-TEMPERATURE THERMOSTAT (TEMPERATURE RANGE FROM 35 DEG. F TO 85 DEG. F.) INSTALL THERMOSTAT ON SIDE OF UNIT HEATER.

ELECTRIC CABINET UNIT HEATER SCHEDULE - (E.C.U.H.)

NO.	CFM	HTG KW	MBH	EAT F	LAT F	THERMOSTAT	CABINET RECESS DEPTH	CABINET HGT. AFF	RPM	VOLTS	AMPS	MODEL	REMARKS
1	250	3	10.2	60	98	(1)	0"	1'-0"	1,550	208	15	CUH 935-FF	"BERKO"

- ACCEPTABLE MANUFACTURERS: Q-MARK, MARKEL, BERKO, TRANE.
- UNITS SCHEDULED AT HIGH SPEED.
- PROVIDE ALL CUH'S WITH 2 SPEED FAN SWITCH, PREWIRED DISCONNECT SWITCH, PREWIRED AUTOMATIC RESET THERMAL OVERLOAD PROTECTION FOR HTG. ELEMENT, FAN MOTOR THERMAL OVERLOAD PROTECTION, THROW AWAY FILTER.
- EXPOSED CABINET SURFACE SHALL BE MIN. 16 GAUGE WITH BAKED ENAMEL FINISH, COLOR MFR'S STANDARD WHITE FINISH.

(1) PROVIDE WITH FACTORY INSTALLED TRANSFORMER RELAY TO ACCEPT LOW VOLTAGE SIGNAL FROM REMOTE THERMOSTAT - SEE SPECIFICATIONS.

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTAGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. ● HORTINVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
H4.1

HVAC SCHEDULES

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ELECTRICAL SPECIFICATIONS

DIVISION 26 ELECTRICAL

26 05 00 BASIC ELECTRICAL REQUIREMENTS

A. SEE DIVISION 00 PROCUREMENT AND CONTRACTING AND DIVISION 01 GENERAL REQUIREMENT FOR ADDITIONAL REQUIREMENTS.
B. ELECTRICAL CONTRACTOR SHALL VERIFY REQUIREMENTS FOR TEMPORARY LIGHTING AND POWER WITH GENERAL CONTRACTOR AND INCLUDE IN HIS SCOPE OF WORK WHEN DIRECTED BY G.C. INSTALL IN ACCORDANCE WITH ALL CODE AND OSHA REQUIREMENTS FOR CONSTRUCTION PROJECTS.
C. SUBSTITUTIONS
   1. SEE DIVISION 01 23 00 PRODUCT SUBSTITUTION PROCEDURES FOR ADDITIONAL REQUIREMENTS.
   2. CONTRACTOR SHALL PROVIDE ALL SUPPORTING DATA AND ASSUME THE BURDEN OF PROOF THAT ANY SUBSTITUTE IS EQUIVALENT AS TO APPEARANCE, CONSTRUCTION, CAPACITY, AND PERFORMANCE. THE JUDGMENT OF EQUIVALENCY SHALL BE MADE BY THE ENGINEER AT THE TIME OF SHOP DRAWING REVIEW, NOT DURING BIDDING.
   3. WHERE SUBSTITUTE EQUIPMENT REQUIRES REDESIGN OF ANY PART OF THE PROJECT, THE COST OF REDESIGN AND ADDITIONAL COSTS OF THE WORK SHALL BE PAID BY THE CONTRACTOR. REDESIGN SHALL BE SUBJECT TO THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION OVER THE WORK INCLUDING THE ARCHITECT/ENGINEER.
D. SHOP DRAWINGS, PRODUCT DATA, TEST RESULTS AND SAMPLE SUBMITTALS:
   1. SEE DIVISION 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES FOR ADDITIONAL REQUIREMENTS.
   2. ELECTRICAL CONSTRUCTION ADMINISTRATION SUBMITTAL LIST:
      a. PANELBOARDS
      b. SURGE PROTECTION DEVICES
      c. POWER METER
      d. GENEARATOR SET
      e. LIGHT FIXTURES
      f. LIGHTING CONTROL PANEL
      g. OCCUPANCY SENSORS
      h. FIRE ALARM
   3. INCLUDE OUTLINE AND GENERAL ARRANGEMENT DRAWINGS, DATA SHEETS AND WIRING DIAGRAMS.
   4. SHOP DRAWINGS SHALL CLEARLY INDICATE SPECIFIC MODEL BEING PROVIDED WHERE CUT SHEETS SHOW MULTIPLE MODELS.
   5. LIGHT FIXTURE SHOP DRAWINGS SHALL CLEARLY INDICATE INDENTIFICATION TAG AS INDICATED IN LIGHT FIXTURE SCHEDULE. ALL OPTIONS, ACCESSORIES AND FINISHES BEING PROVIDED SHALL BE CLEARLY INDICATED.
   6. SYSTEM WIRING RISER DIAGRAMS SHALL INDICATE ALL COMPONENTS SHOWN ON THE FLOOR PLANS, TYPE AND TERMINATION POINT OF CABLE TO EACH COMPONENT.
   7. PROJECT CLOSEOUT
      a. MARK RECORD DRAWINGS ON A FINAL SET OF DRAWINGS WHICH INCLUDES ALL REVISIONS.
   8. PROVIDE RECORD DRAWINGS TO THE OWNER IN AUTOCAD AND PDF FORMAT.
E. FINISHING AND PAINTING
   1. SEE DIVISION 09 91 00 FINISH AND PAINTING FOR ADDITIONAL REQUIREMENTS.
   2. PREPARE EXPOSED CONDUIT, FITTINGS, SUPPORTS, AND ACCESSORIES FOR FINISH PAINTING IN ROOMS THAT WILL HAVE CEILING AND STRUCTURE PAINTED.
   3. E.C. SHALL PROVIDE A FACTORY OR FIELD APPLIED PRIME AND FINISH COAT OF COLOR SELECTED BY THE OWNER'S REPRESENTATIVE TO ALL ROOF MOUNTED EQUIPMENT AND OTHER EXTERIOR MATERIALS, INCLUDING SUPPORT HARDWARE.
   4. COORDINATE WORK WITH THE PAINTERS SO THAT ALL EQUIPMENT IS INSTALLED PRIOR TO PAINTING. E.C. SHALL PAINT ITEMS IF NOT IN PLACE PRIOR TO NORMAL ROUTINE PAINTING.
   5. IF FINISH BECOMES RUSTED, CORRODED, SCRATCHED, OR FLAKED DURING STORAGE OR INSTALLATION, REFINISH THE EQUIPMENT TO THE SATISFACTION OF THE OWNER.
   6. WHERE THE ELECTRICAL CONTRACTOR IS REQUIRED TO PAINT, THE PAINTING SHALL BE DONE IN ACCORDANCE WITH THE PAINTING PORTION OF THE ARCHITECTURAL SPECIFICATION.
F. DETAILS AND SCHEDULES ARE SHOWN TO AID THE CONTRACTOR AND ARE NOT MEANT TO BE INCLUSIVE OF ALL DEVICES. PROVIDE REQUIRED EQUIPMENT AND ACCESSORIES FOR A COMPLETE INSTALLATION.
G. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND REQUIREMENTS. PROVIDE ADDITIONAL WORK AND MATERIALS AS REQUIRED.
H. COORDINATE INSTALLATION OF ELECTRICAL WORK WITH THE OTHER CONTRACTORS TO AVOID CONFLICTS WITH OTHER WORK.
I. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITION AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION.
J. COMPLY WITH THE REQUIREMENTS OF NFPA; NATIONAL, STATE AND LOCAL ELECTRICAL CODES AND LOCAL UTILITY REGULATIONS.
K. MATERIAL SHALL BEAR U.L. AND/OR OTHER APPROVED AGENCY LISTING.
L. INSTALL MOTOR STARTERS/VFDS FURNISHED BY HVAC AND PLUMBING CONTRACTORS, AND WIRE FROM THE POWER SOURCE TO THE STARTER/VFD AND FROM THE STARTER/VFD TO THE MOTOR.
M. VERIFY ELECTRICAL SIZE AND CONNECTION REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS WITH FINAL SHOP DRAWINGS.
N. CONTRACTOR SHALL CALL LOCAL UTILITY LOCATING SERVICE AND CONDUCT A PRIVATE UTILITY LOCATE TO ENSURE THAT ALL ELECTRICAL FEEDERS, BRANCH CIRCUITS, LOW VOLTAGE CABLES AND FIBER OPTIC HAVE BEEN LOCATED BEFORE STARTING SITE DEMOLITION. DESIGN ENGINEER AND GENERAL CONTRACTOR SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION.
O. PROJECT COMPLETION
   1. CLEAN FIXTURES AND EQUIPMENT AND LEAVE IN PROPER WORKING CONDITION AT THE TIME OF FINAL CLEAN-UP.
P. PROVIDE OPERATING INSTRUCTIONS AS FOLLOWS:
   1. FOUR (4) HOURS FOR BUILDING ELECTRICAL SYSTEM.
   2. FOUR (4) HOURS FOR FIRE ALARM SYSTEM. THE SUPPLIER SHALL REVIEW THE FIRE ALARM PANEL SEQUENCES OF OPERATION.
   3. TWO (2) HOURS FOR POWER METER SYSTEM.
   4. TWO (2) HOURS FOR LIGHTING CONTROL SYSTEM.
   5. MAINTAIN A RECORD OF OPERATING INSTRUCTION PERIODS.
A. LOCATION
   1. THE ARCHITECT SHALL RESERVE THE RIGHT TO MAKE OUTLET POSITION CHANGES UP TO 10' BEFORE INSTALLATION WITHOUT ANY ADDITIONAL COST TO PROJECT.
   2. DO NOT LOCATE OUTLETS OR EQUIPMENT WHERE THE USEFULNESS AND/OR OPERATION WILL BE AFFECTED BY THE WORK OF OTHER TRADES, DOOR SWING, COUNTER, EQUIPMENT, ETC.
B. ACCESS
   1. INSTALL EQUIPMENT, JUNCTION BOXES, PULL BOXES AND ACCESSORIES TO PERMIT ACCESS WITHOUT RELOCATING INSTALLED OR YET TO BE INSTALLED EQUIPMENT.
   2. ACCESS PANELS
      a. FURNISH ACCESS PANELS OF ADEQUATE SIZE TO PERMIT SERVICE OF CONCEALED DEVICES. PANELS SHALL BE SUITABLE FOR INSTALLATION IN THE MATERIAL FORMING THE FINISHED SURFACE, WITH FLUSH METAL FRAME, FLUSH HINGED STEEL DOOR, FLUSH SCREWDRIVER OPERATED LATCH.
      b. PANELS UL LISTED TO CONFORM TO THE FIRE RATING OF THE SURFACE INSTALLED IN.
      c. TURN ACCESS PANEL OVER TO CONTRACTOR SKILLED IN THE CONSTRUCTION OF THE SURFACES INVOLVED FOR INSTALLATION.
      d. ARCHITECT TO APPROVE ACCESS PANEL LOCATION PRIOR TO INSTALLATION OF EQUIPMENT REQUIRING ACCESS.
      e. COORDINATE WITH THE OTHER CONTRACTORS AND WHEREVER PRACTICAL, GROUP DEVICES IN SUCH A MANNER SO AS TO MINIMIZE PANELS.
C. EXCAVATION AND BACKFILL
   1. EXCAVATE AND BACKFILL TRENCHES FOR ELECTRICAL WORK. BACKFILL AND COMPACTION SHALL MEET REQUIREMENTS SPECIFIED ELSEWHERE.
   2. CONDUIT PASSING UNDER FOOTINGS AND FOUNDATION WALLS ARE ALLOWED WHERE PERMITTED BY NEC. MAINTAIN MINIMUM 1-1/2" CLEARANCE UNDER FOOTINGS AND FOUNDATION WALLS. INSTALL UNDERGROUND CONDUITS PER ALL RELEVANT CODE AND REQUIREMENTS PER THE AREAS.
   3. BURY CONDUIT AND CABLE A MINIMUM 36" DEEP WITH 6" SAND BED ABOVE AND BELOW, AND WARNING MARKER TAPE MINIMUM 12" ABOVE. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL INSPECTION OF UNDERGROUND CONDUIT INSTALLATION BEFORE BACKFILLING.

26 05 02 UTILITIES

A. PROVIDE A NEW ELECTRIC SERVICE AS SHOWN ON THE DRAWINGS.
B. ASSIST THE OWNER IN APPLYING FOR ELECTRICAL SERVICE AND COORDINATE NEW SERVICE INSTALLATION WITH THE UTILITY COMPANY. PROVIDE METERING EQUIPMENT, TRANSFORMER PAD, AND CONDUIT ROUGH-IN AS REQUIRED BY THE UTILITY.
C. ELECTRIC SERVICE COST BY OWNER.
D. ELECTRIC UTILITY
   1. WE ENERGIES
   2. CONTACT: JODI BRICE (920) 380-3346

26 05 19 LOW VOLTAGE POWER CONDUCTORS AND CABLES (600V AND LESS)

A. TYPE AND SIZE
   1. NO. 10 & 12: SOLID OR STRANDED COPPER, 600V, THHN/THWN.
   2. NO. 8 TO 3: STRANDED COPPER, 600V, THHN/THWN.
   3. NO. 2 TO 4/0: STRANDED COPPER OR ALUMINUM (ALTERNATE BID "AS"), 600V, THHN/THWN.
   4. 250 KCMIL AND LARGER: STRANDED COPPER OR ALUMINUM (ALTERNATE BID "AS"), 600V, XHHW.
   5. MINIMUM BRANCH CIRCUIT WIRE SIZE NO. 12.
   6. CONTROL WIRING: STRANDED COPPER, MINIMUM NO. 14.
   7. GREEN INSULATION, COPPER STRANDED EQUIPMENT GROUND.
   8. SEE "FEEDERS FROM VARIABLE FREQUENCY DRIVES TO MOTORS" SECTION OF THE SPECIFICATION FOR VFD FED MOTORS.
   9. TYPE AC OR MC CABLE IS ACCEPTABLE WHER CONCEALED IN WALLS AND CEILING AND WHERE ALLOWED BY STATE AND LOCAL CODES AND LOCAL AUTHORITY HAVING JURISDICTION.
B. NEUTRALS AND GROUNDS SHALL BE COLOR CODED PER NEC.
C. WIRE COLORS
   1. 120/208-VOLT AND 120/240-VOLT SYSTEM: PHASE-A (BLACK), PHASE-B (RED), PHASE-C (BLUE).
   2. 277/480-VOLT SYSTEMS: PHASE-A (BROWN), PHASE-B (ORANGE), PHASE-C (YELLOW).
D. VOLTAGE DROP
   1. AT NO POINT IN THE ELECTRICAL SYSTEM SHALL THERE BE MORE THAN 5 PERCENT TOTAL VOLTAGE DROP.
   2. THE CONTRACTOR SHALL APPROPRIATELY INCREASE THE SIZE OF ALL CIRCUIT CONDUCTORS TO LIMIT VOLTAGE DROP TO 2 PERCENT OR LESS FOR FEEDERS, AND 3 PERCENT OR LESS FOR BRANCH CIRCUITS.
   3. VOLTAGE DROP ON BRANCH CIRCUITS FOR LIGHTING OR RECEPTACLES SHALL BE CALCULATED USING 80 PERCENT AMPACITY OF THE BRANCH CIRCUITS OVERCURRENT PROTECTION DEVICE.
E. PROVIDE GROUND CONDUCTOR(S) WITH EVERY BRANCH CIRCUIT AND EVERY FEEDER.
F. WHEN USING ALUMINUM CONDUCTORS: THE CONTRACTOR SHALL SEAL ALL EXPOSED ALUMINUM WHEN CONDUCTOR IS EXPOSED IN A LUG WITH AN ANTI-OXIDANT COMPOUND. THE CONDUCTORS SHALL BE COMPACT CONCENTRIC STRANDED PURE ALUMINUM CONDUCTORS. (ALTERNATE BID "A4"
G. PROVIDE A SEPARATE GROUND CONDUCTOR AND A SEPARATE NEUTRAL CONDUCTOR WHEN AN INDIVIDUAL RECEPTACLE OR PIECE OF EQUIPMENT IS SHOWN WITH AN INDIVIDUAL HOMERUN.
H. PROVIDE A SEPARATE GROUND CONDUCTOR AND SEPARATE NEUTRAL CONDUCTOR FOR EVERY RECEPTACLE BRANCH CIRCUIT FED FROM A PANELBOARD WITH SURGE PROTECTION.
I. PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH LIGHTING BRANCH CIRCUIT THAT SERVES HID, ELECTRONIC FLUORESCENT BALLASTS AND SOLID-STATE LED DRIVERS OR PROVIDE A NEUTRAL CONDUCTOR ONE SIZE LARGER THAN THE LARGEST SOURCE CONDUCTOR WHEN THE NEUTRAL IS SHARED.
J. TESTING: ALL CIRCUITS SHALL BE TESTED FOR PROPER OPERATION AND FUNCTION. REPAIR ALL NON-WORKING, NEWLY INSTALLED, CIRCUITS.
K. VERIFY LUG SIZES AND TERMINATION LOCATION PRIOR TO INSTALLING FEEDERS.

26 05 26 GROUNDING AND BONDING

A. GROUNDING AND BONDING PRODUCTS
   1. GOVERNING REQUIREMENTS: WHERE TYPES, SIZES, RATINGS, AND QUANTITIES INDICATED ARE IN EXCESS OF NEC REQUIREMENTS, MORE STRINGENT REQUIREMENTS AND GREATER SIZE, RATING, AND QUANTITY INDICATIONS GOVERN.
B. WIRE AND CABLE GROUNDING CONDUCTORS
   1. CONFORM TO NEC TABLE 8, EXCEPT AS OTHERWISE INDICATED FOR CONDUCTOR PROPERTIES, INCLUDING STRANDING.
      a. MATERIAL: COPPER.
   2. EQUIPMENT GROUNDING CONDUCTORS: INSULATED WITH GREEN COLOR INSULATION.
   3. GROUNDING-ELECTRODE CONDUCTORS: STRANDED CABLE.
   4. UNDERGROUND CONDUCTORS: BARE, TINNED, STRANDED, EXCEPT AS OTHERWISE INDICATED.
   5. BARE COPPER CONDUCTORS:
      a. SOLID CONDUCTORS: AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) B3.
      b. ASSEMBLY OF STRANDED CONDUCTORS: ASTM B8.
      c. TINNED CONDUCTORS: ASTM B33.
C. MISCELLANEOUS CONDUCTORS
   1. GROUNDING BUS: BARE, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION
   2. BRAIDED BONDING JUMPERS: COPPER TAPE, BRAIDED NO. 3/0 AMERICAN WIRE GAUGE (AWG) BARE COPPER WIRE, TERMINATED WITH COPPER FERRULES.
   3. BONDING STRAPS: SOFT COPPER, 0.05 INCH (1 MILLIMETER) THICK AND 2 INCHES (50 MILLIMETERS) WIDE, EXCEPT AS INDICATED.
D. CONNECTOR PRODUCTS
   1. PRESSURE CONNECTORS: HIGH CONDUCTIVITY PLATED UNITS.
   2. BOLTED CLAMPS: HEAVY-DUTY TYPE.
   3. EXOTHERMIC-WELDED CONNECTIONS: PROVIDED IN KIT FORM AND SELECTED PER MANUFACTURER'S WRITTEN INSTRUCTIONS FOR SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND CONNECTED ITEMS.
E. GROUNDING ELECTRODES
   1. GROUNDING RODS: COPPER-CLAD STEEL.
      a. SIZE: 3/4 INCH BY 120 INCHES.
      b. PLATE ELECTRODES: COPPER, SQUARE OR RECTANGULAR SHAPE. MINIMUM 0.10 INCH THICK, SIZE AS INDICATED.
F. APPLICATION
   1. EQUIPMENT GROUNDING CONDUCTORS: COMPLY WITH NEC ARTICLE 250 FOR TYPES, SIZES, AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, EXCEPT WHERE SPECIFIC TYPES, LARGER SIZES, OR MORE CONDUCTORS THAN REQUIRED BY NEC ARE INDICATED.
      a. INSTALL EQUIPMENT GROUNDING CONDUCTOR WITH CIRCUIT CONDUCTORS FOR ITEMS BELOW IN ADDITION TO THOSE REQUIRED BY CODE:
         1). FEEDERS AND BRANCH CIRCUITS.
         2). LIGHTING CIRCUITS.
         3). RECEPTACLE CIRCUITS.
         4). SINGLE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.
         5). THREE-PHASE MOTOR OR APPLIANCE BRANCH CIRCUITS.
         6). FLEXIBLE RACEWAY RUNS.
         7). ARMORED AND METAL-CLAD CABLE RUNS.
      b. BUSWAY SUPPLY CIRCUITS: INSTALL SEPARATE EQUIPMENT GROUNDING CONDUCTOR FROM GROUNDING BUS IN SWITCHBOARD TO EQUIPMENT GROUNDING-BAR TERMINAL ON BUSWAY.
      c. COMPUTER OUTLET CIRCUITS: INSTALL SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN BRANCH CIRCUIT RUNS FROM COMPUTER AREA POWER PANELS OR POWER-DISTRIBUTION UNITS.
      d. NONMETALLIC RACEWAYS: INSTALL EQUIPMENT GROUNDING CONDUCTOR IN NONMETALLIC RACEWAYS UNLESS THEY ARE DESIGNATED FOR TELEPHONE OR DATA CABLES.
      e. WATER HEATER, HEAT-TRACING, AND ANTIFROST HEATER CIRCUITS: INSTALL SEPARATE EQUIPMENT GROUNDING CONDUCTOR TO EACH ELECTRIC WATER HEATER, HEAT-TRACING ASSEMBLY, AND ANTIFROST HEATING CABLE. BOND CONDUCTOR TO HEATER UNITS, PIPING, CONNECTED EQUIPMENT, AND COMPONENTS.
   2. SIGNAL AND COMMUNICATION SYSTEMS: FOR TELEPHONE, ALARM, VOICE AND DATA, AND OTHER COMMUNICATION SYSTEMS, PROVIDE NO. 4 AWG MINIMUM INSULATED GROUNDING CONDUCTOR IN RACEWAY FROM GROUNDING-ELECTRODE SYSTEM TO EACH SERVICE LOCATION, TERMINAL CABINET, WIRING CLOSET, AND CENTRAL EQUIPMENT LOCATION.
      a. SERVICE AND CENTRAL EQUIPMENT LOCATIONS AND WIRING CLOSETS: TERMINATE GROUNDING CONDUCTOR ON 1/4 BY 2 BY 12 INCHES (6 BY 50 BY 300 MILLIMETER) GROUNDING BUS.
      b. TERMINAL CABINETS: TERMINATE GROUNDING CONDUCTOR ON CABINET-GROUNDING TERMINAL.
   3. SEPARATELY DERIVED SYSTEMS: WHERE NEC REQUIRES GROUNDING, GROUND ACCORDING TO NEC PARAGRAPH 250-30.
   4. METAL POLES SUPPORTING OUTDOOR LIGHTING FIXTURES: GROUND POLE TO GROUNDING ELECTRODE IN ADDITION TO SEPARATE EQUIPMENT GROUNDING CONDUCTOR RUN WITH SUPPLY BRANCH CIRCUIT.
   5. PIPING SYSTEMS AND OTHER EQUIPMENT: COMPLY WITH NEC ARTICLE 250 FOR BONDING REQUIREMENTS.
G. INSTALLATION
   1. GROUND ELECTRICAL SYSTEMS AND EQUIPMENT ACCORDING TO NEC REQUIREMENTS, EXCEPT WHERE DRAWINGS OR SPECIFICATIONS EXCEED NEC REQUIREMENTS.
   2. GROUNDING RODS: LOCATE MINIMUM OF 1 ROD LENGTH FROM EACH OTHER AND AT LEAST SAME DISTANCE FROM ANY OTHER GROUNDING ELECTRODE.
      a. DRIVE UNTIL TOPS ARE 2 INCHES (50 MILLIMETERS) BELOW FINISHED FLOOR OR FINAL GRADE, EXCEPT AS OTHERWISE INDICATED.
      b. INTERCONNECT WITH GROUNDING-ELECTRODE CONDUCTORS. USE EXOTHERMIC WELDS, EXCEPT AT TEST WELLS AND AS OTHERWISE INDICATED. MAKE THESE CONNECTIONS WITHOUT DAMAGING COPPER COATING OR EXPOSING STEEL.
   3. GROUNDING CONDUCTORS: ROUTE ALONG SHORTEST AND STRAIGHTEST PATHS POSSIBLE, EXCEPT AS OTHERWISE INDICATED. AVOID OBSTRUCTING ACCESS OR PLACING CONDUCTORS WHERE THEY MAY BE SUBJECTED TO STRAIN, IMPACT, OR DAMAGE.
   4. UNDERGROUND GROUNDING CONDUCTORS: USE BARE TINNED COPPER WIRE. BURY AT LEAST 30 INCHES (600 MILLIMETERS) BELOW GRADE.
   5. METAL WATER SERVICE PIPE: PROVIDE INSULATED COPPER GROUNDING CONDUCTORS, SIZED AS INDICATED, IN CONDUIT, FROM BUILDING'S MAIN SERVICE EQUIPMENT, OR GROUNDING BUS, TO MAIN METAL WATER SERVICE ENTRANCES TO BUILDING. CONNECT GROUNDING CONDUCTOR TO MAIN METAL WATER SERVICE PIPES BY GROUNDING-CLAMP CONNECTORS. WHERE DIELECTRIC MAIN WATER FITTING IS INSTALLED, CONNECT GROUNDING CONDUCTOR TO STREET SIDE OF FITTING. DO NOT INSTALL GROUNDING JUMPER ACROSS DIELECTRIC FITTINGS. BOND GROUNDING-CONDUCTOR CONDUIT TO CONDUCTOR AT EACH END.
   6. WATER METER PIPING: USE BRAIDED-TYPE BONDING JUMPERS TO ELECTRICALLY BYPASS WATER METERS. CONNECT TO PIPE WITH GROUNDING-CLAMP CONNECTORS.
   7. BOND INTERIOR METAL PIPING SYSTEMS AND METAL AIR DUCTS TO EQUIPMENT GROUNDING CONDUCTORS OF ASSOCIATED PUMPS, FANS, BLOWERS, ELECTRIC HEATERS, AND AIR CLEANERS. USE BRAIDED-TYPE BONDING STRAPS.
   8. CONCRETE-ENCASED GROUNDING ELECTRODE (GROUNDING BUILDING/STRUCTURE FOOTING): FABRICATE ACCORDING TO NEC ARTICLE 250 USING MINIMUM OF 20 FEET (6 METERS) OF BARE TINNED COPPER CONDUCTOR NOT SMALLER THAN NO. 4 AWG OR MINIMUM 20 FEET (6 METERS) REBAR 1/2 INCH OR LARGER IN DIAMETER. BOND GROUNDING CONDUCTOR TO REINFORCING STEEL TO AT LEAST 4 LOCATIONS, AND TO ANCHOR BOLTS. EXTEND GROUNDING CONDUCTOR UP IN FOUNDATION WALL.
H. CONNECTIONS
   1. MAKE CONNECTIONS SO POSSIBILITY OF GALVANIC ACTION OR ELECTROLYSIS IS MINIMIZED. SELECT CONNECTORS, CONNECTION HARDWARE, CONDUCTORS, AND CONNECTION METHODS SO METALS IN DIRECT CONTACT WILL BE GALVANICALLY COMPATIBLE.
      a. USE ELECTROPLATED OR HOT-TIN-COATED MATERIALS TO ASSURE HIGH CONDUCTIVITY AND TO MAKE CONTACT POINTS CLOSER IN ORDER OF GALVANIC SERIES.
      b. MAKE CONNECTIONS WITH CLEAN, BARE METAL AT POINTS OF CONTACT.
      c. MAKE ALUMINUM-TO-STEEL CONNECTIONS WITH STAINLESS-STEEL SEPARATORS AND MECHANICAL CLAMPS.
      d. MAKE ALUMINUM-TO-GALVANIZED STEEL CONNECTIONS WITH TIN-PLATED COPPER JUMPERS AND MECHANICAL CLAMPS.
      e. COAT AND SEAL CONNECTIONS HAVING DISSIMILAR METALS WITH INERT MATERIAL TO PREVENT FUTURE PENETRATION OF MOISTURE TO CONTACT SURFACES.
   2. EXOTHERMIC-WELDED CONNECTIONS: USE FOR CONNECTIONS TO STRUCTURAL STEEL AND FOR UNDERGROUND CONNECTIONS, EXCEPT THOSE AT TEST WELLS. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. WELDS THAT ARE PUFFED UP OR THAT SHOW CONVEX SURFACES INDICATING IMPROPER CLEANING ARE NOT ACCEPTABLE.
   3. EQUIPMENT GROUNDING-WIRE TERMINATIONS: FOR NO. 8 AWG AND LARGER, USE PRESSURE-TYPE GROUNDING LUGS. NO. 10 AWG AND SMALLER GROUNDING CONDUCTORS MAY BE TERMINATED WITH WINGED PRESSURE-TYPE CONNECTORS.
   4. NONCONTACT METAL RACEWAY TERMINATIONS: WHERE METALLIC RACEWAYS TERMINATE AT METAL HOUSINGS WITHOUT MECHANICAL AND ELECTRICAL CONNECTION TO HOUSING, TERMINATE EACH CONDUIT WITH A GROUNDING BUSHING. CONNECT GROUNDING BUSHINGS WITH BARE GROUNDING CONDUCTOR TO GROUNDING BUS OR TERMINAL IN HOUSING. BOND ELECTRICALLY NONCONTINUOUS CONDUITS AT BOTH ENTRANCES AND EXITS WITH GROUNDING BUSHINGS AND BARE GROUNDING CONDUCTORS, EXCEPT AS OTHERWISE INDICATED.
   5. TIGHTEN SCREWS AND BOLTS FOR GROUNDING AND BONDING CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. WHERE THESE REQUIREMENTS ARE NOT AVAILABLE, USE THOSE SPECIFIED IN UL 486A AND UL 486B.
   6. COMPRESSION-TYPE CONNECTIONS: USE HYDRAULIC COMPRESSION TOOLS TO PROVIDE CORRECT CIRCUMFERENTIAL PRESSURE FOR COMPRESSION CONNECTORS. USE TOOLS AND DIES RECOMMENDED BY MANUFACTURER OF CONNECTORS. PROVIDE EMBOSSING DIE CODE OR OTHER STANDARD METHOD TO MAKE VISIBLE INDICATION THAT CONNECTOR HAS BEEN ADEQUATELY COMPRESSED ON GROUNDING CONDUCTOR.
   7. MOISTURE PROTECTION: WHERE INSULATED GROUNDING CONDUCTORS ARE CONNECTED TO GROUNDING RODS OR GROUNDING BUSES, INSULATE ENTIRE AREA OF CONNECTION AND SEAL AGAINST MOISTURE PENETRATION OF INSULATION AND CABLE.

26 05 29 HANGERS AND SUPPORTS

A. CONDUIT HANGERS, ATTACHMENTS, AND SUPPORTS
   1. PROVIDE PROPER FITTINGS AND SUPPORT SUITABLE FOR AMBIENT/ENVIRONMENTAL CONDITIONS AND SERVICE DUTY.
   2. SEE HARSH ENVIRONMENT ROOM SPECIFICATIONS FOR SUPPORTS IN HARSH ENVIRONMENT ROOMS.
   3. ATTACH TO STRUCTURAL COMPONENTS TO NOT JEOPARDIZE STRUCTURAL INTEGRITY.
   4. PROVIDE ANGLES, CHANNELS, AND BEAMS AS REQUIRED.
B. BACKBOARDS
   1. 3/4" PLYWOOD PAINTED ON BOTH SIDES AND EDGES WITH TWO COATS OF WHITE ENAMEL PAINT TO MOUNT EQUIPMENT WHERE SHOWN.
   2. SUPPORT WITH PAINTED OR GALVANIZED STEEL CHANNEL.
C. CONCRETE PADS
   1. COORDINATE FINAL EQUIPMENT CONCRETE PAD SIZE REQUIREMENTS. PADS SHALL EXTEND MINIMUM 2" BEYOND EQUIPMENT FOOTPRINT.
   CONCRETE PADS REQUIRED FOR THE FOLLOWING,
      -MAIN DISTRIBUTION PANELS
      -TRANSFORMERS
      -PAD MOUNTED TRANSFORMERS
      -PAD MOUNTED CT CABINET
      -EMERGENCY GENERATORS
      -SWITCHBOARD
D. EXTERIOR LIGHT POLE AND BOLLARD BASES
   1. PROVIDE EXTERIOR LIGHT POLE AND BOLLARD CONCRETE BASES PER DETAILS.

26 05 30 CONDUIT

A. SEE HARSH ENVIRONMENT ROOM SPECIFICATIONS FOR CONDUIT MATERIAL AND INSTALLATION REQUIREMENTS FOR HARSH ENVIRONMENT ROOMS.
B. RMC
   1. ALLOWED FOR ALL SIZES BELOW GRADE AND INSIDE ABOVE GRADE.
   2. REQUIRED WHERE CALLED OUT ON PLANS.
   3. REQUIRED FOR ALL SIZES OF OUTDOOR ABOVE GRADE CONDUIT.
   4. GALVANIZED RIGID STEEL REQUIRED FOR ALL UNDERGROUND 90 DEGREE BENDS.
   5. GALVANIZED RIGID STEEL WITH GALVANIZED RIGID STEEL FITTINGS, THREADED WATERTIGHT.
C. EMT
   1. ALLOWED FOR INSIDE ABOVE GRADE CONDUIT 2" AND SMALLER.
   2. COMPRESSION TYPE FITTINGS WITH INSULATED THROAT.
D. FLEXIBLE
   1. MINIMUM SIZE 1/2".
   2. MAXIMUM LENGTH 36" FOR CONNECTION TO HVAC EQUIPMENT
   3. MAXIMUM LENGTH 72" FOR CONNECTION TO FIXTURES IN TILE CEILINGS.
   4. STEEL FITTINGS WITH INSULATED THROAT, UL LISTED.
E. PVC
   1. USE FOR CONDUIT IN CONCRETE, UNDER FLOOR SLABS, OR IN EARTH WHEN PERMITTED BY CODE AND LOCAL ORDINANCES.
   2. ALLOWED FOR ABOVE GRADE CONDUIT WHEN CONDUIT IS UL LISTED FOR DIRECT SUNLIGHT EXPOSURE AND WHEN ALLOWED BY CODE AND LOCAL AUTHORITY HAVING JURISDICTION.
   3. MINIMUM SIZE 3/4".
   4. SCHEDULE 40 PVC.
F. FITTINGS
   1. FITTING MATERIAL SHALL MATCH CONDUIT MATERIAL UNLESS OTHERWISE NOTED IN PLANS AND SPECIFICATIONS OR WITH WRITTEN APPROVAL BY ENGINEER.
G. INSTALLATION
   1. DRAWINGS AND DIAGRAMS SHOW SIZE AND APPROXIMATE LOCATION OF CONDUIT. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION. PROVIDE ADDITIONAL OFFSETS AS REQUIRED FOR FIELD CONDITIONS. ROUTE CONDUIT IN ORDERLY MANNER, PARALLEL TO BUILDING STRUCTURE. CONCEAL CONDUIT IN FINISHED AREAS.
   2. INSTALL UL APPROVED EXPANSION FITTINGS COMPLETE WITH GROUNDING JUMPERS WHERE CONDUITS CROSS BUILDINGS EXPANSION JOINTS AND IN LONG CONDUIT RUNS WHERE DIFFERENTIAL EXPANSION OR CONTRACTION WOULD CAUSE BENDING OR SEPARATION.
   3. INSTALL CONDUIT WITH ADEQUATE DRAINAGE.
   4. PROVIDE PULL STRING IN ALL EMPTY CONDUITS.
   5. PAINT ALL EXPOSED CEILING MOUNTED CONDUITS TO MATCH CEILING COLOR.
   6. WHEN REQUIRED BY STATE AND LOCAL CODES AND ORDINANCES, PROVIDE SEPARATE CONDUIT/RACEWAY FOR FIRE ALARM, EMERGENCY STAND-BY, REQUIRED STAND-BY, TELECOMMUNICATION SYSTEMS.
   7. ROUTE CONDUIT ABOVE LAY-IN SUSPENDED CEILINGS SO AS NOT TO INTERFERE WITH TILE REMOVAL.
   8. INSTALL FLEXIBLE STEEL CONDUIT DROPS FROM INDEPENDENT JUNCTION BOX MOUNTED ABOVE CEILING TO RECESSED LIGHT FIXTURES.
   9. SECURE CONDUITS WITH AT LEAST ONE CORROSION PROOF MALLEABLE ALLOY STRAP OR HANGER EVERY 8 FT. DO NOT USE PERFORATED STRAPPING.
   10. PROVIDE UL LISTED FIRE-WALL PENETRATIONS WHEN CONDUIT PASS THROUGH A FIRE RATED WALL.
   11. CONDUIT FLOOR PENETRATION IN ANYWHERE SUBJECT TO HEAVY WEIGHT EQUIPMENT SHALL BE MADE WITH RMC TO A MINIMUM HEIGHT OF 4" ABOVE AND BELOW THE FLOOR THICKNESS.

26 05 33 BOXES

A. SEE HARSH ENVIRONMENT ROOM SPECIFICATIONS FOR BOX MATERIAL AND INSTALLATION REQUIREMENTS FOR HARSH ENVIRONMENT ROOMS.
B. FLUSH INTERIOR 4" SQUARE STEEL BOXES WITH RAISED COVERS AND SQUARE CUT CORNERS. PROVIDE BOXES RATED FOR THROUGH FEED.
C. PROVIDE CAST BOXES FOR EXTERIOR USE DEVICES. PROVIDE COVERS WITH GASKETS.
D. JUNCTION AND SPLICE BOXES SHALL HAVE GALVANIZED SCREW COVERS AND BE NOT LESS THAN CODE DIMENSIONS. THROUGH-WALL AND BACK-TO-BACK BOXES NOT ALLOWED.
E. OUTLET AND JUNCTION BOXES USED AS SURFACE METAL RACEWAY SHALL BE MANUFACTURED BY THE SURFACE METAL RACEWAY MANUFACTURER TO BE COMPATIBLE WITH THE RACEWAY USED.
F. VERIFY LOCATION PRIOR TO ROUGH-IN. MATCH THE HEIGHT OF EXISTING DEVICES FOR INSTALLATIONS IN ADDITIONS TO EXISTING FACILITIES.

26 05 35 PENETRATIONS

A. SLEE

ELECTRICAL SPECIFICATIONS (CONT.)

c. SUPPORT ADDITION OF DEVICES AND CLOUD-CONNECTED GATEWAYS BY SCANNING COMPATIBLE QR CODE THROUGH CLOUD-BASED EPMS SMART MOBILE DEVICE APPLICATION.
d. AUTOMATICALLY DISCOVER DEVICES CONNECTED TO CLOUD-CONNECTED GATEWAYS.
e. AUTOMATICLY IMPORT DEVICE CONTEXT, INCLUDING NAME AND TOPOLOGY INFORMATION, TO AVOID DUPLICATE DATA ENTRY AND CONFIGURATION STEPS.
f. AUTOMATICALLY DISCOVER OTHER GATEWAYS AND DEVICES INCLUDED IN SAME ORDER ONCE FIRST ONE HAS BEEN ADDED.
g. SUPPORT CONFIGURATION OF CONNECTED-DEVICE ENERGY USAGE USING GRAPHICAL DRAG-AND-DROP INTERFACE THROUGH WEB BROWSER.
h. SUPPORT CONFIGURATION OF VIRTUAL (CALCULATED) DEVICES FOR UNMETERED CIRCUITS IN ELECTRICAL PANEL WITH METERED INCOMER AND FEEDERS.
i. SUPPORT IDENTIFICATION OF SITES BY ADDRESS WITH AUTOMATIC ADDRESS VALIDATION BASED ON USER INPUT AND DISPLAYED ON MAP.
j. AUTOMATICALLY CREATE DEFAULT DASHBOARDS AND NAVIGATION BASED ON DEVICES AND CONTEXTUALIZATION ADDED BY USER.
k. SUPPORT ROLE-BASED USER ACCESS DOWN TO SITE LEVEL WITH INVITATION OF NEW USERS BY EMAIL ADDRESS.

8. ALARM MANAGEMENT AND NOTIFICATION:
a. SUPPORT ACQUISITION AND DISPLAY OF SPECIALIZED, ON-BOARD ALARMS FROM POWER DISTRIBUTION EQUIPMENT.
b. SUPPORT CREATION OF SOFTWARE ALARMS BASED ON CONFIGURED THRESHOLDS.
c. PROVIDE DISPLAYS OF ALARMS FILTERED BY LOCATION OR ASSET, WITH NAVIGATION LINKS TO DETAILED INFORMATION ON INDIVIDUAL ALARM OCCURRENCES (E.G., START TIME AND PRIORITY).
d. SUPPORT ACKNOWLEDGEMENT OF ALARMS BY AUTHORIZED USERS.
e. PROVIDE NATIVE SMART MOBILE DEVICE IOS/ANDROID APPLICATION FOR RECEIVING AND ACKNOWLEDGING ALARM NOTIFICATIONS REMOTELY WITH CAPABILITY FOR USER TO CONFIGURE NOTIFICATION PREFERENCES FOR SPECIFIC ALARMS AND VIEW HISTORICAL ALARMS.

9. DATA ANALYTICS AND VISUALIZATION:
a. PROVIDE INTERACTIVE, WEB-BASED DASHBOARD APPLICATION SUPPORTING SYSTEM DEVICES.
b. SUPPORT VISUALIZATION OF MULTIPLE SITES IN SINGLE VIEW.
c. SUPPORT DISPLAY OF GEOGRAPHICALLY DISTRIBUTED SITES IN MAP VIEW.
d. SUPPORT DISPLAY OF DIFFERENT VIEWS FOR PHYSICAL LOCATION OF ASSETS AND LOCATION OF ENERGY USAGE.
e. SUPPORT DISPLAY OF ELECTRICAL DEVICES IN GRAPHICAL SINGLE-LINE DIAGRAM FOR EACH SITE.
f. PROVIDE GRAPHICAL SYSTEM VIEWS THAT ALLOW USERS TO PAN AND ZOOM, WITH DYNAMIC ADJUSTMENT OF DETAIL LEVEL DISPLAYED DEPENDING ON ZOOM LEVEL.
g. SUPPORT GENERATION OF REPORTS.
h. SUPPORT DOWNLOAD OF DATA IN .CSV FORMAT.

10. TECHNICAL INFRASTRUCTURE:
a. SOFTWARE PLATFORM TO BE COMPLETELY HOSTED AND SUPPORTED BY SOFTWARE DEVELOPER.
b. SOFTWARE DEVELOPER TO MONITOR AND MAINTAIN OPERATION OF SOFTWARE PLATFORM, INCLUDING ONGOING CYBERSECURITY/THREAT MONITORING, DISASTER RECOVERY/BACKUP PROCESSES, AND SOFTWARE PATCHES/UPGRADES.
c. AUTOMATICALLY ACQUIRE ONBOARD DATA (E.G., EVENTS, TRENDS, AND WAVEFORMS) FROM NATIVELY SUPPORTED DEVICE TYPES THROUGH SUPPORTED IOT EDGE SERVERS WITHOUT REQUIRING ADDITIONAL SOFTWARE CONFIGURATION OR DATA UPLOAD SCHEDULING.
d. SUPPORT REAL-TIME AND HISTORICAL DATA AGGREGATION WITHIN DEFINED HIERARCHY VIEWS (E.G., BUILDINGS/FLOORS/ROOMS), INCLUDING:
e. A. WEB-BASED, END-USER INTERFACE.
f. B. AUTOMATIC, INTELLIGENT DATA AGGREGATION ACROSS HIERARCHY NODES FOR DATA VISUALIZATION. REMAIN ONLINE DURING SYSTEM ADMINISTRATION FUNCTIONS, INCLUDING COMMUNICATIONS, LOGGING, AND ALARMING; DO NOT REQUIRE OPERATOR TO TAKE SYSTEM OFFLINE.

11. INTEROPERABILITY AND INTEGRATION:
a. PROVIDE API ALLOWING THIRD-PARTY SYSTEMS (E.G., BMS) TO CONSUME DATA COLLECTED BY EPMS PLATFORM.
b. PROVIDE MECHANISM TO EXPORT COLLECTED ENERGY DATA TO CSV FORMAT.

12. CYBERSECURITY AND DATA PRIVACY: COMPLY WITH BEST PRACTICES AND PROVIDE TECHNICAL FEATURES TO REDUCE RISK TO PEOPLE, ASSETS, AND PROCESSES, INCLUDING:
a. DEVELOP SOFTWARE PLATFORM IN ACCORDANCE WITH SECURE DEVELOPMENT LIFECYCLE 2.0 PROCEDURES.
b. SUBSTANTIALLY DEVELOP SOFTWARE PLATFORM IN LOCATION CERTIFIED AS COMPLYING WITH IEC 62443 STANDARD SERIES.
c. SUPPORT ROLE-BASED USER ACCESS.
d. COMPLY WITH GENERAL DATA PROTECTION REGULATION (GDPR).
e. USE HTTPS FOR COMMUNICATION BETWEEN EDGE AND CLOUD.
f. ENCRYPT DATA IN TRANSIT AND AT REST.
g. AUTHENTICATE GENUINENESS OF CLOUD-CONNECTED DEVICES.

26 09 23 LIGHTING CONTROL PANEL

A. MANUFACTURERS: AVI-ON, THE WATT STOPPER, DOUGLAS, INTELLIGENT LIGHTING CONTROLS, LEVITON, HUBBELL BUILDING AUTOMATION, LIGHTING CONTROL AND DESIGN, LITHONIA, NEXLIGHT, PCI SYSTEMS, SPI SYSTEMS.
B. GENERAL SYSTEM REQUIREMENTS:
1. PROVIDE A DISTRIBUTED, NETWORKED LIGHTING CONTROL SYSTEM CONSISTING OF LIGHTING CONTROL PANEL(S), DIGITAL LOAD CONTROLLERS, OCCUPANCY SENSORS, DAYLIGHT SENSORS, WALL STATIONS, TIME SCHEDULING, AND REQUIRED ACCESSORIES AS INDICATED ON DRAWINGS AND SCHEDULES.
2. SYSTEM SHALL SUPPORT STANDALONE ROOM-BASED CONTROL WITH OPTIONAL BUILDING-WIDE NETWORKING AND REMOTE MANAGEMENT.
3. ALL CONTROL SEQUENCES SHALL BE STORED LOCALLY WITHIN CONTROLLERS AND SHALL REMAIN OPERATIONAL INDEPENDENT OF NETWORK OR CLOUD CONNECTIVITY.
4. SYSTEM SHALL PROVIDE ON/OFF CONTROL AND 0-10V DIMMING WHERE INDICATED.
5. PROVIDE SUFFICIENT RELAYS/CONTROLLERS TO CONTROL EACH LIGHTING BRANCH CIRCUIT OR ZONE INDICATED. CONTRACTOR SHALL DETERMINE REQUIRED QUANTITY OF RELAYS AND PANELS INCLUDING MINIMUM 20% SPARE CAPACITY UNLESS NOTED OTHERWISE.

C. LIGHTING CONTROL PANEL / LOAD CONTROLLER REQUIREMENTS:
1. INPUT VOLTAGE: 110—277 VAC.
2. ELECTRONIC RELAY RATED MINIMUM 16 AMP LED LOAD AT 120/277 VOLT.
3. ZERO-CROSS RELAY OPERATION.
4. MINIMUM 200,000 ON/OFF CYCLES.
5. PROVIDE 0—10V DIMMING OUTPUTS WITH ADJUSTABLE HIGH-END AND LOW-END TRIM.
6. PROVIDE DUAL 0—10V OUTPUTS WHERE TUNABLE WHITE FIXTURES ARE INDICATED.
7. UL LISTED FOR COMMERCIAL USE (UL 508 AND/OR UL 916).
8. PLENUM RATED WHERE INSTALLED IN AIR-HANDLING SPACES (UL 2043).
9. PROVIDE INTEGRAL TIME SCHEDULING CAPABLE OF MINIMUM 18 PROGRAMMABLE SCHEDULES INCLUDING:
a. SCHEDULED ON/OFF
b. MANUAL ON / SCHEDULED OFF
c. ASTRONOMICAL (SUNRISE/SUNSET) CONTROL
10. PROVIDE ENERGY MONITORING CAPABILITY WITH MINIMUM 15-MINUTE INTERVAL REPORTING AND ±0.5% ACCURACY.

D. NETWORK CHARACTERISTICS:
1. SYSTEM SHALL UTILIZE BLUETOOTH LOW ENERGY (BLE) MESH OR EQUIVALENT DISTRIBUTED NETWORK ARCHITECTURE.
2. SYSTEM SHALL NOT REQUIRE A CENTRAL PROCESSOR FOR BASIC ROOM OPERATION.
3. PROVIDE LAN CAPABILITY FOR INTER-PANEL COMMUNICATION.
4. PROVIDE BACNET IP INTERFACE FOR BUILDING AUTOMATION SYSTEM (BAS) INTEGRATION WITH TWO-WAY COMMUNICATION.
5. PROVIDE OPTIONAL REMOTE ACCESS CAPABILITY FOR SCHEDULING, ENERGY MONITORING, FIRMWARE UPDATES, AND COMMISSIONING.
6. LOSS OF REMOTE CONNECTIVITY SHALL NOT INTERRUPT LOCAL CONTROL OPERATION.

E. SENSORS:
1. PROVIDE DIGITAL OCCUPANCY/VACANCY SENSORS AS INDICATED (CEILING, FIXTURE, OR WALL MOUNT).
2. SENSOR TYPES: PIR, ULTRASONIC, DUAL-TECHNOLOGY, OR MICROWAVE AS REQUIRED FOR SPACE TYPE.
3. ADJUSTABLE TIME DELAY (DEFAULT 20 MINUTES UNLESS OTHERWISE REQUIRED BY CODE).
4. SUPPORT BI-LEVEL DIMMING AND VACANCY MODE WHERE REQUIRED.
5. PROVIDE DAYLIGHT HARVESTING SENSORS WHERE INDICATED:
a. 1—700 LUX OPERATING RANGE
b. OPEN OR CLOSED LOOP CAPABILITY
c. FIELD ADJUSTABLE SETPOINTS
d. CAPABLE OF TURNING LIGHTS OFF OR DIMMING TO PRESET MINIMUM LEVEL
6. SENSORS SHALL BE PROGRAMMABLE LOCALLY OR REMOTELY VIA MANUFACTURER SOFTWARE.

F. MANUAL CONTROLS:
1. PROVIDE LOW VOLTAGE WALL STATIONS, DIMMERS, ON/OFF SWITCHES, AND SCENE CONTROLLERS AS INDICATED.
2. SWITCHES SHALL SUPPORT MULTI-LOCATION (3-WAY OR GREATER) APPLICATIONS WITHOUT ADDITIONAL CONTROL WIRING.
3. SCENE STATIONS SHALL SUPPORT MINIMUM FOUR (4) PRESET SCENES WHERE INDICATED.
4. BATTERY-POWERED DEVICES SHALL HAVE MINIMUM 10-YEAR BATTERY LIFE WITH FIELD-REPLACEABLE BATTERIES.
5. SEE DEVICE SECTION FOR COVER PLATE AND COLOR REQUIREMENTS.

G. EMERGENCY LIGHTING CONTROL:
1. SYSTEM SHALL COMPLY WITH UL 924 (2022).
2. PROVIDE UL 924 LISTED NORMAL POWER SENSING DEVICE CAPABLE OF DETECTING LOSS OF NORMAL POWER AND SIGNALING EMERGENCY MODE OPERATION.
3. EMERGENCY LIGHTING SHALL OVERRIDE NORMAL CONTROL SEQUENCES WITHOUT REQUIRING BYPASS RELAYS.
4. CONTROLLERS SHALL BE CONFIGURABLE FOR NORMAL AND EMERGENCY OPERATION PROFILES.
5. SYSTEM SHALL BE COMPATIBLE WITH UL 1008 TRANSFER SWITCHES AND EMERGENCY FIXTURES.

H. AUXILIARY INTERFACES:
1. PROVIDE AUXILIARY INPUT MODULES FOR INTEGRATION WITH FIRE ALARM, BAS, SECURITY SYSTEMS, KEY SWITCHES, OR TRANSFER SWITCHES.
2. PROVIDE AUXILIARY OUTPUT MODULES FOR TRIGGERING EXTERNAL DEVICES SUCH AS VAV BOXES OR INDICATOR LIGHTS.

I. TIME CLOCK FUNCTION:
1. PROVIDE INTEGRAL NETWORK TIME MANAGEMENT WITH BATTERY BACKUP.
2. ACCURACY ±3 MINUTES OVER FIVE (5) YEARS.
3. ASTRONOMICAL SCHEDULING CAPABILITY.
4. SCHEDULES SHALL OPERATE INDEPENDENT OF REMOTE CONNECTIVITY.

J. INSTALLATION REQUIREMENTS:
1. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS AND APPROVED SHOP DRAWINGS.
2. TAG ALL CONTROLLED CIRCUITS IDENTIFYING PANEL AND SWITCHED LEG.
3. DO NOT CONNECT CONTROLLED CIRCUITS TO EXTERNAL TIME CLOCKS UNLESS SPECIFICALLY INDICATED.
4. RUN SEPARATE NEUTRALS FOR PHASE-DIMMED LOADS.
5. VERIFY ALL LOADS ARE FREE OF SHORT CIRCUITS PRIOR TO CONTROLLER ENERGIZATION.
6. COMMISSION SYSTEM PER WRITTEN SEQUENCE OF OPERATION.
7. PROVIDE AS-BUILT DOCUMENTATION INCLUDING DEVICE LOCATIONS, SENSOR SETTINGS, TIME SCHEDULES, AND SEQUENCE OF OPERATION.
8. PROVIDE OWNER TRAINING AT PROJECT CLOSEOUT.

K. WARRANTY: PROVIDE MINIMUM FIVE (5) YEAR MANUFACTURER WARRANTY.
L. FINISH: MANUFACTURER'S STANDARD FINISH.

26 22 00 LOW VOLTAGE TRANSFORMERS (600V AND LESS)

A. MANUFACTURERS
1. SQUARE D.
2. CUTLER-HAMMER
3. SIEMENS
4. GENERAL ELECTRIC
B. TRANSFORMER CRITERIA:
1. UL LISTED AND CONFORM TO REQUIREMENTS OF ANSI/NFPA 70.
2. PRIMARY AND SECONDARY WINDINGS: ALUMINUM
3. EFFICIENCY SHALL MEET OR EXCEED DEPARTMENT OF ENERGY STANDARDS.
4. RATE OF RISE: 150 DEGREE C TEMPERATURE RISE ABOVE 40 DEGREE C AMBIENT.
5. INSULATION CLASS: 220 DEGREES CELSIUS CLASS 115 DEGREES CELSIUS MAXIMUM RISE ABOVE 40 DEGREES CELSIUS FOR TRANSFORMERS 15 KILOVOLTAMPS (KVA) OR SMALLER; 220 DEGREES CELSIUS CLASS 80 DEGREES CELSIUS MAXIMUM RISE ABOVE 40 DEGREES CELSIUS FOR TRANSFORMERS LARGER THAN 15 KVA.
6. MAXIMUM IMPEDANCE: 5.75%.
7. NUMBER OF TAPS: MANUFACTURER'S STANDARD

C. MOUNTING
1. SUITABLE FOR TRAPEZE AND WALL BRACKET MOUNTING.
2. PROVIDE ALL NECESSARY MOUNTING HARDWARE, BRACKETS, AND RODS FOR INSTALLING TRANSFORMERS.

D. MANUFACTURER'S STANDARD PAINT OVER CORROSION-RESISTANT PRETREATMENT AND PRIMER.
E. PROVIDE SPRING PRESSURE CONNECTIONS. CUPPED OR SLIT WASHERS ARE ACCEPTABLE. PROVIDE ANTI-OXIDIZING AGENTS ON TERMINATIONS.
F. PROVIDE LUGS RATED FOR COPPER CONDUCTORS. LUGS SHALL BE EITHER SILVER OR TIN PLATED.
G. FIELD QUALITY CONTROL
1. TESTING: PERFORM FIELD QUALITY-CONTROL TESTING.
a. TESTS: INCLUDE FOLLOWING MINIMUM INSPECTIONS AND TESTS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. COMPLY WITH IEEE C57.12.91 FOR TEST METHODS AND DATA CORRECTION FACTORS.
1). INSPECT ACCESSIBLE COMPONENTS FOR CLEANLINESS, MECHANICAL AND ELECTRICAL INTEGRITY, AND DAMAGE OR DETERIORATION. VERIFY THAT TEMPORARY SHIPPING BRACING HAS BEEN REMOVED. INCLUDE INTERNAL INSPECTION THROUGH ACCESS PANELS AND COVERS.
2). INSPECT BOLTED ELECTRICAL CONNECTIONS FOR TIGHTNESS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE VALUES OR, IF NOT AVAILABLE, THOSE SPECIFIED IN UL 486A.
3). INSULATION RESISTANCE: PERFORM MEGOHMMETER TESTS OF PRIMARY AND SECONDARY WINDING TO WINDING AND WINDING TO GROUND.
a). MINIMUM TEST VOLTAGE: 1000 VOLTS, DIRECT CURRENT (DC).
b). MINIMUM INSULATION RESISTANCE: 500 MEGOHMS.
c). DURATION OF EACH TEST: 10 MINUTES
d). TEMPERATURE CORRECTION: CORRECT RESULTS FOR TEST TEMPERATURE DEVIATION FROM 20 DEGREES CELSIUS STANDARD.
b. TEST FAILURES: COMPARE TEST RESULTS WITH SPECIFIED PERFORMANCE OR MANUFACTURER'S DATA. CORRECT DEFICIENCIES IDENTIFIED BY TESTS AND RETEST. VERIFY THAT TRANSFORMERS MEET SPECIFIED REQUIREMENTS.
2. ADJUST TRANSFORMER TAPS AND CONNECTIONS TO PROVIDE OPTIMUM VOLTAGE CONDITIONS AT UTILIZATION EQUIPMENT THROUGHOUT NORMAL OPERATING CYCLE OF FACILITY. RECORD PRIMARY AND SECONDARY VOLTAGES AND TAP SETTIGNS OR CONNECTIONS AND SUBMIT WITH TEST RESULTS.

26 24 16 PANELBOARDS

A. MANUFACTURER:
1. SQUARE D
2. EATON; CUTLER HAMMER

B. CABINET
1. NEMA 1 CABINET, OR AS LISTED IN PANEL SCHEDULES, CODE GAUGE STEEL CONSISTING OF A BOX WITH A HINGED TRIM AND A HINGED DOOR AND LATCH.
2. FABRICATE WITH STRAIGHT EDGES AND SQUARE CORNERS.
3. BOXES SHALL BE MINIMUM 20" WIDE.
4. MANUFACTURER'S STANDARD FINISH, PRIME COAT AND BAKED ENAMEL FINISH.
5. RECESSED DOUBLE TUB PANELBOARDS SHALL HAVE TUBS OF THE SAME HEIGHT.

C. PROVIDE A NAMEPLATE LISTING OF THE PANEL TYPE AND NUMBER OF PROTECTIVE AND SWITCHING DEVICES AND RATINGS.
D. BUS BARS FOR THE MAINS SHALL BE COPPER SIZED IN ACCORDANCE WITH UL STANDARDS. INCLUDE FULL SIZE NEUTRAL BARS UNLESS OTHERWISE NOTED. PROVIDE GROUND BUS.
E. NEUTRAL BUSSING SHALL HAVE ONE LUG FOR EVERY BRANCH CIRCUIT THAT THE PANELBOARD IS CAPABLE OF SUPPORTING.
F. BUS SPACES FOR FUTURE SWITCHING AND PROTECTIVE DEVICES FOR THE MAXIMUM DEVICES AND SWITCHES THAT THE PANELBOARD CAN ACCOMMODATE.
G. AS A MINIMUM, BREAKERS AND SWITCHES SHALL HAVE THE SAME FAULT CURRENT RATING AS THE BOARD. SERIES RATING NOT ACCEPTABLE.
H. CIRCUIT BREAKERS:
1. UNLESS INDICATED OTHERWISE, CIRCUIT BREAKERS SHALL BE PLUG-ON, INDIVIDUALLY REPLACEABLE, THERMAL-MAGNETIC, AUTOMATIC FREE TRIPPING, SEPARATELY INDICATING "ON", "TRIPPED", AND "OFF", AMBIENT COMPENSATED AT 40 DEGREES C, SINGLE, DOUBLE, OR TRIPLE POLE AS REQUIRED BY THE PANEL SCHEDULES.
2. CIRCUIT BREAKERS INDICATED AS MULTIPLE POLE SHALL BE COMMON TRIP.
3. SHUNT TRIP BREAKERS SHALL HAVE INTEGRAL RELAYS.

26 24 17 FUSIBLE BRANCH CIRCUIT PANELBOARDS

A. USE FOR ALL PANELBOARDS FED FROM AN EMERGENCY GENERATOR SERVING EMERGENCY EGRESS LIGHTING LOADS.
B. MANUFACTURER:
1. EATON BUSSMAN SERIES QUIK-SPEC COORDINATION PANEL TYPE QSCP
2. ITE — SIEMENS QUICK-SPEC COORDINATION PANELBOARD

C. CABINET
1. NEMA 1 CABINET, CODE GAUGE STEEL CONSISTING OF A BOX WITH A HINGED TRIM AND A HINGED DOOR AND LATCH.
2. FABRICATE WITH STRAIGHT EDGES AND SQUARE CORNERS.
3. BOXES SHALL BE MINIMUM 20" WIDE.
4. MANUFACTURER'S STANDARD FINISH, PRIME COAT AND BAKED ENAMEL FINISH.

D. PROVIDE A NAMEPLATE LISTING OF THE PANEL TYPE AND NUMBER OF PROTECTIVE AND SWITCHING DEVICES AND RATINGS.
E. BUS BARS SHALL BE TIN-PLATED COPPER
F. FUSES:
4. FUSES UPSTREAM OF BRANCH CIRCUIT PANELBOARDS SHALL BE LOW-PEAK FUSES.
5. PROVIDE CLASS CF — CUBEFUSE (BUSSMAN P/N — TCF) FOR BRANCH CIRCUITS.

G. PROVIDE BRANCH CIRCUITS AS INDICATED IN THE SCHEDULES OR DRAWINGS.
H. BRANCH CIRCUITS MUST BE INTERCHANGEABLE WITH FUSIBLE SWITCHES FROM 20A TO 100A WITHOUT ADDITIONAL REQUIRED SPACE.
I. PANELBOARD BRANCH CIRCUITS SHALL INCORPORATE OVERCURRENT PROTECTION AND BRANCH-CIRCUIT RATED DISCONNECTING MEANS INTO A SINGLE INTEGRATED COMPONENT (1 POLE, 2 POLE OR 3 POLE) THAT PREVENTS REMOVAL OF THE FUSE WHILE ENERGIZED. PROVIDES OPEN FUSE INDICATION, AND FUSE AMPERE RATING REJECTION FEATURE AT 15A, 20A, 30A, 40A, 50A, 60A, 70A, 90A, AND 100A. PROVIDE OPEN FUSE INDICATION ON THE BRANCH CIRCUIT FUSES WHERE INDICATED IN THE ASSOCIATED SCHEDULES OR DRAWINGS
J. NEUTRAL AND EQUIPMENT GROUND BAR (ISOLATED OR NON-ISOLATED) SHALL BE PROVIDED WHERE INDICATED IN THE ASSOCIATED SCHEDULES OR DRAWINGS.
K. PANELBOARD SHALL BE EQUIPPED WITH A SPARE BRANCH CIRCUIT FUSE HOLDER AND SPARE FUSES (10% OF FUSE FOR EACH AMPACITY INSTALLED IN BRANCH CIRCUITS).
L. PANELBOARD SHALL BE EQUIPPED WITH AN EXTERNAL SURGE PROTECTIVE DEVICE, COMPLIANT WITH UL 1449 3RD EDITION. REFERENCE SPECIFICATION SECTION 26 43 13.

26 27 26 WIRING DEVICES

A. MANUFACTURERS: COOPER, HUBBELL, LEVITON AND PASS & SEYMOUR.
B. COLOR
1. SWITCH AND RECEPTACLE COLORS SHALL BE WHITE.
2. COVER PLATE COLORS SHALL BE WHITE.

C. WALL SWITCHES:
1. 20-AMPERE HUBBELL 1221 SINGLE POLE, 1223 THREE-WAY AND 1224 FOUR-WAY.
2. SEE LEGEND FOR MOUNTING HEIGHTS.
3. PROVIDE PILOT LIGHT SWITCHES WHERE INDICATED.

D. DIMMERS:
1. 20 AMPERE SLIDE DIMMER WITH INTEGRAL ON/OFF SWITCH. DIMMER SHALL BE RATED FOR AN LED LOAD OF 1200 WATTS MINIMUM, UNLESS NOTED OTHERWISE.
2. FOR LED DIMMING LOADS GREATER THAT 1200W PROVIDE LEVITON AWSMT-7DW OR APPROVED EQUIVALENT. PROVIDE COLOR CHANGE KIT AS NECESSARY TO MEET DEVICE COLOR SPECIFICATIONS.
3. DIMMERS RATED OVER 1200W SHALL NOT BE MULTI-GANGED. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
4. CONTRACTOR SHALL VERIFY WITH THEIR SUPPLIER(S) ALL DIMMERS AND DIMMABLE FIXTURES ARE 100% COMPATIBLE.

E. RECEPTACLES:
1. DUPLEX GROUNDED RECEPTACLES, 20 AMPERE SPECIFICATION GRADE, HUBBELL 5362.
2. GFCI RECEPTACLES: 20-AMPERE HUBBELL SPECIFICATION GRADE WITH LOCK OUT CAPABILITY UPON GFCI FAILURE.
3. EXTERIOR RECEPTACLES SHALL BE MARKED "WEATHER-RESISTANT" PER NEC.
4. SEE LEGEND FOR MOUNTING HEIGHTS.
5. REVIEW RECEPTACLE LAYOUT WITH OWNER PRIOR TO ROUGH-IN.
6. VERIFY ACTUAL LOCATION OF EQUIPMENT WITH OWNER PRIOR TO ROUGH-IN.
7. MAKE CONNECTIONS THROUGH THE USE OF PIG-TAILS.

F. COVER PLATES
1. SEE HARSH ENVIRONMENT ROOM SPECIFICATIONS FOR COVER PLATE REQUIREMENTS FOR HARSH ENVIRONMENT ROOMS.
2. INTERIOR: SMOOTH NYLON MATERIAL.
3. MECHANICAL EQUIPMENT, SHOP, FABRICATION ROOM: STEEL.
4. EXTERIOR: WEATHER-PROOF, GASKETED, LIFT COVER. RECEPTACLE COVER SHALL ALLOW CONTINUED USE WHEN COVER IS CLOSED.

G. BLANK, TELEVISION AND TELEPHONE OUTLETS: 4" SQUARE EXTRA DEEP BOX, SINGLE GANG RING AND BLANK COVER PLATE. PROVIDE CONDUIT FROM EACH BOX INTO AN ACCESSIBLE SPACE. TERMINATE CONDUIT WITH INSULATED CONNECTORS ON BOTH ENDS.

26 27 27 OCCUPANCY SENSORS / VACANCY SENSORS

A. MANUFACTURERS: COOPER, HUBBELL, LEVITON, SENSOR SWITCH, & THE WATT STOPPER.
1. COLOR:
a. WALL MOUNTED SENSORS SHALL BE THE SAME COLOR AS WIRING DEVICES. REFERENCE SPECIFICATION SECTION 26 27 26.
b. CEILING MOUNTED SENSORS SHALL MATCH COLOR OF CEILING THEY'RE INSTALLED ON.
2. SHALL BE FROM THE SAME MANUFACTURER AS THE WIRING DEVICES.

B. SENSOR TECHNOLOGY
1. ULTRASONIC (US).
a. RESTROOMS
b. HALLWAYS
2. PASSIVE INFRARED (PIR).
a. STORAGE ROOMS
3. DUAL TECHNOLOGY (PASSIVE INFRARED & ULTRASONIC)
a. OFFICES
b. CONFERENCE ROOMS
c. OTHER SPACES

C. SENSOR PERFORMANCE
1. INFRARED:
a. UTILIZE MULTIPLE SEGMENTED LENS, WITH INTERNAL GROOVES TO ELIMINATE DUST AND RESIDUE BUILD-UP.
2. ULTRASONIC.
a. UTILIZE AN OPERATING FREQUENCY OF 32 KHZ OR 40 KHZ THAT SHALL BE CRYSTAL CONTROLLED TO OPERATE WITHIN PLUS OR MINUS 0.005% TOLERANCE. UTILIZE DOPPLER SHIFT ULTRASONIC DETECTION TECHNOLOGY.
3. DUAL TECHNOLOGY:
a. UTILIZE MULTIPLE SEGMENTED LENS, WITH INTERNAL GROOVES TO ELIMINATE DUST AND RESIDUE BUILD-UP.
b. UTILIZE AN OPERATING FREQUENCY OF 32 KHZ OR 40 KHZ THAT SHALL BE CRYSTAL CONTROLLED TO OPERATE WITHIN PLUS OR MINUS 0.005% TOLERANCE.
c. INCORPORATE DOPPLER SHIFT ULTRASONIC AND PASSIVE INFRARED MOTION DETECTION TECHNOLOGIES. PRODUCTS THAT REACT TO NOISE OR AMBIENT SOUND SHALL NOT BE CONSIDERED.
4. SENSOR DEVICES SHALL HAVE EITHER INTEGRAL DUAL RELAYS OR CONTROL SEPARATE DUAL RELAY POWER PACKS TO ACHIEVE DUAL LEVEL LIGHTING WHEN DUAL LEVEL CONTROL IS INDICATED.
5. INTEGRAL ADJUSTABLE LIGHT LEVEL SENSOR WITH CAPACITY TO CONTROL ONE OR MORE RELAY WHEN THE SELECTED ADEQUATE DAYLIGHT IS PRESENT.
6. UTILIZE ZERO CROSSING CIRCUITRY WHICH INCREASES RELAY LIFE AND SENSORS LONGEVITY.
7. SHOULD POWER BE INTERRUPTED AND SUBSEQUENTLY RESTORED, SETTINGS AND PARAMETERS SAVED IN PROTECTED MEMORY SHALL NOT BE LOST.
8. SENSORS SHALL BE SIZED FOR THE ROOM THEY SERVE BY MANUFACTURER'S VENDOR OR COVER 1,500 SQUARE FEET WITH STANDARD LENS AND UP TO 90 LINEAR FEET WITH LONG RANGE LENS FOR WALKING MOTION WHEN MOUNTED AT A CEILING HEIGHT OF 12 FEET.
9. INDEPENDENT SENSITIVITY ADJUSTMENTS AND LED DISPLAY FOR EACH SENSING TECHNOLOGY.
10. SENSOR SHALL HAVE STANDARD 5 YEAR WARRANTY AND BE UL LISTED.

D. CONTROL STRATEGIES
1. AUTOMATIC CONTROLS SHALL BE MANUAL ON, OR SHALL TURN ON NOT MORE THAN 50% OF THE OF THE CONTROLLED LAMPS WITH THE REMAINING LAMPS BEING CONTROLLED MANUALLY.
a. EXCEPTION: PUBLIC CORRIDORS, STAIRWAYS, RESTROOMS, PRIMARY ENTRANCES AND LOBBIES SHALL HAVE FULL ON AUTOMATIC CONTROLS.
2. AUTOMATIC CONTROLS SHALL TURN LIGHTS OFF WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE.
3. RETRIGGER TIME DELAY: ONLY ONE MOTION IS NECESSARY TO TURN ON THE LIGHTS WITHIN 5 SECONDS AFTER TURNING OFF.
4. E.C. SHALL INCLUDE TIME IN HIS BID TO WORK WITH THE OWNER AND MANUFACTURER TO DETERMINE THE PROPER TIME AND SENSOR SETTINGS FOR EACH SENSOR IN THE SPACES IN WHICH THEY OPERATE. INCLUDE TIME IN BID TO HAVE THE MANUFACTURER'S REPRESENTATIVE ON SITE AND REVIEW THE JOB TO DETERMINE WHAT THE EXPECTED EQUIPMENT SETTINGS SHOULD BE.

26 28 16 ENCLOSED DISCONNECT SWITCHES

A. 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.
B. NONFUSIBLE SWITCH: TYPE GD WITH LOCKABLE HANDLE.
C. FUSIBLE SWITCH: TYPE HD WITH CLIPS TO ACCOMMODATE FUSES. HANDLE LOCKABLE IN OPEN AND CLOSED POSITION. HANDLE INTERLOCKED WITH COVER IN CLOSED POSITION WITH INTERLOCK BYPASS.
D. ENCLOSURES: NEMA AB 1 AND NEMA KS 1 TO MEET ENVIRONMENTAL CONDITIONS OF INSTALLED LOCATION.
1. OUTDOOR LOCATIONS: NEMA 250 TYPE 3R.
2. KITCHEN AREAS: NEMA 250 TYPE 4X, STAINLESS STEEL.
3. OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250 TYPE 4.
4. HAZARDOUS AREAS INDICATED ON DRAWINGS: NEMA 250 TYPE 7C

E. MANUFACTURER'S STANDARD PRIME-COAT FINISH READY FOR FIELD PAINTING.
F. LABEL EACH ENCLOSURE WITH ENGRAVED METAL OR LAMINATED-PLASTIC NAMEPLATE MOUNTED WITH CORROSION-RESISTANT SCREWS.
G. INSTALL EQUIPMENT GROUNDING CONNECTIONS FOR SWITCHES AND CIRCUIT BREAKERS WITH GROUND CONTINUITY TO MAIN ELECTRICAL GROUND BUS.
H. DEMONSTRATE PRODUCT CAPABILITY AND COMPLIANCE WITH REQUIREMENTS AFTER INSTALLATION AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED.
1. PERFORM VISUAL AND MECHANICAL INSPECTION AND ELECTRICAL TEST. CERTIFY COMPLIANCE WITH TEST PARAMETERS.
2. CORRECT MALFUNCTIONING UNITS, ON-SITE WHERE POSSIBLE, AND RETEST TO DEMONSTRATE COMPLIANCE.

26 29 23 FEEDERS FROM VARIABLE FREQUENCY DRIVES TO MOTORS

A. CONDUIT AND WIRE
1. PROVIDE ONLY STEEL OR ALUMINUM CONDUIT. BOND CONDUIT TO VARIABLE FREQUENCY DRIVE GROUND.
2. PROVIDE XHHW-2 INSULATED CONDUCTORS.
3. ONLY ONE MOTOR FEEDER PER CONDUIT.
4. BOND GROUNDING CONDUCTOR FROM MOTOR FEEDER TO ONLY VARIABLE FREQUENCY DRIVE GROUND AND MOTOR HOUSING. BONDING GROUND CONDUCTOR TO MOTOR DISCONNECT IS PROHIBITED.

26 36 00 STANDBY GENERATOR

A. SCOPE
1. ACCEPTABLE MANUFACTURERS:
a. CUMMINS
b. KOHLER
c. CATERPILLAR
2. THE GENERATOR SET SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS AND SHALL BE PROVIDED WITH ALL NECESSARY ACCESSORIES. ALL MATERIALS, EQUIPMENT AND PARTS SHALL BE NEW AND UNUSED AND OF CURRENT MANUFACTURE.
3. THESE SPECIFICATIONS, THE ELECTRICAL SYSTEM DESIGN, THE ROOM LAY-OUT AND THE HEATING AND VENTILATING DESIGN IS BASED ON CUMMINS GENERATOR.
4. THE GENERATOR AND TRANSFER SWITCH SHALL BE BUILT, TESTED AS A SYSTEM, AND SHIPPED BY THE MANUFACTURER OF THE ELECTRIC PLANT SO THERE IS ONE SOURCE OF SUPPLY AND RESPONSIBILITY. THE PERFORM

ELECTRICAL SPECIFICATIONS (CONT.)

DIVISION 27 COMMUNICATIONS

27 10 00 PREMISE DISTRIBUTION SYSTEM
SPECIFICATION PROVIDED BY OWNER

GENERAL

1.1 THE SUCCESSFUL BIDDER (CONTRACTOR) WILL PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND INCIDENTALS REQUIRED TO MAKE READY FOR USE A COMPLETE AND PROPERLY OPERATING PREMISE DISTRIBUTION SYSTEM (PDS) TO SERVE AS A VEHICLE FOR TRANSPORT OF VOICE & DATA SIGNALS.

1.2 THE WORK PROVIDED UNDER THIS CONTRACT DOCUMENT SHALL INCLUDE ALL LABOR, MATERIALS, PERMITS, INSPECTIONS AND RE-INSPECTION FEES, TOOLS, EQUIPMENT, TRANSPORTATION, INSURANCE, TEMPORARY PROTECTION, TEMPORARY LIGHTING, SUPERVISION AND INCIDENTAL ITEMS ESSENTIAL FOR A PROPERLY INSTALLED AND OPERATING PDS, EVEN THOUGH NOT SPECIFICALLY MENTIONED OR INDICATED BUT WHICH ARE USUALLY PROVIDED OR ARE ESSENTIAL FOR A PROPERLY OPERATING PDS.

1.3 THE WORD "PROVIDE" WHERE USED IN THIS CONTRACT DOCUMENT SHALL MEAN: FURNISH, INSTALL, MOUNT, CONNECT, PROTECT, TEST, COMPLETE AND MAKE READY FOR OPERATION.

1.4 THE CONTRACTOR SHALL CHECK ALL SITE DRAWINGS AND EXISTING SITE CONDITIONS BEFORE BIDDING AND ADVISE THE OUTAGAMIE COUNTY REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO THE BID.

1.5 THIS CONTRACT DOCUMENT DESCRIBES THE VERY MINIMUM REQUIREMENTS THAT MUST BE MET FOR AN ACCEPTABLE INSTALLATION.

1.6 THE CONTRACTOR WILL GIVE ALL NOTICES, FILE ALL PLANS, PAY ALL FEES, AND OBTAIN ALL PERMITS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. INCLUDE ALL FEES IN THE BID PACKAGE.

1.7 ALL WORK MUST BE PERFORMED BY A PANDUIT CERTIFIED CONTRACTOR.

1.8 OUTAGAMIE'S IT DEPARTMENT SHALL ASSIGN A STAFF MEMBER TO ACT AS THE OUTAGAMIE COUNTY PROJECT MANAGER.

1.9 NOTIFY THE OUTAGAMIE COUNTY PROJECT MANAGER OF ANY DISCREPANCIES FOUND DURING CONSTRUCTION OF THE PROJECT AND DO NOT PROCEED WITH THAT PORTION OF THE PROJECT, UNTIL A WRITTEN STATEMENT IS RECEIVED FROM THE OUTAGAMIE COUNTY PROJECT MANAGER PROVIDING CLEAR DIRECTIONS. IF A CONFLICT EXISTS BETWEEN THE CONTRACT DOCUMENTS AND ANY APPLICABLE CODE OR STANDARD, THE MOST STRINGENT REQUIREMENT SHALL BE INCLUDED FOR THIS PROJECT. THE OUTAGAMIE COUNTY PROJECT MANAGER SHALL MAKE THE DECISION REGARDING QUESTIONABLE AREAS OF CONFLICT.

1.10 REVIEW THE PROJECT WITH THE GENERAL CONTRACTOR, ELECTRICAL ENGINEER, AND THE OUTAGAMIE COUNTY PROJECT MANAGER BEFORE BEGINNING INSTALLATION.

SCOPE OF WORK

1.11 SYMBOLS
1.11.1 SYMBOLS SHOWN IN THE DRAWINGS SHALL BE USED.

1.12 PROJECT DESCRIPTION
1.12.1 THE PREMISE DISTRIBUTION SYSTEM SHALL INCLUDE THE HORIZONTAL CABLES, THE TELECOMMUNICATIONS OUTLETS/CONNECTORS IN THE WORK AREA, THE PATCH PANELS IN THE TELECOMMUNICATION CLOSET (HEREAFTER REFERRED AS THE TC), PATCH CORDS LOCATED IN THE TC, PATCH CORDS LOCATED AT THE TELECOMMUNICATIONS OUTLET/CONNECTOR IN THE WORK AREA.
1.12.2 THE HORIZONTAL CABLING SYSTEM SHALL ACCOMMODATE FUTURE EQUIPMENT AND SERVICE CHANGES.
1.12.3 THE HORIZONTAL CABLING SYSTEM IS A STAR TOPOLOGY. EACH WORK AREA TELECOMMUNICATIONS OUTLET/CONNECTOR AS SHOWN IN THE DRAWINGS SHALL BE CONNECTED TO A PATCH PANEL IN THE TC.
1.12.4 THE HORTONVILLE HIGHWAY GARAGE BUILDING HAS TWO TC AS INDICATED BY THE DRAWINGS.
1.12.5 THE HORTONVILLE HIGHWAY COLD STORAGE BUILDING HAS ONE TC AS INDICATED BY THE DRAWINGS.
1.12.6 SEPARATION OF HORIZONTAL CABLING PATHWAYS FROM TYPICAL SOURCES OF EMI SHALL BE ADHERED TO AS PER EIA/TIA STANDARDS.
1.12.7 BRIDGED TAPS AND SPLICES SHALL NOT BE PERMITTED AS PART OF THE HORIZONTAL CABLING SYSTEM.
1.12.8 THE MAXIMUM HORIZONTAL DISTANCE SHALL BE 90 M (295FT), FOR CATEGORY 6 CABLE. THIS CABLE LENGTH SHALL BE FROM THE MECHANICAL TERMINATION OF THE MEDIA AT THE HORIZONTAL CROSS-CONNECT IN THE TELECOMMUNICATIONS CLOSET TO THE TELECOMMUNICATIONS OUTLET/CONNECTOR IN THE WORK AREA.
1.12.9 ALL VOICE AND DATA HORIZONTAL CABLING FOR DATA JACK, CAMERA AND ACCESS POINT LOCATIONS SHALL BE PLENUM FOUR PAIR UTP CABLE WITH A WHITE JACKET, SPEC FOR PANDUIT'S CATEGORY 6 SYSTEM. THERE SHALL BE NO EXCEPTIONS OR ALLOWED ALTERNATIVES ACCEPTED. APPROVED UNSHIELDED CABLE MANUFACTURER FOR HORIZONTAL DATA CABLE: PANDUIT PART PUP6004WH-W (WHITE JACKET) FOR PLENUM.
1.12.10 ACCESS POINT ENCLOSURES SHALL BE OBERON WIRELESS ENCLOSURES 1047-1NAP45 FOR JUNIPER ACCESS POINT.
1.12.11 COMPUTER GENERATED WIRE LABELS SHALL BE USED TO LABEL THE PATCH PANELS AND STATION LOCATION FACEPLATES.
1.12.12 COMPUTER GENERATED PANDUIT TURN-TELL WIRE LABELS SHALL BE INSTALLED ON ALL NEWLY INSTALLED CABLING 2 TO 4 INCHES FROM ITS TERMINATION POINT AT BOTH THE TC AND STATION OUTLET ENDS.
1.12.13 EIA/TIA 568B WIRING CODE SHALL STANDARDIZE ALL CATEGORY 6 DATA COMMUNICATIONS TWISTED PAIR WIRING.
1.12.14 ALL HORIZONTAL CABLING SHALL BE PHYSICALLY SUPPORTED IN ACCORDANCE WITH THE LATEST REVISION OF THE EIA/TIA-CATEGORY 6 STANDARDS.
1.12.15 ALL CABLING SHALL BE PLENUM RATED.
1.12.16 THE ELECTRICAL CONTRACTOR WILL PROVIDE THE STATION END DEVICE BOXES AND CONDUIT WITH THE EXCEPTION OF THE TWO ACCESS POINT LOCATIONS IN THE HEATED GARAGE. THE CATEGORY 6 CABLING MAY BE INSTALLED AFTER THIS HAS BEEN ACCOMPLISHED.
1.12.17 ANY FURNITURE THAT MUST BE MOVED, FOR THE INSTALLATION OF THE PREMISE DISTRIBUTION SYSTEM, IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL SEE THAT ANY MOVED FURNITURE SHALL BE MOVED BACK INTO PLACE AFTER THE INSTALLATION IS COMPLETE.
1.12.18 THE PDS SHALL INCLUDE THE PANDUIT 25 YEAR SYSTEM WARRANTIES.

1.13 STATION AREA COMMUNICATION OUTLETS
1.13.1 FACEPLATES — PANDUIT'S MINI-COM CLASSIC SERIES VERTICAL FACEPLATES: 1 PORT MODULE SPACE, PART # CFP1IW / 4 PORT MODULE SPACE, PART CFP4IW.
1.13.2 BLANK FACEPLATE INSERTS — PANDUIT'S MINI-COM BLANK MODULE (COLOR OFF-WHITE), PART # CMBIW-X.
1.13.3 FUEL ISLAND AND SCALE: 2 PORT SURFACE MOUNT BOX PANDUIT PART # CBX2IW-A (INTERNATIONAL WHITE)
1.13.4 DATA JACKS — PANDUIT'S GIGA-CHANNEL MINI-JACK TX-6 MODULAR JACK (COLOR BLACK), PART # CJ688TGBL

1.14 HIGHWAY GARAGE BUILDING IT TELECOMMUNICATION CLOSET
1.14.1 FOLLOW DRAWINGS FOR INSTALLATION OF COMPONENTS IN THE HORTONVILLE HIGHWAY GARAGE BUILDING TC.
1.14.2 VERIFY WITH OUTAGAMIE COUNTY'S PROJECT MANAGER THE LOCATION FOR THE NEW RACK. PROVIDE A NEW 7' SILVER TWO POST RACK, CHATSWORTH PART 48353-503 AND SECURE IT TO THE FLOOR. THIS WILL BE REFERRED TO AS THE TC RACK.
1.14.3 INSTALL NEW 18" LADDER RACK FROM THE TOP OF THE NEW COMMUNICATIONS RACK TO THE WALL. USE THIS LADDER RACK TO SECURE THE TWO POST RACK.
1.14.4 PROVIDE PANDUIT'S WATERFALL KIT ON THE TOP OF THE TWO POST RACK, PANDUIT WATERFALL KIT PART #CMW-KIT
1.14.5 ON THE TC RACK: GROUND THE RACK USING #6 AWG GREEN INSULATED GROUNDED WIRE.
1.14.6 ON THE TC RACK: PROVIDE CHATSWORTH 66" VERTICAL RACK MOUNT POWER STRIP, 20 AMP, PART 12848-706.
1.14.7 ON THE TC RACK: PROVIDE CHATSWORTH 6" EXTENDER BRACKET FOR VERTICAL POWER STRIP, PART 12847-701
1.14.8 TERMINATE ALL CATEGORY 6 DATA JACKS IN A SEQUENTIAL ORDER ON THE PATCH PANELS, STARTING FROM LOWEST AND GOING TO HIGHEST.
1.14.9 ON THE TC RACK: PROVIDE TWO PANDUIT 48 PORT METAL PATCH PANEL, PART # CP48BLY (DOES NOT COME WITH JACKS, MUST BE ORDERED SEPARATELY).
1.14.10 ON THE TC RACK: PROVIDE THREE PANDUIT (FRONT/REAR) HORIZONTAL WIRE MANAGEMENT, PART #NM2
1.14.11 ON THE TC RACK: PROVIDE ONE PANDUIT (FRONT) HORIZONTAL WIRE MANAGEMENT, PART # NCMHF2
1.14.12 VERTICAL WIRE MANAGEMENT: ON THE TC PROVIDE TWO PANDUIT 6" DUAL SIDED VERTICAL WIRE MANAGEMENT PART #PRV2VD06.
1.14.13 PROVIDE ONE CHATSWORTH 19" SINGLE BLACK SHELF, PART #40750-719
1.14.14 CATEGORY 6 DATA JACKS — PANDUIT'S GIGA-CHANNEL MINI-JACK TX-6 MODULAR JACK (COLOR BLACK), PART #CJ688TGBL
1.14.15 PROVIDE ONE PANDUIT OPTICOM RACK MOUNT FIBER ENCLOSURE, PART FCE2U
1.14.16 IN THE FIBER OPTIC PANDUIT ENCLOSURE, PROVIDE ONE PANDUIT OPTICOM FAP, OS2, 6 LC DUPLEX FIBER OPTIC ADAPTER PANEL, PART #FAP6WBUDLCZ
1.14.17 PROVIDE CAMERA DROPS CONSISTING OF ONE CATEGORY 6 CABLE TO EACH LOCATION PER THE DRAWING. LEAVE 14" OF SLACK INSIDE THE BUILDING AT THE CAMERA END.
1.14.18 LOCATIONS: 100C, 100E, 100G, 105A, 106A, 110A, 111F, 112B, 112C
1.14.19 PROVIDE CAMERA DROPS CONSISTING OF TWO CATEGORY 6 CABLE TO EACH LOCATION PER THE DRAWING. LEAVE 14" OF SLACK INSIDE THE BUILDING AT THE CAMERA END.
1.14.20 LOCATIONS: 100K
1.14.21 FOR THE CAMERA DROP LOCATIONS — USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL AT THE PATCH PANEL END. TERMINATE THE CAMERA END USING CATEGORY 6 RJ45 SOLID PLUGS FOR FOUR PAIR UTP CATEGORY 6 CABLE
1.14.22 PROVIDE ACCESS POINT DROPS CONSISTING OF ONE CATEGORY 6 CABLE TO EACH LOCATION PER THE DRAWING. LEAVE 14' OF SLACK AT THE ACCESS POINT END. LOCATIONS: 100D, 100F, 106B, 110C
1.14.23 WIRELESS ACCESS POINT LOCATIONS IN HEATED GARAGE AREA: RUN ¾ INCH RIGID CONDUIT FROM THE CEILING STRUCTURE DOWN TO A HEIGHT WITHOUT OBSTRUCTIONS. PROVIDE A SINGLE GANG METAL DEVICE. INSTALL THE CATEGORY 6 CABLING DOWN THE CONDUIT INTO THE DEVICE BOX AND TERMINATE WITH A CATEGORY 6 RJ45 SOLID PLUG FOR FOUR PAIR UTP CATEGORY 6 CABLE. ACCESS POINTS WILL BE PLUGGED DIRECTLY INTO THE RJ45 END AND MOUNTED ON THE SINGLE GANG METAL DEVICE BOX. INSTALL THE COUNTY PROVIDED ACCESS POINT AND USE A COUNTY PROVIDED PATCH CORD TO PATCH THE ACCESS POINT.
1.14.24 LOCATIONS: 100D, 100F
1.14.25 WIRELESS ACCESS POINT LOCATION IN THE PARTS ROOM 106: RUN CATEGORY 6 CABLE INTO A SINGLE GANG METAL DEVICE BOX (PROVIDED BY THE ELECTRICAL CONTRACTOR) AT AN 8' HEIGHT ABOVE THE FLOOR. TERMINATE THE CATEGORY 6 CABLING WITH PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL. USE PANDUIT INTERNATIONAL WHITE MINI-COM CLASSIC 1 PORT FACEPLATE, PART #CFP1IW. UNDERNEATH THE SINGE GANG METAL DEVICE BOX MOUNT THE. COUNTY PROVIDED. ACCESS POINT USING A RIGHT ANGLE BRACKET. USE A COUNTY PROVIDED PATCH CORD TO PATCH THE ACCESS POINT.
1.14.26 WIRELESS ACCESS POINT LOCATION IN OFFICE CORRIDOR 110: PROVIDE OBERON WIRELESS ENCLOSURES 1047-1NAP45 AT LOCATION 110C AND ATTACH IT TO BUILDING STRUCTURE. MOUNT COUNTY PROVIDED JUNIPER ACCESS POINT. USE A COUNTY PROVIDED PATCH CORD TO PATCH THE ACCESS POINT
1.14.27 FOR TV MONITORS PLACE TWO DROPS CONSISTING OF TWO CATEGORY CABLES NEXT TO THE TWO TV MONITOR ELECTRICAL OUTLETS. LOCATIONS: 111D, 111E
1.14.28 PROVIDE DATA DROPS CONSISTING OF THREE CATEGORY 6 CABLES TO EACH LOCATION PER THE DRAWING. LOCATIONS: 100E, 100J, 110B, 111A, 111B, 111C
1.14.29 PROVIDE DATA DROPS CONSISTING OF FOUR CATEGORY 6 CABLES TO EACH LOCATION PER THE DRAWING. LOCATIONS: 112B, 113A
1.14.30 FOR DATA DROP LOCATIONS — USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL. USE PANDUIT MINI-COM CLASSIC SERIES VERTICAL FACEPLATES 4 MODULE SPACE, PART #CFP4IW. USE PANDUIT BLANKS TO FILL IN EMPTY FACEPLATE PORTS, PART #CMBIWX.

1.15 ADDITIONAL LOCATIONS ADDED AS REQUIRED
1.15.1 COORDINATE WITH RESPECTIVE CONTRACTORS TO DETERMINE TERMINATION STYLE REQUIRED FOR 1.15.2 AND 1.15.3
1.15.2 PROVIDE DATA DROPS CONSISTING OF TWO CATEGORY 6 CABLES TO EACH LOCATION PER THE DRAWING. LOCATIONS: 112D
1.15.3 PROVIDE DATA DROPS CONSISTING OF ONE CATEGORY 6 CABLES TO EACH LOCATION PER THE DRAWING. LOCATIONS: 111G, 107A,105B, 103A, 103B, 103C, 103D,116F

1.16 HORTONVILLE HIGHWAY HEATED GARAGE TELECOMMUNICATIONS CLOSET
1.16.1 FOLLOW DRAWINGS FOR INSTALLATION OF COMPONENTS IN THE HORTONVILLE HIGHWAY HEATED GARAGE TC.
1.16.2 PROVIDE 18RU, 30" DEPTH, WINDOWED, BLACK PANDUIT WALL CABINET, PART #PZWMC1830W, AT THE DESIGNATED LOCATION.
1.16.3 IN THE PANDUIT WALL CABINET GROUND THE RACK USING #6 AWG GREEN INSULATED GROUNDED WIRE. INCLUDE ALL NEEDED HARDWARE TO COMPLETE GROUND. PROVIDE A GROUNDING BAR IN THE BUILDING.
1.16.4 PROVIDE ONE PANDUIT OPTICOM RACK MOUNT FIBER ENCLOSURE, PART FCE2U
1.16.5 IN THE FIBER OPTIC PANDUIT ENCLOSURE, PROVIDE TWO PANDUIT OPTICOM FAP, OS2, 6 LC DUPLEX FIBER OPTIC ADAPTER PANEL, PART #FAP6WBUDLCZ
1.16.6 PROVIDE ONE PANDUIT 48 PORT ALL METAL PATCH PANEL, (PART # CP48BLY). NOTE: IT DOES NOT COME WITH JACKS.
1.16.7 PROVIDE TWO PANDUIT (FRONT/REAR) HORIZONTAL WIRE MANAGEMENT, PART #NM2
1.16.8 CATEGORY 6 DATA JACKS — PANDUIT'S 6 MODULAR JACK (COLOR BLACK), PART #CJ688TGBL
1.16.9 PROVIDE HORIZONTAL POWER STRIP, 19" HORIZONTAL RACK MOUNT 15A POWER STRIP PART # TRIPP LITE MFG DRS-1215
1.16.10 PROVIDE ONE CHATSWORTH 19" SINGLE BLACK SHELF, PART #40750-719
1.16.11 TERMINATE ALL CATEGORY 6 DATA JACKS IN A SEQUENTIAL ORDER ON THE PATCH PANELS, STARTING FROM LOWEST AND GOING TO HIGHEST.
1.16.12 PROVIDE CAMERA DROPS CONSISTING OF ONE CATEGORY 6 CABLE TO EACH LOCATION PER THE DRAWING. LEAVE 14" OF SLACK INSIDE THE BUILDING AT THE CAMERA END.
1.16.13 LOCATIONS: 100A, 100B, 100H
1.16.14 FOR THE CAMERA DROP LOCATIONS — USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL AT THE PATCH PANEL END. TERMINATE THE CAMERA END USING CATEGORY 6 RJ45 SOLID PLUGS FOR FOUR PAIR UTP CATEGORY 6 CABLE. CAMERAS WILL BE PLUGGED DIRECTLY INTO THE RJ45 ENDS.
1.16.15 PROVIDE FUEL ISLAND DROP CONSISTING OF TWO OUTDOOR RATED CATEGORY 6, UTP 4 PAIR CABLES, PART # PUO6C04BL-CGZ.
1.16.16 PROVIDE ONE 2" 3-CELL MAXCELL FABRIC INNERDUCT/CONDUIT (OR ANOTHER MANUFACTURER EQUAL) IN THE 2" CONDUIT FROM THE HEATED GARAGE TO THE FUEL ISLAND. THE CATEGORY 6 CABLING SHALL RUN THROUGH ONE OF THE CELLS.
1.16.17 FOR THE FUEL ISLAND DROP LOCATION - USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL AND ONE 2 PORT SURFACE MOUNT BOX PANDUIT PART # CBX2IW-A (INTERNATIONAL WHITE)
1.16.18 PROVIDE SCALE DROP CONSISTING OF TWO OUTDOOR RATED CATEGORY UTP 4 PAIR CABLES, PART # PUO6C04BL-CGZ.
1.16.19 PROVIDE ONE 2" 3-CELL MAXCELL FABRIC INNERDUCT/CONDUIT (OR ANOTHER MANUFACTURER EQUAL) IN THE 2" CONDUIT FROM THE HEATED GARAGE TO THE SCALE. THE CATEGORY 6 CABLING SHALL RUN THROUGH ONE OF THE CELLS.
1.16.20 FOR THE SCALE DROP LOCATION - USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL AND ONE 2 PORT SURFACE MOUNT BOX PANDUIT PART # CBX2IW-A (INTERNATIONAL WHITE)

1.17 HORTONVILLE HIGHWAY COLD STORAGE BUILDING IT TELECOMMUNICATIONS CLOSET COMPONENTS
1.17.1 FOLLOW DRAWINGS FOR INSTALLATION OF COMPONENTS IN THE HORTONVILLE HIGHWAY COLD STORAGE BUILDING TC.
1.17.2 PROVIDE 18RU, 30" DEPTH, WINDOWED, BLACK PANDUIT WALL CABINET, PART #PZWMC1830W, AT THE DESIGNATED LOCATION AS SHOWN DURING THE MANDATORY SITE VISIT (FIGURE 1).
1.17.3 IN THE PANDUIT WALL CABINET GROUND THE RACK USING #6 AWG GREEN INSULATED GROUNDED WIRE. INCLUDE ALL NEEDED HARDWARE TO COMPLETE GROUND. PROVIDE A GROUNDING BAR IN THE BUILDING.
1.17.4 PROVIDE ONE PANDUIT OPTICOM RACK MOUNT FIBER ENCLOSURE, PART FCE2U
1.17.5 IN THE FIBER OPTIC PANDUIT ENCLOSURE, PROVIDE ONE PANDUIT OPTICOM FAP, OS2, 6 LC DUPLEX FIBER OPTIC ADAPTER PANEL, PART #FAP6WBUDLCZ
1.17.6 PROVIDE ONE PANDUIT 48 PORT ALL METAL PATCH PANEL (PART # CP48BLY). NOTE: IT DOES NOT COME WITH JACKS.
1.17.7 PROVIDE TWO PANDUIT (FRONT/REAR) HORIZONTAL WIRE MANAGEMENT, PART #NM2
1.17.8 CATEGORY 6 DATA JACKS — PANDUIT'S 6 MODULAR JACK (COLOR BLACK), PART #CJ688TGBL
1.17.9 PROVIDE HORIZONTAL POWER STRIP, 19" HORIZONTAL RACK MOUNT 15A POWER STRIP PART # TRIPP LITE MFG DRS-1215
1.17.10 PROVIDE ONE CHATSWORTH 19" SINGLE BLACK SHELF, PART #40750-719
1.17.11 TERMINATE ALL CATEGORY 6 DATA JACKS IN A SEQUENTIAL ORDER ON THE PATCH PANELS, STARTING FROM LOWEST AND GOING TO HIGHEST.
1.17.12 PROVIDE CAMERA DROPS CONSISTING OF ONE CATEGORY 6 CABLE TO EACH LOCATION PER THE DRAWING. LEAVE 14" OF SLACK INSIDE THE BUILDING AT THE CAMERA END.
1.17.13 LOCATIONS: 116A, 116B, 116C, 111GD, 111GE
1.17.14 FOR THE CAMERA DROP LOCATIONS — USE PANDUIT GIGA-CHANNEL MINI JACK TX-6 MODULAR JACKS (BLACK) PART #CJ688TGBL AT THE PATCH PANEL END. TERMINATE THE CAMERA END USING CATEGORY 6 RJ45 SOLID PLUGS FOR FOUR PAIR UTP CATEGORY 6 CABLE. CAMERAS WILL BE PLUGGED DIRECTLY INTO THE RJ45 ENDS.

1.18 FIBER OPTIC INSTALLATION: HIGHWAY GARAGE IT TC TO HIGHWAY HEATED GARAGE TC
1.18.1 PROVIDE 12 STRAND PLENUM SINGLEMODE FIBER OPTIC CABLING FROM HIGHWAY GARAGE IT TC TO HIGHWAY HEATED GARAGE TC. INSTALL THE ENTIRE FIBER OPTIC CABLE NETWORK WITH THE PROPER SLACK BUILT-IN TO THE DESIGN FOR RESTORATION AND SPLICING. NOTIFY THE OUTAGAMIE COUNTY PROJECT MANAGER OF ALL DATES AND TIMES WHEN UNDERGROUND WORK IS OCCURRING.
1.18.2 PROVIDE A 1 ¼ INCH ORANGE INNERDUCT/CONDUIT IN WHICH THE FIBER OPTIC CABLE SHALL BE PLACED IN.
1.18.3 USE PANDUIT PLENUM 12 STRAND SINGLEMODE FIBER PART # FSDP912Y OR EQUIVALENT.
1.18.4 LEAVE 20' OF SLACK AT BOTH ENDS. AT THE HIGHWAY GARAGE IT TC LEAVE THE SLACK IN THE 18" LADDER RACK. AT THE HIGHWAY HEATED GARAGE TC PROVIDE A PROPERLY SIZED PULL BOX NEXT TO THE PANDUIT WALL CABINET AND PLACE THE SLACK INSIDE.
1.18.5 TERMINATE THE FIBER OPTIC CABLES WITH SINGLEMODE LC CONNECTORS USING FUSION SPLICING WITH PANDUIT PIGTAILS (F91IBN1NNNSNM001), THE PROPER PANDUIT SPLICE TRAYS (FOSM#), AND PANDUIT SPLICE TRAY HOLDER (FOSMH4U). PROVIDE BLANK ADAPTER PANELS IN ANY UNUSED FIBER ENCLOSURE SLOTS, PANDUIT BLANK (FAP8).

1.19 FIBER OPTIC INSTALLATION: HIGHWAY HEATED GARAGE TC TO HIGHWAY COLD STORAGE BUILDING TC
1.19.1 PROVIDE 12 STRAND PLENUM SINGLEMODE FIBER OPTIC CABLING FROM THE HIGHWAY HEATED GARAGE TC TO THE HIGHWAY COLD STORAGE BUILDING. INSTALL THE ENTIRE FIBER OPTIC CABLE NETWORK WITH THE PROPER SLACK BUILT-IN TO THE DESIGN FOR RESTORATION AND SPLICING. NOTIFY THE OUTAGAMIE COUNTY PROJECT MANAGER OF ALL DATES AND TIMES WHEN UNDERGROUND WORK IS OCCURRING.
1.19.2 IDENTIFY ALL UTILITIES PRIOR TO BEGINNING WORK ON THE PROJECT.
1.19.3 PROVIDE A 1 ¼ INCH INNERDUCT/CONDUIT IN WHICH THE FIBER OPTIC CABLE SHALL BE PLACED IN WHEN ABOVE GROUND. UTILIZE THE BURIED 2" INNERDUCT/CONDUIT PLACED BY THE ELECTRICAL CONTRACTOR BETWEEN LOCATIONS.
1.19.4 USE PANDUIT OPTI-CORE FIBER OPTIC CABLE 12 STRAND 9/125 ΜM OFNR (ETL) OFNR FT4 DIELECTRIC OR EQUIVALENT.
1.19.5 PROVIDE TRACER WIRE IN BURIED INNERDUCT/CONDUIT. TRACER WIRE TO BE ORANGE 12 AWG, CCS SOLID WITH MINIMUM BREAK LOAD OF 1,150 LBS. MINIMUM 30 MIL HDPE INSULATION. DO NOT USE THHN WIRE. GROUND WIRE AT ALL END POINTS WITH MINIMUM TWO FEET OF SLACK. USE LOCKABLE, DIELECTRIC SILICON GEL FILLED CONNECTORS DESIGNED FOR DIRECT BURY ONLY.
1.19.6 THE CONSTRUCTION CONTRACTOR SHALL SUPPLY DUCTS PLUGS AND PLUG/RE-PLUG ALL DUCT IN HAND HOLES AND AT RISERS.
1.19.7 PROPOSED PLACEMENT OF FACILITIES IS BASED ON DESIGN AND PLANNING LOCATES OBTAINED THROUGH THE STATE ONE CALL SYSTEM. ACTUAL FACILITY PLACEMENT IS SUBJECT TO CHANGE BASED ON FIELD LOCATES ENCOUNTERED DURING CONSTRUCTION.
1.19.8 THE CONSTRUCTION CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND FOLLOWING ANY AND ALL STIPULATIONS SET FORTH BY THE PERMIT ENTITIES.
1.19.9 ANY ADJACENT AREAS DAMAGED DURING CONSTRUCTION MUST BE RESTORED TO THEIR ORIGINAL CONDITION.
1.19.10 ROUTE DEVIATIONS SHALL NOT BE ALLOWED WITHOUT CONCURRENCE OF THE OUTAGAMIE COUNTY PROJECT MANAGER.
1.19.11 PROVIDE A 25' SLACK LOOP IN THE HIGHWAY HEATED GARAGE BUILDING TC AND THE HIGHWAY COLD STORAGE TC.
1.19.12 PLACE PULL BOX LOCATIONS AT EACH TC FOR THE 25' SLACK LOOP.

1.20 RESTORATION
1.20.1 ALL AREAS SHALL BE REFILLED AND RESTORED, INCLUDING BUT NOT LIMITED TO AREAS BEING RAKED AND SEEDED.

1.21 INNERDUCT/CONDUIT
1.21.1 ALL UNDERGROUND FIBER OPTIC CABLE SHALL BE PLACED INSIDE 2" INNERDUCT/CONDUIT. ALL INDOOR FIBER OPTIC CABLE SHALL BE PLACED INSIDE 1 1/4" ORANGE CORRUGATED DUCT.
1.21.2 TRACERS - PROVIDE #12 GROUND WIRE FOR TRACERS.

1.22 WORKMANSHIP
1.22.1 ACCEPTABLE WORKMANSHIP IS CHARACTERIZED BY FIRST QUALITY APPEARANCE AND FUNCTION, CONFORMING TO ALL APPLICABLE STANDARDS OF COPPER AND FIBER OPTIC CONSTRUCTION, AND EXHIBITING A HIGH DEGREE OF QUALITY AND PROFICIENCY, WHICH IS JUDGED BY THE OWNER AND PROJECT MANAGER AS EQUIVALENT OR BETTER THAN ORDINARY PRODUCED BY A QUALIFIED INDUSTRY TRADESMAN.
1.22.2 THE AWARDED BIDDER MUST BE A PANDUIT PSC ENTITY CAPABLE OF PROVIDING THE CUSTOMER WITH THE WARRANTY ON PANDUIT'S COPPER AND FIBER OPTIC SYSTEM. THE PROJECT SHALL BE STAFFED AT ALL TIMES BY INSTALLERS AND TECHNICIANS WHO, IN THE ROLE OF LEAD CRAFTSPERSONS, WILL BE ABLE TO PROVIDE LEADERSHIP AND TECHNICAL RESOURCES FOR THE REMAINING CRAFTSPERSONS ON THE PROJECT. A COPY OF THE PANDUIT REGISTERED INSTALLERS MUST BE SUBMITTED IN THE AWARDED BIDDER'S RESPONSE TO THIS RFB. THE AWARDED BIDDER SHALL ASSIGN PANDUIT REGISTERED INSTALLERS TO THIS PROJECT.
1.22.3 PERSONNEL SHALL NOT BE USED IN THE PERFORMANCE OF THE INSTALLATION OF MATERIAL AND EQUIPMENT WHO IN THE OPINION OF THE OWNER AND/OR PROJECT MANAGER, ARE DEEMED TO BE CARELESS OR UNQUALIFIED TO PERFORM THE ASSIGNED TASKS. MATERIAL AND EQUIPMENT INSTALLATIONS NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS OR INSTALLED WITH THE SUBSTANDARD WORKMANSHIP AND NOT ACCEPTABLE TO THE OWNER AND/OR PROJECT MANAGER, SHALL BE REMOVED AND REINSTALLED BY THE QUALIFIED CRAFTSMAN AT NO CHARGE TO THE OWNER AND WITH NO CHANGES TO THE CONTRACT PRICE.
1.22.4 WIRING COLOR CODES SHALL BE OBSERVED AT ALL TIMES AND TERMINATIONS SHALL BE UNIFORM THROUGHOUT THE PDS.

1.23 REFERENCE STANDARD
1.23.1 UL UNDERWRITER'S LABORATORIES, INC.
1.23.2 NEC NATIONAL ELECTRIC CODE
1.23.3 NFPA NATIONAL FIRE PROTECTION ASSOCIATION
1.23.4 NEMA NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION
1.23.5 ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS
1.23.6 IEEE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
1.23.7 ANSI AMERICAN NATIONAL STANDARDS INSTITUTE, INC.
1.23.8 BICSI BUILDING INDUSTRY CONSULTANTS SERVICE INTERNATIONAL
1.23.9 EIA/TIAELECTRONIC / TELECOMMUNICATIONS INDUSTRY ASSOCIATION
1.23.10 ALL FEDERAL, STATE, COUNTY AND CITY LAWS, CODES AND STANDARDS APPLY
1.23.11 ALL WORK SHALL BE PERFORMED UNDER THE LATEST EDITION OF THE ABOVE STANDARDS, AVAILABLE AT THE TIME OF BIDDING. ALL REFERENCES TO A PDS WITHIN THE ABOVE STANDARDS SHALL BE IN EFFECT AS HAVING BEEN WRITTEN WITHIN THIS CONTRACT DOCUMENT.

1.24 GENERAL CABLING PRACTICES
1.24.1 WIRING COLOR CODES SHALL BE OBSERVED AT ALL TIMES AND TERMINATIONS SHALL BE UNIFORM THROUGHOUT THE PDS.
1.24.2 EIA/TIA 568B WIRING CODE SHALL STANDARDIZE ALL DATA COMMUNICATIONS TWISTED PAIR WIRING.
1.24.3 FIRE STOPPING SHALL BE THE RESPONSIBILITY OF THE AWARDED CONTRACTOR. ALL PENETRATIONS OF WALLS AND/OR FLOOR SPACES SHALL BE FIRE STOPPED WITH THE EXACT TIME RATING AS THE WALL AND/OR FLOOR ITSELF.
1.24.4 REFER AND ADHERE TO EIA/TIA 607 AND THE NATIONAL ELECTRIC CODE FOR ALL GROUNDING.

1.25 CABLE AND SUPPORT ROUTING
1.25.1 STATION CABLE AND TIE CABLES USED IN THIS PDS ARE TO BE INSTALLED PER STANDARD CABLING PRACTICES. WHEN CEILING SPACE IS USED, CABLES SHALL BE ROUTED AT RIGHT ANGLES TO ELECTRICAL POWER CIRCUITS AND A MINIMUM OF 12 FEET FROM THOSE CIRCUITS.
1.25.2 USE OF CEILING TILE GRIDS OR HANGER WIRES FOR CABLE SUPPORTS SHALL BE PROHIBITED. THE CONTRACTOR SHALL PROVIDE CEILING SUPPORT HANGERS (J-HOOK STYLE) FOR ALL CABLES. THE CEILING SUPPORT HANGERS (J-HOOK STYLE) SHALL BE 4 FEET OR LESS APART.
1.25.3 VERTICAL RISER CABLES AND BUNDLES OF HORIZONTAL CABLING SHALL BE PROPERLY SECURED TO PREVENT SLIPPAGE DUE TO GRAVITY. AS A MINIMUM REQUIREMENT, CABLES SHALL BE SUPPORTED AT THEIR UPPERMOST POINT AND AT EACH FLOOR OF VERTICAL PLACEMENT.

1.26 LABELING
1.26.1 ALL CABLES SHALL BE LABELED WITH PANDUIT TURN-TELL COMPUTER GENERATED WIRE LABEL ID NUMBERS (2-4 INCHES ABOVE THE TERMINATION) WHICH FOLLOWS THE LABELING STANDARDS O

ELECTRICAL SPECIFICATIONS (CONT.)

DIVISION 28 ELECTRONIC SAFETY, SECURITY, FIRE ALARM

28 10 00 ACCESS CONTROL

SPECIFICATION PROVIDED BY OWNER

A. OWNER'S PREFERRED VENDOR
   SCOTT STILES
   LIFE SAFETY SERVICE REPRESENTATIVE
   JOHNSON CONTROLS FIRE PROTECTION LP
   N961 TOWER VIEW DR, GREENVILLE, WI 54942
   1-920-650-1985 MOBILE
   1-888-746-7539 (1-888-SIMPLEX) MAIN MENU
   SCOTT.STILES@JCI.COM
B. CONTRACTOR SHALL WORK WITH THE OWNER AND OWNERS ACCESS CONTROLS SYSTEM PROVIDER TO ENSURE A COMPLETE AND OPERATIONAL SYSTEM.
C. SCOPE OF WORK
   1. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL LABOR, MATERIALS, ENCLOSURES, WIRING, EQUIPMENT, PROGRAMMING, TRAINING, TESTING, DOCUMENTATION AND WARRANTY SUPPORT, REQUIRED TO PROVIDE A COMPLETELY OPERATIONAL AND WORKING SECURITY SYSTEM. ANY MATERIALS OR EQUIPMENT NECESSARY FOR THE PROPER OPERATION OF THIS SYSTEM, WHETHER OR NOT SPECIFIED OR DESCRIBED HEREIN, SHALL BE DEEMED PART OF THIS SYSTEM AND SHALL BE PROVIDED BY THE INSTALLER WITHOUT ANY ADDITIONAL COST TO THE CLIENT.
   2. THE SECURITY SYSTEM INSTALLER (SSI) SHALL COORDINATE WITH THE DOOR HARDWARE CONTRACTOR ON THE PLACEMENT OF ALL ELECTRONIC LOCKING HARDWARE FOR THIS PROJECT. THE DOOR HARDWARE CONTRACTOR SHALL PROVIDE AND INSTALL ALL ELECTRONIC DOOR LOCKING HARDWARE. THE SSI SHALL PROVIDE THE LOW VOLTAGE POWER SUPPLIES FOR ALL OTHER ELECTRIC LOCKS, WIRE AND CABLE, SHALL TERMINATE ALL CONNECTIONS, AND SHALL INTERFACE THIS EQUIPMENT WITH THE INTEGRATED SECURITY SYSTEM.
   3. NETWORK COMPONENTS, WIRING, AND FIBER OPTIC CABLING SHALL CONFORM TO ALL OWNER ESTABLISHED REQUIREMENTS, STANDARDS, AND PRACTICES.
D. CONTRACTOR QUALIFICATIONS
   1. A. THE SSI SELECTED FOR THIS PROJECT MUST BE A DIRECT MANUFACTURER AUTHORIZED REPRESENTATIVE OF THE PRODUCT THEY PROPOSE TO PROVIDE. ALL TECHNICIANS ASSIGNED TO INSTALL AND CONFIGURE THIS SYSTEM SHALL BE FACTORY TRAINED AND CERTIFIED FOR THE PROPER INSTALLATION OF THIS EQUIPMENT. THE SSI MUST HAVE A MINIMUM OF 5 QUALIFIED AND FACTORY TRAINED TECHNICIANS TO SUPPORT THIS SYSTEM. THIS COMPANY MUST BE OF ESTABLISHED REPUTATION AND EXPERIENCE, REGULARLY ENGAGED IN THE SUPPLY AND SUPPORT OF SUCH SYSTEMS FOR A PERIOD OF AT LEAST FIVE CONSECUTIVE YEARS. THIS COMPANY SHALL HAVE A FULLY STAFFED OFFICE OF SALES AND TECHNICAL SUPPORT REPRESENTATIVES WITHIN 100 MILES OF TRAVEL TIME TO THIS PROJECT AND PROVIDE A 4 HOUR RESPONSE TIME.
   2. OTHER REQUIRED SSI QUALIFICATIONS ARE:
   3. THE SSI SHALL AGREE, IN WRITING, AS PART OF THEIR PROPOSAL, TO PROVIDE BOTH WARRANTY AND NON-WARRANTY SERVICE WITHIN 4 HOURS OF NOTIFICATION OF A PROBLEM. THE SSI SHALL BE ABLE TO PERFORM ANY AND ALL REPAIRS TO THE SYSTEM WITHIN 24 HOURS.
   4. THE SSL AS A MINIMUM, MUST CARRY A CURRENT STATE ISSUED LIMITED ENERGY LICENSE.
E. SYSTEM DESCRIPTION
   1. THE SECURITY SYSTEMS PRIMARY PURPOSES SHALL BE TO PROVIDE ACCESS CONTROL CAPABILITIES FOR THIS NEW PROJECT. THE SYSTEM SHALL PROVIDE THE ABILITY TO REGULATE AND CONTROL ACCESS THROUGH SPECIFIED AREAS OF THE FACILITY.
   2. THE SYSTEM SHALL BE COMPATIBLE WITH AND SHALL BE CONNECTED TO THE OWNERS EXISTING SIELOX CARD ACCESS SYSTEM.
   3. THE SECURITY SYSTEM HAS BEEN DESIGNED TO SUPPORT AN ADVANCED DISTRIBUTED NETWORK ARCHITECTURE WHEREAS INTELLIGENT SYSTEM CONTROLLERS DO NOT NEED TO BE HOME-RUN WIRED BACK TO THE DATABASE SERVER.
   4. ALL INTELLIGENT SYSTEM CONTROLLERS SHALL BE CONNECTED TO THE LAN/WAN NETWORK. THESE CONTROL PANELS SHALL COMMUNICATE WITH THE DATABASE SERVER USING INDUSTRY STANDARD NETWORK HUB, SWITCHES, AND ROUTERS. SECURE TCP/IP COMMUNICATION PROTOCOLS SHALL BE USED FOR DATA TRANSMISSION ACROSS THIS DISTRIBUTED NETWORK SYSTEM. ANY ACCESS CONTROL WORKSTATION RUNNING LICENSED SECURITY SYSTEM SOFTWARE SHALL HAVE FULL ACCESS TO THIS NETWORK.
F. SUBMITTALS
   1. SUBMITTALS SHALL INCLUDE DETAILED SHOP DRAWING, EQUIPMENT LISTS AND EQUIPMENT INFORMATION AND CUT SHEETS.
G. CARD READER
   1. SIELOX PINNACLE AC-2700 WITH LIFESAFETY POWER ENCLOSURE. THE CARD READER SHALL BE A HID SIGNO-40 FOR WALL MOUNT APPLICATIONS AND A HID SIGNO-20 FOR MULLION MOUNT APPLICATIONS.
H. MAIN CONTROLLER AND TERMINAL CONTROLLERS
   1. MAIN CONTROLLERS AND TERMINAL CONTROLLERS SHALL BE SIELOX AC 2700 BOARDS
I. POWER SUPPLY — DOOR LOCKING HARDWARE / ACCESS SYSTEM
   1. POWER TO THE NEW CONTROLLER WILL BE FED FROM A LIGHTING PANEL AT THE SALT STORAGE BUILDING. THE DATA FOR THE NEW CONTROLLER WILL BE CONNECTED TO THE EXISTING HIGHWAY DEPARTMENT MAIN BUILDING. THE LOW VOLTAGE POWER SUPPLY SHALL CONVERT A 115 VAC 60 HZ INPUT TO A CONTINUOUSLY SUPPLY 12 OR 24 VDC. THE POWER SUPPLY SHALL BE UL LISTED, NFPA COMPLIANT, AND CLASS 2 RATED. THE POWER SUPPLY SHALL BE HOUSED IN NEMA 1 HINGED COVER ENCLOSURES WHERE MOUNTED INDOORS AND IN FULLY WEATHERPROOF NEMA 4 ENCLOSURES WHEN LOCATED IN AN OUTDOOR ENVIRONMENTAL CONDITIONS. ALL ENCLOSURES SHALL BE KEY LOCKABLE. KEYED ALIKE, AND SHALL INCLUDE A TAMPER SWITCH FOR MONITORING OF THE DOOR. ALL CABINET OPENING SHALL INITIATE AN ALARM CONDITION TO THE SECURITY MONITORING SYSTEM. THE LOW VOLTAGE POWER SUPPLIES FOR LOW VOLTAGE DOOR HARDWARE SHALL BE LIFE SAFETY POWER LSP-FP0250/150 OR AN APPROVED EQUAL.
J. DOOR STRIKES
   1. DOOR STRIKES SHALL BE COORDINATED WITH DOOR HARDWARE TO ASSURE COMPATIBILITY.
K. SECONDARY DC-DC BOARD
   1. SECONDARY DC-DC BOARD SHALL BE LIFE SAFETY POWER LSP-8100 OR EQUIVALENT.
L. RELAY BOARD
   1. DOOR STRIKE POWER SHALL RUN THROUGH RELAY BOARD MANUFACTURED BY LIFE SAFETY POWER MODEL LSP-C8 OR EQUIVALENT.
M. BATTERY
   1. BATTERY SHALL BE INSTALLED AND WIRED TO PROVIDE UNINTERRUPTED POWER DURING SHORT POWER OUTAGES. BATTERY SHALL BE 12 VDC / 12 AH SEALED LEAD ACID BATTERY.
N. ACCESS CONTROLS CONTRACTOR SHALL PROVIDE AND INSTALL ALL ANCILLARY MATERIALS AND LABOR NEEDED TO MAKE THE CARD ACCESS SYSTEM A COMPLETE AND FULLY FUNCTIONAL SYSTEM.

28 20 00 VIDEO SURVEILLANCE

A. REVIEW RESPONSIBILITY MATRIX ON SHEET E0.3.
B. REVIEW DIVISION 27 SPECIFICATIONS. PROVIDE ALL BOXES, CONDUIT, AND CABLING.
C. CONTRACTOR SHALL WORK WITH THE OWNER TO ENSURE A COMPLETE AND OPERATIONAL SYSTEM.

28 31 10 DIGITAL, ADDRESSABLE FIRE ALARM SYSTEM

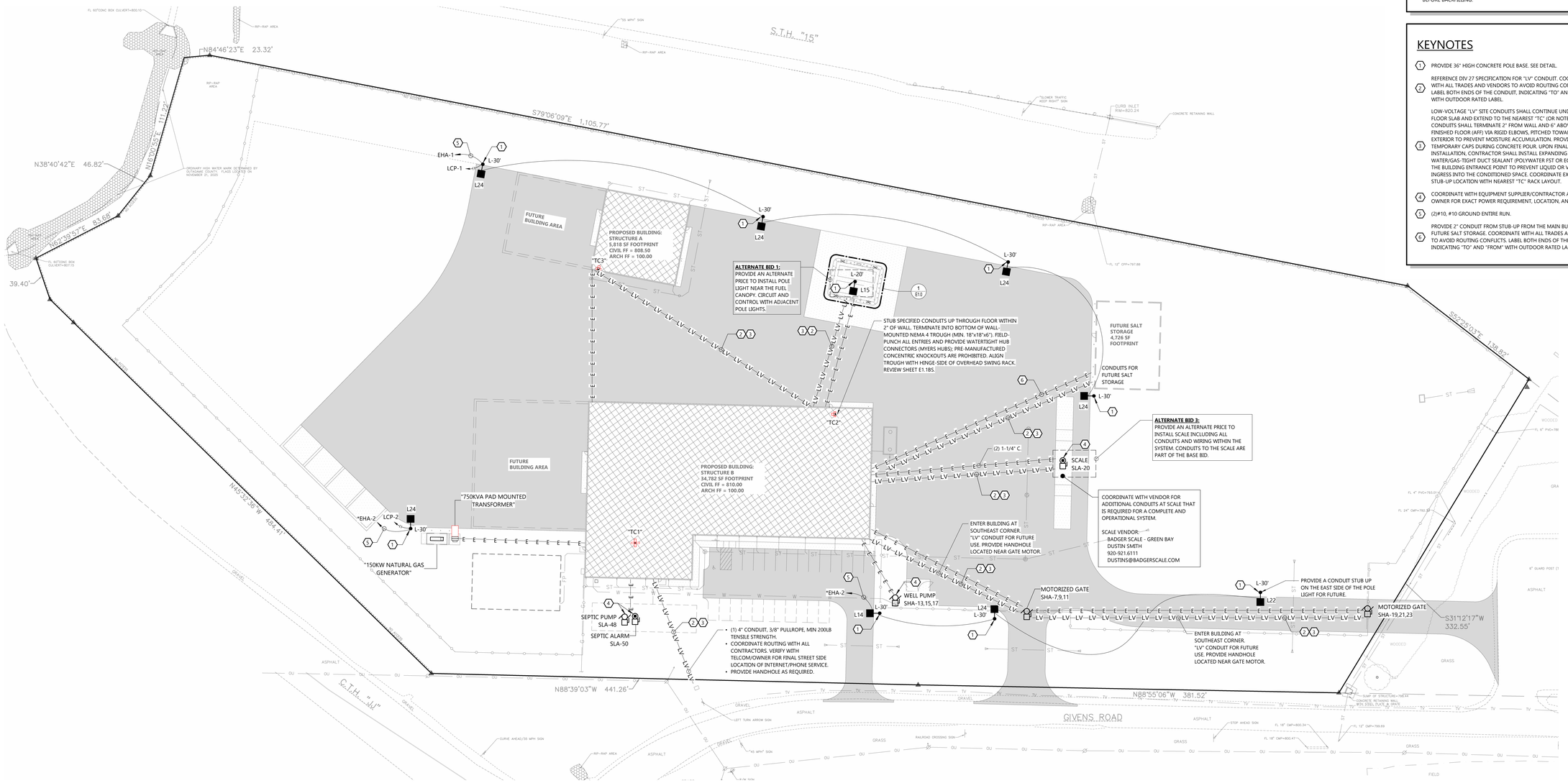
A. OWNER'S PREFERRED VENDOR
   SECURE FIRE & SAFETY (HONEYWELL NOTIFIER)
   DAN LAURICH
   FIRE ALARM & SPECIAL HAZARDS MANAGER — NICET #130293
   OFFICE: 414-257-4222
   MOBILE: 414-248-3936
   DAN.LAURICH@SECUREFIREANDSAFETY.COM
B. REFER TO FIRE ALARM MATRIX ON ELECTRICAL DETAIL SHEET E3.1.
C. NOTE FACP LOCATION ON FLOORPLANS.
D. THIS SPECIFICATION IS A DESIGN BUILD PERFORMANCE BASED SPECIFICATION. THE CONTRACT DOCUMENTS ARE TO RELAY THE MINIMUM DESIGN INTENT. THE FIRE ALARM SYSTEM MATRIX ESTABLISHES MINIMUM REQUIREMENT FOR THIS PROJECT. THE MINIMUM REQUIREMENT MAY BE MORE STRINGENT THAN CODE. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE A COMPLETE APPROVED AND OPERABLE SYSTEM.
E. IN THE EVENT OF ANY INCONSISTENCY, CONFLICT, OR AMBIGUITY BETWEEN OR AMONG THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE MORE STRINGENT REQUIREMENT SHALL TAKE PRECEDENCE WITH NO ADDITIONAL COST TO THE OWNER.
F. MANUFACTURERS: HONEYWELL NOTIFIER.
G. CONTRACTOR SHALL PROVIDE ALL REQUIRED STATE SUBMITTALS FOR FIRE ALARM INSTALLATION, AND INCLUDE ALL ASSOCIATED PLAN APPROVAL FEES. FIRE ALARM SYSTEM DRAWINGS SHALL BE REVIEWED AND APPROVED BY ENGINEERING PRIOR TO SUBMITTING STATE REVIEW DOCUMENTS.
H. FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR FINAL DESIGN AND LAYOUT OF DEVICES TO MEET CODE.
I. PROVIDE UNIT PRICING FOR THE FOLLOWING DEVICE CONNECTIONS TO THE FIRE ALARM CONTROL SYSTEM. PRICE SHALL INCLUDE ALL NECESSARY EQUIPMENT NEEDED TO COMPLETE THE CONNECTION. THESE UNIT PRICES SHALL BE PROVIDED AT THE TIME OF THE BID. FAILURE TO SUBMIT THESE UNIT PRICES IS SUBJECT TO HAVING THE CONTRACTOR'S BID REJECTED. PROVIDE UNIT PRICING FOR CONNECTING:
   1. FLOW SWITCH
   2. TAMPER SWITCH
   3. LOW AIR SWITCH
   4. FIRE PUMP CONTACT
   5. LOW TEMPERATURE SWITCH
   6. FIRE PUMP NOTIFIER
   7. NOTIFICATION APPLIANCE CIRCUIT PANELS
J. SUBMITTALS:
   1. SHOP DRAWINGS:
      a. THE FOLLOWING INFORMATION SHALL BE SUBMITTED:
         1) FIRE ALARM SYSTEM RISER DIAGRAM INDICATING ALL DEVICES, CIRCUIT TYPE, WIRE SIZE AND TYPE, AND SYSTEM ADDRESSING
         2) FIRE ALARM SYSTEM BATTERY CALCULATIONS
         3) FIRE ALARM SYSTEM VOLTAGE DROP CALCULATION FOR EACH CIRCUIT
         4) BUILDING FLOOR PLAN INDICATING DEVICE LOCATIONS
         5) FIRE ALARM SYSTEM OPERATION MATRIX.
         6) PRODUCT CUTSHEETS FOR ALL SPECIFIED DEVICES.
K. QUALITY ASSURANCE
   1. EQUIPMENT AND INSTALLATION SHALL CONFORM TO THE NFPA 72, NEC, AND LOCAL AUTHORITIES HAVING JURISDICTION.
   2. ALL FIRE ALARM EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.
   3. ALL TECHNICIANS PERFORMING WORK ON THIS PROJECT SHALL BE FACTORY TRAINED AND AT MINIMUM, NICET LEVEL TWO CERTIFIED IN FIRE ALARM SYSTEMS.
   4. THE SYSTEM'S VENDOR MUST EMPLOY FACTORY TRAINED TECHNICIANS AND MAINTAIN A SERVICE ORGANIZATION THAT HAS REPRESENTATIVES WITHIN 100 MILES OF TRAVEL TO THIS PROJECT AND PROVIDE A 4 HOUR RESPONSE TIME, HAVE A MINIMUM OF 10 YEARS EXPERIENCE SERVICING FIRE ALARM SYSTEMS AND PROVIDE 24 HOUR EMERGENCY SERVICE.
   5. ALL FIRE SUPPRESSION DEVICES THAT REQUIRE CONNECTION TO THE FIRE ALARM CONTROL PANEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND FIRE SUPPRESSION CONTRACTOR AND INCORPORATED INTO THE BID.
   6. ALL DESTRATIFICATION FANS THAT REQUIRE CONNECTION TO THE FIRE ALARM CONTROL PANEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND FAN CONTRACTOR AND INCORPORATED INTO THE BID.
L. PROJECT CLOSEOUT
   1. THE COMPLETED SYSTEM SHALL BE TESTED IN ACCORDANCE WITH NFPA STANDARD 72H. PROVIDE A CERTIFIED TEST REPORT FROM THE MANUFACTURER'S REPRESENTATIVE THAT THE SYSTEM COMPLIES WITH NFPA AND STATE CODES.
   2. PROVIDE A "FIRE ALARM SYSTEM RECORD OF COMPLETION" PER NFPA 72, CHAPTER 4.
   3. SEE "BASIC ELECTRICAL REQUIREMENTS" FOR OPERATING INSTRUCTION REQUIREMENTS.
   4. PROVIDE THE FOLLOWING SPARE PARTS.
      a. 20 SPARE BREAK RODS.
      b. 2 SPARE ROOM SMOKE DETECTORS.
      c. 2 SPARE DUCT SMOKE DETECTORS.
      d. 1 SPARE PULL STATION.
      e. 1 SPARE HORN/STROBE.
      f. 2 SPARE XENON STROBES.
   5. THE EQUIPMENT AND WIRING SHALL BE WARRANTED TO BE FREE FROM ELECTRICAL AND MECHANICAL DEFECTS FOR A PERIOD OF ONE (1) YEAR. THE YEAR SHALL COMMENCE UPON COMPLETE INSTALLATION AND SUCCESSFUL START-UP OF THE SYSTEM.
M. SYSTEM WIRING
   1. SEE SCHEMATICS AND DETAILS ON DRAWINGS FOR ADDITIONAL REQUIREMENTS.
   2. THE SYSTEM WIRING AND INSTALLATION SHALL BE IN COMPLIANCE WITH APPLICABLE CODES, PROJECT DRAWINGS AND AS REQUIRED BY THE MANUFACTURER. ALL WIRING SHALL BE COLOR CODED, TAGGED AND CHECKED TO ASSURE THAT IT IS FREE FROM SHORTS AND GROUNDS. PROVIDE RECORD DRAWINGS OF INSTALLATION.
   3. PROVIDE DUCT SEAL COMPOUND AT EACH SMOKE DETECTOR TO SEAL THE CONDUIT.
   4. ALL FIRE ALARM CABLE SHALL BE INSTALLED FREE AIR UNLESS NOTED OTHERWISE. ALL FIRE ALARM CABLES SHALL BE INSTALLED IN CONDUIT IN ANY EXPOSED FINISHED AREAS. REFER TO SPEC SECTION ""26 05 30" FOR SPECIFIC CONDUIT REQUIREMENTS. WHEN CONDUIT AND/OR JUNCTION BOXES ARE REQUIRED BY LOCAL ORDINANCES OR AHJ, PAINT THE BOX COVERS AND CONDUIT BODIES RED AND LABEL "F.A.".
N. NAC PANELS
   1. WHEN REMOTE POWER SUPPLIES (NOTIFICATION PANELS) ARE REQUIRED, POWER SUPPLIES ARE TO BE MOUNTED IN MECHANICAL ROOMS OR OTHER AREAS ADJACENT TO PANELBOARDS AND WHERE EASILY ACCESSIBLE. PROVIDE BATTERY BACK-UP FOR EACH REMOTE POWER SUPPLY . PROVIDE ONE DEDICATED 120 VOLT BRANCH CIRCUIT PER POWER SUPPLY. INCLUDE COST OF BRANCH CIRCUITS IN BID.
O. FIRE ALARM CONTROL PANEL (FACP)
   1. SOLID STATE, MICROPROCESSOR BASED MASTER CONTROL UNIT.
   2. CAPABLE OF ON-SITE PROGRAMMING TO ACCOMMODATE AND FACILITATE EXPANSION, BUILDING PARAMETER CHANGES OR CHANGES AS REQUIRED BY LOCAL CODES WITHOUT THE NEED TO REPLACE IC CHIPS. ALL SOFTWARE OPERATIONS ARE TO BE STORED IN A NON-VOLATILE PROGRAMMABLE MEMORY WITHIN THE FIRE ALARM CONTROL PANEL.
   3. THE SYSTEM SHALL HAVE THE CAPABILITY TO BE FIELD PROGRAMMED BY OWNER'S PERSONNEL TRAINED BY THIS VENDOR.
   4. TO ACCOMMODATE AND FACILITATE JOB SITE CHANGES, INITIATION CIRCUITS SHALL BE INDIVIDUALLY CONFIGURABLE ON SITE TO PROVIDE EITHER ALARM/TROUBLE OPERATION, ALARM ONLY, TROUBLE ONLY, CURRENT LIMITED ALARM, NO ALARM, NORMALLY CLOSED DEVICE MONITORING A NON-LATCHING CIRCUIT FOR AN ALARM VERIFICATION CIRCUIT.
   5. NO LIMIT TO THE NUMBER OF STATIONS, DETECTORS OR ZONE ADAPTER MODULES, WHICH MAY BE ACTIVATED OR "IN ALARM" SIMULTANEOUSLY.
   6. THE SYSTEM SHALL BE CAPABLE OF PROVIDING MULTIPLEX OPERATION BY USING THE FIRE ALARM CONTROL PANEL AS A CENTRAL PROCESSING UNIT (CPU) THAT PROVIDES STYLE 4 OR STYLE 7 COMMUNICATIONS TO REMOTE TRANSPONDERS.
   7. ALL DATA COMMUNICATIONS WIRING BETWEEN THE CPU AND TRANSPONDERS SHALL BE SUPERVISED FOR OPENS, SHORTS, AND GROUNDS. ANY DISARRANGEMENT OF SYSTEM WIRING SHALL ACTIVATE THE AUDIBLE AND VISUAL TROUBLE INDICATORS AT THE CONTROL PANEL AND AT THE REMOTE ANNUNCIATOR PANELS. ACTUATION OF THE TROUBLE SILENCE SWITCH SHALL SILENCE THE AUDIBLE TROUBLE INDICATOR, BUT THE TROUBLE LED WILL REMAIN LIT. THE TROUBLE LED SHALL BE NON-CANCELING, EXCEPT BY AN ACTUAL CLEARING OF THE TROUBLE CONDITION AND RESTORING THE TROUBLE SILENCE SWITCH TO NORMAL.
   8. THE INCOMING POWER TO THE SYSTEM SHALL BE SUPERVISED SO THAT ANY POWER FAILURE IS AUDIBLY AND VISUALLY INDICATED AT THE CONTROL PANEL AND THE REMOTE ANNUNCIATOR.
   9. PROVIDE RELAYS TO INTERFACE TO HVAC, DESTRATIFICATION FANS, ELEVATOR, AND DOOR CONTROLS.
   10. THE CONTROL PANEL IS TO HAVE A DEDICATED SYSTEM TROUBLE LED AND A DEDICATED TROUBLE ACKNOWLEDGE SWITCH.
   11. WHERE REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION, PROVIDE A MANUAL EVACUATION SWITCH TO OPERATE THE SYSTEMS ALARM NOTIFICATION APPLIANCES. OTHER CONTROL CIRCUITS SHALL NOT BE ACTIVATED. HOWEVER, A FIRE ALARM SHALL TAKE PRECEDENCE AND SHALL BE PROCESSED AS DESCRIBED IN THIS SECTION.
   12. THE CONTROL PANEL SHALL OBTAIN ITS PRIMARY OPERATING POWER FROM A 120 VAC SINGLE-PHASE 60 HZ SUPPLY PROVIDED WITH A DEDICATED AND SECURED DISCONNECT SWITCH.
   13. OBTAIN SECONDARY OPERATING POWER FROM BATTERIES. BATTERIES TO MAINTAIN SYSTEM OPERATION FOR 24 HOURS IN THE NORMAL SUPERVISORY MODE PLUS HAVE SUFFICIENT CAPACITY TO OPERATE IN THE ALARM MODE FOR 5 MINUTES AT THE CONCLUSION OF THIS SUPERVISORY TIME PERIOD. BATTERIES SHALL BE SUPERVISED FOR CONNECTION TO SYSTEM. PROVIDE AUTOMATIC BATTERY CHARGER CAPABLE OF CHARGING FULLY DISCHARGED BATTERIES TO 100% IN 8 HOURS.
   14. ALARM AND TROUBLE CONDITIONS SHALL BE IMMEDIATELY DISPLAYED ON THE CONTROL PANEL ALPHANUMERIC DISPLAY. IF MORE ALARMS OR TROUBLES ARE IN THE SYSTEM, THE OPERATOR MAY SCROLL TO DISPLAY NEW ALARMS.
   15. SYSTEM RESET:
      a. THE "SYSTEM RESET" BUTTON SHALL BE USED TO RETURN TO ITS NORMAL STATE AFTER AN ALARM CONDITION HAS BEEN REMEDIED.
      b. SHOULD AN ALARM CONDITION CONTINUE TO EXIST, THE SYSTEM WILL REMAIN IN AN ABNORMAL STATE. SYSTEM CONTROL RELAYS SHALL NOT RESET. THE PANEL PRIORITY ALARM LED SHALL REMAIN ON.
P. MULTIPLE ADDRESSABLE PERIPHERAL NETWORK
   1. PROVIDE COMMUNICATION WITH ALL INITIATING AND CONTROL DEVICES INDIVIDUALLY AND INDIVIDUALLY ANNUNCIATE AT THE CONTROL PANEL. ANNUNCIATION SHALL INCLUDE THE FOLLOWING CONDITIONS FOR EACH POINT:
      a. ALARM
      b. TROUBLE
      c. OPEN
      d. SHORT
      e. GROUND
      f. DEVICE FAIL/OR INCORRECT SERVICE/DETECTOR IN NEED OF CLEANING
   2. ALL ADDRESSABLE DEVICES CAPABLE OF BEING INDIVIDUALLY DISABLED OR ENABLED.
   3. EACH ADDRESSABLE DEVICE MUST BE UNIQUELY IDENTIFIED BY AN ADDRESS CODE ENTERED ON EACH DEVICE AT TIME OF INSTALLATION.
   4. THE EQUIPMENT MANUFACTURER SHALL APPROVE WIRING TYPES.
Q. DEVICES
   1. PROCESS ROOMS
      a. PROVIDE NEMA 4X WASHDOWN RATED DEVICES FOR ALL FIRE ALARM DEVICES LOCATED WITHIN A PROCESS ROOM AREA (SEE PLANS FOR LOCATIONS).
      b. PROVIDE BACK BOXES LISTED FOR NEMA 4X WASHDOWN RATED FIRE ALARM DEVICES.
   2. STROBE:
      a. UL LISTED VANDAL RESISTANT SOLID STATE XENON FLASHTURE CAPABLE OF EITHER CEILING OR WALL MOUNTING.
      b. PYRAMIDAL SHAPED LEXAN LENS WITH "FIRE" LETTERING VISIBLE FROM A 180 DEGREE FIELD OF VIEW.
      c. CANDELA REQUIREMENTS DETERMINED BY CONTRACTOR'S VENDOR.
      d. STROBE LOCATION ON PLAN IS APPROXIMATE. THE INDICATOR SHALL BE VISIBLE FROM ALL USABLE SPACES WITHIN THE ROOM. MOUNT VISUAL INDICATOR WHERE IT DOES NOT CONFLICT WITH OTHER WALL FINISHES OR EQUIPMENT.
      e. PROVIDE SYNCHRONIZED STROBES WHERE THREE OR MORE STROBES CAN BE VIEWED FROM ONE LOCATION OR WHERE INDICATED BY AHJ.
   3. HORN/ STROBE:
      a. STROBE AS SPECIFIED ABOVE WITH A COMMON ENCLOSURE FOR THE HORN DEVICE.
      b. SOUND OUTPUT LEVELS DETERMINED BY CONTRACTOR'S VENDOR.
      c. EXTERNAL: PROVIDE WEATHERPROOF AUDIBLE / VISIBLE SIGNAL EQUIVALENT TO FARR-LARM SERIES 3300 AT EXTERIOR OF BUILDING NEAR SIAMESE CONNECTION. SHIELD SHALL STATE "WHEN ALARM SOUNDS CALL POLICE OR FIRE DEPARTMENT" OR SIMILAR VERBIAGE.
   4. SPEAKER/ STROBE:
      a. STROBE AS SPECIFIED ABOVE WITH A COMMON ENCLOSURE FOR THE SPEAKER DEVICE.
      b. INITIALLY TAP SPEAKER DEVICES AT 1 OHM AND ADJUST AS REQUIRED.
      c. SOUND OUTPUT LEVELS DETERMINED BY CONTRACTOR'S VENDOR.
   5. ADDRESSABLE PULL STATIONS:
      a. U.L. LISTED.
      b. COMMUNICATE THE STATION'S STATUS (ALARM/NORMAL) TO THE CONTROL PANEL OVER TWO WIRES WHICH ALSO PROVIDE POWER TO THE PULL STATION.
      c. MECHANICALLY LATCH UPON OPERATION AND REMAIN SO UNTIL MANUALLY RESET BY OPENING WITH A KEY COMMON TO ALL SYSTEMS LOCKS AND CONTROL PANEL.
      d. DOUBLE ACTION AND IDENTIFIED FOR LOCAL USE BY RAISED WHITE LOCAL LETTERING.
      e. HINGED FRONT TO A BACKPLATE ASSEMBLY.
      f. CAPABLE OF FIELD PROGRAMMING IT'S "ADDRESS" LOCATION ON AN ADDRESSABLE SIGNALING LINE CIRCUIT.
   6. SMOKE DETECTORS:
      a. SMOKE SENSORS SHALL BE SOLID STATE PHOTOELECTRIC SMOKE DENSITY MEASURING DEVICES HAVING NO SELF-CONTAINED ALARM SET POINT (FIXED THRESHOLD) AND SHALL COMMUNICATE ACTUAL CHAMBER VALUES TO THE SYSTEM CONTROL PANEL.
      b. SMOKE SENSORS AND BASES SHALL BE LISTED TO UL STANDARD 268 AND DOCUMENTED COMPATIBLE WITH THE CONTROL EQUIPMENT TO WHICH THEY ARE CONNECTED, AND FOR BOTH CEILING AND WALL MOUNT APPLICATIONS.
      c. EACH SENSOR WILL BE CAPABLE OF SENSING UP TO (7) SENSITIVITY LEVELS RANGING BETWEEN .6% AND 4.0%.
      d. PHOTOELECTRIC SENSOR SHALL HAVE A FINE 30 MESH INSECT SCREEN.
      e. SENSOR ELECTRONICS SHALL BE COMPLETELY SHIELDED TO PROTECT AGAINST FALSE ALARMS FROM EMI AND RFI.
      f. SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL FINAL ROOM FINISHES AND CARPETING HAVE BEEN COMPLETED, OR PROTECT BY A PLASTIC BAG TO PREVENT DUST ENTERING THE SMOKE DETECTOR.
   7. HEAT DETECTORS:
      a. SENSOR SHALL BE A COMBINATION RATE OF RISE/FIXED TEMPERATURE SENSOR. U.L. LISTED AS A RATE COMPENSATED HEAT DETECTOR.
      b. EACH SENSOR CAPABLE OF OPERATING AT A SELECTABLE RATE OF RISE OPERATION OF 15 OR 20 DEGREES FAHRENHEIT PER MINUTE AND IS SELF-RESTORABLE.
      c. EACH SENSOR CAPABLE OF FIXED TEMPERATURE OPERATION SELECTABLE FOR EITHER 117 OR 135 DEGREES FAHRENHEIT, INDEPENDENT OF THE RATE OF RISE SETTING.
      d. EACH SENSOR CONFIGURABLE FOR UTILITY MONITORING AND CAPABLE OF SENSING TEMPERATURE BETWEEN 32 AND 158 DEGREES FAHRENHEIT.
   8. PHOTOELECTRIC DUCT SMOKE DETECTOR:
      a. SOLID STATE PHOTOELECTRIC SAMPLING TUBE TYPE AND OPERATING ON THE LIGHT SCATTERING, PHOTODIODE PRINCIPLE. PROVIDE 30 MESH INSECT SCREEN. THE DETECTOR SHALL BE DESIGNED TO IGNORE INVISIBLE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET POINT. OBTAIN OPERATING POWER FROM THE SUPERVISORY CURRENT IN THE FIRE ALARM DETECTION LOOP.
      b. ABILITY TO CLEAN THE DUCT HOUSING SAMPLING TUBES BY ACCESSING THEM THROUGH THE DUCT HOUSING FRONT COVER.
      c. DUCT SMOKE DETECTOR SAMPLING TUBE SHALL EXTEND TO WITHIN 18INCHES OF THE ADJACENT INTERIOR DUCT WALL.
      d. PROVIDE DUCT SMOKE DETECTOR REMOTE TEST SWITCH.
   9. ADDRESSABLE SENSOR BASES:
      a. EACH SENSOR BASE SHALL CONTAIN A LED THAT WILL FLASH EACH TIME IT IS SCANNED BY THE CONTROL PANEL. WHEN THE CONTROL PANEL DETERMINES THAT A SENSOR IS IN THE ALARM OR A TROUBLE CONDITION, THE CONTROL PANEL SHALL COMMAND THE LED ON THAT SENSOR'S BASE TO TURN ON STEADY INDICATING THE ABNORMAL CONDITION.
      b. CONTAIN A MAGNETICALLY ACTUATED TEST SWITCH TO PROVIDE FOR EASY ALARM TESTING AT THE SENSOR LOCATION.
      c. SENSOR BASE WITH RELAY:
         1) PROVIDE FOR ELEVATOR SMOKE DETECTORS, AND FOR SMOKE DETECTORS ASSOCIATED WITH SMOKE DOORS.
         2) THE RELAY SHALL NOT IMPEDE ON THE CAPACITY OF THE ADDRESSABLE DEVICE.
         3) THE RELAY SHALL PROVIDE (2) SETS OF FORM C CONTACTS RATED 3 AMPS AND POWERED FROM THE SYSTEM 24 VDC AND OPERATE IN BATTERY STANDBY.
         4) PROVIDE FOR DESTRAITFICATION FANS CONTROL. DESTRATIFICATION FANS SHALL SHUT DOWN UPON FIRE ALARM PANEL DETECTION OF WATER FLOW IN SPRINKLER SYSTEM.
   10. ADAPTER MODULE
      a. ADAPTER MODULES SHALL BE USED FOR MONITORING OF WATERFLOW, VALVE TAMPER, HOOD SUPPRESSION SYSTEMS, AND NON-ADDRESSABLE DEVICES. THE MODULES SHALL PROVIDE AN AUTOMATIC RETARD FUNCTION.
      b. THE MODULE SHALL BE PROVIDED FOR INTERFACING NORMALLY OPEN DIRECT CONTACT DEVICES TO AN ADDRESSABLE SIGNALING LINE CIRCUIT. THE UNIT SHALL BE SUPERVISED.
      c. E.C. SHALL VERIFY THE NUMBER OF FLOW AND TAMPER SWITCHES WITH THE FIRE PROTECTION CONTRACTOR (FPC).
R. SYSTEM OPERATION
   1. PROVIDE REQUIRED PROGRAMMING. VENDOR SHALL MEET WITH THE OWNER TO DETERMINE IF THERE ARE ANY EXTRAORDINARY PROGRAMMING CIRCUMSTANCES.
   2. SMOKE DETECTION OPERATION:
      a. CONTROL PANEL SHALL MAKE THE ALARM DECISION FOR EACH SENSOR.
      b. CONTROL PANEL SHALL DETERMINE THE CONDITION OF EACH SENSOR BY COMPARING THE SENSOR VALUE TO THE STORED VALUES.
      c. CONTROL PANEL SHALL MAINTAIN A MOVING AVERAGE OF THE SENSORS' SMOKE CHAMBER VALUE TO AUTOMATICALLY COMPENSATE (MOVE THE THRESHOLD) FOR DUST AND DIRTY CONDITIONS THAT COULD AFFECT DETECTION OPERATIONS. THE SYSTEM SHALL AUTOMATICALLY MAINTAIN A CONSTANT SMOKE OBSCURATION SENSITIVITY FOR EACH SENSOR (VIA THE FLOATING THRESHOLD) BY COMPENSATING FOR ENVIRONMENTAL FACTORS.
      d. THE SYSTEM SHALL AUTOMATICALLY INDICATE WHEN AN INDIVIDUAL SENSOR NEEDS CLEANING. WHEN A SENSOR'S AVERAGE VALUE REACHES A PREDETERMINED VALUE, A "DIRTY SENSOR" TROUBLE CONDITION SHALL BE AUDIBLY AND VISUALLY INDICATED AT THE CONTROL PANEL. THE LED ON THE SENSOR BASE SHALL GLOW STEADY. IF A "DIRTY SENSOR" IS LEFT UNATTENDED, AND ITS AVERAGE VALUE INCREASES TO A SECOND PREDETERMINED VALUE, AN "EXCESSIVELY DIRECT SENSOR" TROUBLE CONDITION SHALL BE INDICATED AT THE CONTROL PANEL. TO PREVENT FALSE ALARMS, THESE "DIRTY" CONDITIONS SHALL IN NO WAY DECREASE THE AMOUNT OF SMOKE OBSCURATION NECESSARY FOR SYSTEM ACTIVATION.
      e. CONTROL PANEL SHALL CONTINUOUSLY PERFORM AN AUTOMATIC SELF-TEST ROUTINE ON EACH SENSOR WHICH WILL FUNCTIONALLY CHECK SENSOR ELECTRONICS AND ENSURE THE ACCURACY OF THE VALUES BEING TRANSMITTED TO THE CONTROL PANEL. ANY SENSOR THAT FAILS THIS TEST SHALL INDICATE A "SELF TEST ABNORMAL" TROUBLE CONDITION.
      f. THE ACTIVATION OF ANY SYSTEM SMOKE DETECTOR IN ALL PUBLIC AND COMMON AREAS SHALL INITIATE AN ALARM VERIFICATION OPERATION WHEREBY THE PANEL WILL RESET THE ACTIVATED DETECTOR AND WAIT FOR A SECOND ALARM ACTIVATION. IF, WITHIN ONE MINUTE AFTER RESETTING, A SECOND ALARM IS REPORTED FROM THE SAME OR ANY OTHER SMOKE DETECTOR, THE SYSTEM SHALL PROCESS THE ALARM AS DESCRIBED PREVIOUSLY. IF NO SECOND ALARM OCCURS WITHIN ONE MINUTE, THE SYSTEM IS TO RESUME NORMAL OPERATION. THE ALARM VERIFICATION OPERATION IS TO BE U.L. LISTED.
   3. ALARM ACTIVATION
      a. ANY INITIATION OF SMOKE DETECTORS, PULL STATIONS OR FLOW SWITCHES SHALL PUT THE SYSTEM INTO GENERAL ALARM CONDITIONS.
      b. EXTERNAL AUDIBLE / VISIBLE SIGNAL AT FIRE DEPARTMENT CONNECTION SHALL ONLY ALARM ON FLOW SWITCH INITIATION.
      c. ALL AUDIBLE ALARM INDICATING APPLIANCES SHALL SOUND UNTIL SILEN

GENERAL NOTES

- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI LIC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.
- ALL SITE CONDUIT AND WIRING TO BURIED AT 36" DEPTH.
- COORDINATE INSPECTION OF UNDERGROUND WORK WITH OWNER BEFORE BACKFILLING.

KEYNOTES

1. PROVIDE 36" HIGH CONCRETE POLE BASE. SEE DETAIL.
2. REFERENCE DIV 27 SPECIFICATION FOR "LV" CONDUIT. COORDINATE WITH ALL TRADES AND VENDORS TO AVOID ROUTING CONFLICTS. LABEL BOTH ENDS OF THE CONDUIT, INDICATING "TO" AND "FROM" WITH OUTDOOR RATED LABEL.
3. LOW-VOLTAGE "LV" SITE CONDUITS SHALL CONTINUE UNDER THE FLOOR SLAB AND EXTEND TO THE NEAREST "TC" (OR NOTED). CONDUITS SHALL TERMINATE 2" FROM WALL AND 6" ABOVE FINISHED FLOOR (AFF) VIA RIGID ELBOWS, PITCHED TOWARD THE EXTERIOR TO PREVENT MOISTURE ACCUMULATION. PROVIDE TEMPORARY CAPS DURING CONCRETE POUR. UPON FINAL CABLE INSTALLATION, CONTRACTOR SHALL INSTALL EXPANDING WATER/GAS-TIGHT DUCT SEALANT (POLYWATER FST OR EQUIV) AT THE BUILDING ENTRANCE POINT TO PREVENT LIQUID OR VAPOR INGRESS INTO THE CONDITIONED SPACE. COORDINATE EXACT STUB-UP LOCATION WITH NEAREST "TC" RACK LAYOUT.
4. COORDINATE WITH EQUIPMENT SUPPLIER/CONTRACTOR AND OWNER FOR EXACT POWER REQUIREMENT, LOCATION, AND WIRING.
5. (2)#10, #10 GROUND ENTIRE RUN.
6. PROVIDE 2" CONDUIT FROM STUB-UP FROM THE MAIN BUILDING FOR FUTURE SALT STORAGE. COORDINATE WITH ALL TRADES AND VENDORS TO AVOID ROUTING CONFLICTS. LABEL BOTH ENDS OF THE CONDUIT, INDICATING "TO" AND "FROM" WITH OUTDOOR RATED LABEL.

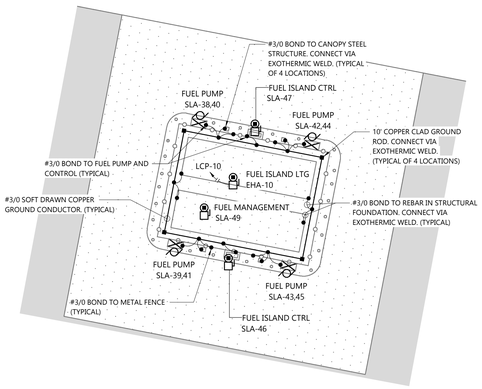


NORTH

SCALE: 1" = 40'-0"

0' 40' 80'

SITE PLAN



E1.0 SCALE: 1/8" = 1'-0"

ENLARGED FUEL INSLAND LAYOUT

FUEL ISLAND NOTES:

- FUEL ISLAND INFORMATION IS REPLIINARY. EC SHALL COORDINATE FINAL POWER REQUIREMENTS, WIRING REQUIREMENTS, AND FINAL LOCATION WITH FUEL ISLAND SUPPLIER PRIOR TO INSTALLATION.
- PROVIDE SEAL-OFFS AND RATED MATERIALS IN ACCORDANCE WITH ARTICLE 514 OF THE NEC BOTH AT THE BUILDING AND FUEL ISLAND FOR THE CIRCUITS. REFERENCE THE CODE SECTION FOR THE AREAS CONSIDERED HAZARDOUS AREA. ARTICLE 500, 501, AND 514 SHOULD BE UTILIZED FOR ALL INSTALLATIONS WITHIN THE AREAS AS A MEANS AND METHODS.
- COORDINATE ALL CONDUIT AND PIPING LAYOUT WITH OWNER AND FUEL EQUIPMENT SUPPLIER PRIOR TO BACKFILLING FUEL ISLAND AREA.
- FUEL ISLAND UNDER CANOPY LIGHTING PROVIDED BY FUEL ISLAND PROVIDER. EC SHALL PROVIDE ELECTRICAL CIRCUIT.

HAZARDOUS LOCATION:

- INSTALL ALL WIRING IN RIGID METALLIC CONDUIT WITH APPROPRIATE CONDUIT SEALS AS REQUIRED BY THE NEC ARTICLE 501 AND 514 IN ALL AREAS THAT ARE CONSIDERED HAZARDOUS AREA PER THE NEC ARTICLE 514.

ELECTRICAL SITE PLAN

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PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

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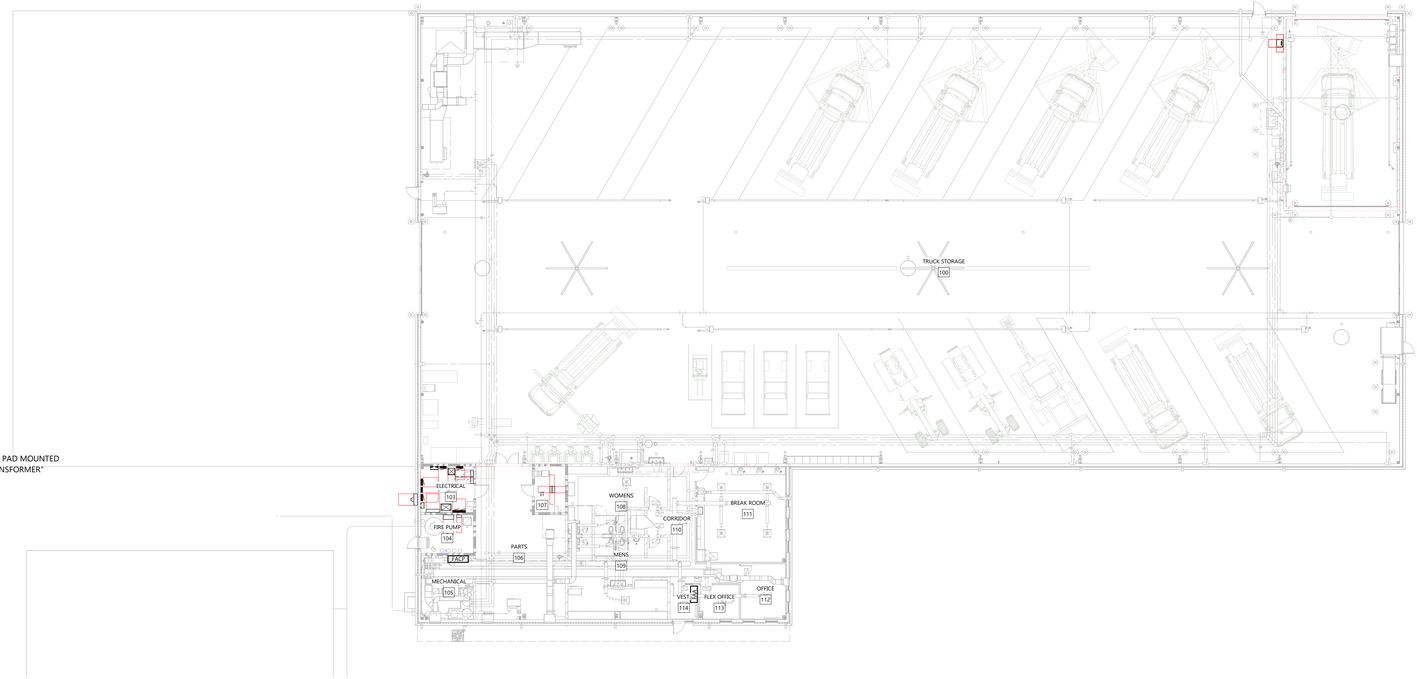
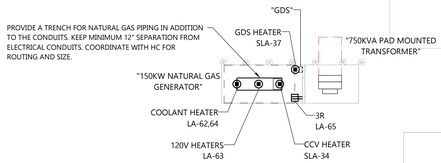


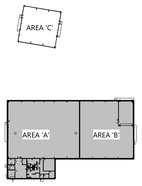


OVERALL FIRST FLOOR PLAN

NORTH

SCALE: 1/16" = 1'-0"

0' 16' 32'



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - OVERALL

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PROJECT INFORMATION

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250041200

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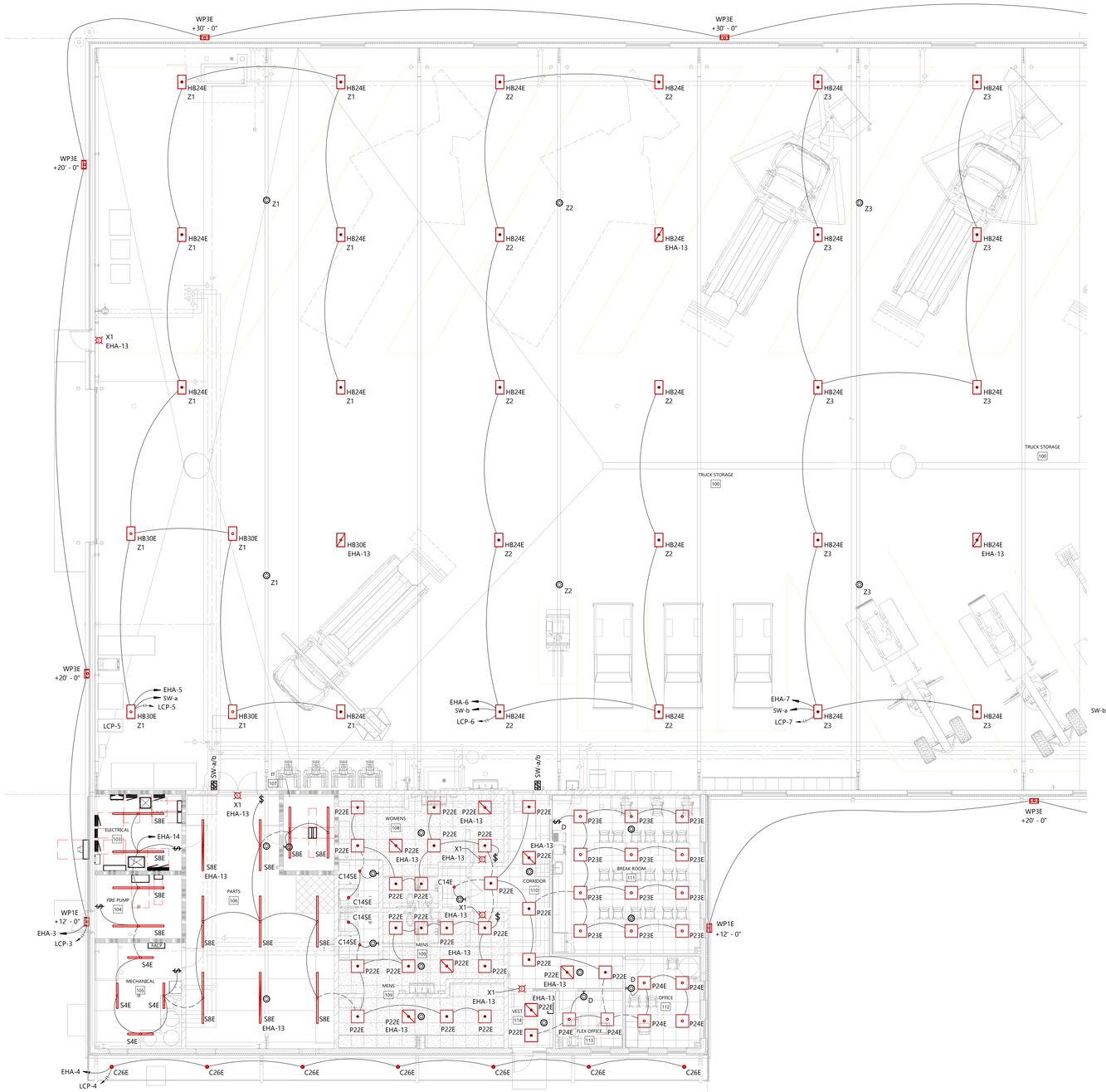


GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- COORDINATE LIGHT FIXTURE LOCATIONS IN MECHANICAL EQUIPMENT ROOMS WITH OTHER CONTRACTORS PRIOR TO ROUGH IN.
- WIRE EMERGENCY LIGHTS UNSWITCHED TO LIGHTING CIRCUIT SERVING SAME ROOM, OR TO "NIGHT LIGHT" CIRCUIT WHEN AVAILABLE.
- LOCATE EXTERIOR EGRESS LIGHT AT SINGLE WYTHE MASONRY CONSTRUCTION MIN. 12" ABOVE FLASHING AT DOOR HEAD.
- EXIT LIGHT CONDUIT AT SINGLE WYTHE MASONRY CONSTRUCTION SHALL NOT PENETRATE FLASHING ABOVE DOOR HEAD IF EXIT LIGHT IS WALL MOUNTED.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- SEE ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR LOCATION OF ALL LIGHTING FIXTURES. LOCATE FIXTURES IN ACCORDANCE WITH CEILING AND ELEVATION PLANS.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE LIGHTING FIXTURE LEGEND FOR FIXTURE WIRING INFORMATION.
- SEE HIGHBAY MOUNTING DETAILS FOR HIGHBAY LIGHT FIXTURE INSTALLATION.

HARSH ENVIRONMENT ROOM NOTES

- SEE HARSH ENVIRONMENT ROOM DETAIL SHEET E3.2 FOR KEY PLAN INDICATING WHICH ROOMS ARE CONSIDERED HARSH ENVIRONMENT ROOMS.
- SEE HARSH ENVIRONMENT ROOM DETAILS E3.2 SHEETS FOR ADDITIONAL INSTALLATION DETAILS THAT APPLY TO HARSH ENVIRONMENT ROOMS.

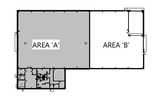
NORTH

FIRST FLOOR PLAN - AREA 'A' - LIGHTING

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

0' 8' 16'

AREA 'C'



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'A' - LIGHTING

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JOB NUMBER

250041200

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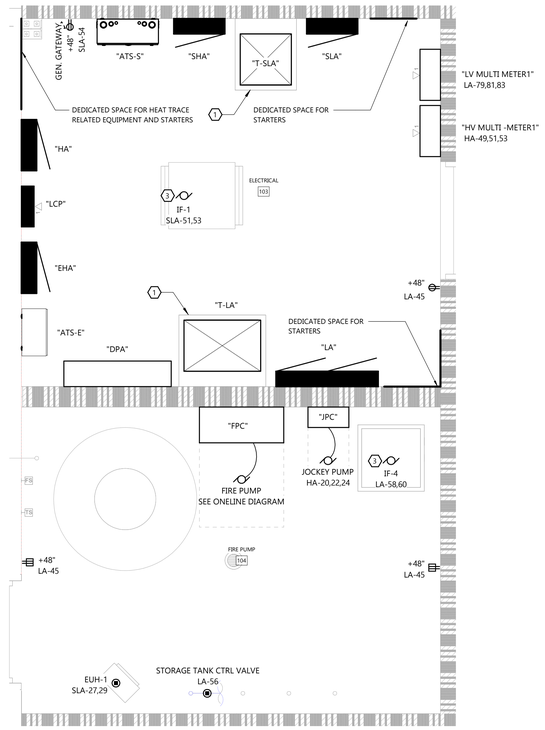
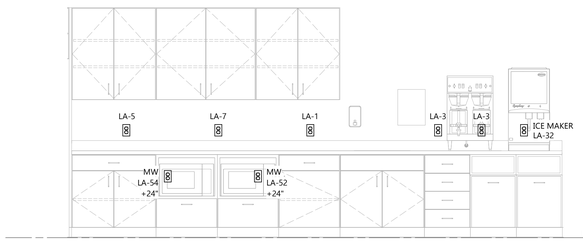


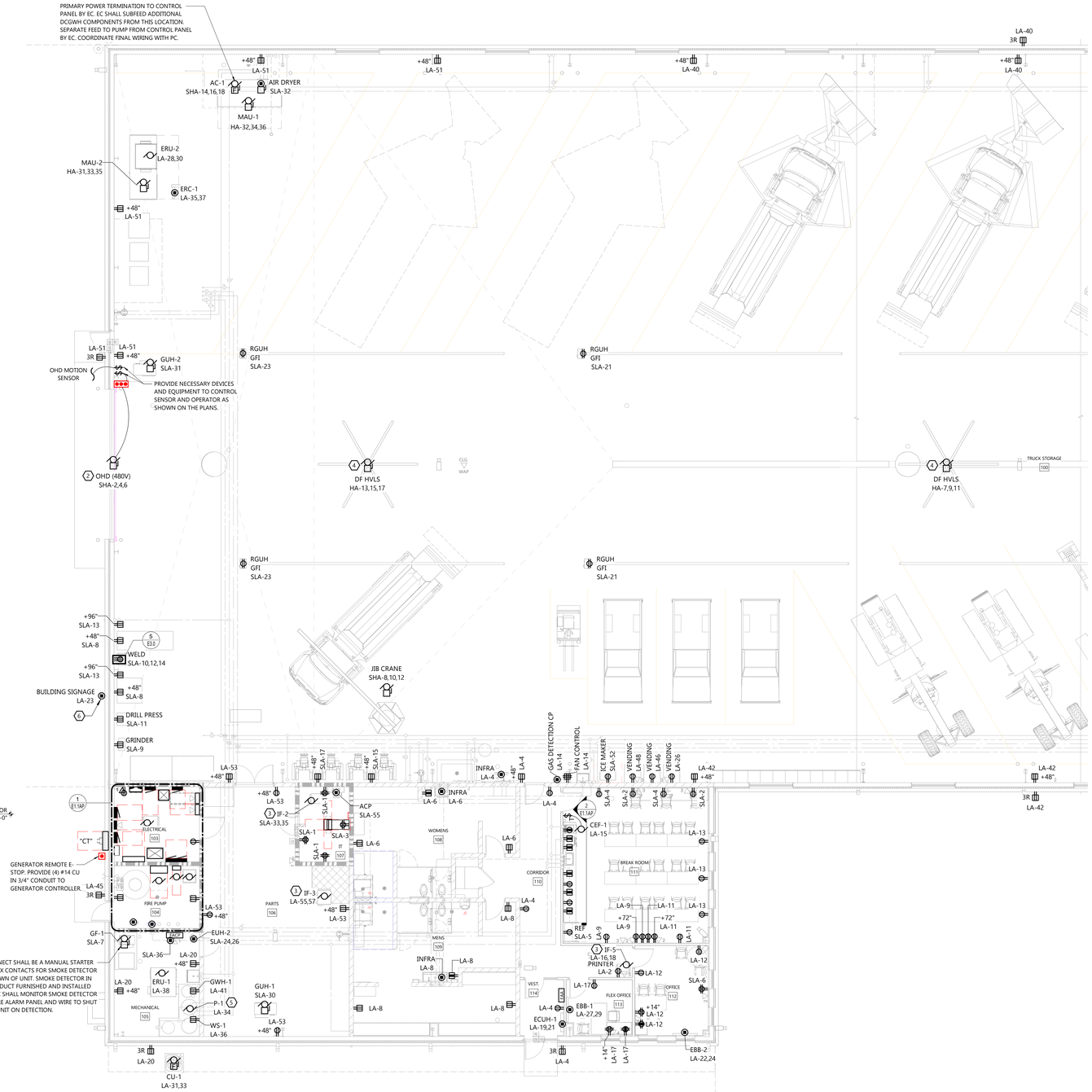
1 E1.1AP ENLARGED ROOM PLAN - ELECTRICAL 103/FIRE PUMP 104

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



2 E1.1AP BREAK ROOM 111 - COUNTER TOP SECTION

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



NORTH

FIRST FLOOR PLAN - AREA 'A' - POWER

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

0' 8' 16'

KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'A' - POWER

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI UC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- ROUGH-IN RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) BEHIND UNIT. VERIFY LOCATION PRIOR TO ROUGH-IN.
- PROVIDE GFI PROTECTION FOR ALL SINGLE PHASE RECEPTACLES IN THE FOLLOWING LOCATIONS: BATHROOMS, KITCHENS, ROOFS, LOCKER ROOMS & SHOWERING FACILITIES, SERVING WATER COOLERS & VENDING MACHINES, GARAGES & SERVICE BAYS, WITHIN 6'-0" OF A SINK, AND ALL OTHER WET LOCATIONS.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- ALL CONDUITS TO ISLAND CABINETRY AND TABLES SHALL BE UNDERGROUND.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.

KEYNOTES

ALL KEYNOTES MAY NOT APPEAR ON THIS SHEET.

1. CONCRETE PAD PROVIDED BY CONTRACTOR.
2. OVERHEAD DOOR. VERIFY LOCATION OF CONTROL PANEL WITH DOOR MANUFACTURER.
3. HC SHALL FURNISH STARTER TO EC FOR INSTALLATION ON WALL NEAR ELECTRICAL PANEL THAT SERVES FAN. COORDINATE FINAL LOCATION AND WIRING WITH HC.
4. FAN FURNISHED WITH CONTACTORS TO SHUT DOWN FAN ON FIRE ALARM SIGNAL INDICATING FIRE SPRINKLER FLOW. EC TO PROVIDE SHUTDOWN SIGNAL AND WIRING FROM FIRE ALARM PANEL.
5. 120V TO SWITCHING RELAY AND FROM SWITCHING RELAY TO PUMP BY EC. 24V WIRING FROM SWITCHING RELAY TO OTHER DEVICES BY PC.
6. BUILDING SIGNAGE PROVIDED BY OTHERS. PRELIM POWER REQUIREMENT IS SHOWN. CONTRACTOR TO COORDINATE WITH SIGNAGE SUPPLIER FOR EXACT LOCATION, POWER AND WIRING REQUIREMENTS.

HARSH ENVIRONMENT ROOM NOTES

- SEE HARSH ENVIRONMENT ROOM DETAIL SHEET E3.2 FOR KEY PLAN INDICATING WHICH ROOMS ARE CONSIDERED HARSH ENVIRONMENT ROOMS.
- SEE HARSH ENVIRONMENT ROOM DETAILS E3.2 SHEETS FOR ADDITIONAL INSTALLATION DETAILS THAT APPLY TO HARSH ENVIRONMENT ROOMS.

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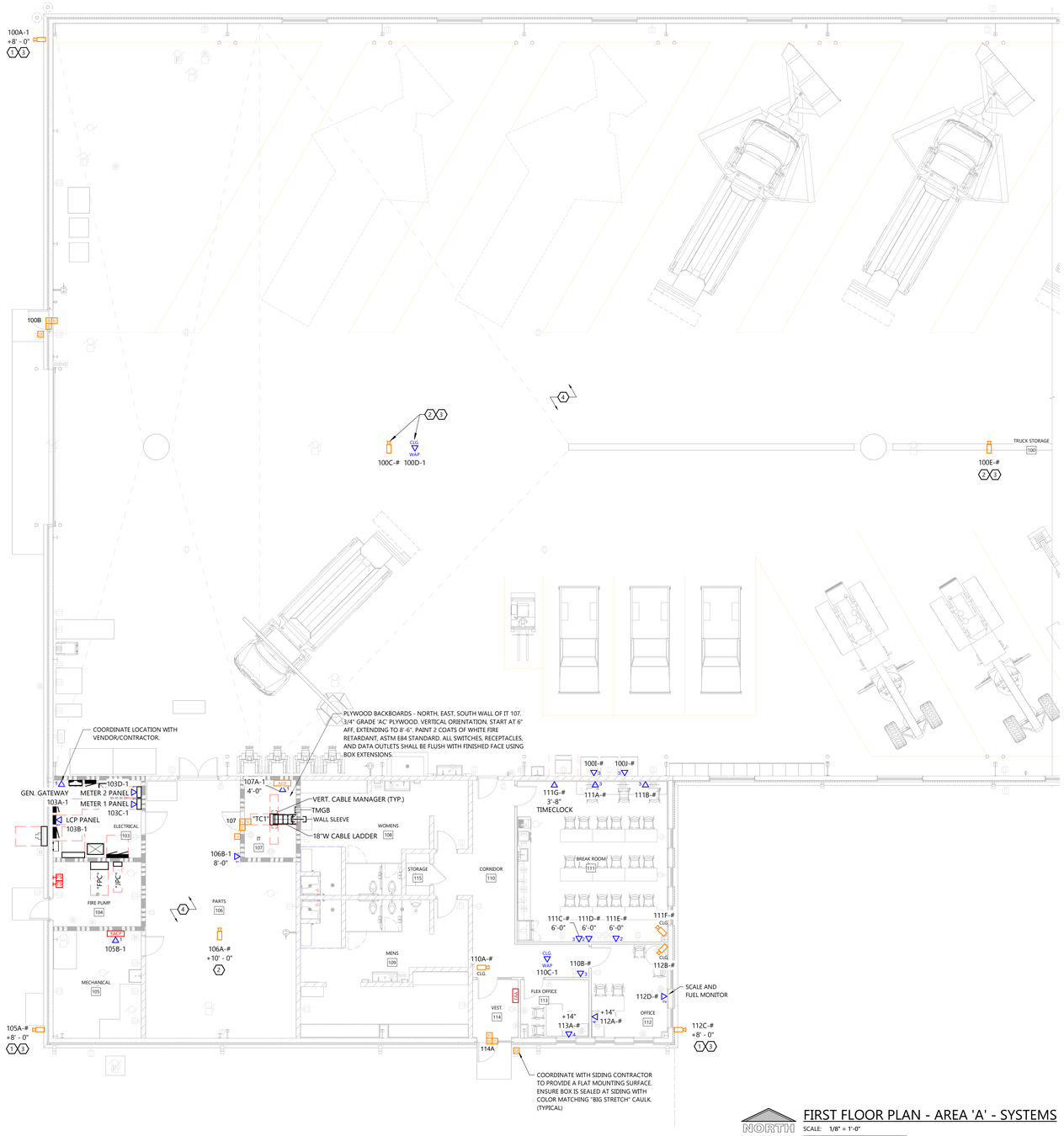


NORTH

FIRST FLOOR PLAN - AREA 'A' - SYSTEMS

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

0' 8' 16'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- ALL CONDUITS TO ISLAND CABINETRY AND TABLES SHALL BE UNDERGROUND.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- ALL ITEMS OR DEVICES SHOWN "DARKER" ARE NEW LOW VOLTAGE DEVICES. ALL ITEMS OR DEVICES SHOWN "LIGHTER" ARE POWER DEVICES. POWER DEVICES ARE SHOWN FOR REFERENCE ONLY. REFER TO POWER SHEETS FOR MORE INFORMATION.
- OWNER-FURNISHED CONTRACTOR-INSTALLED (OFCI) EQUIPMENT:
  1. VERIFICATION: CONTRACTOR SHALL INSPECT ALL OFCI EQUIPMENT FOR DAMAGE UPON RECEIPT AND VERIFY ALL SPECIALIZED MOUNTING HARDWARE ARE PRESENT PRIOR TO ROUGH-IN.
  2. COMPATIBILITY: CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY NECESSARY 3/4" NPT CONDUIT ADAPTERS OR WEATHER-TIGHT GASKETS REQUIRED TO MATE OFCI DEVICES TO THE SPECIFIED SWIVEL/CONDUIT ASSEMBLY.
  3. TESTING: FOLLOWING INSTALLATION, THE CONTRACTOR SHALL VERIFY MECHANICAL STABILITY AND BASIC POWER-UP (WHERE APPLICABLE) TO ENSURE THE MOUNT REMAINS LEVEL AND PLUMB UNDER LOAD.
  4. CONFLICT RESOLUTION: IF THE "MATCH NEAREST LIGHT FIXTURE" HEIGHT RESULTS IN AN OBSTRUCTION OF THE DEVICE'S FIELD OF VIEW OR OPERATION (E.G., CAMERA LENS BLOCKED BY DUCTWORK), THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR CLARIFICATION BEFORE FINAL MOUNTING.

HARSH ENVIRONMENT ROOM NOTES

- SEE HARSH ENVIRONMENT ROOM DETAIL SHEET E3.2 FOR KEY PLAN INDICATING WHICH ROOMS ARE CONSIDERED HARSH ENVIRONMENT ROOMS.
- SEE HARSH ENVIRONMENT ROOM DETAILS E3.2 SHEETS FOR ADDITIONAL INSTALLATION DETAILS THAT APPLY TO HARSH ENVIRONMENT ROOMS.

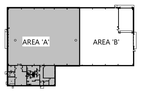
SYSTEMS COLOR LEGEND

- FIRE ALARM
- SECURITY/ACCESS CONTROL
- AUDIO/VIDEO
- NETWORK (IT)
- PROCESS NETWORK (OT)

KEYNOTES

ALL KEYNOTES MAY NOT APPEAR ON THIS SHEET.

1. PROVIDE 4" SQ DEEP JUNCTION BOX MOUNTED ON INTERIOR WALL SURFACE. INSTALL 3/4" RMC THROUGH-WALL SLEEVE CONNECTING TO AN EXTERIOR-RATED, UV-STABLE BOX. SLEEVE SHALL BE PITCHED MINIMUM 1/8" PER FOOT TOWARD THE EXTERIOR TO PREVENT MOISTURE MIGRATION TO THE INTERIOR. SEAL BOTH SIDES OF WALL PENETRATION WITH NON-HARDENING WATERPROOF ARCHITECTURAL CAULK. PROVIDE AN INTERNAL CONDUIT SEAL (DUCT SEAL) WITHIN THE SLEEVE TO PREVENT CONDENSATION AND AIR INFILTRATION BETWEEN CONDITIONED AND UNCONDITIONED SPACES.
2. PROVIDE 4" SQ DEEP JUNCTION BOX WITH SWIVEL HANGER COVER (RACO 897KH), MOUNT VIA 3/4" RIGID METAL CONDUIT SECURED TO ROOF STRUCTURE; PROVIDE SUPPLEMENTAL SUPPORT AS REQUIRED. INSTALL OWNER-PROVIDED DEVICE PER MFG INSTRUCTIONS. MAINTAIN CLEARANCE AT SWIVEL POINT TO ENSURE UNRESTRICTED PENDULUM MOTION; DO NOT APPLY PAINT, ADHESIVES, OR THREAD-LOCKER TO THE BALL JOINT ASSEMBLY. PROVIDE 1/8" STAINLESS STEEL AIRCRAFT SAFETY CABLE LOOPED AROUND PRIMARY ROOF STRUCTURE AND SECURED TO DEVICE CHASSIS AS SECONDARY FALL PROTECTION. COORDINATE WITH ALL TRADES TO ENSURE 3FT OF CLEARANCE FOR UNOBSTRUCTED OPERATION AND SERVICE. FINISHED HEIGHT TO MATCH NEAREST LIGHT FIXTURE.
3. PROVIDE (1) SPECIFIED HORIZONTAL CABLE TERMINATED WITH FIELD TERMINATED PLUG (MPTL). PROVIDE 18" OF CABLE SLACK COILED AND SECURED ABOVE CEILING/STRUCTURE AT DEVICE SIDE. CONTRACTOR SHALL PERFORM MPTL COMPLIANCE TESTING PER TIA-568.2-D STANDARDS.
4. ALL LOW VOLTAGE CABLING FROM WALL DEVICES SHALL BE INSTALLED IN SURFACE-MOUNTED CONDUIT PER CONDUIT SCHEDULE. EXTEND CONDUIT VERTICALLY TO WITHIN 6" OF DECK OR TO NEAREST HORIZONTAL STRUCTURAL MEMBER. TERMINATE CONDUIT WITH PLASTIC BUSHING. CONDUIT SHALL BE PAINTED TO MATCH ADJACENT WALL/CEILING FINISHES. COORDINATE EXACT ROUTING WITH ARCHITECTURAL FINISHES TO MAINTAIN PLUMB ALIGNMENT WITH BUILDING LINES.



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'A' - SYSTEMS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

E1.1AS

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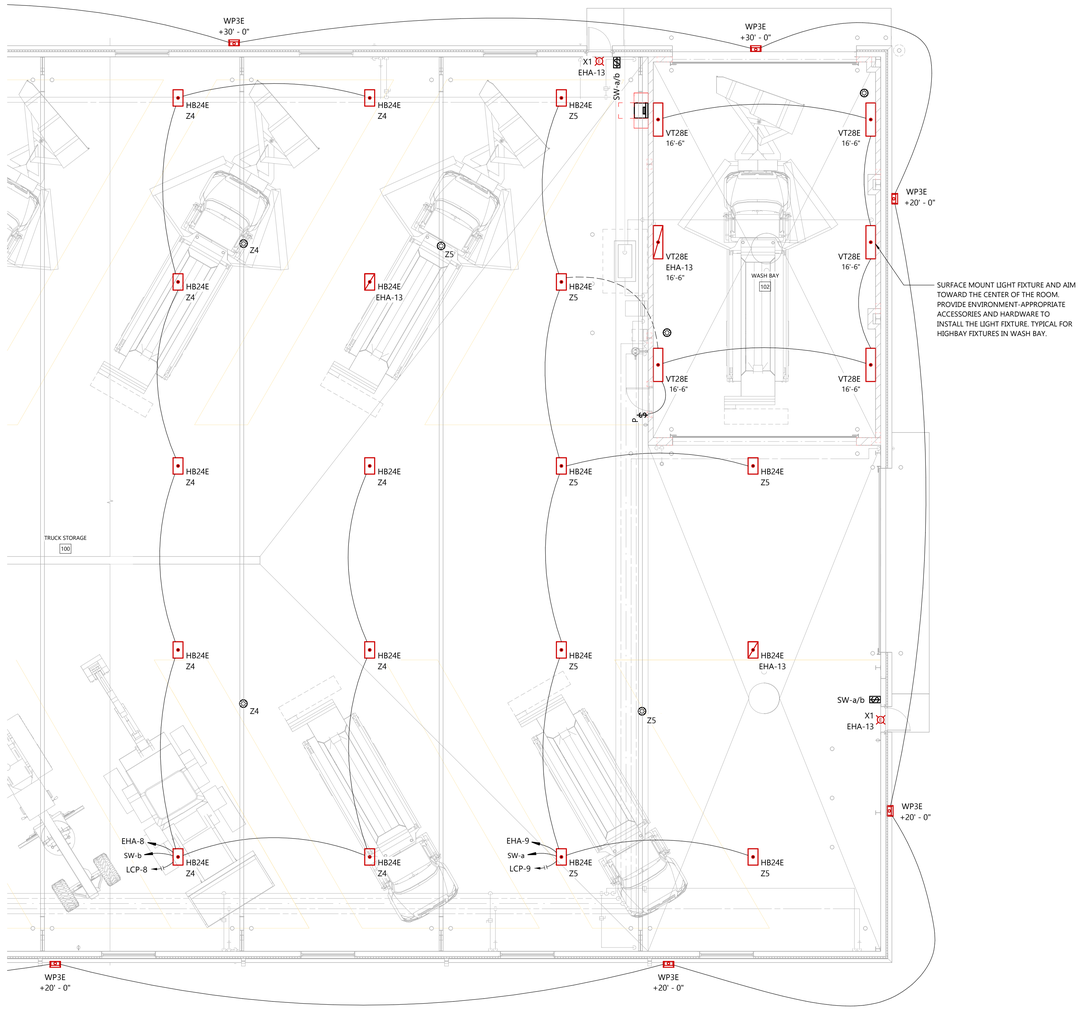

NORTH

FIRST FLOOR PLAN - AREA 'B' - LIGHTING

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

0' 8' 16'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- COORDINATE LIGHT FIXTURE LOCATIONS IN MECHANICAL EQUIPMENT ROOMS WITH OTHER CONTRACTORS PRIOR TO ROUGH IN.
- WIRE EMERGENCY LIGHTS UNSWITCHED TO LIGHTING CIRCUIT SERVING SAME ROOM, OR TO "NIGHT LIGHT" CIRCUIT WHEN AVAILABLE.
- LOCATE EXTERIOR EGRESS LIGHT AT SINGLE WYTHE MASONRY CONSTRUCTION MIN. 12" ABOVE FLASHING AT DOOR HEAD.
- EXIT LIGHT CONDUIT AT SINGLE WYTHE MASONRY CONSTRUCTION SHALL NOT PENETRATE FLASHING ABOVE DOOR HEAD IF EXIT LIGHT IS WALL MOUNTED.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- SEE ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR LOCATION OF ALL LIGHTING FIXTURES. LOCATE FIXTURES IN ACCORDANCE WITH CEILING AND ELEVATION PLANS.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE LIGHTING FIXTURE LEGEND FOR FIXTURE WIRING INFORMATION.
- SEE HIGHBAY MOUNTING DETAILS FOR HIGHBAY LIGHT FIXTURE INSTALLATION.

HARSH ENVIRONMENT ROOM NOTES

- SEE HARSH ENVIRONMENT ROOM DETAIL SHEET E3.2 FOR KEY PLAN INDICATING WHICH ROOMS ARE CONSIDERED HARSH ENVIRONMENT ROOMS.
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PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

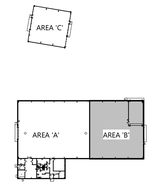
IFB MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

E1.1BL



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'B' - LIGHTING

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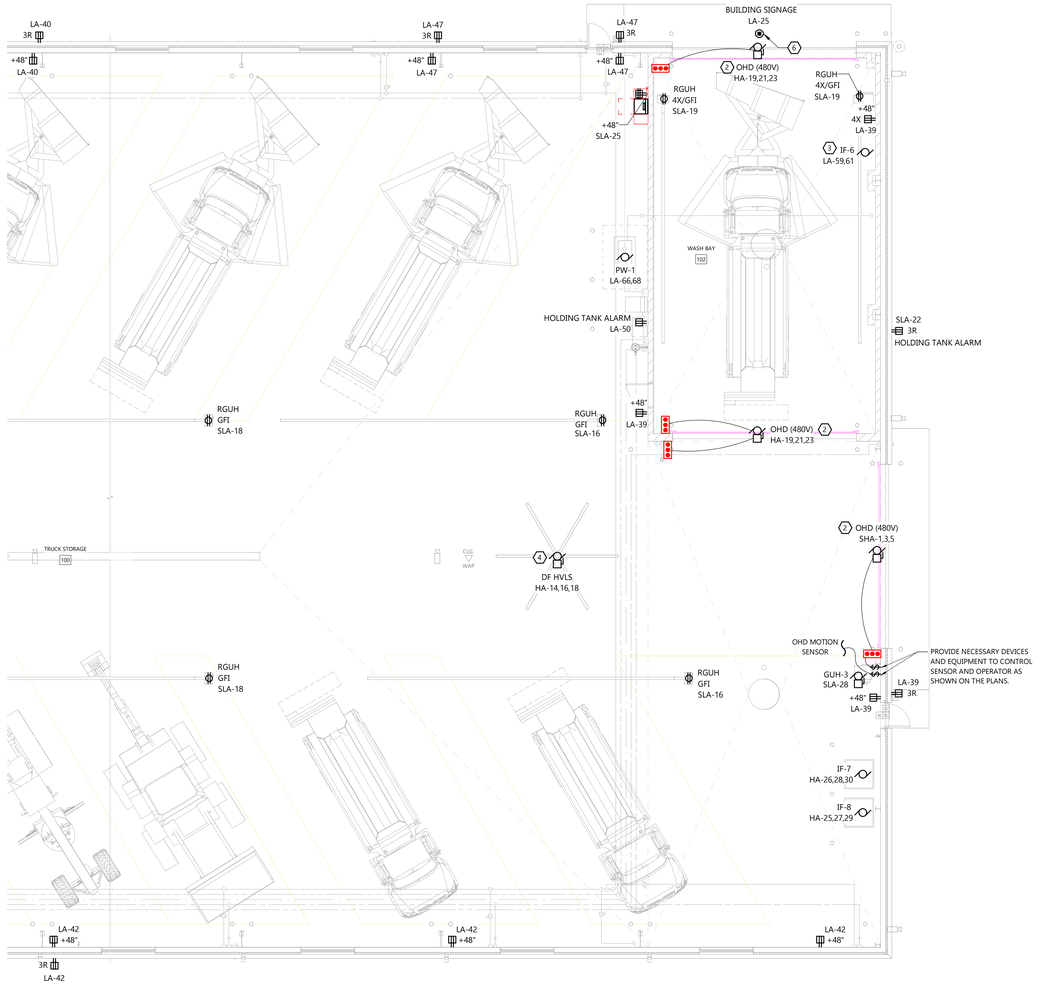

NORTH

FIRST FLOOR PLAN - AREA 'B' - POWER

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

0' 8' 16'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI UC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- ROUGH-IN RECEPTACLES FOR ELECTRIC WATER COOLERS (EWC) BEHIND UNIT. VERIFY LOCATION PRIOR TO ROUGH-IN.
- PROVIDE GFI PROTECTION FOR ALL SINGLE PHASE RECEPTACLES IN THE FOLLOWING LOCATIONS: BATHROOMS, KITCHENS, ROOFS, LOCKER ROOMS & SHOWERING FACILITIES, SERVING WATER COOLERS & VENDING MACHINES, GARAGES & SERVICE BAYS, WITHIN 6'-0" OF A SINK, AND ALL OTHER WET LOCATIONS.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- ALL CONDUITS TO ISLAND CABINETRY AND TABLES SHALL BE UNDERGROUND.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.

KEYNOTES

ALL KEYNOTES MAY NOT APPEAR ON THIS SHEET.

1. CONCRETE PAD PROVIDED BY CONTRACTOR.
2. OVERHEAD DOOR. VERIFY LOCATION OF CONTROL PANEL WITH DOOR MANUFACTURER.
3. HC SHALL FURNISH STARTER TO EC FOR INSTALLATION ON WALL NEAR ELECTRICAL PANEL THAT SERVES FAN. COORDINATE FINAL LOCATION AND WIRING WITH HC.
4. FAN FURNISHED WITH CONTACTORS TO SHUT DOWN FAN ON FIRE ALARM SIGNAL INDICATING FIRE SPRINKLER FLOW. EC TO PROVIDE SHUTDOWN SIGNAL AND WIRING FROM FIRE ALARM PANEL.
5. 120V TO SWITCHING RELAY AND FROM SWITCHING RELAY TO PUMP BY EC. 24V WIRING FROM SWITCHING RELAY TO OTHER DEVICES BY PC.
6. BUILDING SIGNAGE PROVIDED BY OTHERS. PRELIM POWER REQUIREMENT IS SHOWN. CONTRACTOR TO COORDINATE WITH SIGNAGE SUPPIER FOR EXACT LOCATION, POWER AND WIRING REQUIREMENTS.

HARSH ENVIRONMENT ROOM NOTES

- SEE HARSH ENVIRONMENT ROOM DETAIL SHEET E3.2 FOR KEY PLAN INDICATING WHICH ROOMS ARE CONSIDERED HARSH ENVIRONMENT ROOMS.
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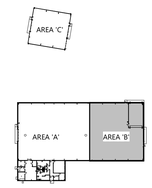

KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'B' - POWER

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

E1.1BP

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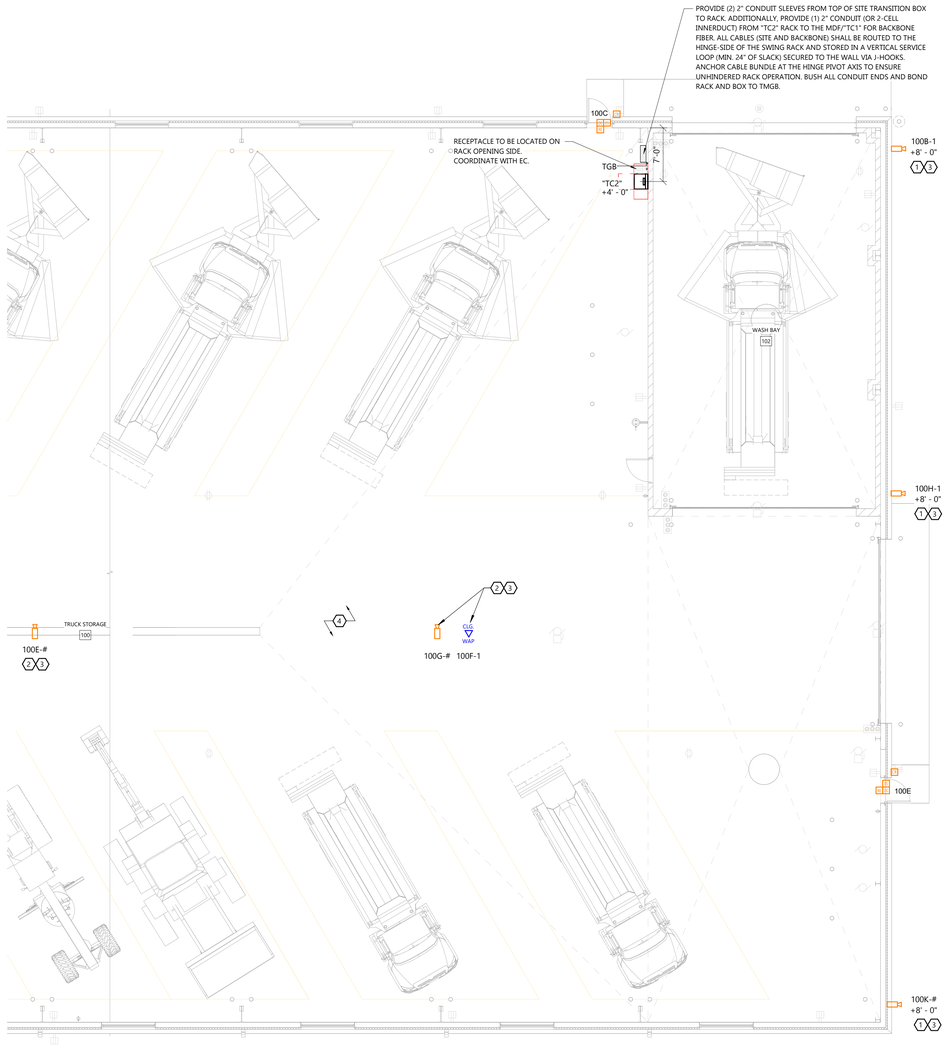

NORTH

FIRST FLOOR PLAN - AREA 'B' - SYSTEMS

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

0' 8' 16'

GENERAL NOTES

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- ALL ITEMS OR DEVICES SHOWN "DARKER" ARE NEW LOW VOLTAGE DEVICES. ALL ITEMS OR DEVICES SHOWN "LIGHTER" ARE POWER DEVICES. POWER DEVICES ARE SHOWN FOR REFERENCE ONLY. REFER TO POWER SHEETS FOR MORE INFORMATION.
- OWNER-FURNISHED CONTRACTOR-INSTALLED (OFCI) EQUIPMENT:
  1. VERIFICATION: CONTRACTOR SHALL INSPECT ALL OFCI EQUIPMENT FOR DAMAGE UPON RECEIPT AND VERIFY ALL SPECIALIZED MOUNTING HARDWARE ARE PRESENT PRIOR TO ROUGH-IN.
  2. COMPATIBILITY: CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANY NECESSARY 3/4" NPT CONDUIT ADAPTERS OR WEATHER-TIGHT GASKETS REQUIRED TO MATE OFCI DEVICES TO THE SPECIFIED SWIVEL/CONDUIT ASSEMBLY.
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  4. CONFLICT RESOLUTION: IF THE "MATCH NEAREST LIGHT FIXTURE" HEIGHT RESULTS IN AN OBSTRUCTION OF THE DEVICE'S FIELD OF VIEW OR OPERATION (E.G., CAMERA LENS BLOCKED BY DUCTWORK), THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR CLARIFICATION BEFORE FINAL MOUNTING.

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SYSTEMS COLOR LEGEND

- FIRE ALARM
- SECURITY/ACCESS CONTROL
- AUDIO/VIDEO
- NETWORK (IT)
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KEYNOTES

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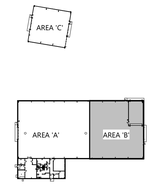

KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'B' - SYSTEMS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E1.1BS

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GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
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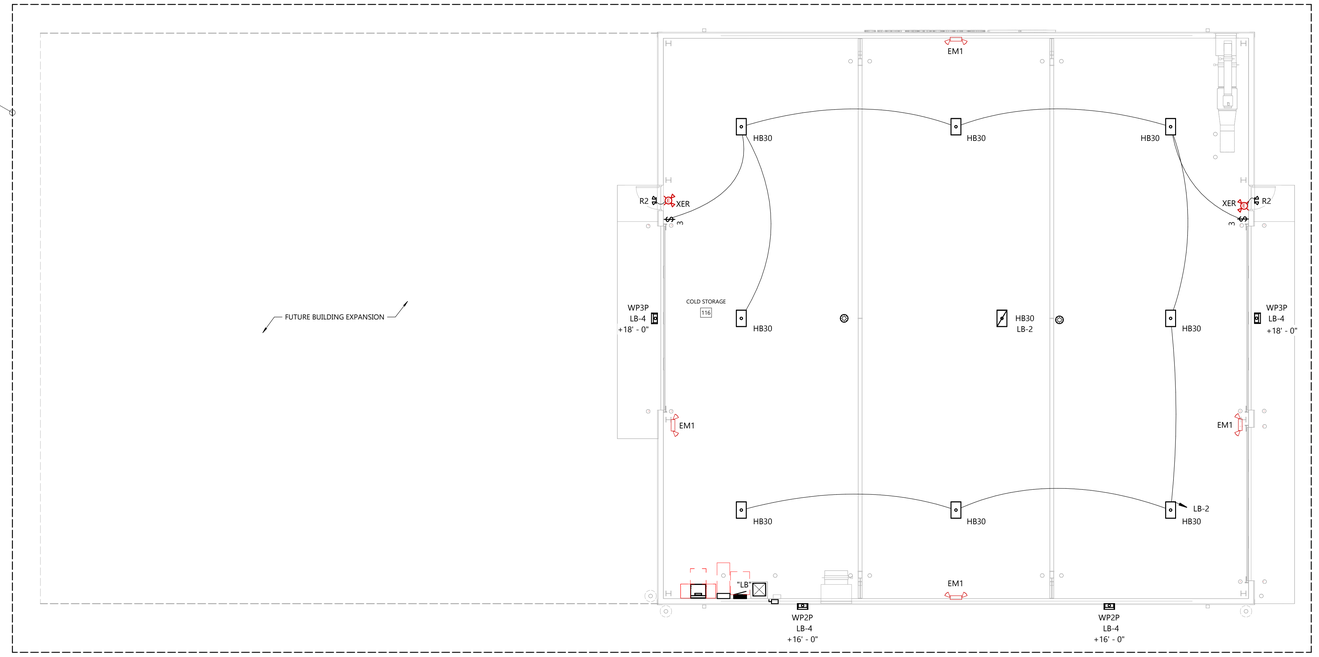
- WIRE EMERGENCY LIGHTS UNSWITCHED TO LIGHTING CIRCUIT SERVING SAME ROOM, OR TO "NIGHT LIGHT" CIRCUIT WHEN AVAILABLE.
- SEE ARCHITECTURAL REFLECTED CEILING AND ELEVATION PLANS FOR LOCATION OF ALL LIGHTING FIXTURES. LOCATE FIXTURES IN ACCORDANCE WITH CEILING AND ELEVATION PLANS.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.
- SEE LIGHTING FIXTURE LEGEND FOR FIXTURE WIRING INFORMATION.

ALTERNATE BID 4:
PROVIDE A BREAKOUT PRICE FOR ELECTRICAL WORK SHOWN IN THE PLAN.

PROVIDE AN ALTERNATE PRICE FOR THE CONSTRUCTION OF THE ELECTRICAL WORK SHOWN AND FOR THE INDICATED FUTURE EXPANSION AREA. UTILIZE SAME LIGHTING LAYOUT.

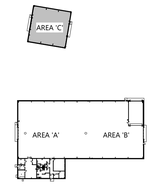


NORTH

FIRST FLOOR PLAN - AREA 'C' - LIGHTING

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

0' 8' 16'



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'C' - LIGHTING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

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IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

E1.1CL

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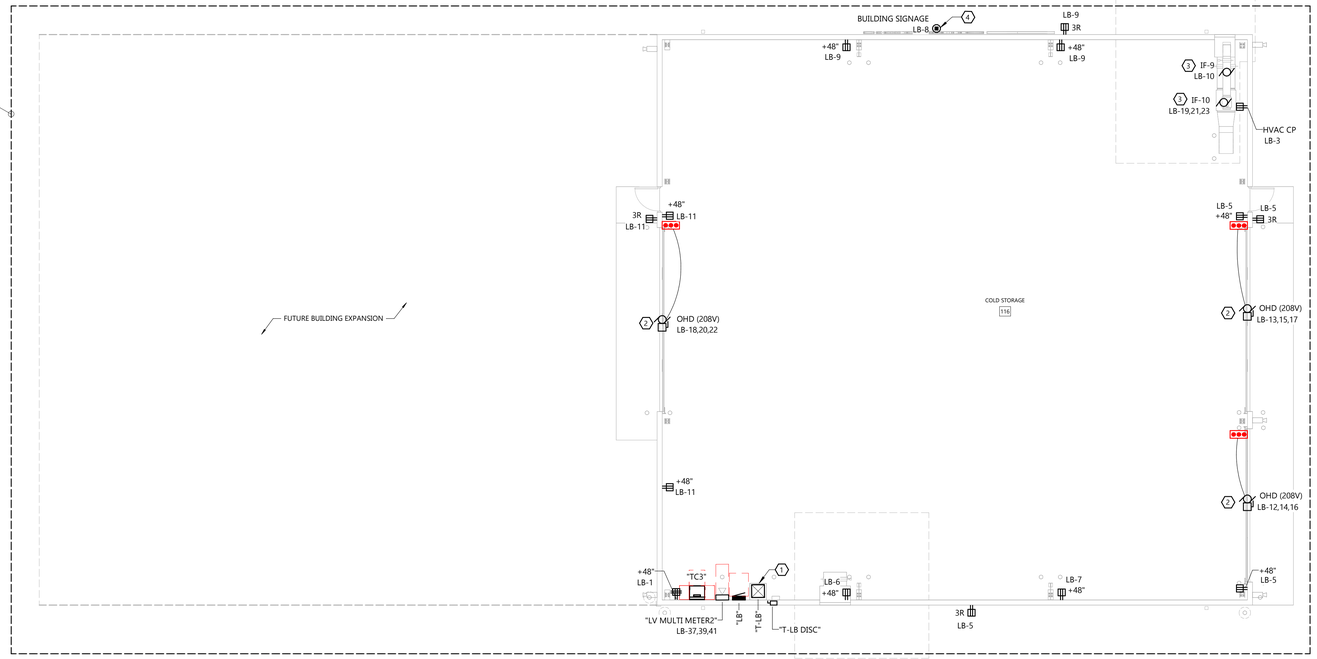
ALTERNATE BID 4:
PROVIDE A BREAKOUT PRICE FOR ELECTRICAL WORK SHOWN IN THE PLAN.

PROVIDE AN ALTERNATE PRICE FOR THE CONSTRUCTION OF THE ELECTRICAL WORK SHOWN AND FOR THE INDICATED FUTURE EXPANSION AREA. UTILIZE SAME POWER LAYOUT.



NORTH

FIRST FLOOR PLAN - AREA 'C' - POWER

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

0' 8' 16'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
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- EXTERIOR RECEPTACLES SHALL BE GFI TYPE. PROVIDE PASS & SEYMOUR SERIES "WI UC" OR EQUIVALENT COVER. (PER NEC 406.8(B) AND AHJ). COLOR SHALL BE SELECTED BY ARCHITECT.
- PROVIDE GFI PROTECTION FOR ALL SINGLE PHASE RECEPTACLES IN THE FOLLOWING LOCATIONS: BATHROOMS, KITCHENS, ROOFS, LOCKER ROOMS & SHOWERING FACILITIES, SERVING WATER COOLERS & VENDING MACHINES, GARAGES & SERVICE BAYS, WITHIN 6'-0" OF A SINK, AND ALL OTHER WET LOCATIONS.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- PENETRATE MASONRY WALL PER STRUCTURAL DRAWINGS. PENETRATIONS NOT PERMITTED THROUGH MARKED GROUTED/REINFORCED MASONRY, AND SHALL NOT BE MODIFIED WITHOUT WRITTEN APPROVAL FROM STRUCTURAL ENGINEER.
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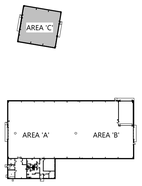
- SEE HVAC AND PLUMBING PLANS FOR LOCATIONS OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT. DO NOT REFERENCE ELECTRICAL DRAWINGS FOR EXACT LOCATION.

KEYNOTES

1. CONCRETE PAD PROVIDED BY CONTRACTOR.
2. OVERHEAD DOOR. VERIFY LOCATION OF CONTROL PANEL WITH DOOR MANUFACTURER.
3. HC SHALL FURNISH STARTER TO EC FOR INSTALLATION ON WALL NEAR ELECTRICAL PANEL THAT SERVES FAN. COORDINATE FINAL LOCATION AND WIRING WITH HC.
4. BUILDING SIGNAGE PROVIDED BY OTHERS. PRELIM POWER REQUIREMENT IS SHOWN. CONTRACTOR TO COORDINATE WITH SIGNAGE SUPPIER FOR EXACT LOCATION, POWER AND WIRING REQUIREMENTS.



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'C' - POWER

EXCEL

Always a Better Plan

100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:

OUTGAMIE COUNTY HWY. DEPT.

W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER

250041200

SHEET NUMBER

E1.1CP

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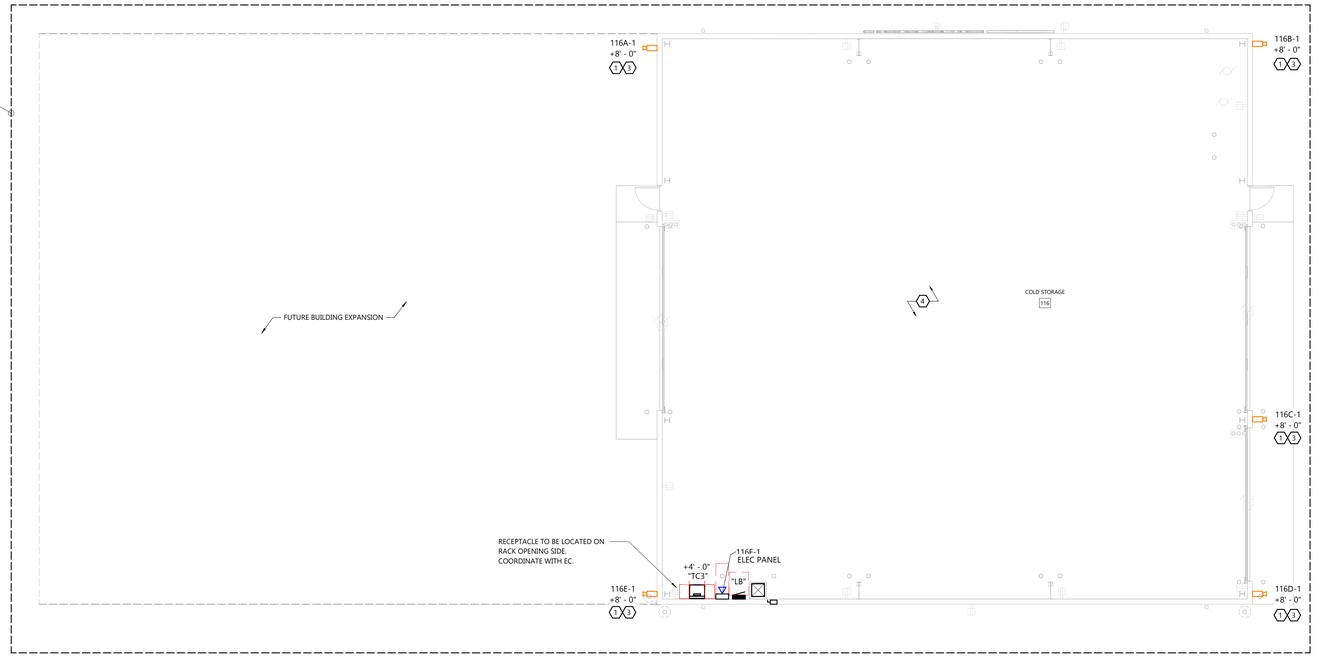
ALTERNATE BID 4:
PROVIDE A BREAKOUT PRICE FOR SYSTEMS WORK SHOWN IN THE PLAN.

PROVIDE AN ALTERNATE PRICE FOR THE CONSTRUCTION OF THE SYSTEMS WORK SHOWN AND FOR THE INDICATED FUTURE EXPANSION AREA.



NORTH

FIRST FLOOR PLAN - AREA 'C' - SYSTEMS

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

0' 8' 16'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- DETAIL REFERENCES ON PLANS ARE TO AID THE CONTRACTOR IN IDENTIFYING THE APPLICABLE DETAIL. NOT ALL DETAILS, OR INSTANCES OF DETAILS, ARE REFERENCES ON PLANS. CONTRACTOR IS RESPONSIBLE TO REVIEW AND COMPLY WITH ALL APPLICABLE DETAILS WHETHER OR NOT REFERENCED ON PLANS.
- ALL ITEMS OR DEVICES SHOWN "DARKER" ARE NEW LOW VOLTAGE DEVICES. ALL ITEMS OR DEVICES SHOWN "LIGHTER" ARE POWER DEVICES. POWER DEVICES ARE SHOWN FOR REFERENCE ONLY. REFER TO POWER SHEETS FOR MORE INFORMATION.

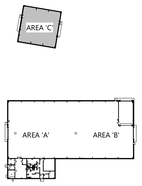
SYSTEMS COLOR LEGEND

- FIRE ALARM
- SECURITY/ACCESS CONTROL
- AUDIO/VIDEO
- NETWORK (IT)
- PROCESS NETWORK (OT)

KEYNOTES

ALL KEYNOTES MAY NOT APPEAR ON THIS SHEET.

1. PROVIDE 4" SQ DEEP JUNCTION BOX MOUNTED ON INTERIOR WALL SURFACE. INSTALL 3/4" RMC THROUGH-WALL SLEEVE CONNECTING TO AN EXTERIOR-RATED, UV-STABLE BOX. SLEEVE SHALL BE PITCHED MINIMUM 1/8" PER FOOT TOWARD THE EXTERIOR TO PREVENT MOISTURE MIGRATION TO THE INTERIOR. SEAL BOTH SIDES OF WALL PENETRATION WITH NON-HARDENING WATERPROOF ARCHITECTURAL CAULK. PROVIDE AN INTERNAL CONDUIT SEAL (DUCT SEAL) WITHIN THE SLEEVE TO PREVENT CONDENSATION AND AIR INFILTRATION BETWEEN CONDITIONED AND UNCONDITIONED SPACES.
2. PROVIDE 4" SQ DEEP JUNCTION BOX WITH SWIVEL HANGER COVER (RACO 897KH). MOUNT VIA 3/4" RIGID METAL CONDUIT SECURED TO ROOF STRUCTURE; PROVIDE SUPPLEMENTAL SUPPORT AS REQUIRED. INSTALL OWNER-PROVIDED DEVICE PER MFG INSTRUCTIONS. MAINTAIN CLEARANCE AT SWIVEL POINT TO ENSURE UNRESTRICTED PENDULUM MOTION; DO NOT APPLY PAINT, ADHESIVES, OR THREAD-LOCKER TO THE BALL JOINT ASSEMBLY. PROVIDE 1/8" STAINLESS STEEL AIRCRAFT SAFETY CABLE LOOPED AROUND PRIMARY ROOF STRUCTURE AND SECURED TO DEVICE CHASSIS AS SECONDARY FALL PROTECTION. COORDINATE WITH ALL TRADES TO ENSURE 3FT OF CLEARANCE FOR UNOBSTRUCTED OPERATION AND SERVICE. FINISHED HEIGHT TO MATCH NEAREST LIGHT FIXTURE.
3. PROVIDE (1) SPECIFIED HORIZONTAL CABLE TERMINATED VIA FIELD TERMINATED PLUG (MPTL). PROVIDE 10' OF CABLE SLACK COILED AND SECURED ABOVE CEILING/STRUCTURE AT DEVICE SIDE. CONTRACTOR SHALL PERFORM MPTL COMPLIANCE TESTING PER TIA-568.2-D STANDARDS.
4. ALL LOW VOLTAGE CABLING FROM WALL DEVICES SHALL BE INSTALLED IN SURFACE-MOUNTED CONDUIT PER CONDUIT SCHEDULE. EXTEND CONDUIT VERTICALLY TO WITHIN 6" OF DECK OR TO NEAREST HORIZONTAL STRUCTURAL MEMBER. TERMINATE CONDUIT WITH PLASTIC BUSHING. CONDUIT SHALL BE PAINTED TO MATCH ADJACENT WALL/CEILING FINISHES. COORDINATE EXACT ROUTING WITH ARCHITECTURAL FINISHES TO MAINTAIN PLUMB ALIGNMENT WITH BUILDING LINES.



KEY PLAN

ELECTRICAL FIRST FLOOR PLAN - AREA 'C' - SYSTEMS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

OUTGAMIE COUNTY HWY. DEPT.

NEW HIGHWAY FACILITY:
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PROFESSIONAL SEAL

SHEET DATES

ISSUED FOR BID

IFB	MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E1.1CS

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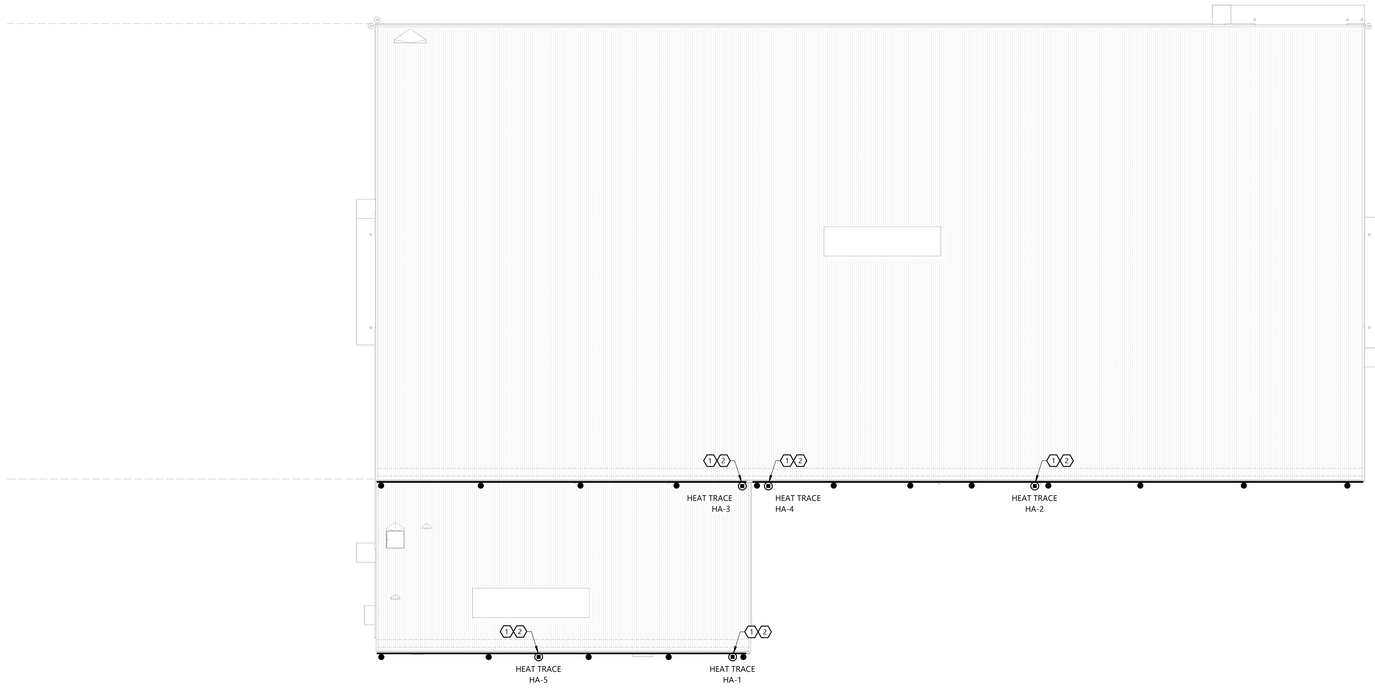

NORTH

ROOF PLAN - OVERALL

SCALE: 1/16" = 1'-0"

0' 16' 32'

GENERAL NOTES

- VERIFY ALL EXPOSED CONDUIT ROUTING WITH ARCHITECT/ENGINEER WHERE CONDUIT IS EXPOSED IN FINISHED ROOMS.
- SEE SHEET E4.0 FOR BRANCH CIRCUIT FEEDER SIZES.
- DEVICE LOCATIONS MAY BE DISTORTED FOR CLARITY. LOCATE DEVICES SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS.

KEYNOTES

1. PROVIDE RAYCHEM SELF-REG HEATING CABLE (MODEL #GM-2XT ICESTOP SELF-REGULATING HEAT TRACE), RAYCHEM GMK-RC INSTALLATION CLIPS, RAYCHEM FTC-P POWER CONNECTION KIT FOR EACH CIRCUIT, RAYCHEM DOWNSPOUT HANGER BRACKETS (2 PER DOWNSPOUT), AND RAYCHEM ECW-GFF ELECTRONIC HEAT TRACE CONTROLLER.
2. RUN HEAT TRACE TO END OF DOWNSPOUT AND GUTTER. SEE ARCHITECTURAL ELEVATIONS FOR LOCATION AND LENGTH OF DOWNSPOUTS AND GUTTERS. LINE INDICATES GUTTER AND BLACK DOT INDICATES DOWNSPOUT. SEE HEAT TRACE DETAILS ON SHEET E3.0 FOR INSTALLATION.

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PROFESSIONAL SEAL

SHEET DATES

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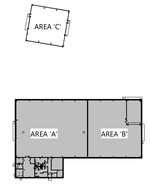
IFB	MAR. 31, 2026



KEY PLAN

ELECTRICAL ROOF PLAN

JOB NUMBER

250041200

SHEET NUMBER

E1.3

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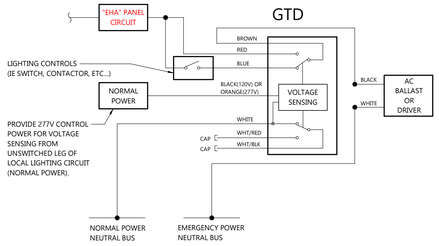
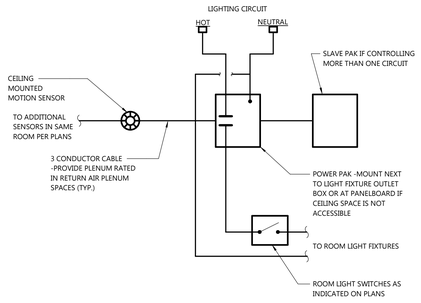
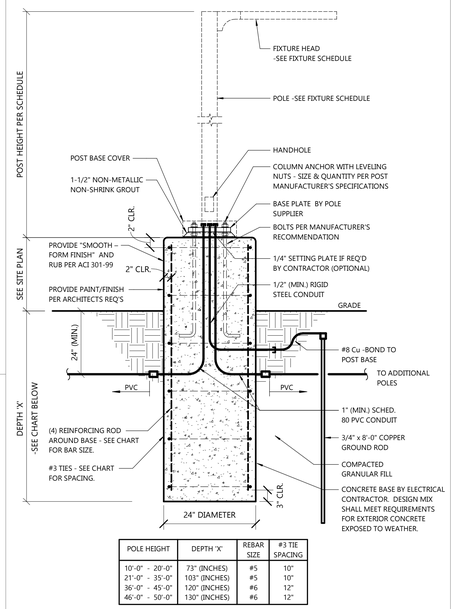


4 E3.0 GENERATOR LIGHTING CONTROL DETAIL
NOT TO SCALE



3 E3.0 MOTION SENSOR DETAIL
NOT TO SCALE



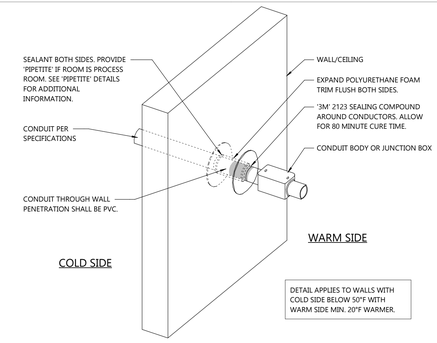
POLE HEIGHT	DEPTH 'X'	REBAR SIZE	#3 TIE SPACING
10'-0" - 20'-0"	73" (INCHES)	#5	10"
21'-0" - 35'-0"	103" (INCHES)	#5	10"
36'-0" - 45'-0"	120" (INCHES)	#6	12"
46'-0" - 50'-0"	130" (INCHES)	#6	12"

NOTES:
A DRILLED 2'-0" DIA. HOLE SHALL BE USED AS A FORM FOR THE CONCRETE BASE IN UNDISTURBED EARTH, EXCLUDING FILL MATERIAL.

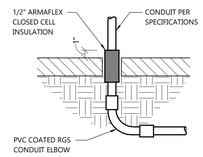
BACKFILL AROUND CONCRETE BASE WITH COMPACTED GRANULAR BACKFILL A MIN. OF 2'-0" IN ALL DIRECTIONS IN EXCAVATED AREAS OR IN EXISTING SOIL CONTAINING FILL OF OBJECTIONABLE MATERIAL.

DESIGN BASED ON IBC 2009: 100 MPH WIND SPEED, EXPOSURE C, 150 PSF/FT LATERAL SOIL PRESSURE, OCCUPANCY CATEGORY II, IMPORTANCE FACTOR 1.0.

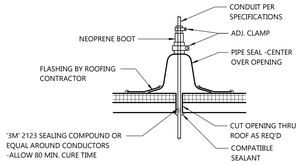
2 E3.0 LIGHT POLE DETAIL
NOT TO SCALE



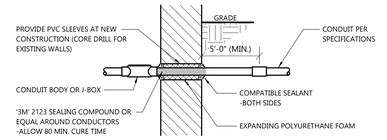
COLD ROOM WALL/CEILING CONDUIT PENETRATIONS



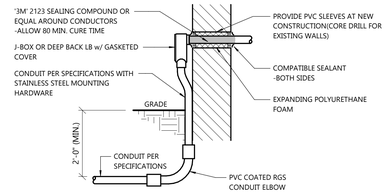
SLAB ON GRADE FLOORS



MEMBRANE ROOF



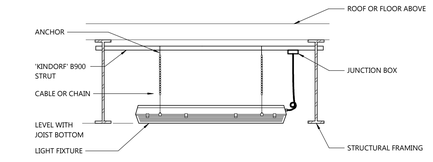
BELOW GRADE WALLS



ABOVE GRADE WALLS

NOTES:
- SEE SPECIFICATIONS FOR CONDUIT MATERIAL BEYOND COUPLINGS.
- SEE SPECIFICATIONS FOR INTERIOR WALL AND FLOOR PENETRATION REQ'S.

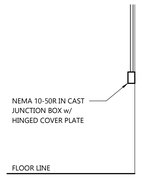
1 E3.0 CONDUIT PENETRATION DETAILS
NOT TO SCALE



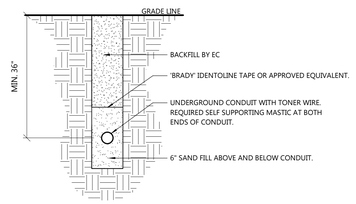
NOTES:
- INSTALL STRUT & SUPPORTS AS REQ'D PRIOR TO PAINTING STRUCTURE.
- SEE STRUCTURAL PLANS FOR LOCATION OF FRAMING MEMBERS.

INDOOR HIGHBAY LIGHT FIXTURE MOUNTING DETAIL - HARDWIRED

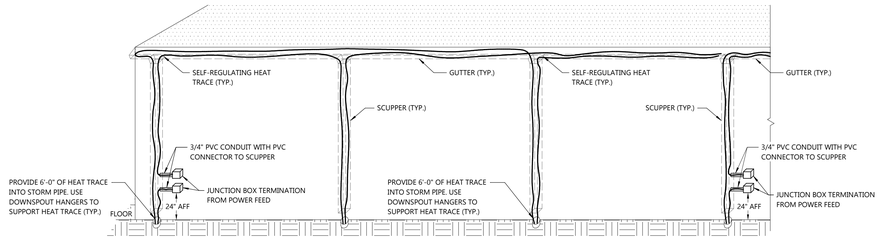
6 E3.0 NOT TO SCALE



5 E3.0 WELDING RECEPTACLE
NOT TO SCALE

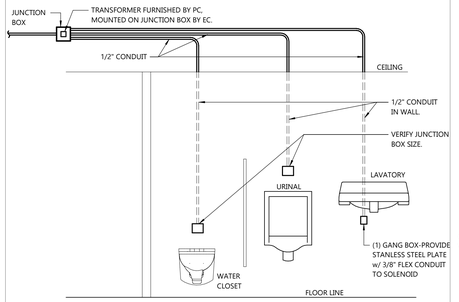


10 E3.0 SITE: UNDERGROUND CONDUIT DETAIL
NOT TO SCALE



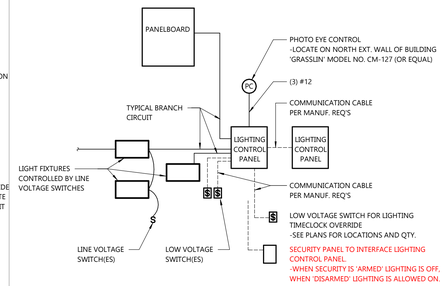
NOTES:
- STAGGER DOWNSPOUT HEAT TRACE LOOP BETWEEN (2) HEAT TRACE CIRCUIT UNLESS ONLY (1). WHEN THERE IS ONLY (1) HEAT TRACE CIRCUIT AVAILABLE, LOOP ALL DOWN SPOUTS USING THE CIRCUIT.
- VERIFY HEAT TRACE FUNCTIONALITY AND COMPLETE HEAT TRACE SYSTEM WITH HEAT TRACE SUPPLIER.

9 E3.0 HEAT TRACE DETAIL
NOT TO SCALE

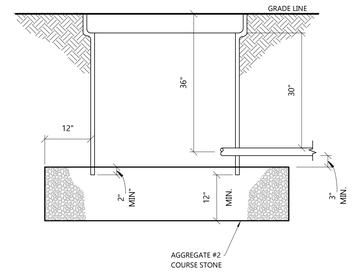


NOTES:
- VERIFY BEST JUNCTION BOX LOCATION WITH PC AND OWNER'S MAINTENANCE STAFF.
- EC SHALL PROVIDE ALL CONDUIT/BOXES AND MAKE FINAL CONNECTIONS. WIRING FURNISHED BY PC. CONNECT TO LOCAL RECEPTACLE CIRCUIT OR AS SHOWN ON PLANS.
- SEE PLANS FOR PLUMBING FIXTURE LOCATIONS AND QUANTITIES.

8 E3.0 INFRARED WATER CONTROL DETAIL
NOT TO SCALE



7 E3.0 LIGHTING CONTROL PANEL DETAIL
NOT TO SCALE



11 E3.0 SITE: HAND HOLE DETAIL
NOT TO SCALE

ELECTRICAL DETAILS

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Fond du Lac, WI 54935
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E3.0

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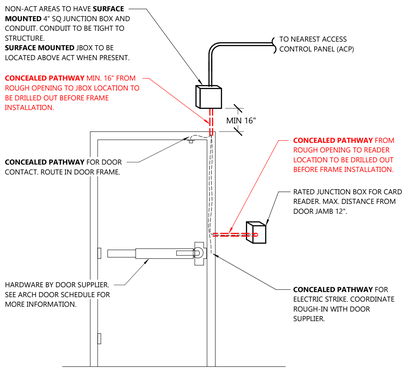
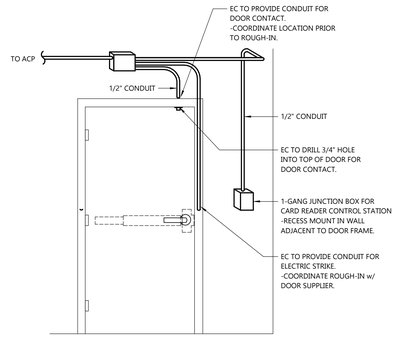


2 E3.1 ACCESS CONTROL: DOOR IN PRECAST DETAIL
NOT TO SCALE



1 E3.1 ACCESS CONTROL: TYP DOOR
NOT TO SCALE

FIRE ALARM MATRIX

AREAS / SYSTEMS	MANUAL FIRE ALARM BOX	EVACUATION NOTIFICATION	SMOKE / HEAT DETECTION	DUCT SMOKE DETECTION	FIRE SUPPRESSION MONITORING	FIRE ALARM CONTROL INTERFACE
"B" OCCUPANCY CLASSIFICATION		X				
"S-1" OCCUPANCY CLASSIFICATION		X				
"S-2" OCCUPANCY CLASSIFICATION		X				
AUTOMATIC SPRINKLER SYSTEMS (2)	X (3)				X	X (8)
ELECTRICAL ROOMS		X				
HVAC EQUIPMENT (1)				X		X (8)
FIRE PUMP ROOM (2)	X (3)	X			X	
FIRE ALARM CONTROL PANEL / EXPANSION PANEL	X (3)		X (5)			
EMERGENCY RESPONDER ENHANCEMENT SYSTEM (7)						
BACKUP GENERATOR / AUTOMATIC TRANSFER SWITCH (7)						

NOTES:

- THE FIRE ALARM SYSTEM SHALL BE PROVIDED AS A DESIGN-BUILD SCOPE BY THE FIRE ALARM CONTRACTOR. THE DRAWINGS, SPECIFICATIONS, AND MATRIX ARE FOR GENERAL INTENT AND BIDDING PURPOSES ONLY. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONSTRUCTION DOCUMENTS FOR ALL DISCIPLINES AND PROVIDING A COMPLETE, CODE-COMPLIANT FIRE ALARM DESIGN, INSTALLATION, COMMISSIONING, 24/7 OFF-SITE MONITORING, INSPECTIONS, TESTING, AND MAINTENANCE.

- SEE ARCHITECTURAL "T" SHEETS FOR OCCUPANCY CLASSIFICATIONS, OCCUPANCY LOADS, AND HAZARDOUS CLASSIFICATIONS.

- COORDINATE ALL FIRE ALARM SYSTEM DEVICES WITH REFLECTED CEILING PLANS AND LIGHTING PLANS PRIOR TO ROUGH IN. ACT MOUNTED DEVICES SHALL BE CENTERED ON CEILING TILES.

- COORDINATE LOCATIONS OF ALL DEVICES WITH FF&E ITEMS AND WALL CONTROL JOINTS. SEE ARCHITECTURAL ELEVATIONS.

- THE FIRE ALARM CONTRACTOR SHALL RELOCATE EXISTING DEVICES AND PROVIDE ANY ADDITIONAL DEVICES REQUIRED BY OWNER DIRECTION OR ENVIRONMENTAL CONDITIONS AT ANY TIME DURING CONSTRUCTION, UP TO AND INCLUDING APPROVED OCCUPANCY INSPECTION, AT NO ADDITIONAL COST TO THE OWNER.

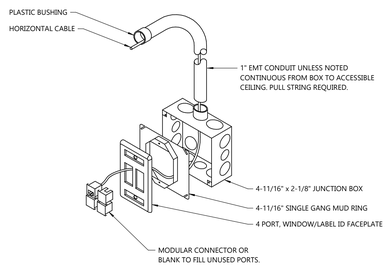
- FIRE ALARM SHOP DRAWINGS SHALL BE REVIEWED BY THE OWNER FOR COORDINATION OF ALL FIRE ALARM DEVICES WITH FF&E ITEMS PRIOR TO THE FIRE ALARM CONTRACTOR SUBMITTING DRAWINGS TO ANY LOCAL OR STATE AGENCIES FOR APPROVAL.

- FIRE ALARM DEVICES SHALL BE LISTED FOR USE IN ITS INSTALLED ENVIRONMENT.

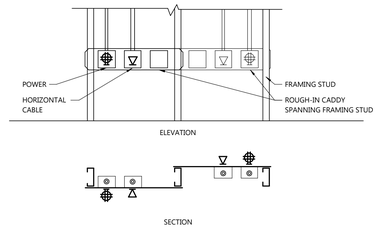
- A SINGLE MAIN FIRE ALARM CONTROL PANEL (FACP) SHALL BE PROVIDED. ALL OTHER PORTIONS OF THE FIRE ALARM SYSTEM SHALL FUNCTION AS EXTENSIONS OF, AND BE FULLY INTEGRATED WITH, THE MAIN CONTROL PANEL.

REMARKS:

(1) SEE HVAC ELECTRICAL / STARTER / DISCONNECT (ESD) SCHEDULE FOR DUCT SMOKE DETECTOR AND HVLS FAN INTERLOCK REQUIREMENTS.
(2) SEE FIRE PROTECTION ELECTRICAL / STARTER / DISCONNECT (ESD) SCHEDULE FOR FIRE PROTECTION/SUPPRESSION REQUIREMENTS.
(3) PROVIDE MANUAL PULL STATIONS IN APPROVED LOCATIONS.
(4) COORDINATE ELEVATOR HOIST WAY DETECTOR REQUIREMENTS WITH FIRE SUPPRESSION CONTRACTOR. FIRE ALARM INITIATING DEVICES REQUIRED TO INSTALLED INSIDE AN ELEVATOR HOIST WAY SHALL BE REQUIRED TO ACCESSIBLE FROM OUTSIDE THE ELEVATOR HOIST WAY. PROVIDE ELEVATOR RECALL.
(5) PROVIDE SMOKE DETECTOR AT FIRE ALARM CONTROLLER PER NFPA 72.
(7) FIRE ALARM SYSTEM SHALL PROVIDE ALARM, TROUBLE, AND SUPERVISORY MONITORING FOR LOCAL SYSTEM CONTROL PANEL.
(8) COORDINATE EMERGENCY CONTROL FUNCTION REQUIREMENTS WITH INSTALLING CONTRACTOR.

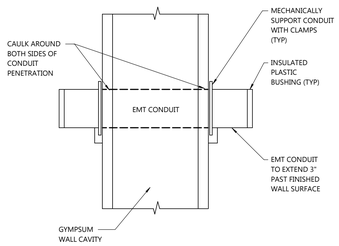


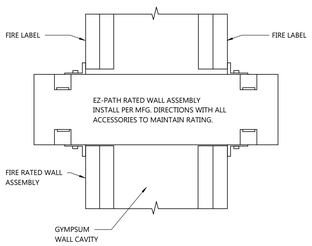
4 E3.1 SYSTEMS: OUTLET ROUGH-IN DETAIL
NOT TO SCALE



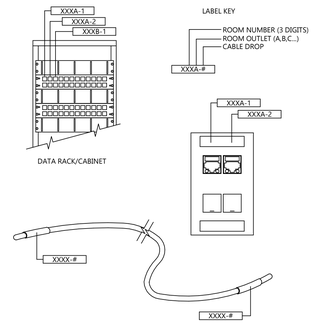
BACK TO BACK JUNCTION BOXES ARE NOT PERMETTED.
INSTALL IN SEPARATE STUD CAVITIES AS SHOWN.
IN UNAVOIDABLE CASES, INSTALL PUTTY PAD ON ALL SIDES OF JUNCTION BOXES WITHIN SHARED SPACE.

3 E3.1 SYSTEMS: OUTLET ROUGH-IN AT OFFICES
NOT TO SCALE

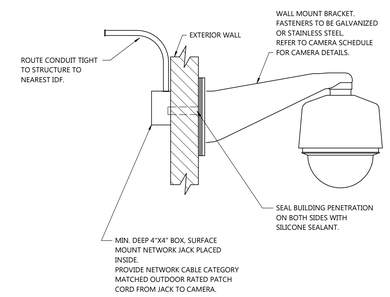




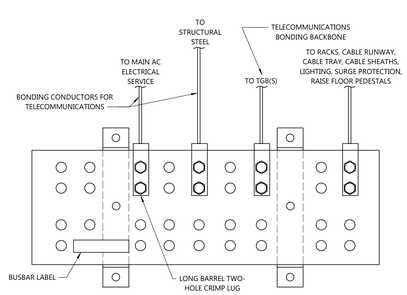
7 E3.1 SYSTEMS: WALL SLEEVE DETAIL
NOT TO SCALE



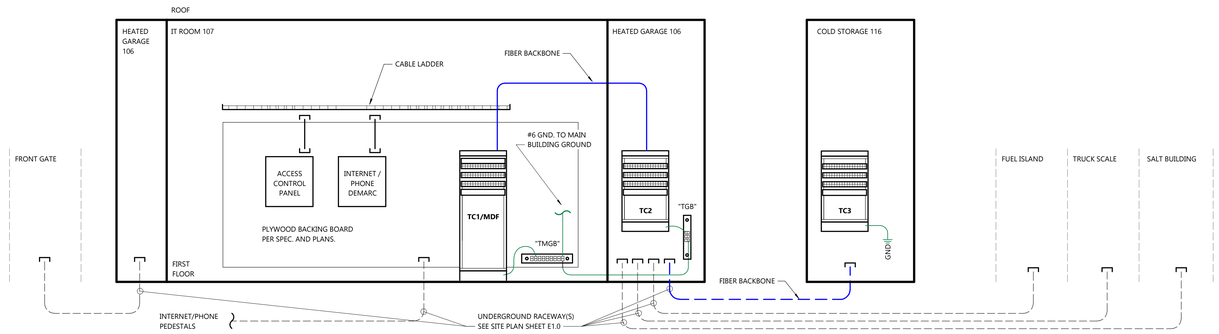
6 E3.1 SYSTEMS: CABLE LABEL DETAIL
NOT TO SCALE



5 E3.1 EXTERIOR CAMERA - WALL MOUNT DETAIL
NOT TO SCALE



9 E3.1 BONDING: TMGB DETAIL
NOT TO SCALE



8 E3.1 PREMISE INFRASTRUCTURE RISER DETAIL
NOT TO SCALE

ELECTRICAL DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E3.1

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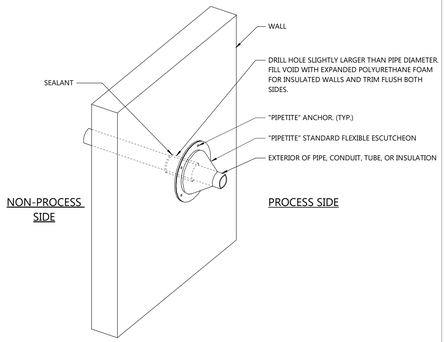
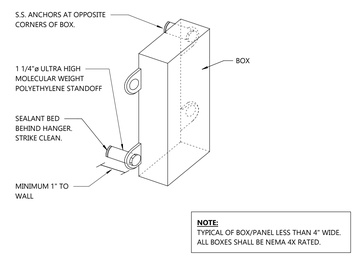
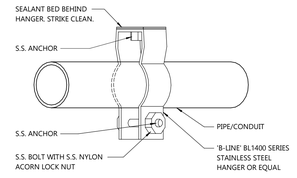


4 / E3.2 WALL PENETRATION DETAIL
NOT TO SCALE



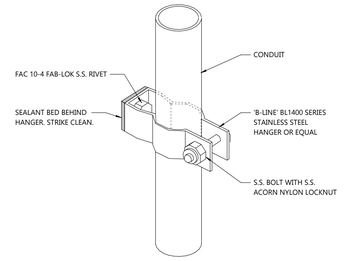
NOTE:
TYPICAL OF BOX/PANEL LESS THAN 4" WIDE. ALL BOXES SHALL BE NEMA 4X RATED.

3 / E3.2 ELECTRICAL BOX/PANEL WALL MOUNTING DETAIL
NOT TO SCALE

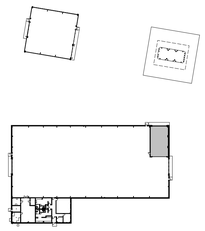


ALLOWABLE APPLICATIONS
- ALL CONDUIT SIZES

2 / E3.2 CEILING CONDUIT SUPPORT DETAIL
NOT TO SCALE



1 / E3.2 CONDUIT WALL MOUNTING DETAILS
NOT TO SCALE



NOTE:
SHADED REGIONS INDICATE SPACES TO BE CONSIDERED HARSH ENVIRONMENT ROOMS.

HARSH ENVIRONMENT ROOM KEY PLAN

ELECTRICAL HARSH ENVIRONMENT ROOM DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E3.2

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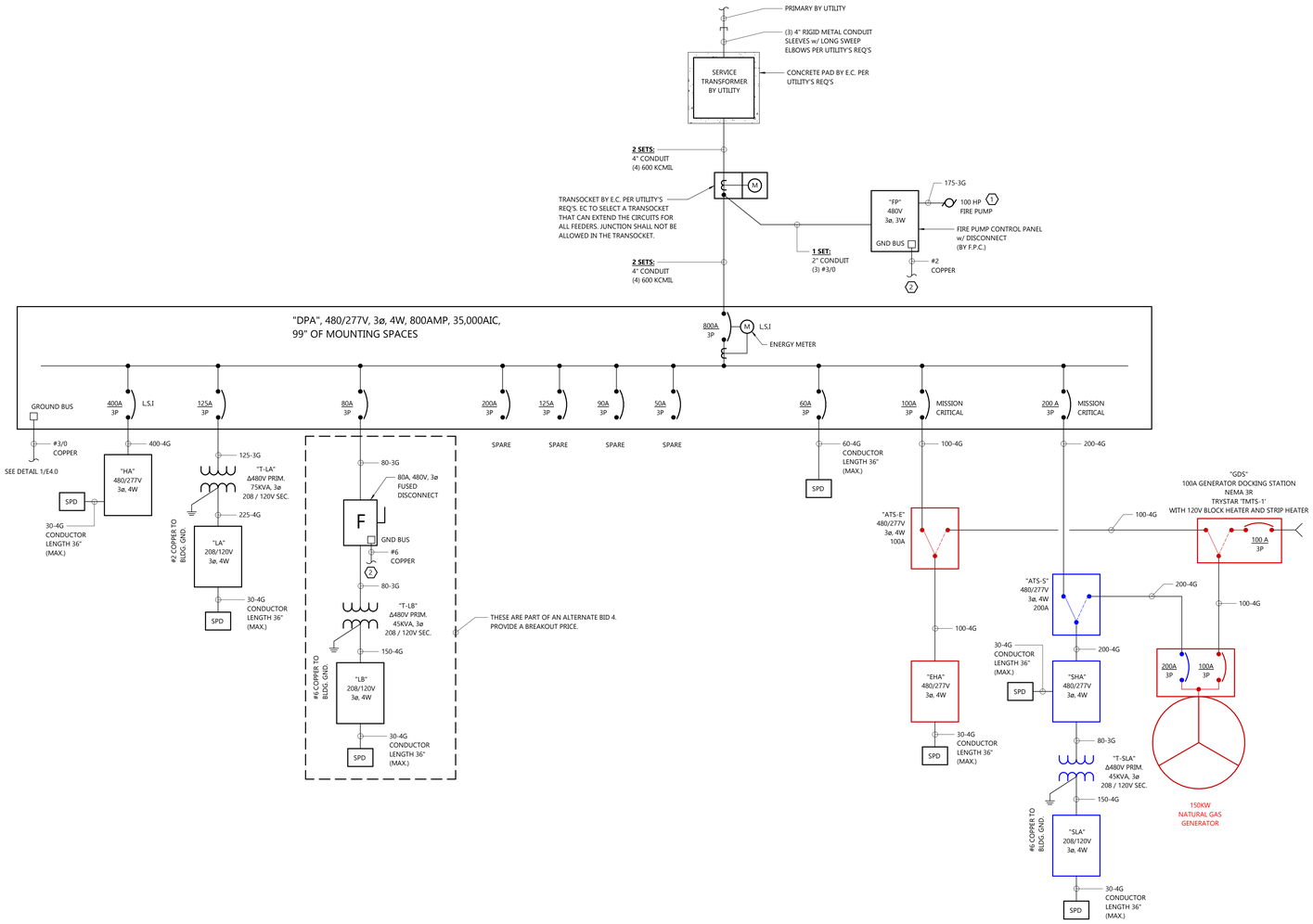
GENERAL NOTES

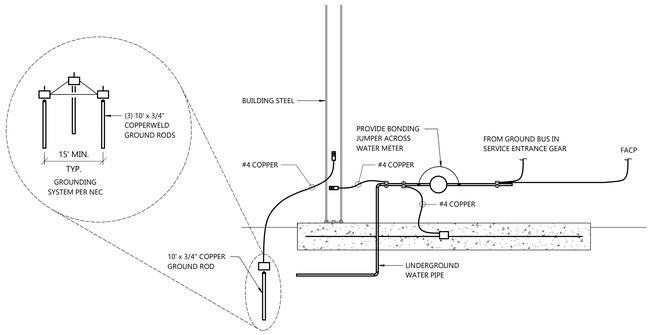
- ALL ITEMS OR DEVICES SHOWN "HEAVY DASHED" ARE TO BE DEMOLISHED. ALL ITEMS OR DEVICES SHOWN "LIGHTER" ARE EXISTING TO REMAIN.
- ONELINE DIAGRAMS AND RISER DIAGRAMS ARE A DIAGRAMMATIC REPRESENTATION TO AID THE CONTRACTOR IN UNDERSTANDING THE FUNCTION AND OPERATION OF THE SYSTEMS. EC SHALL REVIEW THE ONELINES, RISERS AND FLOOR PLANS FOR THE LOCATION OF ALL EQUIPMENT.

KEYNOTES

1. FIRE PUMP HORSEPOWER IS ESTIMATED. VERIFY ACTUAL HORSEPOWER AND FIRE PUMP ROOM LAYOUT WITH FPC BEFORE INSTALLING ANY CONDUIT OR WIRING. INFORM EXCEL ENGINEERING IF HORSEPOWER OR LAYOUT DOES NOT MATCH PLANS.
2. PROVIDE A GROUNDING ELECTRODE SYSTEM INCLUDING (2) GROUND RODS BONDED TO THE MAIN DISCONNECTING MEANS.



ONELINE DIAGRAM



1 / E4.0 GROUNDING SYSTEM RISER DETAIL
NOT TO SCALE

BRANCH CIRCUIT FEEDER SCHEDULE

AMP / POLE	CONDUIT SIZE	CONDUCTORS & GROUNDING CONDUCTOR SIZES
15A/1P OR 15A/2P	1/2"	(2) #12 & #12 GND
20A/1P OR 20A/2P	1/2"	(2) #12 & #12 GND
15A/3P OR 20A/3P	1/2"	(3) #12 & #12 GND
25A/1P OR 25A/2P	3/4"	(2) #10 & #10 GND
30A/1P OR 30A/2P	3/4"	(2) #10 & #10 GND
25A/3P OR 30A/3P	3/4"	(3) #10 & #10 GND
35A/1P OR 35A/2P	3/4"	(2) # 8 & #10 GND
40A/1P OR 40A/2P	3/4"	(2) # 8 & #10 GND
35A/3P OR 40A/3P	3/4"	(3) #8 & #10 GND
45A/1P OR 45A/2P	1"	(2) #6 & #10 GND
45A/3P OR 50A/3P	1"	(3) #6 & #10 GND
50A/1P OR 50A/2P	1"	(2) #6 & #10 GND
60A/1P OR 60A/2P	1"	(2) #4 & #8 GND
60A/3P	1-1/4"	(3) #4 & #8 GND
70A/3P OR 80A/3P	1-1/4"	(3) #4 & #8 GND
90A/3P	1-1/4"	(3) #3 & #8 GND
100A/3P OR 110A/3P	1-1/2"	(3) #2 & #6 GND
125A/3P	1-1/2"	(3) #1 & #6 GND

- PROVIDE BRANCH CIRCUIT FEEDERS AS NOTED ABOVE, UNLESS NOTED OTHERWISE

3 ø FEEDER SCHEDULES - COPPER

3 WIRE FEEDERS			4 WIRE FEEDERS		
FEEDER DESIGNATION	CONDUIT SIZE(S)	CONDUCTORS & GROUNDING CONDUCTOR(S) SIZES	FEEDER DESIGNATION	CONDUIT SIZE(S)	CONDUCTORS & GROUNDING CONDUCTOR(S) SIZES
20 - 3G	3/4"	(3) #12 & #12 GND	20 - 4G	3/4"	(4) #12 & #12 GND
25 - 3G	3/4"	(3) #10 & #10 GND	25 - 4G	3/4"	(4) #10 & #10 GND
30 - 3G	3/4"	(3) #10 & #10 GND	30 - 4G	3/4"	(4) #10 & #10 GND
35 - 3G	3/4"	(3) #10 & #10 GND	35 - 4G	3/4"	(4) #10 & #10 GND
40 - 3G	1"	(3) #8 & #10 GND	40 - 4G	1"	(4) #8 & #10 GND
45 - 3G	1"	(3) #8 & #10 GND	45 - 4G	1"	(4) #8 & #10 GND
50 - 3G	1"	(3) #8 & #10 GND	50 - 4G	1"	(4) #8 & #10 GND
60 - 3G	1"	(3) #6 & #8 GND	60 - 4G	1"	(4) #6 & #8 GND
65 - 3G	1"	(3) #6 & #8 GND	65 - 4G	1"	(4) #6 & #8 GND
70 - 3G	1"	(3) #4 & #8 GND	70 - 4G	1-1/4"	(4) #4 & #8 GND
80 - 3G	1"	(3) #4 & #8 GND	80 - 4G	1-1/4"	(4) #4 & #8 GND
90 - 3G	1-1/4"	(3) #3 & #8 GND	90 - 4G	1-1/4"	(4) #3 & #8 GND
100 - 3G	1-1/4"	(3) #3 & #8 GND	100 - 4G	1-1/4"	(4) #3 & #8 GND
110 - 3G	1-1/4"	(3) #2 & #6 GND	110 - 4G	1-1/2"	(4) #2 & #6 GND
125 - 3G	1-1/4"	(3) #1 & #6 GND	125 - 4G	1-1/2"	(4) #1 & #6 GND
150 - 3G	1-1/2"	(3) #1/0 & #6 GND	150 - 4G	2"	(4) #1/0 & #6 GND
175 - 3G	2"	(3) #2/0 & #6 GND	175 - 4G	2"	(4) #2/0 & #6 GND
200 - 3G	2"	(3) #3/0 & #4 GND	200 - 4G	2"	(4) #3/0 & #4 GND
225 - 3G	2"	(3) #4/0 & #4 GND	225 - 4G	2-1/2"	(4) #4/0 & #4 GND
250 - 3G	2-1/2"	(3) 250 KCMIL & #4 GND	250 - 4G	3"	(4) 250 KCMIL & #4 GND
300 - 3G	2-1/2"	(3) 350 KCMIL & #3 GND	300 - 4G	3"	(4) 350 KCMIL & #3 GND
350 - 3G	3"	(3) 500 KCMIL & #3 GND	350 - 4G	3-1/2"	(4) 500 KCMIL & #3 GND
400 - 3G	(2) 2"	2 SETS OF (3) #3/0 & #2 GND	400 - 4G	(2) 2-1/2"	2 SETS OF (4) #3/0 & #2 GND
450 - 3G	(2) 2-1/2"	2 SETS OF (3) #4/0 & #2 GND	450 - 4G	(2) 2-1/2"	2 SETS OF (4) #4/0 & #2 GND
500 - 3G	(2) 2-1/2"	2 SETS OF (3) 250 KCMIL & #2 GND	500 - 4G	(2) 3"	2 SETS OF (4) 250 KCMIL & #2 GND
550 - 3G	(2) 2-1/2"	2 SETS OF (3) 300 KCMIL & #1 GND	550 - 4G	(2) 3"	2 SETS OF (4) 300 KCMIL & #2 GND
600 - 3G	(2) 3"	2 SETS OF (3) 350 KCMIL & #1 GND	600 - 4G	(2) 3"	2 SETS OF (4) 350 KCMIL & #1 GND
700 - 3G	(2) 3"	2 SETS OF (3) 500 KCMIL & #1/0 GND	700 - 4G	(2) 3-1/2"	2 SETS OF (4) 500 KCMIL & #1/0 GND
800 - 3G	(3) 3"	3 SETS OF (3) 300 KCMIL& #1/0 GND	800 - 4G	(3) 3"	3 SETS OF (4) 300 KCMIL & #1/0 GND
900 - 3G	(3) 3"	3 SETS OF (3) 350 KCMIL & #2/0 GND	900 - 4G	(3) 3"	3 SETS OF (4) 350 KCMIL & #2/0 GND
1000 - 3G	(3) 3"	3 SETS OF (3) 400 KCMIL & #2/0 GND	1000 - 4G	(3) 3-1/2"	3 SETS OF (4) 400 KCMIL & #2/0 GND
1200 - 3G	(4) 3"	4 SETS OF (3) 350 KCMIL & #3/0 GND	1200 - 4G	(4) 3"	4 SETS OF (4) 350 KCMIL & #3/0 GND
1600 - 3G	(4) 4"	4 SETS OF (3) 600 KCMIL& #4/0 GND	1600 - 4G	(4) 4"	4 SETS OF (4) 600 KCMIL & #4/0 GND
2000 - 3G	(6) 3"	6 SETS OF (3) 400 KCMIL & 250 KCMIL GND	2000 - 4G	(6) 3-1/2"	6 SETS OF (4) 400 KCMIL & 250 KCMIL GND

- CONDUCTOR SIZES LISTED ABOVE ARE FOR COPPER THHN/XHHW. CONTRACTOR SHALL ADJUST ACCORDINGLY FOR DIFFERENT WIRING TYPES.
- CONTRACTOR SHALL MAKE ADJUSTMENTS TO FEEDERS SIZES FOR AMBIENT TEMPERATURES AND VOLTAGE DROP ACCORDINGLY.
- WHERE PARALLEL CONDUCTORS ARE INDICATED, THE CONTRACTOR SHALL VERIFY LUG CONFIGURATIONS OF EQUIPMENT BEING CONNECTED.
- EQUIPMENT GROUNDING CONDUCTOR SIZE MAY BE REDUCED BASE ON OVERCURRENT AND/OR GROUND FAULT PROTECTION EQUIPMENT (NEC 250).

ELECTRICAL ONELINE DIAGRAMS & SCHEDULES

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E4.0

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PANELBOARD: LB

LOCATION: COLD STORAGE 116
SUPPLY FROM: T-LB
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

VOLTS: 120/208 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 10,000A
MAINS TYPE: MCB
BUS RATING: 100A
MCB RATING: 100A

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.
THIS PANELBOARD IS PART OF AN ALTERNATE BID 4. PROVIDE A BREAKOUT PRICE FOR THE PANELBOARD.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	RECEP - IT RACK COLD STORAGE 116 (P)	20 A	1				1	20 A		LIGHTING - COLD STORAGE 116 (IN)	2
3	RECEP - HVAC CP COLD STORAGE 116 (P)	20 A	1				1	20 A		LIGHTING - EXTERIOR COLD STORAGE 116 (EX)	4
5	RECEP - EAST COLD STORAGE 116 (P)	20 A	1				1	20 A		RECEP - SOUTH COLD STORAGE 116 (P)	6
7	RECEP - SOUTH COLD STORAGE 116 (P)	20 A	1				1	20 A		OTHER - BUILDING SIGNAGE WEST EXTERIOR (B)	8
9	RECEP - NORTH COLD STORAGE 116 (P)	20 A	1				1	20 A		MOTOR - IF-9 COLD STORAGE 116 (M)	10
11	RECEP - WEST COLD STORAGE 116 (P)	20 A	1				3	20 A		MOTOR - OHD EAST COLD STORAGE 116 (B)	12
13	MOTOR - OHD EAST COLD STORAGE 116 (B)	20 A	3				--	--	--	--	14
15	--	--	--				--	--	--	--	16
17	--	--	--				3	20 A		MOTOR - OHD WEST COLD STORAGE 116 (B)	18
19	MOTOR - IF-10 COLD STORAGE 116 (M)	15 A	3				--	--	--	--	20
21	--	--	--				--	--	--	--	22
23	--	--	--				1	20 A	--	SPARE	24
25	SPARE	20 A	1				1	20 A	--	SPARE	26
27	SPARE	20 A	1				1	20 A	--	SPARE	28
29	SPARE	20 A	1				1	20 A	--	SPARE	30
31											32
33											34
35											36
37	OTHER - LV METER2 COLD STORAGE 116 (MISC)	15 A	3				3	30 A	--	SPD (MISC)	38
39	--	--	--				--	--	--	--	40
41	--	--	--				--	--	--	--	42

PANELBOARD: LA

LOCATION: ELECTRICAL 103
SUPPLY FROM: T-LA
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

VOLTS: 120/208 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 10,000A
MAINS TYPE: MCB
BUS RATING: 225A
MCB RATING: 225A

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	RECEP - COUNTERTOP BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - PRINTER CORRIDOR 110 (P)	2
3	RECEP - COUNTERTOP BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - CORRIDOR 110 / VEST. 114 (P)	4
5	RECEP - COUNTERTOP BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - WOMENS 108 (P)	6
7	RECEP - COUNTERTOP BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - MEN'S 109 (P)	8
9	RECEP - SOUTH BREAK ROOM 111 (P)	20 A	1				1	20 A	--	SPARE	10
11	RECEP - SOUTH BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - OFFICE 112 (P)	12
13	RECEP - EAST BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - HVAC CP TRUCK STORAGE 100 (P)	14
15	MOTOR - CEF-1 BREAK ROOM 111 (M)	20 A	1				2	15 A		MOTOR - IF-5 CORRIDOR 110 (M)	16
17	RECEP - FLEX OFFICE 113 (P)	20 A	1				--	--	--	--	18
19	ELEC HEAT - ECUH-1 VEST. 114 (M)	20 A	2				1	20 A		RECEP - MECHANICAL 105 (P)	20
21	--	--	--				2	20 A		ELEC HEAT - EBB-2 OFFICE 112 (M)	22
23	OTHER - BUILDING SIGNAGE WEST EXTERIOR (B)	20 A	1				--	--	--	--	24
25	OTHER - BUILDING SIGNAGE NORTH EXTERIOR (B)	20 A	1				1	20 A	G	RECEP - VNEDING TRUCK STORAGE 100 (P)	26
27	ELEC HEAT - EBB-2 OFFICE 113 (M)	20 A	2				2	15 A		MOTOR- ERU-2 TRUCK STORAGE 100 (M)	28
29	--	--	--				--	--	--	--	30
31	MOTOR - CU-1 EXTERIOR (M)	20 A	2				1	20 A	G	RECEP - ICE MAKER BREAK ROOM 111 (P)	32
33	--	--	--				1	20 A		OTHER - P-1 MECHANICAL 105 (M)	34
35	MOTOR - ERC-1 TRUCK STOAGE 100 (M)	40 A	2				1	20 A		RECEP - WS-1 MECHANICAL 105 (P)	36
37	--	--	--				1	20 A		MOTOR - ERU-1 MECHANICA L105 (M)	38
39	RECEP - EAST TRUCK STORAGE 100 (P)	20 A	1				1	20 A		RECEP - NORTH TRUCK STORAGE 100 (P)	40
41	RECEP - GWH-1 MECHANICAL 105 (M)	20 A	1				1	20 A		RECEP - S/E TRUCK STORAGE 100 (P)	42
43	SPARE (G)	20 A	1				1	20 A	--	SPARE	44
45	RECEP - ELECTRICAL 103 / FIRE PUMP 104 (P)	20 A	1				1	20 A	G	RECEP - VNEDING TRUCK STORAGE 100 (P)	46
47	RECEP - N/E TRUCK STORAGE 100 (P)	20 A	1				1	20 A	G	RECEP - VNEDING TRUCK STORAGE 100 (P)	48
49	SPARE	20 A	1				1	20 A		RECEP - HOLDING TANK ALM TURCK STORAGE 100 (P)	50
51	RECEP - N/W TRUCK STORAGE 100 (P)	20 A	1				1	20 A	G	RECEP - MW BREAK ROOM 111 (P)	52
53	RECEP - PART 106 (P)	20 A	1				1	20 A	G	RECEP - MW BREAK ROOM 111 (P)	54
55	MOTOR - IF-3 PARTS 106 (M)	15 A	2				1	20 A		OTHER - STORAGE TANK CTRL VALVE FIRE PUMP 104...	56
57	--	--	--				2	15 A		MOTOR - IF-4 FIRE PUMP 104 (M)	58
59	MOTOR - IF-6 WASH BAY 102 (M)	15 A	2				--	--	--	--	60
61	--	--	--				2	20 A		OTHER - GENERATOR COOLANT HEATER (B)	62
63	OTHER - GENERATOR 120V HEATERS (B)	20 A	1				--	--	--	--	64
65	RECEP - GENERATOR (P)	20 A	1				2	80 A		MOTOR - PW-1 STORAGE 100 (M)	66
67	SPARE	15 A	3				--	--	--	--	68
69	--	--	--				1	20 A	--	SPARE	70
71	--	--	--				1	20 A	--	SPARE	72
73	SPARE	20 A	3				3	30 A	--	SPARE	74
75	--	--	--				--	--	--	--	76
77	--	--	--				--	--	--	--	78
79	OTHER - LV METER1 ELECTRICAL 103 (MISC)	15 A	3				3	30 A	--	SPD (MISC)	80
81	--	--	--				--	--	--	--	82
83	--	--	--				--	--	--	--	84

PANELBOARD: HA

LOCATION: ELECTRICAL 103
SUPPLY FROM: DPA
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

VOLTS: 480/277 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 35,000A
MAINS TYPE: MLO
BUS RATING: 400A
MCB RATING: -

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	ELEC HEAT - HEAT TRACE OFFICE ROOF (B)	30 A	1				1	30 A		ELEC HEAT - HEAT TRACE TRUCK STORAGE ROOF (B)	2
3	ELEC HEAT - HEAT TRACE TRUCK STORAGE ROOF (B)	30 A	1				1	30 A		ELEC HEAT - HEAT TRACE TRUCK STORAGE ROOF (B)	4
5	ELEC HEAT - HEAT TRACE OFFICE ROOF (B)	30 A	1				1	30 A	--	SPARE	6
7	MOTOR - DF HVLS CENTER TRUCK STORAGE 100 (M)	15 A	3				3	15 A	--	SPARE	8
9	--	--	--				--	--	--	--	10
11	--	--	--				--	--	--	--	12
13	MOTOR - DF HVLS WEST TRUCK STORAGE 100 (M)	15 A	3				3	15 A	--	MOTOR - DF HVLS EAST TRUCK STORAGE 100 (M)	14
15	--	--	--				--	--	--	--	16
17	--	--	--				--	--	--	--	18
19	MOTOR - OHD WASH BAY 102 (B)	20 A	3				3	20 A		MOTOR - JOCKEY PUMP FIRE PUMP 104 (M)	20
21	--	--	--				--	--	--	--	22
23	--	--	--				--	--	--	--	24
25	MOTOR - IF-8 TRUCK STORAGE 100 (M)	20 A	3				3	20 A		MOTOR - IF-7 TRUCK STORAGE 100 (M)	26
27	--	--	--				--	--	--	--	28
29	--	--	--				--	--	--	--	30
31	MOTOR - MAU-2 TRUCK STORAGE 100 (M)	30 A	3				3	30 A		MOTOR - MAU-1 TRUCK STORAGE 100 (M)	32
33	--	--	--				--	--	--	--	34
35	--	--	--				--	--	--	--	36
37	SPARE	15 A	3				3	20 A	--	SPARE	38
39	--	--	--				--	--	--	--	40
41	--	--	--				--	--	--	--	42
43	SPARE	20 A	3				3	30 A	--	SPARE	44
45	--	--	--				--	--	--	--	46
47	--	--	--				--	--	--	--	48
49	OTHER - HV METER1 ELECTRICAL 103 (MISC)	15 A	3				3	30 A	--	SPD (MISC)	50
51	--	--	--				--	--	--	--	52
53	--	--	--				--	--	--	--	54

PANELBOARD: SLA

LOCATION: ELECTRICAL 103
SUPPLY FROM: T-SLA
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

VOLTS: 120/208 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 10,000A
MAINS TYPE: MCB
BUS RATING: 150A
MCB RATING: 150A

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	RECEP - IT 107 (P)	20 A	1				1	20 A		RECEP - BREAK ROOM 111 (P)	2
3	RECEP - IT 107 (P)	20 A	1				1	20 A		RECEP - BREAK ROOM 111 (P)	4
5	RECEP - REFRIGERATOR BREAK ROOM 111 (P)	20 A	1				1	20 A		RECEP - OFFICE 112 (P)	6
7	MOTOR - GF-1 MECHANICAL 105 (M)	20 A	1				1	20 A		RECEP - MAINTENANCE AREA TRUCK STORAGE 100 (P)	8
9	RECEP - GRINDER TRUCK STORAGE 100 (P)	20 A	1				3	50 A	G	RECEP - WELD TRUCK STORAGE 100 (P)	10
11	RECEP - DRILL PRESS TRUCK STORAGE 100 (P)	20 A	1				--	--	--	--	12
13	RECEP - MAINTENANCE AREA TRUCK STORAGE 100 (P)	20 A	1				--	--	--	--	14
15	RECEP - TRUCK STORAGE 100 (P)	20 A	1				1	20 A		RECEP - RGUH EAST TRUCK STORAGE 100 (P)	16
17	RECEP - TRUCK STORAGE 100 (P)	20 A	1				1	20 A		RECEP - RGUH CENTER TRUCK STORAGE 100 (P)	18
19	RECEP - RGUH WASH BAY 102 (P)	20 A	1				1	20 A		OTHER - SCALE EXTERIOR (B)	20
21	RECEP - RGUH CENTER TRUCK STORAGE 100 (P)	20 A	1				1	20 A		RECEP - HOLDING TANK ALARM EXTERIOR (P)	22
23	RECEP - RGUH WEST TRUCK STORAGE 100 (P)	20 A	1				2	20 A		ELEC HEAT - EUH-2 MECHANICAL 105 (M)	24
25	RECEP - IT RACK TRUCK STORAGE 100 (P)	20 A	1				--	--	--	--	26
27	ELEC HEAT - EUH-1 FIRE PUMP 104 (M)	20 A	2				1	20 A		MOTOR - GUH-3 TRUCK STORAGE 100 (M)	28
29	--	--	--				1	20 A		MOTOR - GUH-1 PARTS 106 (M)	30
31	MOTOR - GUH-2 TRUCK STORAGE 100 (M)	20 A	1				1	20 A		OTHER - AIR DRYER TRUCK STORAGE 100 (M)	32
33	MOTOR - IF-2 IT 107 (M)	15 A	2				1	20 A		OTHER - GENERATOR CCV HEATER (B)	34
35	--	--	--				1	20 A		OTHER - FACP MECHANICAL 105 (B)	36
37	OTHER - GDS 120V HEATERS (B)	20 A	1				2	20 A		MOTOR - FUEL PUMP EXTERIOR (MISC)	38
39	MOTOR - FUEL PUMP EXTERIOR (MISC)	20 A	2				--	--	--	--	40
41	--	--	--				2	20 A		MOTOR - FUEL PUMP EXTERIOR (MISC)	42
43	MOTOR - FUEL PUMP EXTERIOR (MISC)	20 A	2				--	--	--	--	44
45	--	--	--				1	20 A		OTHER - FUEL ISLAND CTRL EXTERIOR (MISC)	46
47	OTHER - FUEL ISLAND CTRL EXTERIOR (MISC)	20 A	1				1	20 A		MOTOR - SEPTIC PUMP EXTERIOR (B)	48
49	OTHER - FUEL MANAGEMENT EXTERIOR (MISC)	20 A	1				1	20 A		OTHER - SEPTIC ALARM EXTERIOR (B)	50
51	MOTOR - IF-1 ELECTRICAL 103 (M)	15 A	2				1	20 A		RECEP - ICE MAKER STORAGE 100 (P)	52
53	--	--	--				1	20 A		RECEP - GENERATOR GATEWAY ELECTRICAL 103 (P)	54
55	OTHER - ACP IT 107	20 A	1				1	20 A	--	SPARE	56
57	SPARE	20 A	2				1	20 A	--	SPARE	58
59	--	--	--				1	20 A	--	SPARE	60
61	SPARE	20 A	3								62
63	--	--	--								64
65	--	--	--								66
67							3	30 A	--	SPD (MISC)	68
69							--	--	--	--	70
71							--	--	--	--	72

FUSIBLE BOARD: EHA

LOCATION: ELECTRICAL 103
SUPPLY FROM: ATS-E
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

VOLTS: 480/277 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 65,000A
MAINS TYPE: MAIN FUSE
BUS RATING: 100A
MAIN FUSE RATING: 100A

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	LIGHTING - NORTH SITE POLE LIGHTS (EX)	20 A	1				1	20 A		LIGHTING - SOUTH SITE POLE LIGHTS (EX)	2
3	LIGHTING - EXTERIOR WALLPACKS (EX)	20 A	1				1	20 A		LIGHTING - EXTERIOR CANOPY (EX)	4
5	LIGHTING - TRUCK STORAGE 100 (IN)	20 A	1				1	20 A		LIGHTING - TRUCK STORAGE 100 (IN)	6
7	LIGHTING - TRUCK STORAGE 100 (IN)	20 A	1				1	20 A		LIGHTING - TRUCK STORAGE 100 (IN)	8
9	LIGHTING - TRUCK STORAGE 100 / WASH BAY 102 (IN)	20 A	1				1	20 A		LIGHTING - FUEL ISLAND LIGHTING (EX)	10
11	FUTURE - LCP-11	20 A	1				1	20 A		FUTURE - LCP-12	12
13	LIGHTING - NIGHT LIGHT (IN)	20 A	1				1	20 A		LIGHTING - OFFICE AREA (IN)	14
15	SPARE	20 A	1				1	20 A	--	SPARE	16
17	SPARE	20 A	1				1	20 A	--	SPARE	18
19											20
21											22
23											24
25							3	30 A	--	SPD (MISC)	26
27							--	--	--	--	28
29							--	--	--	--	30

PANELBOARD: SHA

LOCATION: ELECTRICAL 103
SUPPLY FROM: ATS-S
MOUNTING: SURFACE
ENCLOSURE: NEMA 1

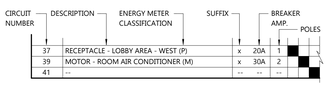
VOLTS: 480/277 WYE
PHASES: 3
WIRES: 4

A.I.C. RATING: 35,000A
MAINS TYPE: MCB
BUS RATING: 200A
MCB RATING: 200A

NOTES:
SEE BRANCH CIRCUIT FEEDER SCHEDULE FOR FEEDER DESIGNATIONS.

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A	B	C	POLES	TRIP		CIRCUIT DESCRIPTION	CKT
1	MOTOR - OHD EAST TRUCK STORAGE (B)	20 A	3				3	20 A		MOTOR - OHD WEST TRUCK STORAGE 100 (B)	2
3	--	--	--				--	--	--	--	4
5	--	--	--				--	--	--	--	6
7	MOTOR - CENTER MOTORIZED GATE EXTERIOR (B)	20 A	3				3	20 A		MOTOR - JIB CRANE TRUCK STOAGE 100 (B)	8
9	--	--	--				--	--	--	--	10
11	--	--	--				--	--	--	--	12
13	MOTOR - WELL PUMP EXTERIOR (B)	20 A	3				3	60 A		MOTOR - AC-1 TRUCK STORAGE 100 (M)	14
15	--	--	--				--	--	--	--	16
17	--	--	--				--	--	--	--	18
19	MOTOR - EAST MOTORIZED GATE EXTERIOR (B)	20 A	3				3	15 A	--	SPARE	20
21	--	--	--				--	--	--	--	22
23	--	--	--				--	--	--	--	24
25	SPARE	20 A	3				3	20 A	--	SPARE	26
27	--	--	--				--	--	--	--	28
29	--	--	--				--	--	--	--	30
31	SPARE	30 A	3				3	30 A	--	SPARE	32
33	--	--	--				--	--	--	--	34
35	--	--	--				--	--	--	--	36
37											38
39											40
41											42
43											44
45											46
47											48
49	TRANSFORMER - "T-SLA"	80 A	3				3	30 A	--	SPD (MISC)	50
51	--	--	--				--	--	--	--	52
53	--	--	--				--	--	--	--	54

PANEL SCHEDULE KEY



PANEL SCHEDULE SUFFIX LEGEND

A	ARC-FAULT BREAKER
G	5mA GFCI BREAKER (PERSONAL PROTECTION)
GE	30mA GFCI BREAKER (EQUIPMENT PROTECTION)
A/G	COMBINATION 5mA GFCI AND ARC-FAULT BREAKER
ST	SHUNT TRIP BREAKER
R	RELAY CONTROLLED CIRCUIT

ENERGY METER CLASSIFICATION SUFFIX LEGEND

P	PLUG LOAD
M	MECHANICAL (HVAC & PLUMBING) LOAD
B	BUILDING LOAD
IN	INTERIOR LIGHTING LOAD
EX	EXTERIOR LIGHTING LOAD
MISC	MISCELLANEOUS LOAD

ELECTRICAL PANEL SCHEDULES

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E4.1

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LIGHTING FIXTURE SCHEDULE

NOTES:
- FIXTURE MODEL NUMBER MAY NOT REFLECT ALL MOUNTING HARDWARE. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MOUNTING EQUIPMENT, LENSES, STEMS, SAFETY CHAINS, END PLATES, AND ALL OTHER HARDWARE NECESSARY FOR A COMPLETE FIXTURE INSTALLATION. SEE MOUNTING DETAILS WHEN APPLICABLE.
- LINE VOLTAGE DRIVERS MAY BE SUBSTITUTED FOR "UNIVERSAL" OR "MULTI-VOLTAGE" DRIVERS.
- ALL LIGHT FIXTURE POLES SHALL BE RATED FOR WIND ZONE SITE IT IS LOCATED IN, OR 100 MPH WINDS, WHICHEVER IS GREATER.
- ALL FIXTURES SHALL BE UL OR ETL LISTED.
- ALL FIXTURES IN DIRECT CONTACT WITH INSULATION SHALL BE IC RATED OR INSULATION SHALL BE KEPT A MINIMUM OF 3" FROM ALL SIDES OF FIXTURES.
- ALL FIXTURES SHALL BE DLC CERTIFIED AND FOCUS ON ENERGY COMPLIANT.

LED REQUIREMENTS:
- ALL LED FIXTURES SHALL HAVE A MINIMUM 80 PERCENT COLOR RENDERING INDEX UNLESS NOTED OTHERWISE.
- PROVIDE DIMMABLE DRIVERS FOR ALL FIXTURE TYPES SHOWN TO BE "DIMMABLE".
- CONTRACTOR SHALL VERIFY WITH THEIR SUPPLIER(S) THAT ALL DIMMERS AND DIMMABLE FIXTURES ARE 100% COMPATIBLE.
- ALL LED FIXTURES SHALL HAVE MINIMUM 50,000 L70.

REMARKS:

TYPE	DESCRIPTION	VOLTAGE	LIGHT SOURCE	CCT	FIXTURE WATTS	MIN. LUMENS	MANUFACTURER SERIES - BASIS OF DESIGN	ALTERNATE MANUF. #1	ALTERNATE MANUF. #2	ALTERNATE MANUF. #3	REMARKS
INTERIOR											
C14E	4" ROUND RECESSED DOWNLIGHT - 0-10V DIMMABLE - FLUSH LENSED WHITE PAINTED TRIM - SMOOTH CLEAR LENS - EMERGENCY	120 V	LED	4,000K	9 VA	750	GOTHAM / EVO4SH SERIES	LIGHTOLIER / L4R SERIES	PORTFOLIO / LDAC SERIES	PRESCOLITE / LITEFRAME 2.0 (SHOWER) SERIES	
C14SE	4" ROUND RECESSED DOWNLIGHT - 0-10V DIMMABLE - SHOWER RATED - FLUSH LENSED WHITE PAINTED TRIM - SMOOTH CLEAR LENS - EMERGENCY	277 V	LED	4,000K	9 VA	750	GOTHAM / EVO4SH SERIES	LIGHTOLIER / L4R SERIES	PORTFOLIO / LDAC SERIES	PRESCOLITE / LITEFRAME 2.0 (SHOWER) SERIES	
C26E	6" ROUND RECESSED DOWNLIGHT - 0-10V DIMMABLE - WET LOCATION - FLUSH LENSED BLACK PAINTED TRIM - SMOOTH CLEAR LENS - EMERGENCY	277 V	LED	5,000K	10 VA	1,000	GOTHAM / EVO6 SERIES	LIGHTOLIER / L6R SERIES	PORTFOLIO / LDAC SERIES	PRESCOLITE / LITEFRAME 2.0 (SHOWER) SERIES	
HB24E	4' SUSPENDED LED HIGH BAY - 0-10V DIMMABLE - WHITE HOUSING - FROSTED ACRYLIC LENS - GENERAL DISTRIBUTION - EMERGENCY	277 V	LED	5,000K	144 VA	24,000	LITHONIA / IBG SERIES	DAYBRITE / FBZ SERIES	METALUX / OHB SERIES	HE WILLIAMS / GH SERIES	
HB30	4' SUSPENDED LED HIGH BAY - 0-10V DIMMABLE - WHITE HOUSING - FROSTED ACRYLIC LENS - GENERAL DISTRIBUTION	120 V	LED	5,000K	174 VA	30,000	LITHONIA / IBG SERIES	DAYBRITE / FBZ SERIES	METALUX / OHB SERIES	HE WILLIAMS / GH SERIES	
HB30E	4' SUSPENDED LED HIGH BAY - 0-10V DIMMABLE - WHITE HOUSING - FROSTED ACRYLIC LENS - GENERAL DISTRIBUTION - EMERGENCY	277 V	LED	5,000K	174 VA	30,000	LITHONIA / IBG SERIES	DAYBRITE / FBZ SERIES	METALUX / OHB SERIES	HE WILLIAMS / GH SERIES	
P22E	2X2 ARCHITECTURAL LAY-IN FLAT PANEL - 0-10V DIMMABLE - WHITE HOUSING - SMOOTH FROSTED LENS - EMERGENCY	277 V	LED	4,000K	16 VA	2,100	LITHONIA / CPX SERIES	DAYBRITE / 2FPZ SERIES	METALUX / CGTX SERIES	COLUMBIA / NBT SERIES	
P23E	2X2 ARCHITECTURAL LAY-IN FLAT PANEL - 0-10V DIMMABLE - WHITE HOUSING - SMOOTH FROSTED LENS - EMERGENCY	277 V	LED	4,000K	24 VA	3,000	LITHONIA / CPX SERIES	DAYBRITE / 2FPZ SERIES	METALUX / CGTX SERIES	COLUMBIA / NBT SERIES	
P24E	2X2 ARCHITECTURAL LAY-IN FLAT PANEL - 0-10V DIMMABLE - WHITE HOUSING - SMOOTH FROSTED LENS - EMERGENCY	277 V	LED	4,000K	30 VA	4,000	LITHONIA / CPX SERIES	DAYBRITE / 2FPZ SERIES	METALUX / CGTX SERIES	COLUMBIA / NBT SERIES	
S4E	4' LINEAR STRIP - 0-10V DIMMABLE - WHITE HOUSING - ROUND FROSTED LENS - EMERGENCY	277 V	LED	5,000K	35 VA	4,000	LITHONIA / ZL1D SERIES	DAYBRITE / FSS SERIES	METALUX / SNLED SERIES	COLUMBIA / MPS SERIES	
S8E	8' LINEAR STRIP - 0-10V DIMMABLE - WHITE HOUSING - ROUND FROSTED LENS - EMERGENCY	277 V	LED	5,000K	70 VA	8,000	LITHONIA / ZL1D SERIES	DAYBRITE / FSS SERIES	METALUX / SNLED SERIES	COLUMBIA / MPS SERIES	
VT28E	WALL-MOUNTED LED HIGH BAY VAPORTIGHT - 0-10V DIMMABLE - WHITE HOUSING - FROSTED ACRYLIC LENS - STAINLESS STEEL LATCHES - STAINLESS STEEL RIGID MOUNTING BRACKET - EMERGENCY	277 V	LED	5,000K	173 VA	28,000	LITHONIA / FHE LED SERIES	VISCOR / LBHV48 SERIES	METALUX / VT4 LED SERIES	COLUMBIA / LXEW SERIES	
EXTERIOR											
L14	SINGLE HEAD POLE MTD LED CUT-OFF, TYPE TFTM DIST. - GRAY FINISH	277 V	LED	5,000K	124 VA	15,500	LITHONIA / DSX1 LED SERIES	GARDCO / OPF SERIES	MCGRAW-EDISON / GALN SERIES	BEACON / VIPER SERIES	
L15	SINGLE HEAD POLE MTD LED CUT-OFF, TYPE 5 SQUARE MEDIUM DIST. - GRAY FINISH	277 V	LED	5,000K	124 VA	15,500	LITHONIA / DSX1 LED SERIES	GARDCO / OPF SERIES	MCGRAW-EDISON / GALN SERIES	BEACON / VIPER SERIES	
L22	SINGLE HEAD POLE MTD LED CUT-OFF, TYPE 2 MEDIUM DIST. - GRAY FINISH	277 V	LED	5,000K	466 VA	53,000	LITHONIA / DSX2 LED SERIES	GARDCO / OPF SERIES	MCGRAW-EDISON / GALN SERIES	BEACON / VIPER SERIES	
L24	SINGLE HEAD POLE MTD LED CUT-OFF, TYPE TFTM DIST. - GRAY FINISH	277 V	LED	5,000K	466 VA	55,000	LITHONIA / DSX2 LED SERIES	GARDCO / OPF SERIES	MCGRAW-EDISON / GALN SERIES	BEACON / VIPER SERIES	
L-20'	30' SQUARE STEEL POLE - SINGLE HEAD - GRAY FINISH						KW / SSP30-5.0-7-BRZ-DM10	HAPCO / SSS30 SERIES	UNITED LIGHTING STANDARDS / ULSI SERIES	BEACON / SSSB SERIES	
L-30'	30' SQUARE STEEL POLE - SINGLE HEAD - GRAY FINISH						KW / SSP30-5.0-7-BRZ-DM10	HAPCO / SSS30 SERIES	UNITED LIGHTING STANDARDS / ULSI SERIES	BEACON / SSSB SERIES	
WP1E	EXTERIOR LED WALL PACK - FULL CUT-OFF - BLACK FINISH - EMERGENCY	277 V	LED	5,000K	10 VA	1,200	LITHONIA / WDGE1 LED SERIES	GARDCO / GWS SERIES	MCGRAW-EDISON / GEKKO SERIES	BEACON / VIPER WALL SERIES	
WP2P	EXTERIOR LED WALL PACK - FORWARD THROW OPTICS - FULL CUT-OFF - BLACK FINISH - INTEGRAL PHOTOCELL	120 V	LED	5,000K	60 VA	7,500	LITHONIA / WDGE3 LED SERIES	GARDCO / GWM SERIES	MCGRAW-EDISON / GEKKO SERIES	BEACON / VIPER WALL SERIES	
WP3E	EXTERIOR LED WALL PACK - FORWARD THROW OPTICS - FULL CUT-OFF - BLACK FINISH - EMERGENCY	277 V	LED	5,000K	88 VA	12,000	LITHONIA / WDGE3 LED SERIES	GARDCO / GWM SERIES	MCGRAW-EDISON / GEKKO SERIES	BEACON / VIPER WALL SERIES	
WP3P	EXTERIOR LED WALL PACK - FORWARD THROW OPTICS - FULL CUT-OFF - BLACK FINISH - INTEGRAL PHOTOCELL	120 V	LED	5,000K	88 VA	12,000	LITHONIA / WDGE3 LED SERIES	GARDCO / GWM SERIES	MCGRAW-EDISON / GEKKO SERIES	BEACON / VIPER WALL SERIES	
EMERGENCY											
EM1	WALL BATTERY EMERGENCY LIGHT - WHITE HOUSING - SELF-DIAGNOSTICS	120 V	LED	-	5 VA	-	LITHONIA / ELM6 SERIES	ELITE / ELM-813 SERIES	SURE LITES / SEL SERIES	COMPASS / CU2HLHO SERIES	
R2	EXTERIOR REMOTE EMERGENCY HEAD - ALUMINUM - 25FT - DOUBLE - WHITE	120 V	LED	-	3 VA	-	LITHONIA / ELMRW SERIES	ELITE / ELM-863-OT SERIES	SURE LITES / SRP SERIES	DUAL-LITE / EVO SERIES	
X1	SINGLE FACE POLYCARBONATE EXIT - RED LETTERS	277 V	LED	-	5 VA	-	LITHONIA / LQM SERIES	ELITE / ELX-504 SERIES	SURE LITES / APX SERIES	DUAL-LITE / EVE SERIES	
XER	COMBO SINGLE FACE EXIT W/EM. HEADS - W/ BATTERY - RED LETTERS - THERMOPLASTIC WHITE HOUSING - REMOTE CAPACITY	120 V	LED	-	5 VA	-	LITHONIA / LHQM SERIES	ELITE / ELX-768 SERIES	SURE LITES / APC7RG SERIES	DUAL-LITE / EVC SERIES	

LIGHTING CONTROL PANEL

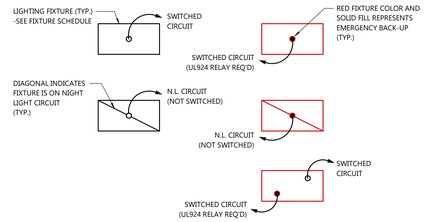
RELAY CIRCUIT	SWITCH	AUTOMATIC CONTROLS	VOLTAGE	SUPPLY FROM PANEL	SUPPLY FROM CIRCUIT	ROOM / AREA
LCP-1	-	TIME CLOCK / PHOTOCELL	277 V	EHA	1	NORTH SITE POLE LIGHT
LCP-2	-	TIME CLOCK / PHOTOCELL	277 V	EHA	2	SOUTH SITE POLE LIGHT
LCP-3	-	TIME CLOCK / PHOTOCELL	277 V	EHA	3	TRUCK STORAGE WALLPACKS
LCP-4	-	TIME CLOCK / PHOTOCELL	277 V	EHA	4	OFFICE AREA CANOPY LIGHTS
LCP-5	LV SWITCHES	TIME CLOCK / PHOTOCELL	277 V	EHA	5	TRUCK STORAGE 100
LCP-6	LV SWITCHES	TIME CLOCK / PHOTOCELL	277 V	EHA	6	TRUCK STORAGE 100
LCP-7	LV SWITCHES	TIME CLOCK / PHOTOCELL	277 V	EHA	7	TRUCK STORAGE 100
LCP-8	LV SWITCHES	TIME CLOCK / PHOTOCELL	277 V	EHA	8	TRUCK STORAGE 100
LCP-9	LV SWITCHES	TIME CLOCK / PHOTOCELL	277 V	EHA	9	TRUCK STORAGE 100
LCP-10	-	TIME CLOCK / PHOTOCELL	277 V	EHA	10	FUEL ISLAND
LCP-11	-	PRE-WIRE RELAY FOR FUTURE	277 V	EHA	11	SPARE
LCP-12	-	PRE-WIRE RELAY FOR FUTURE	277 V	EHA	12	SPARE

CODE COMPLIANT SEQUENCE OF OPERATIONS

SPACE TYPE	MANUAL CONTROL: On/Off Switch	MANUAL CONTROL: Dimmer	MANUAL CONTROL: 2hrs override	AUTOMATIC ON/OFF CONTROL: Timeclock3 (Schedule) Load Type	Interior: Time On	Interior: Time Off	Exterior: Sunrise/ Sunset	Occupancy Sensor: Manual On (vacancy)	Auto On (Occupancy) (full 100%)	Partial On (<50%)	Hold at Dim 24 (Partial Off) Hi/Low	Auto-Off: Dim level 1 (%)1	Auto-Off: Time Delay 1 (min)	Auto-Off: Dim level 2 (%)	Auto-Off: Time Delay 2 (min)	DAYLIGHT CONTROL: Interior Primary...	Interior Secondary (DZ2)	Exterior	NOTES
PRIVATE OFFICE	X	0-10V						PIR				100%	17	-	3				Wall Switch Vacancy Sensor
BREAK ROOM w/ windows	X	0-10V						PIR				100%	17	-	3	50	50		
VESTIBULE, CORRIDOR	X							PIR	I		I	100%	20	20%	-				
RESTROOMS, SHOWER, LOCKER ROOMS	X								I			100%	20	-	-				
ELECTRICAL, FIRE PUMP, MECHANICAL	X							-				-	-	-	-				
IT ROOM	X							PIR				100%	20	-	-				Wall Switch Vacancy Sensor
TRUCK STROAGE	LV	0-10V								I		50%	17	-	3				
WASH BAY	X							PIR				100%	17	-	3				NEMA 4X Occupancy sensors
PARTS STORAGE	X							PIR			I	100%	17	-	3				
EXTERIOR LIGHTING											I	100%	15	20%	-				

1 High end trim value that is overridable using Scene Controller
2 Adjustable value using the programming. Cannot override it using a scene controller.
3 Schedule is an approved alternate control strategy to occupancy sensing.
4 Partial Off (Hi/Low aka Hold at Dim 2) is an approved alternate control strategy to Auto-off.

LIGHTING FIXTURE LEGEND



NOTE:
ADDITIONAL DRIVERS SHALL NOT BE NEEDED FOR EMERGENCY FIXTURES.
REFER TO "EMERGENCY LIGHTING CONTROL DETAIL" FOR MORE INFORMATION.

ELECTRICAL LIGHT FIXTURE SCHEDULE

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

PROJECT INFORMATION

NEW HIGHWAY FACILITY:
OUTGAMIE COUNTY HWY. DEPT.
W9590 GIVENS RD. • HORTONVILLE, WI 54944

PROFESSIONAL SEAL

SHEET DATES
ISSUED FOR BID
IFB MAR. 31, 2026

JOB NUMBER
250041200

SHEET NUMBER
E5.0

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