

BAALMAN
ARCHITECTS

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2014003655

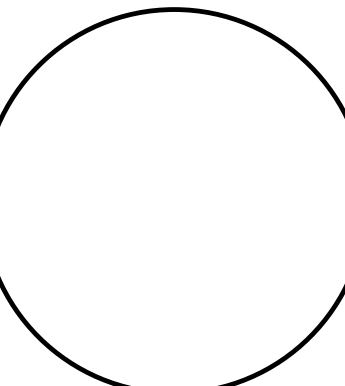
CIVIL ENGINEER
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STRUCTURAL, MECHANICAL,
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CASE ENGINEERING, INC.
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New Base Station #2 Facility for:
**Lincoln County
Ambulance District**
28 Walter Court
Moscow Mills, Missouri 63362

[illegible]

Michael J. Baalman
ARCHITECT
MO# A-2012004035

PROJECT MANAGER: JKL
DRAWN BY: JKL

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
A1.1
ARCHITECTURAL
SITE PLAN

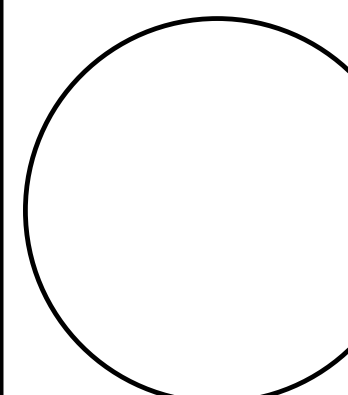


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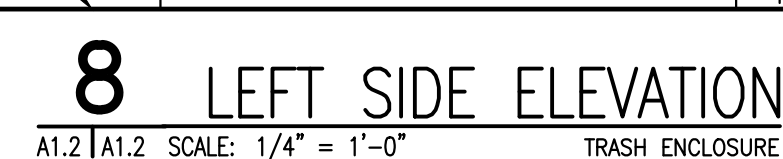
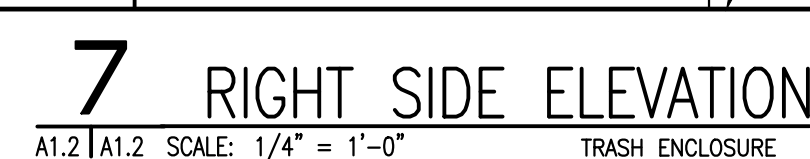
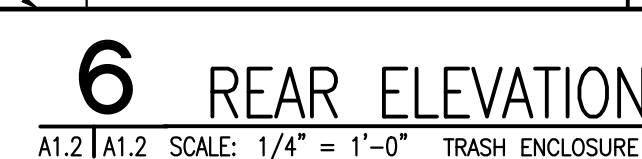
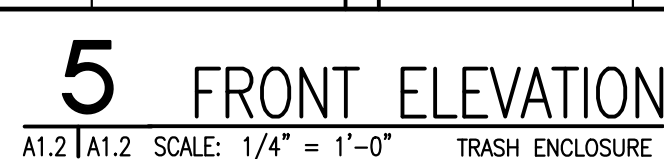
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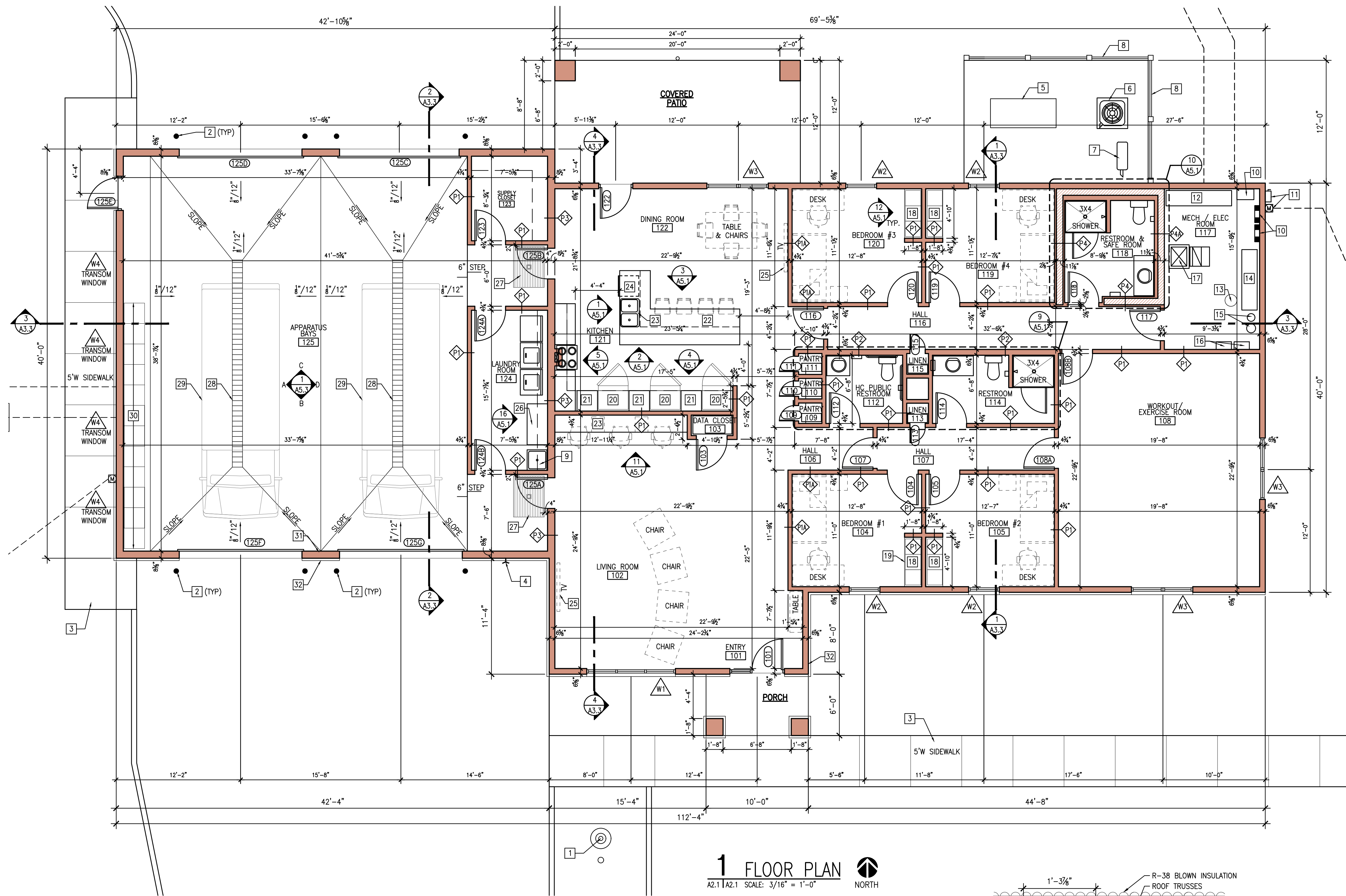
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[illegible]

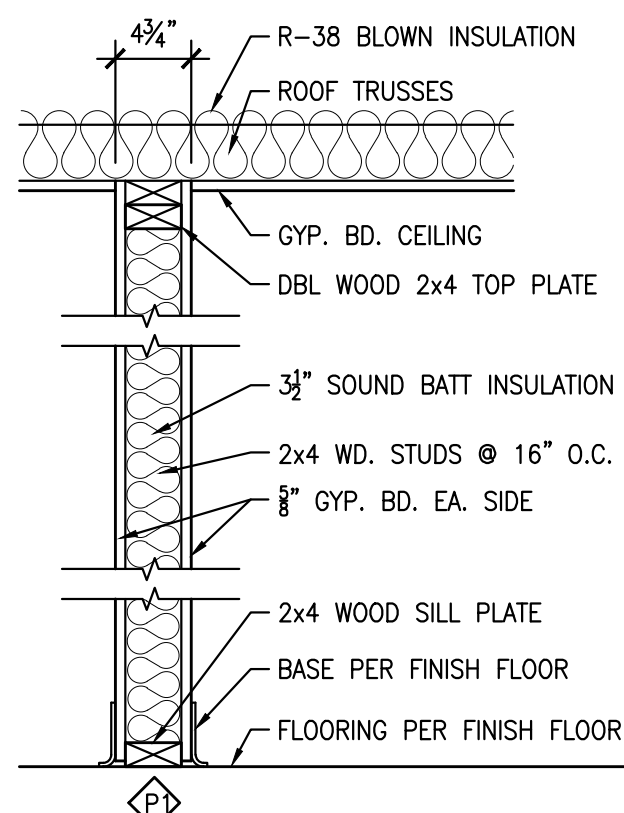
PROJECT MANAGER: JKL
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SHEET
A1.2
SITE PLAN
DETAILS

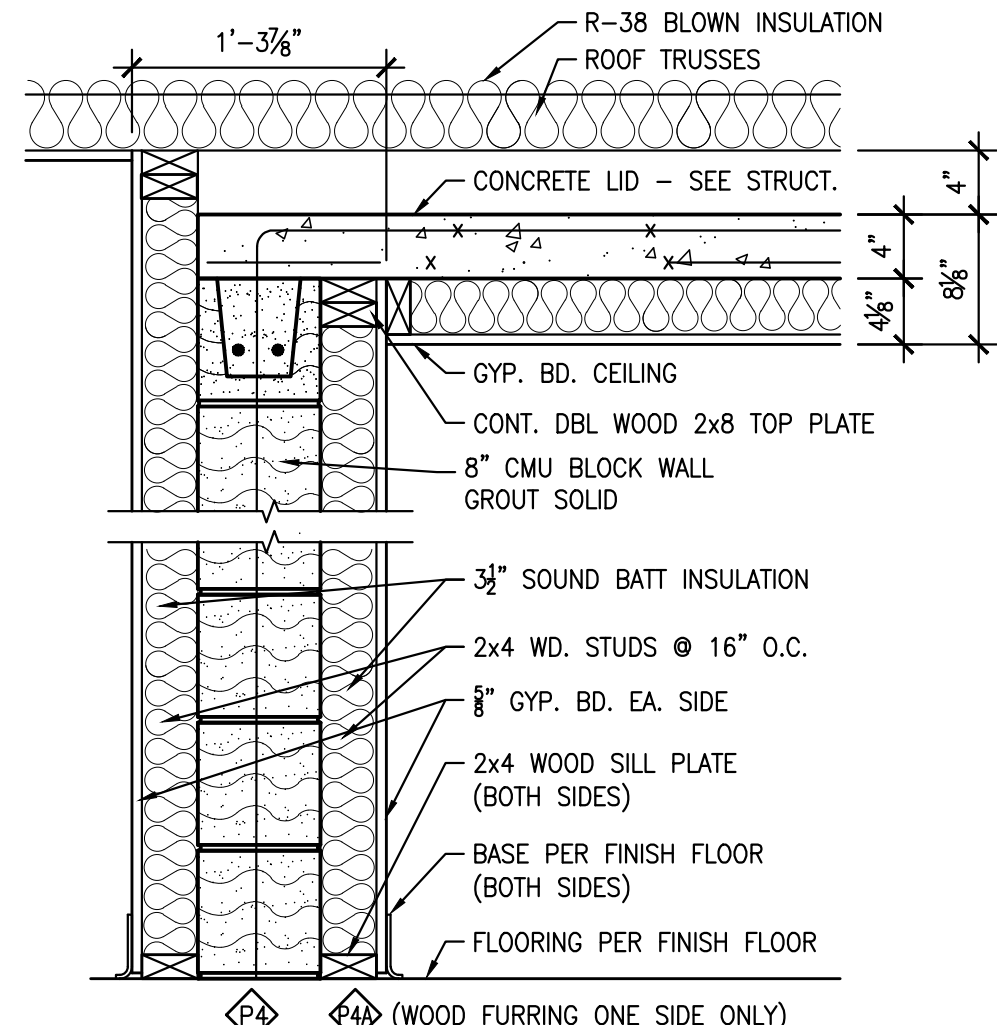
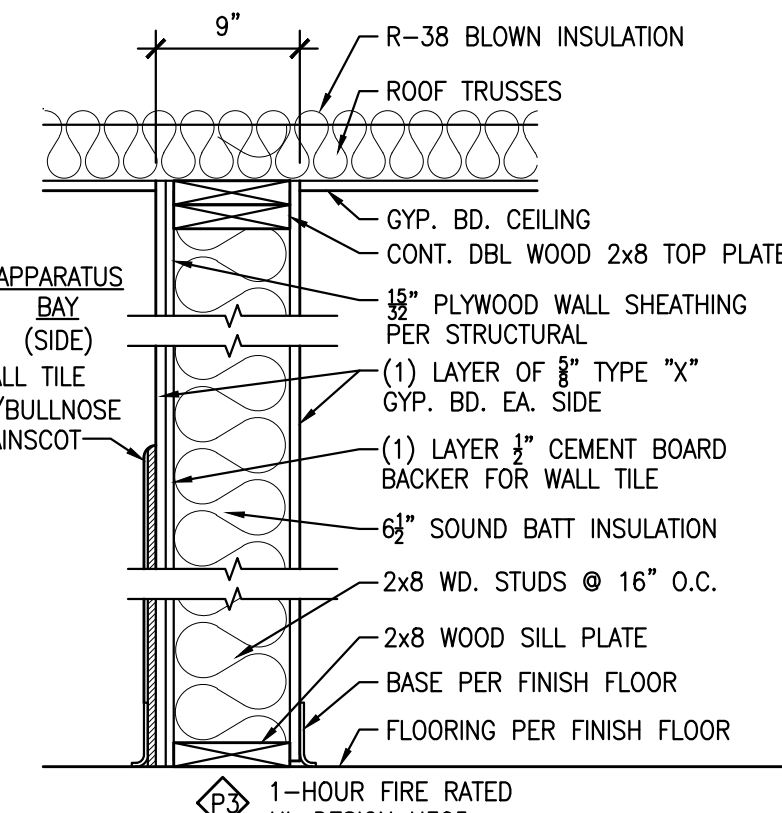
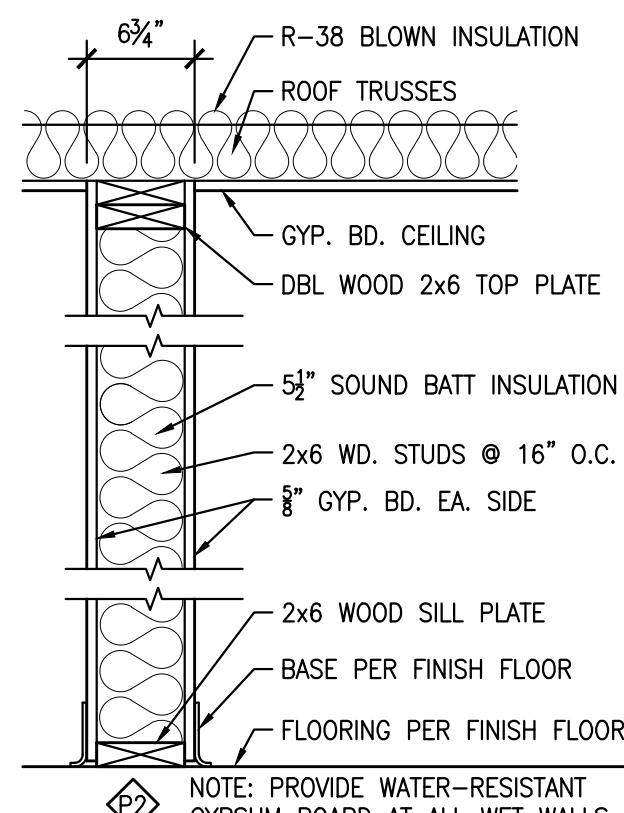
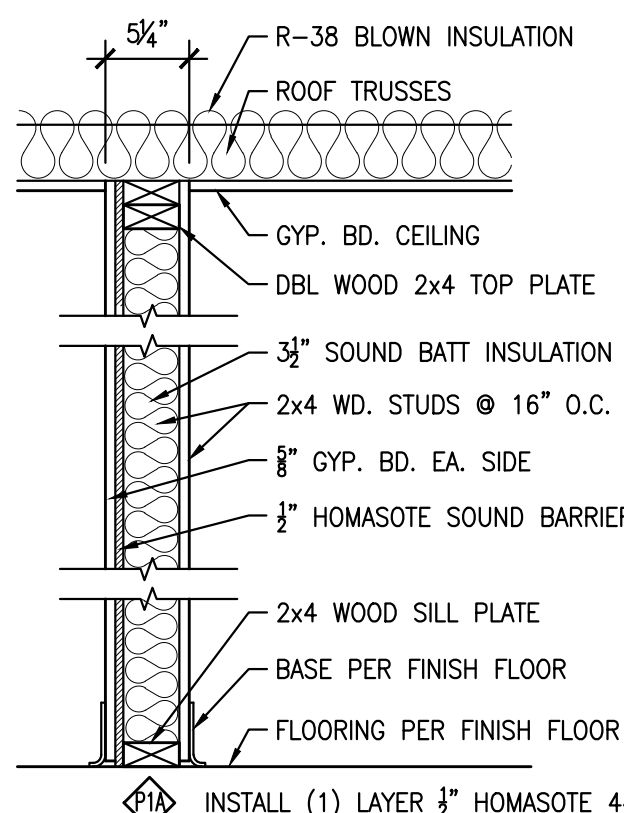




1 FLOOR PLAN
A2.1 | A2.1 SCALE: 3/16" = 1'-0" NORTH



2 PARTITION TYPES
A1.2 | A1.2 SCALE: 1" = 1'-0"

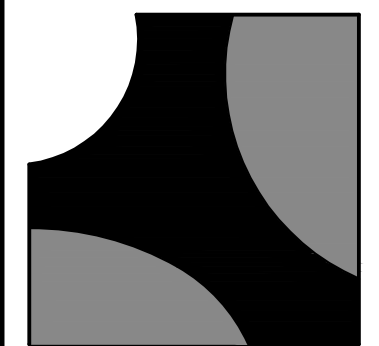


GENERAL FLOOR PLAN NOTES

1. SEE GENERAL NOTES ON THE COVER SHEET FOR MORE INFORMATION.
2. UNLESS OTHERWISE INDICATED ALL MATERIALS AND EQUIPMENT ON THE DRAWINGS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. ALL FURNITURE SHOWN DASHED IS BY OWNER.
4. ALL EXTERIOR SIDED OR STONE VENEER ARE DIMENSIONED FROM EXTERIOR FACE OF SHEATHING TO FINISHED FACE OF INTERIOR GYPSUM BOARD UNLESS NOTED OTHERWISE.
5. CONTRACTOR TO PROVIDE BLOCKING IN WALL TO SUPPORT ALL CASEWORK, SHELVING, LOCKERS, SHOWER UNITS, GRAB BARS, TOILET ACCESSORIES, TVS AND EQUIPMENT, ETC..
6. NO BACK TO BACK JUNCTION BOXES SHALL BE PERMITTED IN SOUND PARTITIONS.
7. ALL CEILING HEIGHTS ARE REFERENCED FROM NEAREST FINISHED FLOOR. ALL BEARING ELEVATIONS ARE BASED ON 100'-0" REFERENCED ELEVATION TYPICAL UNLESS NOTED OTHERWISE.
8. PROVIDE CORNER GUARDS ON ALL OUTSIDE CORNERS WHERE APPLICABLE. VERIFY LOCATIONS WITH OWNER.

KEYED NOTES

- 1 FLAGPOLE WITH LIGHT - SEE ARCHITECTURAL SITE DETAILS, CIVIL DRAWINGS AND ELECTRICAL DRAWINGS FOR MORE INFORMATION AND LOCATION.
- 2 CONCRETE BOLLARD, SEE ARCHITECTURAL SITE PLAN.
- 3 SIDEWALK - SEE ARCHITECTURAL SITE PLAN
- 4 FIRE DEPARTMENT CONNECTION, SEE CIVIL DRAWINGS AND FIRE PROTECTION DRAWINGS.
- 5 EMERGENCY GENERATOR, SEE ELECTRICAL DRAWINGS.
- 6 AIR CONDITIONER CONDENSER UNIT, SEE MECHANICAL DRAWINGS.
- 7 HEAT PUMP, SEE MECHANICAL DRAWINGS.
- 8 PRIVACY FENCE, SEE ARCHITECTURAL SITE PLAN AND CIVIL DRAWINGS.
- 9 FIBERGLASS SINGLE COMPARTMENT SERVICE SINK, SEE PLUMBING DRAWINGS.
- 10 ELECTRICAL PANELS & TRANSFER SWITCH, SEE ELECTRICAL DRAWINGS.
- 11 ELECTRIC METER AND ELECTRICAL EQUIPMENT, SEE ELECTRICAL DRAWINGS.
- 12 SPRINKLER RISER EQUIPMENT, SEE FIRE PROTECTION DRAWINGS.
- 13 SUMP PUMP, SEE PLUMBING DRAWINGS.
- 14 DOMESTIC WATER/BACKFLOW EQUIPMENT, SEE PLUMBING DRAWINGS.
- 15 WATER SOFTENER SYSTEM, SEE PLUMBING DRAWINGS.
- 16 WALL MOUNTED TANKLESS WATER HEATERS, SEE PLUMBING DRAWINGS.
- 17 FURNACE, SEE MECHANICAL DRAWINGS.
- 18 18"x18"x72" METAL LOCKERS WITH 4" Z BASE. - REPUBLIC SINGLE TIER, ALL SIDES SOLID, RECESS TRIM, RECESS HANDLE, COLOR TAUPE 51.
- 19 WALL MOUNTED TV AND BRACKET ABOVE BY OWNER. PROVIDE BLOCKING IN WALL. MOUNT 7'-6" ABOVE FINISHED FLOOR TO CENTER OF BRACKET / TV. SEE ELECTRICAL DRAWINGS.
- 20 REFRIGERATOR BY OWNER. CONNECT WATER LINE PLUMBING BY CONTRACTOR. SEE PLUMBING DRAWINGS.
- 21 PANTRY CABINET. SEE INTERIOR ELEVATIONS.
- 22 TWO-TIER SOLID SURFACE ISLAND. SEE INTERIOR ELEVATIONS.
- 23 DOUBLE-BOWL STAINLESS STEEL SINK. SEE PLUMBING DRAWINGS.
- 24 DISHWASHER BY OWNER. CONNECT TO ELECTRIC AND PLUMBING BY CONTRACTOR. SEE ELECTRICAL AND PLUMBING DRAWINGS.
- 25 WALL MOUNTED TV AND BRACKET ABOVE BY OWNER. PROVIDE BLOCKING IN WALL. CONSULT WITH OWNER FOR MOUNTING HEIGHT. SEE ELECTRICAL DRAWINGS.
- 26 PLASTIC LAMINATE COUNTER. SEE INTERIOR ELEVATIONS.
- 27 3'-0"x4'-0" RECESSED ENTRY MAT SYSTEM WITH FLOOR DRAIN. RECESSES 2", VERIFY WITH MANUFACTURER. SEE STRUCTURAL AND PLUMBING DRAWINGS.
- 28 TRENCH DRAIN - SEE STRUCTURAL AND PLUMBING DRAWINGS.
- 29 AMBULANCE BY OWNER. SHOWN DASHED.
- 30 (12) TURNOUT GEAR OPEN GRID WALL MOUNTED LOCKERS BY OWNER. PROVIDE BLOCKING AS REQUIRED.
- 31 HOSE BIBB WITH REEL ON INTERIOR OF APPARATUS BAY. SEE PLUMBING.
- 32 HOSE BIBB ON EXTERIOR WALL. SEE PLUMBING.



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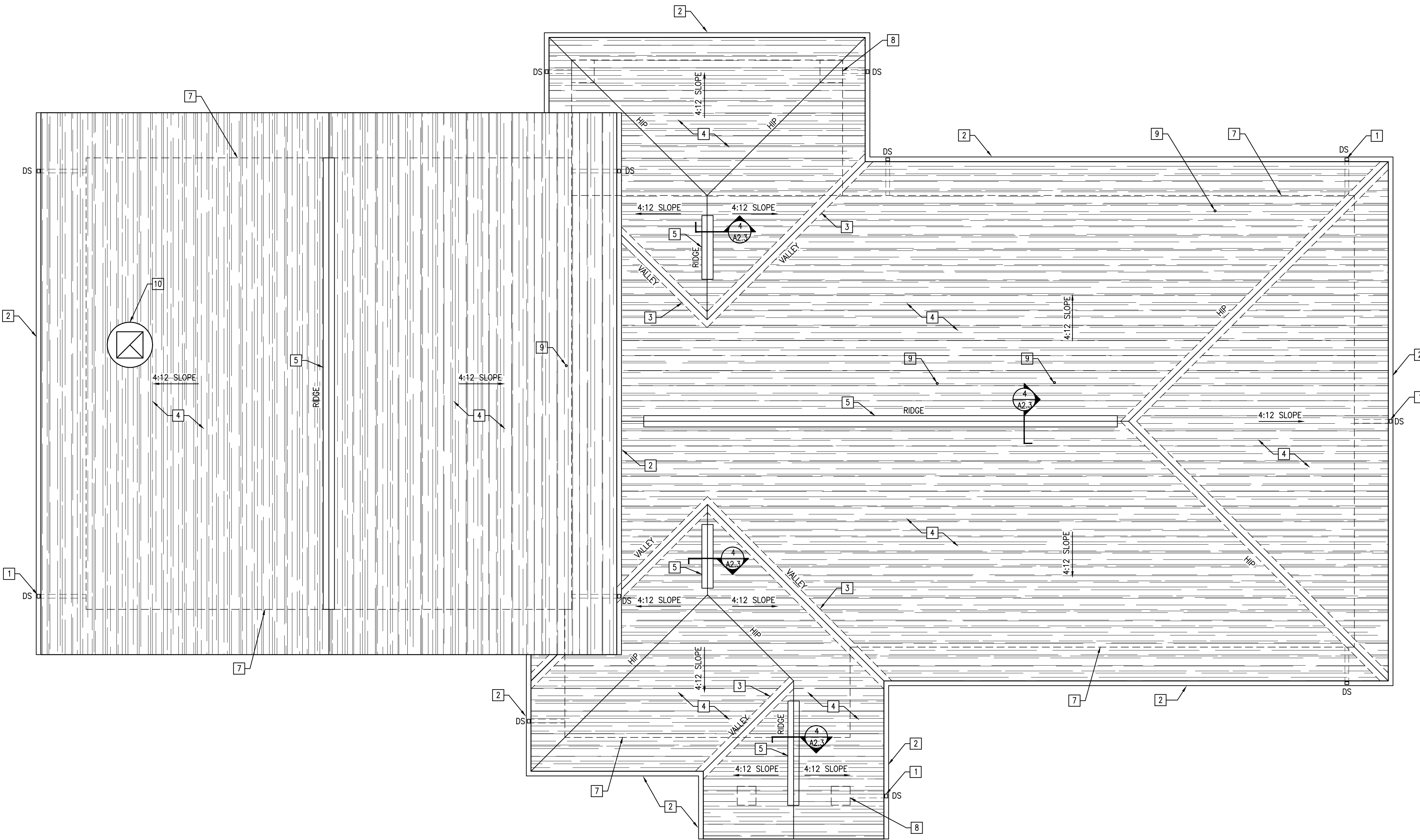
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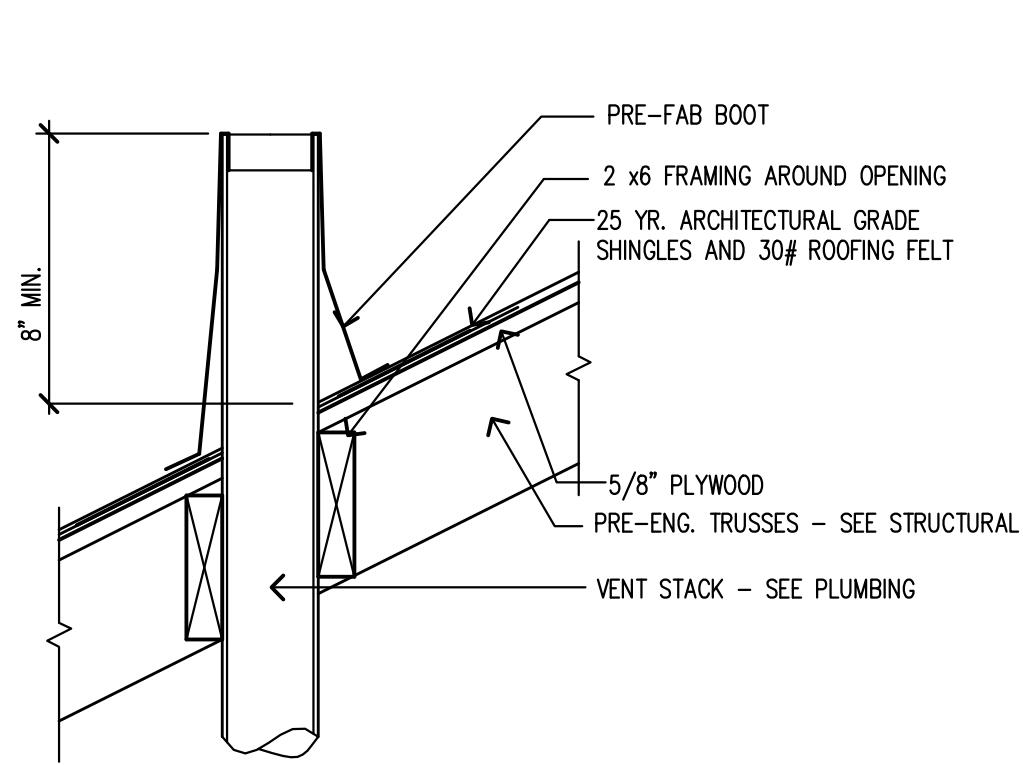
SHEET
A2.1
FLOOR PLAN
AND
PARTITION TYPES



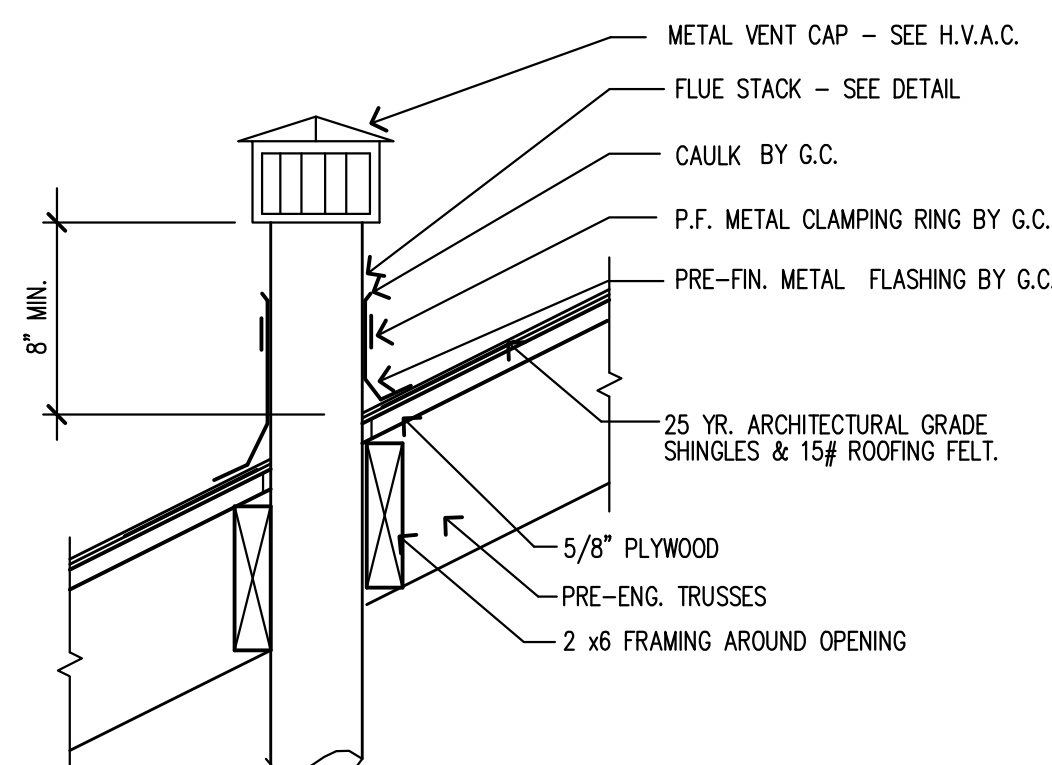
SHEET
A2.2
REFLECTED
CEILING PLAN



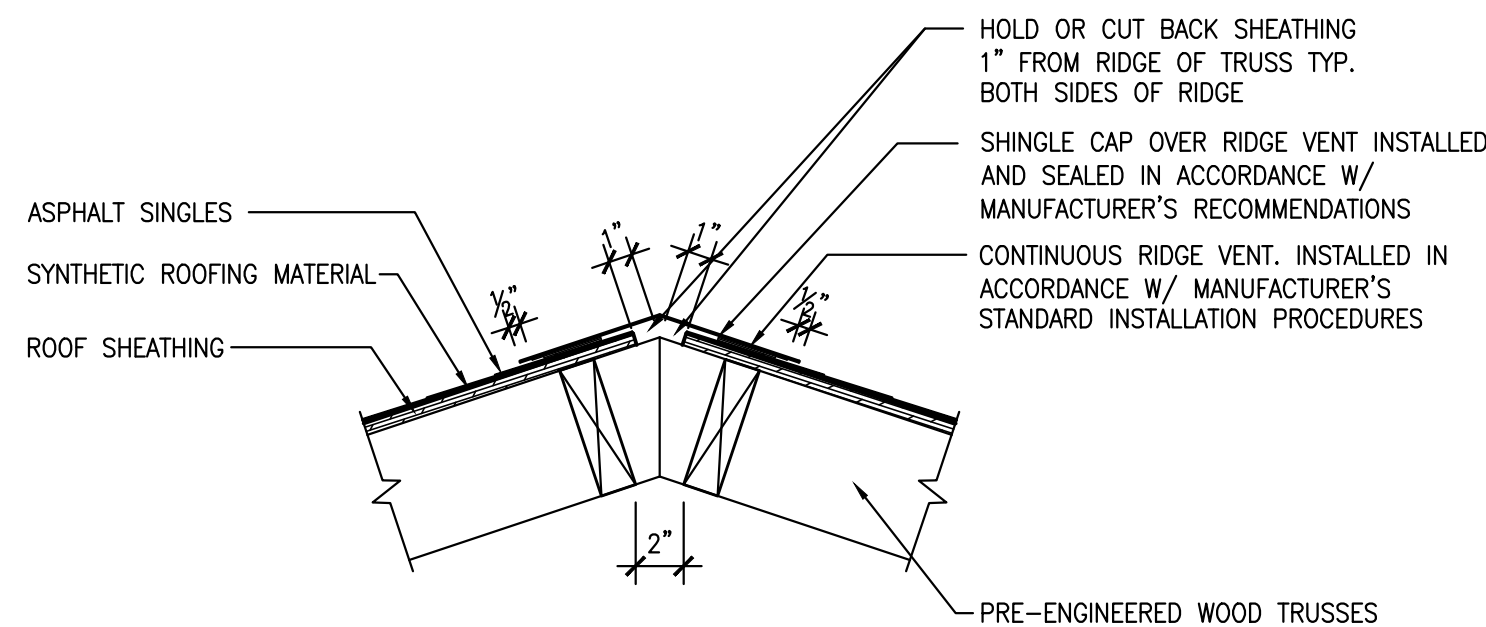
1 ROOF PLAN
A2.3 | A2.3 SCALE: 3/16" = 1'-0" NORTH



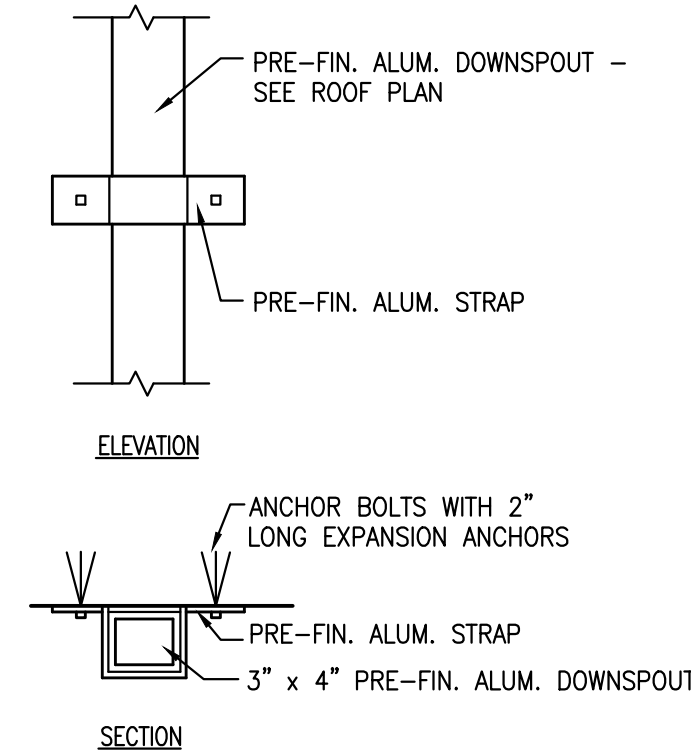
2 DETAIL @ VENT STACK
A2.3 | A2.3 SCALE: 1 1/2" = 1'-0"



3 DETAIL @ FLUE STACK
A2.3 | A2.3 SCALE: 1 1/2" = 1'-0"



4 RIDGE VENT DETAIL
A2.3 | A2.3 SCALE: 1 1/2" = 1'-0"



5 DETAIL @ DOWN SPOUT
A2.3 | A2.3 SCALE: 1 1/2" = 1'-0"

GENERAL NOTES

- ALL ROOF PENETRATIONS SHALL BE FLASHED AS REQUIRED BY ROOFING MANUFACTURER'S SPECIFICATIONS.
- DOWNSPOUTS TO CONNECT TO STORM SEWER PER CIVIL DRAWINGS.
- COORDINATE LOCATION AND CONFIGURATION OF ALL ROOF PENETRATIONS W/ MECHANICAL, ELECTRICAL AND PLUMBING CONTRACTOR.

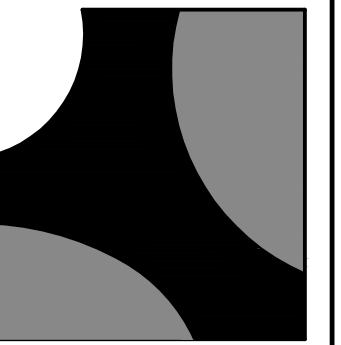
DRAFTSTOPPING

ATTIC DRAFTSTOPPING SHALL BE INSTALLED WHERE SHOWN OR AT A MAXIMUM OF 3,000 S.F. OPEN ATTIC SPACE.

DRAFTSTOPPING SHALL INCLUDE 1/2" MINIMUM GYPSUM BOARD OR AS ACCEPTED BY THE 2015 IBC CHAPTER 718 CONCEALED SPACES.

KEYED NOTES

- PRE-FINISHED METAL DOWNSPOUTS. CONTRACTOR TO VERIFY SIZES AND LOCATIONS.
- PRE-FINISHED METAL GUTTER. CONTRACTOR TO VERIFY SIZE TO ACCOMMODATE ROOF DRAINAGE PER CODE.
- PROVIDE ICE AND WATER SHIELD AT ALL ROOF VALLEYS AND ROOF PERIMETER (TYP).
- LIFETIME ARCHITECTURAL ROOF SHINGLES WITH SYNTHETIC UNDERLAYMENT.
- RIDGE VENT
- DRAFTSTOPPING IN ATTIC
- BUILDING LINE BELOW
- COLUMN BUILDING LINE BELOW
- PLUMBING VENT - VERIFY LOCATION WITH PLUMBING DRAWINGS
- ROOF MOUNTED EXHAUST FAN



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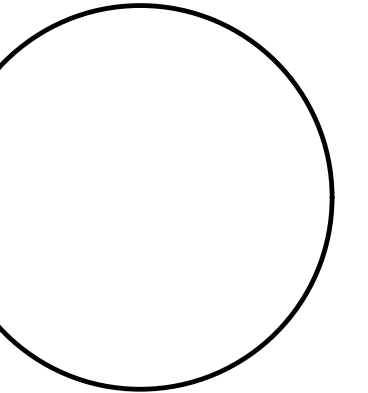
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SHEET
A2.3
ROOF PLAN
& DETAILS



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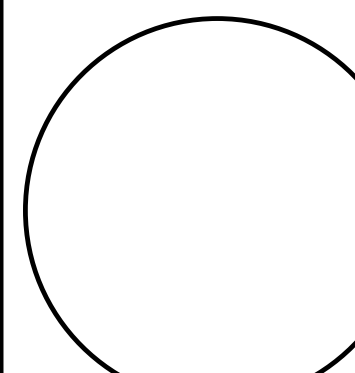
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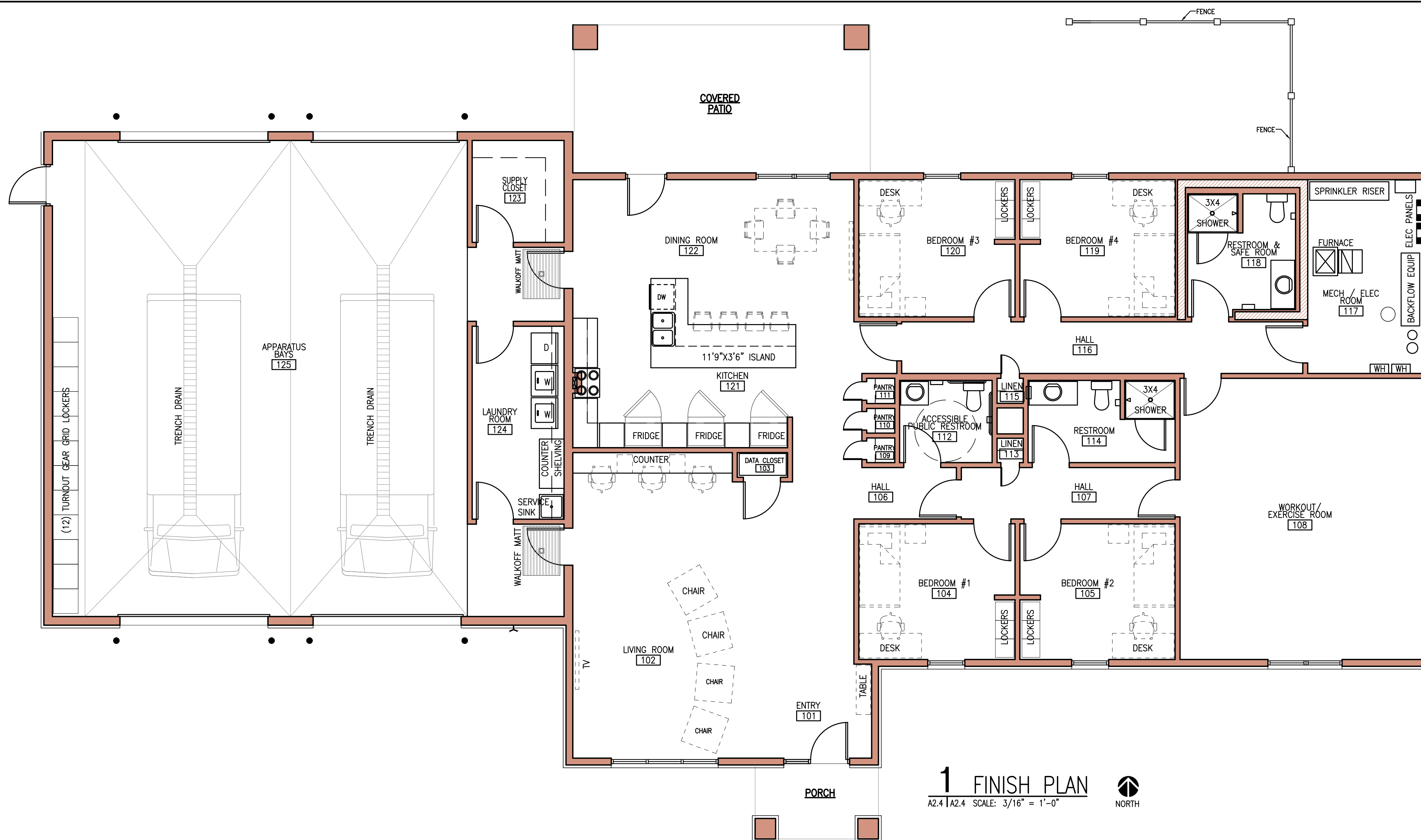
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SHEET
A2.4
FINISH PLAN
& ROOM
SCHEDULE



ROOM FINISH SCHEDULE												INTERIOR MATERIALS, FINISHES & COLOR SELECTIONS								
ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING		DECORATING		NOTES:	LVT - LUXURY VINYL TILE		GB - GYPSUM BOARD		FRP - FIBERGLASS REINFORCED PANEL		P - PAINT	
				NORTH	EAST	SOUTH	WEST	MAT'L	HEIGHT	WALLS	CLG		PT - PORCELAIN TILE	VB - VINYL BASE	SS - SOLID SURFACE	PL - PLASTIC LAMINATE	CP - ENTRY MAT SYSTEM	RES - RESINOUS FLOORING	CT - CERAMIC TILE	SC - SEALED CONCRETE
101	ENTRY	LVT-1	VB-1		GB	GB		GB	9'-0"	P	P									
102	LIVING ROOM	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
103	DATA CLOSET	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
104	BEDROOM #1	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
105	BEDROOM #2	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
106	HALL	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
107	HALL	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
108	WORKOUT/EXERCISE ROOM	SF-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
109	PANTRY	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
110	PANTRY	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
111	PANTRY	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
112	ACCESSIBLE PUBLIC RESTROOM	PT-2	PT-2	GB	GB	GB	GB	GB	9'-0"	P	P									
113	LINEN	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
114	RESTROOM	PT-2	PT-2	GB	GB	GB	GB	GB	9'-0"	P	P									
115	LINEN	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
116	HALL	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
117	MECH/ELEC ROOM	SC	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
118	RESTROOM & SAFE ROOM	PT-2	PT-2	GB	GB	GB	GB	GB	9'-0"	P	P									
119	BEDROOM #4	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
120	BEDROOM #3	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
121	KITCHEN	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P	CT-1 BACKSPLASH TILE								
122	DINING ROOM	LVT-1	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
123	SUPPLY CLOSET	SC	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
124	LAUNDRY ROOM	SC	VB-1	GB	GB	GB	GB	GB	9'-0"	P	P									
125	APPARATUS BAYS	SC**	PT-1	GB	GB	GB	GB	GB	15'-4"	P	P	PT-1 WAINSCOT AND CP-1 ENTRY MAT **ALTERNATE FOR RESINOUS FLOORING								
ABBREVIATIONS																				
LVT - LUXURY VINYL TILE		GB - GYPSUM BOARD		FRP - FIBERGLASS REINFORCED PANEL				P - PAINT												
PT - PORCELAIN TILE		SS - SOLID SURFACE		CP - ENTRY MAT SYSTEM				CT - CERAMIC TILE												
VB - VINYL BASE		PL - PLASTIC LAMINATE		RES - RESINOUS FLOORING				SC - SEALED CONCRETE												

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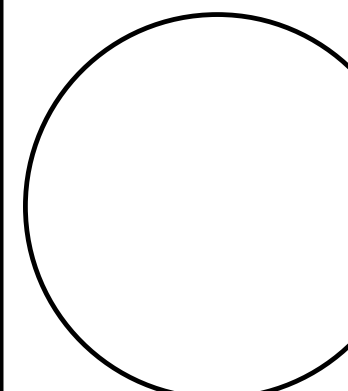


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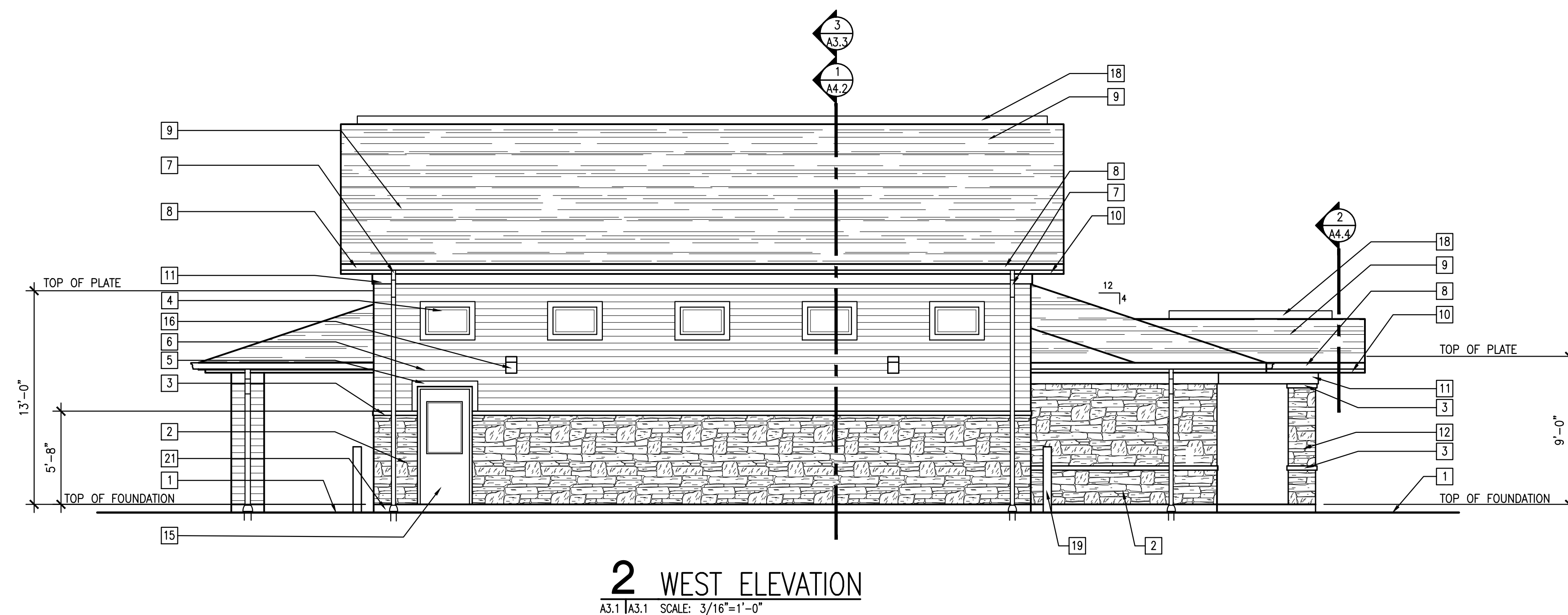
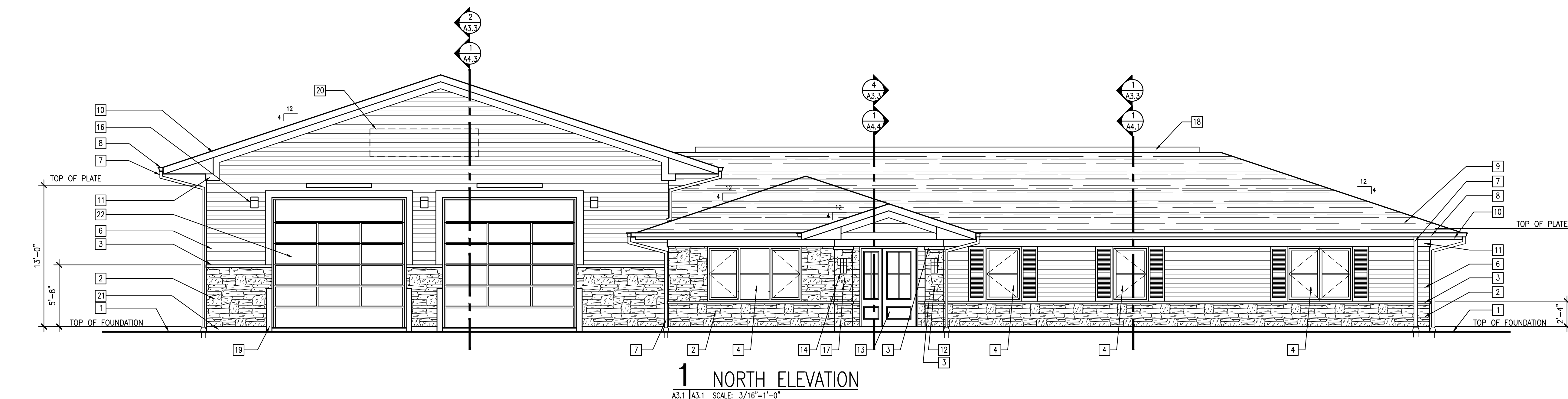
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SHEET
A3.1
EXTERIOR
ELEVATIONS



EXTERIOR MATERIALS AND FINISH SPECIFICATIONS

STONE VENEER SYSTEM:
ELDERADO STONE, COLOR: BOARDWALK, CLIFFSTONE
MORTAR: TINTED COLOR WITH SEALER ADDITIVE, WEATHERED JOINTS

STONE ACCENT BAND AND SILL BAND:
ELDORADO STONE, COLOR: ELDORADO STONE

PRE-FINISHED ALUMINUM COPINGS/TRIM:
COLOR: DARK BRONZE

PRE-FINISH FIBERGLASS DOOR:
COLOR: DARK BRONZE
GLAZING: SOLAR BRONZE, LOW-E GLASS

WINDOWS: SEE WINDOW TYPES ON SHEET A6.2.
ALUMINUM CLAD WOOD WINDOWS
TYPE: FIXED AND CASEMENT (WITH FULL SCREENS)

SOFFIT PANEL:
DESCRIPTION: FLUSH VENTED WITH CONCEALED FASTENERS
MANUFACTURER: T.B.D.
COLOR: DARK BRONZE

VINYL SIDING: CERTAINTED, RESTORATION CLASSIC, DOUBLE 4 1/2" DUTCHLAP
WITH TRIM AS REQUIRED TO MATCH.
COLOR: CASTLE STONE

ASPHALT SHINGLES: ASPHALT, LIFETIME, ARCHITECTURAL STYLE SHINGLES
MANUFACTURER: GAF, OWENS CORNING OR EQUIVALENT
BASIS OF DESIGN PRODUCT: GAF, TIMBERLINE HDZ, HIGH DEFINITION
COLOR: BLACK

GENERAL NOTES

1. SEE EXTERIOR MATERIALS AND FINISH SPECIFICATIONS FOR MATERIAL FINISH COLORS.
2. FRONT ENTRY - FIBERGLASS DOOR W/ SIDE LIGHTS 3'-0"x6'-8" FIBERGLASS DOOR W/ LOW E GLASS 2-3/8" BACKSET NO DEAD BOLT SET STANDARD BRUSHED NICKEL HINGES SET. SINGLE SIDE LIGHT W/ LOW E GLASS LIFETIME PRIMED WOOD FRAME W/ PRIMED INTERIOR CONTINUOUS HEAD/SILL - 6 9/16" JAMBES, BRONZE COMPRESSION WEATHERSTRIP TO COMPOSITE ADJ MILL FIN. SILL COLOR TO MATCH CLAD WINDOWS.
3. REAR ENTRY - FIBERGLASS DOOR 3'-0"x6'-8" FIBERGLASS DOOR W/ LOW E GLASS 2-3/8" BACKSET NO DEAD BOLT SET STANDARD BRUSHED NICKEL HINGES SET. LIFETIME PRIMED WOOD FRAME W/ PRIMED INTERIOR CONTINUOUS HEAD/SILL - BRONZE COMPRESSION WEATHERSTRIP TO COMPOSITE ADJ MILL FIN. SILL COLOR TO MATCH CLAD WINDOWS.
4. HOLLOW METAL DOORS AND FRAMES, COLOR TO MATCH CLAD WINDOWS. SEMI GLOSS.
5. OVERHEAD DOOR - WAYNE-DALTON THERMOPLAS 150 SELECTION DOORS W/ FACTORY TINTED LOW E GLASS. EXTERIOR FINISH: FACTORY PRIMED FOR FIELD PAINTING - COLOR TO MATCH CLAD WINDOWS - SEMI GLOSS. INTERIOR FINISH FACTORY PAINTED - COLOR: WHITE.
6. ALUMINUM CLAD WOOD WINDOWS: PELLA LIFESTYLE SERIES CASEMENT AND AWNING W/ LOW E GLASS AND IN ED FAL SCREENS. FACTORY EXTERIOR FINISH COLOR: BLACK. FACTORY INTERIOR FINISH - COLOR: RED MAHOGANY. HARDWARE: OIL RUBBED BRONZE.
7. ALL INNER FLASHING OCCURRING ABOVE DOORS AND WINDOWS ARE TO CONSTRUCTED WITH END DAMS.

KEYED NOTES

- 1 APPROXIMATE FINISH GRADE OR CONCRETE SIDEWALK. REFER TO CIVIL DRAWINGS.
- 2 STONE VENEER SYSTEM.
- 3 STONE ACCENT BAND. (ELDORADO STONE)
- 4 ALUMINUM CLAD WOOD WINDOWS AND TRIM. SEE WINDOW TYPES SHEET A/6.1.
- 5 PRE-FINISHED ALUMINUM TRIM AROUND WINDOW AND DOOR OPENINGS.
- 6 DOUBLE DUTCHLAP VINYL SIDING. SEE FINISH SPECIFICATIONS ON THIS SHEET.
- 7 PREFINISHED SQUARE-SHAPED METAL DOWNSPOUTS. PIPED UNDERGROUND. REFER TO CIVIL DRAWINGS.
- 8 PREFINISHED METAL GUTTER.
- 9 ASPHALT LIFETIME ARCHITECTURAL SHINGLES WITH SYNTHETIC UNDERLAYMENT.
- 10 PRE-FINISHED ALUMINUM CLAD FASCIA TRIM.
- 11 PRE-FINISHED ALUMINUM WRAPPED WOOD SHADOW BOARD.
- 12 STONE CLAD WRAPPED METAL COLUMNS.
- 13 PREFINISHED FIBERGLASS IN-SWINGING DOOR WITH SIDELITE.
- 14 DECORATIVE WALL SCIENCE. REFER TO ELECTRICAL DRAWINGS, VERIFY HEIGHT.
- 15 HOLLOW METAL DOOR AND FRAME.
- 16 WALL PACK LIGHT FIXTURE. SEE ELECTRICAL DRAWINGS.
- 17 ADDRESS ON FRONT OF COLUMN (4" HIGH)
- 18 RIDGE VENT, SEE ROOF PLAN.
- 19 BOLLARD, PAINT.
- 20 SIGN - BY OWNER INSTALLED BY CONTRACTOR.
- 21 CONCRETE FOUNDATION.
- 22 OVERHEAD DOOR WITH VISION PANELS (TEMP. GLASS), SEE DOOR SCHEDULE.
- 23 PREFINISHED FIBERGLASS IN-SWINGING DOOR WITH TEMP. GLASS, SEE DOOR SCHEDULE.
- 24 DOUBLE DUTCHLAP VINYL SIDING WRAPPING METAL COLUMN



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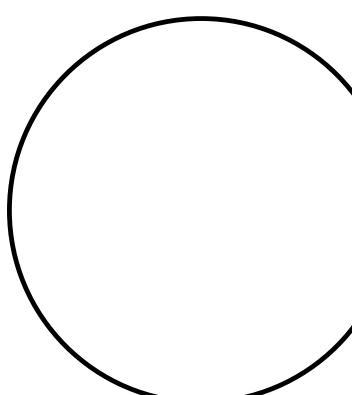
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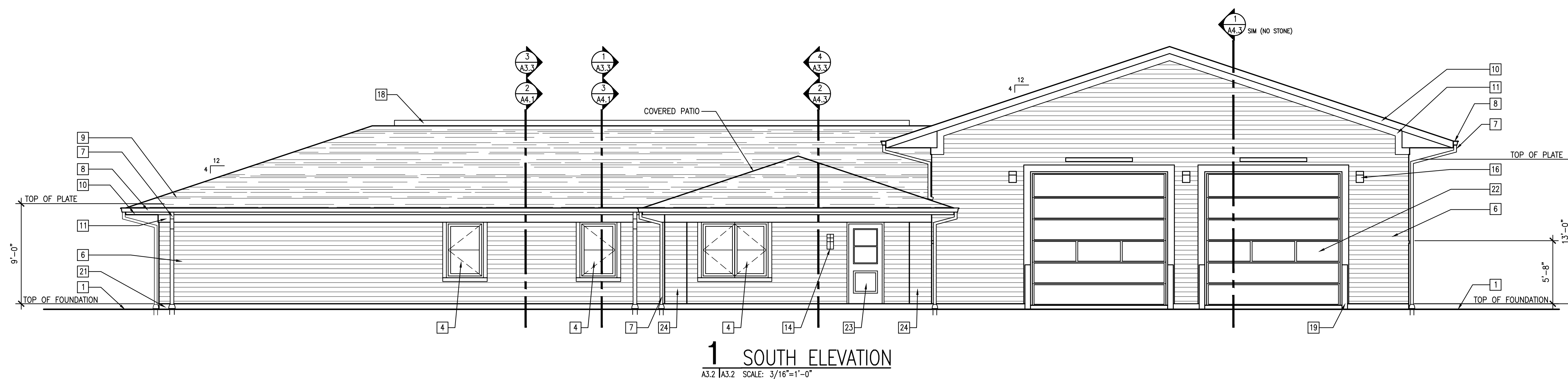


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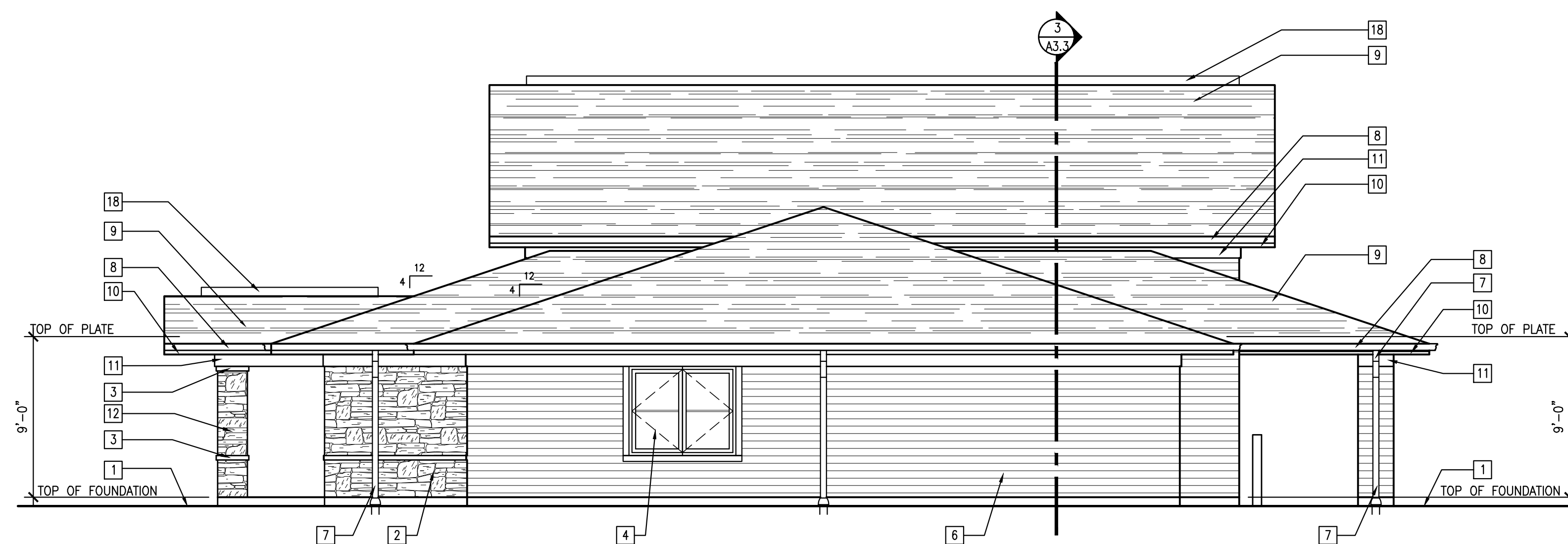
PROJECT MANAGER: JKL
DRAWN BY: JKL

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
A3.2
EXTERIOR
ELEVATIONS



1 SOUTH ELEVATION
A3.2 | A3.2 SCALE: 3/16"=1'-0"



2 EAST ELEVATION

EXTERIOR MATERIALS AND FINISH SPECIFICATIONS

STONE VENEER SYSTEM:
ELDERADO STONE, COLOR: BOARDWALK, CLIFFSTONE
MORTAR: TINTED COLOR WITH SEALER ADDITIVE, WEATHERED JOINTS

STONE ACCENT BAND AND SILL BAND:
ELDORADO STONE, COLOR: ELDORADO STONE

PRE-FINISHED ALUMINUM COPINGS/TRIM:
COLOR: DARK BRONZE

PRE-FINISH FIBERGLASS DOOR:
COLOR: DARK BRONZE
GLAZING: SOLAR BRONZE, LOW-E GLASS

WINDOWS: SEE WINDOW TYPES ON SHEET A6.2.
ALUMINUM CLAD WOOD WINDOWS
TYPE: FIXED AND CASEMENT (WITH FULL SCREENS)

SOFFIT PANEL:
DESCRIPTION: FLUSH VENTED WITH CONCEALED FASTENERS
MANUFACTURER: T.B.D.
COLOR: DARK BRONZE

VINYL SIDING: CERTAINTED, RESTORATION CLASSIC, DOUBLE 4 $\frac{1}{2}$ " DUTCHLAP
WITH TRIM AS REQUIRED TO MATCH.
COLOR: CASTLE STONE

ASPHALT SHINGLES: ASPHALT, LIFETIME, ARCHITECTURAL STYLE SHINGLES
MANUFACTURER: GAF, OWENS CORNING OR EQUIVALENT
BASIS OF DESIGN PRODUCT: GAF, TIMBERLINE HDZ, HIGH DEFINITION
COLOR: BLACK

GENERAL NOTES

1. SEE EXTERIOR MATERIALS AND FINISH SPECIFICATIONS FOR MATERIAL FINISH COLORS.
2. FRONT ENTRY - FIBERGLASS DOOR W/ SIDE LIGHTS 3'-0"x6"-8" FIBERGLASS DOOR W/ LOW E GLASS 2-3/8" BACKSET NO DEAD BOLT SET STANDARD BRUSHED NICKEL HINGES SET. SINGLE SIDE LIGHT W/ LOW E GLASS, LIFETIME PRIMED WOOD FRAME W/ PRIMED INTERIOR CONTINUOUS HEAD/SILL- 6 9/16" JAMBS. BRONZE COMPRESSION WEATHERSTRIP TO COMPOSITE ADJ MILL FIN. SILL COLOR TO MATCH CLAD WINDOWS.
3. REAR ENTRY - FIBERGLASS DOOR 3'-0"x6"-8" FIBERGLASS DOOR W/ LOW E GLASS 2-3/8" BACKSET NO DEAD BOLT SET STANDARD BRUSHED NICKEL HINGES SET, LIFETIME PRIMED WOOD FRAME W/ PRIMED INTERIOR CONTINUOUS HEAD/SILL. BRONZE COMPRESSION WEATHERSTRIP TO COMPOSITE ADJ MILL FIN. SILL COLOR TO MATCH CLAD WINDOWS.
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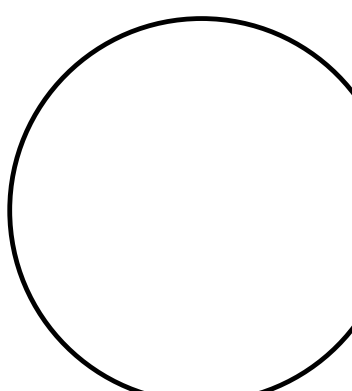
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PROJECT MANAGER: JKL
DRAWN BY: JKL

SHEET
A3.3
BUILDING
SECTIONS

- 1 APPROXIMATE FINISH GRADE OR CONCRETE SIDEWALK. REFER TO CIVIL DRAWINGS.
- 2 STONE VENEER SYSTEM.
- 3 VENEER ACCENT BAND.
- 4 ALUMINUM CLAD WOOD WINDOWS WITH PAINTED WOOD STOOL AND TRIM.
- 5 PREFINISHED FIBERGLASS DOOR
- 6 WOOD DOOR
- 7 HOLLOW METAL DOOR
- 8 WOOD DOOR WITH LITE
- 9 GLASS OVERHEAD DOOR
- 10 R-38 FIBERGLASS INSULATION
- 11 PRE-ENGINEERED ROOF TRUSSES
- 12 DOUBLE DUTCHLAP VINYL SIDING
- 13 TRENCH DRAIN
- 14 KITCHEN ISLAND
- 15 KITCHEN CABINETRY
- 16 WALL TILE WITH BULLNOSE CAP





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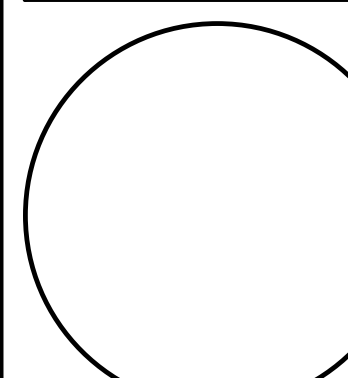
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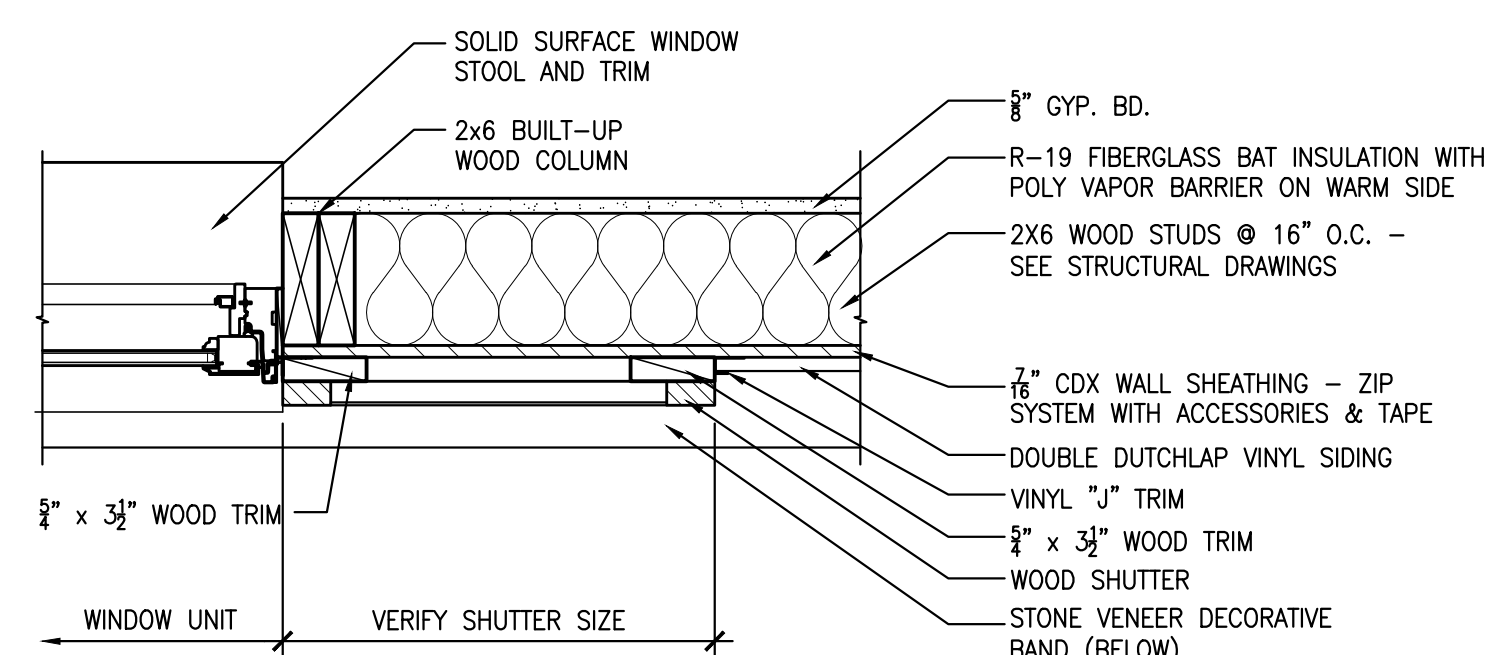


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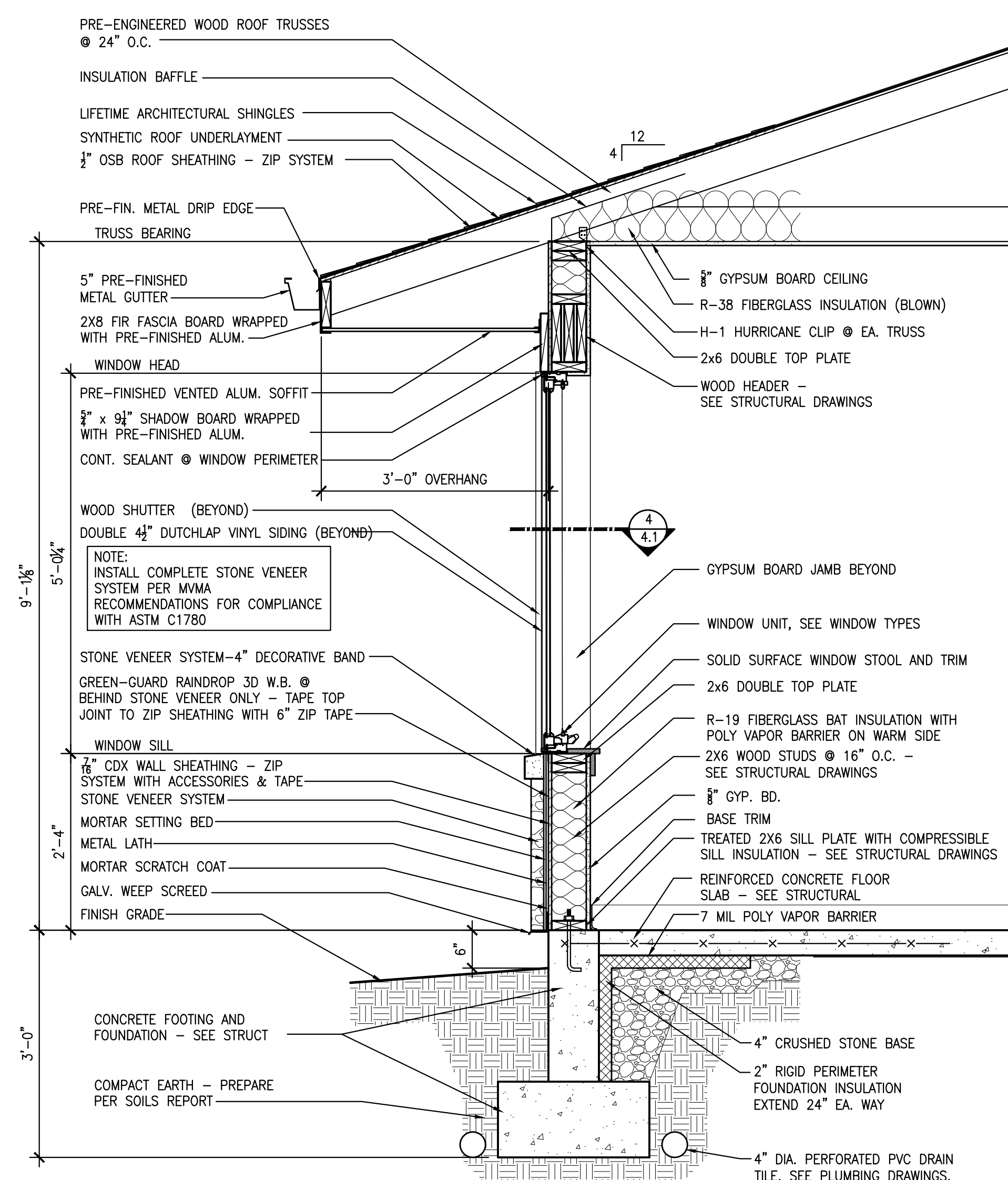
PROJECT NUMBER
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SHEET
A4.1
WALL
SECTIONS



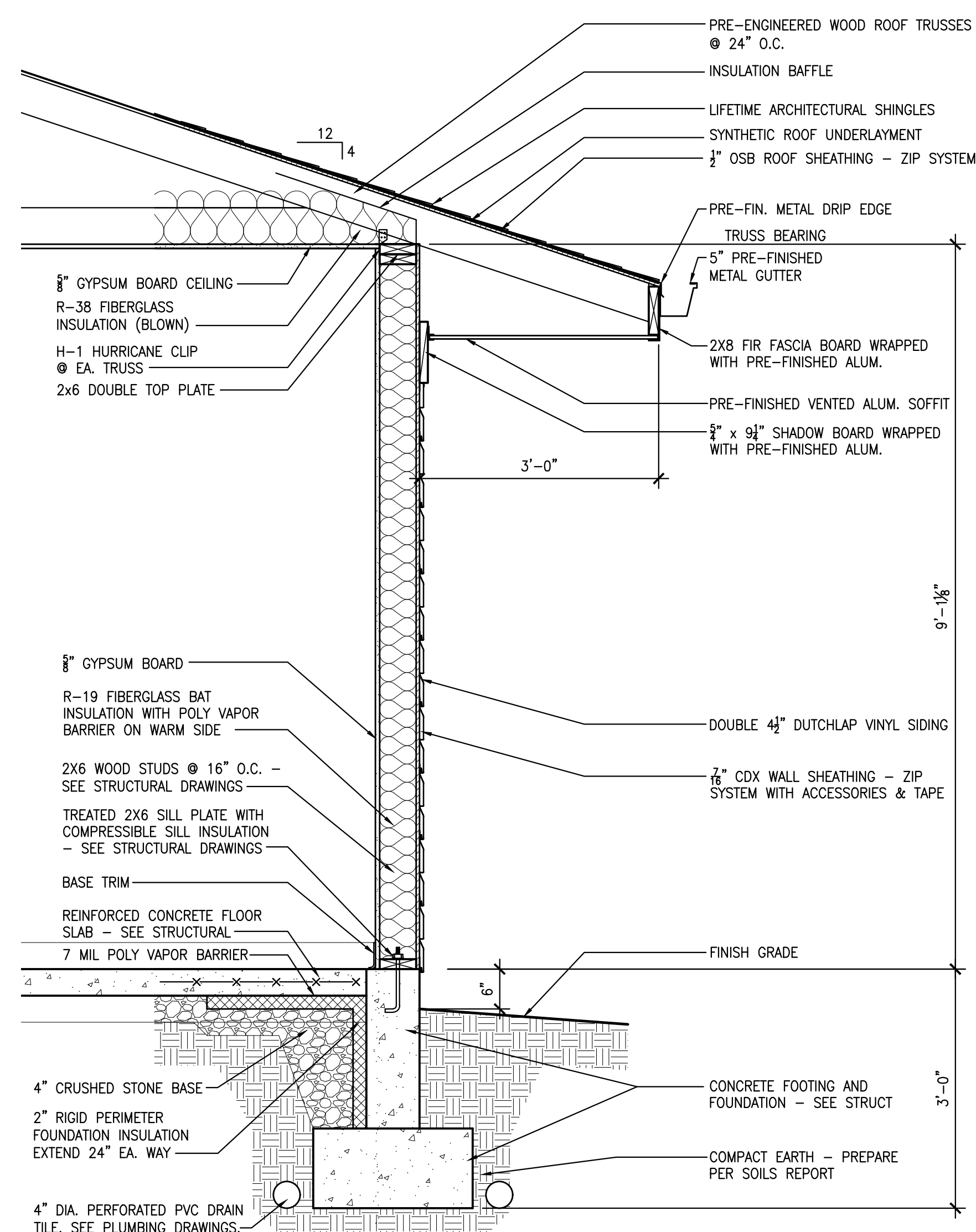
4 WINDOW JAMB / SHUTTER DETAIL

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



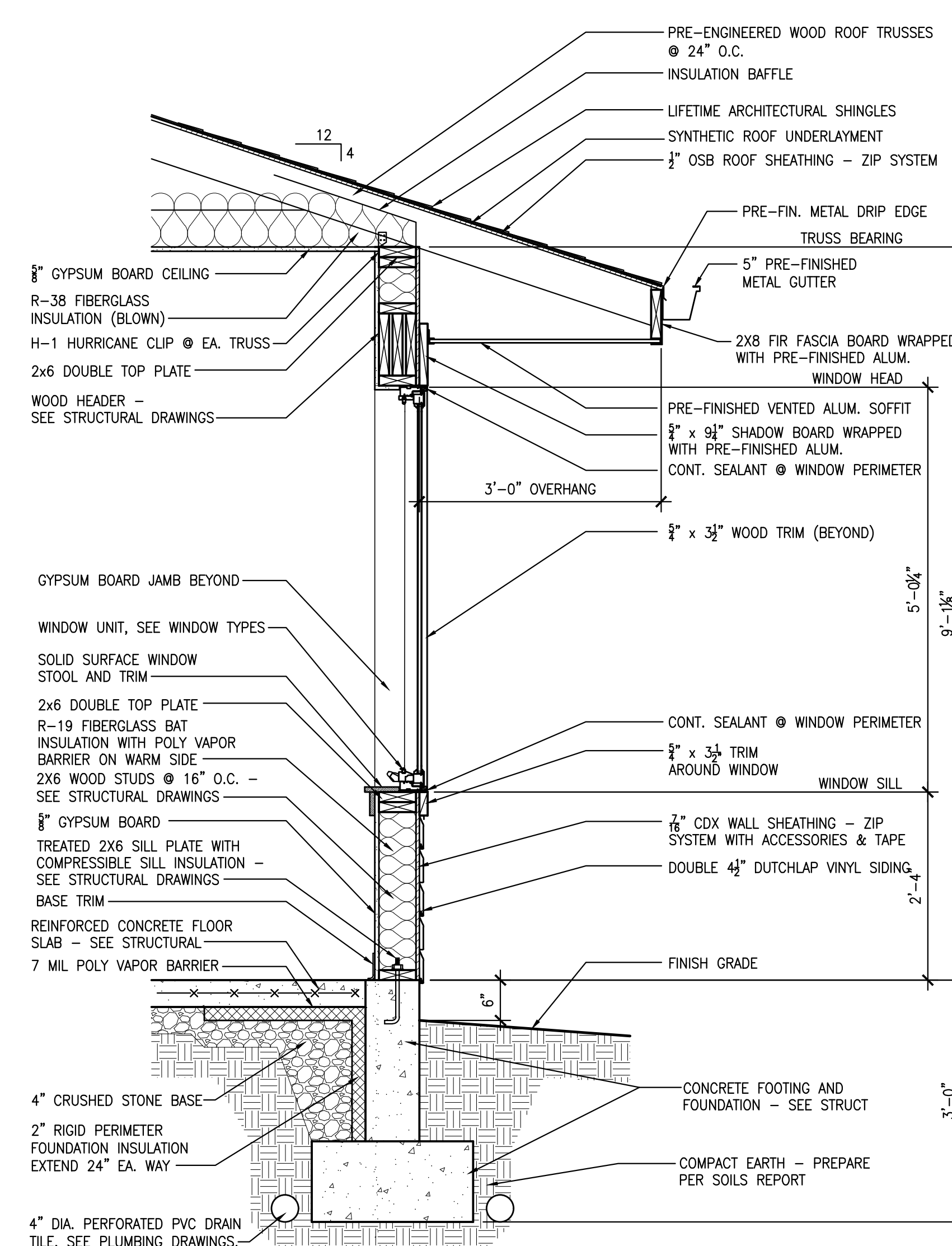
1 WALL SECTION

A4.1 | A4.1 SCALE: 3/4" = 1'-0"



2 WALL SECTION

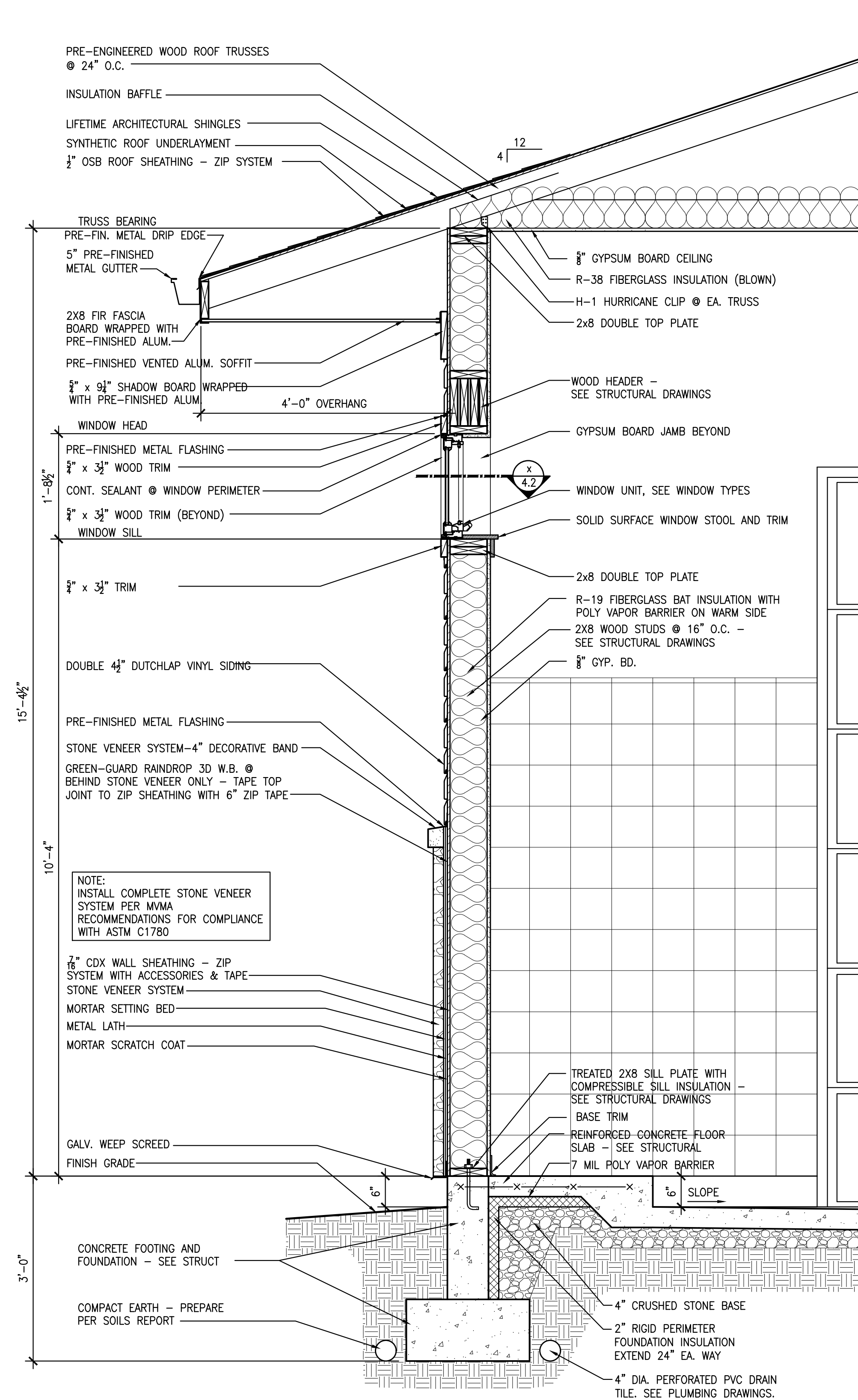
A4.1 SCALE: 3/4" = 1'-0"



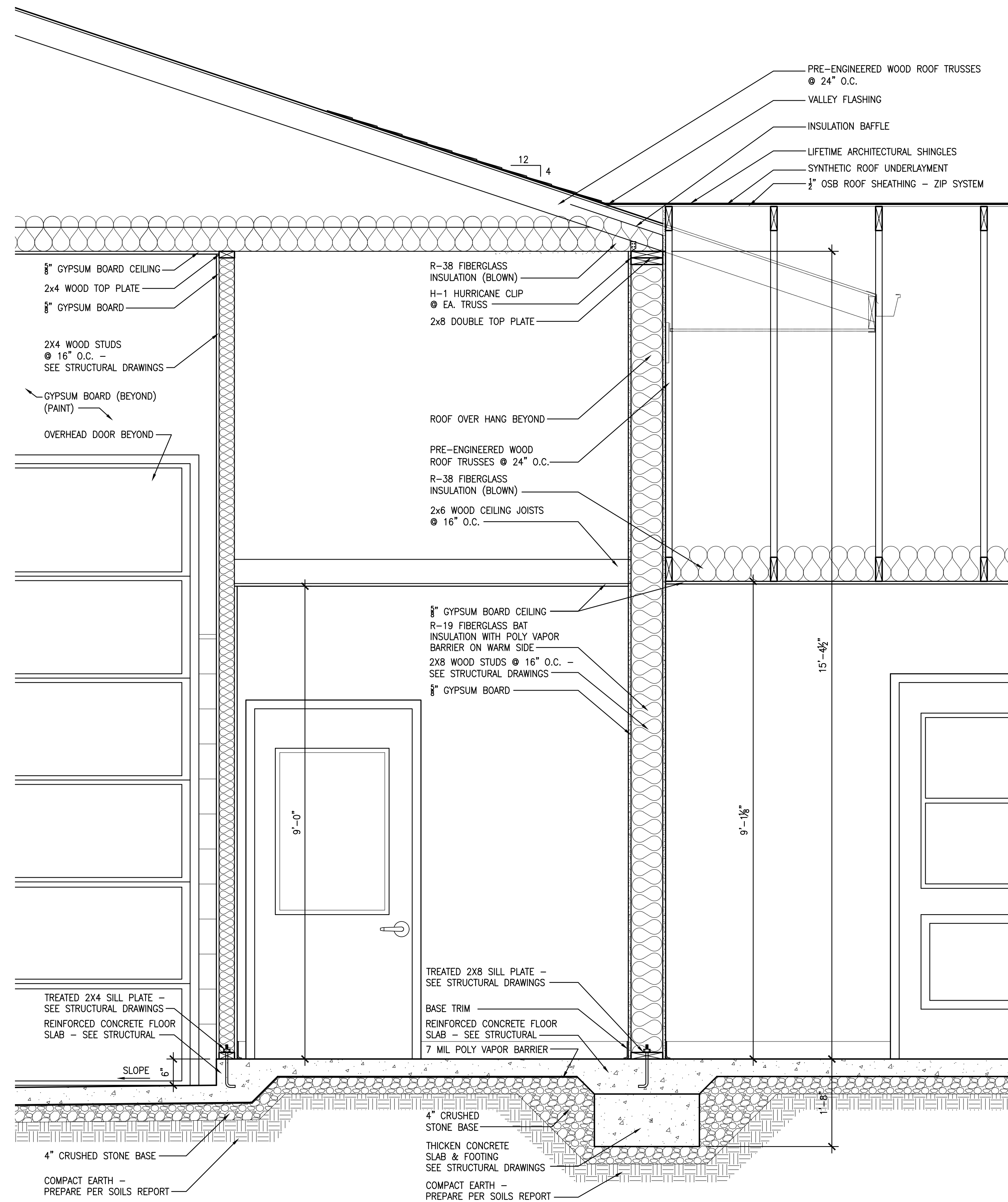
3 WALL SECTION

A4.1 | A4.1 SCALE: 3/4" = 1'-0"

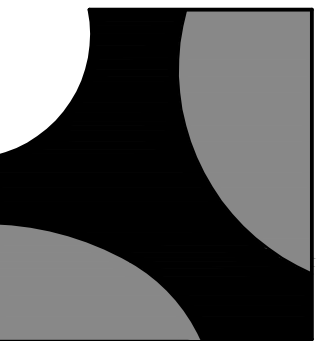
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1 WALL SECTION
A4.2|A4.2 SCALE: 3/4" = 1'-0"



2 WALL SECTION
A4.2|A4.2 SCALE: 3/4" = 1'-0"



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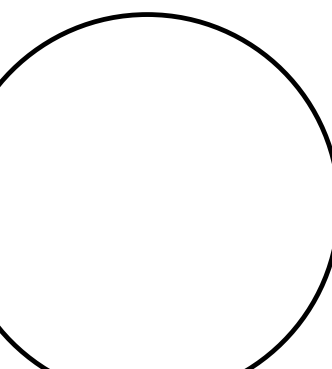
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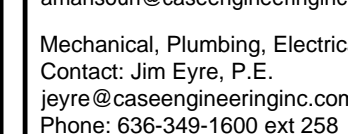


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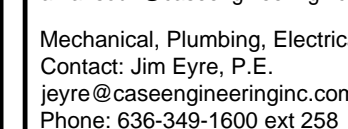
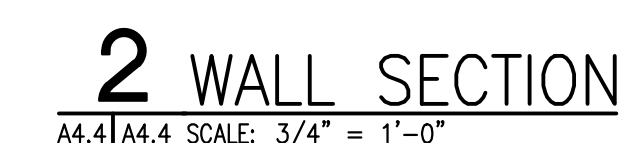
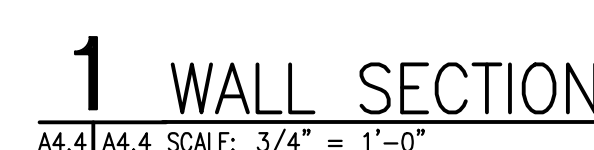
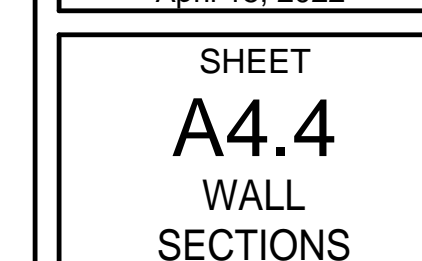
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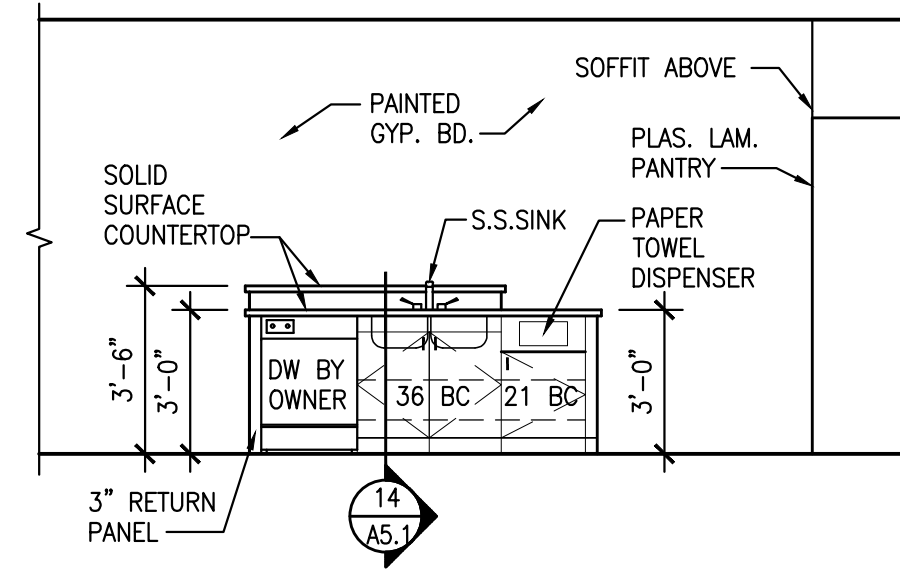
SHEET
A4.2
WALL
SECTIONS



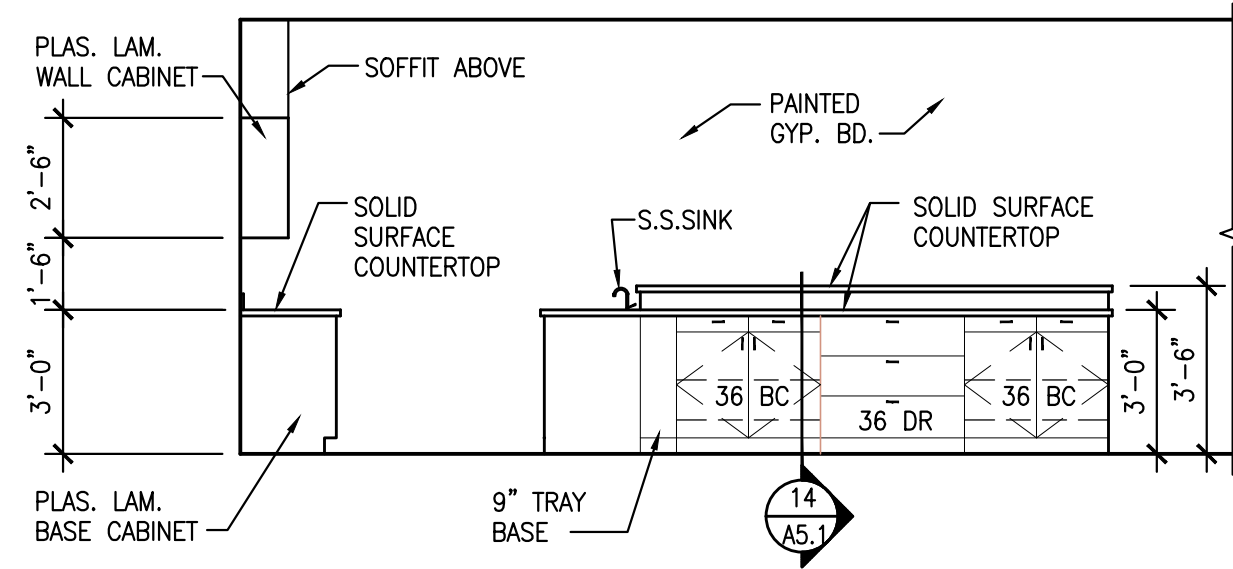
SHEET
A4.3
WALL
SECTIONS



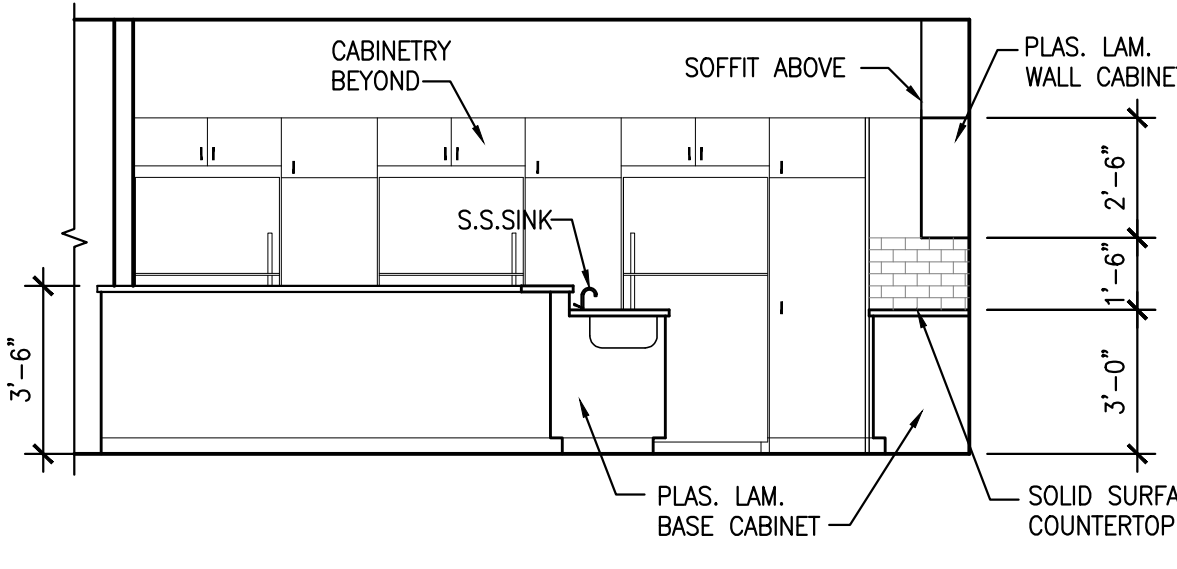
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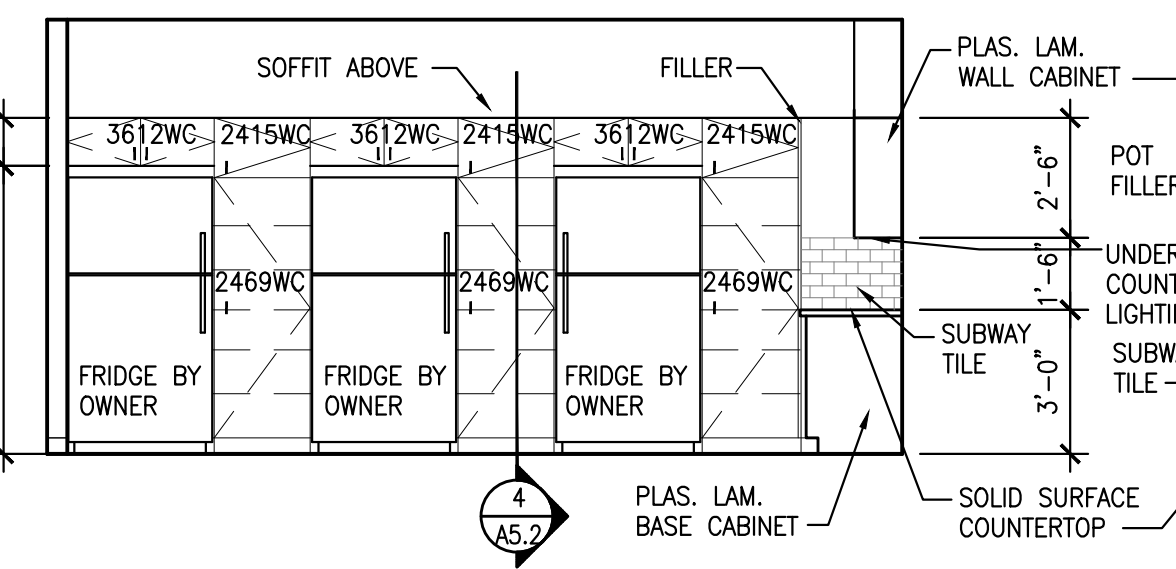
1 KITCHEN CABINETS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



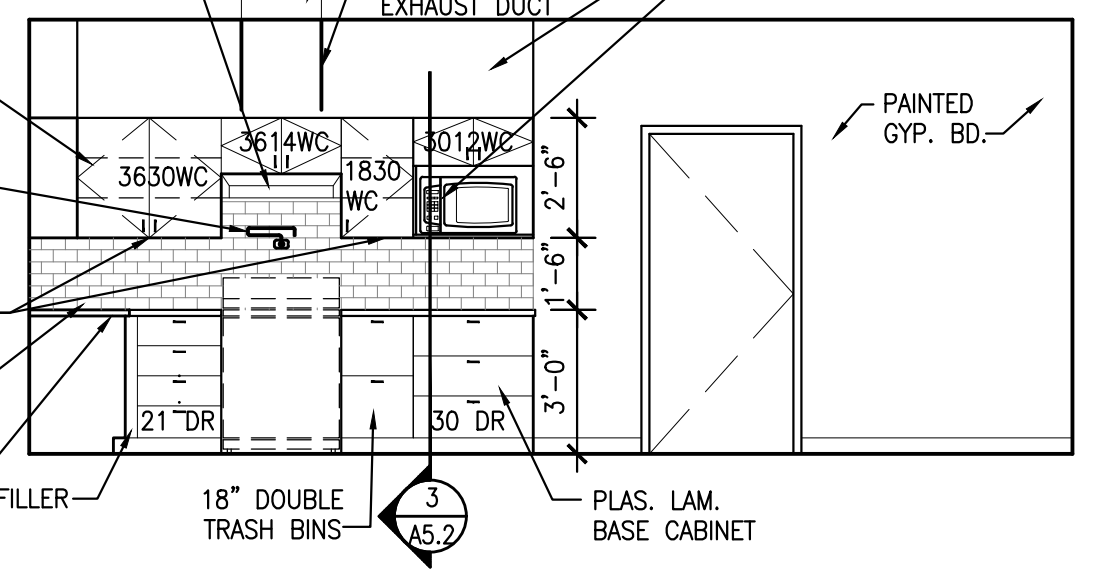
2 KITCHEN CABINETS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



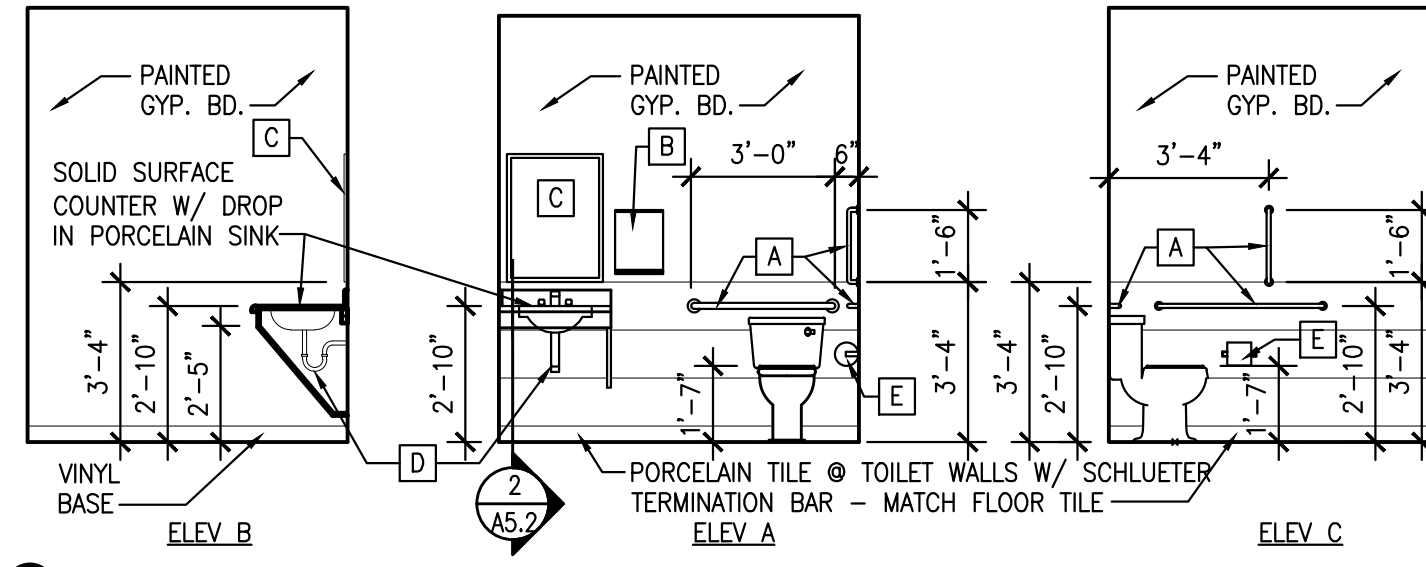
3 KITCHEN CABINETS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



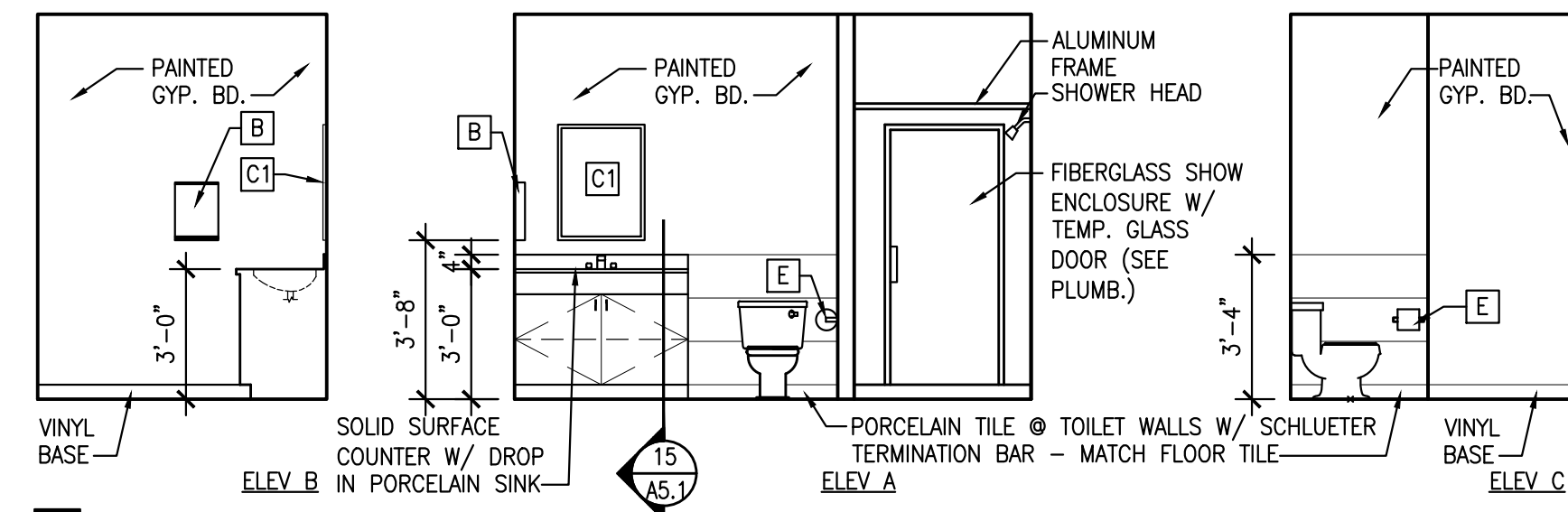
4 KITCHEN CABINETS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



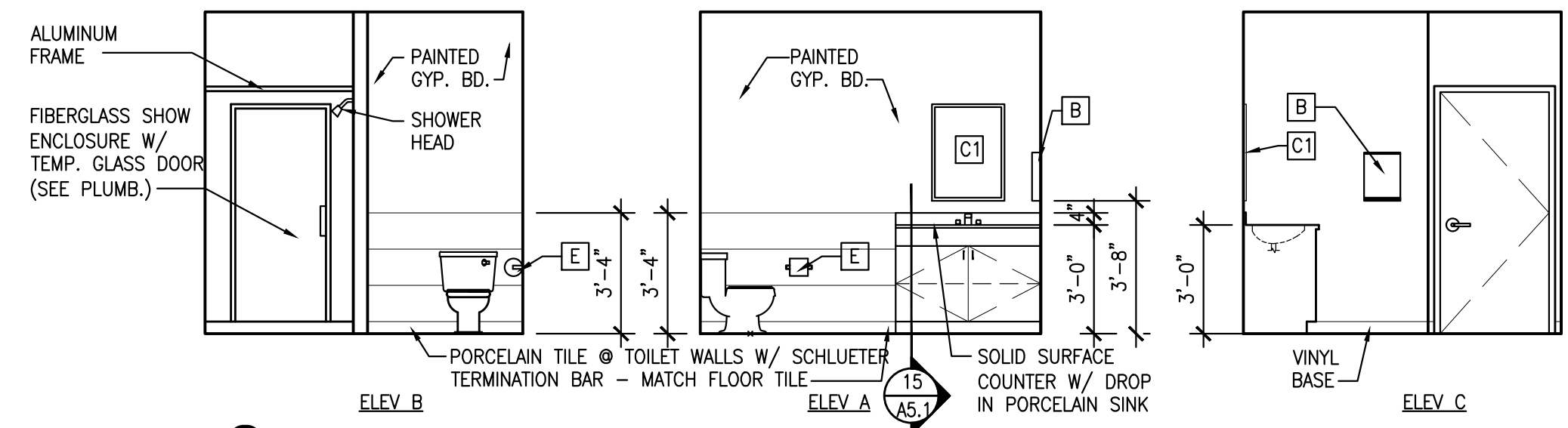
5 KITCHEN CABINETS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



6 H.C. TOILET ELEVATIONS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



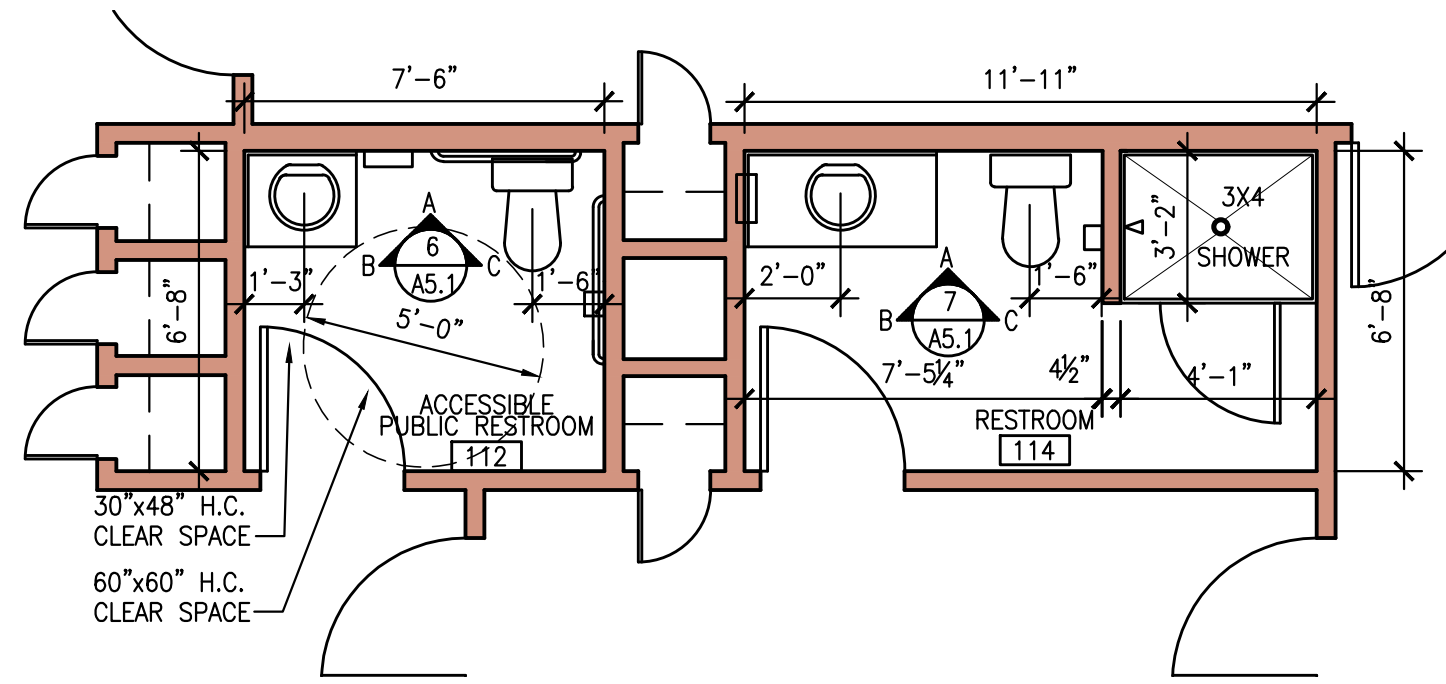
7 TOILET ELEVATIONS
A5.1 | A2.1 SCALE: 1/4"=1'-0"



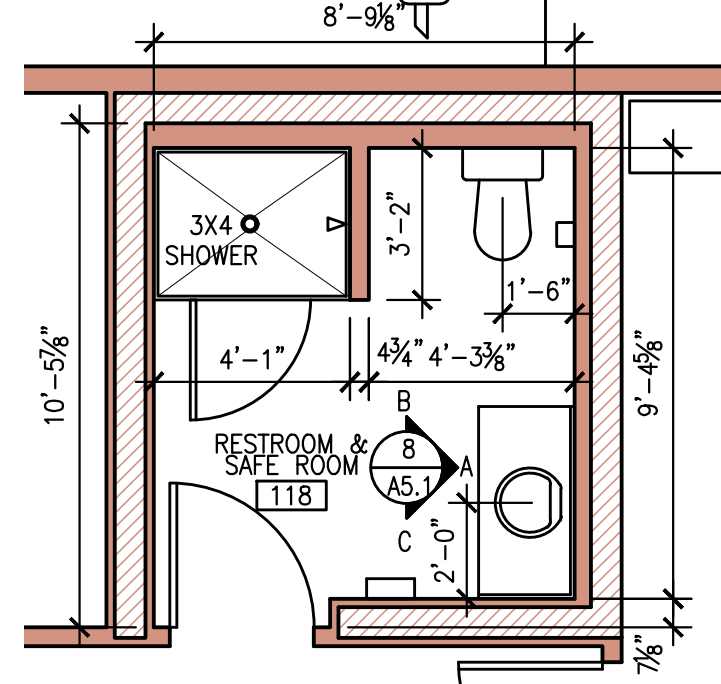
8 TOILET ELEVATIONS
A5.1 | A2.1 SCALE: 1/4"=1'-0"

TOILET ACCESSORIES	
NO.	ITEM
A	TOILET PAPER DISPENSER
B	PAPER TOWEL DISPENSER
C	20"x32" H.C. MIRROR
C1	20"x32" MIRROR
D	INSULATE PIPING PER ADA
E	H.C. GRAB BARS

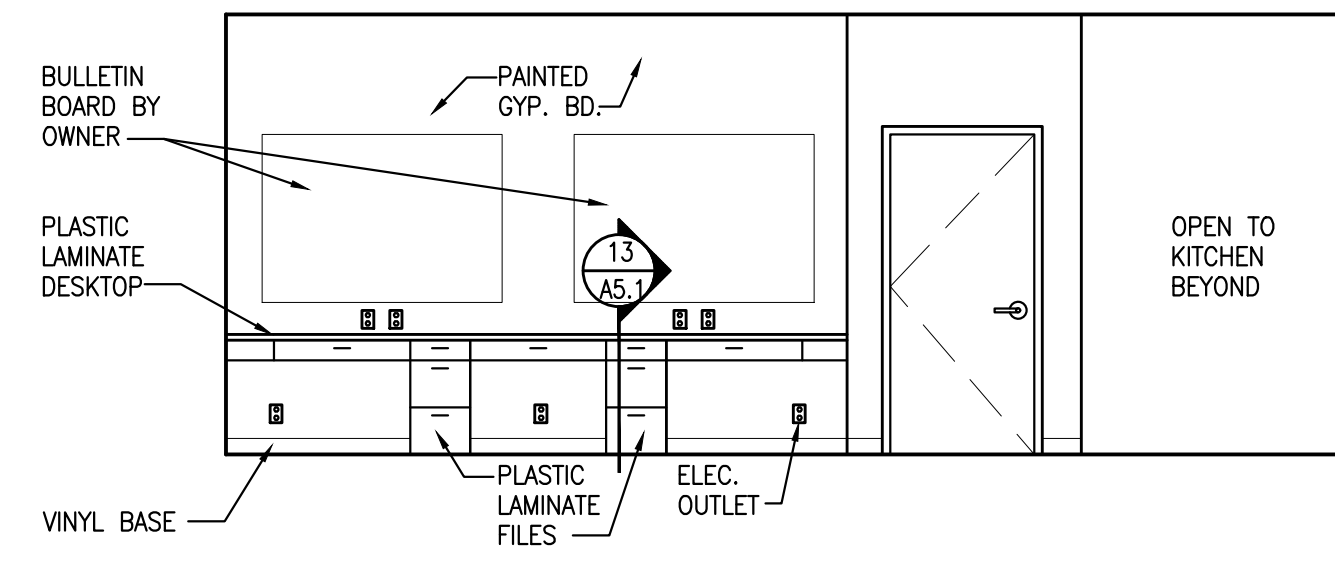
- NOTES:
- ALL TOILET ACCESSORIES TO BE PROVIDED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE NOTED.
 - CONTRACTOR SHALL COORDINATE WITH OWNER ON OWNER PROVIDED AND CONTRACTOR INSTALLED ITEMS IN ORDER TO LOCATE REQUIRED BLOCKING.
 - PROVIDE WOOD BLOCKING FOR ATTACHMENT OF ALL MISC. RESTROOM ACCESSORIES INCLUDING MIRRORS, PAPER HANGER, PAPER TOWEL DISPENSER, SOAP DISPENSER, ETC.
 - PROVIDE THE REQUIRED TRAP SEAL PRIMER OR ICC APPROVED EQUAL FOR ALL NEW FLOOR DRAINS SUBJECT TO TRAP SEAL LOSS BY EVAPORATION.



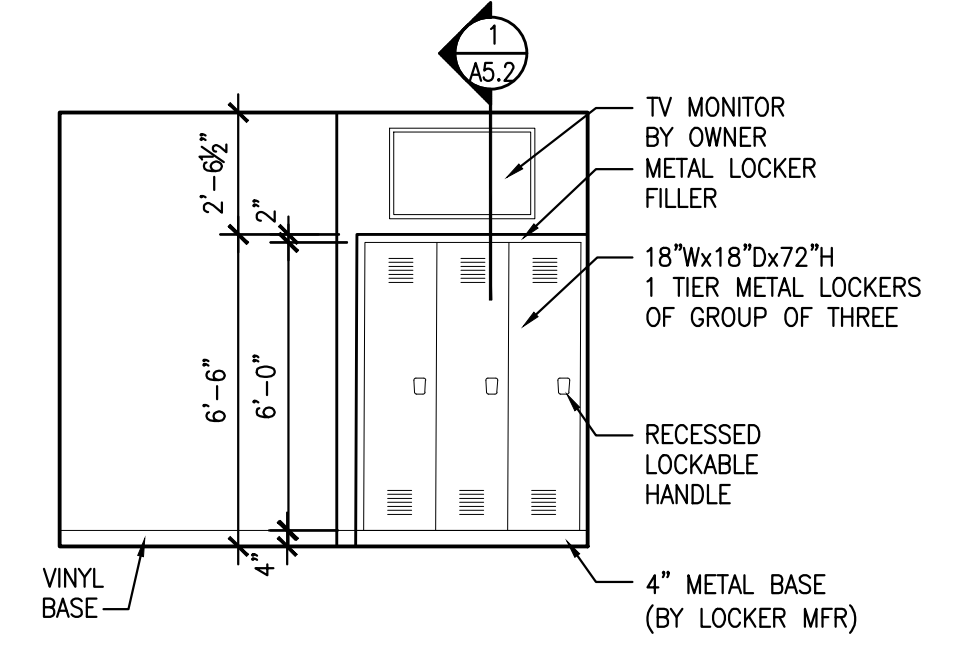
9 RESTROOM PLAN
A5.1 | A5.1 SCALE: 1/4"=1'-0"



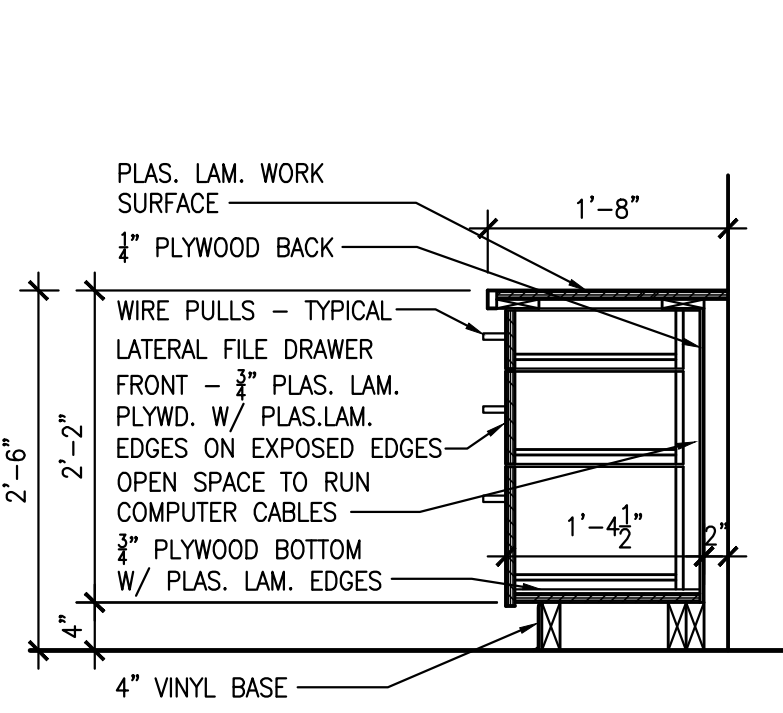
10 RESTROOM & SAFE ROOM PLAN
A5.1 | A5.1 SCALE: 1/4"=1'-0"



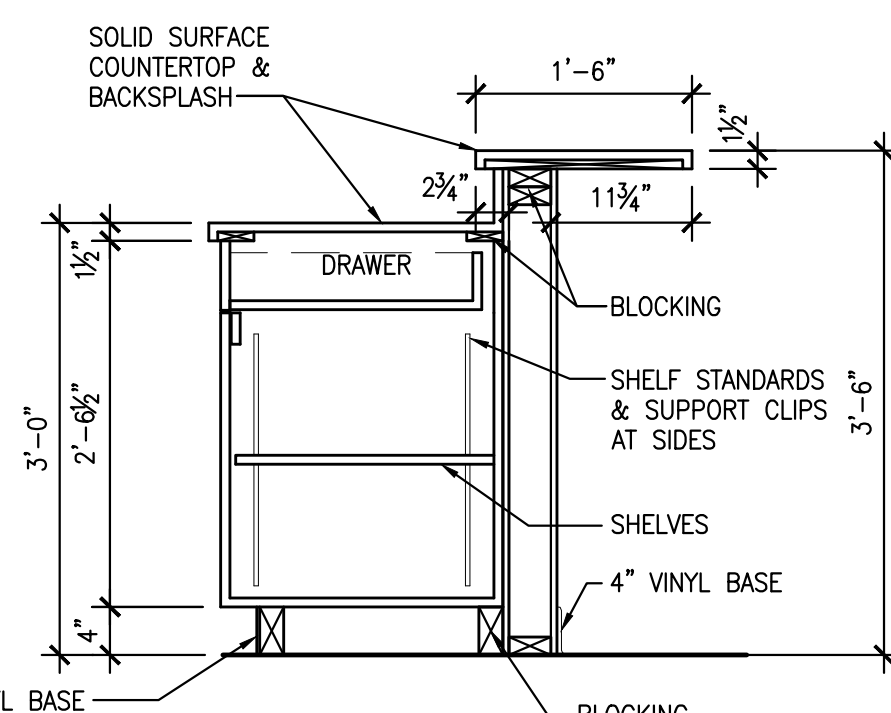
11 LIVING ROOM DESK ELEVATION
A5.1 | A2.1 SCALE: 1/4"=1'-0"



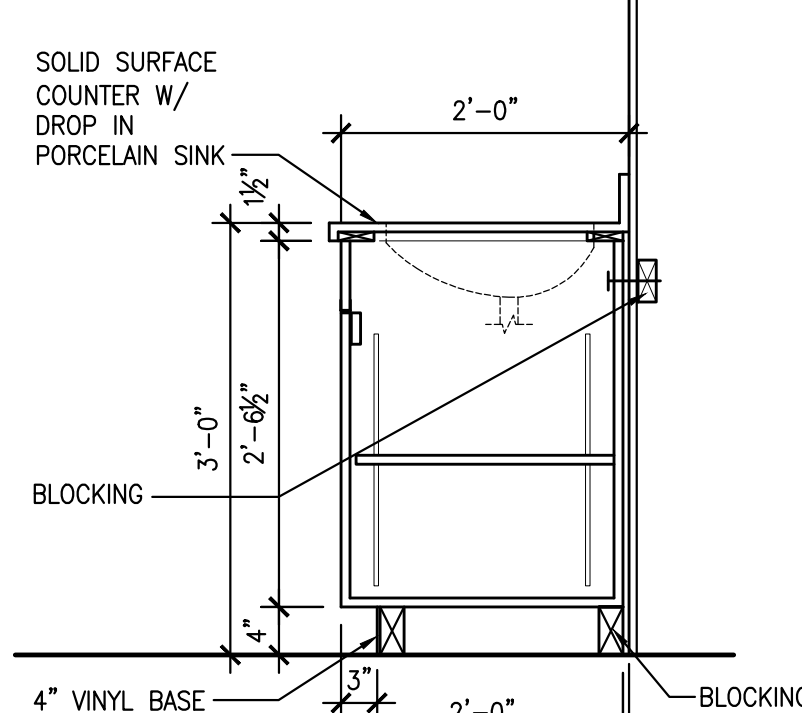
12 TYPICAL LOCKER ELEVATION
A5.1 | A2.1 SCALE: 1/4"=1'-0"



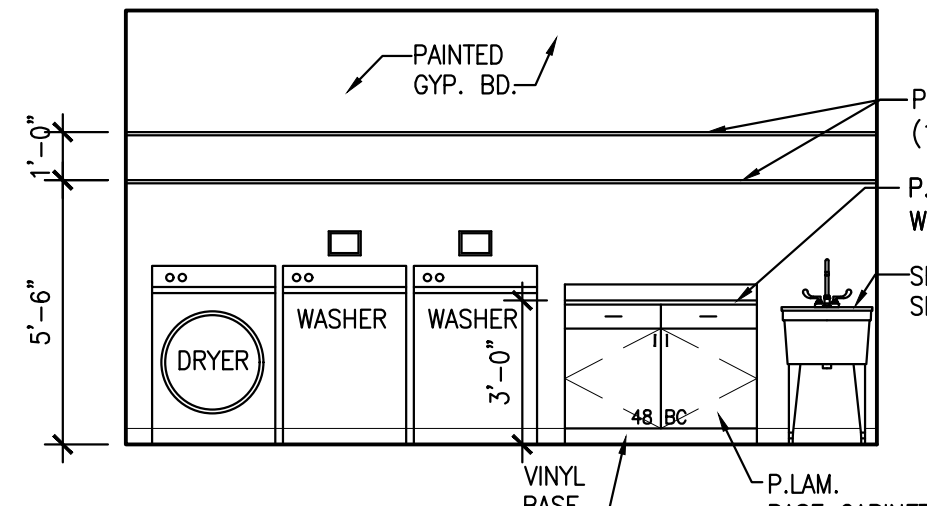
13 CABINET SECTION
A5.1 | A2.1 SCALE: 3/4"=1'-0"



14 CABINET SECTION
A5.1 | A2.1 SCALE: 3/4"=1'-0"



15 VANITY SECTION
A5.1 | A2.1 SCALE: 3/4"=1'-0"



16 LAUNDRY ROOM ELEVATION
A5.1 | A2.1 SCALE: 1/4"=1'-0"

KITCHEN AND VANITY CABINETS

KITCHEN AND VANITY CABINETS

KITCHEN AND VANITY CABINETS SHALL BE MANUFACTURED BY MERILLAT.
<https://www.merillat.com/> PHONE: 866-850-8557

CABINETS TO BE PREFINISHED AND COMPLETE WITH ALL HARDWARE AND AS DESCRIBED BELOW:

- MERILLAT BASICS, COLLINS, SQUARE RECESSED PANEL, STANDARD OVERLAY, CLOVE FINISH
- SHAKER FRONT CABINET DOORS (STANDARD SIZE)
- PULL HANDLES (NO KNOBS)
- DOVE TAIL DRAWERS
- SOFT CLOSE GUIDES
- TRASH CAN CABINET FOR TWO CANS AS SHOWN ON THE DRAWINGS
- POTS AND PANS DRAWERS AS SHOWN ON THE DRAWINGS
- COOKIE SHEET CABINET NEXT TO RANGE/STOVE WITH DIVIDER FOR TRAYS
- ADJUSTABLE SHELVES IN PANTRY CABINETS NEXT TO REFRIGERATORS
- ALL PANTRY DOORS TO HAVE LOCKS (3 SEPARATE KEYS)

EQUIPMENT COORDINATION SCHEDULE

EQUIPMENT LIST

STOVE (GAS)
DISHWASHER
REFRIGERATOR
RANGE / HOOD
GARBAGE DISPOSAL
WASHER
DRYER

PROVIDED BY OWNER	INSTALLED BY CONTRACTOR	INSTALLED BY CONTRACTOR	FINAL CONNECTION BY P.C.	FINAL CONNECTION BY E.C.
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New Base Station #2 Facility for:
Lincoln County Ambulance District
28 Walter Court
Moscow Mills, Missouri 63362

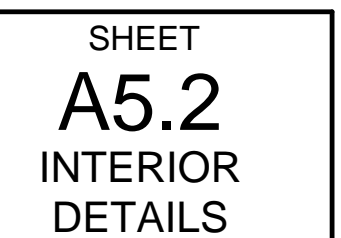
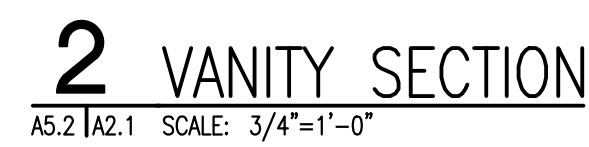
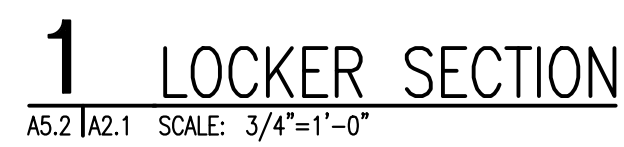
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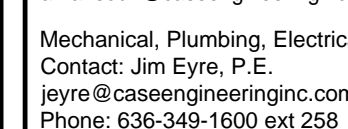
Michael J. Baalman
ARCHITECT
MO# A-2012004035

PROJECT MANAGER: JKL
DRAWN BY: JKL

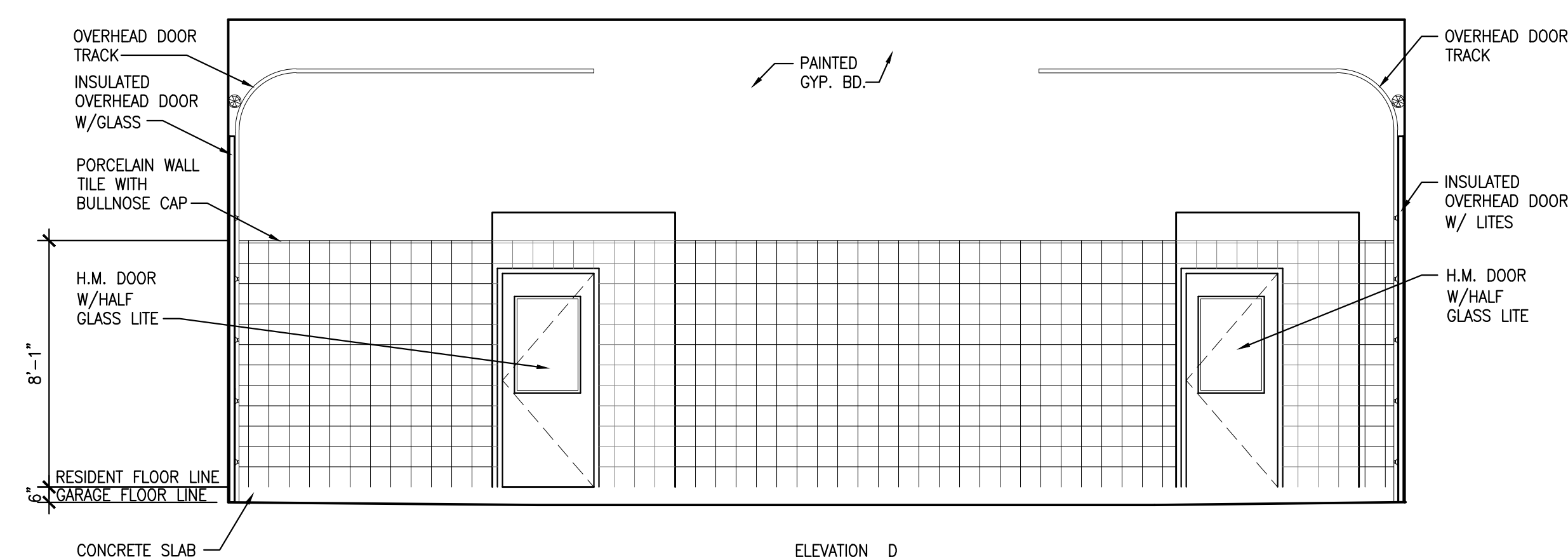
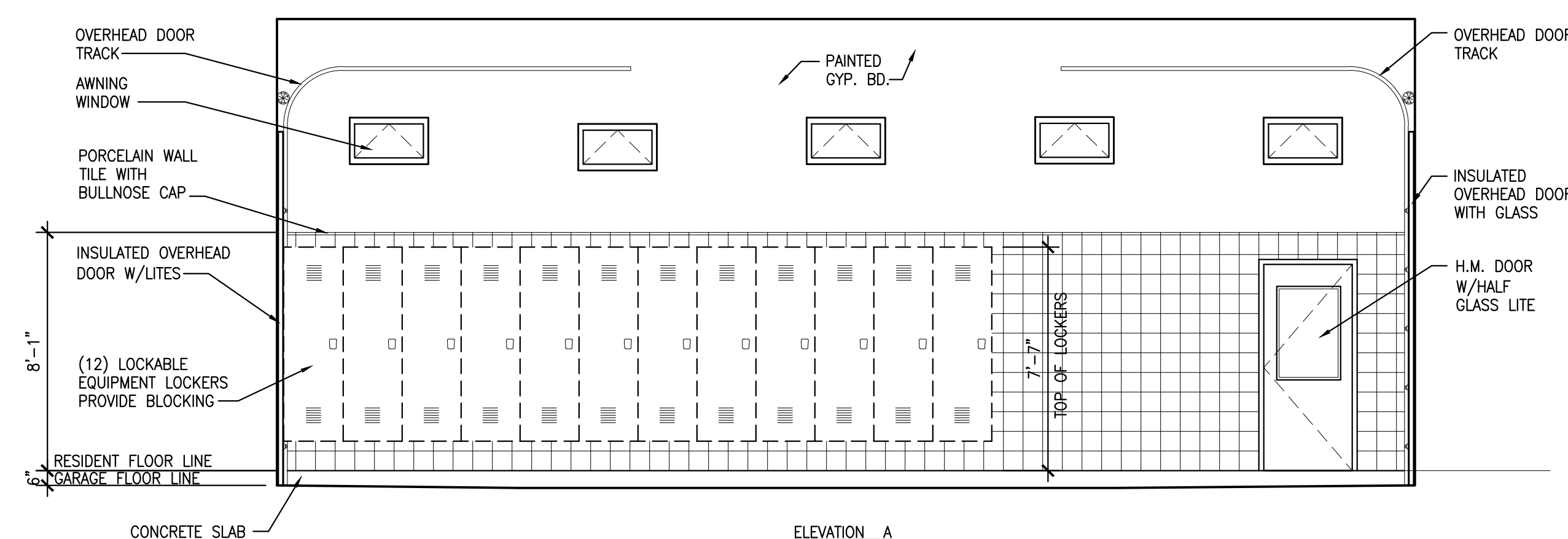
PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
A5.1
INTERIOR
ELEVATIONS





SHEET
A5.3
INTERIOR
APPARATUS BA
ELEVATIONS



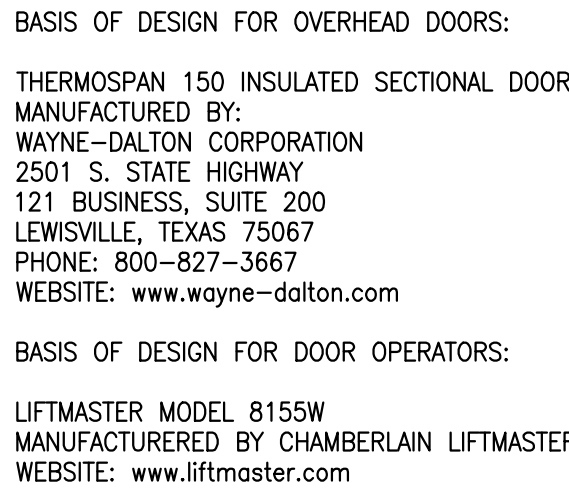
A5.3 | A2.1 SCALE: 1/4"=1'-0"

DOOR NO.	DOOR SIZE	DOOR TYPE	DOOR MAT.	FRAME MAT.	FRAME TYPE	FIRE RATED	HARDWARE	REMARKS
101	3'-0" x 6'-8" x 1 3/4"	D1	FG	WOOD	F1	0	1	INSWINGING FIBERGLASS DOOR WITH SIDELITE
103	3'-0" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F4	0	2	
104	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	4	
105	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	4	
107	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	2	
108A	3'-0" x 6'-8" x 1 3/4"	D4	SCW	WOOD	F4	0	2	
108B	3'-0" x 6'-8" x 1 3/4"	D4	SCW	WOOD	F4	0	2	
109	1'-6" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F5	0	4	
110	1'-6" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F5	0	4	
111	1'-6" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F5	0	4	
112	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	3	
113	1'-6" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F5	0	2	
114	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	3	
115	1'-6" x 6'-8" x 1 3/4"	D3	HCW	WOOD	F5	0	2	
116	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	2	
117	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	45 MIN	5	FIRE RATED DOOR AND HARDWARE
118	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	3	
119	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	4	
120	3'-0" x 6'-8" x 1 3/4"	D3	SCW	WOOD	F4	0	4	
122	3'-0" x 6'-8" x 1 3/4"	D2	FG	WOOD	F2	0	1	INSWINGING FIBERGLASS DOOR
123	3'-0" x 6'-8" x 1 3/4"	D6	HM	HM	F3	0	5	
124A	3'-0" x 6'-8" x 1 3/4"	D5	HM	HM	F3	45 MIN	8	FIRE RATED DOOR AND HARDWARE
124B	3'-0" x 6'-8" x 1 3/4"	D5	HM	HM	F3	45 MIN	8	FIRE RATED DOOR AND HARDWARE
125A	3'-0" x 6'-8" x 1 3/4"	D4	HM	HM	F3	45 MIN	7	FIRE RATED DOOR AND HARDWARE
125B	3'-0" x 6'-8" x 1 3/4"	D4	HM	HM	F3	45 MIN	7	FIRE RATED DOOR AND HARDWARE
125C	12'-0" x 12'-0"	D8	ALUM			0	6	INSULATED OVERHEAD DOOR WITH HARDWARE BY DOOR MANUFACTURER
125D	12'-0" x 12'-0"	D8	ALUM			0	6	INSULATED OVERHEAD DOOR WITH HARDWARE BY DOOR MANUFACTURER
125E	3'-0" x 6'-8" x 1 3/4"	D6	HM	HM	F3	0	1	
125F	12'-0" x 12'-0"	D7	ALUM			0	6	INSULATED OVERHEAD DOOR WITH HARDWARE BY DOOR MANUFACTURER
125G	12'-0" x 12'-0"	D7	ALUM			0	6	INSULATED OVERHEAD DOOR WITH HARDWARE BY DOOR MANUFACTURER

ALUM - ALUMINUM SCW - SOLID CORE WOOD FG - FIBERGLASS
HM - HOLLOW METAL HCW - HOLLOW CORE WOOD

1	EXTERIOR HARDWARE: 1 1/2 OR 3 PR. H.D. HINGES, EXTERIOR LOCKSET, THRESHOLD, DRIP EDGE, DOOR SWEEP, WEATHERSEAL, WALL STOP
2	INTERIOR PASSAGE SET: 1 1/2 PR. H.D. HINGES, PASSAGE SET, WALL STOP
3	RESTROOM SET: 1 1/2 PR. H.D. HINGES, LOCKSET, WALL STOP – PRIVACY OPERATION, DOOR CLOSER, KICKPLATE
4	INTERIOR PRIVACY SET: 1 1/2 PR. H.D. HINGES, LOCKSET, WALL STOP OR OVERHEAD STOP ON DOORS 109,110,111,113,115 – PRIVACY OPERATION
5	STOREROOM LOCKSET: 1-1/2 PR. H.D. HINGES, STOREROOM LOCK SET, KICKPLATE, WALL STOP
6	OVERHEAD DOOR HARDWARE BY DOOR MANUFACTURER
7	INTERIOR LOCKSET: 1 1/2 PR. H.D. HINGES, LOCKSET, DOOR CLOSER, KICKPLATE, WALL STOP
8	INTERIOR LOCKSET: 1 1/2 PR. H.D. HINGES, LOCKSET, KICKPLATE, WALL STOP

1. ALL WOOD DOORS TO BE A PLAIN SLICED WHITE BIRCH DOOR. OWNER TO SELECT FINISH COLOR.
2. VERIFY ALL DOOR HARDWARE REQUIREMENTS WITH OWNER.
3. ALL LATCHING INTERIOR DOORS TO HAVE LEVER TYPE ADA APPROVED ACCEPTABLE HARDWARE UNLESS OTHERWISE NOTED.
4. ALL HANDICAPPED ACCESSIBLE ROOM DOORS ARE REQUIRED TO HAVE A MINIMUM OF 12" CLEARANCE ON PUSH SIDE AND 18" CLEARANCE ON PULL SIDE.
5. VERIFY ALL HARDWARE WITH OWNER AND HARDWARE SUPPLIER PRIOR TO INSTALLATION.
6. ALL EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.

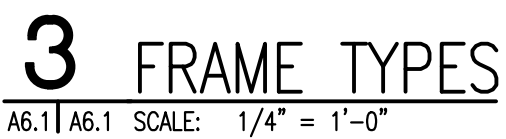


The drawing shows a building elevation with four windows labeled W1, W2, W3, and W4. A horizontal line represents the floor level.

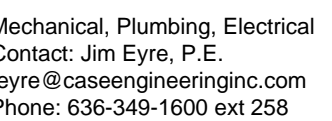
- Window W1:** A double casement window with a horizontal bar at the midpoint. Dimensions: 8'-8" wide and 5'-0" high. The mounting bracket is 2'-10" above the floor line.
- Window W2:** A double casement window. Dimensions: 3'-4" wide and 5'-0" high. The mounting bracket is 2'-10" above the floor line.
- Window W3:** A double casement window with a horizontal bar at the midpoint. Dimensions: 6'-0" wide and 5'-0" high. The mounting bracket is 2'-10" above the floor line.
- Window W4:** A small double casement window. Dimensions: 2'-8" wide and 1'-8" high. The mounting bracket is 10'-4" above the floor line.

Below each window is a description: "PROJECT-OUT ALUM. CLAD WOOD CASEMENT WINDOW W/HORIZ. BAR AT MIDPOINT" for W1, W2, and W3, and "PROJECT-OUT ALUM. CLAD WINDOW" for W4.

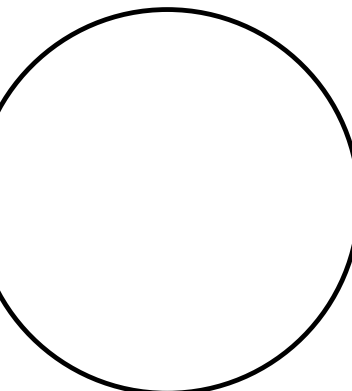
2 WINDOW TYPES



1. SEE GENERAL NOTES ON THE COVER SHEET FOR MORE INFORMATION.
2. SEE FLOOR PLAN SHEET A2.1 FOR WINDOW LOCATIONS.
3. WOOD DOORS TO BE MACHINED FOR MORTISED HARDWARE AT THE FACTORY.
4. WOOD DOOR CONSTRUCTION AND FINISH:
 - FACES: A GRADE VENEER
 - SPECIES: WHITE BIRCH
 - CUT: PLAIN SLICED
 - CORE: PARTICLEBOARD (MINERAL CORE AT FIRE RATED DOORS)
 - BEVEL: 3 DEG. BOTH STILES
 - UNDERCUT: $\frac{3}{4}"$ AT BOTTOM; $\frac{1}{4}"$ AT TOP AND SIDES
 - GLASS, GLAZING AND INSTALLATION OF GLASS BY FACTORY.
 - ALL FIRE RATED DOORS TO HAVE A LABEL.
 - ALL DOORS TO BE PRE-FINISHED TO ONE OF MANUFACTURER'S STANDARD COLORS.
5. ALL DOOR FRAMES TO BE WELDED.
6. PAINT EXTERIOR DOORS TO MATCH WINDOWS.
7. ALUMINUM CLAD WOOD WINDOWS TO BE PELLA, LIFESTYLE SERIES WINDOWS. NO SUBSTITUTIONS.
8. ALUMINUM CLAD WOOD WINDOWS HAVE STAINED WOOD PICTURE FRAME JAMB CASING ON THE INTERIOR SIDE.
 - WOOD FRAME AND SASH, FACTORY FABRICATED AND ASSEMBLED.
 - EXTERIOR FINISH: METAL CLAD, FACTORY FINISHED, COLOR: T.B.D.
 - INTERIOR FINISH: COLOR T.B.D.
 - SCREENS: PROVIDE FUL SCREENS FOR INSIDE OF CASEMENT WINDOWS.
9. PROVIDE WINDOWS WITH WOOD TRIM AND WOOD APRON.
10. ALL WINDOWS EXCEPT W4 MEET MINIMUM CLEAR OPENING OF 24" HIGH X 20" WIDE AND 5'-0" SQ. FT.
11. GLASS TYPES:
 - a. ALL INTERIOR GLAZING TO BE 1-INCH INSULATED SOLARBAN 60 SOLAR CONTROL LOW-E GLASS.
 - b. PROVIDE TEMPERED GLAZING AS REQUIRED BY 2015 IBC.
12. HORIZONTAL LOUVER BLINDS: PROVIDE HORIZONTAL SLAT LOUVER BLINDS AT WINDOWS MARKED W1, W2 AND W3. BASIS OF DESIGN IS LEVOLOR; FAUX WOOD BLINDS. BLINDS TO BE HUNG FROM FULL-WIDTH HEADRAIL WITH FULL-WIDTH BOTTOM RAIL. SLATS: INCH WALNUT SPECIES, SQUARE SLAT CORNERS, MANUAL OPERATION WITH LIFT CORD AND CONTROL WAND FOR RAISING AND LOWERING BY CORD WITH FULL RANGE LOCKING; BLADE ANGLE ADJUSTABLE BY CONTROL WAND.



**Lincoln County
Ambulance District**
28 Walter Court
Moscow Mills, Missouri 63362

[illegible]

SHEET
A6.1
DOOR AND
WINDOW TYPES
& SCHEDULE

CONCRETE NOTES

1. ALL CONCRETE WORK INCLUDING FORMING, REINFORCING, MIXING, PLACING, FINISHING AND CURING SHALL BE DONE IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318, AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301 LATEST EDITIONS.
2. IT SHALL BE THE RESPONSIBILITY OF THE MIX DESIGN SUPPLIER TO PROPORTION MIXES APPROPRIATELY TO REACH THE REQUIRED PROPERTIES NOTED, AND SHALL BE APPROPRIATE FOR THEIR INTENDED USE. ADMIXTURES MEETING ASTM C494 ARE OPTIONAL. HOWEVER, AIR-ENTRAINING ADMIXTURES MEETING ASTM C260 SHALL BE USED FOR CONCRETE EXPOSED TO THE EXTERIOR OR FREEZE-THAW CYCLES.
3. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR EACH INTENDED USE ON THE PROJECT FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD. CONTENTS OF THE MIX DESIGN SHALL COMPLY WITH, AND INCLUDE ALL INFORMATION REQUIRED BY, ACI 318, CHAPTER 5 (FOR 2011 AND EARLIER CODE EDITIONS), & CHAPTER 26 (FOR 2014 CODE EDITION). THIS INCLUDES, BUT IS NOT LIMITED TO NUMBER OF TESTS AND AGE OF TESTS INCLUDED IN THE MIX DESIGN REPORT.
4. ALL CONCRETE DENSITY SHALL BE NORMAL WEIGHT (145 pcf +/- 5) UNLESS OTHERWISE INDICATED.
5. FLY ASH ALLOWANCES:

• 20% MAXIMUM BY WEIGHT OF CEMENTITIOUS IN FOOTINGS

• 15% MAXIMUM BY WEIGHT OF CEMENTITIOUS MATERIAL IN SLABS

• 0% (NONE) ALLOWED IN SLABS TO RECEIVE SHAKE ON HARDENERS
6. MACRO SYNTHETIC FIBER: POLYPROPYLENE/POLYETHYLENE SYNTHETIC MACRO FIBER COMPLYING WITH ASTM C1116 TYPE 3, MINIMUM 2 INCH LENGTH, ASPECT RATIO 50 TO 90.

A. BASIS OF DESIGN: EUCLID CHEMICAL COMPANY (THE) TUFSTRAND SF; WWW.EUCLIDCHEMICAL.COM OR APPROVED EQUAL.

B. FIBER MANUFACTURER SHALL HAVE ISO 9001 CERTIFICATION.

C. MACRO SYNTHETIC FIBER SHALL BE TESTED IN CONCRETE TO MEET THE REQUIREMENTS OF ICC-ES383.
7. COORDINATE CONCRETE WORK WITH THAT OF OTHER TRADES TO ALLOW FOR SETTING OF SLEEVES, ACCESSORIES, ETC.
8. ALL REINFORCING STEEL, ANCHOR RODS, DOWELS, AND INSERTS SHALL BE WELL-SECURED IN POSITION PRIOR TO PLACING CONCRETE. DO NOT "WET SET" OR "FLOAT" INTO CONCRETE.
9. TEST CYLINDERS WILL BE REQUIRED, AND RECORDS OF RESULTS SHALL BE SUBMITTED TO ENGINEER OF RECORD. PROVIDE A MINIMUM OF (4) 6"x12" CYLINDERS FOR TESTING (1 AT 7 DAYS, 2 AT 28 DAYS, ONE SPARE). ALTERNATIVELY, PROVIDE A MINIMUM (5) 4"x8" CYLINDERS FOR TESTING (1 AT 7 DAYS, 3 AT 28 DAYS, ONE SPARE). SLUMP TESTS ARE RECOMMENDED.
10. CONSTRUCTION JOINTS IN CONCRETE INDICATED WITH A ROUGH, CLEAN SURFACE SHALL HAVE A 1/4" AVERAGE AMPLITUDE.
11. ALL COLD JOINTS SHALL BE ROUGHENED AND CLEANED PRIOR TO PLACING CONCRETE.
12. SLUMP: CONCRETE MIXES SHALL BE PROPORTIONED TO ACHIEVE A MAXIMUM SLUMP OF 8" FOR CONCRETE CONTAINING HIGH RANGE WATER REDUCING ADMIXTURE. 6" FOR CONCRETE CONTAINING A MID-RANGE WATER REDUCING ADMIXTURE. MIXES SHALL HAVE A WATER SLUMP OF 2"-3" (3" TO 4" FOR CONCRETE RECEIVING A "DRY-SHAKE" HARDENER). MAXIMUM 4" WATER SLUMP FOR ALL OTHER CONCRETE.
13. AIR CONTENT: ALL CONCRETE EXPOSED TO FREEZING AND THAWING AND/OR REQUIRED TO BE WATER TIGHT SHALL HAVE AN AIR CONTENT OF 4.5% TO 7.5%. ALL INTERIOR SLABS AND ALL SLABS TO RECEIVE DRY-SHAKE SHALL HAVE A MAXIMUM AIR CONTENT OF 3%.
14. DEPOSIT AND CONSOLIDATE CONCRETE FOR FLOORS AND SLABS IN A CONTINUOUS OPERATION, WITHIN LIMITS OF CONSTRUCTION JOINTS, UNTIL PLACEMENT OF A PANEL OR SECTION IS COMPLETE.

A. CONSOLIDATE CONCRETE DURING PLACEMENT OPERATIONS, SO CONCRETE IS THOROUGHLY WORKED AROUND REINFORCEMENT AND OTHER EMBEDDED ITEMS AND INTO CORNERS.

B. MAINTAIN REINFORCEMENT IN POSITION ON CHAIRS DURING CONCRETE PLACEMENT.

C. SCREED SLAB SURFACES WITH A STRAIGHT EDGE AND STRIKE OFF TO CORRECT ELEVATIONS.

D. UTILIZE A VIBRATORY SCREED FOR CONCRETE THAT WILL RECEIVE DIAMOND POLISH FINISH. KEEP VIBRATING SCREED MOVING CONTINUOUSLY ACROSS SURFACE. DO NOT STOP SCREED IN ANY ONE PLACE WHILE VIBRATING.

E. SLOPE SURFACES UNIFORMLY TO DRAINS WHERE REQUIRED.

F. BEGIN INITIAL FLOATING USING BULL FLOATS OR DARBIES TO FORM A UNIFORM AND OPEN-TEXTURED SURFACE PLANE BEFORE EXCESS BLEED WATER APPEARS ON THE SURFACE. DO NOT FURTHER DISTURB SLAB SURFACES BEFORE STARTING FINISHING OPERATIONS.

G. THE USE OF HIGHWAY STRAIGHT EDGES OR "BUMP CUTTERS" ON CONCRETE SLABS TO BE POLISHED IS PROHIBITED.
15. CONCRETE TO BE POLISHED SHALL RECEIVE A HARD STEEL TROWEL FINISH WITH A MINIMUM OF (3) SEPARATE PASSES WITH POWER TROWEL TO ACHIEVE CLASS 5 FINISH AS DESCRIBED IN ACI 302R. HAND TROWELLING SHALL BE LIMITED TO ONLY THOSE AREAS NECESSARY. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

A. INSPECT TROWELLING MACHINE AND REMOVE ACCUMULATED MORTAR PRIOR TO EACH PASS.

B. FINISH SURFACE SHALL BE FREE OF TROWEL MARKS, BURN MARKS AND MOTTLING.
16. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE FOLLOWING:

A. "N" IN COLUMN INDICATES THE ADDITION OF ENTRAINED AIR IS NOT REQUIRED, BUT IS PERMITTED. AIR ENTRAINMENT IS NOT RECOMMENDED FOR SURFACES TO BE GIVEN A SMOOTH, DENSE, HARD-TROWELED FINISH. COORDINATE FINISH REQUIREMENTS WITH ARCHITECTURAL DRAWINGS AND/ OR SPECIFICATIONS.

TABLE NOTES

1. SYNTHETIC MACRO FIBER REINFORCEMENT MAY BE USED TO REPLACE REINFORCING STEEL IN CONCRETE SLABS ON GRADE AND TOPPING SLABS WHERE INDICATED ON DRAWINGS. SUBMIT FIBER MANUFACTURER'S DOCUMENTATION INDICATING THAT PROPOSED FIBER DOSAGE WILL PROVIDE A MINIMUM Fe3 VALUE AS FOLLOWS IN ACCORDANCE WITH ASTM C 1609. UNDER NO CIRCUMSTANCES SHALL DOSAGE RATE BE LESS THAN 3.0lbs PER CUBIC YARD OF CONCRETE IN SLABS ON GRADE AND TOPPING SLABS (4lbs PER CUBIC YARD FOR SLABS ON METAL DECK). SYNTHETIC MACRO FIBER REINFORCEMENT IS PROHIBITED IN CONCRETE TO RECEIVE POLISHED CONCRETE FINISHES.

A. SLABS ON GRADE AND TOPPING SLABS

1. 4" DEEP SLAB: Fe3 = 94psi

2. 6" DEEP SLAB: Fe3 = 128psi

3. 8" DEEP SLAB: Fe3 = 180 psi

REINFORCED MASONRY NOTES

1. MASONRY CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PORTIONS OF TMS 602, "SPECIFICATIONS FOR MASONRY STRUCTURES". CONCRETE MASONRY UNITS SHALL BE CLASSIFIED AS NORMAL WEIGHT DENSITY AND CONFORM TO ASTM C90. THE MASONRY ASSEMBLY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, (fm) = 2,500 psi.
2. GROUT IN ACCORDANCE WITH ASTM C476 MAY BE FINE OR COARSE, SELF-CONSOLIDATING OR CONVENTIONAL (AT CONTRACTOR'S OPTION), AND SHALL BE PROPORTIONED TO ACHIEVE THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF MASONRY. GROUT SHALL HAVE A DRY DENSITY OF 135 +/- 3pcf. NORMAL WEIGHT AGGREGATES IN GROUT SHALL COMPLY WITH ASTM C404. MORTAR SHALL COMPLY WITH PROPORTION SPECIFICATION REQUIREMENTS OF ASTM C270.
3. ALL MASONRY WALLS SHALL HAVE CONTINUOUS HORIZONTAL BOND BEAMS WITH SIZE AND SPACING PER MASONRY WALL ELEVATIONS. VERTICAL REINFORCEMENT IS PER FOUNDATION PLAN.
4. SUPPLY VERTICAL REINFORCING IN MINIMUM LENGTHS EQUAL TO 4'-0" PLUS LAP SPLICE LENGTH PER TABLE.
5. WALL CONSTRUCTION LIFTS FOR REINFORCING BARS AND INSULATION FILL SHALL BE PER ACI 530.
6. PORTLAND CEMENT AND LIME TYPE "S" MORTAR IS REQUIRED FOR ALL MASONRY UNLESS NOTED OTHERWISE.
7. SEE ARCHITECTURAL PLANS FOR LOCATION AND DETAIL OF CONTROL JOINTS AND EXPANSION JOINTS. SEE TYPICAL CONTROL JOINT DETAIL FOR GUIDANCE.
8. VERTICAL REINFORCING IS TO BE CONTINUOUS ABOVE LINTELS TO TOP OF WALL. WELD REBAR OR WHS PER SECTIONS TO TOP OF STEEL LINTEL. GROUT CELLS SOLID AROUND REINFORCING AS NOTED ON PLANS.
9. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DETAILS OF DOOR AND WINDOW OPENINGS FOR SPECIAL COURSING AND OTHER MASONRY DETAILS. THE INFORMATION SHOWN ON THE STRUCTURAL DRAWINGS IS INTENDED TO DEFINE THE STRUCTURAL REQUIREMENTS ONLY.
10. ALL BOLTS, ANCHORS, ETC., INSERTED IN THE WALLS SHALL BE GROUTED SOLID INTO POSITION WITH MINIMUM EDGE DISTANCE FROM ANCHOR TO EDGE OF GROUTED PORTION OF CMU IN ALL DIRECTIONS AS NOTED ON DRAWINGS.
11. REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED ON DRAWINGS. REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706.
12. WHEN A FOUNDATION DOWEL DOES NOT LINE UP WITH A VERTICAL BLOCK CORE, IT SHALL NOT BE SLOPED MORE THAN (ONE HORIZONTAL IN 6 VERTICAL), OR 10 DEGREES. DOWEL MAY BE GROUTED INTO CELL IN VERTICAL ALIGNMENT, EVEN THOUGH IT IS IN AN ADJACENT CELL TO THE VERTICAL WALL REINFORCING, AS LONG AS THE CENTER-TO-CENTER SPACE BETWEEN THE WALL REINFORCING AND THE DOWEL DOES NOT EXCEED 8 INCHES. DOWELS SHALL NOT BE BENT INTO ALIGNMENT AFTER CONCRETE HAS BEEN CAST.
13. SPLICED REINFORCING SHALL BE LAPPED ACCORDING TO "MASONRY LAP SPLICE LENGTH" TABLE. SPLICED BARS SHALL BE WIRED TOGETHER. CONTRACTOR MAY OPT TO STAGGER SPLICES.
14. VERTICAL BARS SHALL BE HELD IN POSITION AT TOP AND BOTTOM AND AT INTERVALS NOT EXCEEDING 192 DIAMETERS OF THE REINFORCING OR 10'-0"
15. REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE AND INSPECTED BEFORE GROUTING STARTS.
16. VERTICAL GROUTING MAY BE EITHER "LOW LIFT" OR "HIGH LIFT" AT THE CONTRACTOR'S OPTION.
17. VERTICAL CELLS THAT WILL BE GROUTED SHALL HAVE VERTICAL ALIGNMENT TO MAINTAIN A CONTINUOUS UNOBSTRUCTED CELL AREA NOT LESS THAN 2"x3".
18. GROUTING OF MASONRY BEAMS OVER OPENINGS SHALL BE DONE IN ONE CONTINUOUS OPERATION.
19. VERTICAL REINFORCING BARS SHALL MAINTAIN MINIMUM CLEARANCES AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:

1. INSIDE FACE OF MASONRY = 3/4"

2. ADJACENT BARS NOT SPLICED = 1" OR 1 BAR DIAMETER, WHICHEVER IS GREATER.
20. INSULATION INSERTS ARE NOT PERMITTED IN GROUTED CELLS.
21. PRISM TESTS IN ACCORDANCE WITH ASTM C1314 AND ASTM C140 SHALL BE PERFORMED WITH TEST REPORTS SENT TO ARCHITECT AND EOR FOR RECORD. REFER TO SPECIAL INSPECTIONS TABLE ITEM "EVALUATION OF STRENGTH" FOR ADDITIONAL INFORMATION.

MASONRY LAP SPLICE LENGTH NOTES

1. CONTRACTOR SHALL PROVIDE DEVELOPMENT AND REBAR SPLICE LENGTHS SHOWN IN THE TABLES AS A MINIMUM UNLESS INDICATED OTHERWISE IN STRUCTURAL DETAILS OR NOTES.
2. "SINGLE" INDICATES ONE BAR PER CELL. "DOUBLE" INDICATES TWO BARS PER CELL. SEE PLAN.

fm = 2,500 psi - MASONRY LAP SPLICE LENGTH TABLE (INCHES)						
BAR SIZE	CMU SIZE STD HOOK DEVELOPMENT LENGTH (IN)	8"	10"	10"	12"	12"
#3	5	12	12	12	12	12
#4	6	12	12	18	12	18
#5	8	18	14	28	12	28
#6	9	34	26	54	21	54
#7	10	47	36	76	36	76
#8	12	71	48	96	47	96

PRE-FABRICATED WOOD TRUSS NOTES

1. DESIGN AND FABRICATION SHALL BE IN ACCORDANCE WITH THE TRUSS PLATE INSTITUTE PUBLICATION "DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES", LATEST EDITION.
2. PROVIDE ALL PERMANENT TRUSS BRACING INDICATED ON DRAWINGS OR SPECIFIED BY TRUSS MANUFACTURER. IN ADDITION, PROVIDE TEMPORARY BRACING AS INDICATED IN THE TRUSS PLATE INSTITUTE BOOKLET "BRACING WOOD TRUSSES: COMMENTARY AND RECOMMENDATIONS BWT-76".
3. NO FIELD MODIFICATIONS OF TRUSSES ARE PERMITTED UNLESS FABRICATOR PROVIDES CALCULATIONS AND DRAWINGS SHALL BE SIGNED AND SEALED BY A REGISTERED ENGINEER (REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED).
4. REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

PRE-FABRICATED WOOD ROOF TRUSSES - DESIGN CRITERIA TABLE	
TOP CHORD	20 psf LIVE LOAD 10 psf DEAD LOAD SNOW LOAD AND WIND LOAD PER ROOF PLAN AND NOTES
BOTTOM CHORD	10 psf LIVE LOAD (NOT CONCURRENT WITH TOP CHORD LIVE LOAD) 8 psf DEAD LOAD
WIND UPLIFT	PER "DESIGN LOADS" ON THESE GENERAL NOTES
LOAD DURATION FACTOR	AS REQUIRED
TRUSS SPACING	PER PLAN
DEFLECTION LIMITS	L/240 MAXIMUM TOTAL LOAD L/360 MAXIMUM LIVE LOAD
CAMBER	75 PERCENT OF DEAD LOAD

SPECIAL INSPECTIONS

1. REFER TO THE SPECIAL INSPECTION TABLES FOR THE LIST OF ELEMENTS OF CONSTRUCTION THAT SHALL REQUIRE SPECIAL INSPECTION. THIS SHALL BE CONSIDERED A GUIDE, AND THE CONTRACTOR AND INSPECTOR SHALL REFER TO THE IBC FOR COMPLETE REQUIREMENTS, QUALIFICATIONS, EXCEPTIONS, AND SUBMITTALS. REFER TO IBC CHAPTER 17. THE OWNER SHALL BE RESPONSIBLE FOR EMPLOYING THE SPECIAL INSPECTION AGENCY. ANY "OBSERVATIONS" BY THE EOR WILL NOT BE TO PERFORM SPECIAL INSPECTIONS AND SHALL NOT BE INTERPRETED AS SUCH.
2. COPIES OF ALL INSPECTION REPORTS THAT REPORT COMPLIANCE SHALL BE SUBMITTED TO THE ARCHITECT OF RECORD, STRUCTURAL ENGINEER OF RECORD, AND BUILDING INSPECTOR WITHIN 7 CALENDAR DAYS OF COMPLETION OF THAT PORTION OF WORK. A MINIMUM OF ONE (1) PROGRESS REPORT PER MONTH FOR EACH TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD.
3. SPECIAL INSPECTOR SHALL INFORM ENGINEER OF RECORD IMMEDIATELY OF NON-COMPLIANCE WITH CONSTRUCTION DOCUMENTS OR APPROVED SUBMITTALS. CONTACT ENGINEER OF RECORD THE SAME DAY NON-COMPLIANCE IS DISCOVERED AND FOLLOW UP WITH AN OFFICIAL REPORT WITHIN 2 BUSINESS DAYS.
4. THE SPECIAL INSPECTIONS IDENTIFIED ON THE PLANS ARE IN ADDITION TO, AND NOT A SUBSTITUTE FOR THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY A BUILDING INSPECTOR.
5. SPECIAL INSPECTIONS ARE NOTED AS EITHER "CONTINUOUS" OR "PERIODIC". A "CONTINUOUS" INSPECTION REQUIRES THE PRESENCE OF A QUALIFIED INSPECTOR IN THE VICINITY OF THE WORK BEING PERFORMED FOR 100% OF THAT WORK. A "PERIODIC" INSPECTION REQUIRES PART-TIME OBSERVATION OF THE WORK BEING PERFORMED. THE INSPECTOR SHALL ALSO OBSERVE THE FINAL CONDITION OF THE WORK BEFORE IT IS CLOSED FROM VIEW.
6. WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED, IT SHALL BE THE RESPONSIBILITY OF THE AGENT TO EMPLOY A SUFFICIENT NUMBER OF SPECIAL INSPECTORS TO ASSURE THAT ALL WORK IS CONTINUOUSLY INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.

SPECIAL INSPECTIONS - CONCRETE TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
REINFORCEMENT	PERIODIC	INSPECT REINFORCEMENT (INCLUDING PRESTRESSING TENDONS) AND PLACEMENT; VERIFY CONFORMANCE WITH CONSTRUCTION DOCUMENTS, AND THAT BARS ARE FREE FROM MATERIALS THAT COULD PREVENT BOND, ARE ADEQUATELY LAPPED, SPLICED, TIED, AND SUPPORTED
ANCHOR INSTALLATION	PERIODIC	INSPECT CAST-IN-PLACE ANCHORS AND BOLTS
ANCHOR INSTALLATION	PERIODIC	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS NOT OTHERWISE SPECIFIED
MIX DESIGN	PERIODIC	VERIFY USE OF APPROVED MIX DESIGN
SAMPLING AND TESTING	CONTINUOUS	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTING; PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF THE CONCRETE
CONCRETE PLACEMENT	PERIODIC	VERIFY MAINTENANCE OF CURING TEMPERATURE AND TECHNIQUES
CONCRETE PLACEMENT	PERIODIC	INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED
CONCRETE PLACEMENT	CONTINUOUS	CONCRETE PLACEMENT

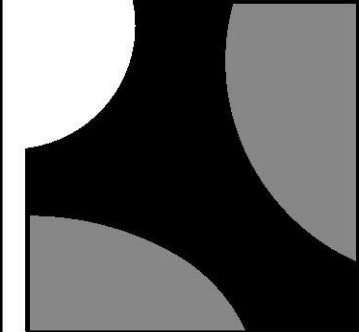
SPECIAL INSPECTIONS - SOILS AND FOUNDATIONS TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
SOILS	PERIODIC	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY; VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL; PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS; PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY
SOILS	CONTINUOUS	VERIFY USE OF PROPER MATERIALS, DENSITIES, LIFT THICKNESSES, AND COMPACTION OF FILL; VERIFY MATERIALS AND PROCEDURES COMPLY WITH THE GEOTECHNICAL REPORT

SPECIAL INSPECTIONS - OFF-SITE FABRICATION (INCLUDING PRE-MANUFACTURED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES, AND STEEL FABRICATING)		
ITEM	INSPECTION FREQUENCY	SCOPE
FABRICATION AND IMPLEMENTATION PROCEDURES	PERIODIC	VERIFY THAT FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS; REVIEW PROCEDURES FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENTS FOR THE FABRICATOR'S SCOPE OF WORK
NOTE	-	SPECIAL INSPECTION FOR OFF-SITE FABRICATION IS NOT REQUIRED FOR FABRICATORS APPROVED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH THE CODE

SPECIAL INSPECTIONS - WOOD TABLE		
ITEM	INSPECTION FREQUENCY	SCOPE
PREMANUFACTURED WOOD STRUCTURAL ELEMENTS AND ASSEMBLIES	-	SEE "OFF-SITE FABRICATION" SPECIAL INSPECTION TABLE
DIAPHRAGM AND SHEAR WALL	PERIODIC	WOOD SHEAR WALLS, SHEAR PANELS, AND DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING, AND OTHER FASTENING TO COMPONENTS OF THE MAIN LATERAL SYSTEM WHEN THE FASTENER SPACING IS LESS THAN OR EQUAL TO 4 INCHES ON CENTER

SPECIAL INSPECTIONS - MASONRY - LEVEL 1 INSPECTION (LEVEL B QUALITY ASSURANCE) FOR OCCUPANCY CATEGORY I, II, III STRUCTURES		
ITEM	INSPECTION FREQUENCY	SCOPE
REINFORCEMENT	PERIODIC	LAPPING AND SPLICING OF REBAR; LOCATION, PLACEMENT, GRADE, SIZE, AND TYPE OF REINFORCEMENT AND CONNECTORS
INSTALLATION OF MASONRY, GROUT, AND MORTAR	PERIODIC	CONSTRUCTION OF MORTAR JOINTS; SIZE AND LOCATION OF STRUCTURAL ELEMENTS; PROTECTION OF MASONRY IN COLD WEATHER (BELOW 40°F) OR HOT WEATHER (ABOVE 90°F); CLEAN GROUT SPACE
INSTALLATION OF MASONRY, GROUT, AND MORTAR	CONTINUOUS	GROUT PLACEMENT IN CELLS WITH STEEL REINFORCEMENT
MIXING OF MORTAR AND GROUT	PERIODIC	PROPORTIONS OF SITE-PREPARED MORTAR AND GROUT
ANCHORS	PERIODIC	GROUT PLACEMENT IN CELLS WITH STEEL REINFORCEMENT OR PRESTRESSING BONDED TENDONS
ANCHORS	PERIODIC	INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS PER THE REQUIREMENTS IN THEIR RESPECTIVE ICC-ES REPORTS
EVALUATION OF STRENGTH	CONTINUOUS	PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/ OR PRISMS; VERIFY fm PRIOR TO CONSTRUCTION. A "SET" IS HEREBY DEFINED AS A MINIMUM OF 4 PRISM SPECIMENS. A MINIMUM OF 1 SET SHALL BE PREPARED AND TESTED FOR EACH DAY MASONRY IS INSTALLED. TEST 1 PRISM AT 7 DAYS, 2 AT 28 DAYS, AND THE 4th PRISM AT THE EOR'S DIRECTION, IF REQUIRED. REPORT ALL TEST RESULTS TO THE ARCHITECT AND EOR WITHIN 3 WORKING DAYS OF TESTING.
MISCELLANEOUS	PERIODIC	COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED

CONCRETE TABLE					
INTENDED USE	MIN 28 DAY STRENGTH (psi)	MAX WATER-CEMENT RATIO	% TOTAL AIR LIMITS	MACRO SYNTHETIC FIBER (1)	% MAX SHRINKAGE @ 28 DAYS
INTERIOR SLAB ON GRADE	4,000	0.50	3	YES	0.04
FOOTING & FOUNDATION WALLS	4,000	0.48	4.5 TO 7.5 (WHERE EXPOSED TO EXT)	-	0.05
CONCRETE EXPOSED TO DE-ICERS	4,500	0.45	4.5 TO 7.5	-	0.05
ALL CONCRETE NOT OTHERWISE SPECIFIED	4,000	0.48	4.5 TO 7.5	-	0.05



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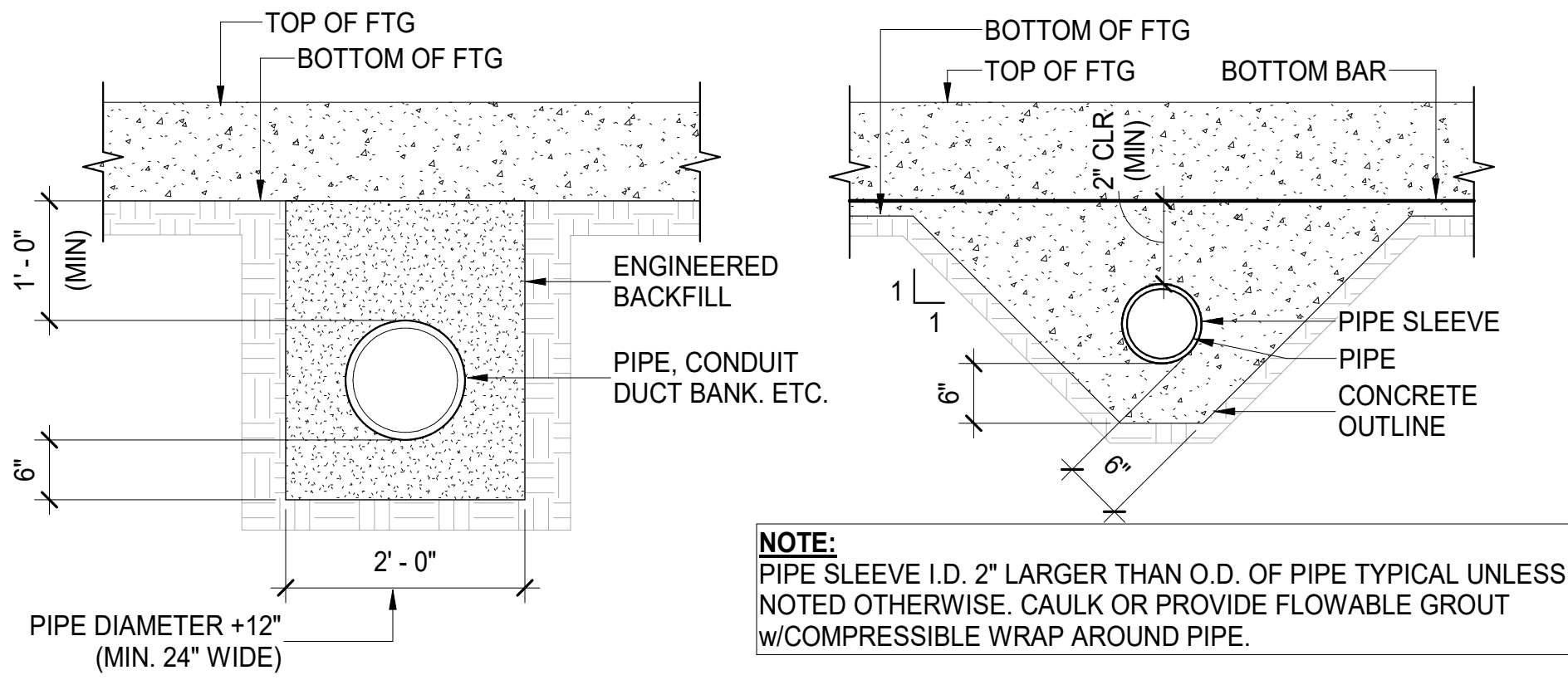


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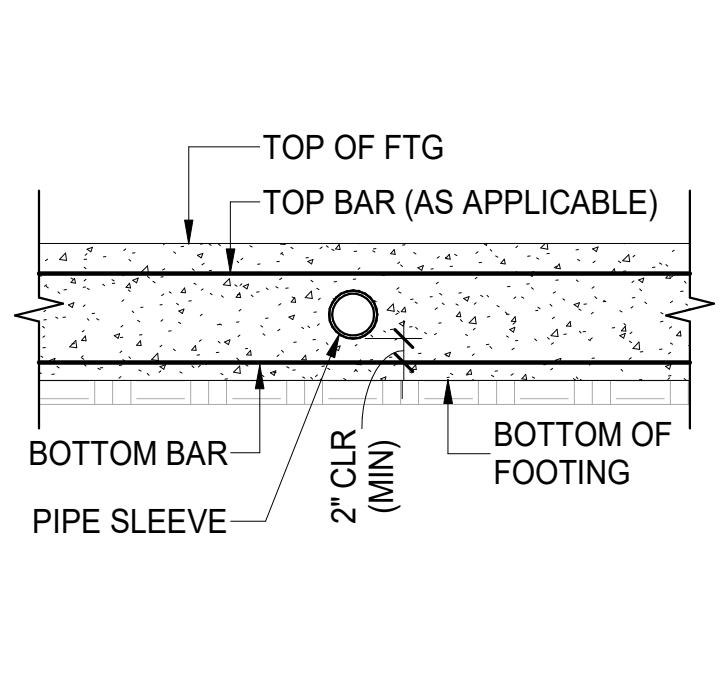
PROJECT MANAGER: CS
DRAWN BY: TJH

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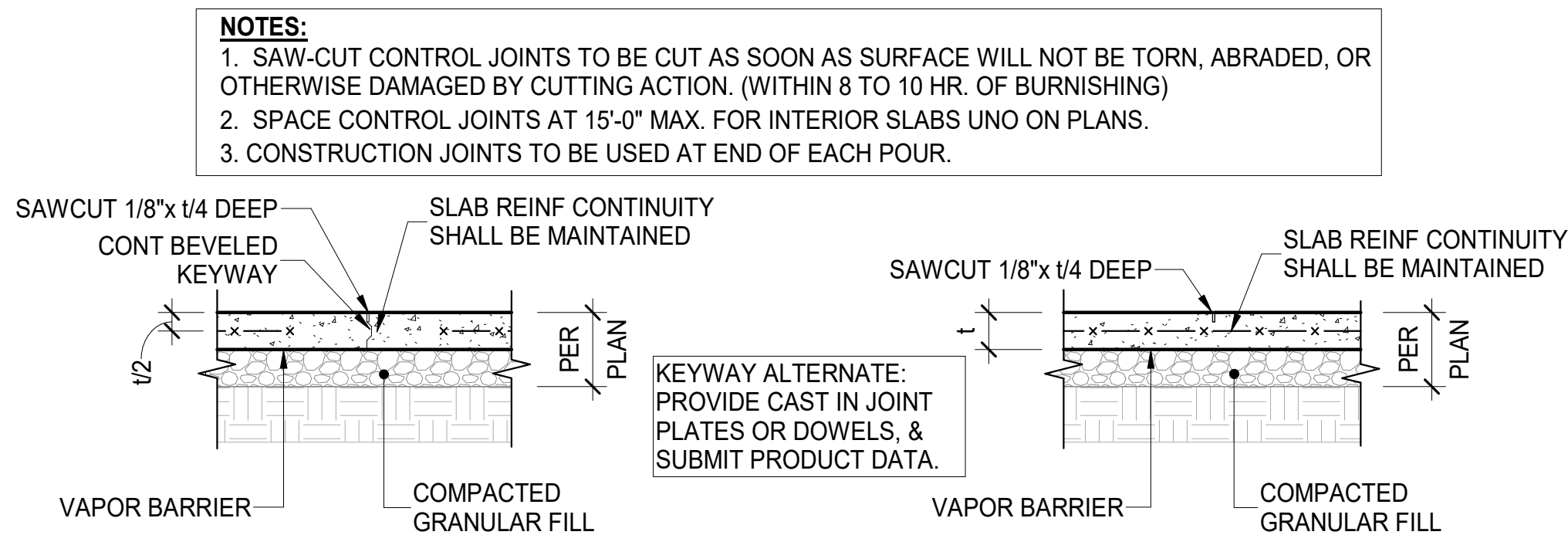
SHEET
S1.2
GENERAL NOTES &
SCHEDULES



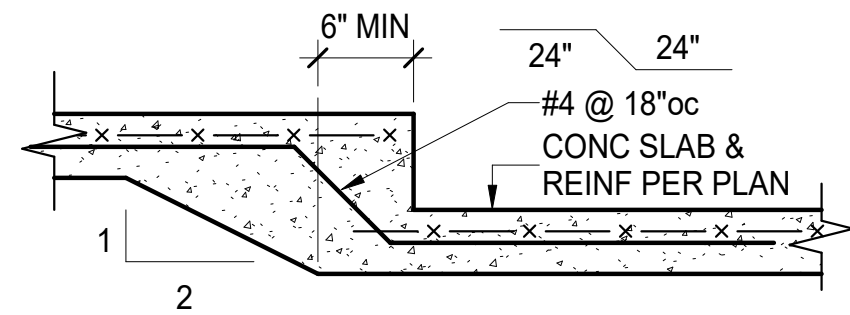
A TYP FOUNDATION PIPE PENETRATION DETAILS
S1.3 N.T.S.



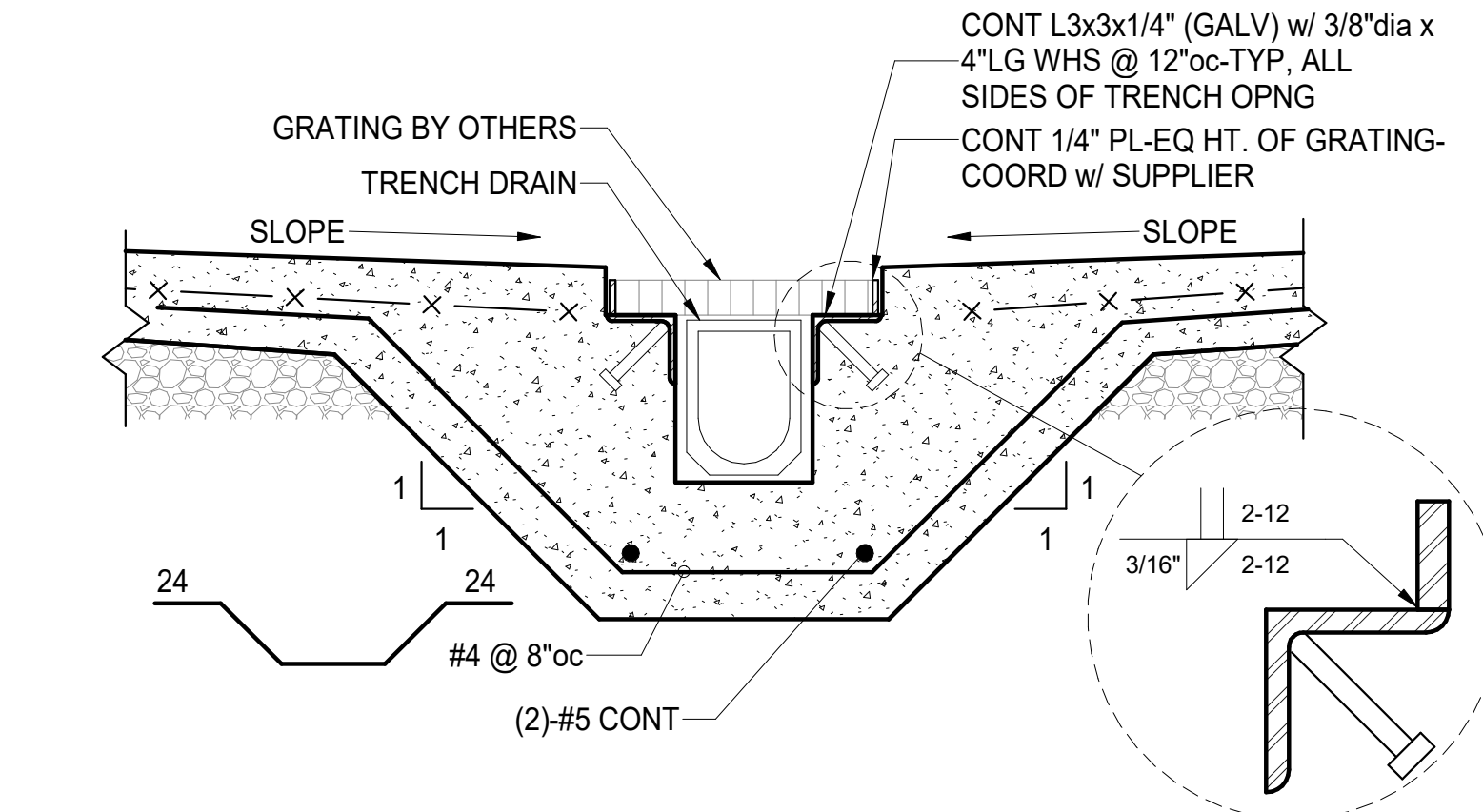
B TYP SLAB-ON-GRADE CONSTRUCTION JOINT DETAILS
S1.3 N.T.S.



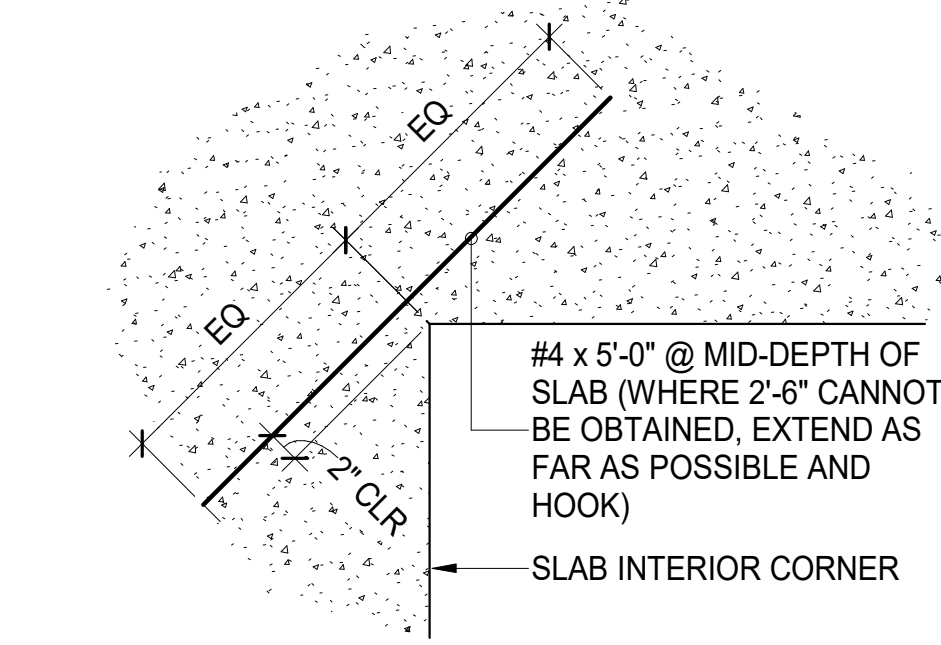
C TYP DEPRESSED SLAB SECTION
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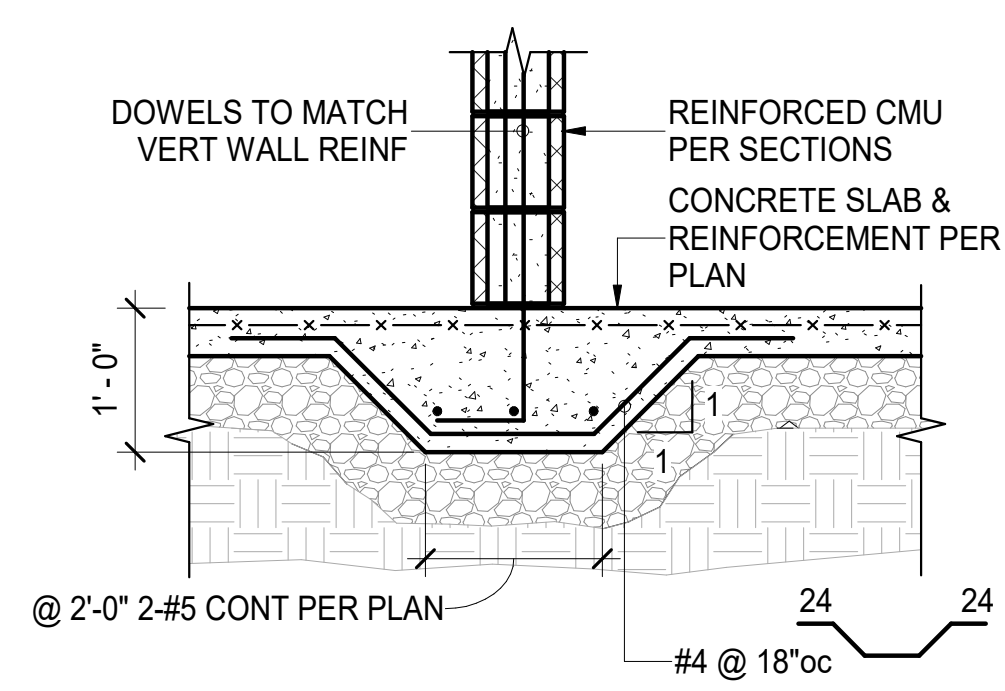
D TYP CONCRETE WALL REINFORCEMENT
S1.3 N.T.S.



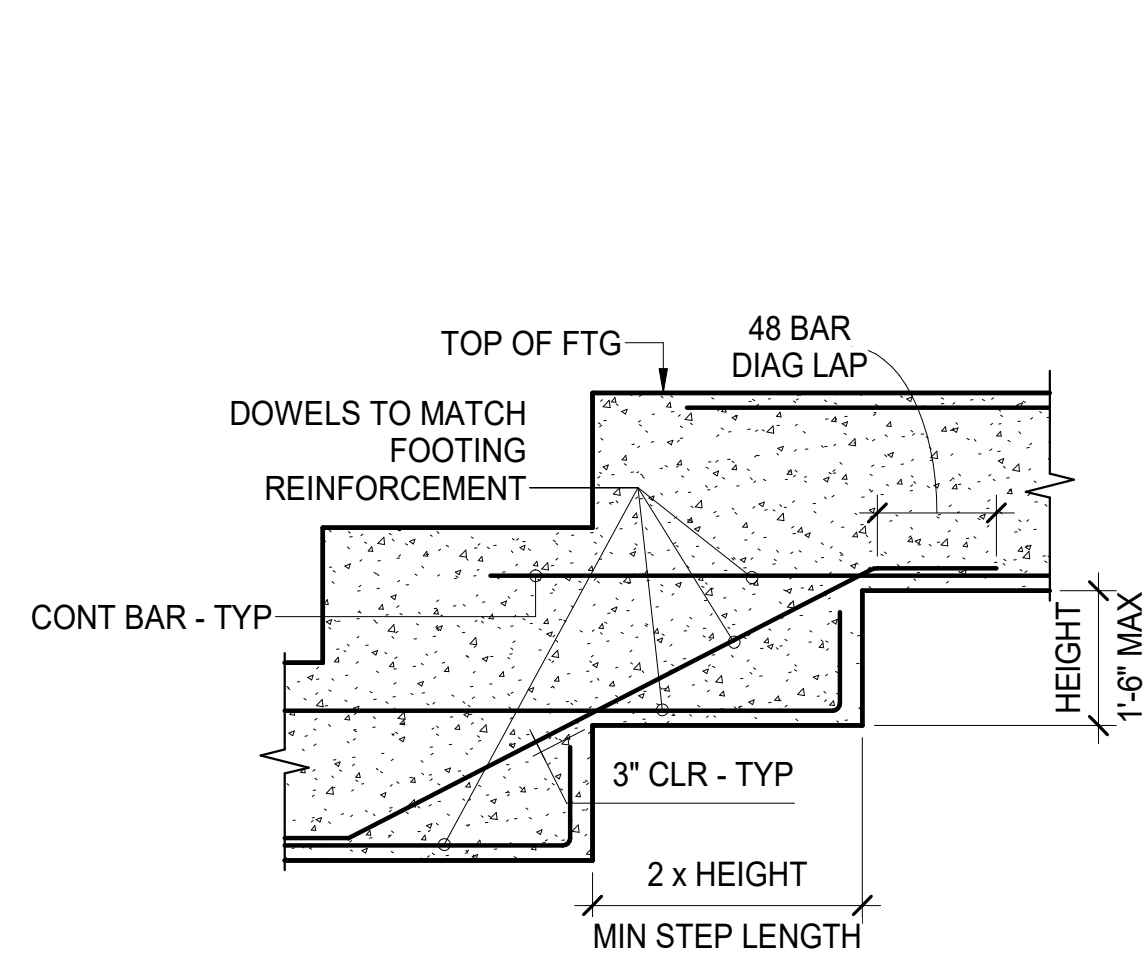
E TYP TRENCH DRAIN DETAIL
S1.3 N.T.S.



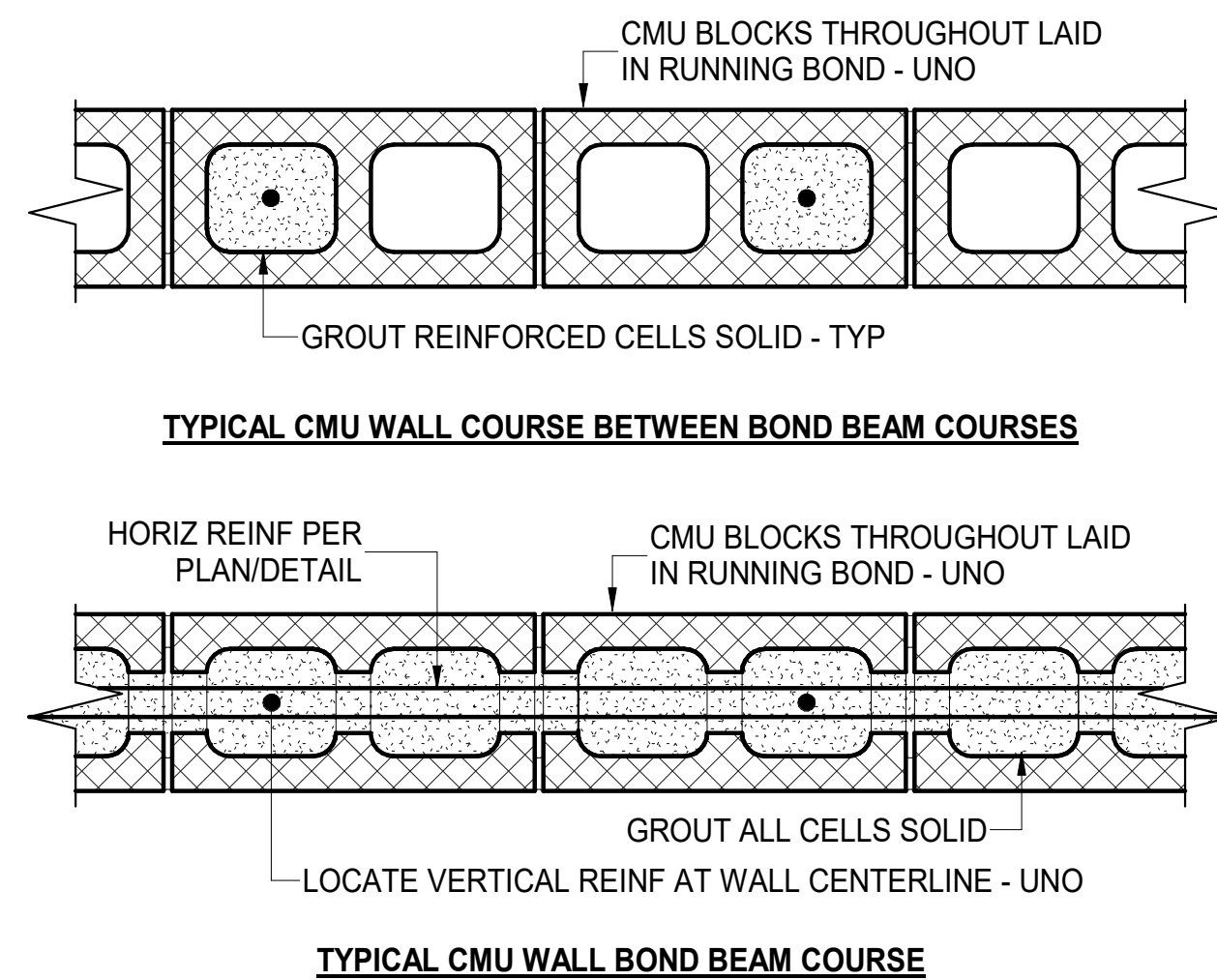
F TYP REINF @ INTERIOR CORNERS
S1.3 N.T.S.



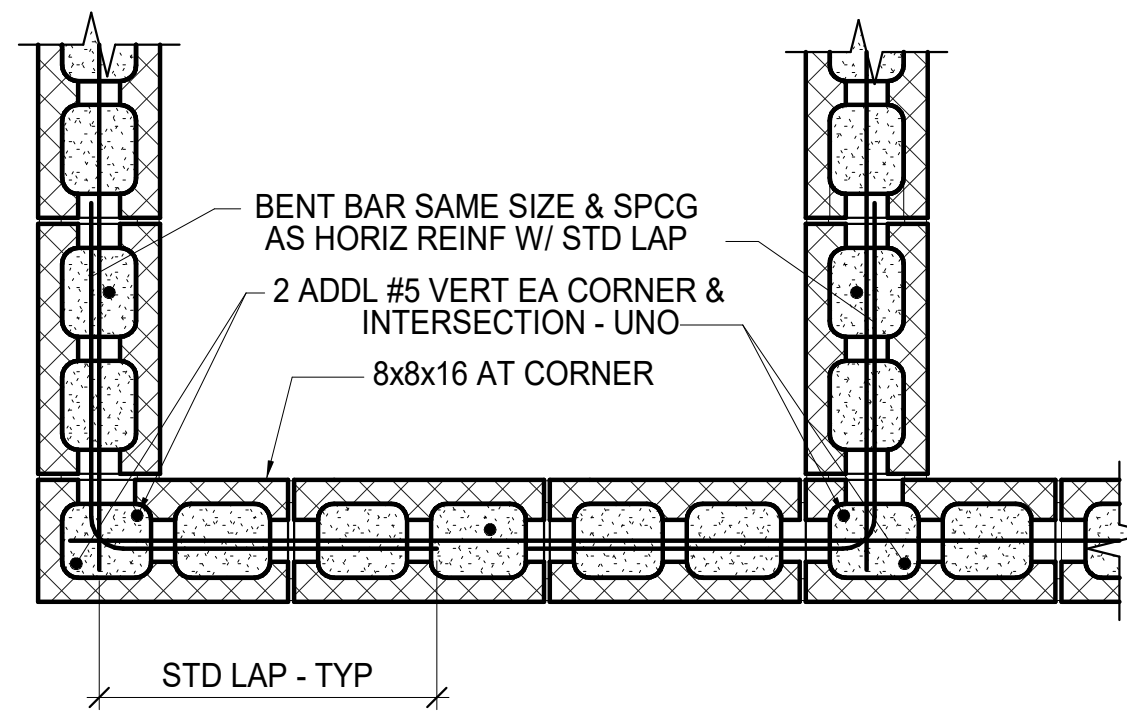
G TYP THICKENED SLAB @ CMU WALL
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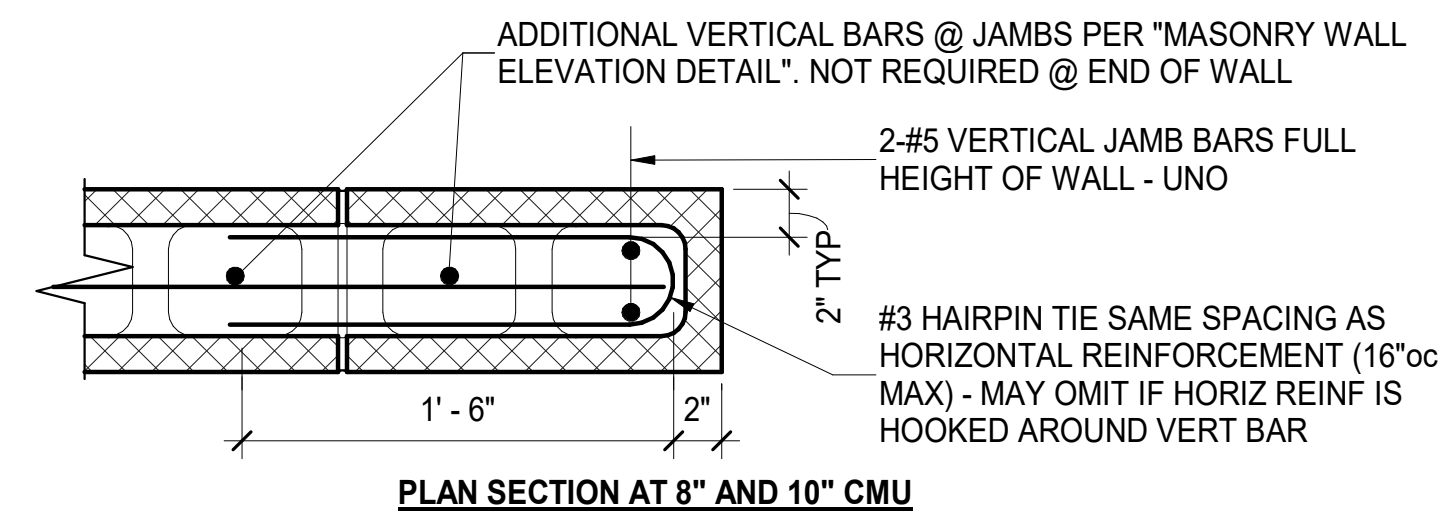
H TYP FOOTING STEP
S1.3 N.T.S.



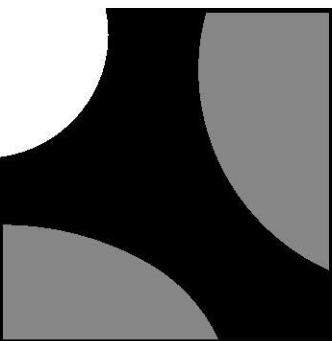
I TYP CMU WALL COURSES
S1.3 N.T.S.



J TYP CMU WALL CORNERS & INTERSECTIONS
S1.3 N.T.S.



K TYP CMU JAMB DETAILS
S1.3 N.T.S.



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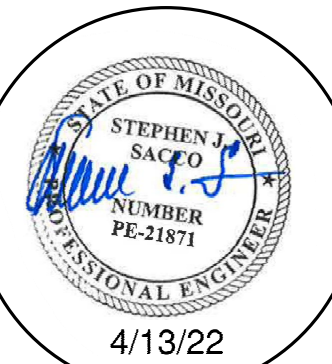
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STEVE SACCO
PE-21871

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DRAWN BY: TJH

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SHEET
S1.3
TYPICAL DETAILS

SILL PL BOLTS & SOLE PL SCREWS SCHEDULE			
MARK	WALL SIDES SHEATHED	FASTENER SPACING "B" (NOTES 5-6)	
		BOLT	SCREW
⑥	1	34"	5"
④	1	22"	3"
③	1	16"	2"

WALL SHEATHING AND NAILING SCHEDULE			
MARK	SHTG SPEC	NAIL SIZE	EN SPCG "E"
⑥	15/32" *	10d	6"
④	15/32" *	10d	4"
③	15/32" *	10d	3"

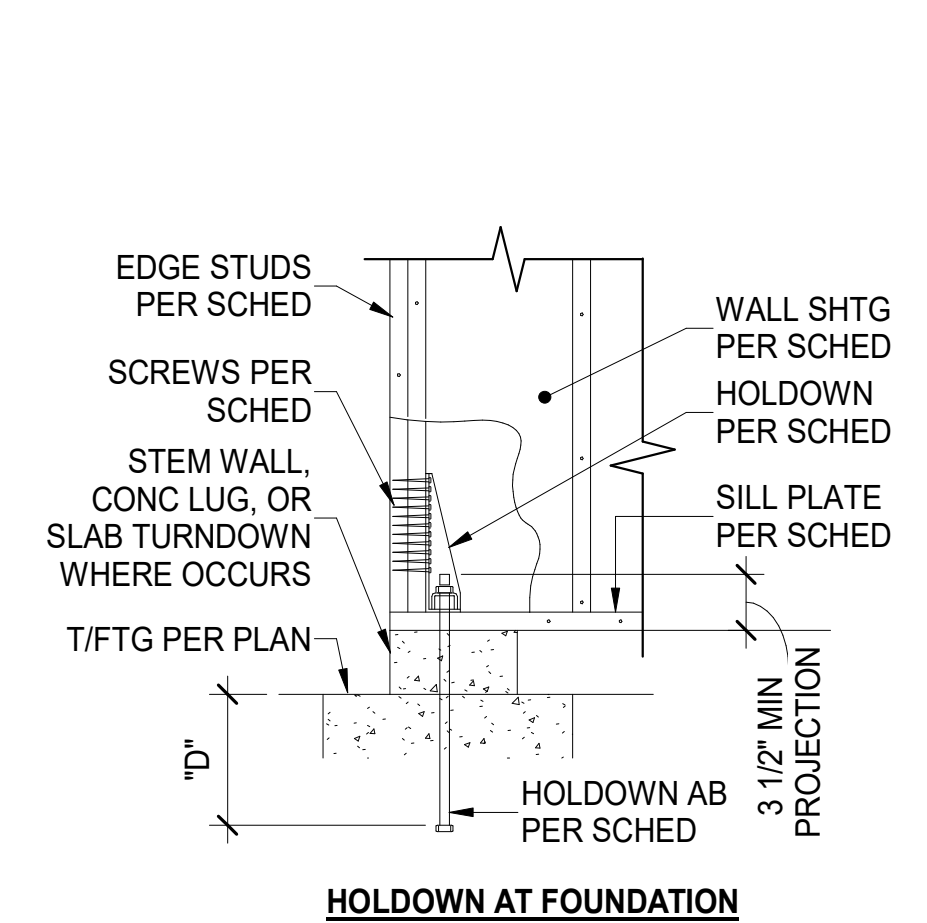
* PANELS SHALL BE SHEATHING GRADE, SEE LUMBER SCHEDULE FOR REQUIREMENTS.

NOTES:

1. FIELD NAILING (FN): 10d @ 12"oc.
2. ALL NAILS SHALL BE COMMON OR BOX WIRE NAILS.
3. MINIMUM DIMENSION OF ANY SHEATHING SHEET EQUALS 16" OR STUD SPACING, WHICHEVER IS GREATER.
4. ALL SHEAR WALL SHEATHING PLATE EDGES SHALL BE FULLY BLOCKED WITH FULL DEPTH 2x STUD BLOCKING-TYP-UNO.
5. SIL PLATES SHALL BE FASTENED WITH 5/8" dia x 7"LG EMBED ANCHOR BOLTS PER FASTENER SPACING "B" IN SCHEDULE ABOVE. ALTERNATIVELY, USE 5/8" x 8"LG SIMPSON TITEN HD HANGES AND 3"x3"x0.225" PLATE WASHERS AT 12"oc.
6. SOLE PLATES SHALL BE FASTENED WITH 1/2" dia (#14) x 4 1/2"LG WOOD SCREWS PER SCREW FASTENERS SCHEDULE "B" IN SCHEDULE ABOVE. PRE-DRILL HOLES FOR #14 WOOD SCREWS PER NDS 12.1.5.3 ALTERNATIVELY, CONTRACTOR MAY USE SIMPSON STRONG-TIE SDS25412 STRONG-DRIVE SCREWS AND DOUBLE THE SCREW SPACING PER THE SCHEDULE ABOVE. NO PRE-DRILLING REQUIRED FOR SDS SCREWS.

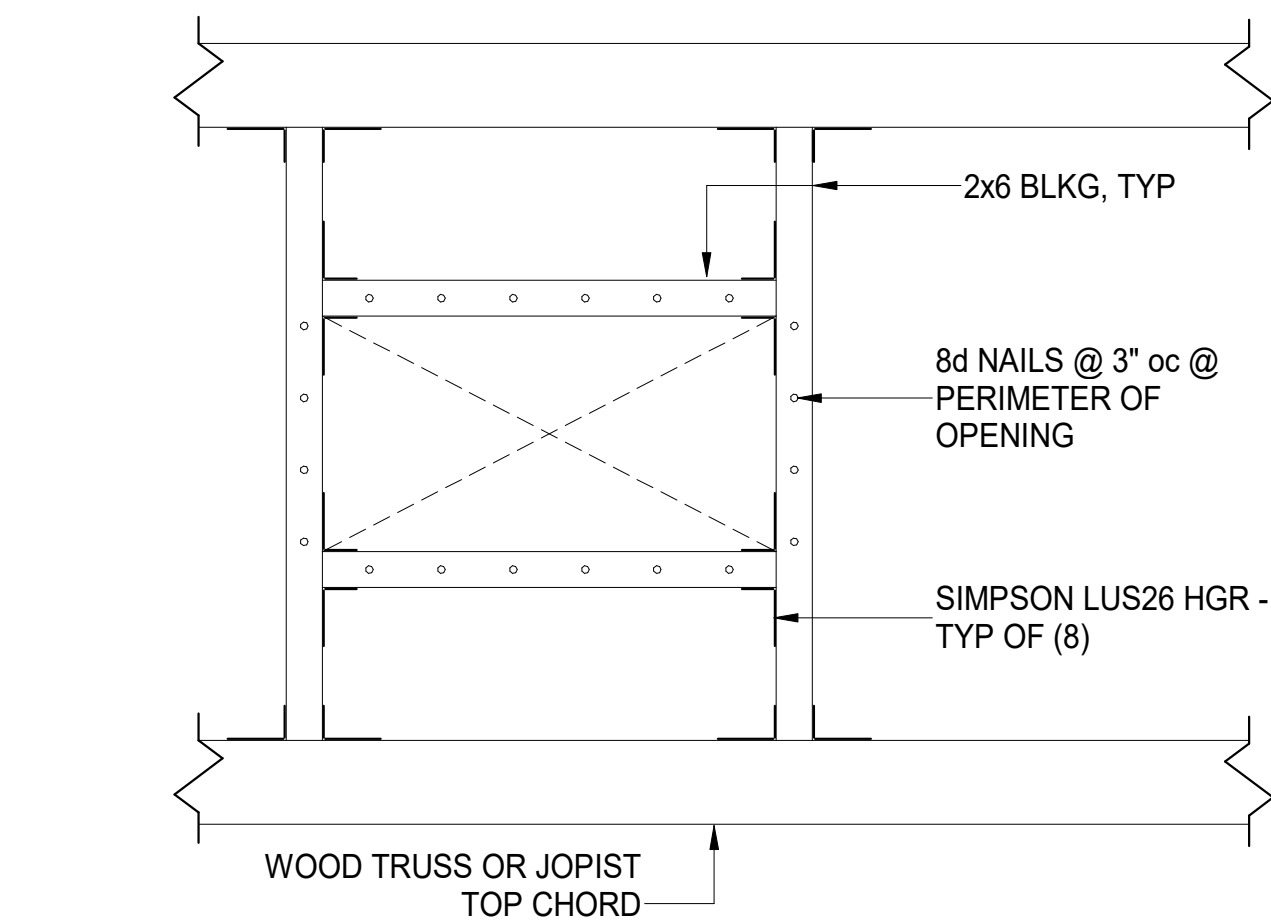
A TYP SHEAR WALL SHEATHING AND FASTENER SCHEDULE

S1.4	N.T.S.
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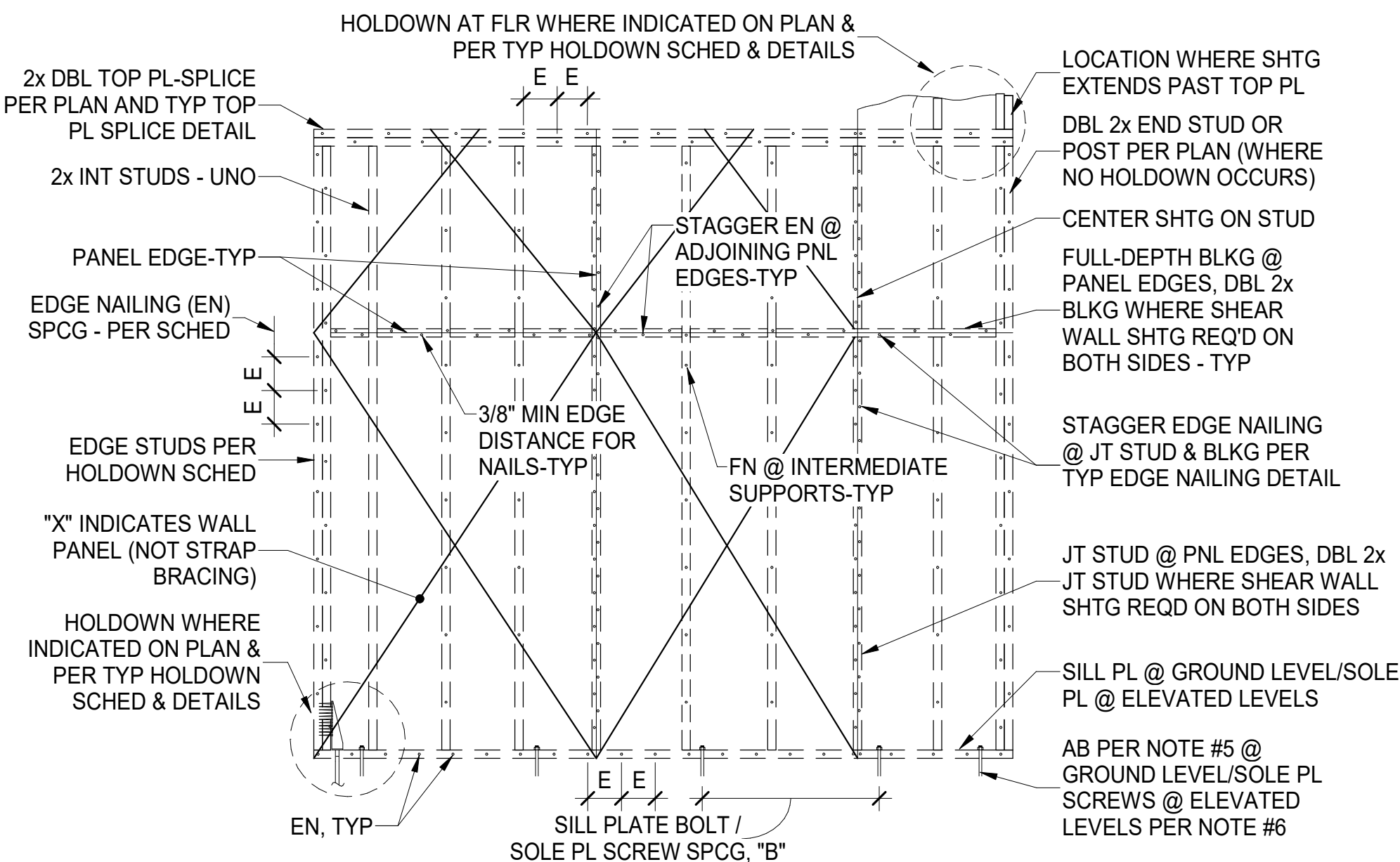
C TYP HOLDOWN SCHEDULE & DETAILS

S1.4	N.T.S.
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F TYP BLKG @ ROOF OPENING

S1.4	N.T.S.
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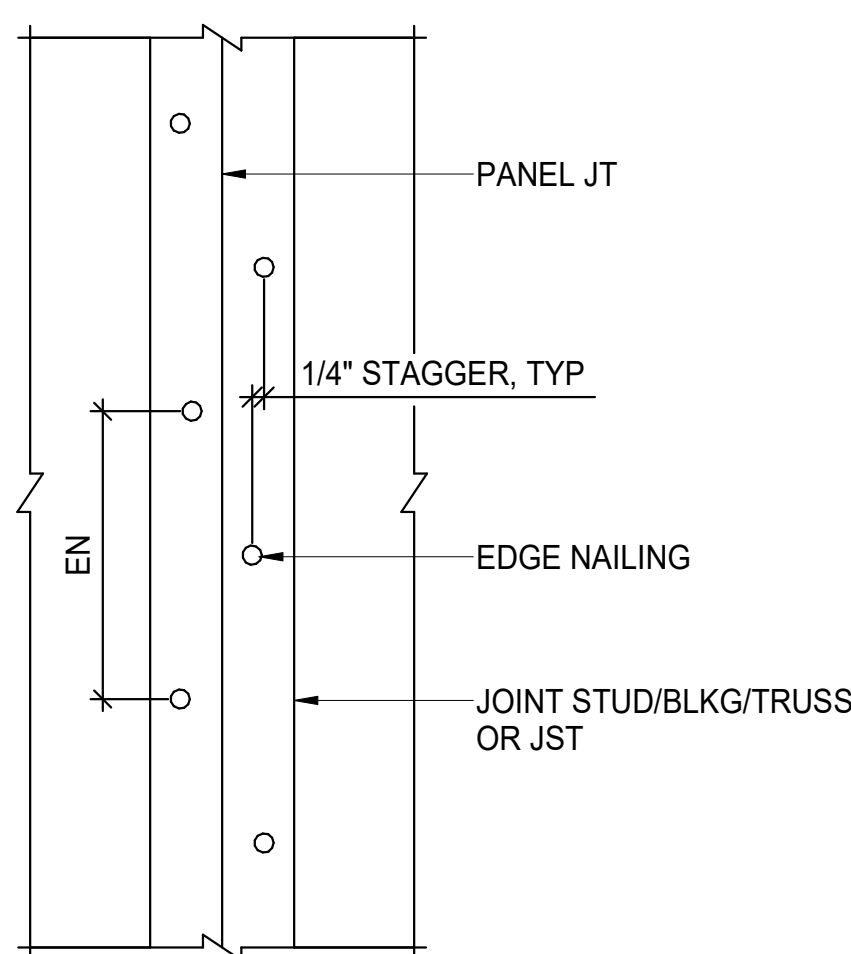
SECTION A-A							
DIAPHRAGM SHEATHING & NAILING SCHEDULE							
MARK	SHTG SPEC	NAILS IZE	BN SPCG	EN SPCG	FN SPCG	TRANSV BLKG	EDGE MEMBER THICK
R1	19/32" *	10d	6"	6"	12"	NO	2"
* PANELS SHALL BE SHEATHING GRADE, SEE LUMBER SCHEDULE FOR REQUIREMENTS.							

NOTE:

1. DIAPHRAGM SHEATHING NAILS SHALL BE DRIVEN SO THAT THEIR HEADS ARE FLUSH WITH THE SURFACE OF THE SHEATHING.
2. PROVIDE T & G SHEATHING AT ALL FLOORS. ALTERNATIVELY, USE PSL 19/32 CLIPS BY SIMPSON STRONG-TIE OR APPROVED EQUAL.
3. 10d COMMON NAILS CAN BE SUBSTITUTED WITH #9 x 2" SCREW WSV2 BY SIMPSON STRONG-TIE.

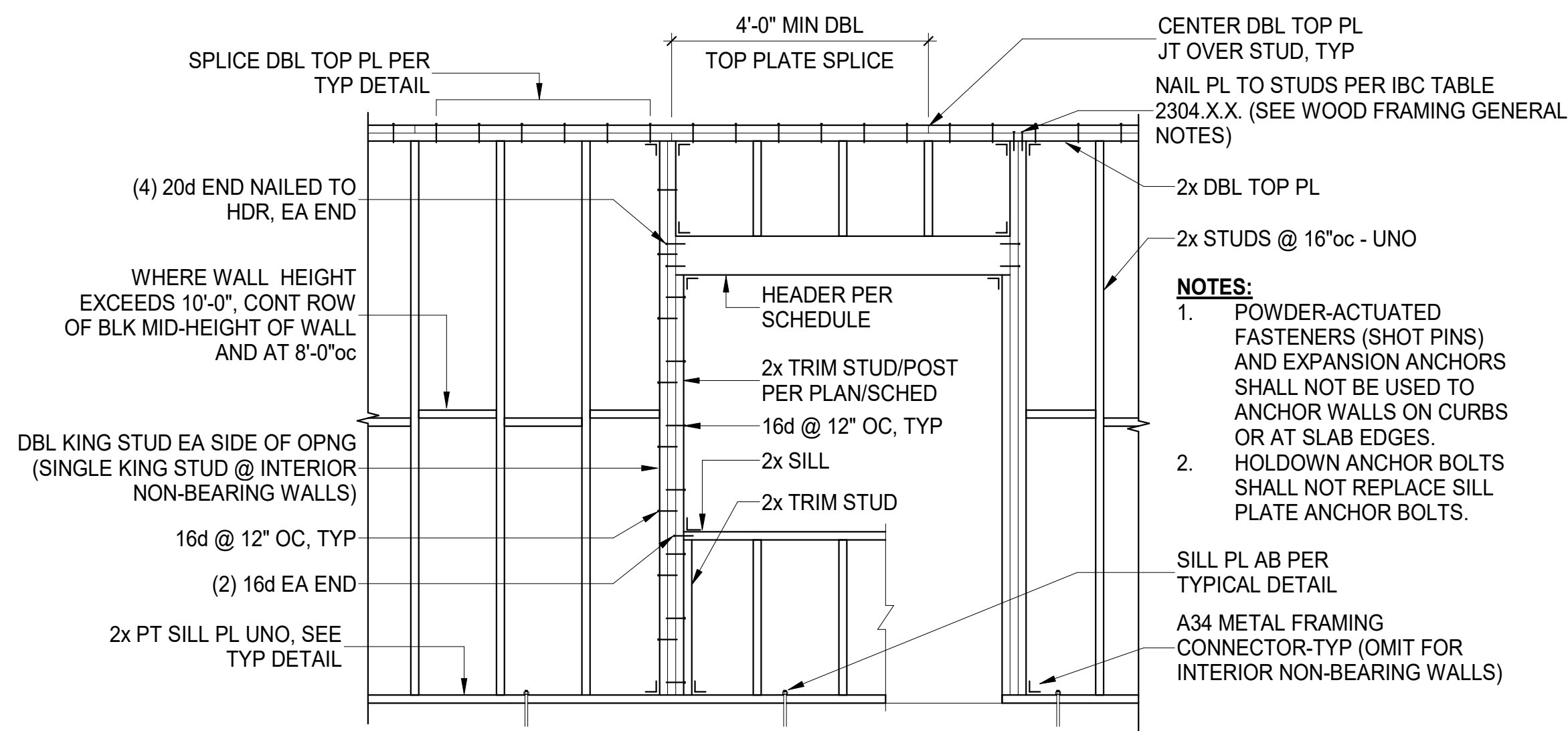
B TYP ROOF SHEATHING DETAIL

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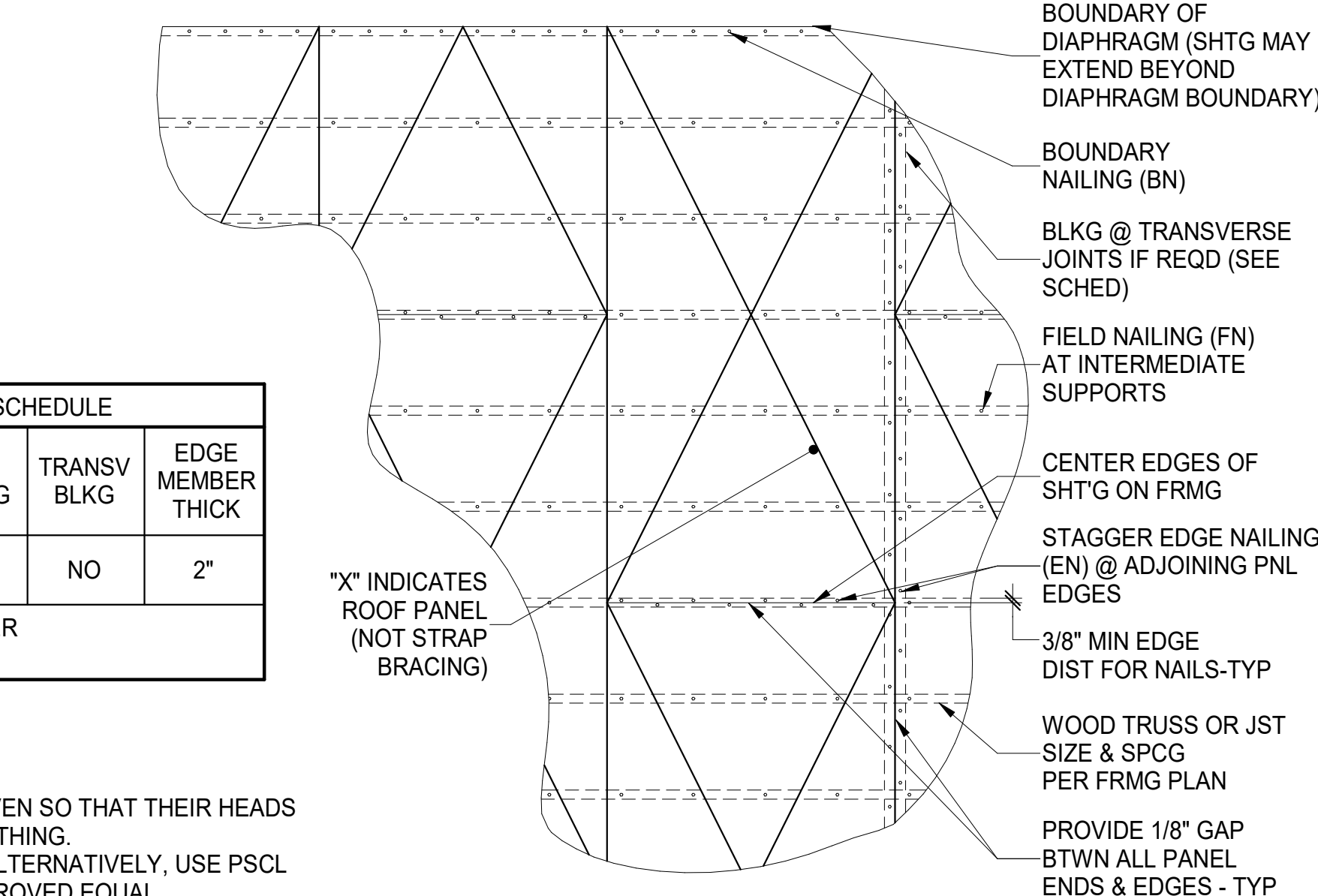
D TYP STAGGERED EDGE NAILING DETAIL

S1.4 N.T.S.



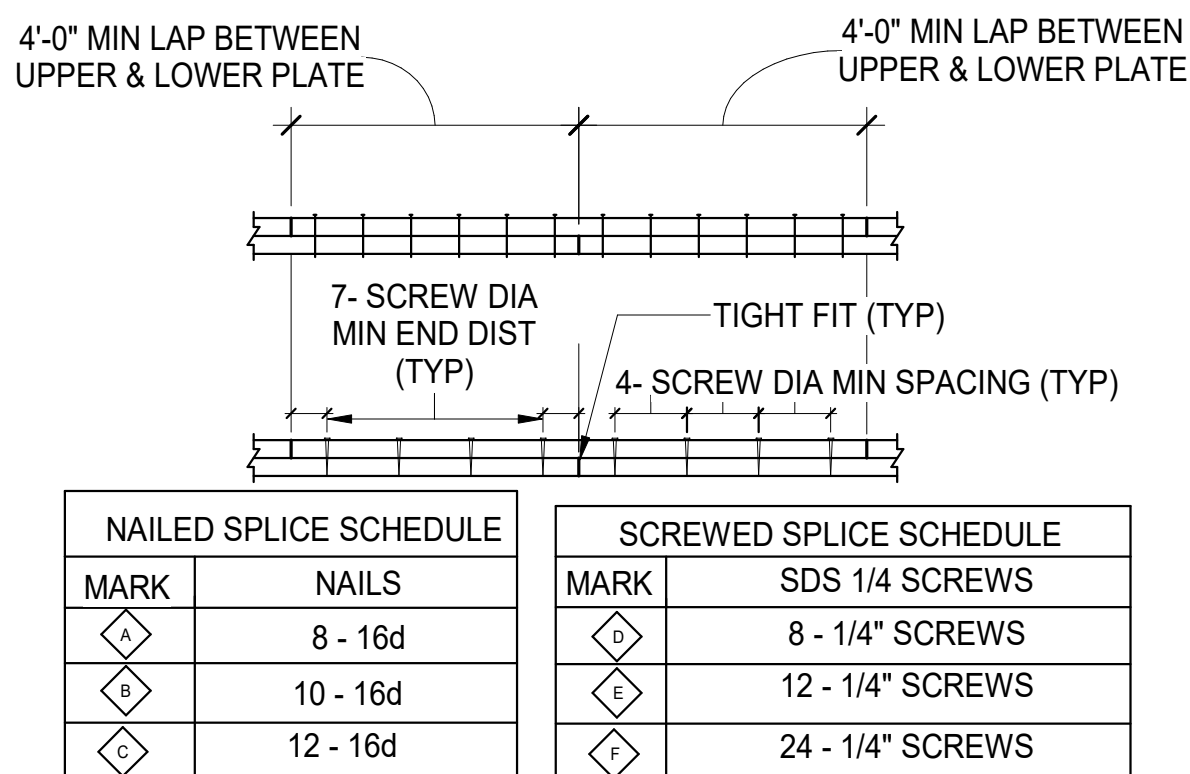
G TYP STRUCTURAL WALL PANEL FRAMING ELEVATION

S1.4 **N.T.S.**



E TYP SILL PLATE ANCHOR BOLT DETAIL

S1.4	N.T.S.
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H TYP TOP PLATE SPLICE DETAIL

S1.4	N.T.S.
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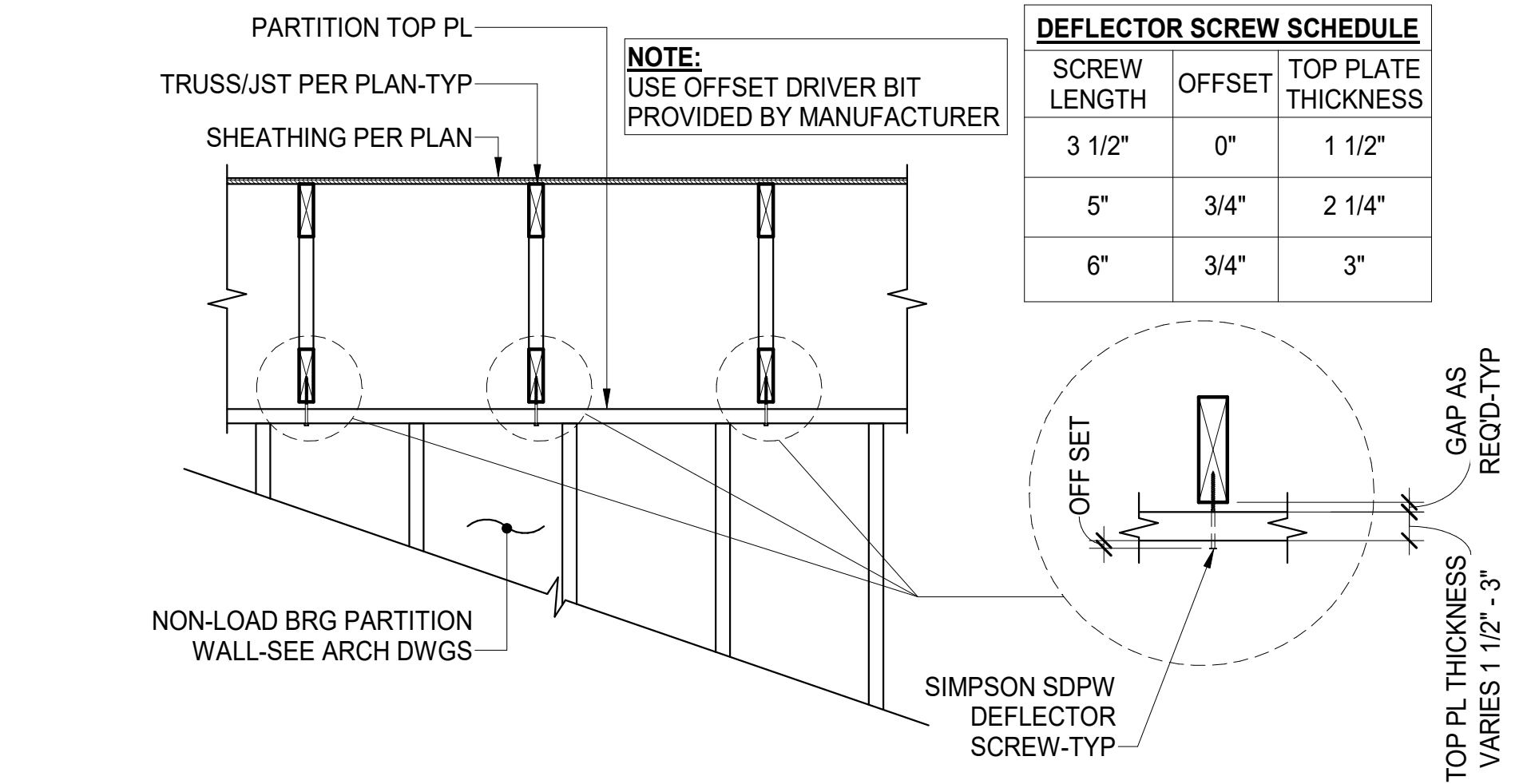
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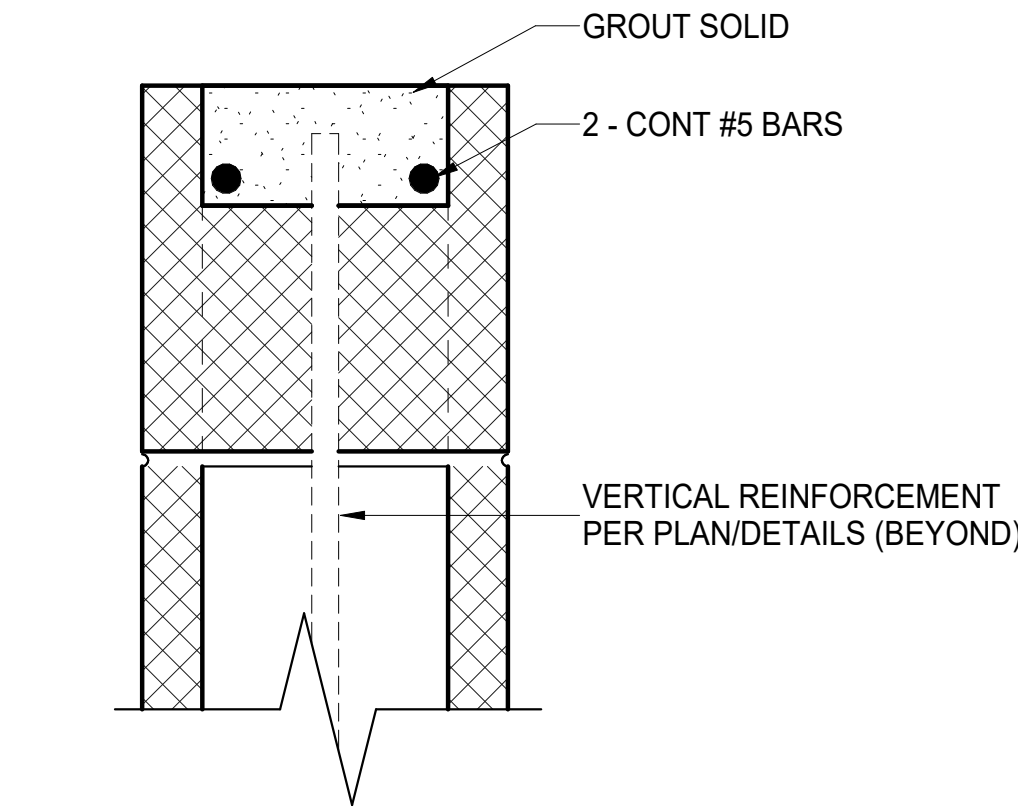
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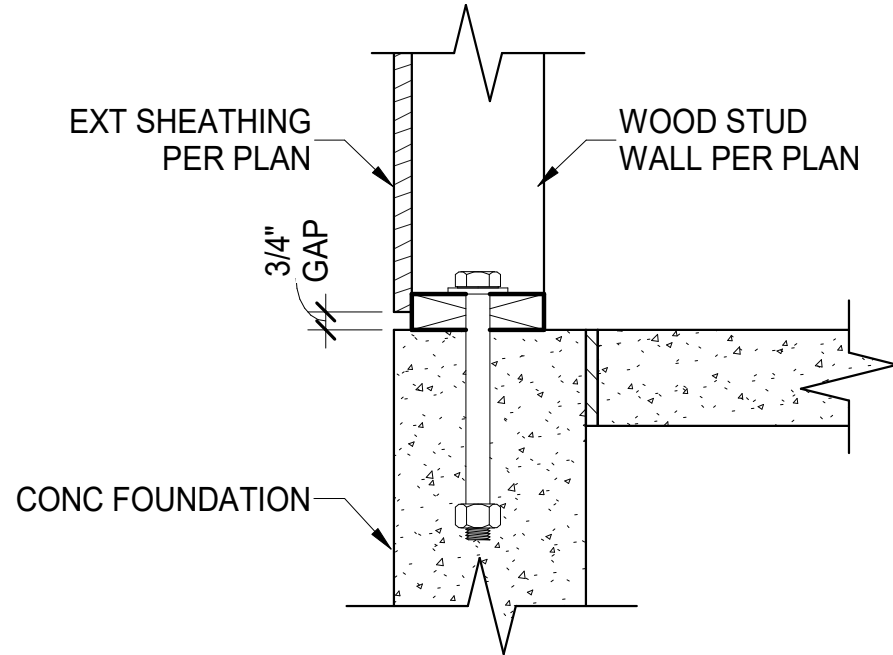
SHEET
S1.4
TYPICAL DETAILS



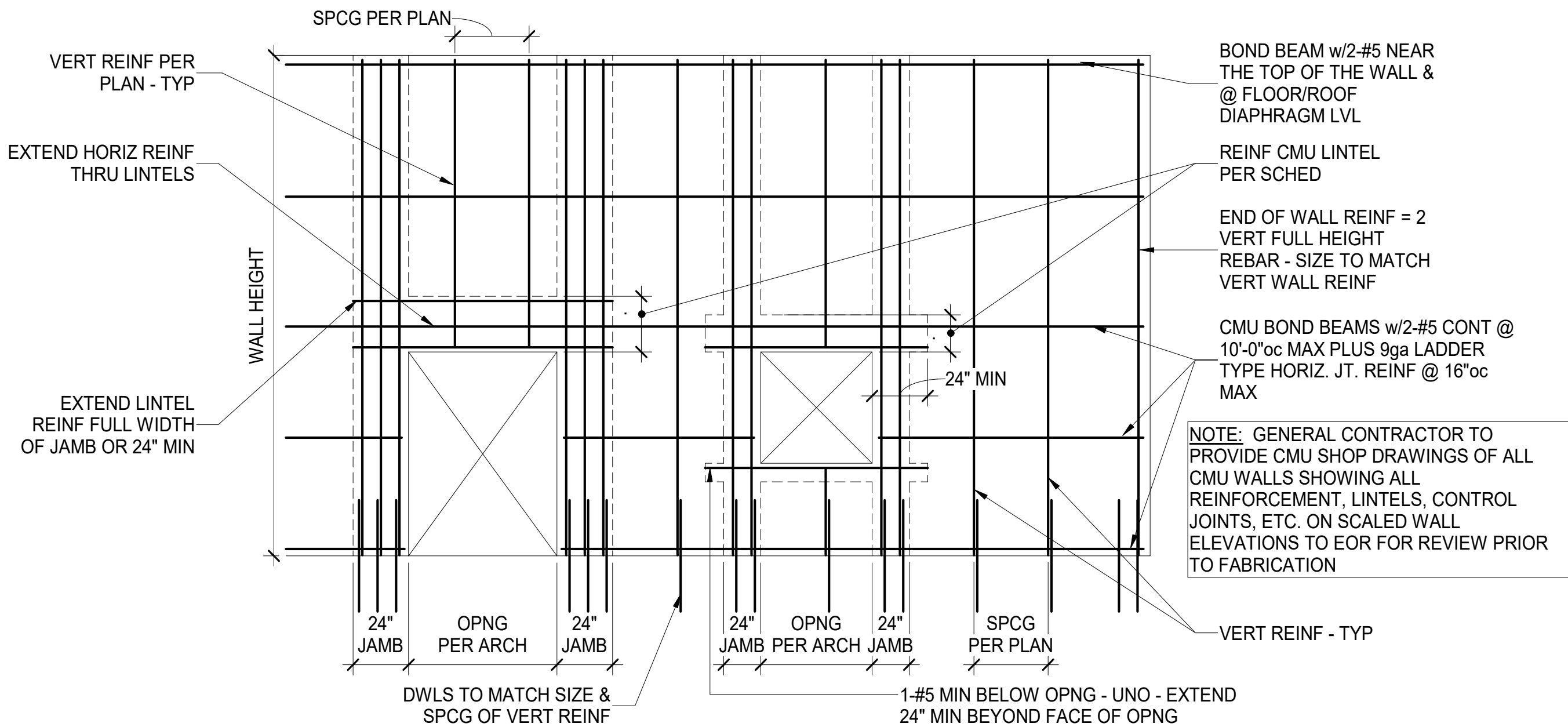
A TYP SLIP CONNECTION @ NON LOAD-BEARING WOOD PARTITION WALL
S1.5 N.T.S.



B 8" CMU BOND BEAM
S1.5 N.T.S.



C TYPICAL SHEATHING GAP DETAIL
S1.5 N.T.S.



D TYP REINFORCED MASONRY WALL ELEVATION
S1.5 N.T.S.



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SHEET
S1.5
TYPICAL DETAILS



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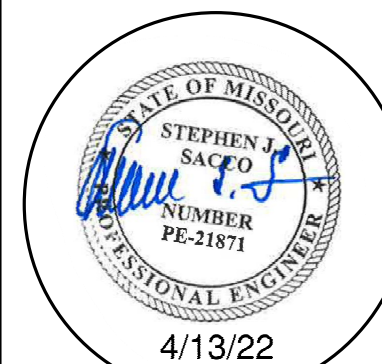
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New Base Station #2 Facility for:
Lincoln County
Ambulance District
28 Walter Court
Moscow Mills, Missouri 63362

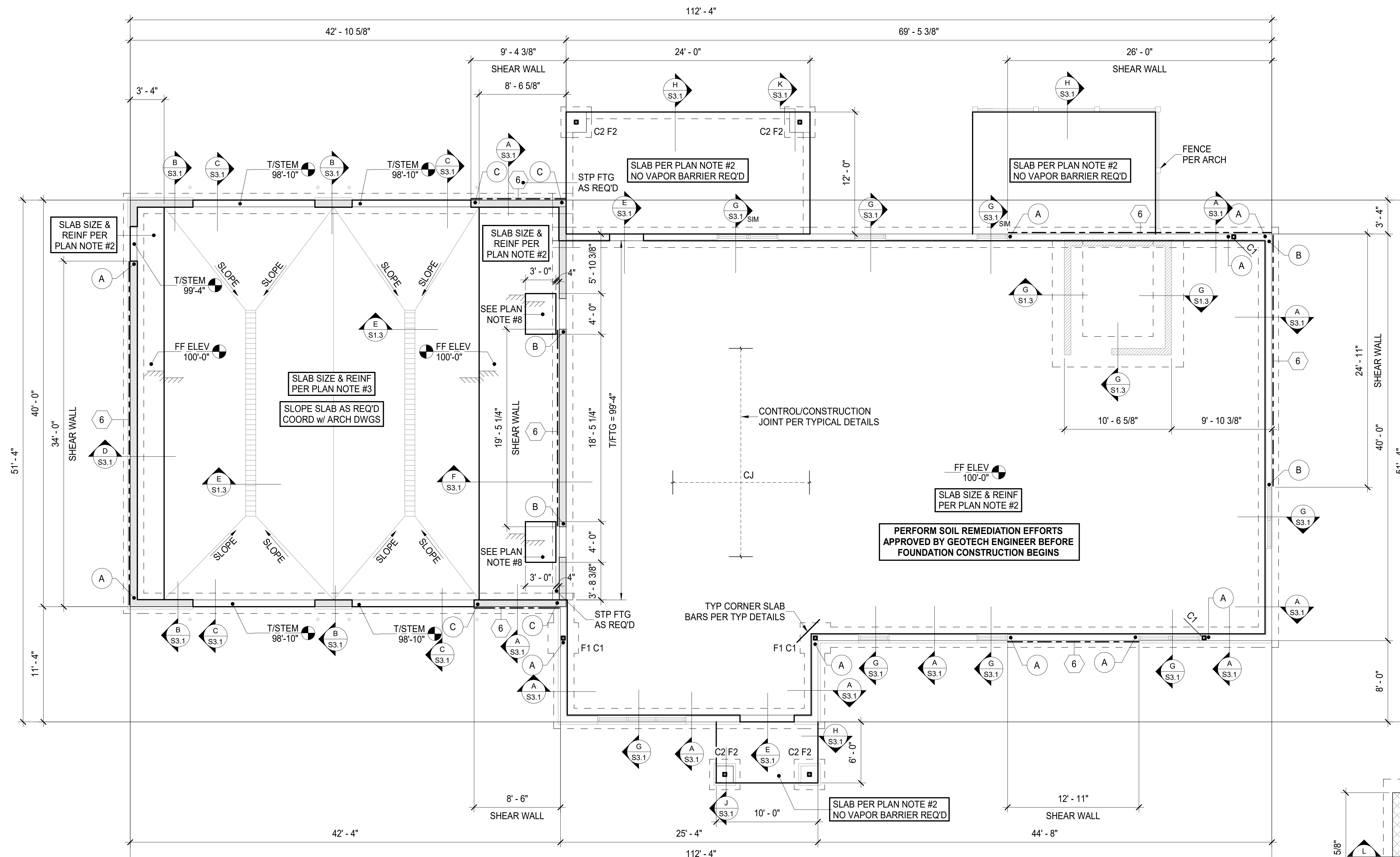
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STEVE SACCO
PE-21871

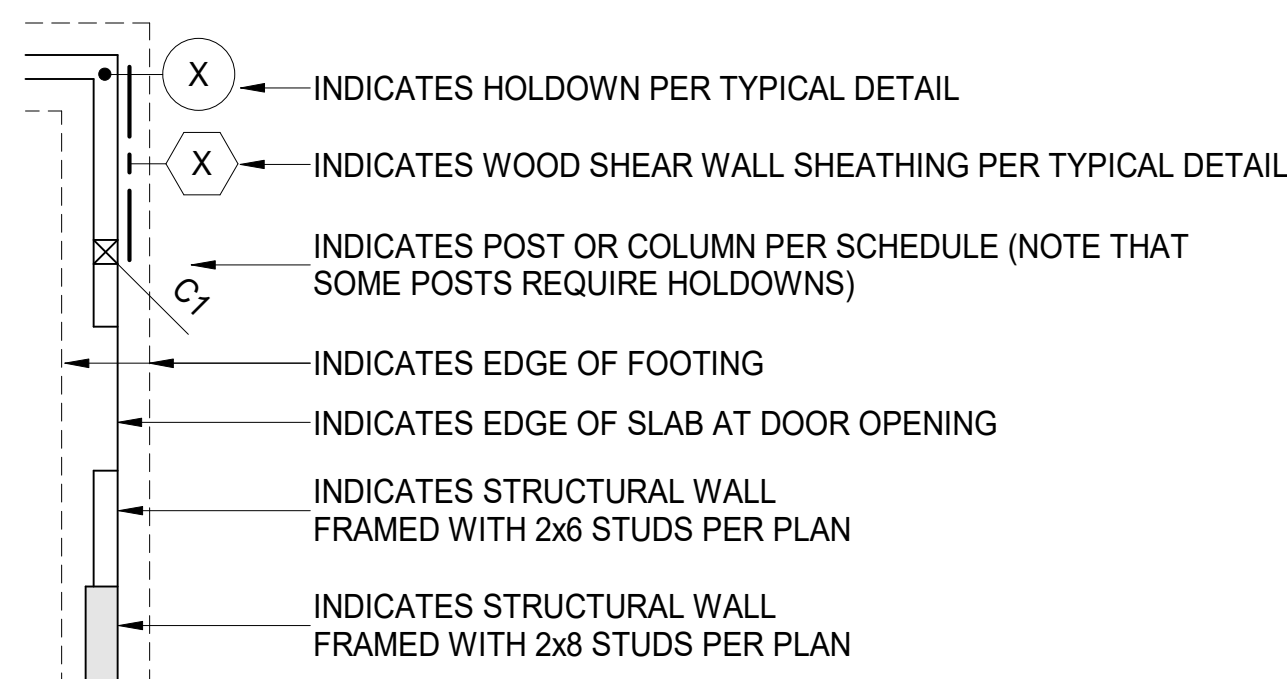
PROJECT MANAGER:	CS
DRAWN BY:	TJH

PROJECT NUMBER
BAA-MO-01-21
DATE
April 15, 2022

SHEET
S2.1
FOUNDATION
PLAN



LEGEND - FOUNDATION PLAN



FOUNDATION PLAN

PLAN NOTES

1. SEE SHEETS S1.1 - S1.5 FOR GENERAL NOTES AND TYPICAL DETAILS.
2. 4" CONCRETE SLAB REINFORCED WITH ONE LAYER OF 6x6 - W1.4xW1.4 WWR ON 7 MIL. POLY VAPOR BARRIER OVER 6" MINIMUM (COMPACTED FREE-DRAINING GRANULAR MATERIAL. REINFORCEMENT TO BE LOCATED IN THE MIDDLE OF THE SLAB.
3. 5" CONCRETE SLAB REINFORCED WITH ONE LAYER OF 6x6 - W2.1xW2.1 WWR ON 7 MIL. POLY VAPOR BARRIER OVER 6" MINIMUM (COMPACTED FREE-DRAINING GRANULAR MATERIAL. REINFORCEMENT TO BE LOCATED IN THE MIDDLE OF THE SLAB.
4. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS, SECTIONS, AND ELEVATIONS NOT SHOWN HEREON.
5. COORDINATE SIZE AND LOCATION OF ROUGH OPENINGS IN FLOOR OR WALLS WITH ARCHITECTURAL DRAWINGS.
6. ALL ELEVATIONS ARE REFERENCED FROM FINISHED MAIN FLOOR = 100'-0" UNO
 - T/FTG = TOP OF FOOTING = 98'-0" UNO
 - T/CONC = TOP OF CONCRETE = PER PLAN
7. ALL EXTERIOR WALL SHEATHING NOT SPECIFIED AS "SHEAR WALL SHEATHING" IS TO BE 7/16" CDX OSB SHEATHING AND ATTACHED PER IBC TABLE 2304.9.1 UNLESS OTHERWISE INDICATED BY ARCHITECT.
8. RECESSED ENTRY MAT SYSTEM WITH FLOOR DRAIN. RECESS 2" (T/CONC-99'-10") VERIFY WITH MANUFACTURER

SCALE: 3/16" = 1'-0"

FOOTING SCHEDULE

MARK	SIZE	REINFORCING
F1	4'-0" x 4'-0" x 1'-0"	(5) #5 EW TOP & BOT
F2	3'-0" x 3'-0" x 1'-0"	(4) #5 EW TOP & BOT

COLUMN SCHEDULE

MARK	SIZE	BASE PLATE	ANCHOR BOLTS	CAP/TIE
C1	(3) 2x6	SEE PLAN	PER HOLD DOWN SCHED	(2) LGT3 OR (2) LGT4
C2	4x4 POST	ABA44Z	1/2"dia w/ 12" EMBED	(2) LCE4

TRASH ENCLOSURE
1/4" = 1'-0"

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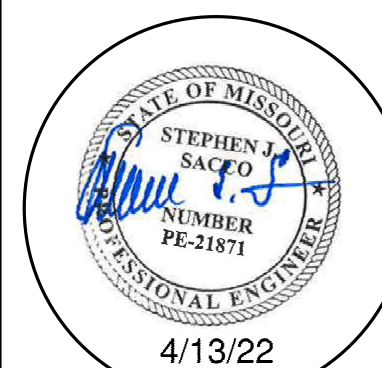
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ELECTRICAL**

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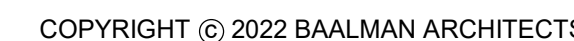
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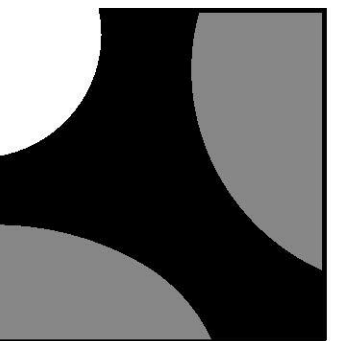
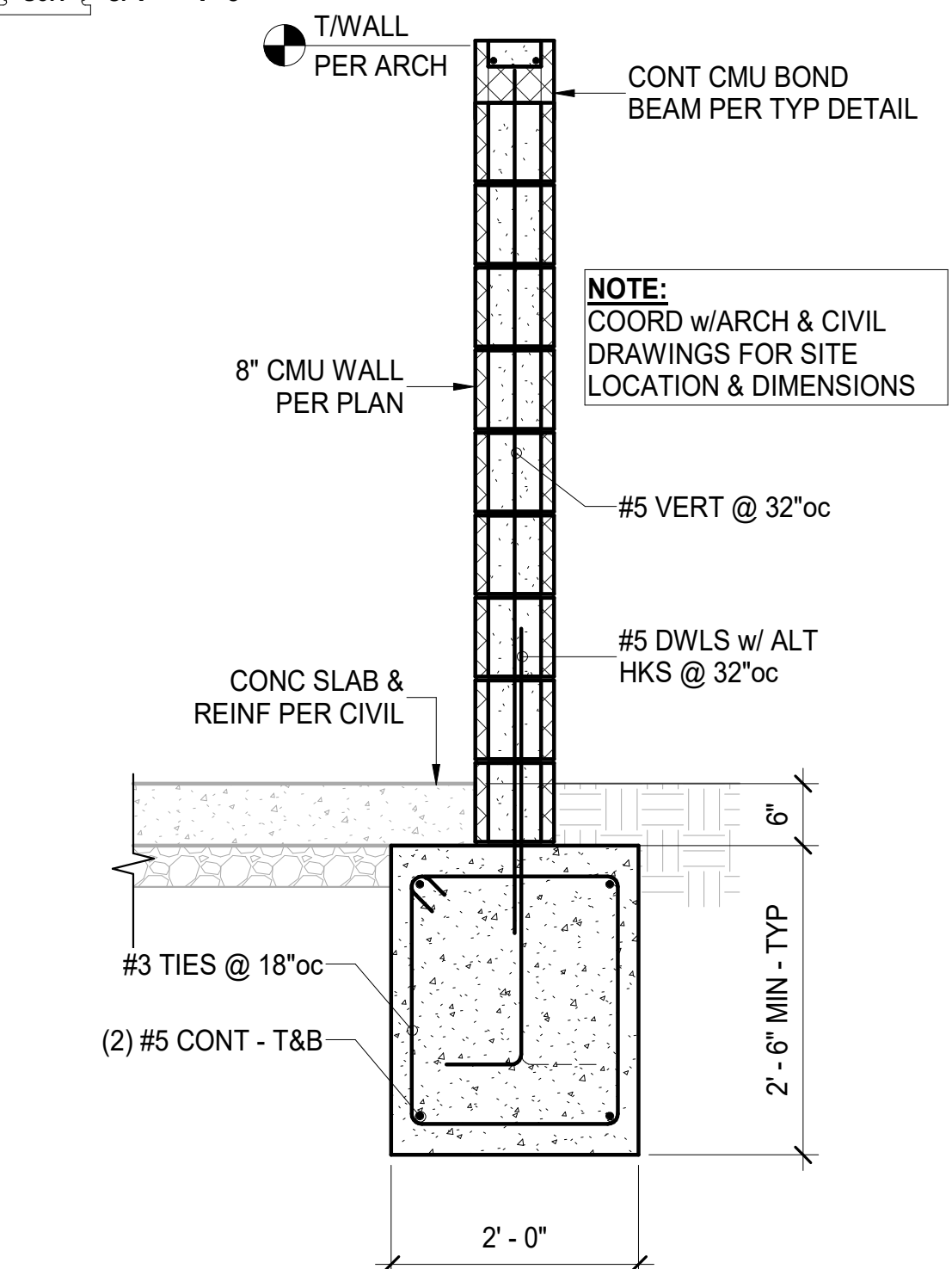
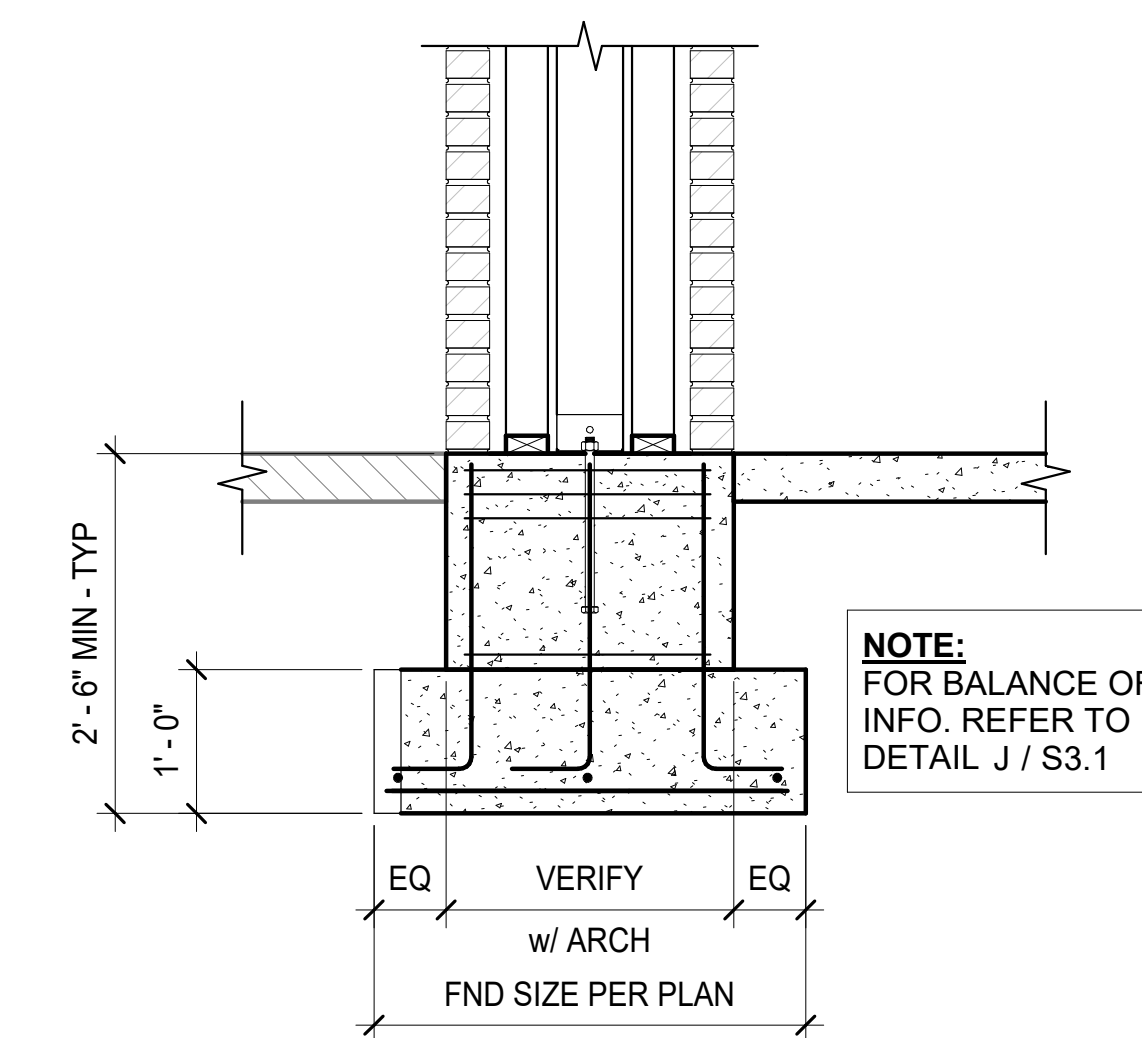
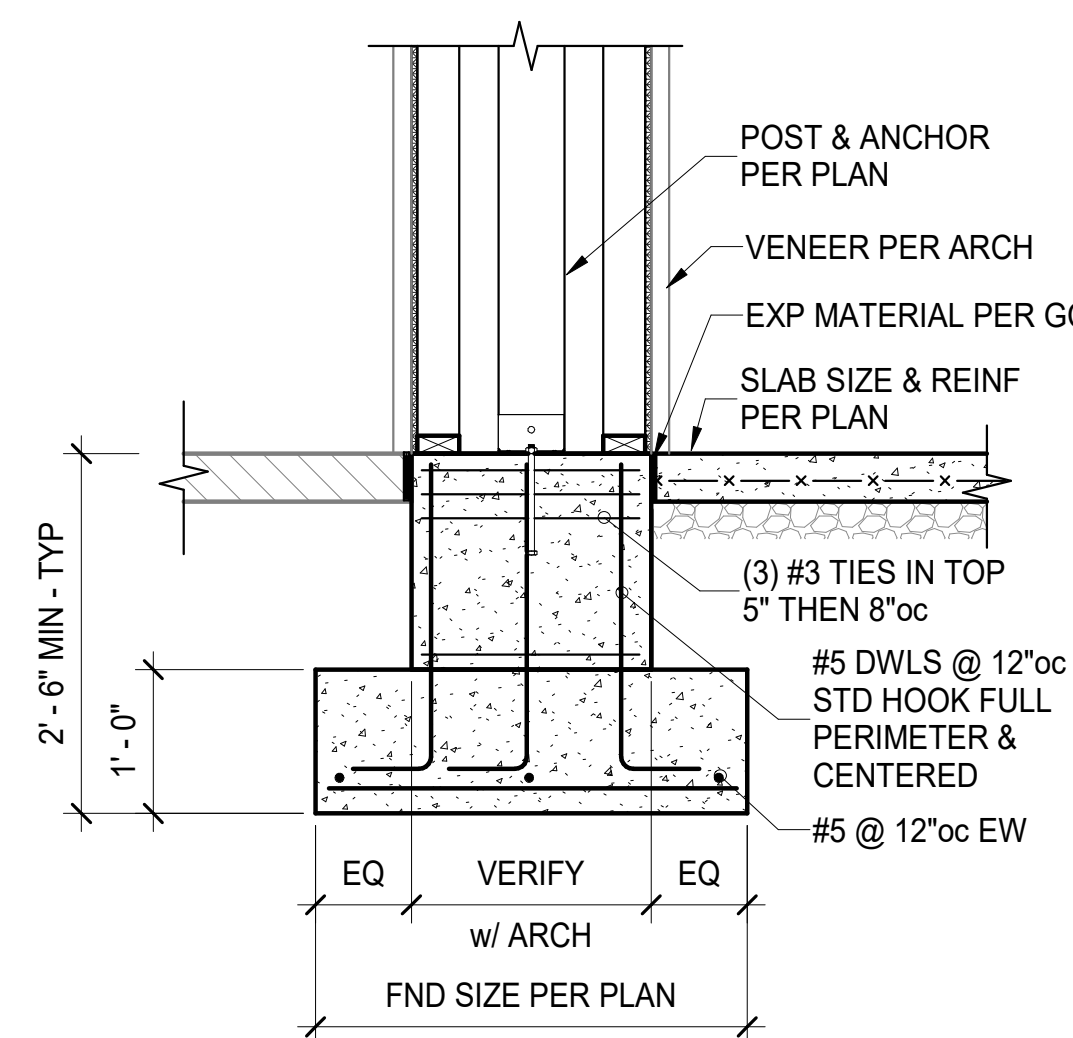
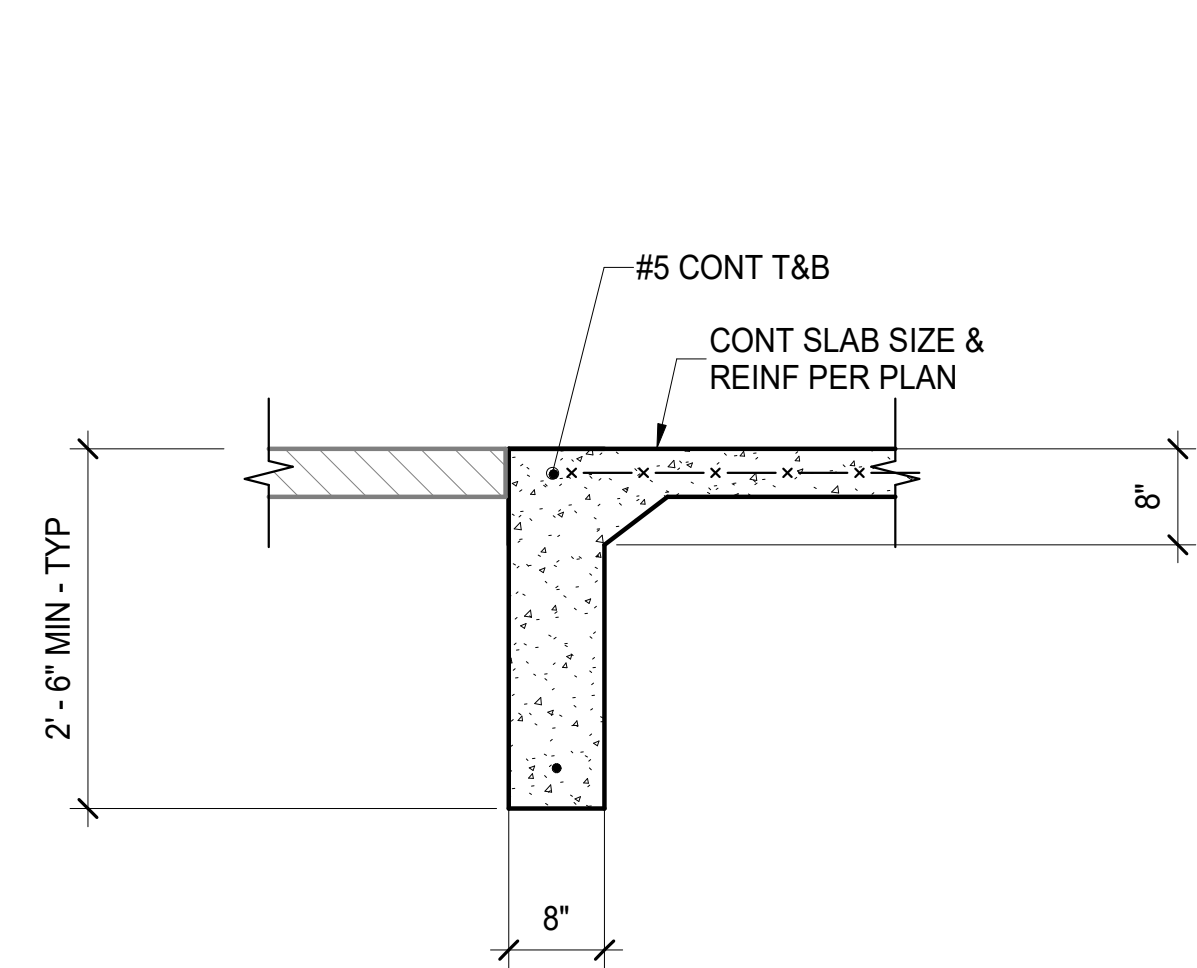
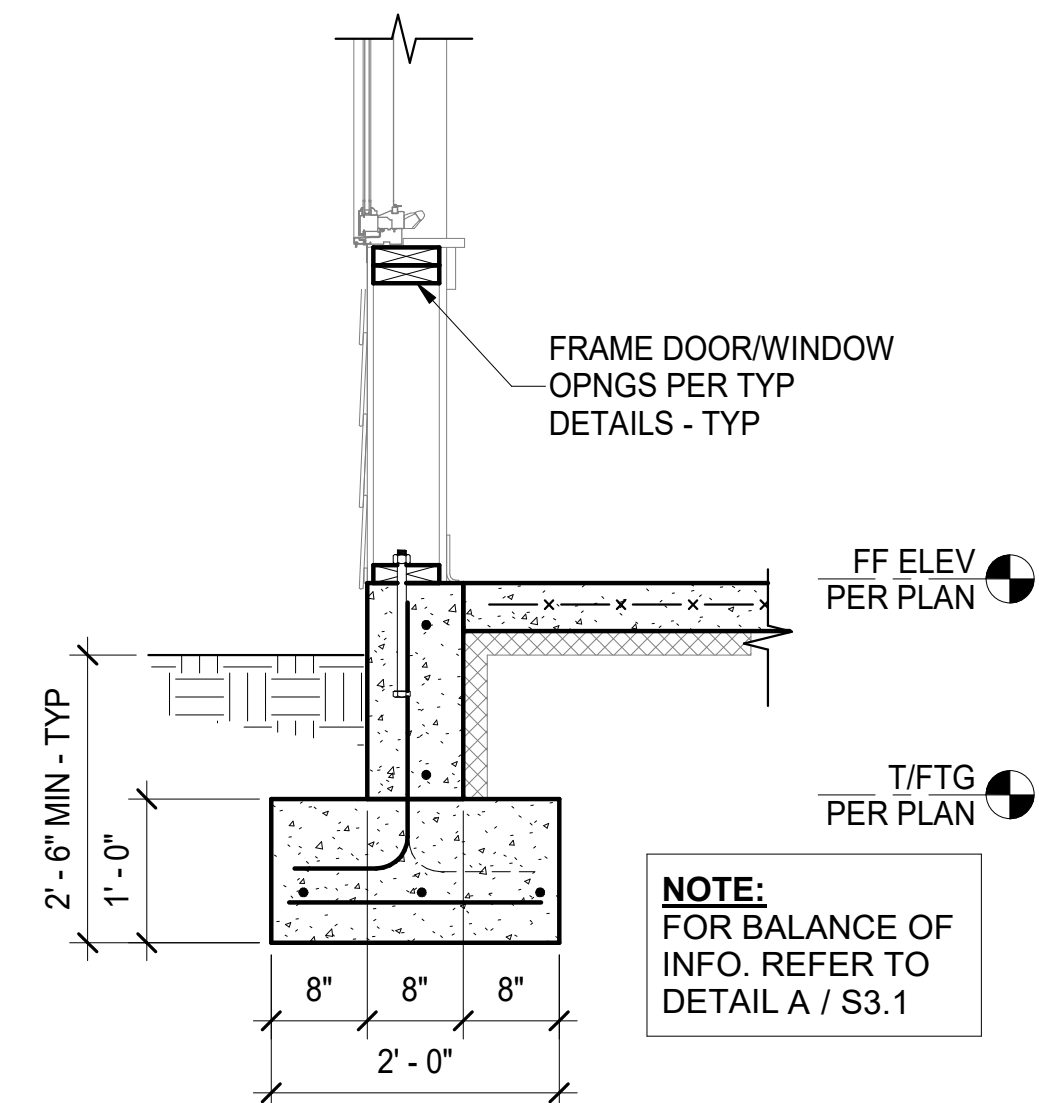
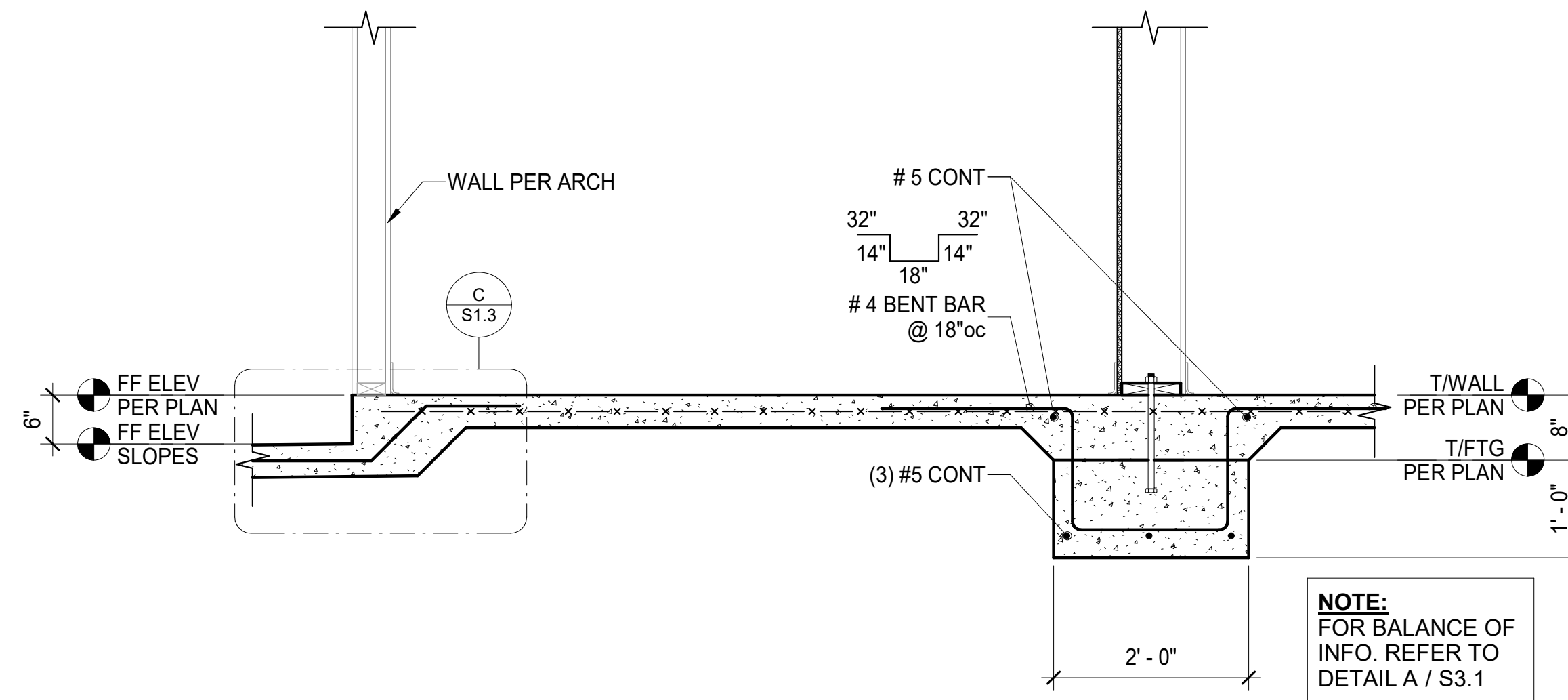
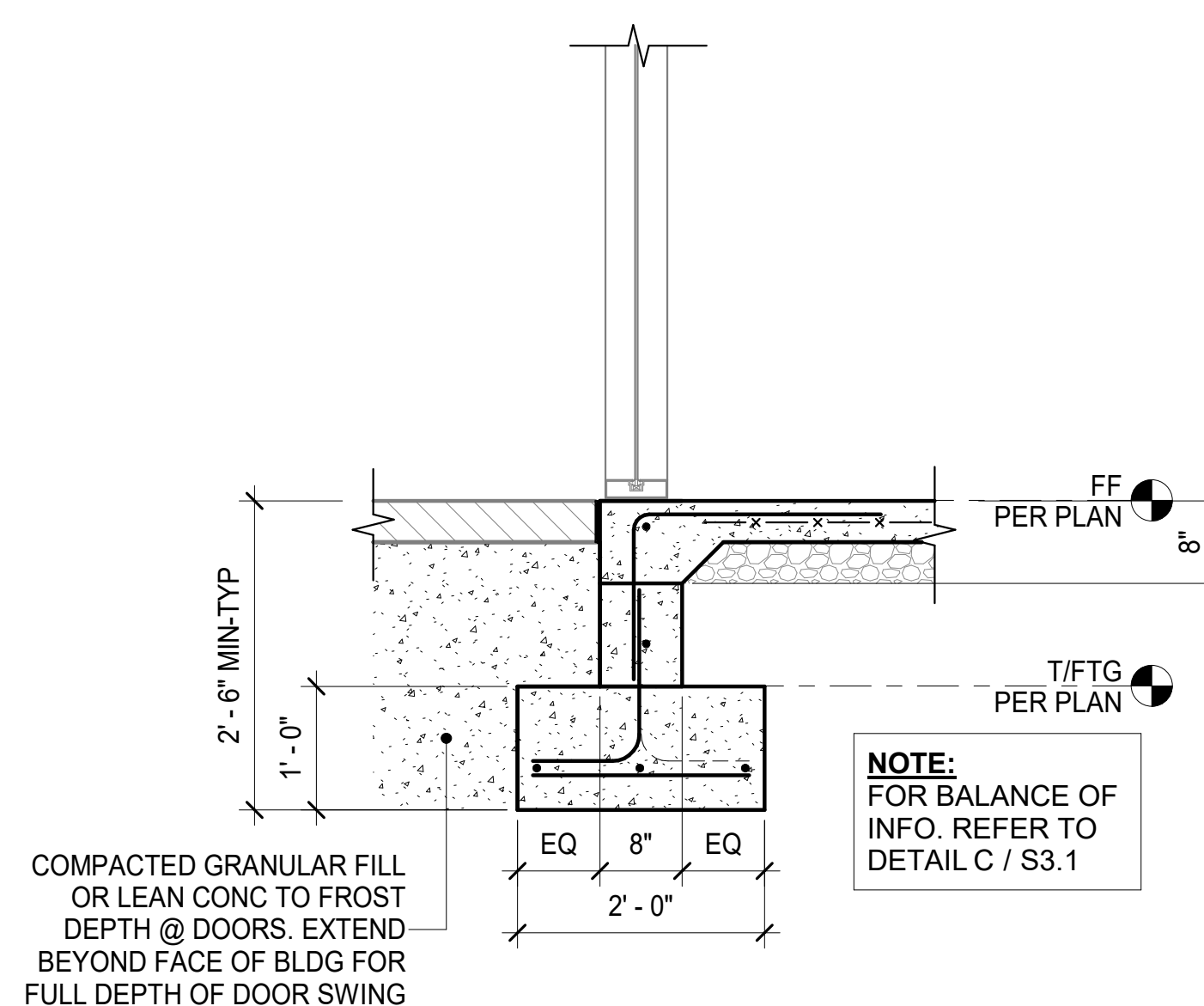
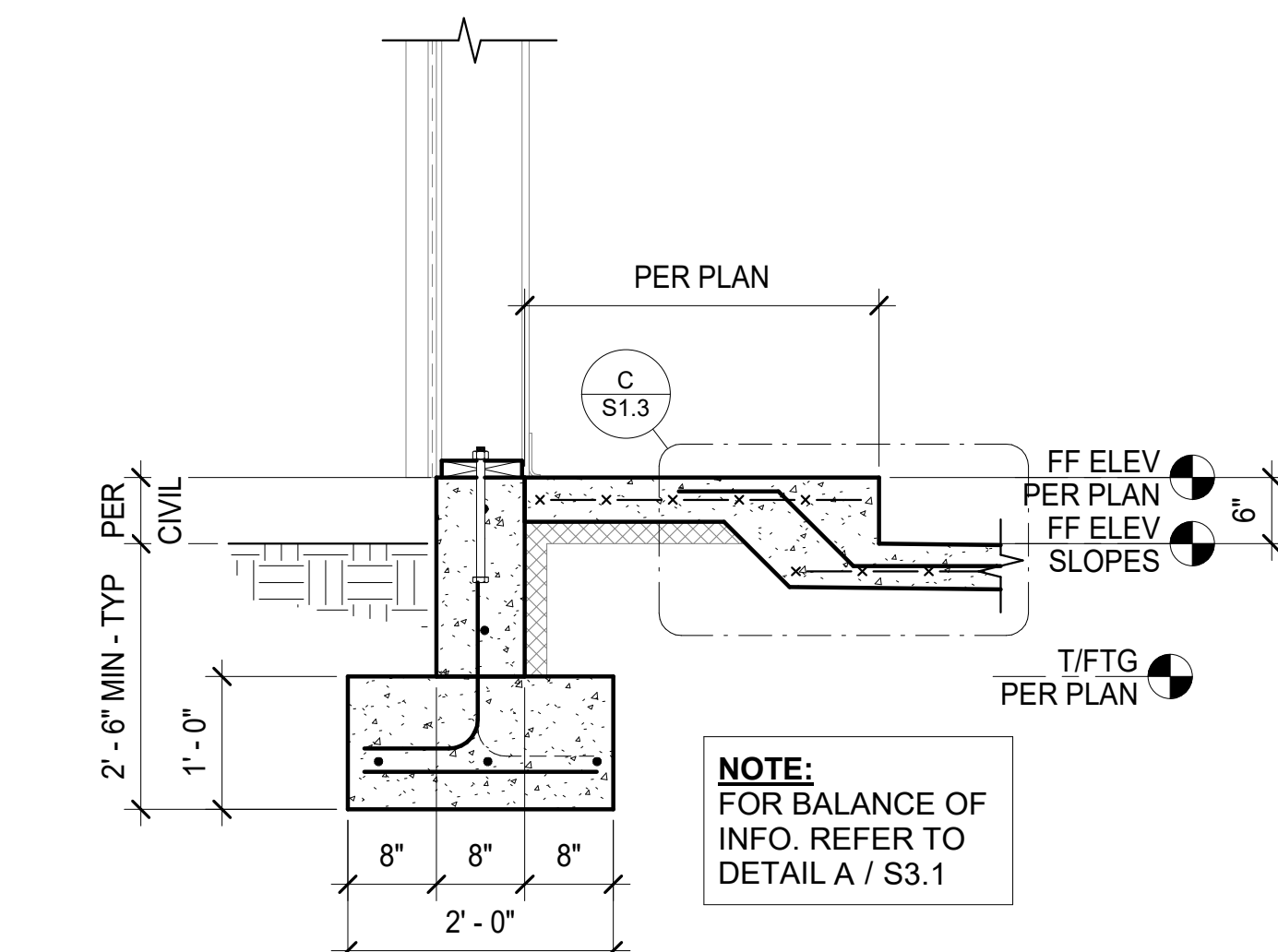
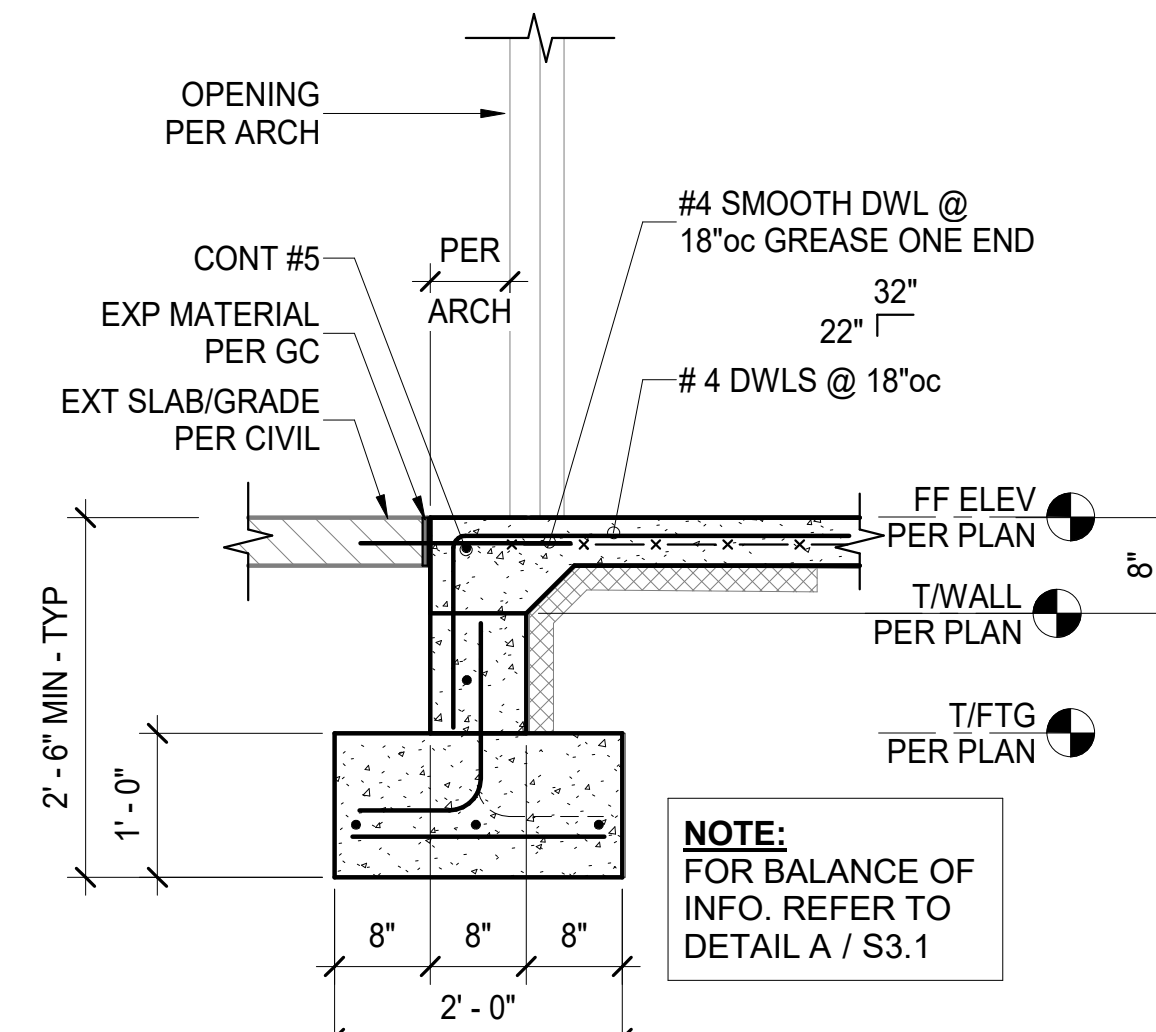
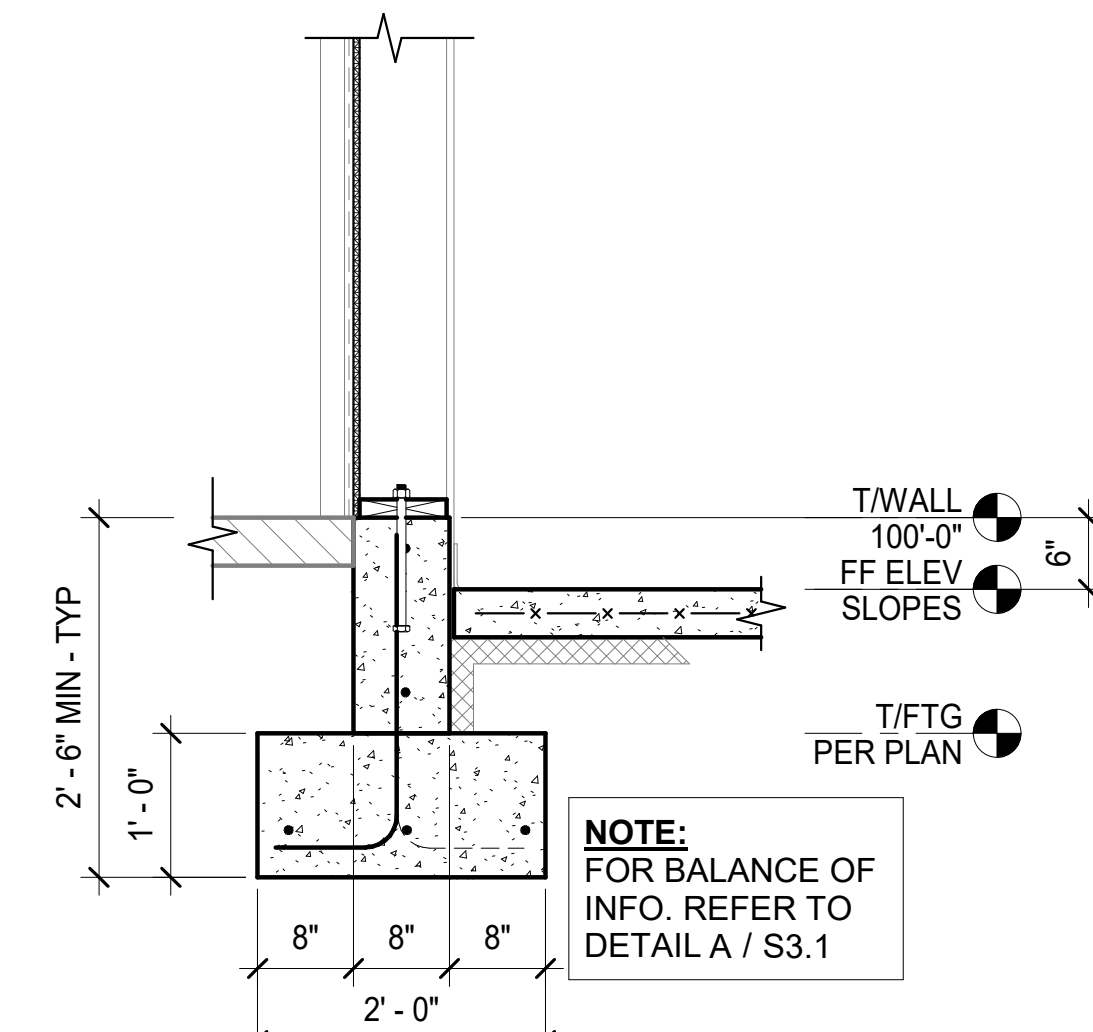
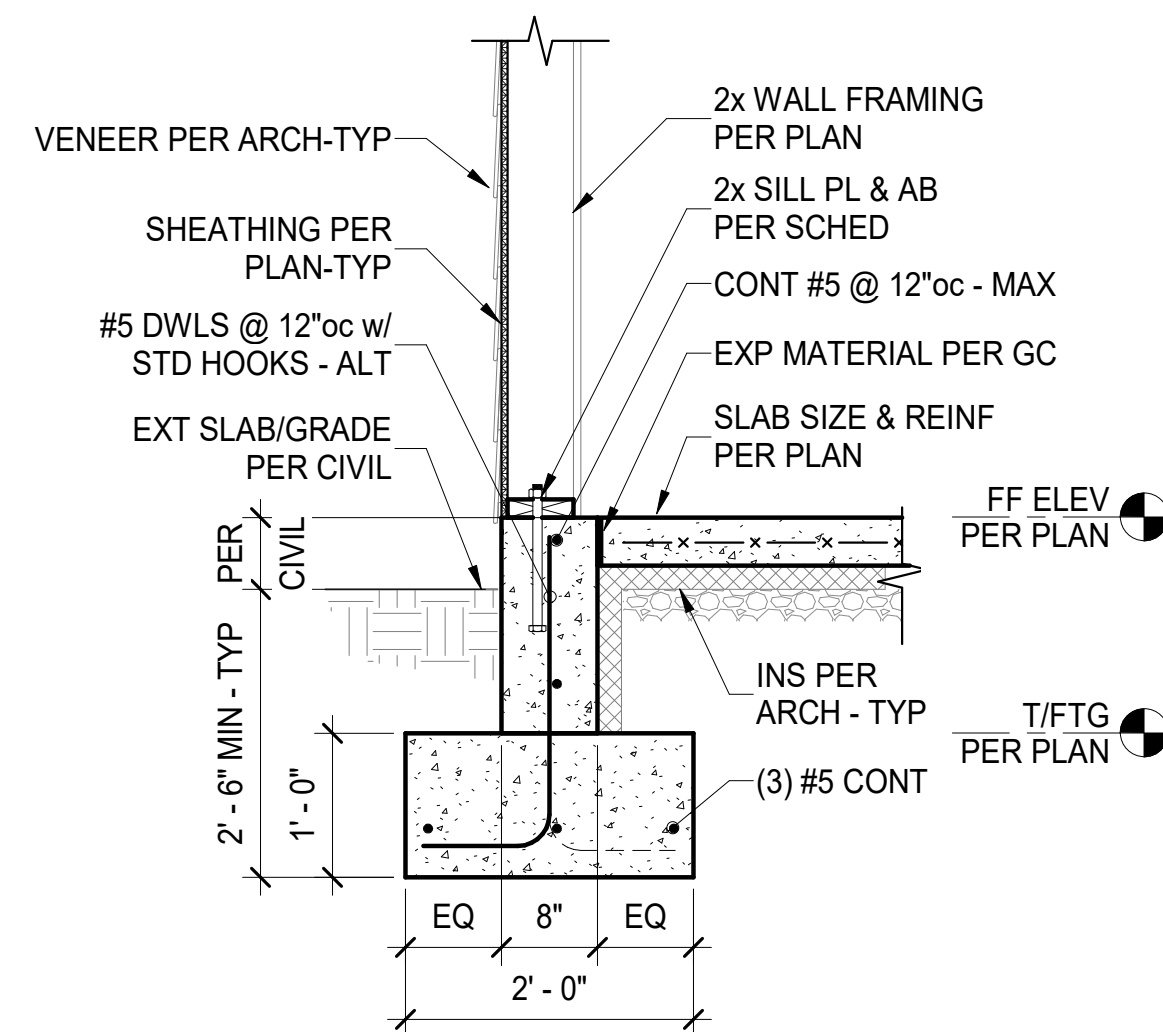
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PROJECT MANAGER:	CS
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PROJECT NUMBER
BAA-MO-01-21
DATE
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SHEET
S2.2
ROOF FRAMING
PLAN



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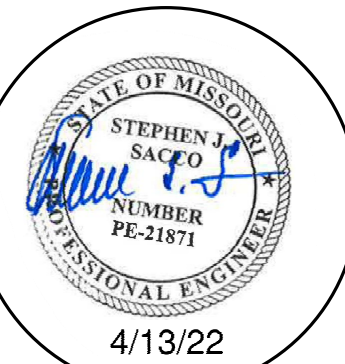
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New Base Station #2 Facility for:
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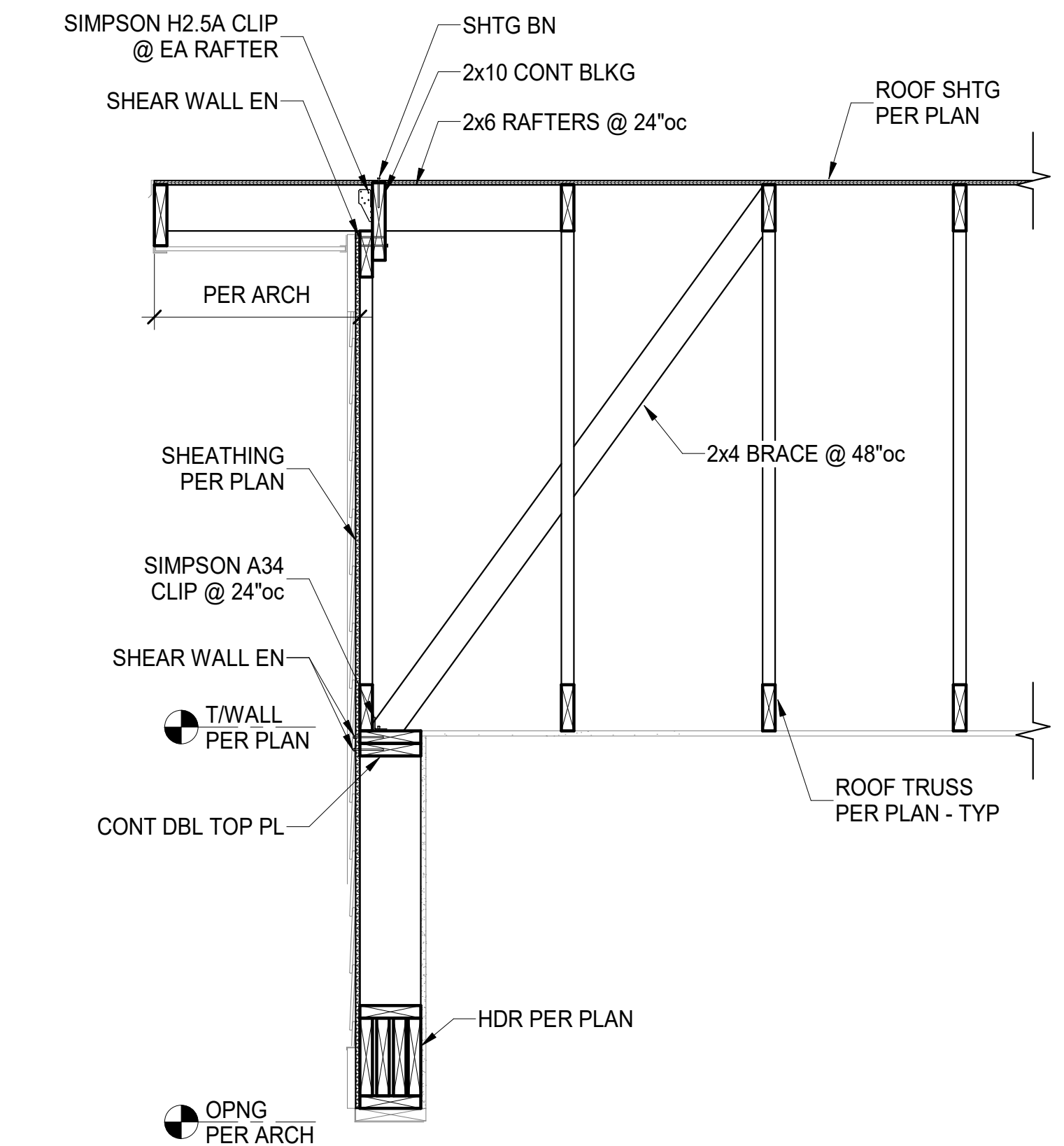
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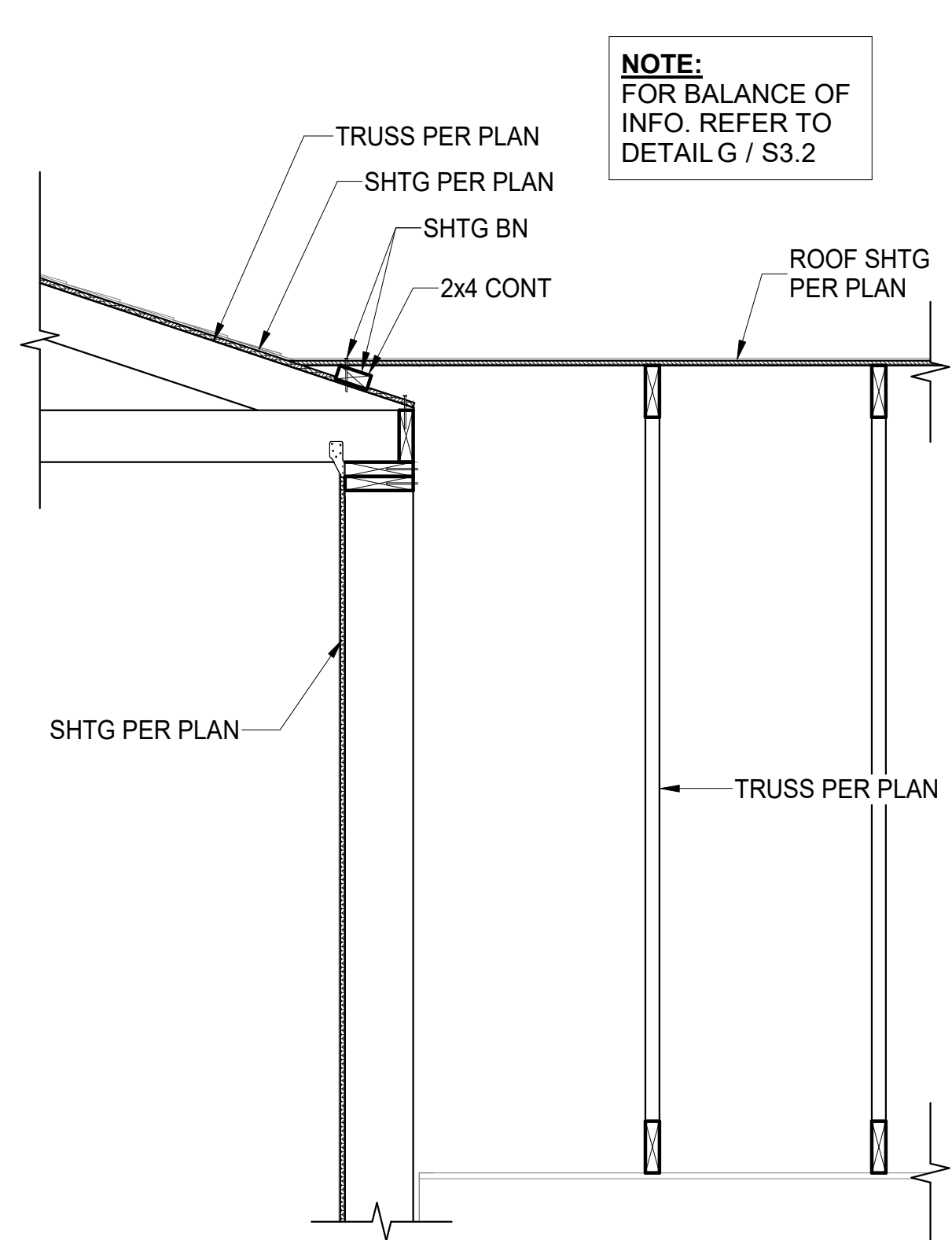
SHEET

S3.1

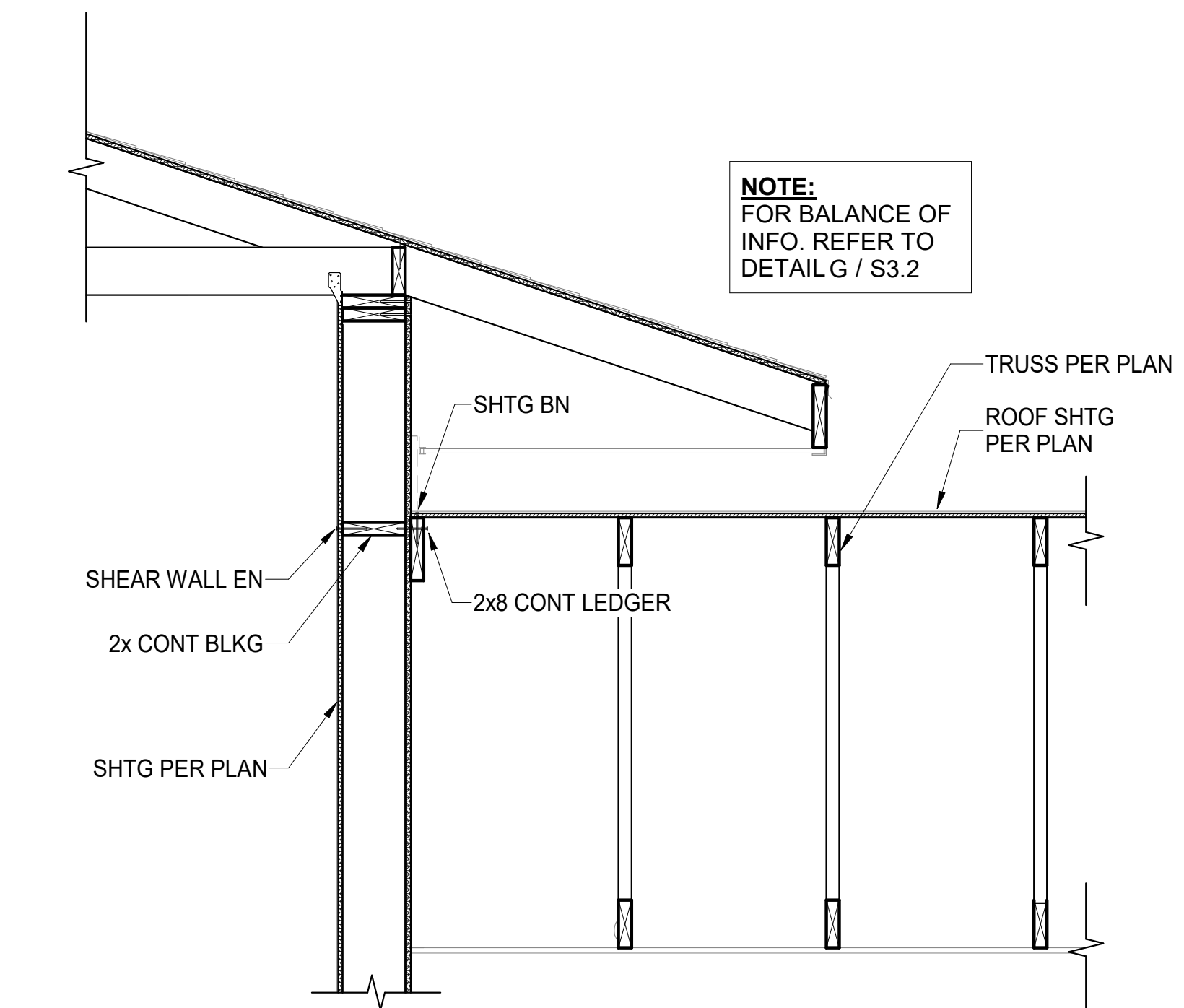
FOUNDATION SECTIONS



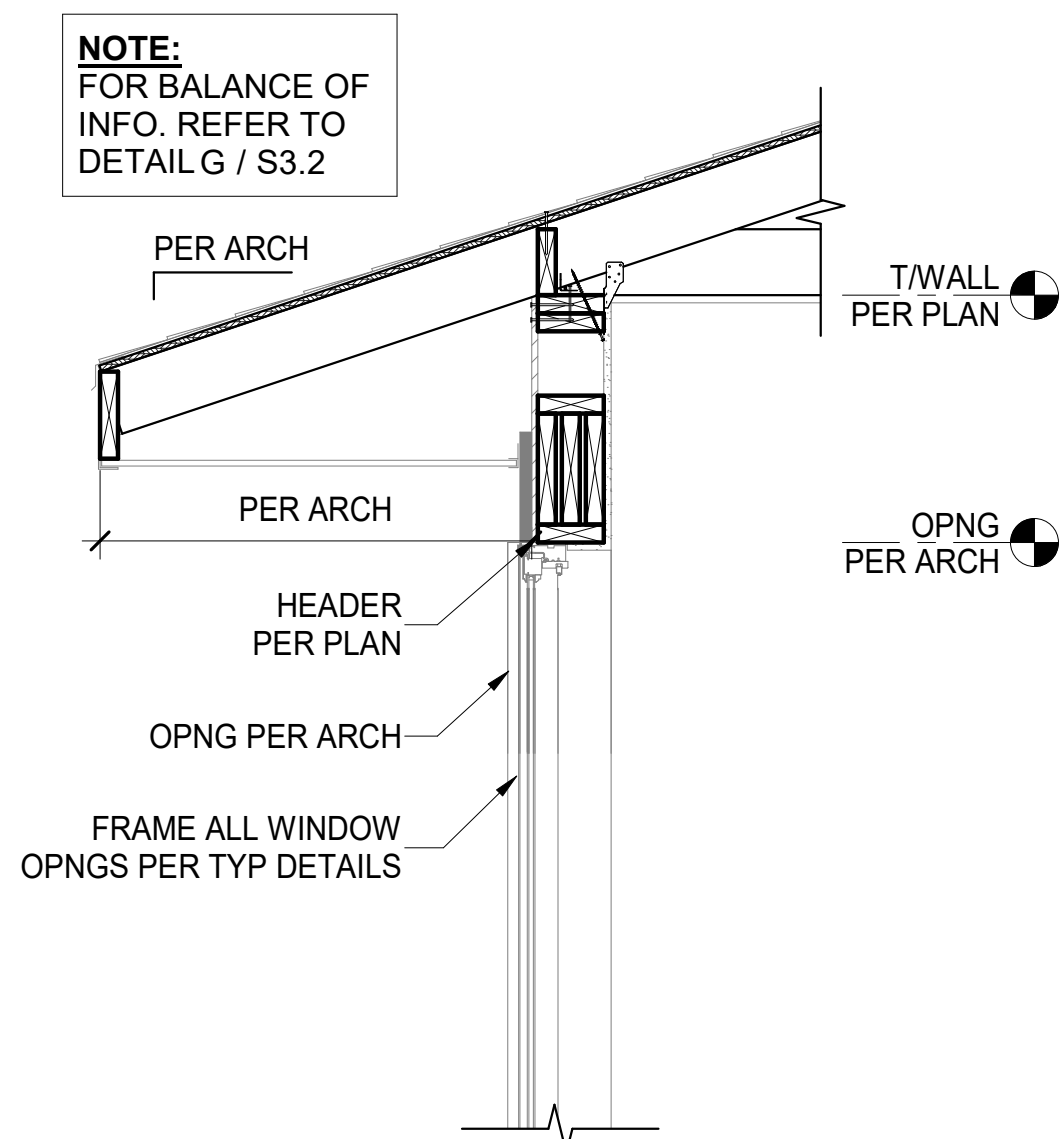
A FRAMING SECTION
S3.2 3/4" = 1'-0"



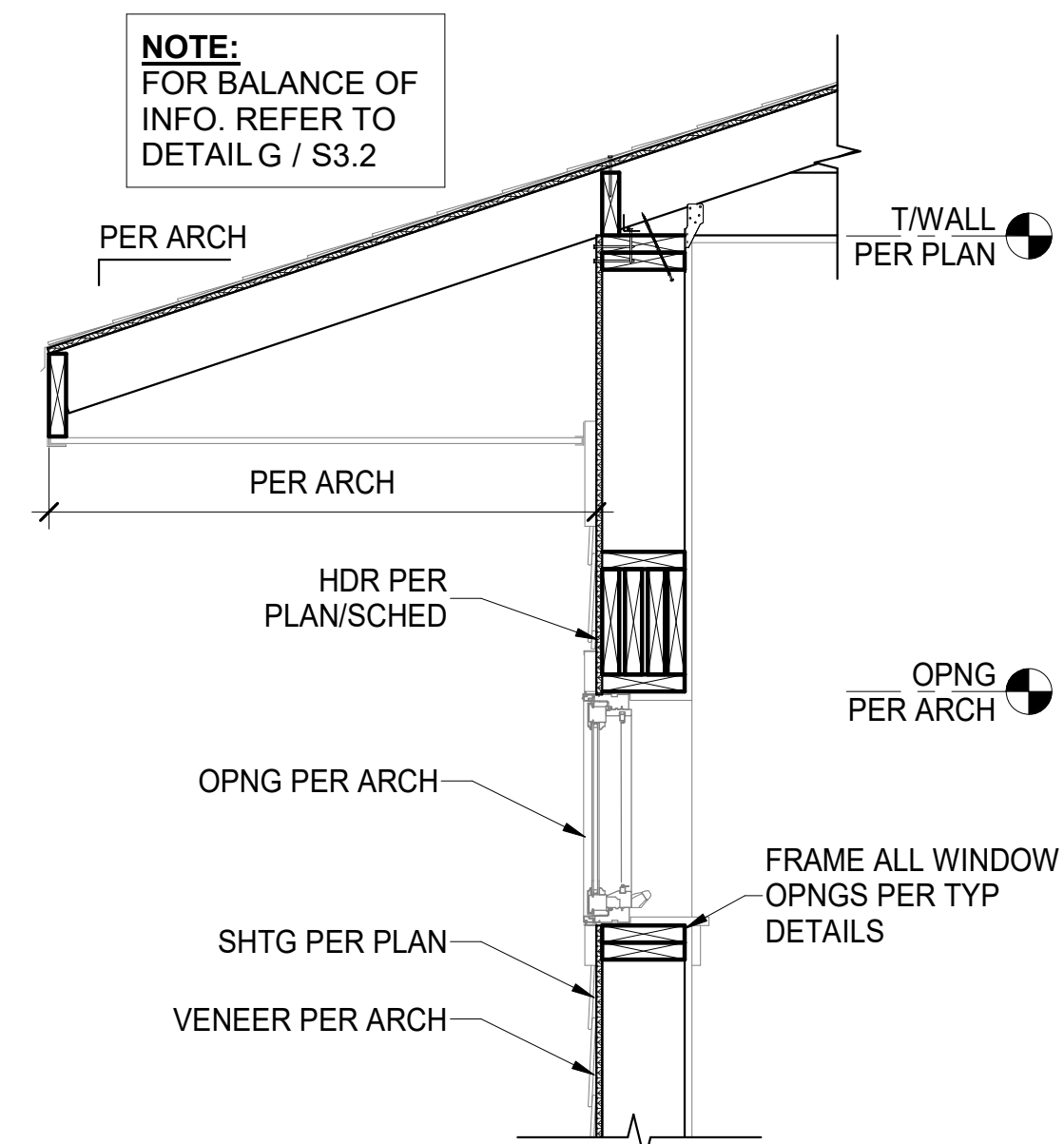
B FRAMING SECTION
S3.2 3/4" = 1'-0"



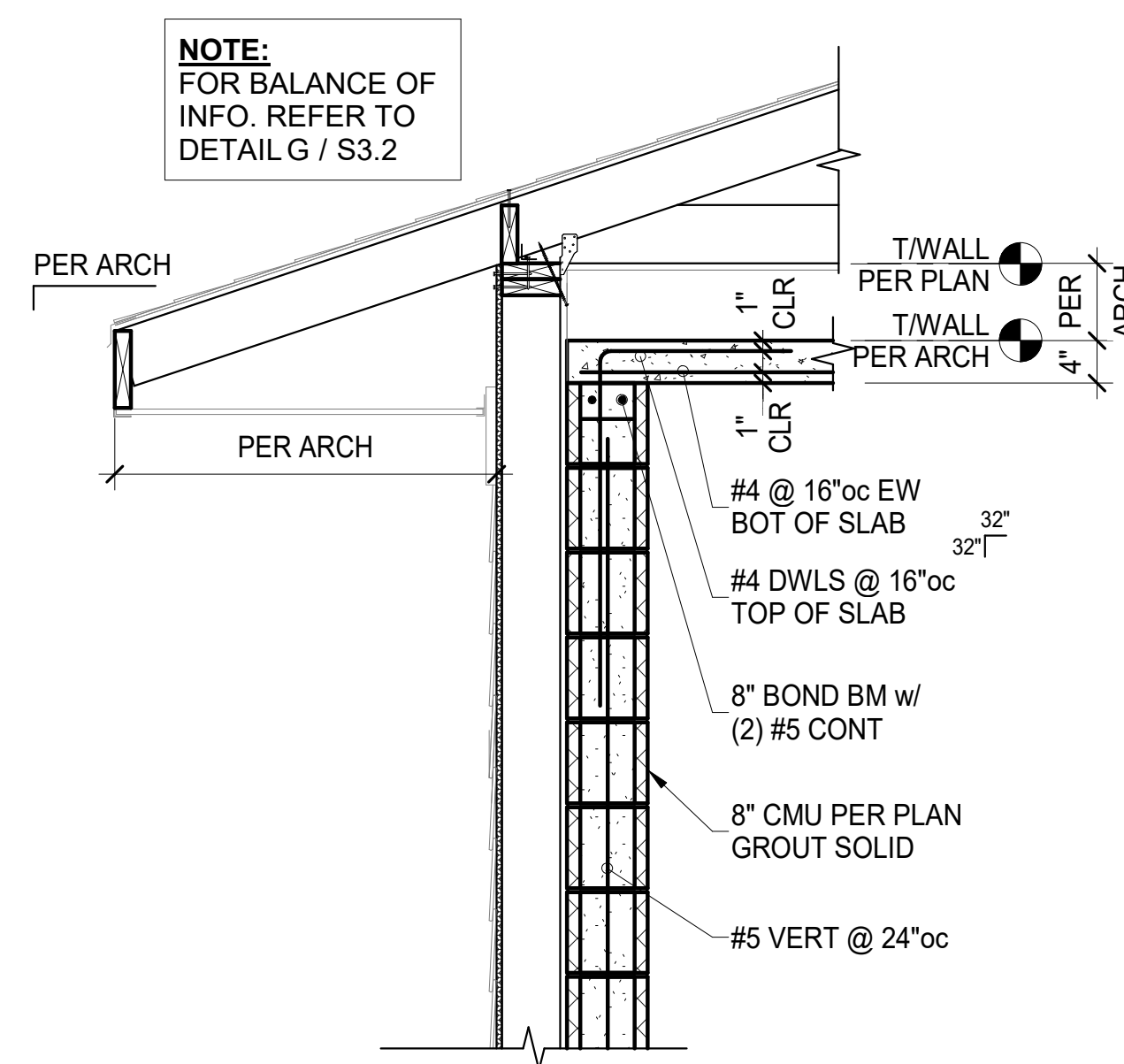
C FRAMING SECTION
S3.2 3/4" = 1'-0"



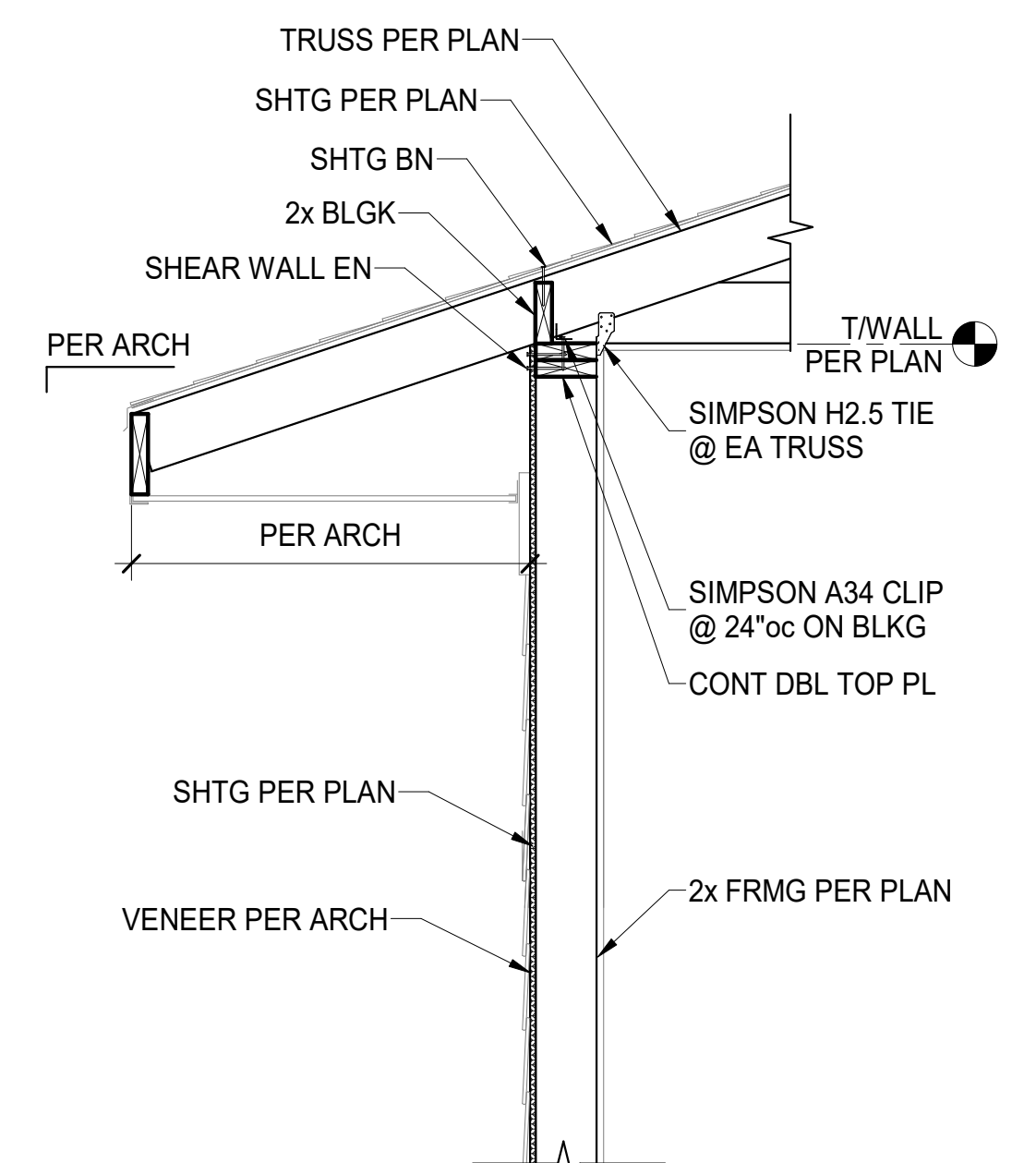
D FRAMING SECTION
S3.2 3/4" = 1'-0"



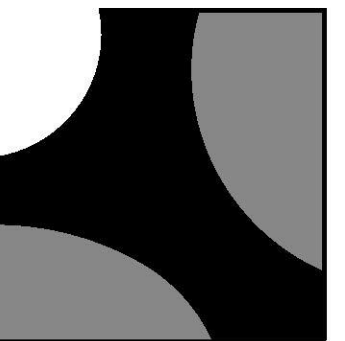
E FRAMING SECTION
S3.2 3/4" = 1'-0"



F FRAMING SECTION
S3.2 3/4" = 1'-0"



G FRAMING SECTION
S3.2 3/4" = 1'-0"



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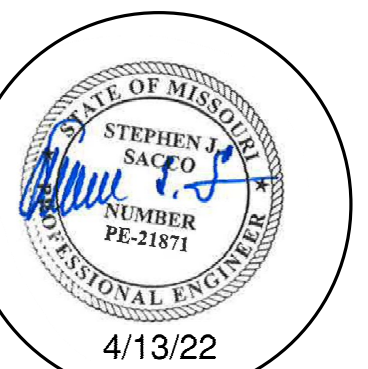
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DATE	ISSUE	RF#
4-13-2022	BID & PERMIT SET	



STEVE SACCO
PE-21871

PROJECT MANAGER: CS
DRAWN BY: TJH

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BAA-MO-01-21
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SHEET
S3.2
FRAMING
SECTIONS

MECHANICAL ABBREVIATIONS	
AAV	AUTOMATIC AIR VENT
ACCU	AIR COOLED CONDENSING UNIT
ACH	AIR CHANGES PER HOUR
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITIES HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIP	ABANDON(ED) IN PLACE
AP	ACCESS PANEL
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL VALVE
ATCR	ALL THREAD ROD
ATU	AIR TERMINAL UNIT
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOP	BOTTOM OF PIPE
BP	BYPASS
BT	BUFFER TANK
BTUH	BTU/HR
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CI	CAST IRON
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRGU	COMPUTER ROOM CONDENSING UNIT
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DRAIN
DDC	DIRECT DIGITAL CONTROL
DEMOL	DEMOLISH
DLSS	DUCTLESS SPLIT SYSTEM
DN	DOWN
DOAS	DEDICATED OUTDOOR AIR SYSTEM
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EBB	ELECTRIC BASEBOARD HEATER
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EMS	ENERGY MANAGEMENT SYSTEM
EQ	EQUAL
EQPT	EQUIPMENT
ERV	ENERGY RECOVERY VENTILATOR
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EV	EXHAUST VENTILATOR
EWC	ELECTRIC WATER COOLER
EWB	ELECTRIC WATER HEATER
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FRT	FIRE RETARDANT TREATED WOOD
FS	FLOAT SWITCH
FSD	FIRE/SMOKE DAMPER
FT.HD.	FEET OF HEAD (PRESSURE DROP)
FTU	FAN TERMINAL UNIT
FV	FIELD VERIFY
GBDD	GRAVITY BACK DRAFT DAMPER
GC	GENERAL CONTRACTOR
GUH	GAS UNIT HEATER
GWH	GAS WATER HEATER
H	HUMIDITY SENSOR
HEV	HOSE END VALVE
HP	HORSEPOWER
HP	HEAT PUMP
HPRTU	HEAT PUMP ROOF TOP UNIT
HX	HEAT EXCHANGER
HZ	HERTZ
IAD	INTAKE AIR HOOD
IBDD	INTAKE BACK DRAFT DAMPER
ID	INSIDE DIAMETER
IOM	INSTALLATION AND OPERATION MANUAL
IRH	INFRARED RADIANT HEATER
IV	INTAKE VENTILATOR
IW	INDIRECT WASTE
KEC	KITCHEN EQUIPMENT CONTRACTOR
KEF	KITCHEN EXHAUST FAN
KW	KILOWATT
LLD	LOW LEAK TYPE DAMPER
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
MAV	MANUAL AIR VENT
MFR	MANUFACTURER
MAX	MAXIMUM
MBH	1000 BTU/HR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPERES
MD	MOTORIZED DAMPER
MFR	MANUFACTURER
MH	MOUNTING HEIGHT
MIN	MINIMUM
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE UP AIR
MUW	MAKE UP WATER
NAU	NEUTRAL AIR UNIT
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OF	OVERFLOW
P	PUMP
PC	PLUMBING CONTRACTOR
PCF	POUNDS PER CUBIC FOOT
PE	POLYETHYLENE
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSG	PUMP SUCTION GUIDE
PSI	POUNDS PER SQUARE INCH
PTAC	PACKAGED TERMINAL AIR CONDITIONING
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAH	RELIEF AIR HOOD
RHC	REFRIGERATION CONTRACTOR
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RLS	REFRIGERANT LIQUID/SUCTION
RS	REFRIGERANT SUCTION
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	ROOF TOP UNIT
S	SENSOR
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SMS	SHEET METAL SCREW
SS	STAINLESS STEEL
T	THERMOSTAT
TA	TRANSFER AIR
TDV	TRIPLE DUTY VALVE
TRU	TUBULAR RADIANT HEATER
TV	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VAV	VARIABLE AIR VOLUME
VO	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
VSD	VARIABLE SPEED DRIVE
x	EXISTING
W	WATT
W	WITH
WS	WET SWITCH
WSPD	WATER SOURCE HEAT PUMP
ZD	ZONE DAMPER

MECHANICAL SYMBOLS LEGEND		
	AIR GRILLES	
	EXHAUST AIR GRILLE	
	RETURN AIR GRILLE	
	SUPPLY AIR DIFFUSER	
	RETURN AIR GRILLE, SIDEWALL	
	SUPPLY AIR GRILLE, SIDEWALL	
	AIR DEVICE, CEILING SLOT	
	CONTROLS	
	HUMIDISTAT	
	SENSOR, CARBON DIOXIDE	
	SENSOR, CARBON MONOXIDE	
	SENSOR, NITROGEN DIOXIDE	
	THERMOSTAT, EQUIPMENT ID	
	GENERAL	
	CONNECTION OF NEW TO EXISTING	
	CONNECTION OF NEW TO EXISTING, NOTED	
	EXISTING TO BE DEMOLISHED	
	EXISTING TO BE DEMOLISHED	
	EXISTING TO BE DEMOLISHED	
	SINGLE LINE DUCT, OPEN END RETURN	
	SINGLE LINE DUCT, OPEN END	
	TRANSFER AIR OPENING THROUGH WALL ABOVE CEILING, 14x14 U.O., MOUNT AS HIGH AS POSSIBLE	
	UNDER DUCT DOOR 1", COORDINATE WITH G.C.	
	DUCT	
	DUCT DIMENSIONS, LINER/INSULATION TYPE	
	VERTICAL FIRE DAMPER/FIRE SMOKE DAMPER	
	HORIZONTAL FIRE DAMPER/FIRE SMOKE DAMPER	
	BACK DRAFT DAMPER	
	MOTORIZED DAMPER	
	VOLUME DAMPER, MANUAL	
	FLEXIBLE DUCT	
	RADIUS ELBOW, ROUND OR RECTANGULAR	
	RECTANGULAR ELBOW WITH TURNING VANES	
	ROUND DUCT VERTICAL OFFSET	
	CHANGE IN DUCT ELEVATION, DIRECTION OF FLOW	
	TRANSITION IN DUCT SIZE	
	E.A. 90° ELBOW DOWN, RECTANGULAR / ROUND	
	E.A. 90° ELBOW UP, RECTANGULAR / ROUND	
	R.A. 90° ELBOW DOWN, RECTANGULAR / ROUND	
	R.A. 90° ELBOW UP, RECTANGULAR / ROUND	
	S.A. 90° ELBOW DOWN, RECTANGULAR / ROUND	
	S.A. 90° ELBOW UP, RECTANGULAR / ROUND	
	REBALANCE EXISTING AIR DEVICE TO CFM SHOWN	

MECHANICAL PIPING LEGEND		
	PIPING	
	COMPRESSED AIR PIPE	
	AC CONDENSATE DRAIN PIPE	
	COMBUSTION AIR PIPE (SEALED COMBUSTION UNIT)	
	NATURAL GAS PIPE	
	LIQUIFIED PROPANE GAS PIPE	
	REFRIGERANT PIPE	
	REFRIGERANT PIPE, HOT GAS REHEAT	
	VENT EXHAUST PIPE (SEALED COMBUSTION UNIT)	
	PIPE SYMBOLS	
	AUTOMATIC SHUT OFF VALVE, GAS	
	BALL VALVE	
	GATE VALVE (GV)	
	PLUG VALVE	
	PRESSURE REDUCING VALVE (PRV)	
	STRAINER	
	UNION	
	90° ELBOW DOWN	
	90° ELBOW UP	
	90° TEE DOWN	
	90° TEE UP	
	DUCT/PIPE THROUGH ATTIC GYP.BD. PENETRATION SEALED BY G.C.	
	TRANSITION IN PIPE SIZE	
	CHANGE IN ELEVATION, DIRECTION OF FLOW	
	PIPE TRAP	

MECHANICAL PIPE & PIPE INSULATION SCHEDULE				
PIPE APPLICATION				
AC CONDENSATE (G) ABOVE GROUND SEISMICALLY ACTIVE REFRIGERANT (RSL)				
COMBUSTION AIRVENT EXHAUST (PLENUM SPACES)				
COMBUSTION CONDENSATE (NON-PLENUM SPACES)				
NATURAL GAS (G) ABOVE GROUND SEISMICALLY ACTIVE REFRIGERANT (RSL)				
PIPE MATERIAL				
COPPER TUBE: (ASTM B 88, TYPE K OR L) OR ASTM B 280, TYPE ACR. WROUGHT-COPPER FITTINGS: ASME B16.22. SOLDER: ASTM B 32 USE 95-5 TIN ANTIMONY OR ALLOY HB SOLDER TO JOIN COPPER SOCKET FITTINGS ON COPPER PIPE. BRAZING METALS: AWS A5.8.	◆			
STEEL PIPE SCHEDULE 40: ASTM A 53, TYPE E OR S, GRADE B. FITTINGS: MALLEABLE-IRON, THREADED, ASME B16.3, CLASS 150, STANDARD PATTERN.		◆		
STEEL PIPE SCHEDULE 40: ASTM A 53, TYPE E OR S, GRADE B. FITTINGS: WROUGHT-STEEL WELD, ASTM A 234 FOR BUTT WELDING AND SOCKET WELDING.		◆		
ANNEALED-TEMPER COPPER TUBE: ASTM B 88, TYPE L. FITTINGS: ASME B16.22, WROUGHT COPPER, AND STREAMLINED PATTERN. BRAZING METALS: ALLOY WITH MELTING POINT > 1000 DEG F, AWS A5.8. BRAZING ALLOYS CONTAINING MORE THAN 0.05 PERCENT PHOSPHORUS ARE PROHIBITED.	◆			
PVC PLASTIC, SOLID WALL: ASTM D 1785, SCHEDULE 40. FITTINGS: PVC SOCKET-TYPE, ASTM D 2466.		◆		
CPVC PLASTIC: ASTM F 441, SCHEDULE 40. FITTINGS: CPVC SOCKET-TYPE, ASTM F 438.			◆ ◆ ◆	
PIPE INSULATION		(2009 IECC)		
PIPE DIAMETER: ALL; 1/2" THICK INSULATION				A
PIPE DIAMETER: ≤ 1.5"; 1-1/2" THICK INSULATION		A		
PIPE DIAMETER: ≥ 1.5"; 2" THICK INSULATION		A		
INSULATION TYPE				
A FLEXIBLE CLOSED-CELL ELASTOMERIC: ASTM C 534, TYPE I. NFPA 90A, 90B. EXTERIOR EXPOSURES: PROVIDE CONTINUOUS 30 MIL PVC JACKET (UV, OZONE, MOISTURE RESISTANT).				
*PROVIDE APPLIANCE VENTING MATERIALS IN STRICT ACCORDANCE WITH APPLIANCE LISTING. NOTE:				
1. INSTALL ALL PIPING, PIPE INSULATION, AND JACKETING IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND PER APPLICABLE CODE AND AHJ'S REQUIREMENTS.				
2. ALL MATERIALS INSTALLED IN PLENUM SPACES SHALL CONFORM WITH NFPA 90A AND NFPA 90B AND BE LABELED ACCORDINGLY.				
3. DO NOT INSTALL ANY PIPING ABOVE ELECTRICAL PANELS AND/OR TRANSFORMERS.				
4. LABEL PIPE PER BUILDING STANDARD OR AS SCHEDULED.				
5. PAINT PIPE PER ARCHITECT'S DIRECTION OR PER OWNER'S OR BUILDING STANDARD.				

WATER PIPE SUPPORT SCHEDULE							
NOMINAL PIPE DIAMETER NPS (IN)	MAXIMUM SUPPORT SPACING (FEET)						
	STEEL PIPE	COPPER TUBE	SCH 40 PVC	SCH 40 CPVC			
			60°F	73°F	100°F	120°F	140°F
1/2	7	8	-	5	4.5	4.5	4
3/4	7	9	5	5	5	4.5	4
1	7	9	5.5	5.5	5.5	5	4.5
1 1/4	9	12	5.5	5.5	5.5	5.5	5
1 1/2	9	12	6	6	5.5	5.5	5
2	10	13	6	6	6	5.5	5
1. SUPPORT SPACING ABOVE IS FOR STRAIGHT HORIZONTAL PIPE. PROVIDE SUPPORTS ON EACH SIDE OF ELBOWS, FLANGES, VALVES, SPECIALTIES, ETC.							

GAS FURNACE SCHEDULE									
MFR: CARRIER		FAN							
PLAN MARK	MODEL	INPUT/OUTPUT (MBH)	EFF. %	CFM	O.A. CFM	E. S. P. (IN.W.G.)	W/PH60	WEIGHT (LBS)	REMARKS
GF-1	59SP6A080V21-20	80.0/78.0	96.0	200	400	1.0	0.5	115/160	161 1,2,3,4,5,6,7,8
1. ALUMINIZED STEEL INSHOT BURNERS, ALUMINIZED STEEL TUBULAR HEAT EXCHANGER, HOT SURFACE IGNITION.									
2. ECM MULTI SPEED CONSTANT TORQUE FAN MOTOR, SPEED MEDIUM-HIGH.									
3. PROVIDE FULL DIAMETER AIR AND EXHAUST AIR VENT CONNECTIONS.									
4. PROVIDE VIBRATION ISOLATION PADS.									
5. MOTORIZED OUTDOOR AIR DAMPER.									
6. EXPANSION COIL MODEL: CAPMP6121ALA, "A" CONFIGURATION.									
7. ELECTRICAL DISCONNECT AND RETURN AIR SMOKE DETECTOR BY E.C.									
8. PROVIDE WITH ELECTRONIC PROGRAMMABLE THERMOSTAT WITH REMOTE AVERAGING SENSORS AS SHOWN ON PLAN.									

CONDENSING UNIT SCHEDULE									
MFR: CARRIER		COOLING				ELECTRICAL			REMARKS
MARK	MODEL	NET TLT/SENS MBH	SEER	AMB. °F	LINE SET I.D. IN.	V/PH/Hz	MCAM/OCP	WEIGHT (LBS)	
CU-1	24ACC46A003	56.5/43.9	14	95	PER I.O.M.	230/160	12.8/20	197	1,2,3,4,5,6
1. PRIOR TO INSTALLATION, CONFIRM REFRIGERANT PIPE ROUTE. SIZE AND INSTALL REFRIGERANT PIPING IN STRICT ACCORDANCE WITH MANUFACTURER'S I.O.M.									
2. INSULATE PIPE PER MANUFACTURER'S I.O.M. INSULATE WITH 1" THICK ELASTOMERIC INSULATION. ALL INSULATED PIPE ON BUILDING EXTERIOR SHALL BE WRAPPED WITH 30 MIL PVC JACKET.									
3. REFRIGERANT: R410A									
4. FEATURES: HIGH PRESSURE SWITCH (MANUAL RESET), TWO STAGE SCROLL COMPRESSOR, HI-CAPACITY DRIER FACTORY INSTALLED IN LIQUID LINE, LOW PRESSURE SWITCH, CRANKCASE HEATER, COIL HAIL GUARDS.									
5. THERMAL EXPANSION VALVE, FIELD INSTALLED.									
6. ELECTRICAL DISCONNECT BY E.C.									

DLSS HP-FAN COIL UNIT SCHEDULE															
MFR: CARRIER		MODEL	(CFM)	COOLING		EER	REFG. TYPE	HEATING		REFRIGERANT PIPING LIQUID-SUCTION (I.D. IN.)	ELECTRICAL		WEIGHT (LBS)	REMARKS	
MARK	AREA SERVED			TOTAL (BTUH)	AMB. (°F)			(BTUH)	AMB. (°F)		COP	V/PH/Hz			MCA/MOP
HP-1	IT	MPB012S4S-1L	-	12,000	95.0	13.0	R410A	4,470	5.0	4.06	1/4"-1/2"	115/1/60	15.0/20	80	1,2,3,4
FCU-1		MWMB012S4-2L	365									-	-	20	
1. SINGLE POINT POWER SUPPLY TO HP/FCU, SEE EQUIPMENT MANUFACTURER'S IOM. 2. INDOOR UNIT POWERED THROUGH OUTDOOR UNIT. 3. PROVIDE FCU WITH FACTORY CONDENSATE PUMP. 4. PROVIDE HP WITH FACTORY WIND BAFFLE, FIELD INSTALLED. 5. PROVIDE HP WITH COIL HAIL GUARDS.															

AIR HOOD SCHEDULE											
MFR: COOK		MODEL NO.	CFM	LISTED SIZE LxW (IN.)	FREE AREA SQ. FT.	FINISH MEDIUM	FACE VELOCITY F.P.M.	ΔP (IN.W.C.)	INTAKE/ EXHAUST	WEIGHT LBS.	REMARKS
MARK	SERVES										
IAH-1	GF-1	PR-12	300	Ø12	0.852	PAINTED	612	0.03	INT	-	1
IAH-2	APP. BAYS 125	TRE	975	14x14x2	2.5	PAINTED	390	0.09	INT	-	1
ERJ-1	EF-1	RJR100	110	Ø6	0.196	PAINTED	561	0.09	EXH	-	2
1.	INTAKE AIR HOOD, MILL FINISH ALUMINUM, ALUMINUM BIRD SCREEN, 24V LOW LEAK TYPE MOTORIZED DAMPER, 14" FACTORY CURB, CURB SLOPED TO ROOF PITCH, PAINT CURB AND HOOD TO MATCH ROOF COLOR.										
2.	EXHAUST ROOF JACK COLOR TO MATCH ROOF.										

MECHANICAL SPECIFICATIONS

1. GENERAL
- A. THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS, AND ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL BE PART OF THESE SPECIFICATIONS.
- B. "PROVIDE" AS USED HEREIN MEANS TO FURNISH AND INSTALL COMPLETE.
- C. "FURNISH" AS USED HEREIN MEANS TO PURCHASE AND DELIVER TO THE PROJECT SITE IN UNDAMAGED CONDITION, WHERE APPLICABLE, SUBMIT FOR REVIEW AND APPROVAL AND COORDINATE WITH THE CONTRACT DOCUMENTS.
- D. "INSTALL" AS USED HEREIN MEANS TO STORE AND PROTECT FROM DAMAGE, INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS, AND MAKE ALL CONNECTIONS COMPLETE.
- E. THE TERM "CONTRACTOR" AS USED HEREIN MEANS ANY CONTRACTOR OR SUBCONTRACTOR CONTRACTED TO PERFORM WORK INCLUDED IN AND DEFINED BY THIS SECTION.
- F. MECHANICAL WORK SHALL BE PROVIDED IN STRICT COMPLIANCE WITH THE 2015 IMC, AND ALL APPLICABLE LOCAL ORDINANCES, STATE LAWS AND FEDERAL LAWS.
2. PRIOR TO BIDDING:
- A. THOROUGHLY REVIEW THE BID INSTRUCTIONS INCLUDING ALL CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DOCUMENTS, OBTAIN AND THOROUGHLY EXAMINE THE MANUFACTURERS' WRITTEN INSTALLATION INSTRUCTIONS, DETAILS, AND REQUIREMENTS FOR THE SCHEDULED AND SPECIFIED EQUIPMENT AND MATERIALS. FOR AMBIGUOUS, CONTRADICTION, OR CONFLICTING ITEMS WITHIN THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL REQUEST CLARIFICATION IN A WRITTEN "REQUEST FOR INFORMATION" (RFI), AT LEAST FIVE (5) WORKING DAYS PRIOR TO BID DATE. RFI-RELATED WORK NOT CLARIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ARCHITECT (ENGINEER) IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK.
- B. IF THE CONTRACTOR BELIEVES THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE ARCHITECT (ENGINEER) IN WRITING.
- C. NO ALLOWANCES WILL BE MADE DUE TO CONTRACTOR'S UNFAMILIARITY WITH THE CONSTRUCTION DOCUMENTS OR FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.
- D. VISIT THE JOB SITE AND THOROUGHLY INVESTIGATE CONDITIONS, THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.
- E. REFER TO APPLICABLE CODES CITED IN CONSTRUCTION DOCUMENTS, EXAMINE GOVERNING STATE AND LOCAL CODES, AND LOCAL REGULATIONS AND ORDINANCES, AND PROVIDE ALL EQUIPMENT AND INSTALLATION IN STRICT ACCORDANCE WITH SAME.
- F. REFER TO CONSTRUCTION DOCUMENTS FOR SCHEDULED AND SPECIFIED MATERIALS AND EQUIPMENT. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS AND DETAILS.
3. BIDDING
- A. SUBMISSION OF A BID ACKNOWLEDGES THAT THE CONTRACTOR HAS REVIEWED THE BID INSTRUCTIONS, HAS VISITED THE SITE, EXAMINED ALL CONSTRUCTION DOCUMENTS, AND AGREES TO ALL ITEMS AND CONDITIONS WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR'S BID SHALL INCLUDE ALL MECHANICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING MECHANICAL WORK RELATED TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS.
4. PERMITS
- A. SECURE AND PAY FOR ALL PERMITS, LICENSES, AND INSPECTIONS REQUIRED BY THE AHJ FOR THIS WORK.
5. SUBSTITUTIONS
- A. MANUFACTURERS' EQUIPMENT, APPLIANCES, AND MATERIALS SCHEDULED, NOTED, AND SPECIFIED IN THE CONSTRUCTION DOCUMENTS ARE THE DESIGN STANDARD. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT OR ENGINEER. IN BIDDING, CONTRACTOR SHALL NOT ASSUME ACCEPTANCE OF SUBSTITUTIONS. CONTRACTOR MUST STATE IN SUBSTITUTION REQUEST: "PROPOSED SUBSTITUTIONS ARE OF EQUAL OR HIGHER QUALITY, EFFICIENCY AND DEPENDABILITY COMPARED TO THE SPECIFIED EQUIPMENT AND MATERIAL. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ANY ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS." IF DEEMED NECESSARY BY THE ARCHITECT OR ENGINEER, SUBSTITUTIONS WHICH ARE NOT APPROVED OR NOT EQUAL TO DESIGN STANDARD SHALL BE REMOVED AND THE SCHEDULED, NOTED, AND SPECIFIED EQUIPMENT AND MATERIALS SHALL BE INSTALLED AT CONTRACTOR'S EXPENSE. SUBMITTING CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ANY ADDITIONAL ENGINEERING COSTS AND COSTS TO OTHER CONTRACTORS DUE TO SUBSTITUTIONS.
7. SCHEDULING
- A. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION, AS SCHEDULED BY THE GC. PROVIDE COMPLETE INFORMATION AND FULL COOPERATION WITH OTHER CONTRACTORS AND TRADES, AS REQUIRED FOR THE TIMELY COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
- B. PROVIDE ALL TESTS AND INSPECTIONS REQUIRED BY AHJ.
- C. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.
7. SCOPE
- A. PROVIDE PERMIT(S), INSPECTIONS, FINAL CERTIFICATE(S) OF INSPECTION BY AHJ, PERMIT AND INSPECTION FEES, AND ALL MATERIALS, EQUIPMENT, RIGGING, AND LABOR NECESSARY FOR A COMPLETE AND FULLY OPERATING HVAC SYSTEM.
- B. THROUGHOUT CONSTRUCTION, THIS CONTRACTOR'S WORK SHALL INCLUDE ONGOING COORDINATION OF THIS WORK WITH THE CONTRACTOR'S TRADES, THE WORK OF ALL OTHER TRADES, AND WITH UTILITY SERVICE(S) AND UTILITY CONNECTION(S). FOR AMBIGUOUS, CONTRADICTION, OR CONFLICTING ITEMS WITHIN THE CONSTRUCTION DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE ACTUAL UTILITY SERVICE AND CONNECTION REQUIREMENTS, THE CONTRACTOR SHALL REQUEST CLARIFICATION IN A WRITTEN "REQUEST FOR INFORMATION" (RFI). RFI SHALL BE ISSUED WITHOUT DELAY AND PRIOR TO PROCEEDING WITH ANY RFI-SUBJECT WORK. RFI NOT CLARIFIED PRIOR TO BID SHALL BE PROVIDED PER THE ARCHITECT (ENGINEER) IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK, AT NO ADDITIONAL COST TO THE OWNER.
- C. PROVIDE HOISTING FOR ALL MATERIALS AND EQUIPMENT FURNISHED AND/OR INSTALLED, IN ACCORDANCE WITH ALL CITY, STATE AND FEDERAL RULES AND REGULATIONS.
- D. INSTALL ALL WORK AND EQUIPMENT RIGID, DEAD LEVEL, PLUMB, AND TRUE-TO-LINE. UNLESS NOTED OTHERWISE, SUPPORT AND MOUNTING OF EQUIPMENT, DUCT, PIPING, ETC., ARE THIS CONTRACTOR'S MEANS AND METHODS. THE CONTRACTOR SHALL UNDERSTAND THE SPECIFIED AND SCHEDULED EQUIPMENT AND MATERIALS AND MEANS AND METHODS OF INSTALLATION. THIS CONTRACTOR SHALL PROVIDE ALL ACCESSORIES REQUIRED FOR PROPER SUPPORT WHETHER SHOWN ON THE DRAWINGS OR NOT. IF SUPPORTS ARE REQUIRED, CONTRACTOR SHALL SUBMIT DRAWINGS TO THE ARCHITECT FOR APPROVAL.
- E. PROVIDE ACCESSORY MOUNTING HARDWARE INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, STRUT SYSTEMS, ALL THREAD RODS, AND BRACES, AS REQUIRED TO MOUNT EQUIPMENT. PROVIDE STEEL SHAPES AND FRAMES TO SUPPORT EQUIPMENT WHERE NEEDED. ALL SYSTEMS SHALL BE SUPPORTED INDEPENDENT OF AND ISOLATED FROM EQUIPMENT VIBRATION.
- F. PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH

- MANUFACTURERS' PRINTED INSTALLATION AND MAINTENANCE LITERATURE. COMPONENTS REQUIRING PERIODIC MAINTENANCE OR ADJUSTMENTS SHALL BE INSTALLED AS TO PERMIT ACCESS WITHOUT DAMAGE TO STRUCTURE, FINISHES, OR OTHER EQUIPMENT.
- G. PROVIDE ALL LABOR, EQUIPMENT AND MATERIAL REQUIRED FOR THE REINSTALLATION AND RE-SUPPORT OF EXISTING SERVICES (DUCTWORK, ELECTRICAL CONDUIT, PIPING, EXISTING EQUIPMENT, ETC.) DISTURBED BY THE INSTALLATION OF NEW WORK UNDER THIS CONTRACT.
- H. CONTRACTOR SHALL PROVIDE DAILY CLEAN-UP, DEMOLITION AND LEGAL DISPOSAL OF ALL RUBBISH GENERATED BY THIS WORK.
- I. AS-BUILT DRAWINGS: DURING CONSTRUCTION, AS WORK PROCEEDS, MAINTAIN AS-BUILT MARK-UPS OF ACTUAL INSTALLATION. AT CONSTRUCTION COMPLETION AND PRIOR TO TURNOVER TO OWNER, PROVIDE FINAL MARK-UPS IN PDF AND DWG FORMAT TO ARCHITECT AND ENGINEER.
- J. PROVIDE FINAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, AS NOTED (KITCHEN EQUIPMENT, LAUNDRY EQUIPMENT, ETC.).
- K. DO NOT ROUTE ANY PIPING OR DUCTWORK ABOVE ELECTRICAL PANELS. UNLESS NOTED OTHERWISE, ALL DUCT AND PIPE SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALLS, BEAMS, OR COLUMNS. PIPE SHALL BE RUN AS DIRECT AS POSSIBLE - AVOID UNNECESSARY OFFSETS AND MAXIMIZE HEADROOM.
- M. PRIOR TO ORDERING EQUIPMENT, THIS CONTRACTOR SHALL PROVIDE FINAL COORDINATION OF ELECTRICAL POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
- N. CONTRACTOR SHALL MAINTAIN ACTIVITIES WITHIN AREA APPROVED BY OWNER OR GC. CONTRACTOR'S ACTIVITIES SHALL NOT INTERFERE WITH THE OWNER'S OPERATIONS, EXCEPT AS APPROVED.
- O. EXCEPT THOSE COORDINATED AND APPROVED BY THE G.C., CONTINUITY OF ALL BUILDING SERVICES AND THE CONSTRUCTION OF BUILDING FACILITIES SHALL BE MAINTAINED UNINTERRUPTED AT NO ADDITIONAL COST. PROVIDE ALL NECESSARY CROSS CONNECTIONS AND TEMPORARY CONNECTIONS REQUIRED TO PERFORM THE CONSTRUCTION, AS DETERMINED BY THE G.C., AND NEEDED TO MAINTAIN CONTINUITY OF THE BUILDING SERVICE(S). THIS CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY AND ALL CONNECTIONS, AND/OR REARRANGEMENT OF EXISTING EQUIPMENT, PIPING, ETC., SHALL ASSURE FULL RESUMPTION OF SERVICE(S) AT THE G.C.'S DESIGNATED TIME.
8. CODE REQUIREMENTS
- A. ALL WORK SHALL COMPLY WITH THE CONSTRUCTION DOCUMENTS OR, AS DIRECTED BY THE ARCHITECT (ENGINEER), AND SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS OF THE AHJ, WHETHER SO SHOWN OR NOT. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PROVIDING ALL APPLICABLE CODES AND SHALL ENSURE THE WORK COMPLIES WITH ALL LOCAL, STATE AND FEDERAL CODES, TRADE STANDARDS AND MANUFACTURER'S RECOMMENDATIONS. IF CONTRACTOR BELIEVES THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH CODE REQUIREMENTS, IMMEDIATELY NOTIFY THE G.C. IN WRITING. DO NOT INSTALL WORK NOT COMPLYING WITH CODE REQUIREMENTS. IN CASE OF CONFLICT BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY. AS A MINIMUM STANDARD, CONTRACTOR SHALL SATISFY CODE REQUIREMENTS. ALL MODIFICATIONS REQUIRED BY AHJ SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. BEFORE COMMENCING WORK NOT SHOWN IN DOCUMENTS BUT REQUIRED TO ACHIEVE FULL COMPLIANCE WITH CODES, CONTRACTOR SHALL NOTIFY ARCHITECT (ENGINEER).
9. CUTTING & PATCHING
- A. CORE-DRILL OR SAW-CUT EXISTING FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR EQUIPMENT, PIPE, OR DUCTWORK. PRIOR TO CUTTING, PERFORM NON-DESTRUCTIVE TESTING TO VERIFY LOCATION OF PIPING, CONDUIT, AND STRUCTURAL COMPONENTS. NOTIFY ARCHITECT (ENGINEER) OF ANY DISCREPANCIES. PATCH SURROUNDING AREAS FLUSH WITH ADJACENT SURFACE AND PROVIDE FINISH. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING.
10. FIRE STOPPING
- A. PROVIDE FIRE STOPPING FOR PENETRATIONS OF DUCT, PIPING, AND OTHER MECHANICAL EQUIPMENT THROUGH FIRE-RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES), AND VERTICAL SERVICE SHAFT WALLS AND PARTITIONS. (WHERE THIS WORK IS BEING PERFORMED UNDER A GC, PRIOR TO INSTALLATION, THIS CONTRACTOR SHALL COORDINATE FIRESTOPPING WITH GC). FIRESTOP SYSTEM INSTALLATION MUST MEET REQUIREMENTS OF ASTM E 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF CONSTRUCTION BEING PENETRATED. INSTALL IN STRICT ACCORDANCE WITH UL FIRE RESISTANCE DIRECTORY, AHJ, AND MANUFACTURER'S SPECIFIED REQUIREMENTS. ONLY TESTED FIRESTOP SYSTEMS BY "JM", "HILTI", OR EQUAL SHALL BE USED. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATING.
11. MATERIALS AND WORKMANSHIP
- A. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE NEW U.N.O., FREE OF DEFECTS, AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND DETAILS, AND INDEPENDENTLY TESTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY. UNDERGROUND LABORATORIES (UL) OR INTERTEK (ETL). ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY U.N.O.
- B. ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. ALL MATERIALS INSTALLED IN PLENUM SPACES SHALL BE LISTED AND LABELED FOR SUCH APPLICATION.
- C. ALL WORK SHALL BE SUPERVISED BY THE INSTALLING CONTRACTOR'S COMPETENT AND SKILLED FOREMAN. ALL WORK SHALL BE PERFORMED BY COMPETENT AND SKILLED WORKERS, WITH ALL TRADE AND MANUFACTURER REQUIRED TRAINING, AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE BEST QUALITY STANDARDS OF THE TRADE AND IN CONFORMANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND STANDARDS, INCLUDING APPLICABLE OSHA REGULATIONS. PROPERLY PROTECT WORK DURING CONSTRUCTION. AT CONSTRUCTION COMPLETION, THOROUGHLY CLEAN WORK AND REMOVE ALL DEBRIS FROM THE PREMISES.
12. PROTECTION OF WORK AND PROPERTY
- A. PROTECT ALL WORK FROM DAMAGE AND PROTECT THE OWNER'S PROPERTY FROM DIRT, DAMAGE, OR LOSS ARISING FROM CONTRACTOR WORK.
- B. COMPLY WITH OSHA REQUIREMENTS AND TAKE ALL NECESSARY PRECAUTIONS FOR EMPLOYEE SAFETY.
- C. PROTECT ALL OPEN PIPING, DUCT, AND EQUIPMENT, EXISTING AND NEW FROM CONSTRUCTION DIRT AND DUST. COVER, CAP, OR PLUG OPEN ENDS OF PIPING AND DUCT. KEEP EQUIPMENT CLOSED OR COVER AND SEAL EQUIPMENT OPENINGS, ANY MECHANICAL SYSTEMS, NEW AND/OR EXISTING OPERATED DURING CONSTRUCTION SHALL BE PROTECTED BY COVERING EACH RETURN AIR DUCT OPENING WITH MERV 8 FILTERS AND INSTALLING MERV 8 FILTER(S) IN EQUIPMENT FILTER RACK. PRIOR TO TESTING AND BALANCING, REMOVE FILTERS FROM FILTER RACKS AND INSTALL NEW MERV 8 FILTERS.
- D. AT COMPLETION OF WORK, PRIOR TO EQUIPMENT START-UP, REMOVE COVERS, CAPS, OR PLUGS ON DUCT AND PIPING.
13. DAMAGE BY LEAKS
- A. THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL DAMAGES TO THE

- PROPERTY (GROUNDS, WALKS, ROADS, BUILDING COMPONENTS, FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS, HVAC SYSTEMS, AND THEIR EQUIPMENT AND CONTENT) CAUSED BY LEAKS IN THE SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED AS PART OF THIS WORK. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.
14. DRAWINGS AND SPECIFICATIONS
- A. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW GENERAL LOCATIONS OF DUCTS, PIPES, AND EQUIPMENT AND THE METHODS OF CONNECTING AND CONTROL. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONDITIONS AND THE WORK OF OTHER TRADES PERMIT. THE DRAWINGS ARE NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL OR ALL OFFSETS, TRANSITIONS, OR FITTINGS REQUIRED FOR A COMPLETE SYSTEM NOR IS IT IMPLIED THAT ALL CONFLICTS BETWEEN BUILDING ELEMENTS AND/OR OTHER TRADES ARE INDICATED. DO NOT SCALE DRAWINGS. EXAMINE FIELD CONDITIONS AND SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATION OF DOORS, WINDOWS, LIGHTS, ETC.
- B. THE DRAWINGS AND SPECIFICATIONS ARE MUTUALLY COMPLEMENTARY, AND ANY WORK REQUIRED BY ONE BUT NOT BY THE OTHER SHALL BE REQUIRED BY BOTH.
- C. PRIOR TO INSTALLING EQUIPMENT, DUCT, OR PIPE COORDINATE PROPOSED LOCATIONS WITH EACH TRADE/DISCIPLINE AND GC. EXAMINE EACH DISCIPLINE'S DRAWINGS FOR CONSTRUCTION DETAILS, CEILING HEIGHTS, REQUIRED CLEARANCES, AND SPACE CONSTRAINTS. PROVIDE SYSTEMS INSTALLATION BASED ON THIS EXAMINATION AND COORDINATION. IMMEDIATELY REPORT INSTALLATION CONFLICTS IN WRITING TO THE GC. RESOLVE ALL CONFLICTS WITH GC AND OTHER TRADES PRIOR TO PROCEEDING. INSTALLING CONTRACTOR IS FULLY RESPONSIBLE FOR CORRECT INTERPRETATION AND APPLICATION OF ALL SIZES AND DIMENSIONS.
- D. SIGNIFICANT DEVIATIONS OR CHANGES FROM THE DRAWINGS, WHICH ARE REQUIRED TO ACCOMPLISH THE INTENT OF THE CONTRACT DOCUMENTS MUST BE REVIEWED AND APPROVED BY THE ARCHITECT (ENGINEER) BEFORE PROCEEDING. IF THE CONTRACTOR BELIEVES CHANGES TO THE CONTRACT DRAWINGS ARE NECESSARY, SHOP DRAWINGS WITH WRITTEN DESCRIPTIONS OF THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE ARCHITECT (ENGINEER) FOR APPROVAL.
- E. ALL PIPE, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED WATERPROOF. PROVIDE ALL FLASHING FOR PIPE AND DUCTWORK PENETRATING BUILDING ENVELOPE. PROVIDE DUCT AND/OR PIPE SLEEVES AT WALL PENETRATIONS. SEAL ANNULAR SPACE WEATHER TIGHT.
15. CONTROLS
- A. PROVIDE COMPLETE EQUIPMENT CONTROLS, INCLUSIVE OF ALL COMPONENTS, VOLTAGES, PROGRAMMING, (PNEUMATIC TUBING), WIRING ETC. FOR COMPLETE AND OPERATIONAL SYSTEMS. MOUNT THERMOSTATS AND SWITCHES 4'-0" ABOVE FINISHED FLOOR. MOUNT OTHER SENSORS (HUMIDITY, CO2, CO, NOX, ETC.) PER MANUFACTURER'S IOM. PRIOR TO MOUNTING, COORDINATE THERMOSTAT LOCATIONS WITH FINAL FIXTURES AND EQUIPMENT. DO NOT MOUNT THERMOSTATS IN DIRECT SUNLIGHT, IN DISCHARGE OF SUPPLY GRILLE(S), NEAR HEAT PRODUCING APPLIANCES OR EQUIPMENT, ON WALLS WITH INTERNAL HEAT SOURCES (DUCT OR PIPING), OR ON EXTERIOR WALLS. IF EXTERIOR WALL MOUNTING IS NECESSARY, PROVIDE INSULATED MOUNTING BASE. WHEN THERMOSTAT LOCATION IS SUBJECT TO DAMAGE, PROVIDE LOCKABLE HIGH-IMPACT GUARD.
16. PIPING
- A. IN FINISHED AREAS, ALL PIPING SHALL BE CONCEALED UNLESS NOTED OTHERWISE.
- B. SEE PIPE SCHEDULE FOR PIPE MATERIALS AND PIPE INSULATION.
- C. DO NOT INSTALL PVC PIPING IN PLENUM AREAS.
- D. PAINT PIPE TO MATCH OWNER'S OR BUILDING STANDARD.
- I. PROVIDE PIPE LABELS AND FLOW DIRECTION PER BUILDING OR FACILITY'S STANDARD OR AS SCHEDULED. ORIENT ALL MARKERS SO AS TO BE VISIBLE FROM FLOOR LEVEL. AT A MINIMUM PIPE LABELS AND FLOW DIRECTION MARKERS SHALL BE LOCATED:
- AT LEAST ONCE IN EACH ROOM
 - AT EQUIPMENT CONNECTIONS
 - AT ACCESS DOORS
 - AT BRANCH MAINS
 - ON ALL ACCESSIBLE PIPE A MAXIMUM OF 25' BETWEEN MARKERS.
- J. BRANCH TAKE-OFFS SHALL BE MADE WITH SWING CONNECTIONS AS REQUIRED TO AVOID STRESS AT THESE POINTS.
- K. DO NOT INSTALL ANY PIPING ABOVE ELECTRICAL PANELS AND/OR TRANSFORMERS.
- L. INSTALL AND SIZE REFRIGERANT PIPE IN STRICT ACCORDANCE WITH EQUIPMENT/APPLIANCE MANUFACTURER'S IOM. DO NOT INSTALL REFRIGERANT PIPE BELOW GROUND. REFRIGERANT PIPE INSTALLED ON BUILDING EXTERIOR SHALL BE ROUTED TO MINIMIZE EXTERIOR EXPOSURE. INSULATE REFRIGERANT PIPE PER MANUFACTURER'S IOM. PROVIDE INSULATION EXPOSED TO AMBIENT CONDITIONS WITH A CONTINUOUS 30 MIL PVC JACKET.
- M. ROUTE PIPE THROUGH ROOF WITH ALUMINUM PIPE HOOD, PATE CURB MODEL "PHA-2" WITH 14" TALL MODEL "PC-2" CURB. SEAL PIPE THROUGH CURB WEATHER-TIGHT.
- N. PRIOR TO INSTALLING EQUIPMENT/APPLIANCES, CAREFULLY CONSIDER FALL REQUIREMENTS OF CONDENSATE DRAIN PIPE. PROVIDE MINIMUM 1/8" / FOOT SLOPE. EXTEND CONDENSATE DRAIN PIPE TO AN APPROVED RECEPTOR AND TERMINATE VIA AN INDIRECT CONNECTION.
- O. ALL HOLES REQUIRED THROUGH EXISTING FLOORS AND MASONRY WALLS SHALL BE CORE DRILLED.
17. DUCT MOUNTED SMOKE DETECTORS
- A. RETURN AIR DUCT MOUNTED SMOKE DETECTORS SHALL BE PROVIDED BY E.C. (WITH THE SCHEDULE EQUIPMENT, SEE SCHEDULE) AND UPON DETECTING SMOKE, SHALL SHUT DOWN PROTECTED AIR SYSTEM.
18. SHOP DRAWINGS
- A. SUBMIT SHOP DRAWINGS ON SCHEDULED AND NOTED EQUIPMENT AND MATERIALS. PRIOR TO SUBMITTAL, EACH SHOP DRAWING SHALL BE REVIEWED BY THE CONTRACTOR TO ASSURE THAT THE PROPOSED EQUIPMENT IS CLEARLY MARKED, HIGHLIGHTED, AND NOTED, ALL DIMENSIONS, QUANTITIES, CONNECTIONS, CAPACITIES AND ACCESSORIES SHALL BE CLEARLY SHOWN IN CONFORMANCE WITH THE CONTRACT DOCUMENTS, AND SHALL BE MARKED OR STAMPED TO CONFIRM THAT SUCH REVIEW WAS MADE AND COMPLIANCE WAS CONFIRMED. SHOP DRAWING SUBMITTED WITHOUT BEING MARKED, HIGHLIGHTED, AND NOTED WILL BE REJECTED WITHOUT REVIEW.
- B. PROVIDE ADEQUATE TIME FOR SUBMITTAL REVIEW AND CORRECTIONS, IF ANY, TO PREVENT CONSTRUCTION DELAY. DO NOT PERFORM ANY PORTION OF WORK WHICH REQUIRES APPROVED SUBMITTALS UNTIL THE RESPECTIVE SUBMITTALS HAVE BEEN APPROVED BY THE ENGINEER.
- C. REVIEW OF SHOP DRAWINGS BY THE OWNER, OWNER'S AGENT, ARCHITECT, OR ENGINEER IS FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBILITY FOR COMPLYING WITH ALL TERMS OF THE CONTRACT DOCUMENTS AND FOR PERFORMANCE OF ALL EQUIPMENT AND MATERIALS PURCHASED, FOR QUANTITIES, PROPER FIT, AND OTHER DIMENSIONAL REQUIREMENTS.
19. DUCTWORK
- A. REFER TO DUCT INSULATION SCHEDULE FOR CLARIFICATION OF DUCT

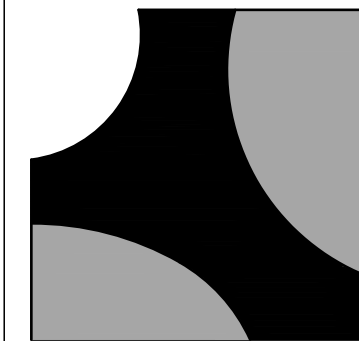
- DIMENSIONS. PROVIDE ALL DUCTWORK IN STRICT ACCORDANCE WITH THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", LATEST EDITION. U.N.O. ALL RIGID DUCTWORK SHALL BE GALVANIZED SHEET METAL. ALL EXPOSED DUCTWORK SHALL HAVE A MILL-PHOSPHATIZED FINISH FOR PAINT ADHESION. EXPOSED ROUND DUCT SHALL BE SPIRAL SEAM TYPE. NO FIBERGLASS DUCTBOARD WILL BE ALLOWED.
- B. PROVIDE TURNING VANES AT ALL CHANGES IN DIRECTION.
- C. PROVIDE DAMPERS AT EACH BRANCH-DUCT SERVING AIR DEVICES AND AS SHOWN AND DETAILED. PROVIDE EACH ROUND BRANCH DUCT TAKE-OFF FROM MAIN DUCT WITH SPIN-IN FITTING AND BALANCING DAMPER. DAMPER SHALL BE YOUNG REGULATOR MODEL 5020R LOCKING QUADRANT VOLUME DAMPER WITH 2" HANDLE STANDOFF FOR INSULATION THICKNESS. WHERE BRANCH TAKE-OFF IS INACCESSIBLE FOR BALANCING, PROVIDE BALANCING DAMPER IN GRILLE NECK OR BOWDEN "270-275" REMOTE CABLE CONTROL.
- D. ALL FLEXIBLE DUCT SHALL BE THERMAFLEX TYPE MKE, MAXIMUM 7'-0" LONG. FLEX DUCT SHALL BE INSTALLED IN ACCESSIBLE CONCEALED SPACES ONLY, FULLY STRETCHED OUT AND WITHOUT SAGS OR KINKS. CONNECTIONS TO FITTINGS AND AIR DEVICES SHALL BE MADE WITH TWO (2) BAND CLAMPS. BAND CLAMP THE INNER LINER TIGHT TO FITTING OR AIR DEVICE, THEN THE INSULATION AND VAPOR-PROOF JACKET SHALL BE CLAMPED TIGHT. FLEX DUCT INSTALLATION ABOVE INACCESSIBLE CEILINGS IS UNACCEPTABLE.
- E. AIR DUCT TIGHTNESS TESTS SHALL BE PER 2012 IECC SECTION R403.2. PROVIDE WITH ROUGH-IN TEST OR POST CONSTRUCTION TEST. ROUGH-IN TEST: TIL LEAKAGE < 4 CFM PER 100 SQUARE FEET OF CONDITIONED FLOOR AREA AT DIFFERENTIAL PRESSURE OF 0.1 INCHES OF W.G. ACROSS THE ENTIRE SYSTEM, INCLUDING THE FAN COIL UNIT CABINET. ALL AIR DEVICES SHALL BE SEALED DURING THE TEST. IF THE FCU IS NOT INSTALLED AT THE TIME OF THE TEST, TOTAL LEAKAGE SHALL BE < 3 CFM PER 100 SQUARE FEET OF OF CONDITIONED FLOOR AREA. POST CONSTRUCTION TEST: TOTAL LEAKAGE < 4 CFM PER 100 SQUARE FEET OF CONDITIONED FLOOR AREA AT DIFFERENTIAL PRESSURE OF 0.1 INCHES OF W.G. ACROSS THE ENTIRE SYSTEM, INCLUDING THE FAN COIL UNIT CABINET. ALL AIR DEVICES SHALL BE SEALED DURING THE TEST.]
20. DUCT SEALING
- A. IN CONDITIONED AREAS, SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS WITH A NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT, WITH VOC CONTENT NO GREATER THAN 250G/L AND RECOMMENDED BY THE MANUFACTURER FOR SEALING SHEET METAL DUCT. SEAL ALL JOINTS, SPIN-IN FITTINGS, AND FASTENING SCREWS WITH MASTIC. HVAC SYSTEM LEAKAGE SHALL NOT EXCEED 5% OF DESIGN FLOW. DUCT TAPE IS NOT ALLOWED.
- B. IN UNCONDITIONED AREAS (INCLUDING BUT NOT LIMITED TO EXTERIOR OF BUILDING, ATTIC, CRAWL SPACES, ETC.), SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS WITH CARLISLE'S "HARDCAST FOIL-SEALANT DUCT SEALING SYSTEM" - NO EXCEPTIONS. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE INITIAL SEALANT OF HARDCASTS IRON-GRIP 601, SPRAY-SEAL, OR VERSA-GRIP 181 LIQUID MASTIC SEALANT. AFTER SEALANT HAS CURED COMPLETELY, OVERLAP THE MASTIC WITH 4" WIDE STRIP OF AFT-701 ROLLED SEALANT. SEAL ALL JOINTS, SPIN-IN FITTINGS, AND FASTENERS. HVAC SYSTEM LEAKAGE SHALL NOT EXCEED 5% OF DESIGN FLOW.
21. CLOTHES DRYER
- A. CLOTHES DRYER DUCT SHALL BE ALUMINUM DUCT SEALED WATER TIGHT. FABRICATE DRYER DUCT WITH NO FASTENERS PROTRUDING INTO INSIDE OF DUCT. TERMINATE DRYER DUCT WITH BACKDRAFT DAMPER AND WITHOUT A SCREEN.
22. DUCT INSULATION
- A. SEE DUCT INSULATION SCHEDULE.
23. EQUIPMENT
- A. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION AND OPERATIONS MANUAL AND IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND REGULATIONS.
- B. U.N.O. PROVIDE ALL MOTORIZED EQUIPMENT WITH VIBRATION ISOLATION MOUNTING AND FLEXIBLE DUCT AND FLEXIBLE PIPE CONNECTIONS.
- C. LABEL ALL EQUIPMENT WITH ID TAGS. LETTERING SHALL BE 1" HIGH BLACK ON WHITE BACKGROUND. ID TAGS IN PLENUM SPACES SHALL BE PLENUM RATED. EQUIPMENT NOT PLENUM MOUNTED SHALL BE LABELED WITH ENGRAVED PHENOLIC RESIN NAMEPLATES ADHERED TO UNIT CABINET WITH RTV SILICONE. LETTERING SHALL BE 1" HIGH BLACK ON WHITE BACKGROUND.
- D. ALL EQUIPMENT, DUCT, PIPE, ETC. MOUNTED FROM BOLTED CONNECTIONS SHALL HAVE DOUBLED BOLTS AT ATTACHMENT TO STRUCTURE AND HANGER, NO EXCEPTIONS.
24. FIRE AND FIRE-SMOKE DAMPERS
- A. PROVIDE FIRE DAMPERS AND/OR FIRE SMOKE DAMPERS AT DUCT PENETRATIONS OF RATED ASSEMBLIES AND AS REQUIRED BY AHJ. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATINGS. INSTALL DAMPERS IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILS AND MAINTAIN MANUFACTURER'S DETAILS ONSITE FOR AHJ REVIEW. PROVIDE ACCESS PANELS OF ADEQUATE SIZE TO FACILITATE SERVICE ACCESS OF DAMPER. IN LIEU OF ACCESS PANELS, A REMOVABLE DUCT SECTION IS ACCEPTABLE.
25. OUTDOOR AIR INTAKES
- A. PROVIDE A MINIMUM 10'-0" HORIZONTAL CLEARANCE BETWEEN MECHANICAL EQUIPMENT OUTDOOR AIR INTAKES AND EXHAUST FAN DISCHARGES, COMBUSTION EXHAUST, PLUMBING VENTS, AND ANY OTHER HAZARDOUS OR NOXIOUS CONTAMINANT.
26. AIR FILTERS
- A. PROVIDE THREE (3) SETS OF NEW MERV 8 DISPOSABLE AIR FILTERS, PER THE FOLLOWING: FOR HVAC SYSTEMS OPERATED DURING CONSTRUCTION, PROVIDE FILTERS IN EQUIPMENT AND ON RETURN AIR DUCT OPENINGS TO PROTECT DUCT FROM DIRT; IN HVAC EQUIPMENT PRIOR TO AIR TESTING, ADJUSTING, AND BALANCING; AND AT PROJECT COMPLETION - ONE (1) SPARE SET FOR HVAC EQUIPMENT.
27. SEISMIC RESTRAINT
- A. PROVIDE SEISMIC RESTRAINT OF SYSTEMS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE BUILDING CODE. SUBMIT ALL REQUIRED DETAILS TO AHJ FOR REVIEW AND APPROVAL. IF REQUIRED BY AHJ, PROVIDE ENGINEERED SEISMIC-RESTRAINT DRAWINGS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE STATE. SUBMIT COPIES INCLUDING CALCULATIONS AND DETAILS, AS REQUIRED BY AHJ TO ARCHITECT (ENGINEER) AND TO AHJ FOR REVIEW AND APPROVAL.
28. COMPLETION OF WORK
- A. UPON COMPLETION OF WORK, INSPECT INSTALLATION OF ALL EQUIPMENT AND SYSTEMS. OPEN ALL ACCESS COVERS ON EQUIPMENT. REMOVE ALL SURPLUS MATERIALS AND DEBRIS AND PROPERLY DISPOSE OF SAME.
29. TESTING, ADJUSTING, & BALANCING
- A. PRIOR TO EQUIPMENT START-UP, REMOVE COVERS, CAPS, OR PLUGS ON DUCT AND PIPING.
- B. UPON COMPLETION OF WORK, MC SHALL PROVIDE HVAC TESTING:

- I. AFTER INSTALLING EQUIPMENT AND AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, TEST UNITS FOR COMPLIANCE WITH REQUIREMENTS.
- II. INSPECT FOR AND REMOVE SHIPPING BOLTS, BLOCKS, AND TIE-DOWN STRAPS.
- III. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION, BELT TENSION, DAMPER FUNCTION, COOLING FUNCTION, HEATING FUNCTION, AND UNIT OPERATION.
- IV. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
- V. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS SPECIFIED ABOVE.
- VI. SUBMIT TESTING REPORT TO ARCHITECT (ENGINEER).
- C. UPON COMPLETION OF WORK, PROVIDE AN HVAC TESTING, ADJUSTING, AND BALANCING REPORT PERFORMED BY AN INDEPENDENT CONTRACTOR CERTIFIED BY AABC, NEBB, OR TABB. BALANCE SYSTEMS WITHIN 10% OF DESIGN FLOW. TAB SHALL BE PERFORMED IN STRICT ACCORDANCE WITH SMACNA'S "TAB PROCEDURAL GUIDE", LATEST EDITION. MC SHALL BE PRESENT DURING TAB SHOULD ANY CORRECTIONS BE REQUIRED.
30. CLOSEOUT - AT CONSTRUCTION COMPLETION AND PRIOR TO TURNOVER TO OWNER (TENANT):
- A. PROVIDE FINAL MARK-UPS IN PDF (DWG) FORMAT TO ARCHITECT AND ENGINEER.
- B. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.
- C. PROVIDE THE OWNER WITH A BOUND OWNER'S MANUAL. THE MANUAL SHALL CONSIST OF A THREE-RING LOOSE-LEAF BINDER CONTAINING ALL PRINTED MATERIAL FOR INSTALLED EQUIPMENT INCLUDING BUT NOT LIMITED TO: WARRANTY INFORMATION, SERVICE AND CLEANING INSTRUCTIONS, NOTICES TO OWNER, OPERATING MANUALS, AND MAINTENANCE INSTRUCTIONS.
- D. TRAIN THE OWNER IN THE THERMOSTATS AND CONTROLS FUNCTIONS AND OPERATING THE EQUIPMENT USING THE THERMOSTATS. CONTRACTOR SHALL PROGRAM THE THERMOSTATS PER THE OWNER'S TIME SCHEDULES AND SETPOINTS.
31. WARRANTY
- A. ON ALL WORK INCLUDED IN THIS CONTRACT, PROVIDE ONE (1) YEAR UNCONDITIONAL WRITTEN WARRANTY FOR LABOR, EQUIPMENT, AND MATERIALS TO REPLACE ALL FAULTY MATERIALS AND/OR LABOR, AT NO COST TO OWNER, BEGINNING ON DATE OF ACCEPTANCE BY OWNER.
- B. WITHIN THE WARRANTY PERIOD, DURING THE OPPOSITE SEASON (HEATING/COOLING) FROM THAT IN WHICH THE INITIAL ADJUSTMENTS WERE MADE, THIS CONTRACTOR SHALL MAKE AN INSPECTION OF THE INSTALLED BUILDING SYSTEMS. AT THIS INSPECTION, WITH SYSTEMS OPERATING, THIS CONTRACTOR SHALL MAKE ANY NECESSARY MODIFICATIONS TO THE INITIAL ADJUSTMENTS REQUIRED TO PRODUCE OPTIMUM OPERATION OF THE SYSTEM COMPONENTS, TO PRODUCE THE PROPER CONDITIONS IN EACH SPACE.
- END OF SPECIFICATIONS -

GAS FURNACE/CU - SPLIT SYSTEM EQUIPMENT
SEQUENCE OF OPERATIONS

(NOTE: ST=SPACE TEMPERATURE)

1. UNOCCUPIED MODE (IF ANY):
- A. SETPOINT: HEATING 65°F/COOLING 83°F (ADJUSTABLE)
- B. OUTSIDE AIR DAMPER: CLOSED
- C. SUPPLY FAN: NORMALLY OFF. OPERATES ONLY ON THERMOSTAT CALL FOR HEATING OR COOLING.
- D. HEATING STAGE(S): ENERGIZES WHEN ST < SETPOINT-3°F
- E. COOLING STAGE(S): ENERGIZES WHEN ST > SETPOINT+3°F
- F. R.A. SMOKE DETECTOR/NORMAL MODE: NO ACTION
- G. R.A. SMOKE DETECTOR/ALARM MODE: SUPPLY FAN SHUT DOWN, FURNACE OFF, CU OFF.
2. PREOCCUPIED MODE (IF ANY):
- A. SETPOINT: HEATING 70°F/COOLING 73°F (ADJUSTABLE)
- B. OUTSIDE AIR DAMPER: CLOSED
- C. SUPPLY FAN: RUNS CONTINUOUSLY.
- D. HEATING STAGE(S): ENERGIZES WHEN ST < SETPOINT-3°F
- E. COOLING STAGE(S): ENERGIZES WHEN ST > SETPOINT+3°F
- F. R.A. SMOKE DETECTOR/NORMAL MODE: NO ACTION
- G. R.A. SMOKE DETECTOR/ALARM MODE: SUPPLY FAN SHUT DOWN, FURNACE OFF, CU OFF.
3. OCCUPIED MODE:
- A. SETPOINT: HEATING 70°F/COOLING 75°F (ADJUSTABLE)
- B. OUTSIDE AIR DAMPER: OPEN TO SCHEDULED CFM
- C. SUPPLY FAN: RUNS CONTINUOUSLY.
- D. HEATING STAGE(S): ENERGIZES WHEN ST < SETPOINT-3°F
- E. COOLING STAGE(S): ENERGIZES WHEN ST > SETPOINT+3°F
- F. R.A. SMOKE DETECTOR/NORMAL MODE: NO ACTION
- G. R.A. SMOKE DETECTOR/ALARM MODE: SUPPLY FAN SHUT DOWN, FURNACE OFF, CU OFF.
- *PRIOR TO PROGRAMMING, COORDINATE WITH OWNER TIME OF DAY SCHEDULES AND SPACE SETPOINT TEMPERATURES.
- THIS OCCUPANCY MAY ONLY HAVE "OCCUPIED MODE", COORDINATE WITH OWNER.
- MECHANICAL CONTRACTOR SHALL TRAIN OWNER IN THERMOSTAT CONTROLS.
- FCU-1/HP-1
- (NOTE: ST=SPACE TEMPERATURE)
1. OCCUPIED MODE:
- A. SETPOINT: HEATING 70°F/COOLING 75°F (ADJUSTABLE)
- B. SUPPLY FAN: RUNS ONLY ON A CALL FOR COOLING OR HEATING.
- C. HEATING STAGE(S): ENERGIZES WHEN ST < SETPOINT-3°F
- D. COOLING STAGE(S): ENERGIZES WHEN ST > SETPOINT+3°F
- *PRIOR TO PROGRAMMING, COORDINATE WITH OWNER TIME OF DAY SCHEDULES AND SPACE SETPOINT TEMPERATURES.
- THIS OCCUPANCY MAY ONLY HAVE "OCCUPIED MODE", COORDINATE WITH OWNER.
- MECHANICAL CONTRACTOR SHALL TRAIN OWNER IN THERMOSTAT CONTROLS.



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New Base Station #2 Facility for:
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28 Water Court
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DATE	ISSUE	BID. & PERMIT SET
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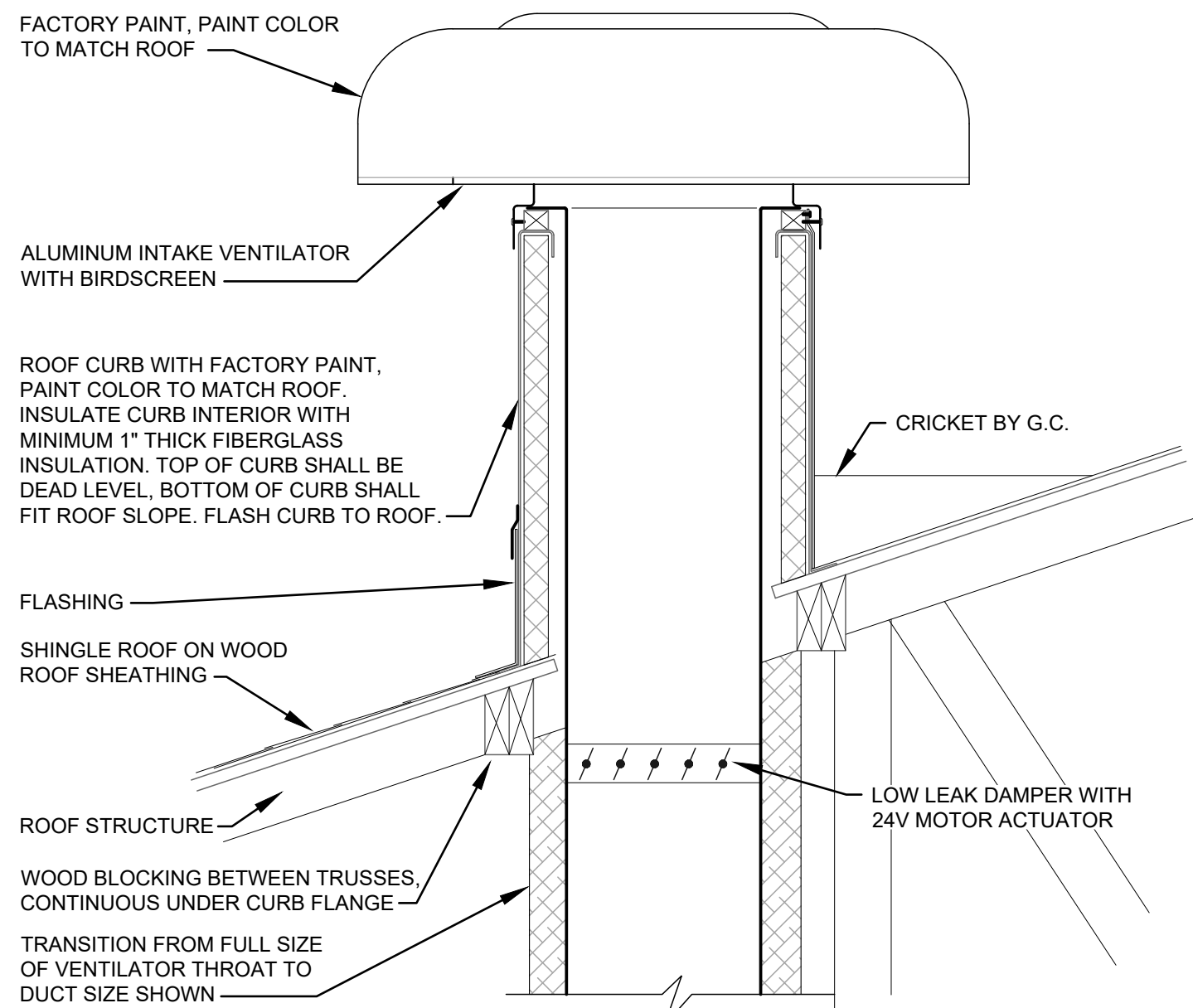


Darrell R Case
ENGINEER
MO# E-23303

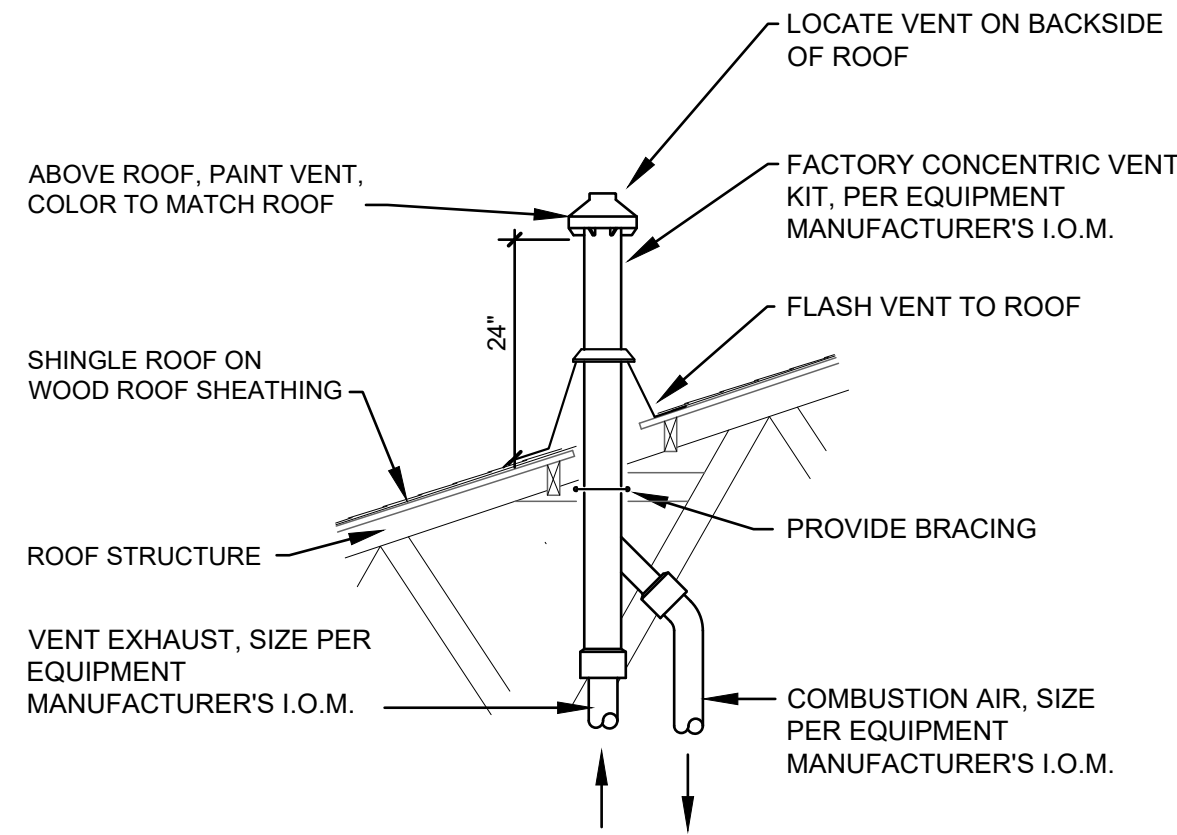
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DRAWN BY: CK

PROJECT NUMBER
21-079
DATE
April 15, 2022

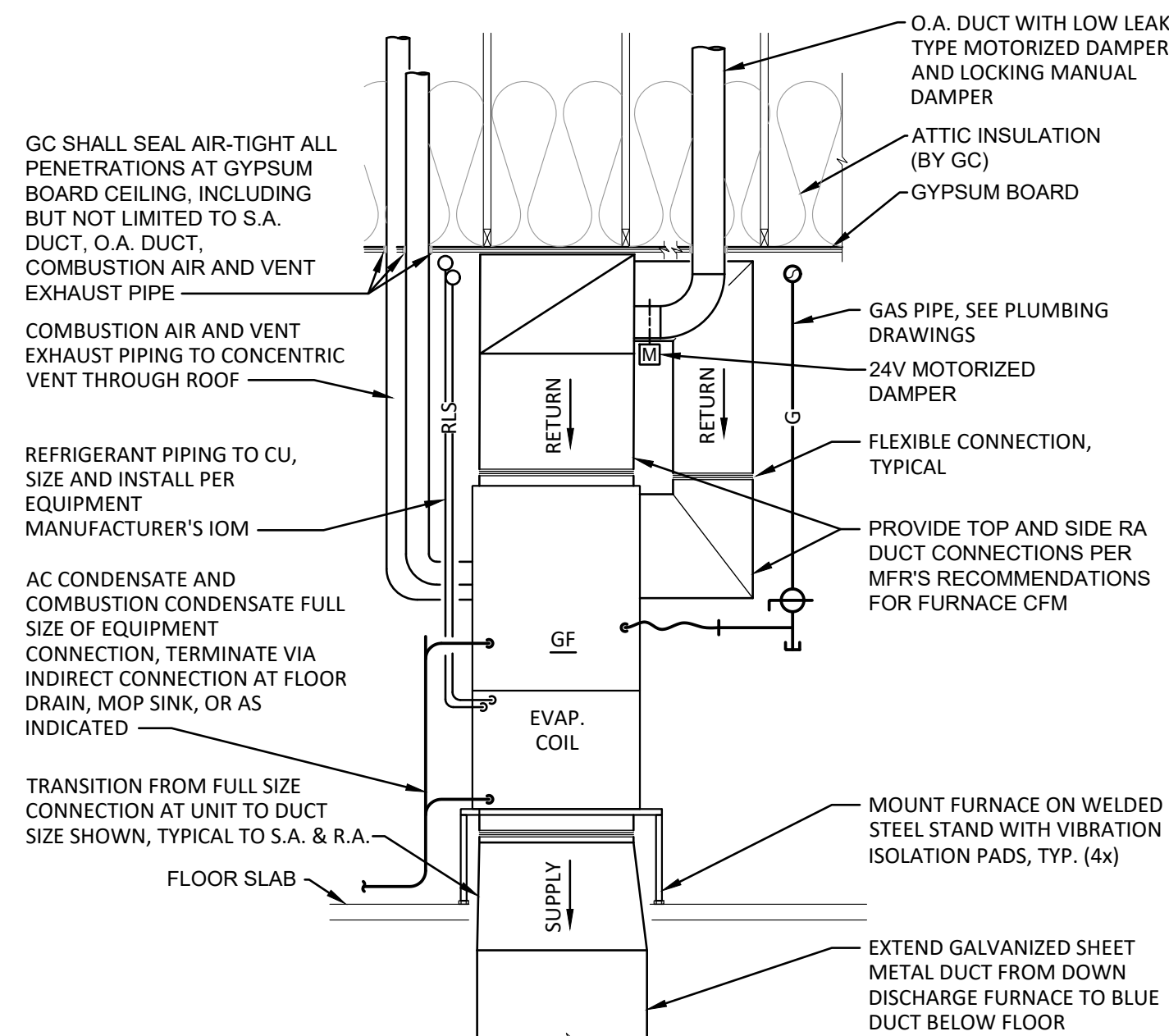
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MECHANICAL
SPECIFICATIONS



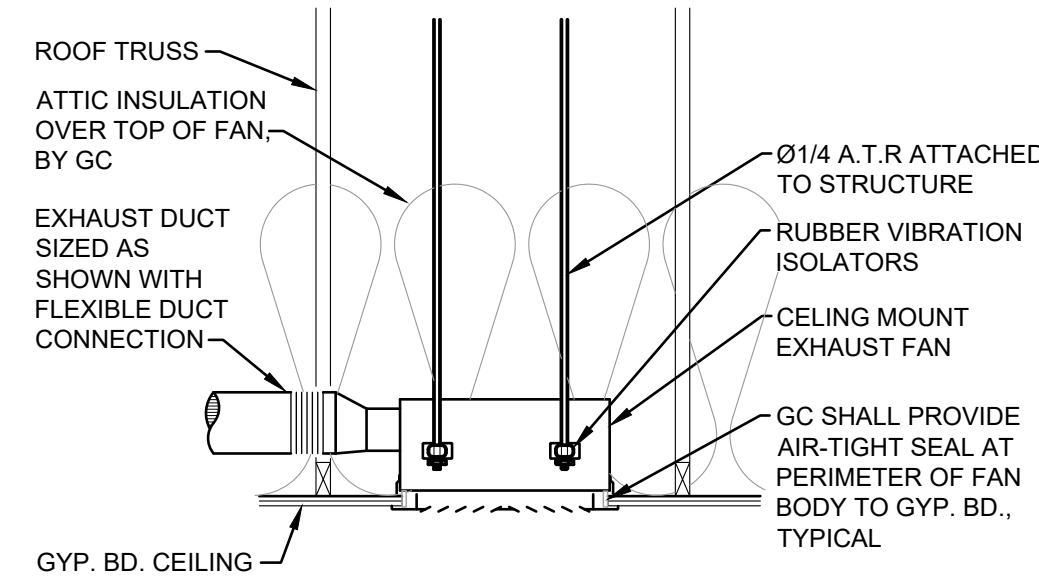
1 GF-1 INTAKE VENTILATOR DETAIL
M1.2 SCALE: N.T.S.



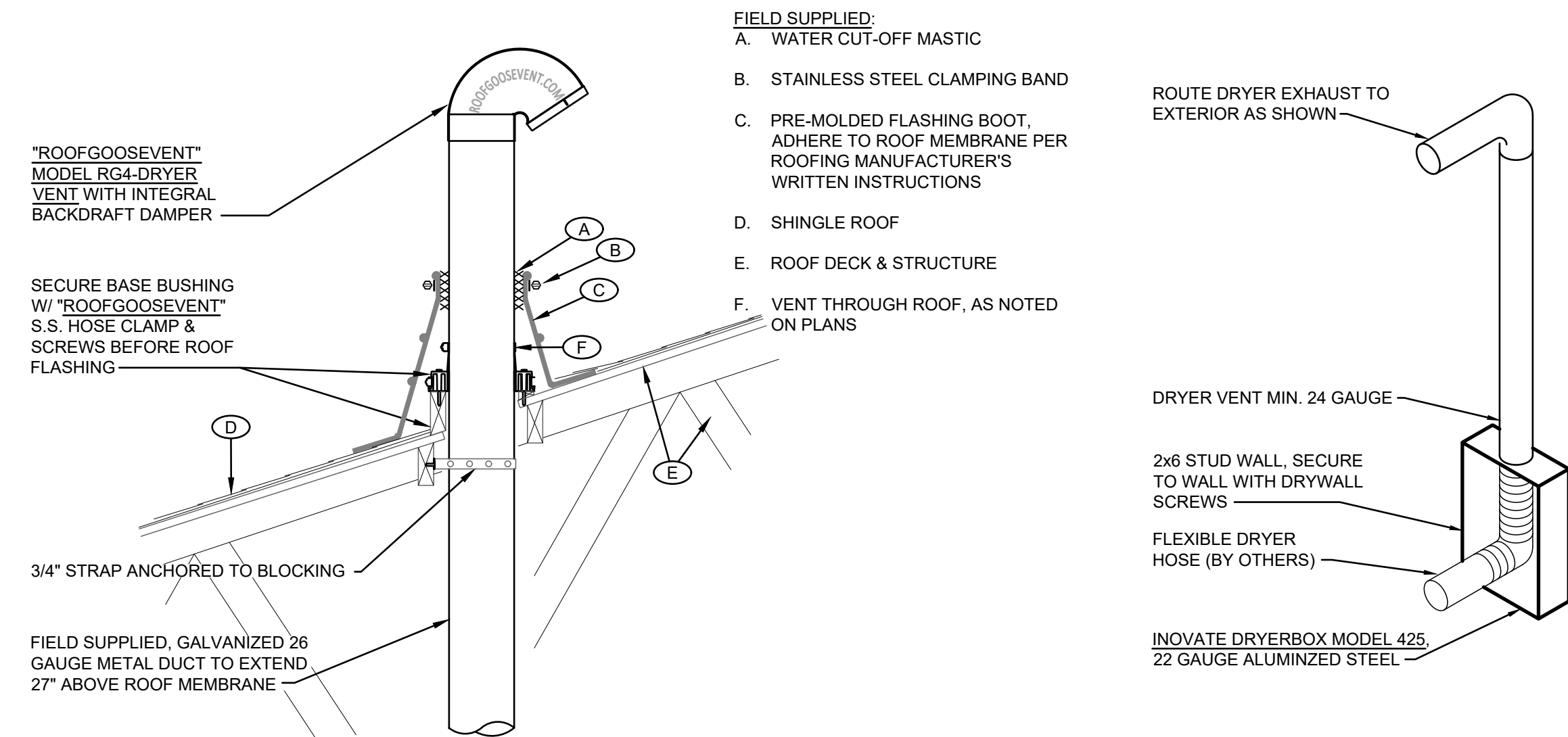
2 CONCENTRIC VENT THRU ROOF
M1.2 SCALE: NO SCALE



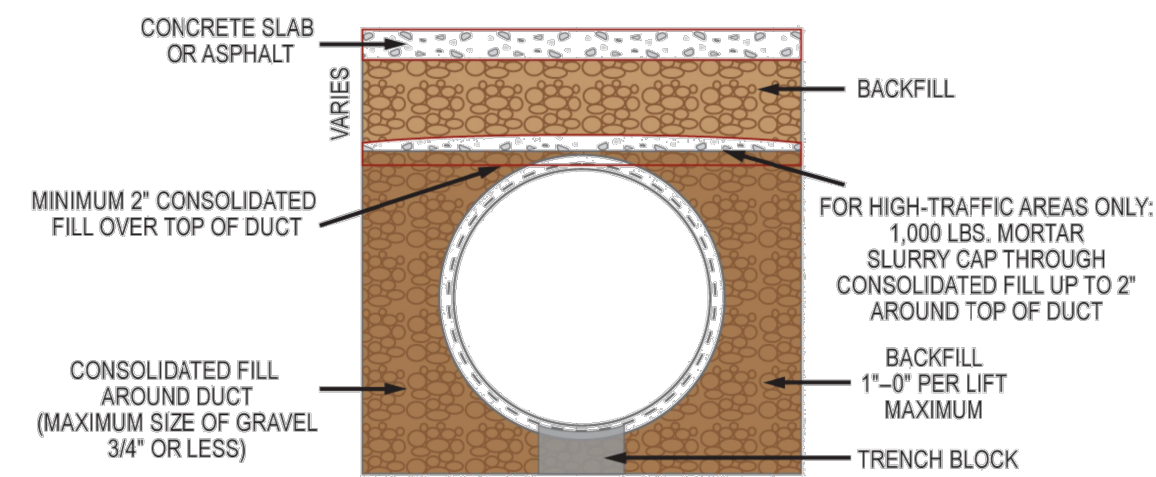
3 DOWN DISCHARGE GAS FURNACE DETAIL
M1.2 SCALE: NO SCALE



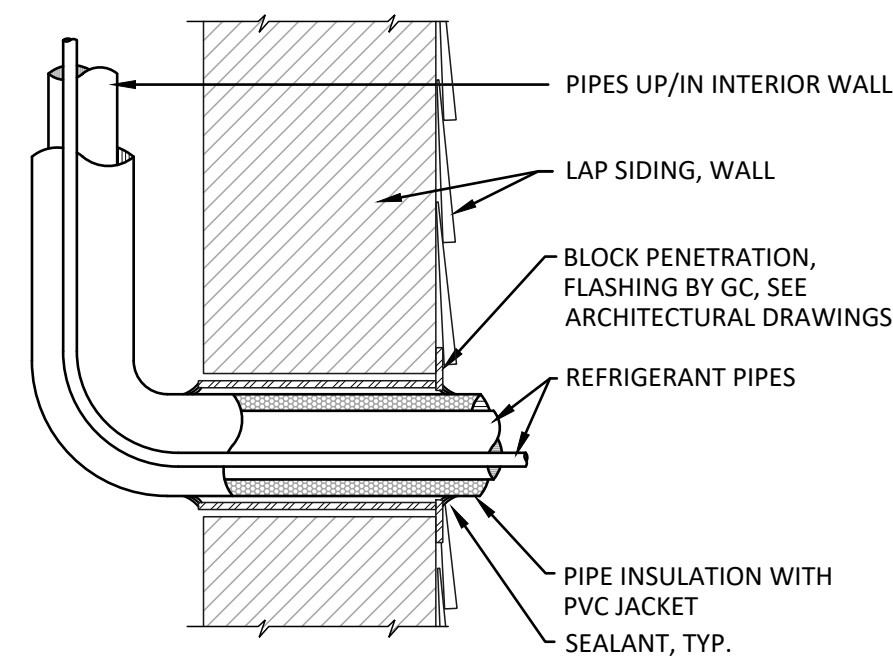
4 CEILING EXHAUST FAN DETAIL
M1.2 SCALE: NO SCALE



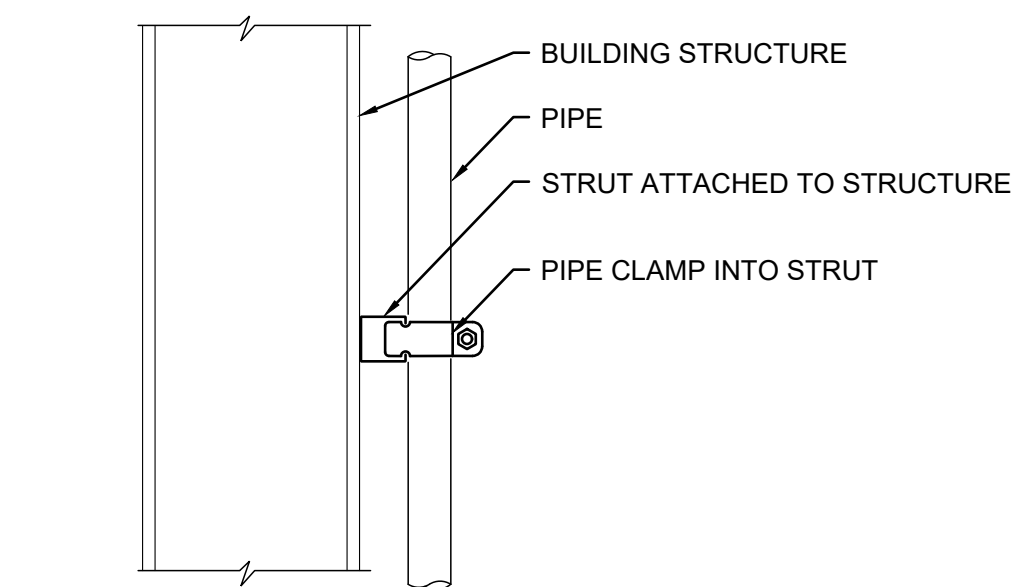
5 CLOTHES DRYER VENT DETAILS
M1.2 SCALE: NO SCALE



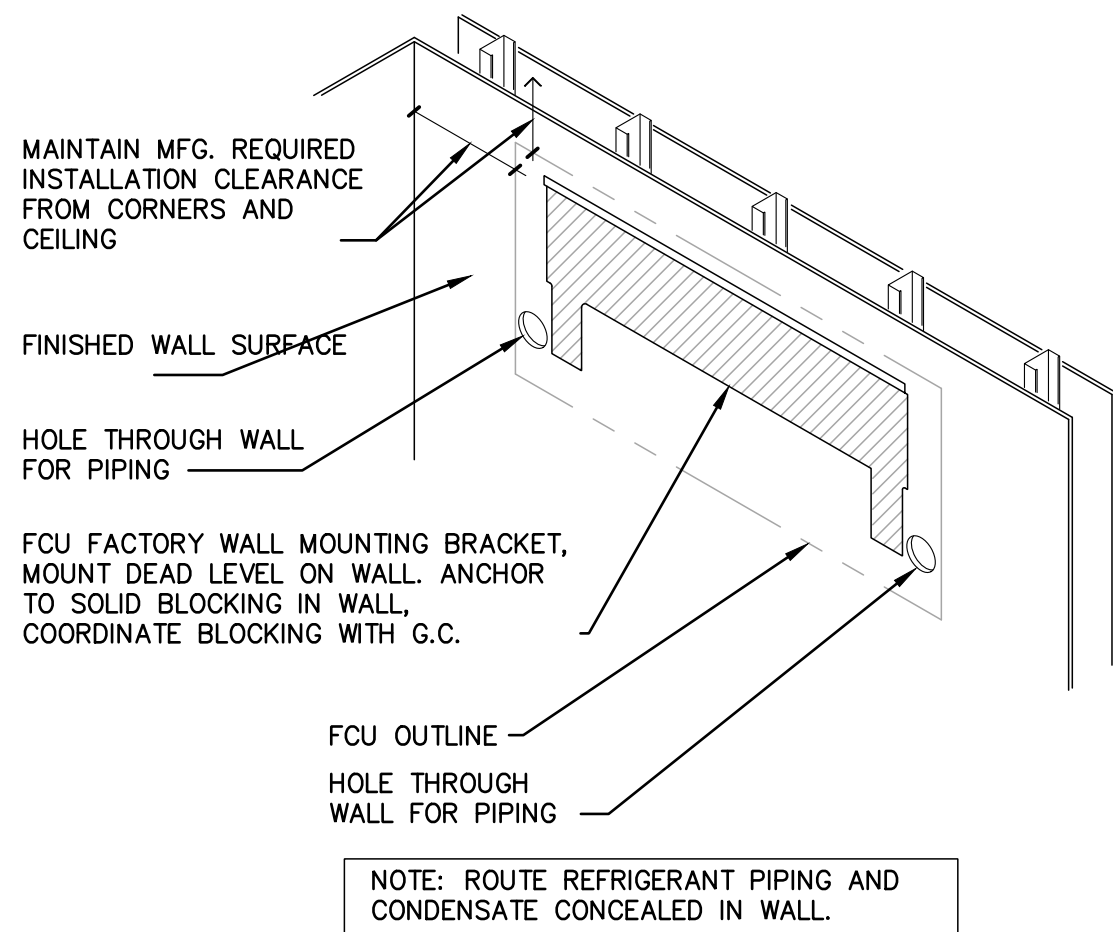
6 BLUE DUCT DETAIL
M1.2 SCALE: NO SCALE



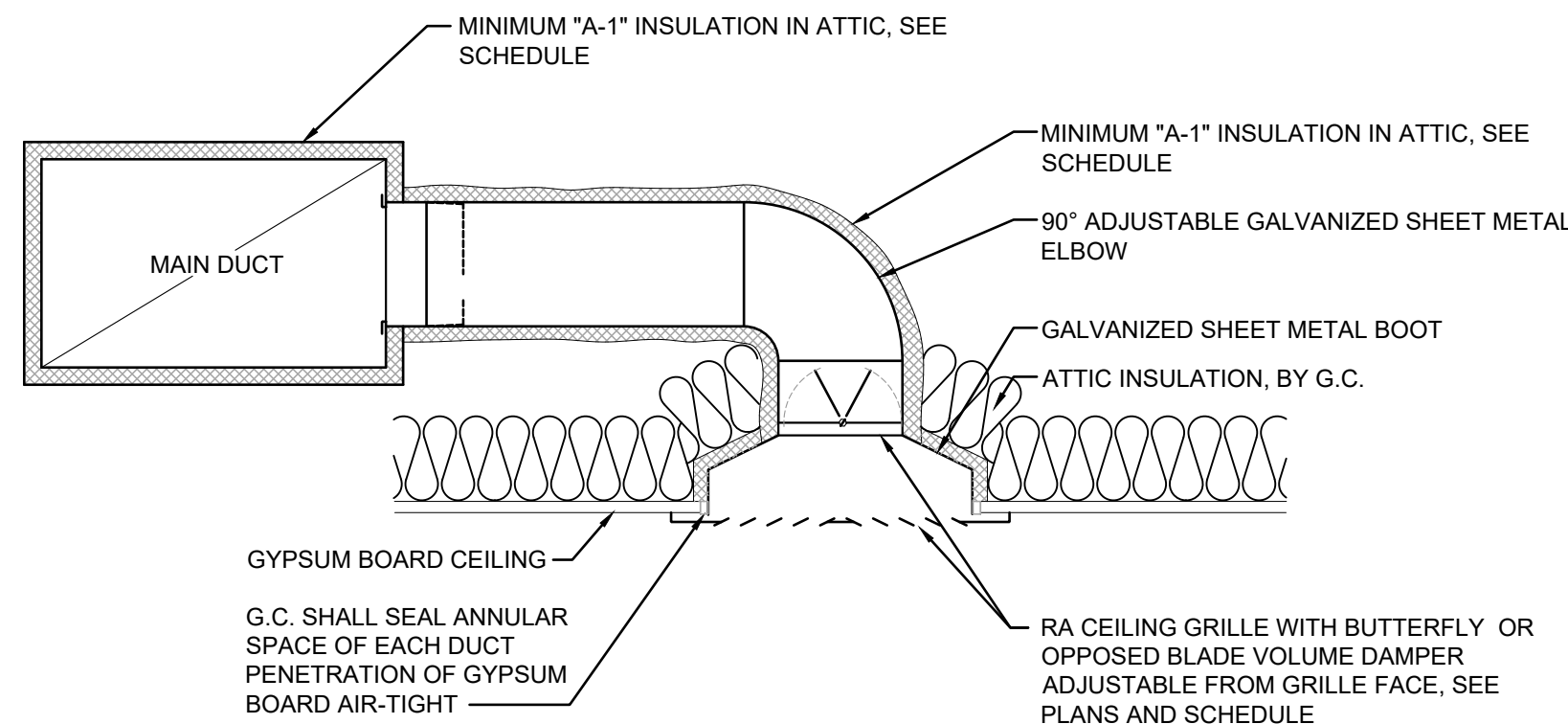
7 INSULATED PIPE - SLEEVE DETAIL
M1.2 SCALE: NO SCALE



8 PIPE DROP DETAIL
M1.2 SCALE: NO SCALE

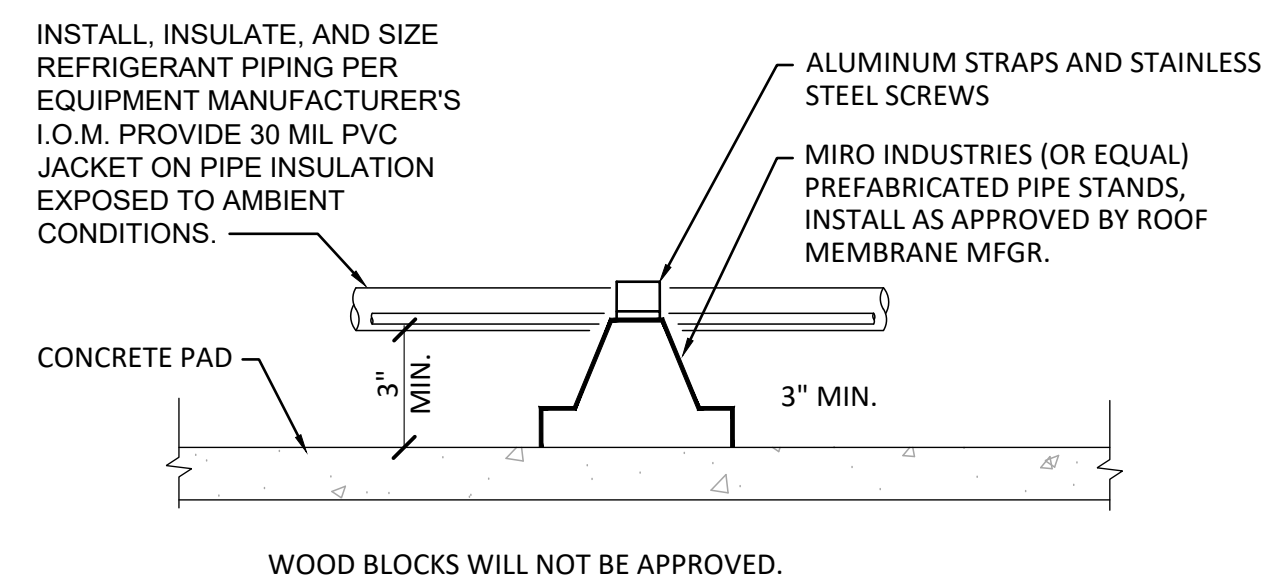


9 DUCTLESS SPLIT FCU MOUNTING DETAIL
M1.2 SCALE: NO SCALE



- TYPICAL ATTIC DUCT NOTES:
- ALL DUCT INSTALLED IN ATTIC SHALL BE GALVANIZED SHEET METAL, FLEX DUCT IS NOT ACCEPTABLE.
 - SEAL ALL DUCT JOINTS AND SEAMS WITH AN APPROVED DUCT SEALANT.
 - AFTER ATTIC DUCT ROUGH IN (ALL R.A. DUCT THROUGH EACH CEILING PENETRATION) AND PRIOR TO INSULATING, TEMPORARILY CAP OPENINGS AND LEAK TEST DUCT. LEAKAGE MAY NOT EXCEED 5%, G.C. MUST WITNESS TESTING.
 - AFTER SUCCESSFUL LEAKAGE TEST, INSULATE ATTIC DUCT WITH TYPE "A-1" AS SCHEDULED, MINIMUM R-12.8
 - G.C. SHALL SEAL ANNULAR SPACE OF EACH DUCT PENETRATION OF GYPSUM BOARD AIR-TIGHT.

10 BRANCH DUCT - AIR GRILLE DETAIL
M1.2 SCALE: NO SCALE



WOOD BLOCKS WILL NOT BE APPROVED.

SUPPORT SPACING:

RIGID 1" AND UNDER - 6'

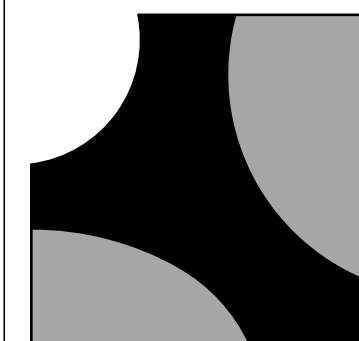
RIGID 1-1/4" AND OVER - 10'

STEEL STRAP SIZES:

1/8" X 1-1/8" FOR 3/4" TO 1-1/4" PIPE,

3/16" X 1-1/4" FOR 1-1/2" TO 2" PIPE,

11 GRADE PIPE SUPPORT DETAIL
M1.2 SCALE: NO SCALE



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jeyre@caseengineeringinc.com
Phone: 636-349-1600 ext 258

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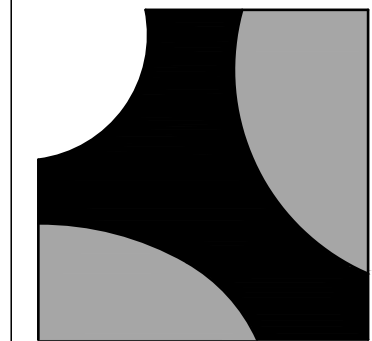


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SHEET
M1.2
MECHANICAL
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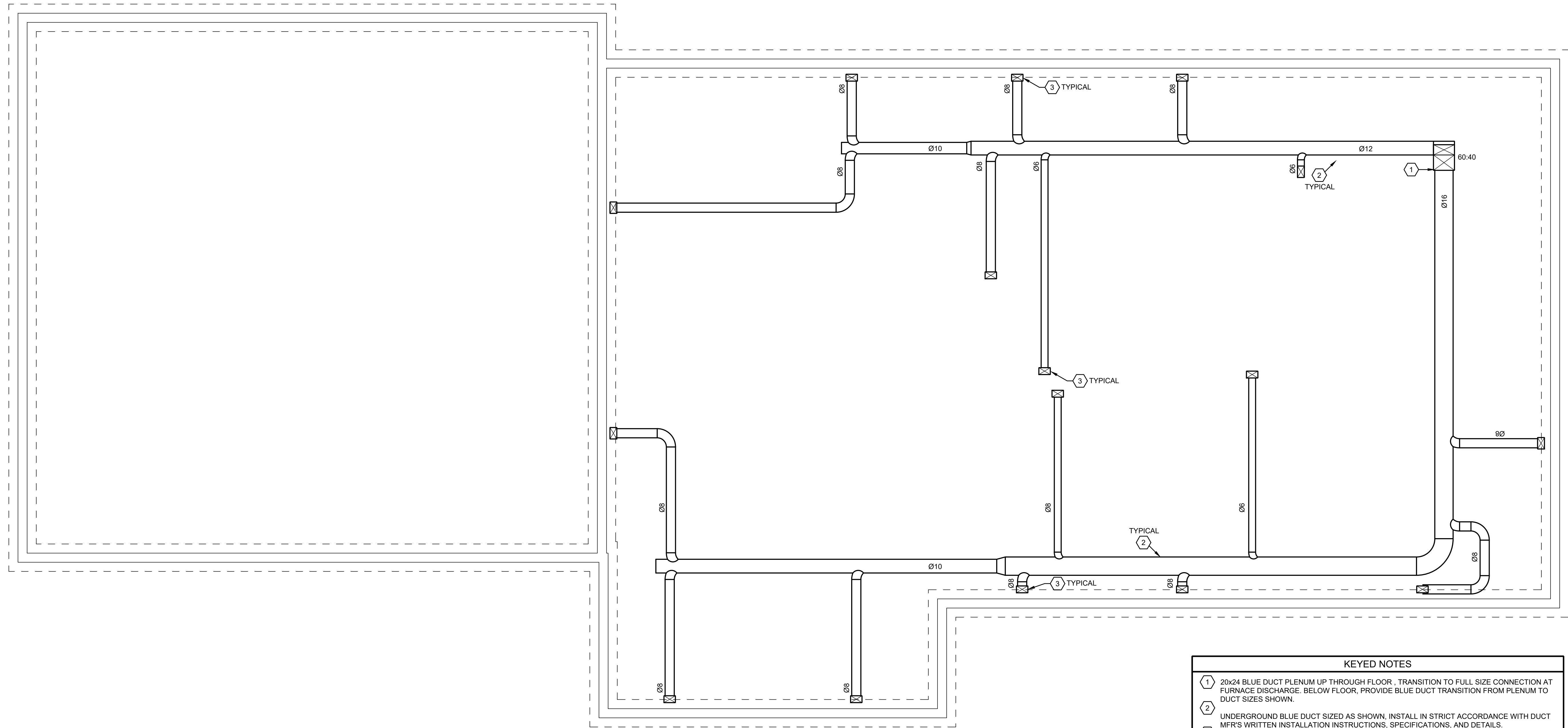


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SHEET
M2.0
MECHANICAL PLAN



1 MECHANICAL FOUNDATION PLAN
M2.0 SCALE: 1/4" = 1'-0"

UNDERGROUND DUCT NOTES:
1. ALL SUPPLY DUCT AND FITTINGS BELOW GROUND SHALL BE BLUE DUCT, NO EXCEPTIONS. INSTALL DUCT AND FITTINGS IN STRICT ACCORDANCE WITH BLUE DUCT'S WRITTEN INSTRUCTIONS AND DETAILS.

KEYED NOTES	
1	20x24 BLUE DUCT PLENUM UP THROUGH FLOOR, TRANSITION TO FULL SIZE CONNECTION AT FURNACE DISCHARGE. BELOW FLOOR, PROVIDE BLUE DUCT TRANSITION FROM PLENUM TO DUCT SIZES SHOWN.
2	UNDERGROUND BLUE DUCT SIZED AS SHOWN, INSTALL IN STRICT ACCORDANCE WITH DUCT MFR'S WRITTEN INSTALLATION INSTRUCTIONS, SPECIFICATIONS, AND DETAILS.
3	BLUE DUCT BOOT UP TO FLOOR SUPPLY GRILLE, SEE AIR.



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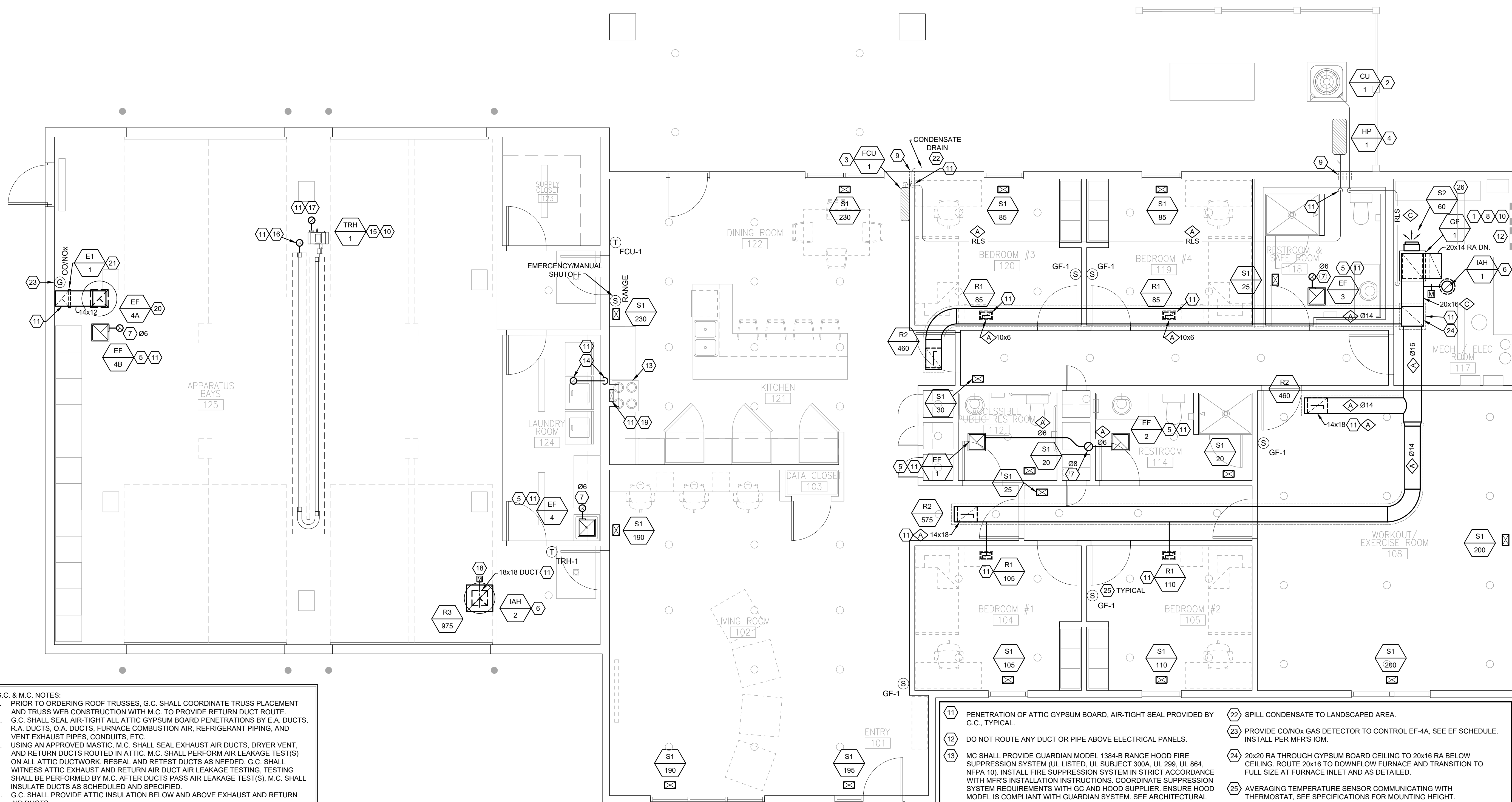
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PROJECT MANAGER: JE
DRAWN BY: CK

SHEET
M2.1
MECHANICAL PLAN



- G.C. & M.C. NOTES:
1. PRIOR TO ORDERING ROOF TRUSSES, G.C. SHALL COORDINATE TRUSS PLACEMENT AND TRUSS WEB CONSTRUCTION WITH G.C. TO PROVIDE RETURN DUCT ROUTE.
2. G.C. SHALL SEAL AIR-TIGHT ALL ATTIC GYPSUM BOARD PENETRATIONS BY E.A. DUCTS, R.A. DUCTS, A.C. DUCTS, FURNACE COMBUSTION AIR, REFRIGERANT PIPING, AND VENTILATION DUCTS FOR CONDENSATES, ETC.
3. USING AN APPROVED MASTIC, M.C. SHALL SEAL EXHAUST AIR DUCTS, DRYER VENT, AND RETURN DUCTS ROUTED IN ATTIC. M.C. SHALL PERFORM AIR LEAKAGE TEST(S) ON ALL ATTIC DUCTWORK, RESEAL AND RETEST DUCTS AS NEEDED. G.C. SHALL WITNESS ATTIC EXHAUST AND RETURN AIR DUCT AIR LEAKAGE TESTING, TESTING SHALL BE PERFORMED BY M.C. AFTER DUCTS PASS AIR LEAKAGE TEST(S); M.C. SHALL INSULATE DUCTS AS SCHEDULED BELOW.
4. G.C. SHALL PROVIDE ATTIC INSULATION BELOW AND ABOVE EXHAUST AND RETURN AIR DUCTS.

- TYPICAL ATTIC DUCT NOTES:
- * ALL DUCT INSTALLED IN ATTIC SHALL BE GALVANIZED SHEET METAL. FLEX DUCT IS NOT ACCEPTABLE.
 - * SEAL ALL JOINTS AND SEAMS WITH AN APPROVED DUCT SEALANT.
 - * AFTER ATTIC DUCT ROUGH IN, TEMPORARILY CAP OPENINGS AND LEAK TEST DUCT. LEAKAGE MAY NOT EXCEED 5% G.C. MUST WITNESS TESTING.
 - * AFTER SUCCESSFUL LEAKAGE TEST, INSULATE ATTIC RETURN AIR DUCT TO MINIMUM R-12.
 - * G.C. SHALL SEAL EACH ANNULAR SPACE OF ALL PENETRATIONS THROUGH GYPSUM BOARD CEILING AIR-TIGHT.

1 MECHANICAL PLAN
M2.0 SCALE: 1/4" = 1'-0"

KEYED NOTES

- | | | | | | |
|---|--|----|--|----|--|
| 1 | PROVIDE DOWN DISCHARGE NATURAL GAS FURNACE WITH DX COOLING EVAPORATOR COIL, AS SCHEDULED. SET UNIT DEAD LEVEL ON VIBRATION ISOLATION PADS. INSTALL PER MFR'S I.O.M. TRANSITION FROM FULL SIZE S.A. AND R.A. DUCTS AT UNIT TO DUCT SIZES SHOWN, WITH FLEXIBLE CONNECTIONS AT UNIT. PROVIDE FULL SIZE CONDENSATE DRAINS FROM UNIT AND TERMINATE VIA INDIRECT CONNECTION TO FLOOR DRAIN. EXTEND AND CONNECT R/LS PIPING TO CU. | 5 | PROVIDE CEILING MOUNTED EXHAUST FAN, AS SCHEDULED AND SPECIFIED. MOUNT FAN DEAD LEVEL IN GYPSUM BOARD CEILING. TRANSITION FROM FULL SIZE DUCT CONNECTION AT FAN TO DUCT SIZE SHOWN AND, AS DETAILED WITH FLEXIBLE CONNECTIONS. PROVIDE CONTROL PER SCHEDULE. | 15 | FOR COMPLETE INSTALLATION AND, AS SCHEDULED, MC SHALL PROVIDE 24V THERMOSTAT CONTROL. PLUMBING CONTRACTOR SHALL PROVIDE APPROVED 3/4" DIA. DUCT THROUGH PLUMBING AT THE SEE PLUMBING DRAWINGS FOR GAS PIPING. INSTALL UNIT PER MANUFACTURER'S I.O.M. WITH REQUIRED CLEARANCES. COORDINATE UNIT MOUNTING WITH FIXTURES, OVERHEAD DOORS, AND EQUIPMENT, MOUNT AS HIGH AS POSSIBLE. |
| 2 | PROVIDE AIR COOLED CONDENSING UNIT. SET UNIT DEAD LEVEL ON CONCRETE PAD, PAD BY G.C. INSTALL UNIT PER MFR'S I.O.M. INCLUDING REQUIRED CLEARANCES. PROVIDE 1/2" DIA. CUPRUM COLORED MINIMUM 1/2" DIA. PIPING PER EQUIPMENT MANUFACTURER'S I.O.M. INSULATION THICKNESS PER 2015 IECC. COVER INSULATION ON BUILDING EXTERIOR WITH 30 MIL PVC JACKET. COORDINATE UNIT LOCATION WITH WINDOWS, MAXIMIZE CLEARANCE FROM WINDOWS. | 6 | PROVIDE ROOF MOUNTED OUTSIDE AIR INTAKE HOOD (IAH-1,2), AS SCHEDULED AND SPECIFIED. PROVIDE SLOPED CURB TO MATCH ROOF PITCH. SET HOOD DEAD LEVEL. PROVIDE O.A. DUCT DROP FULL SIZE FROM UNIT CONNECTION, TRANSITION TO DUCT SIZED, AS SHOWN. PAINT HOOD AND CURB TO MATCH MINIMUM 10'-0" HORIZONTAL DISTANCE BETWEEN OUTSIDE AIR INTAKES AND EXHAUST VENTS, FURNACE VENTS, AND EXHAUST AIR VENT. | 16 | PROVIDE TYPE B VENT THROUGH ROOF WITH WEATHER CAP, FLASH TO ROOF. SIZE PER EQUIPMENT MANUFACTURER'S I.O.M. |
| 3 | PROVIDE WALL MOUNTED FCU AS SCHEDULED. MOUNT UNIT DEAD LEVEL FROM FACTORY BRACKET. INSTALL PER MFR'S I.O.M. AND WITH FACTORY CONDENSATE PUMP. CONCEAL ALL PIPING. PROVIDE WIRELESS PROGRAMMABLE THERMOSTAT CONTROL. INSTALL, INSULATE, AND SIZE REFRIGERANT PIPING PER EQUIPMENT MFR'S I.O.M. PROVIDE FULL DIAMETER CONDENSATE DRAIN PIPE INSULATED PER SCHEDULE. EXTEND AND TERMINATE VIA INDIRECT CONNECTION TO LANDSCAPED AREA. | 7 | PROVIDE ROOF MOUNTED EXHAUST AIR ROOF JACK (ERJ-1), AS SCHEDULED AND SPECIFIED. PROVIDE E.A. DUCT DROP FULL SIZE FROM CONNECTION, TRANSITION TO DUCT SIZED, AS SHOWN. PAINT ROOF JACK TO MATCH ROOF COLOR. MAINTAIN MINIMUM 10'-0" HORIZONTAL DISTANCE BETWEEN OUTSIDE AIR INTAKES AND EXHAUST ROOF JACK. | 17 | 1TH COMBUSTION AIR INTAKE THROUGH ROOF, PROVIDE WEATHER CAP. |
| 4 | PROVIDE AIR SOURCE HEAT PUMP AS SCHEDULED. SHIM UNIT TO SET DEAD LEVEL ON CONCRETE PAD. ANCHOR TO PAD WITH CONCRETE SCREWS. INSTALL UNIT PER MFR'S I.O.M. INCLUDING REQUIRED CLEARANCES. INSTALL, INSULATE, AND SIZE REFRIGERANT PIPING PER EQUIPMENT MANUFACTURER'S I.O.M. PROVIDE 30 MIL PVC JACKET ON | 8 | PROVIDE FACTORY CONCENTRIC VENT KIT FOR GAS FURNACE COMBUSTION AIR AND VENT EXHAUST PIPING. PAINT VENT KIT ABOVE ROOF TO MATCH ROOF COLOR. COORDINATE FLASHING WITH GC. | 18 | PROVIDE LOW LEAK DAMPER WITH 24V ACTUATOR, MOUNT ACTUATOR ACCESSIBLE FROM GYPSUM BOARD CEILING. PROVIDE CEILING ACCESS PANEL. DAMPER INTERLOCKED WITH EF-4A, OPEN WHEN FAN IS ENERGIZED, CLOSED WHEN FAN IS DEENERGIZED. |
| | | 9 | TYPICAL. PROVIDE PIPE SLEEVE AT WALL, SEAL ANNULAR SPACE WEATHER TIGHT. | 19 | 10x3-1/2 GALVANIZED SHEET METAL DUCT IN WALL UP TO ALUMINUM ROOF JACK. PAINT ROOF JACK TO MATCH ROOF COLOR. |
| | | 10 | SEE PLUMBING DRAWINGS FOR GAS PIPING AND PIPE SIZES. | 20 | PROVIDE ROOF MOUNTED EXHAUST FAN, AS SCHEDULED AND SPECIFIED. PROVIDE SLOPED CURB TO MATCH ROOF PITCH. SET EF DEAD LEVEL. PROVIDE FULL SIZE DUCT DROP FULL SIZE FROM UNIT CONNECTION, TRANSITION TO DUCT SIZED, AS SHOWN. PAINT FAN AND CURB TO MATCH ROOF COLOR. MAINTAIN MINIMUM 10'-0" HORIZONTAL DISTANCE BETWEEN OUTSIDE AIR INTAKES AND EXHAUST FAN. |
| | | | | 21 | ROUTE E.A. DUCT SIZED AS SHOWN TIGHT TO WALL, EXTEND TO 12" AFF. PROVIDE E.A. GRILLE AT BOTTOM OF DUCT. |

- 11 PENETRATION OF ATTIC GYPSUM BOARD, AIR-TIGHT SEAL PROVIDED BY G.C., TYPICAL.

12 DO NOT ROUTE ANY DUCT OR PIPE ABOVE ELECTRICAL PANELS.

13 MC SHALL PROVIDE GUARDIAN MODEL 1384-B RANGE HOOD FIRE SUPPRESSION SYSTEM (UL LISTED, UL SUBJECT 300A, UL 299, UL 884, NFPA 10). INSTALL FIRE SUPPRESSION SYSTEM IN STRICT ACCORDANCE WITH MFR'S INSTALLATION INSTRUCTIONS. COORDINATE SUPPRESSION SYSTEM REQUIREMENTS WITH GC AND HOOD SUPPLIER. ENSURE HOOD MODEL IS COMPLIANT WITH GUARDIAN SYSTEM. SEE ARCHITECTURAL DRAWINGS FOR RANGE HOOD.

14 CLOTHES DRYER PROVIDED BY OTHER. MC SHALL PROVIDE "DRYER BOX MODEL 425", RECESS BOX IN WALL BEHIND DRYER. COORDINATE LOCATION WITH APPLIANCE SUPPLIER PRIOR TO INSTALLATION. EXTEND AND CONNECT FULL SIZE DRYER VENT FROM DRYER BOX THROUGH ROOF. MC SHALL SEAL ENTIRE LENGTH OF DRYER VENT WATER-TIGHT. TERMINATE THROUGH ROOF WITH ROOFGOOSEVENT WITH INTEGRAL BACK DRAFT DAMPER. PAINT GOOSE NECK VENT, COLOR TO MATCH ROOF.

15 PROVIDE GAS FIRED INFRARED TUBE HEATER (TRH), MOUNT UNIT DEAD LEVEL FROM ROOF STRUCTURE. PROVIDE ALL ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION AND, AS SCHEDULED. MC SHALL PROVIDE 24V THERMOSTAT CONTROL. PLUMBING CONTRACTOR SHALL PROVIDE APPROVED CSST FLEXIBLE GAS CONNECTION AT ITH. SEE PLUMBING DRAWINGS FOR GAS PIPING. INSTALL UNIT PER MANUFACTURER'S I.O.M. WITH REQUIRED CLEARANCES. COORDINATE UNIT MOUNTING WITH FIXTURES, OVERHEAD DOORS, AND EQUIPMENT, MOUNT AS HIGH AS POSSIBLE.

16 PROVIDE TYPE B VENT THROUGH ROOF WITH WEATHER CAP, FLASH TO ROOF. SIZE PER EQUIPMENT MANUFACTURER'S I.O.M.

17 ITH COMBUSTION AIR INTAKE THROUGH ROOF, PROVIDE WEATHER CAP.

18 PROVIDE LOW LEAK DAMPER WITH 24V ACTUATOR, MOUNT ACTUATOR ACCESSIBLE FROM GYPSUM BOARD CEILING, PROVIDE CEILING ACCESS PANEL, DAMPER INTERLOCKED WITH EF-4A, OPEN WHEN FAN IS ENERGIZED, CLOSED WHEN FAN IS DEENERGIZED.

19 10x3-1/2 GALVANIZED SHEET METAL DUCT IN WALL UP TO ALUMINUM ROOF JACK. PAINT ROOF JACK TO MATCH ROOF COLOR.

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21 ROUTE E.A. DUCT SIZED AS SHOWN TIGHT TO WALL, EXTEND TO 12" AFF, PROVIDE E.A. GRILLE AT BOTTOM OF DUCT.

22 PROVIDE CO/NOx GAS DETECTOR TO CONTROL EF-4A, SEE EF SCHEDULED INSTALL PER MFR'S I.O.M.

24 20x20 RA THROUGH GYPSUM BOARD CEILING TO 20x16 RA BELOW CEILING. ROUTE 20x16 TO DOWNFLOW FURNACE AND TRANSITION TO FULL SIZE AT FURNACE INLET AND AS DETAILED.

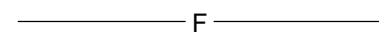


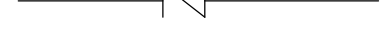







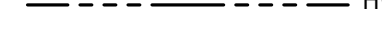
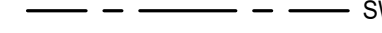
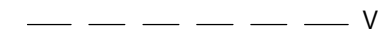


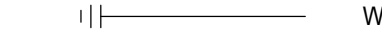

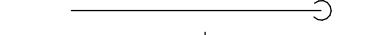
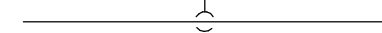









25 AVERAGING TEMPERATURE SENSOR COMMUNICATING WITH THERMOSTAT, SEE SPECIFICATIONS FOR MOUNTING HEIGHT.

26 ON DOWNFLOW FURNACE, MOUNT S2 GRILLE IN VERTICAL FACE OF SUPPLY AIR PLENUM, MOUNT GRILLE ON 6" DEEP GALVANIZED SHEET METAL BOOT ATTACHED TO PLENUM. PROVIDE GRILLE WITH FACTORY OBD IN GRILLE NECK.

PLUMBING ABBREVIATION

AD	AREA DRAIN
A.F.F	ABOVE FINISHED FLOOR
BT	BATHTUB
CO	CLEANOUT
COTG	CLEANOUT TO GRADE
CW	COLD WATER
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DWH	DOMESTIC WATER HEATER
ESP	ELEVATOR SUMP PUMP
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FO	FLOOR CLEANOUT
FD	FLOOR DRAIN
F.F.	FINISH FLOOR
HB	HOSE BIB
HW	HOT WATER
HWHR	HOT WATER RETURN
HY	HYDRANT
IMB	ICE MAKER BOX
INV. EL	INVERT ELEVATION
LAV	LAVATORY
MB	MOB BASIN
NG	NATURAL GAS
NPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
SH	SHOWER
SK	SINK
SS	SANITARY STACK
ST	STORM
TYP.	TYPICAL
V	VENT
VS	VENT STACK
VTR	VENT THRU ROOF
W	WASTE
WS	WASTE STACK
WB	WASHER BOX
WCO	WALL CLEANOUT
WC	WATER CLOSET
WH	WALL HYDRANT
WHP	WATER HEATER PAN
WSP	WASHER SAFE PAN

PIPING LEGEND

	FIRE LINE
	FLOW SWITCH
	SHUTOFF VALVE
	CHECK VALVE
	BALANCING VALVE
	UNION
	STRAINER
	THERMOMETER
	GAUGE
	PRESSURE/TEMPERATURE TEST PLUG
	CW COLD WATER
	HW HOT WATER
	HWHR HOT WATER RETURN
	FW FILTERED COLD WATER
	SW SOFT COLD WATER
	W/S WASTE/SANITARY
	V VENT
	CA COMPRESSED AIR
	ST STORM
	CO CLEANOUT
	FCO FLOOR CLEANOUT
	WCO WALL CLEANOUT
	HY HYDRANT
	ELBOW, TURNED UP
	ELBOW, TURNED DOWN
	BRANCH CONNECTION, TOP
	BRANCH CONNECTION, BOTTOM
	PIPE CAP OR BLIND FLANGE
	CONNECT TO EXISTING

NOT ALL OF THE ITEMS ABOVE ARE IN THIS PROJECT

GENERAL NOTES:

- PLUMBING CONTRACTOR SHALL EXECUTE ALL WORK SO THAT IT PRECEDES WITH A MINIMUM OF INTERFERENCE WITH OTHER TRADES.
- VERIFY EXACT ROUGH-IN AND FINAL EQUIPMENT REQUIREMENTS IN FIELD.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINAL CONNECTIONS TO PLUMBING FIXTURES AND KITCHEN EQUIPMENT. THIS INCLUDES, BUT NOT LIMITED TO FURNISHINGS AND INSTALLING ALL TRAPS, DRAINS AND SUPPLIES WITH STOPS.
- THE PLUMBING CONTRACTOR SHALL VERIFY THAT ALL PIPING, AS SHOWN ON THESE DRAWINGS WILL NOT CONFLICT WITH ANY DRAINS, SCUTTLES, JOINTS, VENTS, EQUIPMENT, ETC.
- COORDINATE ROUTING AND LOCATIONS OF WASTE AND VENT PIPING WITH ALL OTHER TRADES.
- THE PLUMBING CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES, ALL REQUIRED OPENINGS AND EXCAVATIONS. ALL REQUIRED OPENINGS IN FOUNDATIONS, FLOORS, WALLS, AND ROOFS SHALL BE DESIGNED INTO THE STRUCTURE INITIALLY BY THE USE OF SLEEVES, CURBS, ETC. CUTTING AND PATCHING SHALL BE HELD TO MINIMUM.
- ALL ITEMS PROJECTING THROUGH ROOFS SHALL BE FLASHED, A MINIMUM OF 12" ABOVE THE ROOF. ALL VENTS SHALL BE A MINIMUM OF 10' FROM ANY OUTSIDE AIR INTAKE.
- ALL FLOOR DRAINS SHALL HAVE 6" DEEP SEAL TRAPS.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTING WATER SUPPLY TO THE COFFEE MAKERS, TEA BREWERS, AND ICE MACHINES AND ALL OTHER LIKE KITCHEN EQUIPMENT.
- WRAP ALL CONDENSATE PIPE IN FREEZER WITH HEAT TRACING TAPE AND INSULATE ALL CONDENSATE DRAIN PIPING, ROUTE COOLER CONDENSATE DRAIN PIPING TO HUB DRAIN/FLOOR DRAIN AS INDICATED.
- INSULATE ALL WATER AND WASTE PIPING UNDER LAVATORIES.
- POT SINKS TO BE ANCHORED TO WALL AND SEALED WITH SILICONE CAULKING.
- INSTALL GAS VALVE (FBC) IN GAS LINE TO COOKING EQUIPMENT. INSTALL UNIONS AT THE SOLENOID VALVE.
- PLUMBING CONTRACTOR TO PROVIDE AND INSTALL SHUTOFF COCKS, QUICK DISCONNECTS AND FLEXIBLE LINES AT GAS EQUIPMENT.
- PROVIDE VACUUM BREAKERS AT FIXTURES WITH HOSE THREAD CONNECTIONS.
- PROVIDE DIELECTRIC UNIONS AT ALL DISSIMILAR METAL PIPE CONNECTIONS.
- LAVATORY AND HAND SINK FAUCETS SHALL HAVE A THERMAL MIXING VALVE AND LIMIT HOT WATER FLOW TO 110G TO COMPLY WITH THE LOCAL HEALTH OR PLUMBING DEPARTMENT RECOMMENDATIONS.
- FURNISH ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH ALL APPLICABLE CODES.
- FURNISH AND INSTALL COMPLETE SYSTEM OF SOIL, WASTE AND VENT PIPING FROM ALL PLUMBING FIXTURES, AND/OR OTHER EQUIPMENT.
- CLEANOUT PLUGS SHALL BE INSTALLED IN ACCORDANCE WITH PLUMBING CODE REQUIREMENTS AT EACH CHANGE IN DIRECTION. CLEANOUTS SHALL BE PLACED IN READILY ACCESSIBLE LOCATIONS.
- ALL SOIL, WASTE AND VENT LINES SHALL BE CONCEALED IN THE BUILDING CONSTRUCTION, EXCEPT FOR FOR INDIRECT DRAINS WHEN REQUIRED.
- FURNISH AND INSTALL A COMPLETE SYSTEM OF HOT AND COLD WATER AND WASTE PIPING FROM SUPPLIES TO ALL FIXTURES AND/OR EQUIPMENT REQUIRING THESE SERVICES. VERIFY LOCATION OF BEGINNING POINTS.
- COPPER PIPING SHALL BE PROTECTED AGAINST CONTACT WITH MASONRY OR DISSIMILAR METALS, HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON IRON TRAPEZE HANGERS WITH OTHER PIPING, SATISFACTORY AND PERMANENT ELECTROLYTIC ISOLATION MATERIAL SHALL PROTECT THE COPPER AGAINST CONTACT WITH OTHER METALS.
- WHERE COPPER PIPING IS SLEEVED THROUGH MASONRY, SLEEVES SHALL BE COPPER OR RED BRASS. WHERE COPPER MUST BE CONCEALED IN A MASONRY PARTITION OR AGAINST MASONRY, CONTACT SHALL BE PREVENTED BY COATING THE COPPER HEAVILY WITH ASPHALTIC ENAMEL AND PROVIDING 15# ASPHALT SATURATED FELT BETWEEN THE PIPE AND MASONRY.
- ALL CUTTING AND PATCHING OF SLAB, ROOF OR OTHER BUILDING COMPONENTS TO BE BY THE GENERAL CONTRACTOR.
- ALL ADA FIXTURES SHALL ALSO MEET THE REQUIREMENTS OF ANSI A117.1.
- IN TOILET ROOMS, COORDINATE FIXTURES, TRIM AND ACCESSORIES TO AVOID CONFLICTS WITH ALL MOUNTED GRAB BAR.
- PROVIDE ISOLATION VALVES ON ALL INDIVIDUAL FIXTURES AND RESTROOM GROUPS.
- ALL VENT- THROUGH-ROOF LOCATIONS TO BE 4", ALL VENT THROUGH WALLS SHALL BE A MIN 10' FROM FLOOR, OR INTAKES AND TERMINATE WITH A WALL CAP.
- ALL WATER PIPING SHALL BE INSULATED, AND ANY BURIED WATER LINES SHALL HAVE A SLEEVE FOR BURIAL APPLICATIONS.
- PROVIDE SHUTOFF VALVES AT ALL DOMESTIC WATER LINES, BRANCHES, AND PRIOR TO ALL EQUIPMENT. SHUT OFF VALVES ARE NOT SHOWN FOR CLARITY.

PLUMBING FIXTURE SCHEDULE										
Mark	Description	Provided By	Manufacturer	Model	Accessory Manufacturer	Accessory Model	Cold Water Pipe	Hot Water Pipe	Waste Pipe	Vent Pipe
BP-1	BOOSTER PUMP	GC	FRANKLIN ELECTRIC	2IL-23033-G1S-C			2"	0"	0"	0"
DW-1	DISHWASHER	OWNER	GE	SEE ARCHITECHJAL PLANS			0"	1/2"	2"	0"
GD-1	GARBAGE DISPOSAL	GC	IN SINKERATOR	BADGER 5			0"	1/2"	2"	0"
GG	GAS GRILL (OUTSIDE)	OWNER	WEBER	GENESIS 2 E-435			0"	0"	0"	0"
GR	GAS RANGE	OWNER	SEE ARCHITECHJAL PLANS	SEE ARCHITECHJAL PLANS			0"	0"	0"	0"
GWH-1&2	TANKLESS WATER HEATER	GC	AO SMITH	540H			0"	0"	0"	0"
HB-1	HOSE BIBB	GC	WOODFORD	B67			3/4"	0"	0"	0"
HB-2	HOSE BIBB	GC	WOODFORD	67			3/4"	0"	0"	0"
HR-1	HOSE REEL	GC	REELCRAFT	CT6100HN			3/4"	0"	0"	0"
LAV-1	LAVATORY - DROP IN - ADA	GC	KOHLER	K-2905-4	DELTA	25911LF	1/2"	1/2"	2"	1 1/2"
MS-1	MOP SINK	GC	FIAT	MSB-2424	T&S BRASS	897-CP	3/4"	3/4"	3"	2"
OB-2	COFFEE/ICE MAKER OUTLET BOX	GC	SIOUX CHIEF	696-RG1010MF			1/2"	0"	0"	0"
OB-3	WASHING MACHINE OUTLET BOX	GC	SIOUX CHIEF	696-R2313MF			1/2"	1/2"	2"	2"
PF-1	POT FILLER	GC	KHOLER	K-22066			1/2"	0"	0"	0"
S-1	2 BOWL SINK	GC	KOHLER	K-31465	KOHLER	K-596	1/2"	1/2"	2"	2"
SH-1	SHOWER STALL	GC	SEE ARCHITECHJAL PLANS	SEE ARCHITECHJAL PLANS	DELTA	T17230	1/2"	1/2"	2"	1 1/2"
WC-1	WATER CLOSET - FLOOR - FLUSH TANK- ADA	GC	TOTO	CST244EF			1/2"	0"	4"	2"
WS-1	WATER SOFTNER SYSTEM	GC	CULLIGAN	CTM-90			2"	0"	1 1/2"	0"

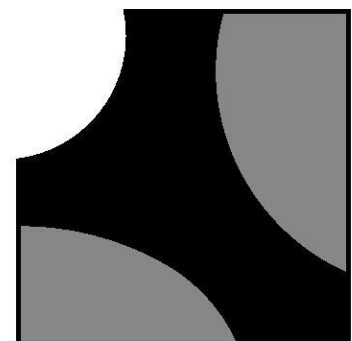
FUEL LOADS SUMMARY			
BUILDING NATURAL GAS SERVICE = 1" LINE 30 PSI REGULATED TO 2 PSI BEFORE METER			
DEVELOPED LENGTH = 250'-0"			
CONTRACTOR TO REGULATE TO 7.5 W.C BEFORE ENTERING BUILDING WITH SEISMIC SHUT OFF			
TOTAL LOAD = 1060 MBH			
PIPE SIZE @ 7.5 W.C. = 2.5"			
2015 IFGC			
MARK	DESCRIPTION	Count	FUEL INPUT (MBH)
GF-1	AIR HANDELING UNIT	1	80
GWH-1&2	TANKLESS WATER HEATER	1	400
TRH-1	TUBULAR RADIANT HEATER	1	100
S-1	GAS GRILL (OUTSIDE)	1	240
GR	GAS RANGE	1	240
TOTAL			1060

PIPE MATERIAL	
SYSTEM	MATERIAL
CONDENSATE	COPPER, PVC
CONDENSER WATER	COPPER TUBING, STAINLESS STEEL, SCHEDULE 80 STEEL
DOMESTIC WATER	PVC, CPVC, COPPER, PE-X-A
FIRE PROTECTION	GALVANIZED OR BLACK STEEL
HYDRONIC	COPPER TUBING, STAINLESS STEEL, SCHEDULE 40 STEEL
NATURAL GAS	SCHEDULE 40 BLACK STEEL
REFRIGERANT	ACR COPPER OR SCHEDULE 40 BLACK STEEL
SANITARY VENT	CAST IRON, ABS, PVC
SANITARY WASTE	CAST IRON, ABS, PVC
STORM DRAINAGE	CAST IRON, ABS, PVC

DRAINAGE FIXTURE UNIT SUMMARY					
ID	FIXTURE DESCRIPTION	QTY	WASTE SIZE	DFU DEMAND UNIT	TOTAL
FD-1	FLOOR DRAIN	1	2"	2	2
FD-1	FLOOR DRAIN	5	3"	6	30
FD-2	FLOOR DRAIN	2	2"	2	4
GD-1	GARBAGE DISPOSAL	1	2"	2	2
LAV-1	LAVATORY - DROP IN - ADA	3	2"	1	3
MS-1	MOP SINK	1	3"	2	2
OB-3	WASHING MACHINE OUTLET BOX	2	2"	3	6
S-1	2 BOWL SINK	1	2"	4	4
SH-1	SHOWER STALL	2	2"	2	4
WC-1	WATER CLOSET - FLOOR - FLUSH TANK- ADA	3	4"	4	12
Grand total:		21		69	

WATER SUPPLY FIXTURE UNIT SUMMARY							
BUILDING WATER CONDITIONS							
BUILDING DOMESTIC WATER SUPPLY SIZE = 2"							
BUILDING STATIC WATER PRESSURE = 45 PSI							
BUILDING PRESSURE LOSS							
METER, STRAINER, RPZ, LOSS = 25 PSI							
WATER SOFTNER = 15 PSI							
LOWEST PRESSURE REQUIRED = 20 PSI							
TOTAL PRESSURE LOSS = 60 PSI							
45 PSI - 60 PSI = -15 PSI							
TOTAL BOOST REQUIRED IS 40 PSI.							
TOTAL BUILDING LOAD							
32 GPM WITH TANKS @ 4 FPS = MIN 2"							
ID	FIXTURE DESCRIPTION	QTY	CWFU DEMAND		HWFU DEMAND		WSFU DEMAND
			UNIT	TOTAL	UNIT	TOTAL	UNIT TOTAL
BP-1	BOOSTER PUMP	1	0.25	0.25	0	0	0.25 0.25
DW-1	DISHWASHER	1	0	0	1.5	1.5	1.5 1.5
HB-1	HOSE BIBB	4	2.5	10	0	0	2.5 10
HB-2	HOSE BIBB	4	2.5	10	0	0	2.5 10
HR-1	HOSE REEL	2	2.5	5	0	0	2.5 5
LAV-1	LAVATORY - DROP IN - ADA	3	1.5	4.5	1.5	4.5	2 6
MS-1	MOP SINK	1	2.25	2.25	2.25	2.25	3 3
OB-2	COFFEE/ICE MAKER OUTLET BOX	3	0.5	1.5	0	0	0.5 1.5
OB-3	WASHING MACHINE OUTLET BOX	2	3	6	3	6	4 8
PF-1	POT FILLER	1	0	0	0	0	1.5 1.5
S-1	2 BOWL SINK	1	1.5	1.5	1.5	1.5	2 2
SH-1	SHOWER STALL	2	1.5	3	1.5	3	2 4
WC-1	WATER CLOSET - FLOOR - FLUSH TANK- ADA	3	5	15	0	0	5 15
WS-1	WATER SOFTNER SYSTEM	1	0.25	0.25	0	0	0.25 0.25
TOTAL			59.25		18.75		68

PLUMBING DRAIN SCHEDULE				
Identity Type Mark	Description	Manufacturer	Model	Remarks
FD-1	FLOOR DRAIN	WATTS	FD-1100-M	PROVIDE TRAP SEALS OR TRAP PRIMERS
FD-2	FLOOR DRAIN	WATTS	FD-1100-M	PROVIDE TRAP PRIMER DRAIN FOR ONS MATT.
TD-1	TRENCH DRAIN	MIFAB	T-1400-13-PGE-4-HP	PROVIDE LOAD CLASS E GRATE MIFAB T100-PGE-4-HP



BAALMAN ARCHITECTS

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mstruckhoff@baxengineering.com

STRUCTURAL,
MECHANICAL, PLUMBING &
ELECTRICAL
CASE ENGINEERING, INC.

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Structural Contact:
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Mechanical, Plumbing, Electrical
Contact: Jim Eyre, P.E.
jeyre@caseengineeringinc.com
Phone: 636-349-1600 ext 258

for:

New Base Station #2 Facility for:
**Lincoln County
Ambulance District**
28 Water Court
Moscow Mills, Missouri 63362

R#	ISSUE	BID & PERMIT SET	DATE
0			04/15/2022



04-15-2022

DARREL R. CASE
PE-23303

PROJECT MANAGER: JKL
DRAWN BY: CLK

PROJECT NUMBER
21-079
DATE
APRIL 15, 2022

SHEET
P001
PLUMBING NOTES
& SCHEDULES

PLUMBING SPECIFICATIONS

1. GENERAL
THE "ARCHITECTURAL GENERAL CONDITIONS" GOVERN WORK UNDER THIS SECTION.

BEFORE SUBMITTING A PROPOSAL, THIS CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND SHALL CAREFULLY EXAMINE THE DRAWINGS AND SPECIFICATIONS. IT IS EXPRESSLY UNDERSTOOD THAT THIS PROPOSAL IS BASED ON THE ABOVE REQUIREMENTS AND THAT IT COVERS EVERYTHING NECESSARY TO DO AND COMPLETE THE WORK.

2. INSPECTION AND COOPERATION
NO DEVIATION FROM THE DRAWINGS AND/OR SPECIFICATIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF ARCHITECT OR ENGINEER. THIS CONTRACTOR SHALL COOPERATE WITH THE OTHER CONTRACTORS TO ALLOW FOR THE INSTALLATION OF THEIR WORK AS WELL AS HIS OWN.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK FITTING IN PLACE WITHOUT CONFLICT WITH THE OTHER TRADES, WHERE PROPER PLANNING COULD AVOID INTERFERENCE.

3. CODES AND PERMITS
NOTHING IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE INTERPRETED TO CONFLICT WITH ANY CITY OR PROVINCIAL LAW, REGULATION, CODE, ORDINANCE, RULING, OR FIRE UNDERWRITER'S REQUIREMENT APPLICABLE TO THIS CLASS OF WORK.

SHOULD THE DRAWINGS AND/OR SPECIFICATIONS CONFLICT WITH SUCH LAWS OR ORDINANCES, THE CONFLICTING PORTION OF THE WORK SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH SUCH LAWS AND ORDINANCES WITHOUT EXTRA COST.

THIS CONTRACTOR SHALL SECURE AND PAY FOR ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED FOR THIS INSTALLATION OF HIS WORK.

PLUMBING SYSTEMS SHALL BE PROTECTED FROM EARTHQUAKE DAMAFE PER CODE REQUIREMENTS FOR SEISMIC DESIGN CATEGORY D.

4. ACCURACY OF DATA
THE INFORMATION GIVEN HEREIN AND ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED, BUT ITS EXTREME ACCURACY IS NOT GUARANTEED. THIS CONTRACTOR SHALL EXAMINE THE LOCATIONS AND VERIFY ALL MEASUREMENTS, DISTANCES, ELEVATIONS AND EXISTING PIPE SIZES BEFORE STARTING THE WORK AS ALL PIPING SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC ONLY.

THIS CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS, RAISED AND DROPS IN PIPING AND DUCTWORK AS REQUIRED BY BUILDING CONDITIONS AT NO ADDITIONAL COST.

MECHANICAL DRAWINGS SHALL NOT BE USED FOR GENERAL CONSTRUCTION DIMENSIONS OR FOR TYPE OF MATERIAL USED. FOR EXACT BUILDING LAYOUT, DIMENSIONS AND BUILDING MATERIAL USED, THIS CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS.

5. SHOP DRAWINGS
SHOP OR INSTALLATION DRAWINGS, FOUNDATION PLANS, EQUIPMENT OR APPARATUS DRAWINGS SHALL BE FURNISHED BY THIS CONTRACTOR. THESE DRAWINGS SHALL BE CLEARLY MARKED INDICATING WHICH ITEMS ARE TO BE SUPPLIED AND SHALL STATE MATERIALS, SIZES AND GENERAL DESCRIPTION OF ALL EQUIPMENT. ANY CHANGES FROM THE SPECIFIED ITEMS SHALL BE NOTED ON THE SUBMITTALS.

SHOP DRAWINGS OF SPECIAL APPARATUS OR EQUIPMENT WHICH IS TO BE FABRICATED INDIVIDUALLY FOR THIS PROJECT AND IS NOT DESCRIBED BY STANDARD MANUFACTURER'S DRAWINGS OR BULLETINS SHALL BE SUBMITTED FOR PROCESSING BEFORE FABRICATION.

THESE DRAWINGS SHALL BE SUBMITTED IN A TIMELY MANNER.

IT SHALL BE THIS CONTRACTORS RESPONSIBILITY TO MAINTAIN LIAISON WITH ALL PARTIES CONCERNED WITH THE MATERIAL SUBMITTED. THIS CONTRACTOR SHALL NOT PURCHASE ANY EQUIPMENT UNTIL SHOP DRAWINGS HAVE BEEN PROCESSED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FEES ACCRUED FROM THE RETURN OF FIXTURES PROCURED PRIOR TO THE REVIEW OF SHOP DRAWINGS AND THAT ARE NOT APPROVED.

THIS CONTRACTOR SHALL SUBMIT NO DRAWINGS WITHOUT NOTATION INDICATING DATE OF CONTRACTOR'S REVIEW AND SIGNATURE OR CHECK FOR CONTRACTOR TOGETHER WITH CONTRACTOR'S NAME AND PROJECT IDENTIFICATION.

ARCHITECT'S PROCESSING WILL NOT CONSTITUTE A COMPLETE CHECK BUT WILL INDICATE ONLY THAT GENERAL METHOD OF CONSTRUCTION AND DETAILING IS SATISFACTORY.

ARCHITECT'S PROCESSING WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR ERRORS SINCE THIS CONTRACTOR IS SOLELY RESPONSIBLE FOR DIMENSIONS AND DESIGNS OF ADEQUATE CONNECTIONS, DETAILS AND SATISFACTORY CONSTRUCTION OF ALL WORK, AS WELL AS FURNISHING MATERIALS AND WORKMANSHIP REQUIRED BY DRAWINGS AND SPECIFICATIONS WHICH MAY NOT BE INDICATED ON THE SUBMITTALS WHEN APPROVED.

CORRECTIONS OR COMMENTS MADE ON THE SHOP DRAWINGS DURING ENGINEER REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. REVIEW OF A SPECIFIC ITEM SHALL NOT INCLUDE THE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. THE CONTRACTOR IS RESPONSIBLE FOR EQUIPMENT VOLTAGES AND DIMENSIONS TO BE CONFIRMED AND CORRELATED WITH ALL DISCIPLINES PRIOR TO PURCHASE; INFORMATION THAT PERTAINS SOLELY TO THE FABRICATION PROCESSES OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; COORDINATION OF THE WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.

6. SUBSTITUTIONS OF EQUIPMENT OR MATERIAL

THE BRAND NAMES OF EQUIPMENT OR MATERIALS SPECIFIED HEREIN SHALL ESTABLISH QUALITY, CAPACITY, TYPE AND DIMENSIONS TO BE INCLUDED IN THE BASE BID.

APPROVAL OF SUBSTITUTED ITEMS WILL BE BASED ON ABILITY AND CAPACITY TO PERFORM FUNCTION SERVED, QUALITY AND AVAILABILITY OF PARTS AND SERVICE, QUALITY OF EQUIPMENT, DELIVERY SCHEDULE, ETC. THE ARCHITECT SHALL REVIEW ALL SUCH REQUESTS BUT RESERVES THE SOLE RIGHT OF JUDGEMENT TO APPROVE OR REJECT THE PROPOSED SUBSTITUTIONS.

ACCEPTANCE OR REJECTION OF PROPOSED SUBSTITUTIONS SHALL NOT CAUSE ADDITIONAL COST. ANY CHANGES OF PIPING, DUCTWORK, ELECTRICAL CONTROLS OR INSTALLATION REQUIRED BECAUSE OF THE SUBSTITUTION OR EQUIPMENT SHALL BE PAID FOR BY THIS CONTRACTOR PROPOSING THE SUBSTITUTION.

7. ERECTION OF APPARATUS

ALL WORK SHALL BE DONE UNDER THE PERSONAL SUPERVISION OF THIS CONTRACTOR WHO SHALL PROVIDE A COMPETENT FOREMAN TO LAID OUT ALL WORK. ALL WORK SHALL BE LAID OUT WITH DUE REGARD FOR THE SPACE REQUIREMENTS OF THE OTHER CONTRACTORS. THIS CONTRACTOR SHALL REPORT ANY CONFLICTS OR DIFFICULTIES IN REGARD TO THE INSTALLATION IMMEDIATELY.

WHERE CROWDED LOCATIONS EXIST OR WHERE THERE IS A POSSIBILITY OF CONFLICT BETWEEN TRADES, THIS CONTRACTOR SHALL MAKE COMPOSITE DRAWINGS SHOWING THE EXACT LOCATIONS OF PIPES, DUCT, CONDUIT AND EQUIPMENT. DRAWINGS SHALL BE BASED ON FIELD MEASUREMENTS AND AFTER CONSULTATION AND AGREEMENT BETWEEN THE TRADES, SHALL BE APPROVED BY ARCHITECT AND ENGINEER BEFORE INSTALLATION OF THE WORK.

EQUIPMENT OF A TYPE TO REQUIRE REPLACEMENT, SERVICING, ADJUSTING OR MAINTENANCE SHALL BE LOCATED TO ALLOW EASY ACCESS AND SPACE FOR REMOVAL OF INTERNAL ASSEMBLIES, IF REQUIRED.

8. EXCAVATION AND BACKFILL

THIS CONTRACTOR SHALL DO ALL EXCAVATION REQUIRED TO INSTALL PIPES AND EQUIPMENT SHOWN ON THE PLANS OR REQUIRED FOR PROPER OPERATION. EXCESS EXCAVATION BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH EARTH AND THOROUGHLY TAMPED. UTILITIES SERVICES LINES SHALL BE INSPECTED AND APPROVED BY THE PROPER INSPECTION AUTHORITY BEFORE BACKFILLING.

INSTALL PLASTIC PIPE AND FITTINGS IN STRICT ACCORDANCE WITH THE INSTALLATION RECOMMENDATIONS OF THE PIPE AND FITTINGS MANUFACTURER, APPENDIX X1 OF ASTM D2265 (STORAGE AND INSTALLATION PROCEDURES FOR PLASTIC DRAIN, WASTE, AND VENT PIPING) AND FOR BURIED PIPE ASTM D2321 (STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS). SUCH INSTRUCTIONS SHALL INCLUDE BUT ARE NOT LIMITED TO CUTTING, SOLVENT CEMENTING AND PRIMING, JOINTS, CONNECTIONS, TRENCHING, ALIGNMENT AND GRADE, TRENCHING, BEDDING, BACKFILL AND COMPACTION, SUPPORTS AND SPACING AND ALLOWANCE FOR THERMAL EXPANSION.

CAST IRON PIPING TRENCHING SHALL BE IN ACCORDANCE TO THE CAST IRON SOIL PIPE AND FITTINGS HANDBOOK ISSUED BY THE CAST IRON SOIL PIPE INSTITUTE.

THE BOTTOM OF TRENCHES SHALL BE TAMPED HARD AN GRADED TO SECURE THE REQUIRED FALL, ROCK, WHERE ENCOUNTERED SHALL BE EXCAVATED TO A DEPTH OF SIX INCHES (6") BELOW THE BOTTOM OF THE PIPE, AND BEFORE THE PIPE IS LAID, THE SPACE BETWEEN BOTTOM PIPE AND ROCK SURFACE SHALL BE FILLED WITH GRAVEL. IF TRENCHES ARE DEEPER THAN BOTTOM OF FLOORING OR CLOSER THAN THREE FEET (3'0") TO FOOTING THEY MUST BE FILLED WITH COHESIVE SOIL AND COMPACTED TO 95% OF MAXIMUM DENSITY, STANDARD PROCTOR, ASTM D-698. ALL OTHER EXCAVATIONS UNDER FLOOR SLABS COMPACTED TO 95% STANDARD PROCTOR.

WHEN EXCESS DIRT HAS BEEN REMOVED, THE TRENCH SHALL BE BROUGHT TO THE REQUIRED LEVEL WITH SAND AND GRAVEL FIRMLY COMPACTED.

TRENCHES AND EXCAVATION SHALL BE BACKFILLED IN 6" LAYERS OF EARTH, FREE FROM CLOUDS, AND STONES THOROUGHLY TAMPED TO A DEPTH OF 12" ABOVE THE PIPE. AFTER THAT DEPTH HAS BEEN REACHED, BACKFILLING SHALL BE DONE IN 12" LAYERS, THOROUGHLY TAMPED.

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS TO ANY DAMAGES OR SAGS TO THE PIPING SYSTEMS THAT OCCUR FROM THE IMPROPER EXCAVATION AND BACKFILL METHODS.

9. EQUIPMENT SUPPORTS

ANY STRUCTURAL STEEL MEMBERS REQUIRED TO ADAPT THE EQUIPMENT AND PIPING AS FURNISHED BY THIS CONTRACTOR, TO THE BUILDING STEEL OR STRUCTURE, SHALL BE INCLUDED IN THE BID OF THE CONTRACTOR FURNISHING THE EQUIPMENT OR PIPING. HANGING OF ALL EQUIPMENT AND REQUIRED SUPPORTING STEEL AND BRACING SHALL BE FURNISHED BY THE CONTRACTOR WHO SUPPLIES THE EQUIPMENT.

10. CUTTING AND PATCHING

THIS CONTRACTOR SHALL INCLUDE ALL CUTTING, PATCHING AND PAINTING OF PATCHED AREAS REQUIRED FOR AND RESULTING FROM THE INSTALLATION OF ALL OF THIS CONTRACTOR'S WORK, EXCEPT WHERE NOTED OTHERWISE.

ALL OPENINGS AROUND PIPE PENETRATIONS THROUGH SMOKE OR FIRE-RATED FLOORS, CEILINGS OR WALLS SHALL BE SEALED AIRTIGHT WITH MATERIAL HAVING A RATING EQUAL TO THE MATERIAL OF THE WALL, CEILING AND/OR FLOOR PENETRATED.

ALL PATCHING SHALL BE NEATLY FINISHED TO THE SATISFACTION OF THE ARCHITECT.

11. ACCESS PANELS

THIS CONTRACTOR SHALL LOCATE AND FURNISH FOR INSTALLATION BY THE GENERAL CONTRACTOR, ALL ACCESS PANELS AS REQUIRED FOR ACCESS TO VALVES, AND THE PROPER SERVICING OF EQUIPMENT AND LINES INSTALLED UNDER THE CONTRACT.

ALL PANELS SHALL BE MILCOR, STYLE "M" FOR MASONRY, "A" FOR ACOUSTICAL TILE AND "F" FOR PLASTER. ACCESS DOORS SHALL BE 12" X 12" MINIMUM SIZE FOR VALVES.

12. DIELECTRIC UNIONS

FOR THE PREVENTION OF ELECTROLYTIC CORROSION AT CONNECTIONS BETWEEN PIPE OF DISSIMILAR METALS OR BETWEEN PIPE AND EQUIPMENT CONNECTIONS OF DISSIMILAR METALS, PROVIDE DIELECTRIC UNIONS OR FLANGES.

13. MOTORS, STARTERS AND DISCONNECTS

UNLESS SPECIFIED TO BE FURNISHED WITH EQUIPMENT, ALL MOTOR STARTERS AND DISCONNECT SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

14. JOINTS AND FITTINGS

THREADS ON SCREWED PIPE SHALL BE STANDARD, CLEAN BUTT AND TAPERED. PIPE SHALL BE REAMED OF BURRS AND KEPT CLEAN OF SCALE, DIRT AND SHAVINGS. TREADS SHALL BE MADE WITH FLAKED GRAPHITE AND LUBRICATING OIL OR APPROVED PIPE COMPOUND ON THE MALE THREAD ONLY.

COPPER-TO-STEEL AND COPPER-TO-BRASS JOINTS SHALL BE MADE WITH SILVER SOLDER. ALL OTHER COPPER-TO-COPPER JOINTS ABOVE GROUND SHALL BE MADE WITH LEAD FREE SOLDER. COPPER PIPE SHALL BE CUT SQUARE, BURRS REMOVED AND CARE SHALL BE GIVEN TO KEEP THE LINES FREE OF DIRT AND MOISTURE. ALL TUBING AND FITTINGS SHALL BE THOROUGHLY CLEANED.

WELDED PIPE SHALL HAVE BUTT WELDED SINGLE "V" TYPE JOINTS FOR WHICH PIPE HAS BEEN BEVELLED TO 45 DEGREES. WELD SHALL BE ONE-FOURTH GREATER THICKNESS THAN THE PIPE. CONNECTIONS TO EQUIPMENT, ACCESSORIES, ETC. SHALL BE MADE BY MEANS OF FLANGES AND/OR ADAPTERS.

UNIONS SHALL BE PROVIDED AT EACH SCREWED VALVE AND UNIONS OR FLANGES AT EACH EQUIPMENT CONNECTION.

15. EXPANSION JOINTS

FURNISH AND INSTALL FLEXONICS EXPANSION JOINTS IN PIPING SYSTEM WHERE SHOWN OR NECESSARY FOR EXPANSION AND CONTRACTION.

EXPANSION JOINTS IN PIPE 4" AND GREATER SHALL BE THE PACKLESS TYPE WITH STAINLESS STEEL BELLOWS AND HAVE WELDED OR FLANGED END. JOINTS SHALL HAVE TRAVERSE AS INDICATED ON THE PLANS. EXPANSION JOINTS SHALL BE OF THE CONTROLLED FLEXING TYPE.

EXPANSION JOINTS IN COPPER PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL BELLOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

EXPANSION JOINTS IN STEEL PIPE UNDER 4" IN SIZE SHALL BE OF THE COMPENSATOR TYPE CONSTRUCTED OF TWO-PLY STAINLESS STEEL ELBOWS AND CARBON STEEL SHROUDS AND END FITTINGS, INTERNAL GUIDES AND ANTI-TORQUE DEVICES.

PROVIDE GUIDES ON EACH SIDE OF EXPANSION JOINT, AT 4 PIPE DIAMETERS, 14 PIPE DIAMETERS, AND A THIRD GUIDE AS RECOMMENDED BY THE MANUFACTURER.

16. PIPE FLEXIBLE CONNECTIONS

FLEXIBLE PIPE CONNECTIONS SHALL BE RESISTOFLEX #R6904 OR APPROVED EQUAL FLEXIBLE CONNECTIONS MADE FROM TEFLO.

PROVIDE FOR MOVEMENT IN PIPING BY USE OF SWING JOINTS AT CONNECTION OF ALL BRANCHES TO MAINS AND RISERS. ALL BRANCHES FROM MAINS AND RISERS SHALL HAVE 1/4" CLEARANCE BETWEEN PIPE INSULATION AND SLEEVE TO PERMIT PIPE MOVEMENT.

17. VALVES

THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL VALVES OF ONE MANUFACTURER, FIQUE NUMBER AND TYPE THROUGHOUT THE ENTIRE INSTALLATION OF THE WORK, UNLESS OTHERWISE SPECIFIED. THE FOLLOWING NUMBERS ARE FROM THE CRANE CATALOG. EQUAL VALVES OF REPUTABLE MANUFACTURERS, SUCH AS HAMMOND, NIBCO-SCOTT AND/OR JENKINS WILL BE CONSIDERED EQUIVALENT.

ALL VALVES SHALL BE BUILT FOR A MINIMUM OF 125 PSIG WORKING PRESSURE.

ISOLATION VALVES SHALL BE PROVIDED ON ALL INDIVIDUAL FIXTURES AND FIXTURE GROUPS.

CHECK VALVES 2-1/2" AND SMALLER SHALL BE #36 (SCREWED ENDS) OR #1342 (SOLDER JOINT ENDS) SWING-TYPE WITH BRONZE BODY AND BRONZE TRIM.

BUTTERFLY VALVES 2" AND LARGER SHALL BE #12F, IRON BODY, CAST-IRON WAFER W/LOCK LEVER.

BALL VALVE UP TO 3" IN SIZE SHALL BE APOLLO SERIES #70 BRONZE VALVE WITH CHROME-PLATED BALL AND TEFLON SEAT.

GAS LINE COCKS UP TO 4" SHALL BE #320, 1/2 PSI FOR INDOOR APPLIANCE CONNECTIONS, SHUT OFF VALVES TO ANSI Z21.15 AND CSA 9.1, 5 PSI FOR INDOOR SHUTOFF SHALL CONFORM TO CGA 91-002 AND ASME B16.44

HOSE END VALVES SHALL BE #438 GATE VALVES WITH HOSE END NIPPLES.

PROVIDE ISOLATION VALVES AT EACH FIXTURE AND FIXTURE GROUP SUPPLIES. PROVIDE SHUT OFF VALVES AT EACH BRANCH AND LABEL IN THE CEILING BELOW.

18. PIPE SLEEVES AND COLLARS

THIS CONTRACTOR SHALL LAID OUT ALL HIS WORK AND SET SLEEVES IN NEW CONSTRUCTION AS CONCRETE FORMS AND WALL ARE ERCTED SO AS TO BE ABLE TO INSTALL HIS WORK WITHOUT CUTTING OR BREAKING OF FLOORS OR WALLS. ALL SLEEVES FOR INSULATED PIPING SHALL BE LARGE ENOUGH TO ALLOW INSULATION TO PASS THROUGH SLEEVE.

ALL SLEEVES PASSING THROUGH FLOORS WHICH ARE WATERPROOFED SHALL BE COPPER TUBING SLEEVES EXTENDING 1" ABOVE FINISHED FLOOR. ALL OTHER SLEEVES SHALL BE 24 GAUGE GALVANIZED PIPES AND SLEEVES TO BE THOROUGHLY PACKED WITH WATERPROOF SEALANT AND THE REMAINING SPACE FILLED WITH MASTIC AND MUST BE WATERTIGHT.

ALL SLEEVES PASSING THROUGH INNER WALLS SHALL BE STANDARD PIPE THIMBLES EQUAL TO THE THICKNESS OF THE WALL.

SPACES BETWEEN PIPES AND SLEEVES THROUGH OUTSIDE WALLS, ABOVE GRADE, SHALL BE CAULKED WITH CAULKING COMPOUND; THOSE BELOW GRADE SHALL BE MADE WATERTIGHT.

SPACE AROUND ALL PIPING THROUGH FIRE OR SMOKE RATED PARTITIONS OR FLOORS SHALL BE SEALED AIRTIGHT WITH MATERIALS OR EQUIPMENT AS SPECIFIED UNDER FIRESTOPPING.

ALL PIPE PENETRATIONS OF SLABS ON GRADE SHALL BE WRAPPED WITH #15 BUILDING FELTS OR FOAM WRAP.

19. HANGERS

a. PIPE HANGER AND SUPPORT PRODUCTS INSTALLATION
A. VERTICAL PIPING: MSS TYPE 8 OR 42 CLAMPS.
b. INDIVIDUAL, STRAIGHT, HORIZONTAL PIPING RUNS: 100 FEET AND LESS: MSS TYPE 1, ADJUSTABLE, STEEL CLEVIS HANGERS. LONGER THAN 100 FEET: MSS TYPE 43, ADJUSTABLE ROLLER HANGERS. LONGER THAN 100 FEET IF INDICATED: MSS TYPE 49, SPRING CUSHION ROLLS.
c. MULTIPLE, STRAIGHT, HORIZONTAL PIPING RUNS 100 FEET OR LONGER:MSS TYPE 44, PIPE ROLLS. SUPPORT PIPE ROLLS ON TRAPEZE.
d. BASE OF VERTICAL PIPING: MSS TYPE 52, SPRING HANGERS.

B. SUPPORT VERTICAL PIPING AND TUBING AT BASE AND AT EACH FLOOR.
C. ROD DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM OF 3/8 INCH
D. INSTALL HANGERS FOR ALL PIPING PER MSS SP-69, MANUFACTURERS MANUALS AND AS PER HANGER SUPPORT DETAIL ON DRAWINGS
E. INSTALL SUPPORTS FOR VERTICAL COPPER TUBING EVERY 10 FEET.
F. INSTALL SUPPORTS FOR VERTICAL STEEL PIPING EVERY 15 FEET.
G. SUPPORT PIPING AND TUBING NOT LISTED IN THIS ARTICLE ACCORDING TO MSS SP-69 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.

20. DAMAGE BY LEAKS

THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO THE GROUNDS, WALKS, ROADS, ALL BUILDING COMPONENTS AND FINISHES, PIPING SYSTEMS, ELECTRICAL SYSTEMS AND THE EQUIPMENT AND CONTENT, CAUSED BY LEAKS IN THE PIPING SYSTEMS BEING INSTALLED OR HAVING BEEN INSTALLED HEREIN. ALL REPAIRS WILL BE MADE AT THIS CONTRACTOR'S EXPENSE.

21. PIPE MARKERS

FURNISH AND INSTALL BRADY #B-350 THIN FILM OR APPROVED EQUAL PIPE MARKERS. MARKERS SHALL BE 1-1/8" HIGH FOR PIPES 3" AND UNDER AND 2-1/4" HIGH FOR PIPES OVER 3". MARKERS SHALL INDICATE TYPE OF SERVICE AND DIRECTION OF FLOW.

PIPE MARKERS SHALL BE LOCATED:
- AT EQUIPMENT CONNECTIONS
- AT ACCESS DOORS
- AT BRANCH MAINS
- ON ALL ACCESSIBLE PIPE A MAXIMUM OF 75' BETWEEN MARKERS.
- AT ALL PENETRATIONS ON EITHER SIDE OF PENETRATION

22. FLOOR, WALL AND CEILING PLATES

PIPES PASSING THROUGH FLOORS AND FINISHED CEILINGS, FITTED WITH CHROME- PLATED PLATES OR ESCUTCHEONS LARGE ENOUGH TO COMPLETELY CLOSE OPENING AROUND PIPE OR PIPE COVERING AND FLOOR SUPPORT IN THE CASE OF VERTICAL PIPING. SECURELY HELD IN PLACE; CAULK WATERTIGHT AROUND PIPE IN UNFINISHED ROOMS.

23. FIRE STOPPING

THE PENETRATIONS OF FIRE AND/OR SMOKE RATED WALLS OR FLOORS SHALL BE PROTECTED BY A UL APPROVED MATERIAL TO RETAIN THE INTEGRITY OF THE TIME-RATED CONSTRUCTION BY MAINTAINING AS EFFECTIVE BARRIER AGAINST THE SPREAD OF FLAME, SMOKE AND GASES. IT SHALL BE USED IN ALL DUCT CABLE, CONDUIT AND PIPING PENETRATIONS THROUGH FLOOR SLABS AND TIME-RATED WALLS, AND/OR FLOORS. THE RATING OF THE FIRESTOPPING SHALL EQUAL THE RATING OF THE TIME-RATED ASSEMBLY.

FIRESTOPPING MATERIAL SHALL BE 3M FIRE BARRIER SEALING SYSTEM OF APPROVED EQUAL. FIRESTOPPING MATERIAL SHALL CONSTITUTE ONE OR MORE OF THE FOLLOWING PRODUCTS:

- CALKUL CP-25
- PUTTY: #303
- WRAP/STRIP: FS195
- COMPOSITE SHEET: CS195
- PENETRATING SEALING SYSTEMS: 7900 SERIES

INSTALLATION OF FIRESTOPPING SHALL BE INSTALLED IN ACCORDANCE WITH AND IN STRICT CONFORMITY WITH MANUFACTURER'S PRINTED INSTRUCTIONS AS TO SURFACE PREPARATION, INSTALLATION AND QUALITY CONTROL. AREAS OF WORK SHALL REMAIN ACCESSIBLE UNTIL INSPECTION AND APPROVAL BY THE APPLICABLE CODE AUTHORITIES.

ON INSULATED PIPES, THE FIRE-RATING CLASSIFICATION SHALL NOT REQUIRE REMOVAL OF THE INSULATION.

QUALITY ASSURANCE:
SUBMIT MANUFACTURER'S PRODUCT DATA, LETTER OF CERTIFICATION OR CERTIFIED LABORATORY TEST REPORT THAT THE MATERIAL OR COMBINATION OF MATERIALS MEET THE REQUIREMENTS SPECIFIED IN ASTM E814 AND ARE SO CLASSIFIED IN UL'S BUILDING MATERIALS DIRECTORY. MATERIALS SHALL MEET AND BE ACCEPTABLE FOR USE BY ALL MODEL BUILDING CODES. MATERIALS SHALL MEET THE REQUIREMENTS OF NFPM61- LIFE SAFETY CODE AND NFPA 70 NATIONAL ELECTRICAL CODE.

SUBMITTALS:
SUBMIT SHOP DRAWINGS, PRODUCT DATA, CERTIFICATES AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUBMIT MANUFACTURER'S PRODUCT DATA FOR ALL MATERIALS AND - PREFABRICATED DEVICES, PROVIDING DESCRIPTIONS SUFFICIENT FOR IDENTIFICATION AT THE JOB SITE. INCLUDE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.

SUBMIT SHOP DRAWINGS SHOWING PROPOSED MATERIAL, REINFORCEMENT, ANCHORAGE, FASTENINGS, LARGER THAN 1/2" OF INSTALLATION. CONSTRUCTION DETAILS SHAL ACCURATELY REFLECT ACTUAL JOB CONDITIONS.

24. CLEANUP AND ADJUSTMENT

ALL PARTS WORK LEFT CLEAN: EQUIPMENT, FIXTURES, VALVES, PIPES AND FITTINGS CLEANED OF GREASE AND METAL CUTTINGS, ANY DISCOLORATION OR OTHER DAMAGE TO PORTIONS OF BUILDING, ITS FINISH OR FURNISHING DUE TO THIS CONTRACTORS FAILURE TO PROPERLY CLEAN INTERIOR OF PIPING, REPAIRED AT THIS CONTRACTOR'S EXPENSE. ALL AUTOMATIC CONTROL DEVICES ADJUSTED FOR PROPER OPERATION. ALL SURPLUS MATERIALS AND ANY RUBBISH REMOVED AS IT ACCUMULATES. ALL EQUIPMENT LEFT IN SAFE, PROPER OPERATING CONDITION.

DAMAGE TO ANY PORTIONS MUST BE REPAIRED OF THE PART REPLACED BY THIS CONTRACTOR AND ALL PARTS LEFT WITHOUT DENTS, SCRATCHES, THROUGH THE FINISH PAINT, LOOSE PLASTER, STAINS OR OTHER BLEMISHES.

25. PIPE TESTING AND START-UP

ALL PIPING TO BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
WATER - 100 PSI WATER PRESSURE
ALL TESTING MUST HOLD FOR AT LEAST 24 HOURS WITHOUT LOSS OF PRESSURE OR VACUUM. ALL CONCEALED PIPING SHALL BE TESTED IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE PRIOR TO COVERING. BEFORE STARTING ANY SYSTEM, ALL EQUIPMENT SHALL BE LUBRICATED PER MANUFACTURERS REQUIREMENTS BY THIS CONTRACTOR. TEST ENTIRE BUILDING SYSTEMS UNDER FULL LOAD CONDITIONS FOR A PERIOD OF NOT LESS THAN ONE (1) WEEK DURING WHICH TIME THE OPERATING PERSONNEL SHALL BE FULLY INSTRUCTED IN THE OPERATION AND MAINTENANCE OF THE PLANT. AFTER THE PLANT IS IN FULL OPERATION, THIS CONTRACTOR IS TO FURNISH WHATEVER ADDITIONAL SERVICE IS REQUIRED TO RECALIBRATE AND RESET CONTROLS, VALVES, BALANCING COCKS, ETC. TO ENSURE PROPER OPERATION OF THIS SYSTEM.

26. TESTING AND BALANCING

THIS CONTRACTOR SHALL AT THE TIME OF INSTALLATION ENSURE THAT ALL DEVICES TO COMPLETE TESTING AND BALANCING AS DIRECTED HEREIN ARE FURNISHED AND INSTALLED DURING FABRICATION AND INSTALLATION OF WORK. THIS WORK SHALL BE PERFORMED PRIOR TO TURNOVER TO BUILDING OCCUPANT AND WITH AMPLE TIME TO MAKE ANY NECESSARY REPAIRS OR CHANGES TO ACHIEVE A PROPERLY OPERATING SYSTEM.

27. SEISMIC RESTRAINTS ON MECHANICAL EQUIPMENT

ALL PLUMBING EQUIPMENT SHALL BE PROVIDED WITH SEISMIC RESTRAINING SERVICES AS REQUIRED BY LOCAL BUILDING CODES. CONTRACTOR SHALL HAVE LOCAL BUILDING OFFICE REVIEW EACH PIECE OF EQUIPMENT WHEN INSTALLED AND THE CONTRACTOR SHALL INSTALL ALL REQUIRED THE DOWN, ANCHORS, STRAPS OR OTHER DEVICES REQUIRED.

28. GUARANTEE

THIS CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, MATERIALS, AND LABOR FURNISHED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AND SHALL REPAIR OR REPLACE ANY EQUIPMENT OR MATERIAL WHICH IS DEFECTIVE OR IMPROPERLY INSTALLED. IN ADDITION, THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO THE BUILDINGS AND ITS CONTENTS OR OTHER EQUIPMENT, CAUSED BY DEFECTS OR IMPROPER INSTALLATION OF EQUIPMENT OR MATERIALS INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS.

29. TEMPORARY WATER

TEMPORARY WATER SERVICE (IF REQUIRED) TO THE BUILDING SHALL BE PROVIDED BY THIS CONTRACTOR TO THE BUILDING FOR CONSTRUCTION PURPOSES. THIS CONTRACTOR TO MAINTAIN WATER SERVICE AS REQUIRED DURING CONSTRUCTION.

30. DOMESTIC WATER SERVICE

THIS CONTRACTOR SHALL COORDINATE EXACT AVAILABLE DELIVERY PRESSURE AND PROVIDE ALTERNATE FEE FOR A PRESSURE BOOSTING SYSTEM IF PRESSURE IS LESS THAN 65PSI STATIC. PROVIDE PRESSURE REDUCING VALVE WITH STRAINER IN SERVICE LINE IF REQUIRED BY LOCAL CODES OR PRESSURE IS ABOVE 80 PSI.

JOINTS SHALL BE CLEANED AND DEBURRED AS RECOMMENDED BY THE MANUFACTURER AND FEDERAL, STATE, AND LOCAL CODES AND PRESS FITTINGS ARE AN ACCEPTABLE IF ALLOWED BY LOCAL A.H.J. WHERE PRESS FITTING S ARE NOT ALLOWED SOLDERED AS LISTED BELOW. FLUX SHALL BE NON-CORROSIVE. VITACUAL GROUVED COUPLINGS ARE ACCEPTABLE ALTERNATE IF ALLOWED BY LOCAL AHJ.

ABOVE GRADE - WHERE FITTINGS ARE SOLDERED BOTH FITTINGS AND TUBING SHALL BE CLEANED AS DESCRIBED ABOVE. UNDER NO CIRCUMSTANCES SHALL DISSIMILAR METALS COME INTO DIRECT CONTACT WITH COPPER TUBING; E.G., GALVANIZED STRAPPING, HANGERS, OR CLAMPS TO SECURE THE TUBING.

BELOW GRADE, OR FLOOR SLAB ON EARTH OR STONE FILL - HIGH TEMPERATURE, SOLDER, 1200 DEG. F. OR GREATER MELTING POINT.

NOTE: WATER PIPE TO BE PROPERLY SECURED AND ALIGNED SO AS NOT TO EXERT VERTICAL OR HORIZONTAL STRESSES ON THE SEATING OF THE MATING (MALE AND FEMALE) SURFACES OF THE UNIONS.

MATERIALS - UNDERGROUND: TYPE "K" COPPER TUBE, SOFT TEMPER MATERIALS - ABOVEGROUND: UPONOR PEKA PIPE AND FITTINGS
ALTERNATE MATERIALS - VIEGA, PROGRESS COPPER 1/2-INCH THROUGH 4-INCH WITH EPDM SEALING ELEMENT AND/OR VIEGA, PROGRESS 304 OR 316 STAINLESS 1/2-INCH THROUGH 4-INCH WITH EPDM OR FKM SEALING ELEMENT IS ACCEPTABLE IF ALLOWED BY LOCAL CODE. NOTE: COPPER PIPING IS NOT TO BE USED ON FILTERED OR RO WATER LINES.

31. STERILIZATION OF DOMESTIC WATER SYSTEM

THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE FLUSHED CLEAR OF ANY DEBRIS AND THOROUGHLY STERILIZED WITH A SOLUTION CONTAINING NOT LESS THAN 100 PARTS PER MILLION OF AVAILABLE CHLORINE. THE SOLUTION SHALL REMAIN IN THE SYSTEM FOR TWO (2) HOURS DURING WHICH TIME ALL VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER STERILIZATION, THE SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAN WATER UNTIL THE RESIDUE CHLORINE CONTENT IS NOT GREATER THAN THE CHLORINE LEVEL OF THE AVAILABLE WATER SUPPLY.

STERILIZATION SHALL BE PERFORMED PRIOR TO TURNOVER TO OCCUPANT AS TO NOT ALLOW FOR THE WATER SYSTEM TO REMAIN STAGNANT FOR LONGER THAN 24 HOURS.

THIS CONTRACTOR SHALL HAVE THE WATER TESTED AND APPROVED BY THE HEALTH DEPARTMENT.

32. SANITARY SEWERS

THIS CONTRACTOR SHALL CONNECT SANITARY SEWER AS INDICATED ON THE DRAWINGS. VERIFY DIRECTION OF FLOW PRIOR TO ANY ROUGH-IN WORK.

EACH PIPE SHALL BE LAID TO THE LINE AND GRADE INDICATED ON THE PLANS AND SUCH A MANNER AS TO FORM A CLOSE CONCENTRIC JOINT WITH THE ADJOINING PIPE AND TO PRESENT OFFSETS IN FLOW LINE. ALL PIPE SHALL BE LAID WITH THE BELLS UPHILL.

THE SUB-GRADES SHALL BE KEPT FREE FROM WATER WHILE PIPES ARE BEING LAID. ALL PIPE SHALL BE LAID WITH ENDS ABUTTING AND TRUE TO LINE AND GRADE. THEY SHALL BE FITTED AND MATCHED SO THAT THEY WILL FORM A SEWER WITH A SMOOTH AND UNIFORM INVERT.

EACH JOINT SHALL BE CLEANED AS IT IS LAID AND ALL BELLS SHALL BE CLEANED BEFORE PIPES ARE JOINED.

EPOXY COATED CAST IRON PIPE AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF CICPI STANDARD 301, ASTM A888 AND ASTM A74, AND BE LINED WITH SUITABLE EPOXY COATING. PIPE AND FITTINGS SHALL BE MARKED WITH COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE AND BE LISTED BT NSF INTERNATIONAL.

PVC SEWER PIPE MAY BE USED IN LIEU OF THAT SPECIFIED ABOVE IF ALLOWED BY LOCAL CODES.

ABS AND FOAM CORE PVC ARE NOT ACCEPTABLE MATERIALS.

SDR 35 IS NOT ACCEPTABLE FOR UNDER BUILDING USE.

33. WASTE, SOIL, DRAIN AND VENT PIPING

THE DRAINS, SOIL WASTE AND VENT PIPE AND FITTINGS INCLUDING EXTENSIONS TO SEWERS SHALL BE OF THE SIZES INDICATED ON THE DRAWINGS. PIPE AND FITTINGS TO BE CYLINDRICAL AND FREE FROM CRACKS OR OTHER DEFECTS.

ALL TRENCHES TO BE DUG WITH GRADUAL FALL, THE PIPING TO BE STRAIGHT AND FREE FROM ANY SAGS.

THE ARRANGEMENT OF THE SYSTEM SHALL BE AS SHOWN ON THE DRAWINGS AND AS DIRECT AS POSSIBLE, AVOIDING ALL UNNECESSARY OFFSETS. THE STACKS SHALL BE FIRMLY SECURED IN POSITION WITH WROUGHT IRON CLAMPS AT EACH FLOOR.

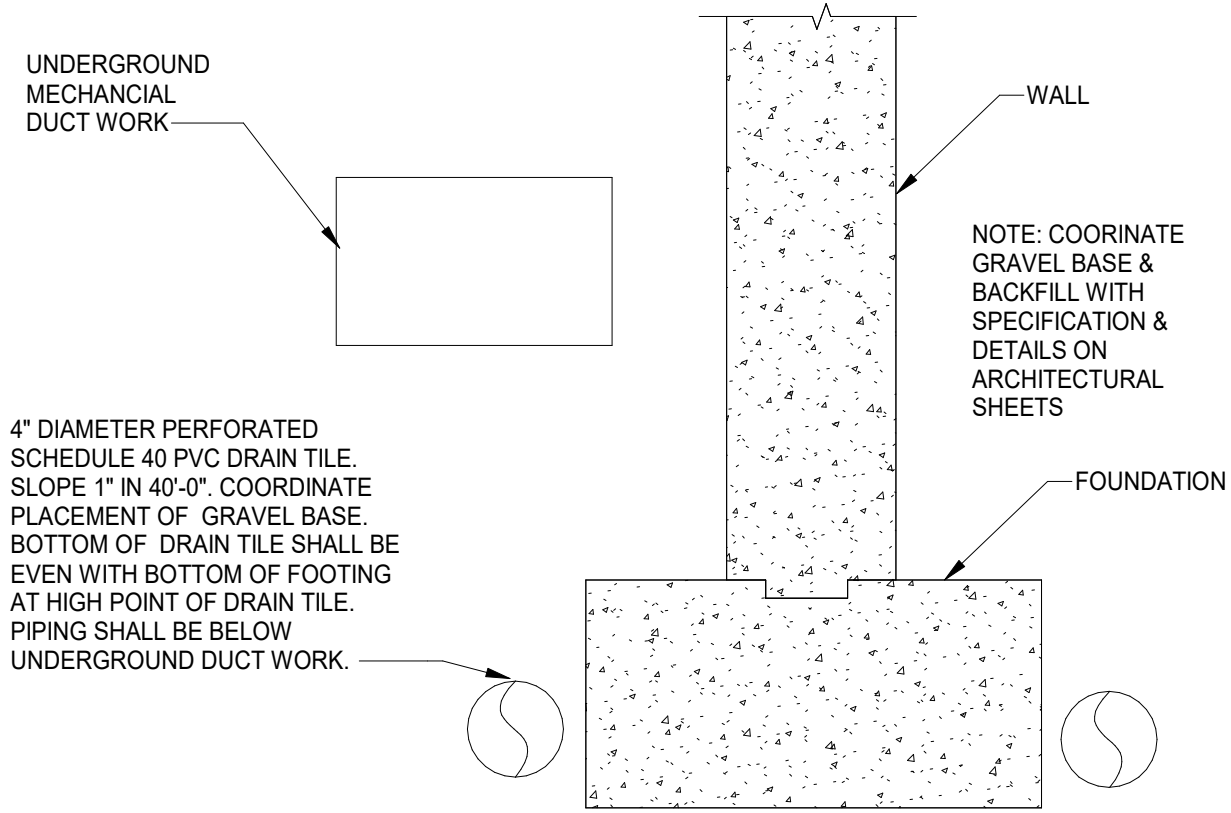
ALL CHANGES IN DIRECTION OF SOIL OR WASTE PIPE SHALL BE MADE BY MEANS OF "Y" BRANCHES AND 1/8 BENDS. NINETY DEGREE SHORT TURN FITTINGS WILL NOT BE PERMITTED EXCEPT TO INDIVIDUAL FIXTURE CONNECTIONS OR WHERE THE FLOW IS FROM THE HORIZONTAL TO THE VERTICAL.

SANITARY CLEANOUTS ARE TO BE PROVIDED AT EVERY TURN GREATER THAN 45°, EVERY 75' AT ANY STACK ROUTING BELOW GRADE. NOT ALL CLEANOUTS LOCATIONS MAY BE SHOWN ON THE DRAWING.

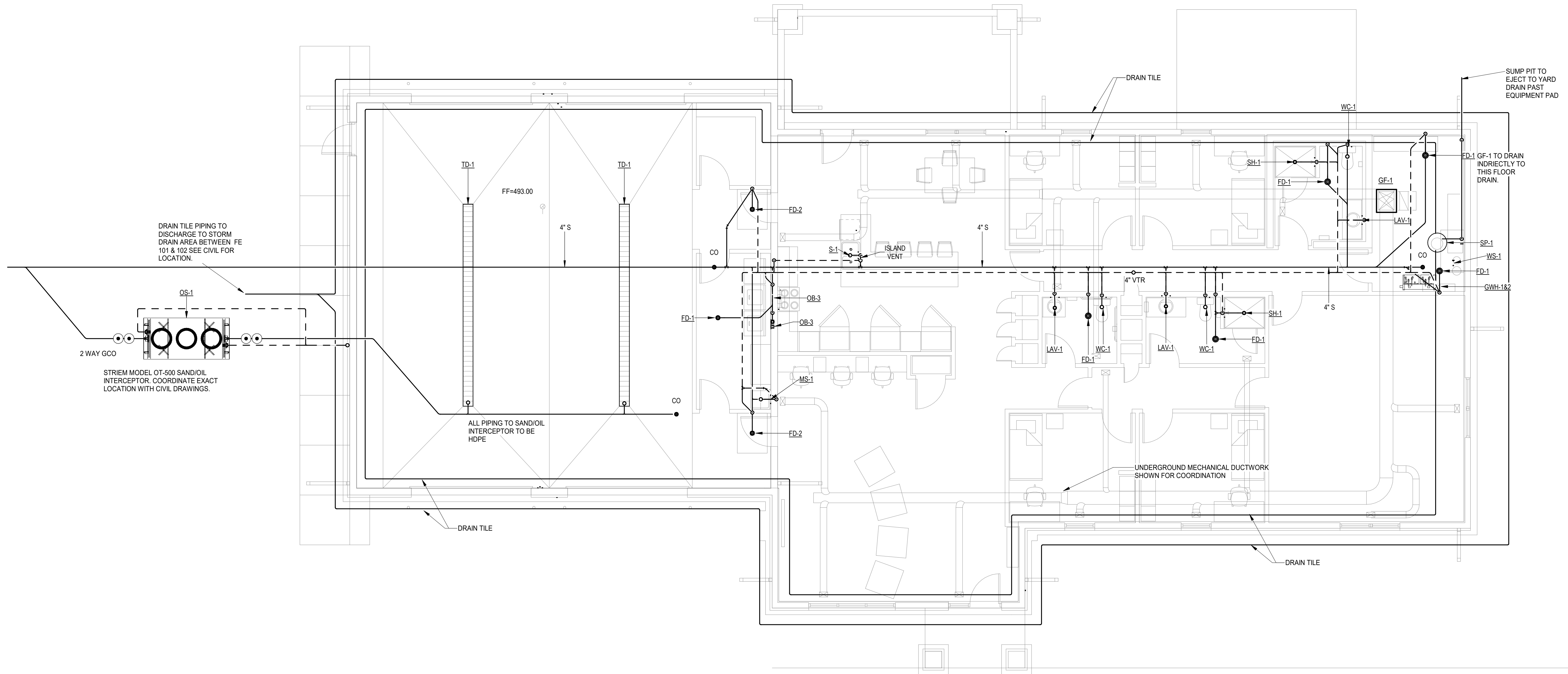
ALL TRAP SCREWS MUST BE OF FULL SIZE OF PIPE UP TO 4" AND 4" FOR ALL OVER THIS SIZE. CONNECTIONS BETWEEN OUTLETS OF FIXTURES AND SOIL OR WASTE PIPE SHALL BE MADE WITH "Y" BRANCHES TO "Y" BRANCHES WHEREVER POSSIBLE. ALL HORIZONTAL SOIL WASTE AND VENT PIPE SHALL BE GRADED TOWARD OUTLETS AND PIPE NOT BURIED SHALL BE INSTALLED ABOVE THE CEILING OR CLOSE AS POSSIBLE TO THE CONSTRUCTION ABOVE WHERE THERE IS NO CEILING.

THE STACKS SHALL BE EXTENDED THROUGH ROOF OF BUILDING TO POINTS NOT LESS THAN 12" ABOVE ROOF. EXTENSIONS THROUGH ROOF SHALL BE MADE WATER-TIGHT BY MEANS OF A LEAD FLASHING OF FOUR POINTS SHEET LEAD SPREAD OVER A DISTANCE OF NOT LESS THAN TWELVE INCHES (12") AROUND PIPE. THIMBLE TO BE SOLDERED TO BASE AND EXTENDED OVER AND TURNED DOWN INTO END OF PIPE IN AN APPROVED MANNER.

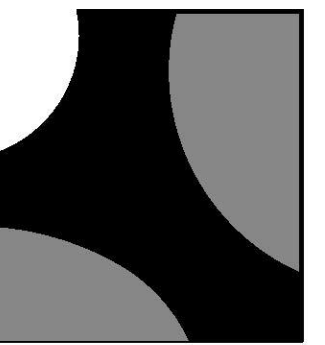
ALL



2 DRAINAGE TILE DETAIL
SCALE: NONE



1 WASTE & VENT PLUMBING PLAN
SCALE: 3/16" = 1'-0"



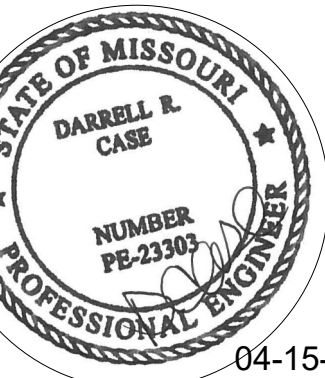
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New Base Station #2 Facility for:
Lincoln County Ambulance District
28 Walter Court
Moscow Mills, Missouri 63362

DATE	ISSUE	R#
04/15/2022	BID & PERMIT SET	0



DARREL R. CASE
PE-23303

PROJECT MANAGER: JKL
DRAWN BY: CLK

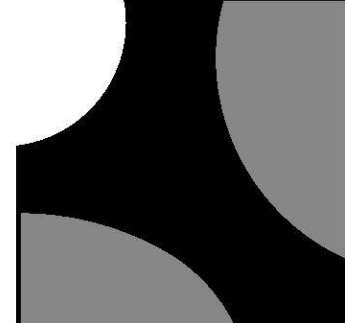
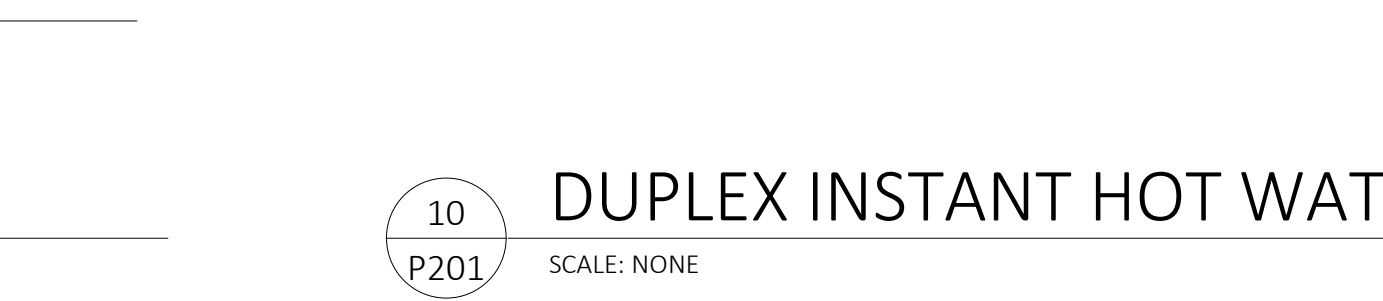
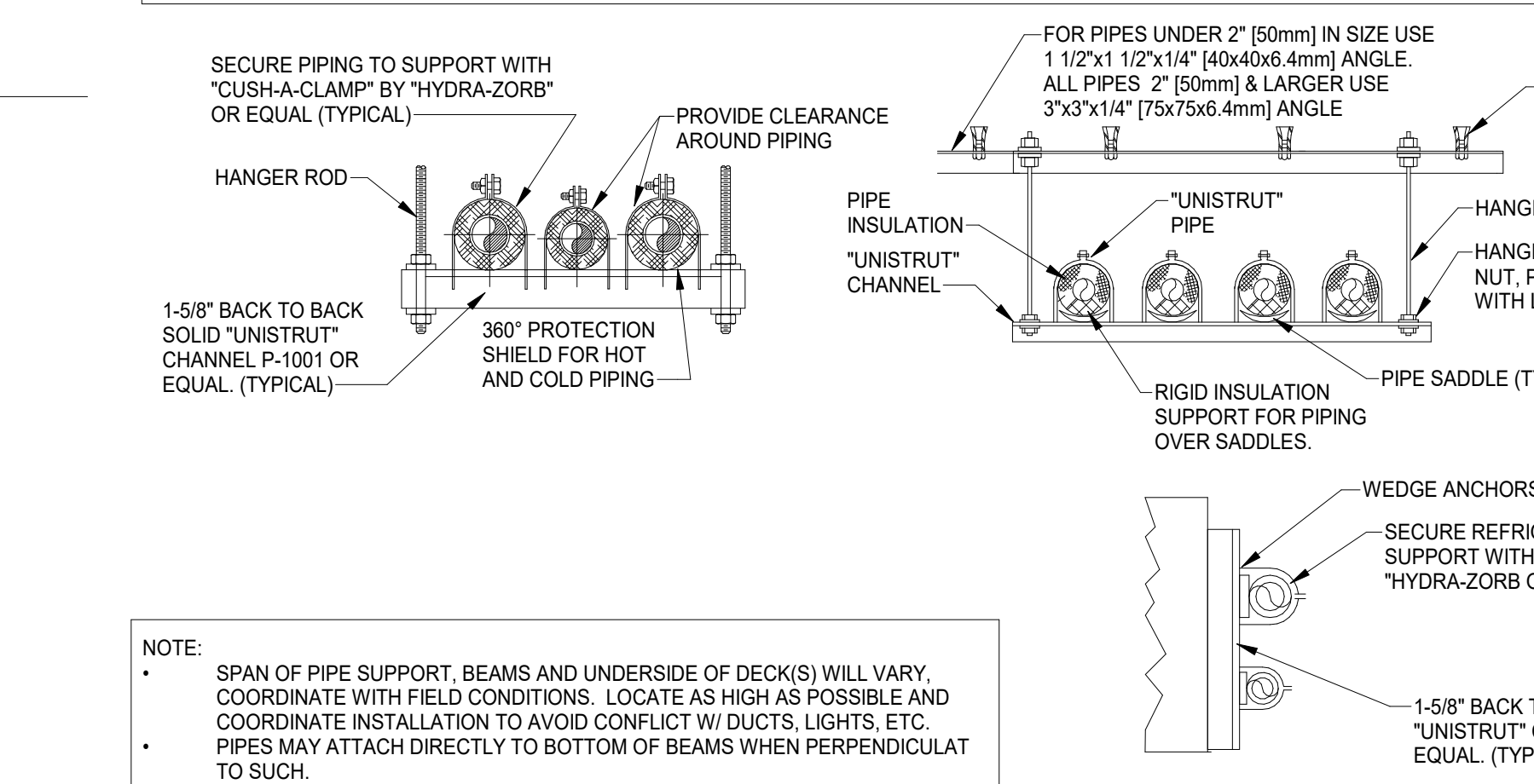
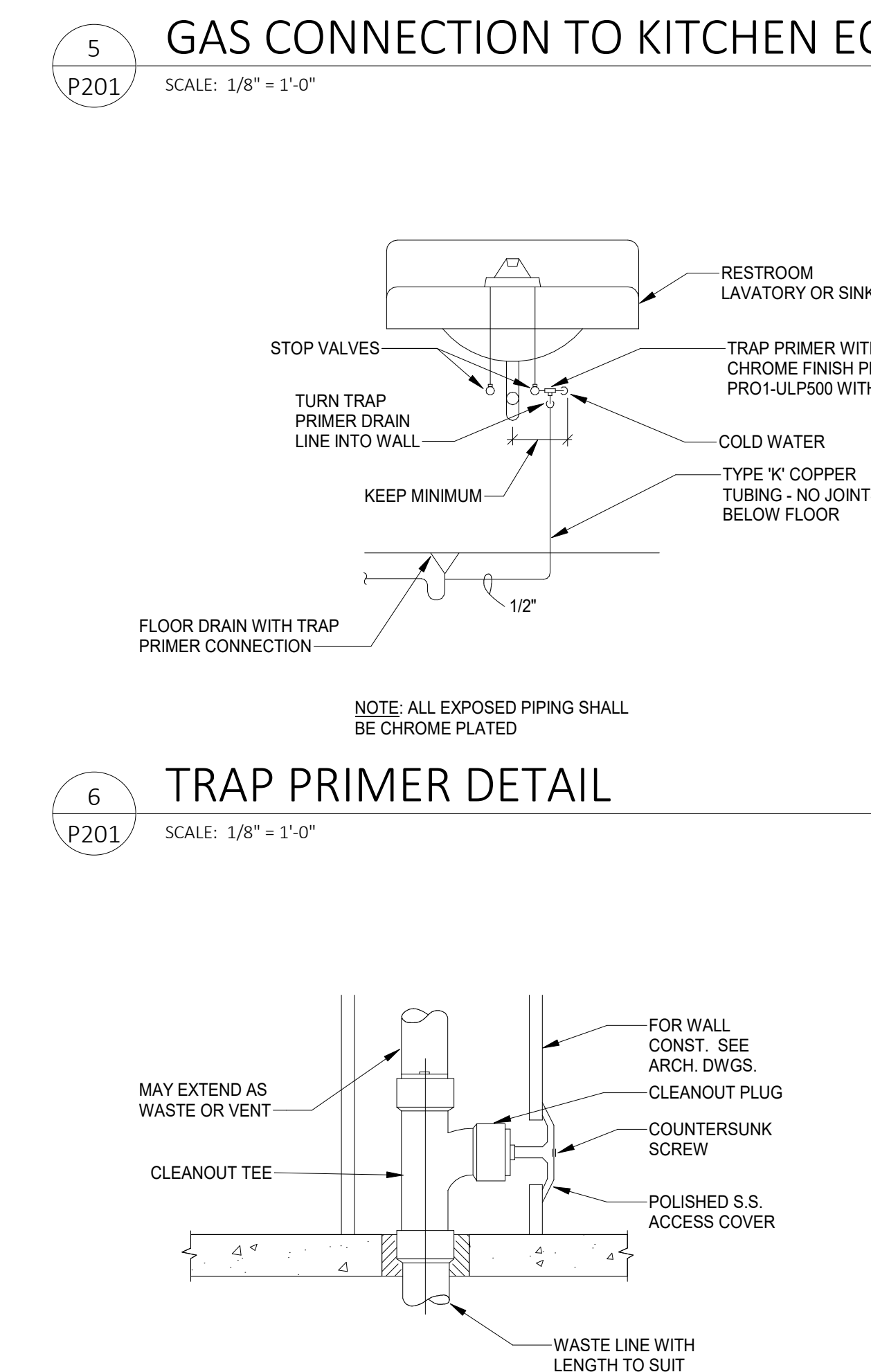
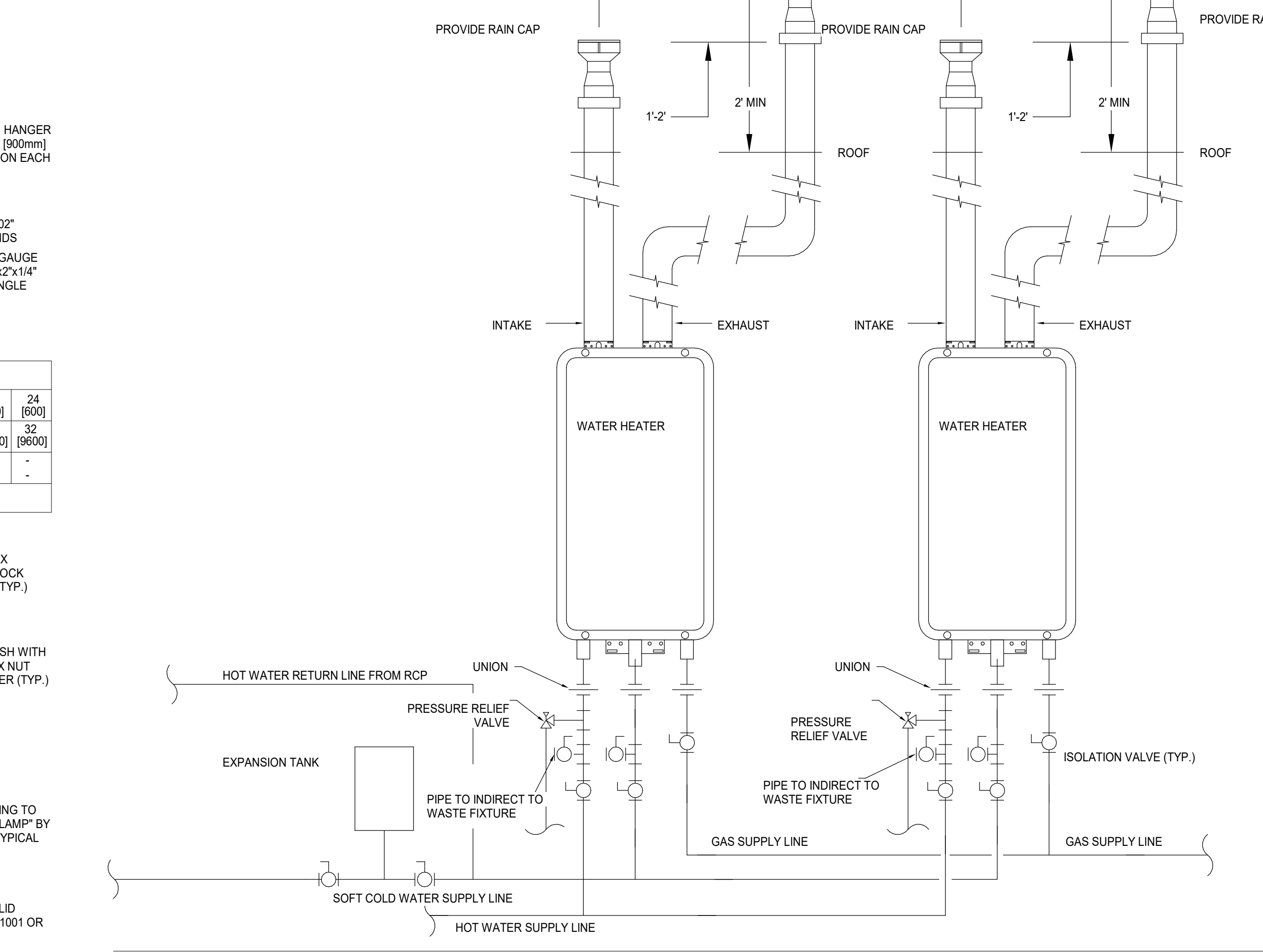
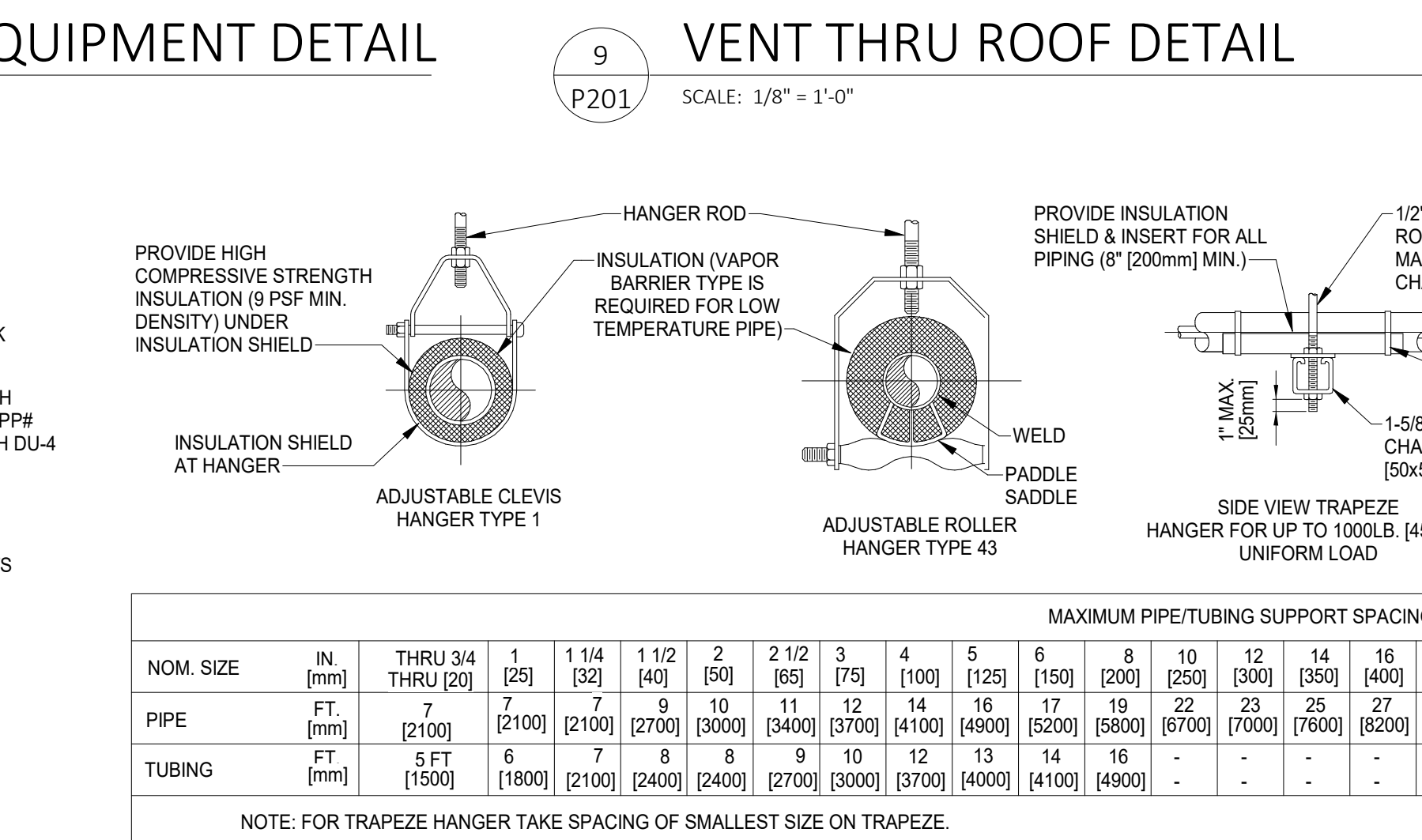
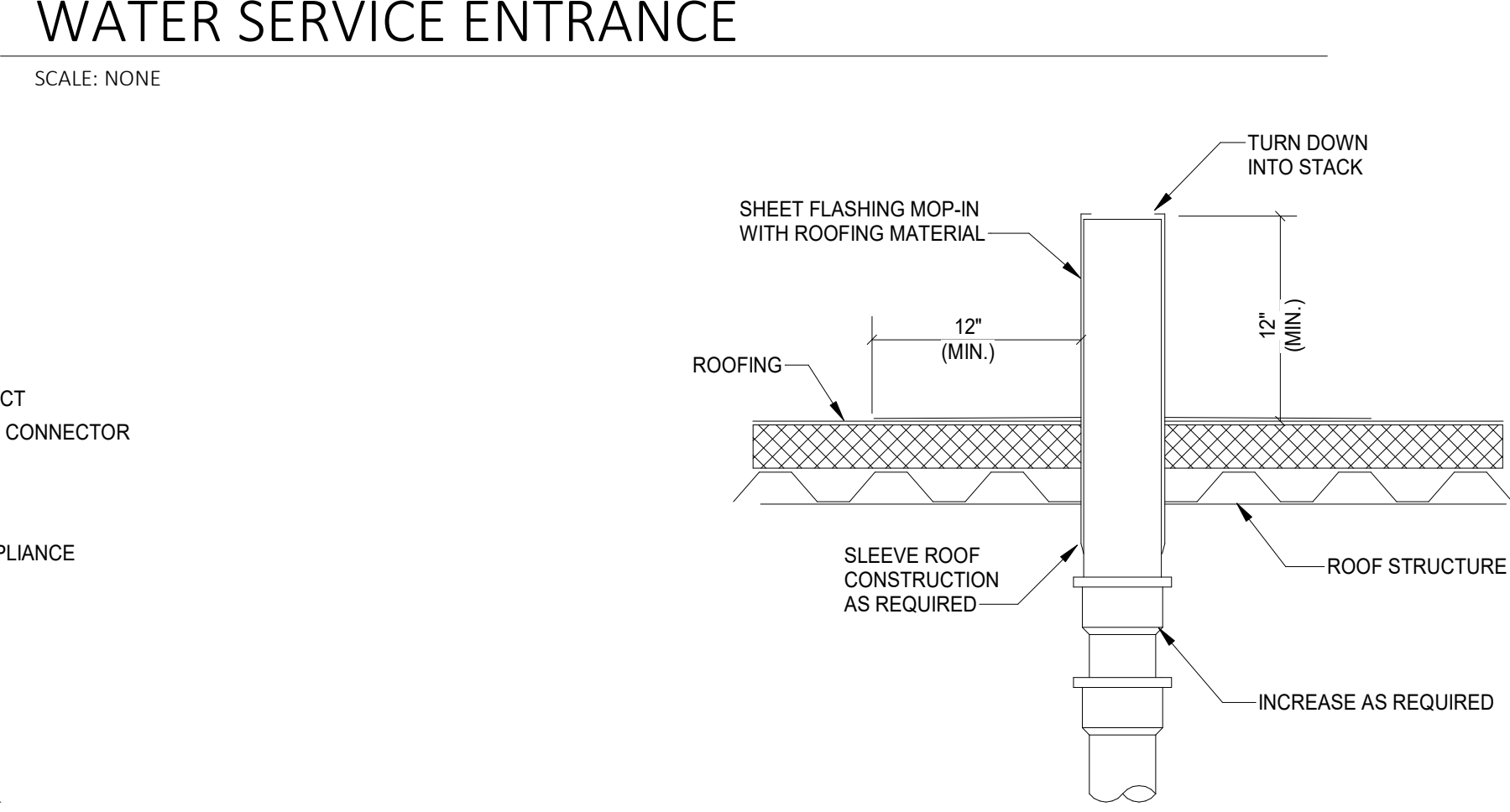
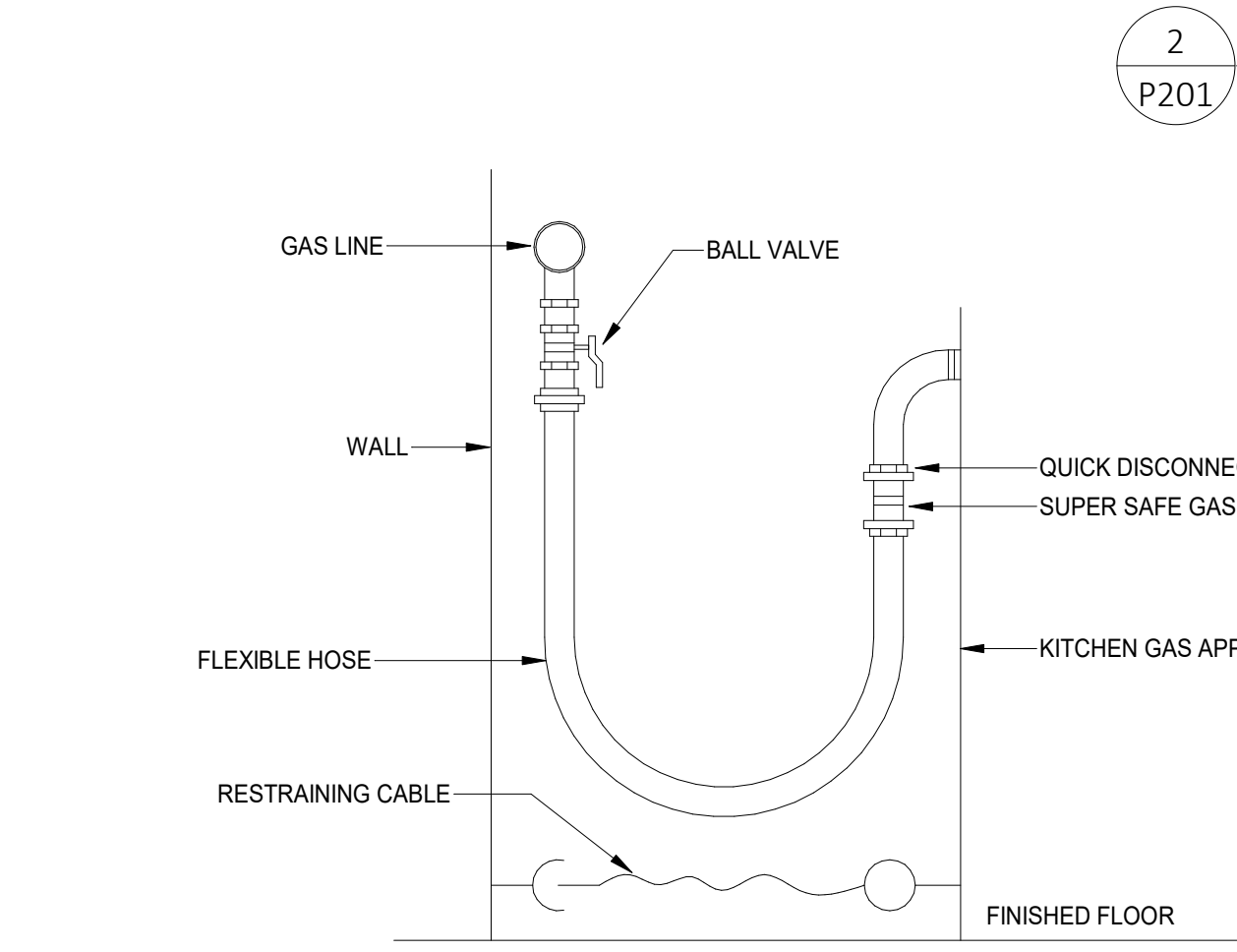
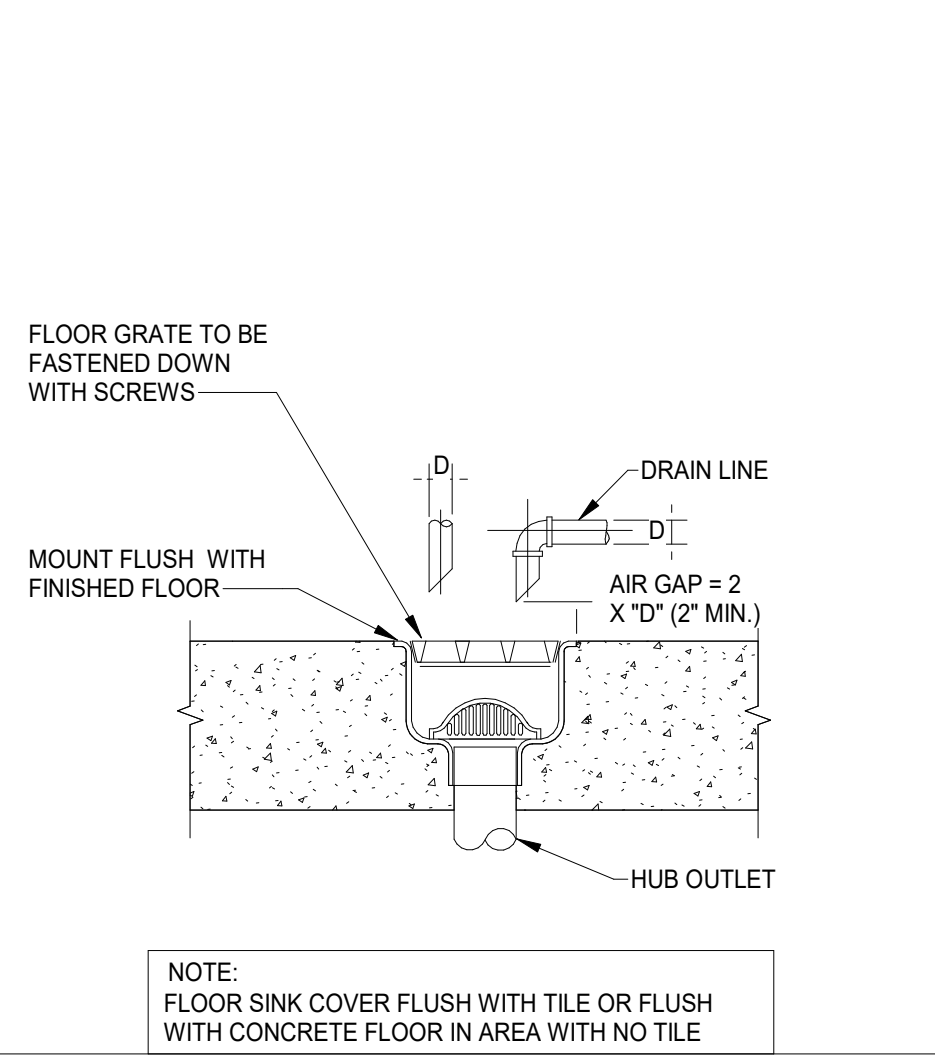
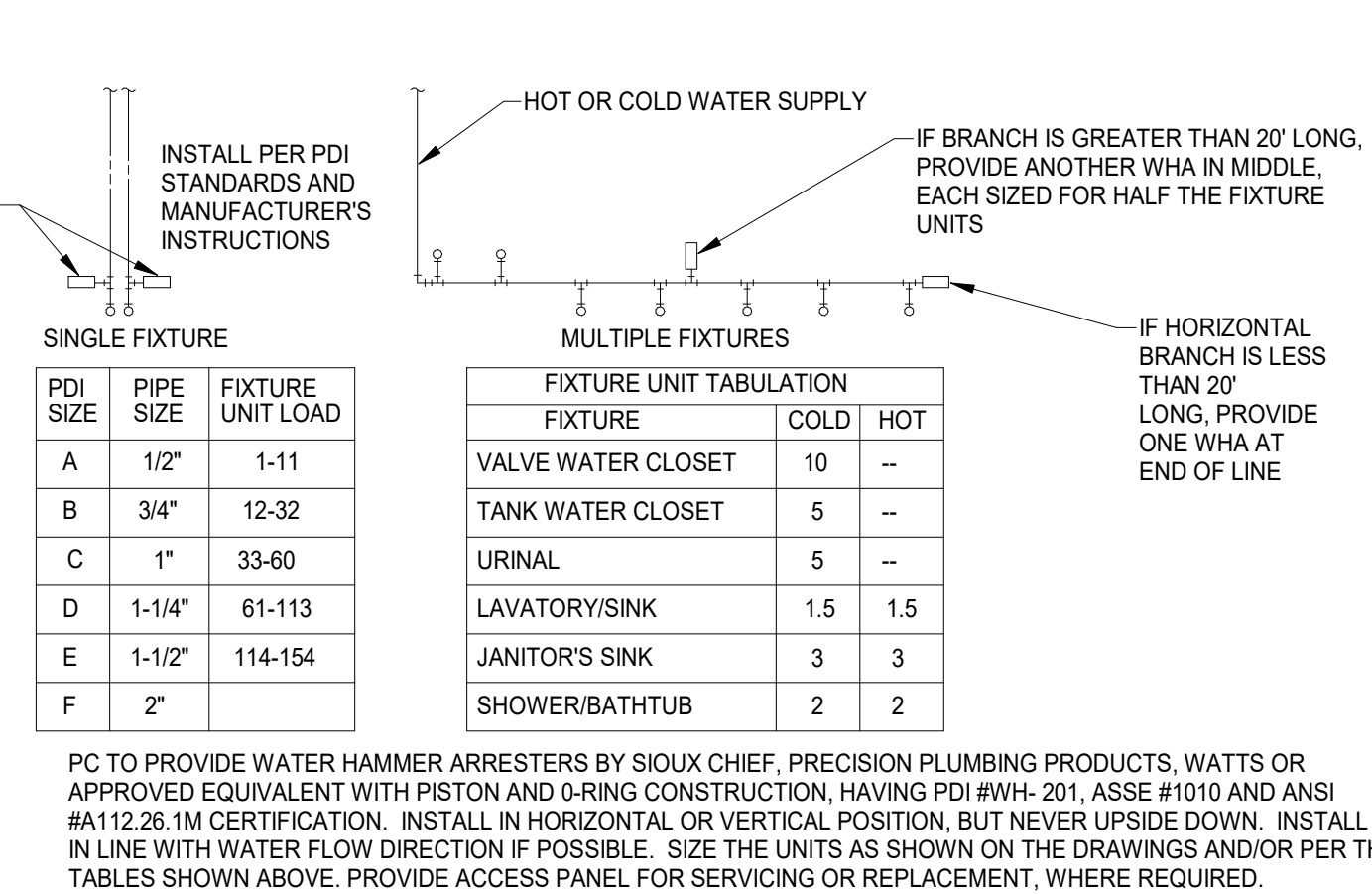
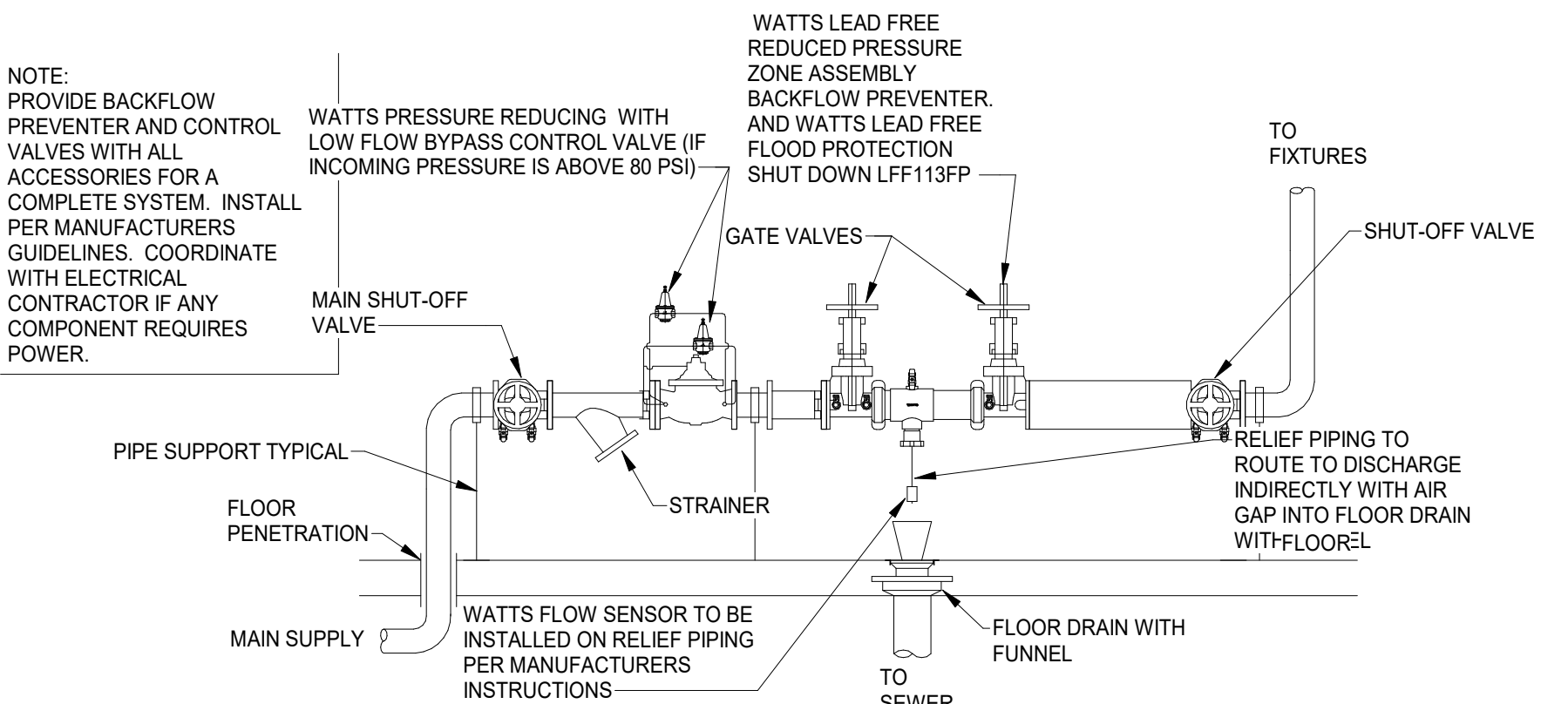
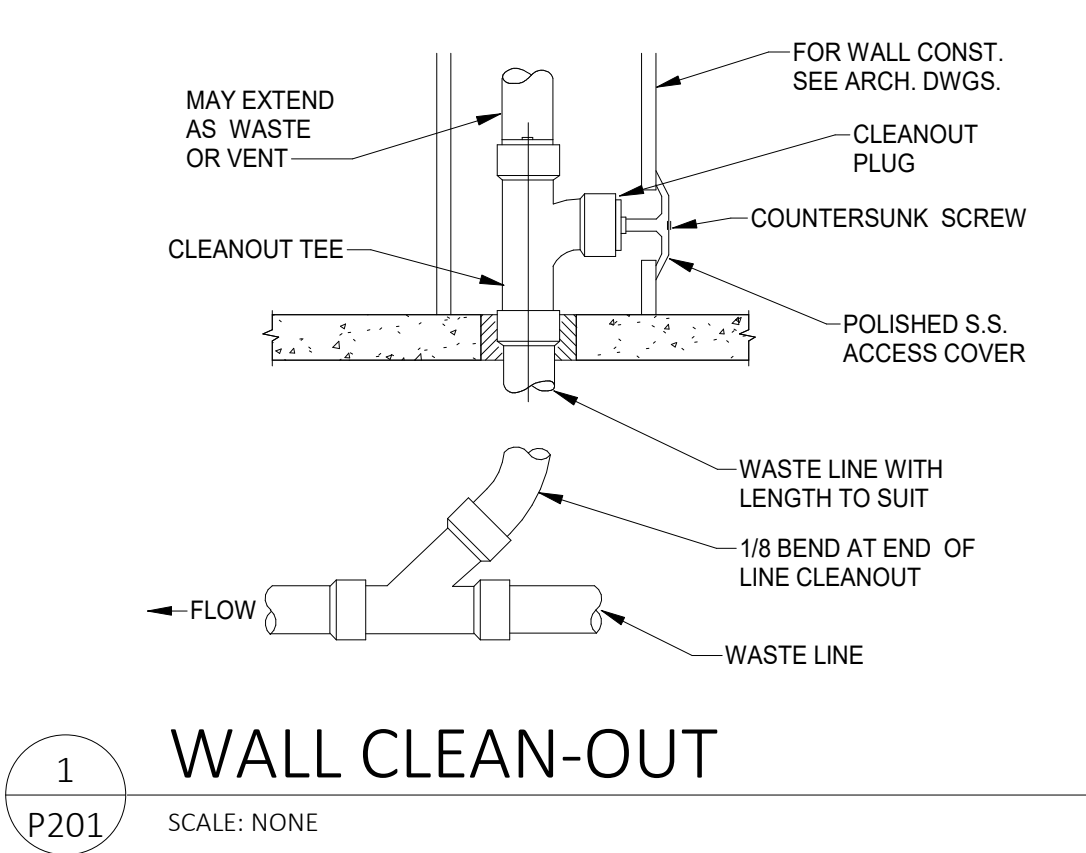
PROJECT NUMBER
21-079
DATE
APRIL 15, 2022

SHEET
P100
WASTE & VENT
PLAN



- SHEET
P101
WATER AND GAS
PLAN





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New Base Station #2 Facility for:
Lincoln County Ambulance District
28 Walter Court
Moscow Mills, Missouri 63362

R#	ISSUE	BID & PERMIT SET	DATE
0			04/15/2022

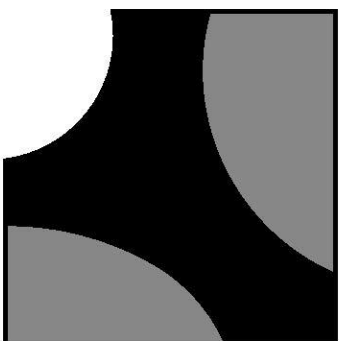


DARREL R. CASE
PE-23303

PROJECT MANAGER: JKL
DRAWN BY: CLK

PROJECT NUMBER
21-079
DATE
APRIL 15, 2022

SHEET
P201
PLUMBING
DETAILS



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**CASE
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STRUCTURAL
MECHANICAL, PLUMBING &
ELECTRICAL

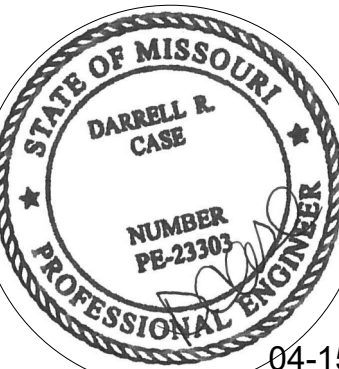
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28 Walter Court
Moscow Mills, Missouri 63362

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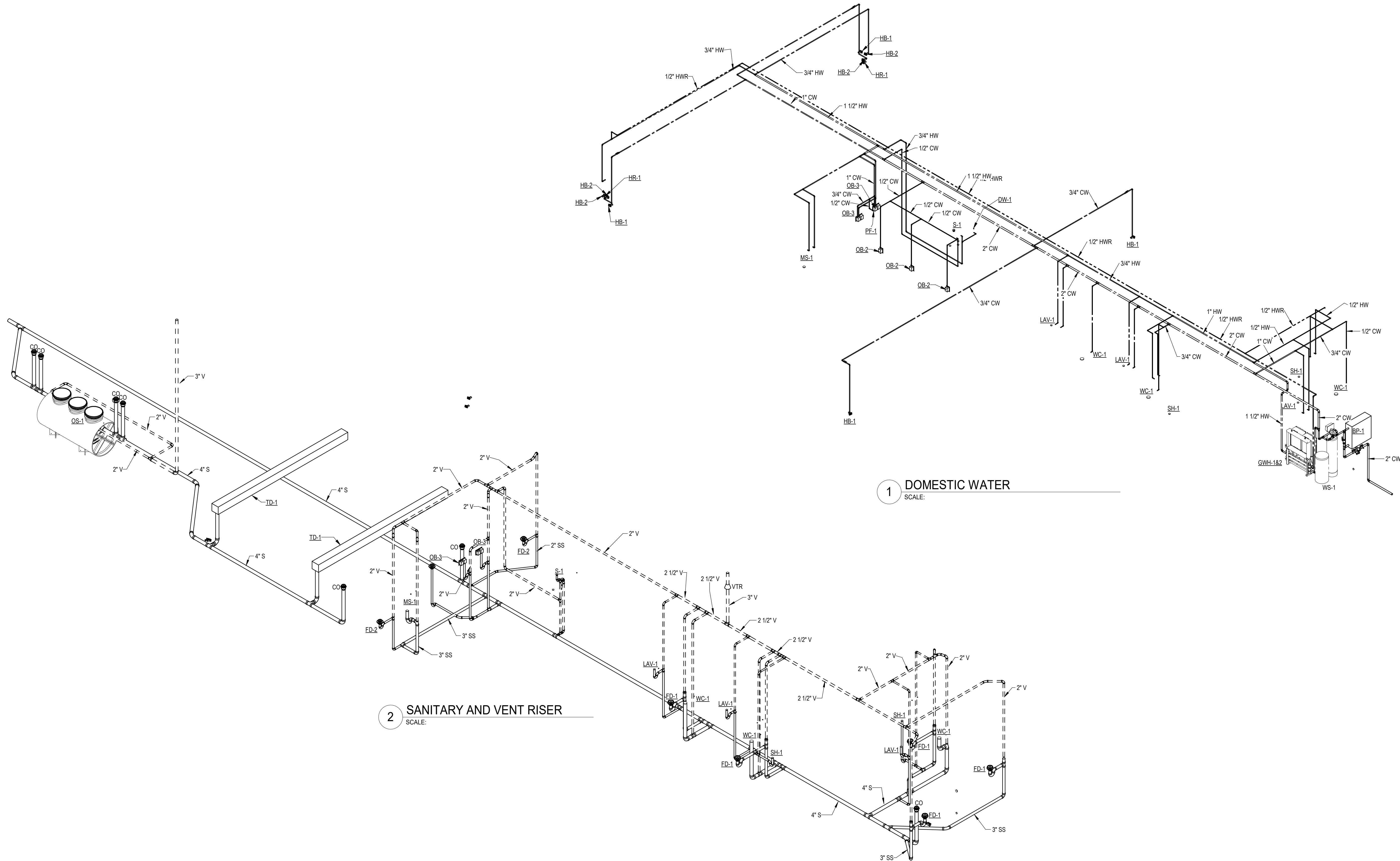
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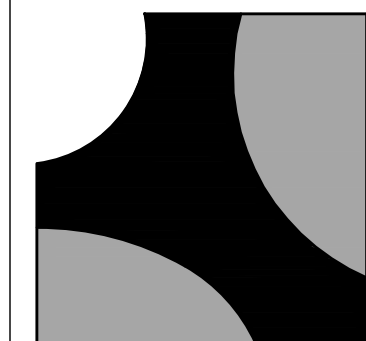
DARREL R. CASE
PE-23303

PROJECT MANAGER: JKL
DRAWN BY: CLK

PROJECT NUMBER
21-079
DATE
APRIL 15, 2022

SHEET
P300
PLUMBING
ISOMETRICS





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New Base Station #2 Facility for:
**Lincoln County
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28 Walter Court
Moscow Mills, Missouri 63362

R#	DATE	ISSUE	BID & PERMIT SET
1	4-15-2022		
2			
3			
4			
5			
6			



Darrell R. Case
ENGINEER
MO# E-23303

PROJECT MANAGER: JE
DRAWN BY: CK

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
E1.0
POWER ONE-LINE
& PANEL SCHEDULES

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NEW PANEL BOARD MP				SURFACE MOUNTED			
120/240VOLTS 1 PHASE 3 WIRE 400 AMP. BUS				22,000 A.I.C. RATED			
400 AMP. MAIN LUGS ONLY				FED FROM			
				ATS			
NO.	TRIP	NO.	LOAD SERVED	LOAD— V. A.	NO.	TRIP	LOAD SERVED
NO.	AMPS	POLE		AØ BØ	POLE	AMPS	
1	20	1	BAY EXIT SIDE RECEPTACLES	800	1	20	2
3	20	1	LIVING ROOM AREA RECEPTACLES	800	1	20	4
5	20	1	WORK COUNTER RECEPTACLES	900	1	20	6
7	20	1	LIVING ROOM TV AREA RECEPT.S	900	1	20	8
9	20	1	KITCHEN COUNTER RECEPTACLES	400	1	20	10
11	20	1	KITCHEN REFRIGERATOR	1000	1	20	12
13	20	1	KITCHEN REFRIGERATOR	1000	1	20	14
15	20	1	KITCHEN REFRIGERATOR	1000	1	20	16
17	20	1	DISHWASHER	1200	1	20	18
19	20	1	DISPOSAL	800	1	20	20
21	20	1	UNDER SINK WATER CHILLER	600	1	20	22
23	20	1	SUPPLY CLOSET RECEPTACLES	1180	1	20	24
25	20	1	EXTERIOR BUILDING LIGHTS	600	1	20	26
27	20	1	SITE POLE LIGHTS	1180	1	20	28
29	20	2	DRY PIPE COMPRESSOR	400	1	20	30
31	20	2	WATER SYSTEM BOOSTER PUMP	1800	1	20	32
33	40	2	KITCHEN REFRIGERATOR	1200	2	40	34
35	40	2	KITCHEN REFRIGERATOR	1540	2	40	36
37	40	2	KITCHEN REFRIGERATOR	3750	2	40	38
39	40	2	KITCHEN REFRIGERATOR	1200	2	40	40
41	40	2	KITCHEN REFRIGERATOR	3750	2	40	42
FEED THRU LUGS FOR PANEL A				13510	12020		
				38610	36580		

LOAD DESCRIPTION	DEMAND FACTOR	VOLT — AMPS	
		CONNECTED	DEMAND
LIGHTING & FRONT SIGN RECEPTACLES	1.25	5570	6965
	1st 10KVA @ 100% REMAINDER @ 50%	9080	9080
MOTORS	ALL @ 100% PLUS 25% OF LARGEST	22920	22920
MISC. EQUIPMENT	1.00	29380	29380
KITCHEN EQUIPMENT	NEC TABLE (220.56) 0.65	---	---
HVAC EQUIPMENT	1.00	8240	8240
TOTAL —		75190	75885

PANELBOARD LOAD = 75885 V.A.
FULL LOAD AMPS = 319.1 A.
(LO PROVIDE LOCK-ON DEVICE) (TS CIRCUIT VIA TIMESWITCH) (GF1 GF2 TYPE CIRCUIT BREAKER)
* HVAC LOAD BASED ON UNIT MCA WHICH INCLUDES 25% OF LARGEST MOTOR

NEW PANEL BOARD A				SURFACE MOUNTED			
120/240VOLTS 1 PHASE 3 WIRE 400 AMP. BUS				22,000 A.I.C. RATED			
400 AMP. MAIN LUGS ONLY				FED FROM			
				PANEL MP			
NO.	TRIP	NO.	LOAD SERVED	LOAD— V. A.	NO.	TRIP	LOAD SERVED
NO.	AMPS	POLE		AØ BØ	POLE	AMPS	
1	20	1	RESTROOM 118 RECEPTACLE	180	1	20	2
3	20	1	RESTROOM 114 RECEPTACLE	180	1	20	4
5	20	1	GENERAL RECEPTACLES	540	1	20	6
7	20	1	GENERAL DINING AREA RECEPT.	540	1	20	8
9	20	1	EXTERIOR PATIO RECEPTACLES	540	1	20	10
11	20	1	GAS SOLENOID CONTROL	200	1	20	12
13	20	1	STOVE ELECTRICAL CONNECTION	200	1	20	14
15	20	1	KITCHEN COUNTER RECEPTACLES	600	1	20	16
17	20	1	KITCHEN COUNTER RECEPTACLES	600	1	20	18
19	20	1	KITCHEN ISLAND RECEPTACLES	600	1	20	20
21	20	1	SPARE	600	1	20	22
23	20	1	SPARE	---	1	20	24
25	20	1	SPARE	---	1	20	26
27	20	1	SPARE	---	1	20	28
29	20	1	BAY ENTRANCE RECEPTACLES	900	1	20	30
31	20	1	LAUNDRY/BAY RECEPTACLES	540	1	20	32
33	20	1	SPARE	1000	1	20	34
35	20	1	PUBLIC AREA LIGHTING	830	1	20	36
37	20	1	BAY LIGHTING	710	1	20	38
39	20	1	BEDROOM AREA LIGHTING	790	1	20	40
41	20	1	BEDROOM AREA LIGHTING	640	1	20	42
				13510	12020		

LOAD DESCRIPTION	DEMAND FACTOR	VOLT — AMPS	
		CONNECTED	DEMAND
LIGHTING & FRONT SIGN RECEPTACLES	1.25	2970	3715
	1st 10KVA @ 100% REMAINDER @ 50%	5280	5280
MOTORS	ALL @ 100% PLUS 25% OF LARGEST	---	---
MISC. EQUIPMENT	1.00	17280	17280
KITCHEN EQUIPMENT	NEC TABLE (220.56) 0.65	---	---
HVAC EQUIPMENT	1.00	---	---
TOTAL —		25530	26275

PANELBOARD LOAD = 26275 V.A.
FULL LOAD AMPS = 109.5 A.
(LO PROVIDE LOCK-ON DEVICE) (TS CIRCUIT VIA TIMESWITCH) (GF1 GF2 TYPE CIRCUIT BREAKER)
* HVAC LOAD BASED ON UNIT MCA WHICH INCLUDES 25% OF LARGEST MOTOR

FIRE ALARM SYSTEM SYMBOLS

F	FIRE ALARM SYSTEM MANUAL STATION
F _H	FIRE ALARM SYSTEM HEAT DETECTOR
F _{CM}	FIRE ALARM SYSTEM COMBINATION SMOKE DETECTOR/CARBON MONOXIDE DETECTOR
F _{SD}	FIRE ALARM SYSTEM SMOKE DETECTOR
F _{SD}	FIRE ALARM SYSTEM DUCT SMOKE DETECTOR
F _K	FIRE ALARM SYSTEM AUDIO/VISUAL ALARM
F _K _{WP}	FIRE ALARM SYSTEM WEATHERPROOF AUDIO/VISUAL ALARM
F _V	FIRE ALARM SYSTEM VISUAL ALARM
F _{FRM}	FIRE ALARM SYSTEM RELAY MODULE
F _{FMM}	FIRE ALARM SYSTEM MONITOR MODULE
F _{FS}	FIRE ALARM SYSTEM SPRINKLER FLOW SWITCH MONITOR
F _{TS}	FIRE ALARM SYSTEM SPRINKLER TAMPER SWITCH MONITOR
F _{PM}	FIRE ALARM SYSTEM PRESSURE MONITOR
F _{ACP}	FIRE ALARM SYSTEM CONTROL PANEL
F _K _{WP}	SPRINKLER SYSTEM EXTERIOR AUDIO/VISUAL DEVICE

OWNER PROVIDED VENDOR EQUIPMENT

GC TO COORDINATE WITH OWNER'S VENDORS FOR ANY CONTRACTOR ITEMS NEEDED (I.E.: EMPTY CONDUITS, JUNCTION BOXES, CABLING, ETC.) AND FOR COORDINATION WITH INSTALLATION TIMEFRAME FOR THE ITEMS LISTED BELOW

- 1) DISPATCH/ALERT SYSTEMS
- 2) SPEAKER SYSTEMS FOR NOTIFICATION
- 3) VOICE AND DATA SYSTEMS
- 4) BUILDING ACCESS CONTROLS
- 5) BUILDING SECURITY SYSTEMS

VERIFY ADDITIONAL ITEMS WITH OWNER PRIOR TO BIDDING.

ELECTRICAL SYMBOLS

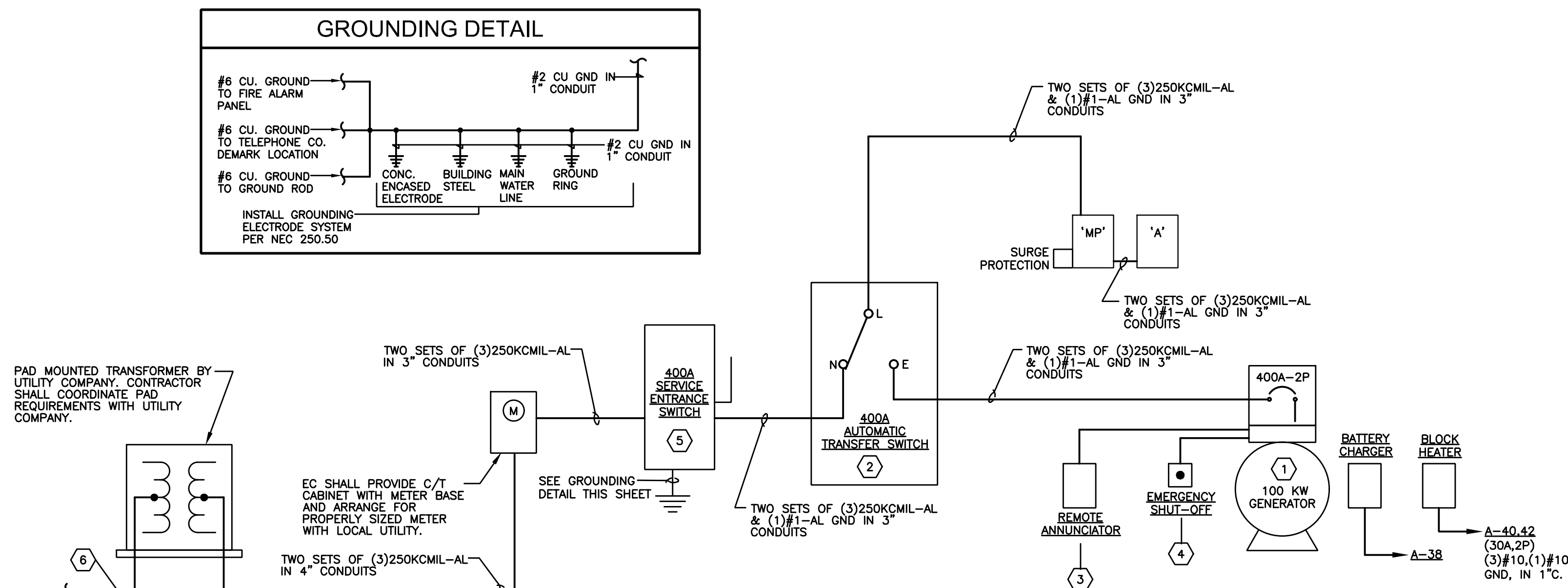
WP	WEATHERPROOF
RT	RAINTIGHT
EC	ELECTRICAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
GC	GENERAL CONTRACTOR
PC	PLUMBING CONTRACTOR
AF	ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE
PROVIDE	FURNISH AND INSTALL COMPLETE
— — —	CONDUIT RUN CONCEALED IN CEILING OR WALL. NUMBER OF HASH MARKS INDICATE NUMBER OF #12 WIRES WHEN MORE THAN TWO ARE REQUIRED UNLESS NOTED OTHERWISE. ALL CIRCUITS SHALL INCLUDE EQUIPMENT GROUND SIZED PER NEC. CURLED HASH MARK INDICATES DEDICATED GROUND WIRE REQUIRED.
— — —	CONDUIT RUN CONCEALED IN FLOOR OR EARTH.
— — —	CONDUIT RUN EXPOSED.
A	LIGHTING FIXTURE. "A" INDICATES FIXTURE TYPE (SEE "LIGHTING FIXTURE SCHEDULE"); "1" INDICATES CIRCUIT NUMBER; "A" INDICATES CONTROL BY SWITCH "A".
1 _a	S.P.S.T. TOGGLE SWITCH: "1A" INDICATES OUTLETS CONTROLLED.
1 _a	THREE WAY TOGGLE SWITCH: "1A" INDICATES OUTLETS CONTROLLED.
1 _a	FOUR WAY TOGGLE SWITCH: "1A" INDICATES OUTLETS CONTROLLED.
1 _a	WALL MOUNTED OCCUPANCY SENSOR SWITCH WITH OVERRIDE: "1A" INDICATES OUTLETS CONTROLLED.
+24"	FLUSH WALL 20A, 125V, DUPLEX RECEPTACLE: +24" INDICATES MOUNTING HEIGHT TO CENTERLINE. MOUNT DEVICE AT +18" AFF UNLESS NOTED OTHERWISE.
+	FLUSH WALL 20A, 125V, DOUBLE DUPLEX RECEPTACLE: MOUNT DEVICE AT +18" AFF UNLESS NOTED OTHERWISE.
+	FLUSH WALL 20A, 125V, GFCI TYPE DUPLEX RECEPTACLE: MOUNT DEVICE AT +18" AFF UNLESS NOTED OTHERWISE.
USB	FLUSH WALL 20A, 125V, DUPLEX RECEPTACLE WITH TWO USB CHARGING PORTS: MOUNT DEVICE AT +18" AFF UNLESS NOTED OTHERWISE.
1	JUNCTION BOX SIZE AS REQUIRED.
30/NF/2P/3R	DISCONNECT SWITCH: SWITCH SIZE (30 AMP), NON-FUSED (NF) OR FUSE SIZE (30AF), 2 POLE, NEMA 3R, VERIFY VOLTAGE (PROVIDED BY EC UNLESS NOTED OTHERWISE)
1	DISCONNECT SWITCH: 30 AMP, NON-FUSED, 1 POLE, VERIFY VOLTAGE (PROVIDED BY EC UNLESS NOTED OTHERWISE)
1	KEYED NOTE — SEE NOTES, THAT SHEET ONLY UNLESS NOTED OTHERWISE.
TV	JUNCTION BOX, 2 GANG MINIMUM FOR TV CONNECTION AND ONE DATA CONNECTION. EC TO ROUTE 1" CONDUIT TO 6" ABOVE ACCESSIBLE CEILING. EC TO PROVIDE PLASTIC BUSHING ON END OF CONDUIT.
1	SPECIAL OUTLET BY EC, SEE NOTES FOR TYPE, ETC..

GENERAL NOTES

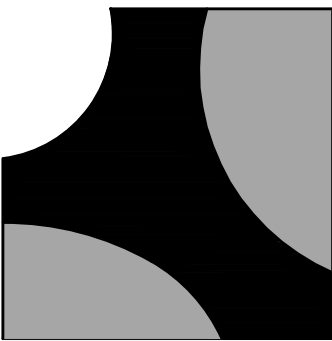
1. EC TO PROVIDE HANDLE TIE OFF ALL MULTIWIRE BRANCH CIRCUITS PER NEC 210.4(B).
2. ALL SPARE CIRCUIT BREAKERS AND DISCONNECT SWITCHES SHALL BE LEFT IN THE OFF POSITION.
3. EC SHALL VERIFY THE VOLTAGE AND AMPERAGE REQUIREMENTS OF ALL EQUIPMENT DELIVERED TO THE SITE PRIOR TO CONNECTION. EC SHALL NOTIFY OWNER OF ANY DIFFERENCE.

KEYED NOTES

- 1 REFER TO SITE PLAN ON SHEET, E4.0 FOR LOCATION OF EMERGENCY GENERATOR.
- 2 EC TO PROVIDE AUTOMATIC TRANSFER SWITCH — 120/240V, 400 AMP, TWO-POLE, THREE-WIRE, WITH A SOLID NEUTRAL, NEMA 1 ENCLOSURE.
- 3 REFER TO SHEET E3.0 FOR LOCATION OF REMOTE ANNUNCIATOR.
- 4 FIELD VERIFY WITH OWNER LOCATION OF GENERATOR EMERGENCY SHUT-OFF.
- 5 EC TO PROVIDE SERVICE ENTRANCE RATED, 240 VOLT, 1 PHASE, 3 WIRE, NEMA 3R, DISCONNECT SWITCH WITH 400 AMP FUSES.
- 6 EC TO PROVIDE (1) 4" SCHED 40 PVC CONDUIT WITH PULL WIRE FROM TRANSFORMER TO UTILITY POLE FOR UTILITY COMPANY CABLES. COORDINATE FULL REQUIREMENTS WITH UTILITY COMPANY PRIOR TO INSTALLATION.



1 RISER DIAGRAM
E1.0 SCALE: NONE



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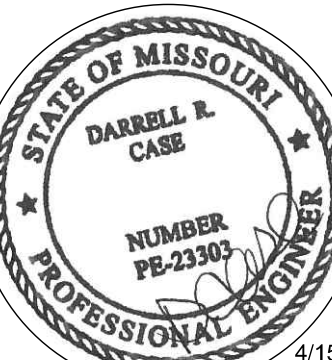
STRUCTURAL, MECHANICAL,
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New Base Station #2 Facility for:
**Lincoln County
Ambulance District**
28 Walter Court
Moscow Mills, Missouri 63362

DATE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE	ISSUE
4-15-2022	BID & PERMIT SET								

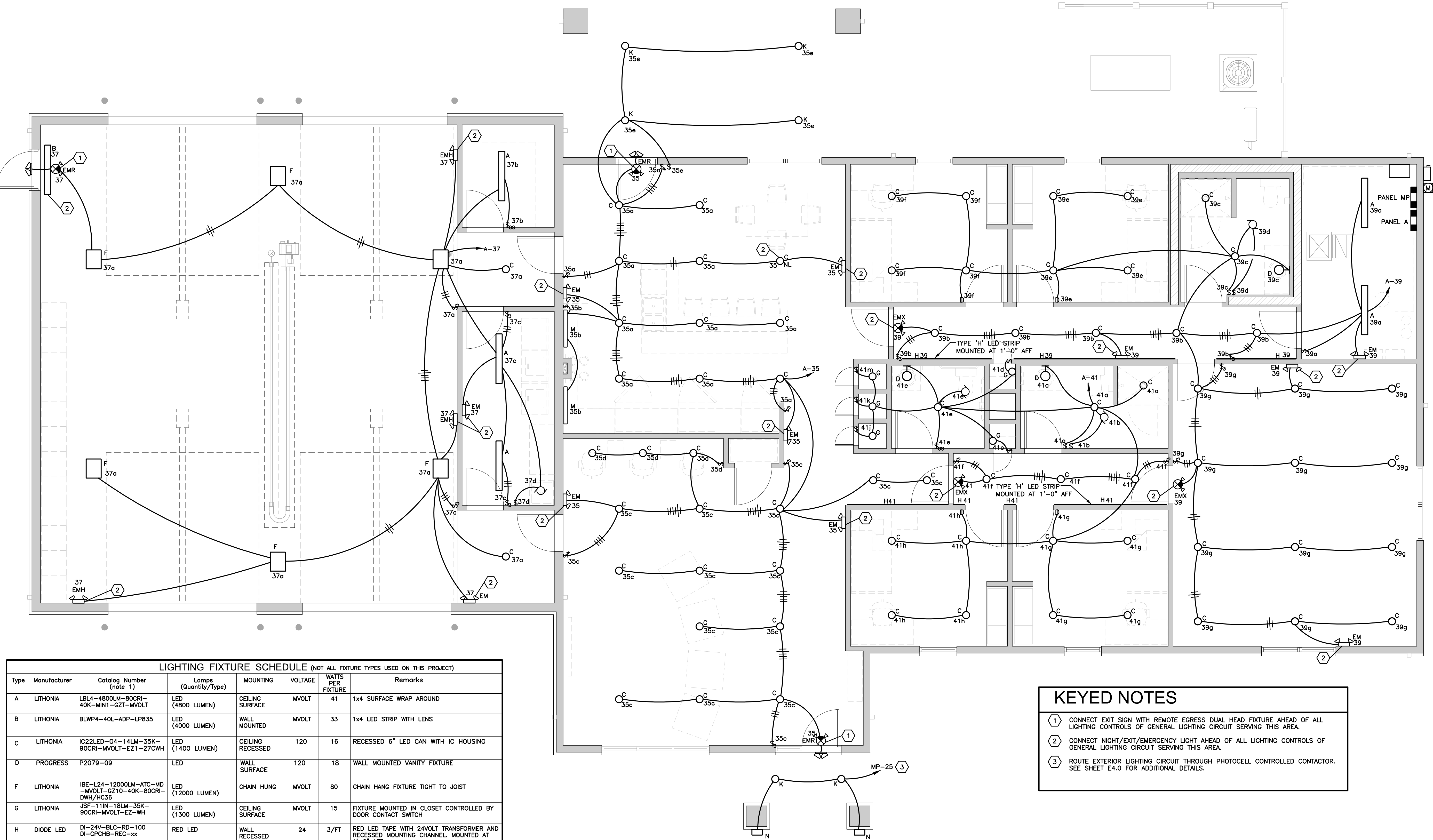


Darrell R. Case
ENGINEER
MOW E-23303

PROJECT MANAGER: JE
DRAWN BY: CK

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
E2.0
ELECTRICAL LIGHTING
PLAN



LIGHTING FIXTURE SCHEDULE (NOT ALL FIXTURE TYPES USED ON THIS PROJECT)						
Type	Manufacturer	Catalog Number (note 1)	Lamps (Quantity/Type)	MOUNTING	VOLTAGE	WATTS PER FIXTURE
A	LITHONIA	LBL4-4800LM-80CRI-40K-MIN1-G2T-MVOLT	LED (4800 LUMEN)	CEILING SURFACE	MVOLT	41
B	LITHONIA	BLWP4-40L-ADP-LP835	LED (4000 LUMEN)	WALL MOUNTED	MVOLT	33
C	LITHONIA	IC22LED-G4-14LM-35K-90CRI-MVOLT-EZ1-27CWH	LED (1400 LUMEN)	CEILING RECESSED	120	16
D	PROGRESS	P2079-09	LED	WALL SURFACE	120	18
F	LITHONIA	IBE-L24-12000LM-ATC-MD-MVOLT-G210-40K-80CRI-DWH/HCS6	LED (12000 LUMEN)	CHAIN HUNG	MVOLT	80
G	LITHONIA	JSF-11IN-18LM-35K-90CRI-MVOLT-EZ-WH	LED (1300 LUMEN)	CEILING SURFACE	MVOLT	15
H	DIODE LED	DI-24V-BLC-RD-100 DI-CPCHB-REC-xx	RED LED	WALL RECESSED	24	3/FT
K	LITHONIA	CYNLED P1 40K MVOLT DDB	LED (4500 LUMEN)	UNDER CANOPY	MVOLT	35
M	LITHONIA	UCEL-36-30K-90CRI-SWR-WH	LED	UNDER CABINET	120	18
N	LITHONIA	OLCS-8-DDB	LED (460 LUMEN)	COLUMN SURFACE	120	10
X	LITHONIA	EXR-LED-EL-M6	WITH UNIT	WALL SURFACE CENTERED ABOVE DOOR	120/277	2
EM	LITHONIA	ELM2-LED	WITH UNIT	WALL	120/277	2
EMH	LITHONIA	ELM6L-UVOLT-LTP-SDRT	WITH UNIT	WALL	120/277	2
EMR	LITHONIA	ECC-R-REM-M6	WITH UNIT	WALL SURFACE CENTERED ABOVE DOOR	120/277	2

- LIGHT FIXTURE SCHEDULE NOTES:
- MANUFACTURER TO VERIFY EXACT PART NUMBER TO MEET INSTALLATION REQUIREMENTS AND ACCESSORIES.
 - ALL EMERGENCY AND EXIT LIGHTS SHALL HAVE MINIMUM 90 MINUTE BATTERY BACKUP.

1 ELECTRICAL LIGHTING PLAN

- TYPICAL ATTIC DUCT NOTES:
- G.C. SHALL SEAL EACH ALL PENETRATIONS THROUGH GYPSUM BOARD CEILING AIR-TIGHT. SEAL ENTIRE PERIMETER OF EACH LIGHT FIXTURE TO GYPSUM BOARD CEILING.

KEYED NOTES

- CONNECT EXIT SIGN WITH REMOTE EGRESS DUAL HEAD FIXTURE AHEAD OF ALL LIGHTING CONTROLS OF GENERAL LIGHTING CIRCUIT SERVING THIS AREA.
- CONNECT NIGHT/EXIT/EMERGENCY LIGHT AHEAD OF ALL LIGHTING CONTROLS OF GENERAL LIGHTING CIRCUIT SERVING THIS AREA.
- ROUTE EXTERIOR LIGHTING CIRCUIT THROUGH PHOTOCELL CONTROLLED CONTACTOR. SEE SHEET E4.0 FOR ADDITIONAL DETAILS.



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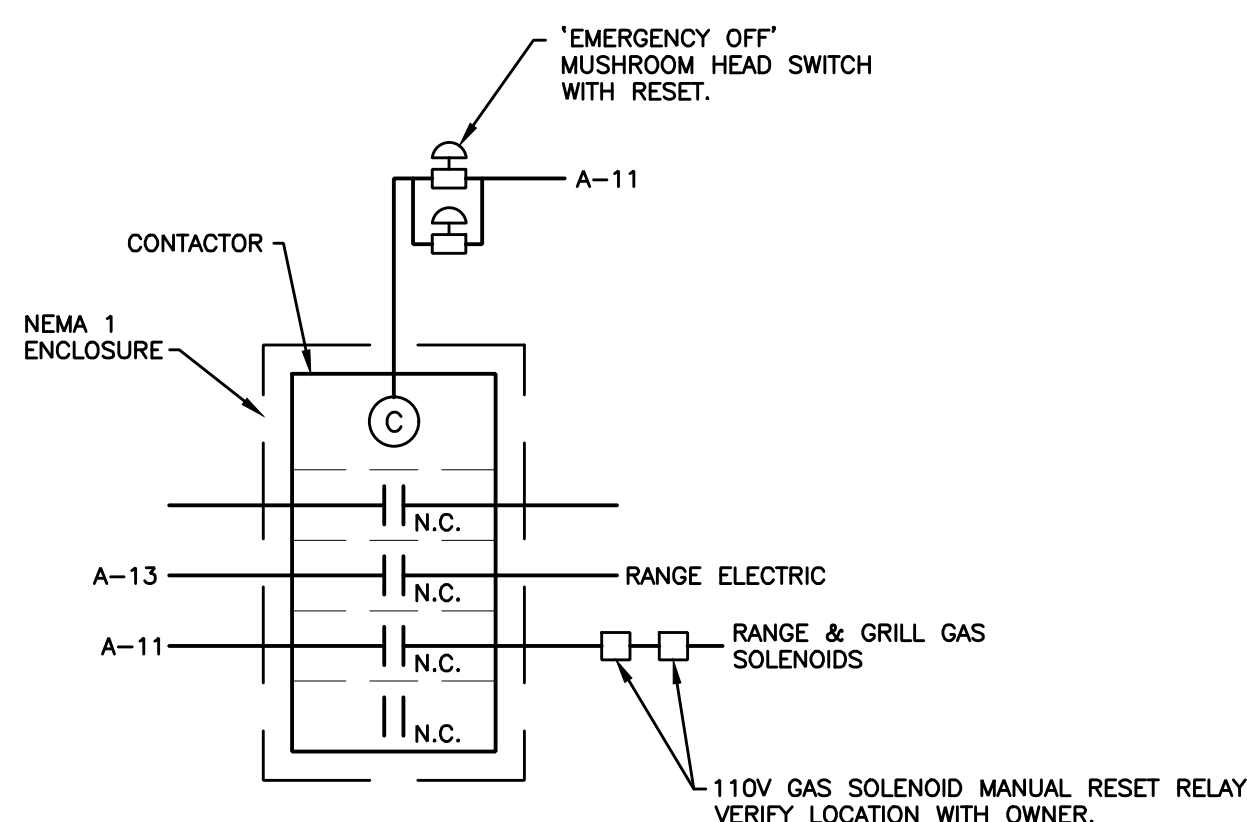
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DATE	ISSUE BID & PERMIT SET	R#
4-15-2022		



PROJECT MANAGER: JE
DRAWN BY: CK

SHEET
E3.0
ELECTRICAL POWER
PLAN



2 EMERGENCY SHUT OFF DETAIL
E3.0 SCALE: NONE

1	NEW C/T, METER AND SERVICE ENTRANCE SWITCH. SEE SHEET E.I.O. FOR ADDITIONAL DETAILS.	15	PROVIDE RECEPTACLE MOUNTED IN JOIST SPACE FOR CONNECTION OF A COORTEL FOR AMBULANCE AND SHORELINE POWER. PROVIDE UNISTRUT FRAME IN JOIST SPACE FOR MOUNTING. COORDINATE LOCATION WITH HVAC EQUIPMENT AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
2	NEW AUTOMATIC TRANSFER SWITCH. EC SHALL VERIFY ALL EQUIPMENT IN ROOM WITH OTHER TRADES PRIOR TO START OF PROJECT.	16	EC TO PROVIDE 20 AMP, 120 VOLT, 1 PHASE, COMBINATION, NON-FUSED, NEMA 3R, DISCONNECT SWITCH AND MOTOR STARTER FOR CONNECTION TO EXHAUST FAN AND MAKE FINAL ELECTRICAL CONNECTION. UNIT TO BE INTERLOCKED WITH MOTORIZED DAMPER BY HVAC CONTRACTOR. VERIFY EXACT LOCATION AND REQUIREMENTS WITH HVAC CONTRACTOR PRIOR TO ANY ROUGH-IN.
3	EC TO MAKE ELECTRICAL CONNECTION TO SPRINKLER DRY PIPE COMPRESSOR.	17	20 AMP, 120 VOLT, 1 PHASE, NON-FUSED, DISCONNECT SWITCH FURNISHED WITH EXHAUST FAN, EC TO MAKE FINAL ELECTRICAL CONNECTION. FAN SHALL OPERATE CONTIGUOUSLY.
4	EC TO MAKE FINAL ELECTRICAL CONNECTION TO DOMESTIC WATER SERVICE PUMP.	18	EC TO PROVIDE MODERN FORMS WYND CEILING FAN WITHOUT LIGHT KIT AND WALL MOUNTED CONTROLLER.
5	EC TO MAKE FINAL ELECTRICAL CONNECTION TO GAS FURNACE.	19	EC TO PROVIDE MODERN FORMS ROBOTO CEILING FAN WITHOUT LIGHT KIT AND WALL MOUNTED CONTROLLER.
6	EC TO PROVIDE NEMA 3R, 30 AMP, 240 VOLT, 2 POLE, NON-FUSED DISCONNECT SWITCH FOR NEW CONDENSING UNIT AND MAKE FINAL ELECTRICAL CONNECTION AS DIRECTED BY HVAC CONTRACTOR.		
7	EC TO PROVIDE 20 AMP, 120 VOLT, DISCONNECT IN BAY JOIST SPACE FOR TUBULAR RADIANT HEATER FAN MOTOR AND MAKE FINAL ELECTRICAL CONNECTION AS DIRECTED BY HVAC CONTRACTOR.		
8	EC TO PROVIDE DISCONNECT/GFCI RECEPTACLE BELOW SINK FOR CHILLED WATER, DISHWASHER AND GARBAGE DISPOSAL. COORDINATE FINAL CONNECTIONS WITH PLUMBING CONTRACTOR.		
9	COORDINATE ELECTRICAL WORK AT CABINENTRY WITH CABINENTRY INSTALLER.		
10	EC TO PROVIDE "EMERGENCY OFF" SWITCH TO SHUT DOWN GAS IN THE EVENT OF DISPATCH. REFER TO EMERGENCY SHUT OFF WIRING DIAGRAM ON THIS SHEET FOR ADDITIONAL INFORMATION.		
11	EC TO PROVIDE CONNECTION TO DOOR MOTOR. PROVIDE WIRING WITHIN 3/4" CONDUIT DOWN TO TIMER DOOR CONTROLLER LOCATION. PROVIDE 3/4" WIRING WITHIN CONDUIT TO WALL MOUNTED DOOR OPEN CONTROL BUTTON. PROVIDE 3/4" WIRING WITHIN CONDUIT TO DOOR OPEN SIGNAL LIGHT LOCATION AND THROUGH WALL TO EXTERIOR SIGNAL DEVICE. PROVIDE 3/4" WIRING WITHIN CONDUIT TO STATION CONTROLLER AT IT CLOSEST FOR FUTURE DOOR TIMER CONTROL WIRING. VERIFY INSTALLATION REQUIREMENTS WITH MANUFACTURER AND LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.		
12	EC TO PROVIDE DISCONNECT SWITCH NOTED. INDOOR AIR HANDLING UNIT POWERED OFF OUTDOOR CONDENSING UNIT. EC TO PROVIDE ALL INTERCONNECT WIRING AS REQUIRED AND MAKE FINAL ELECTRICAL CONNECTIONS. VERIFY EXACT LOCATION WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.		
13	EC TO PROVIDE HARD WIRED CONNECTION TO FIRE ALARM PANEL. VERIFY LOCATION OF PANEL WITH OWNER'S REPRESENTATIVE.		
14	EC TO MOUNT RECEPTACLE AND TV JACK HIGH ON WALL. SEE ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHT.		

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20'-0"

18'-0"

2'-0"

5'-0"

24"

LED LIGHTING FIXTURE ON NEW POLE BY EC

4" SQUARE POLE

BOLTS AND TEMPLATE BY EC

BOLT COVER BY EC

(4) ANCHOR BOLTS .75" DIA BOLT CIRCLE 9" (BOLT PATTERN)

FINISH GRADE

PIER MUST BE IN FULLY COMPACTED SOIL OR ORIGINAL SOIL PER SPECIFICATIONS

(7) #4 REBAR

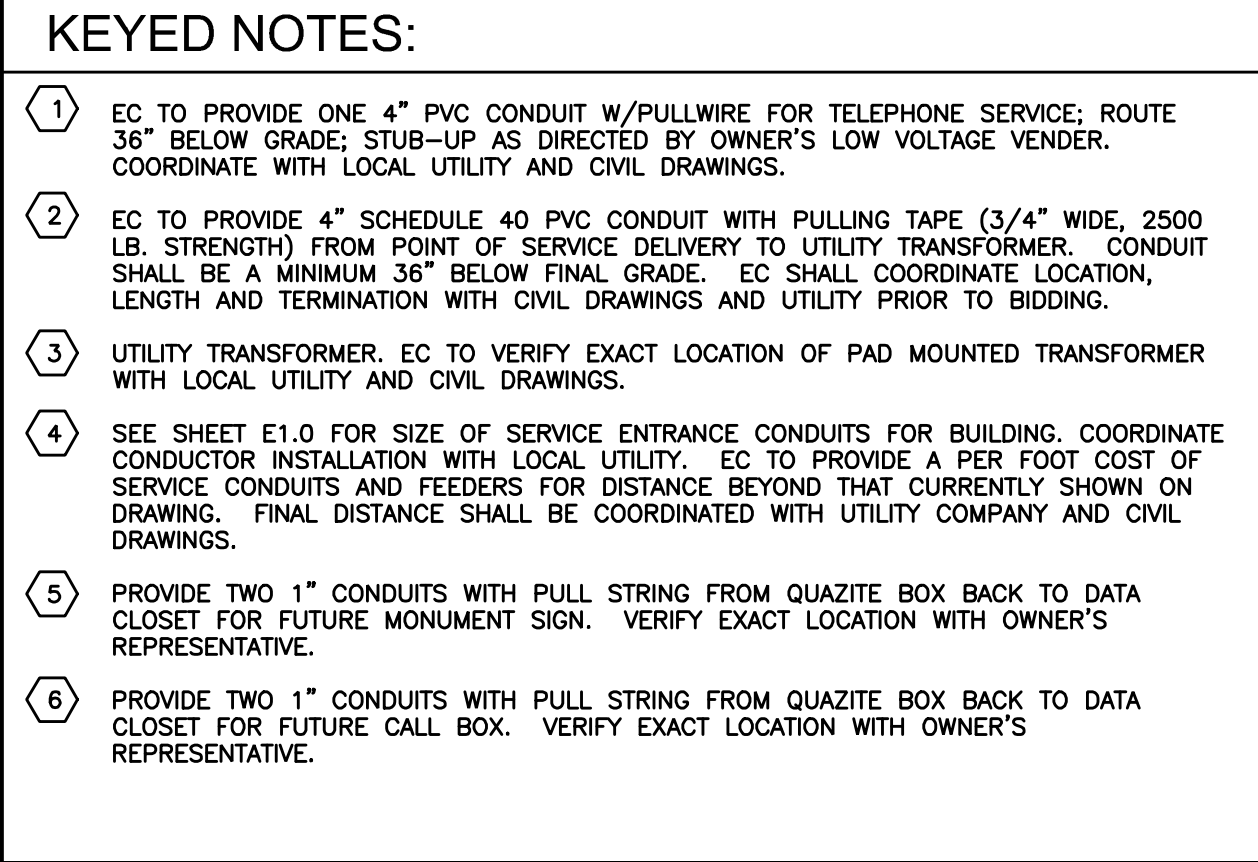
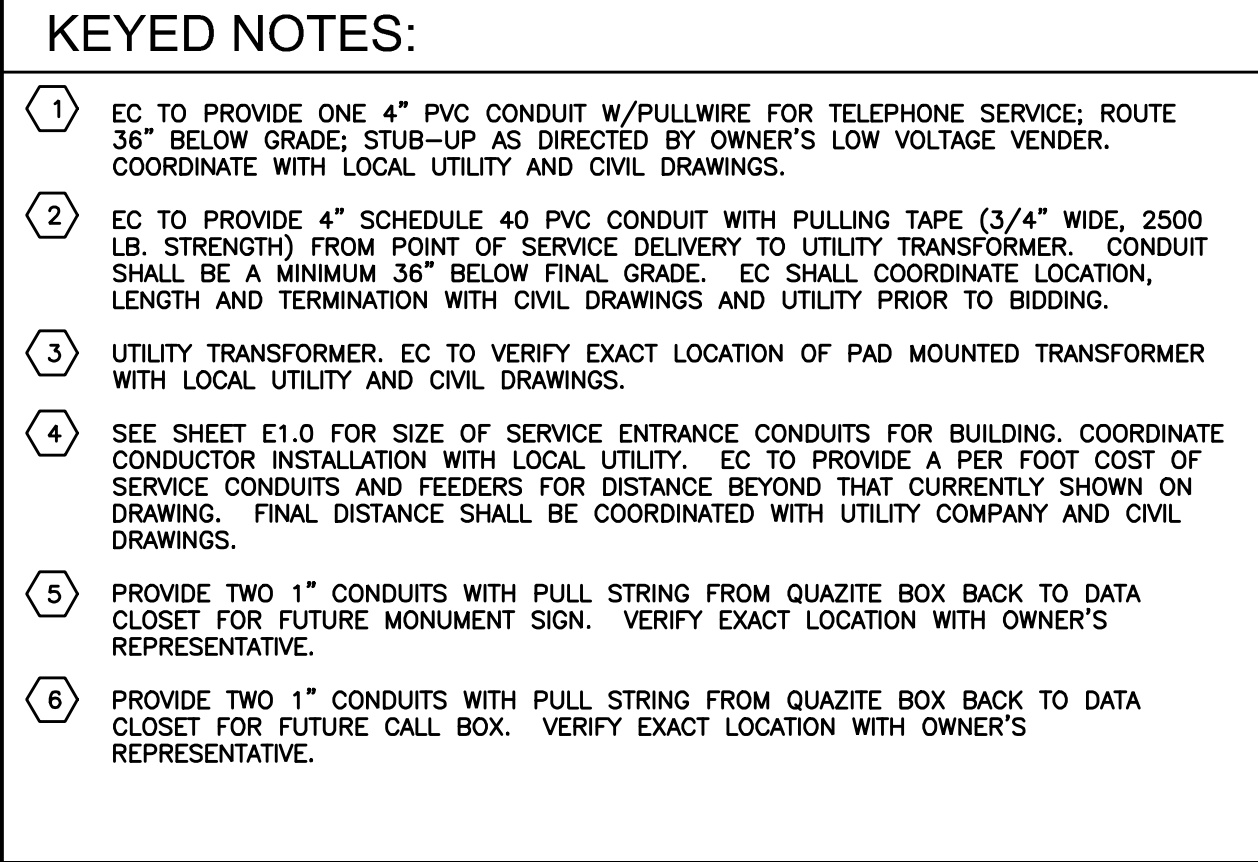
(4) #4 REBAR

#6 BARE GROUND TO REBAR

GROUND LUG AT HANDHOLD

POLE BASE DETAIL

SCALE: NONE



Mechanical, Plumbing, Electrical
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SHEET
E4.0
ELECTRICAL SITE PLAN

SUMMARY

- A. GENERAL AND SUPPLEMENTARY CONDITIONS WITHIN THE SPECIFICATIONS ARE HEREBY INCORPORATED AND BECOME PART OF THESE SPECIFICATIONS AND AS SUCH SHALL BE APPLICABLE TO THE WORK OF THE ELECTRICAL CONTRACT.
- B. PRIOR TO SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL CONDITIONS AND LIMITATIONS THAT IMPACT THE WORK OF THIS CONTRACT. NO ADDITIONAL COSTS TO THE OWNER SHALL BE PERMITTED FOR CHANGES TO THE WORK AS A RESULT OF THE CONTRACTORS FAILURE TO VISIT THE SITE PRIOR TO BIDDING AND IDENTIFY ITEMS THAT WERE ABLE TO BE VERIFIED DURING A SITE VISIT PRIOR TO THE SUBMISSION OF A BID PROPOSAL.
- C. CONTRACTOR SHALL PROVIDE AN ADEQUATE AMOUNT OF WORKERS AND MATERIALS AS REQUIRED TO KEEP PACE WITH THE CONSTRUCTION SCHEDULE AND TO NOT IMPEDE OR HINDER THE WORK OF OTHER TRADES. CONTRACTOR SHALL RETAIN WORKERS AND PLACE ORDERS FOR EQUIPMENT IN A TIMELY MANNER SUCH THAT THE CONSTRUCTION SCHEDULE AND THE WORK OF OTHER TRADES IS NOT IMPAIRED DUE TO LATE DELIVERIES, ETC. CONTRACTOR SHALL VERIFY DELIVERY DATES WITH EQUIPMENT SUPPLIERS AFTER THE MATERIAL HAS BEEN ORDERED.
- D. THE CONTRACTOR SHALL PROVIDE AN OFFICE SPACE AND ON SITE STORAGE FOR MATERIAL AND EQUIPMENT SUPPLIED. LOCATION FOR OFFICE AND MATERIAL/EQUIPMENT STORAGE AREA SHALL BE AS DIRECTED BY THE GENERAL CONTRACTOR.
- E. PROVIDE ALL ELECTRICAL WORK, AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN AS REQUIRED FOR FULL OPERATION, FOR ALL EQUIPMENT FURNISHED BY THE OWNER UNDER A SEPARATE CONTRACT.
- F. PRIOR TO PURCHASE AND INSTALLATION OF MATERIALS, CONTRACTOR SHALL SUBMIT ALL FIRE STOPPING MATERIALS PROPOSED FOR USE ON THIS PROJECT TO THE LOCAL AUTHORITIES HAVING JURISDICTION (AHJ) FOR REVIEW AND APPROVAL. PROVIDE COPIES OF ALL FIRESTOPPING MATERIALS APPROVED BY THE AHJ TO THE ENGINEER.
- G. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, RIGGING, AND MISCELLANEOUS ITEMS AS REQUIRED FOR A COMPLETE, OPERATIONAL AND FUNCTIONAL ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN THESE SPECIFICATIONS.

SCOPE OF WORK

- A. THE SCOPE OF WORK LIST BELOW IS INTENDED TO PROVIDE ONLY A BRIEF OVERVIEW OF THE ELECTRICAL SCOPE OF WORK. IT IS NOT INTENDED TO BE AN ALL INCLUSIVE DEFINITION OF THE ELECTRICAL WORK TO BE PERFORMED. THE COMPLETE SCOPE OF ELECTRICAL WORK TO BE PERFORMED SHALL BE BASED UPON THE DRAWINGS AND THE SPECIFICATIONS.
- B. THE ELECTRICAL WORK SHALL INCLUDE, BUT SHALL NOT NECESSARILY BE LIMITED TO THE FOLLOWING ITEMS:
1. PROVIDE ELECTRICAL SERVICE TO THE FACILITY IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
 2. PROVIDE TEMPORARY CONSTRUCTION POWER AND LIGHTING SYSTEM
 3. PROVIDE A NEW EMERGENCY GENERATOR AND AUTOMATIC TRANSFER SWITCH.
 4. PROVIDE A LIGHTNING PROTECTION SYSTEM
 5. PROVIDE NEW FEEDERS AND BRANCH CIRCUITS TO ELECTRICAL WORK.
 6. PROVIDE NEW INTERIOR AND EXTERIOR LIGHTING FIXTURES AND LIGHTING CONTROL DEVICES.
 7. PROVIDE NEW EMERGENCY EGRESS LIGHTING FIXTURES AND EXIT SIGNS.
 8. PROVIDE NEW CIRCUIT BREAKER PANELS.
 9. PROVIDE NEW RECEPTACLES AT LOCATIONS INDICATED.
 10. PROVIDE POWER TO NEW MECHANICAL AND PLUMBING EQUIPMENT.
 11. PROVIDE POWER TO ALL ELECTRICALLY OPERATED EQUIPMENT.
 12. PROVIDE ROUGH-IN FOR VARIOUS LOW VOLTAGE SYSTEM CABLES AND DEVICES.
 13. PROVIDE A POWER SYSTEM STUDY.
 14. PROVIDE A FIRE ALARM AND DETECTION SYSTEM.
 15. PROVIDE ROUGH-IN FOR FAVIOUS LOW VOLTAGE SYSTEMS AS DIRECTED BY THE OWNER AND THE LOW VOLTAGE SYSTEM VENDORS.
 16. PROVIDE ALL REQUIRED TESTING OF INSTALLED WORK AND SYSTEMS.
 17. PROVIDE A WARRANTY.

BIDS AND SUBSTITUTIONS

- A. PRIOR TO SUBMISSION OF A BID PROPOSAL, CONTRACTOR SHALL THOROUGHLY REVIEW THE BID INSTRUCTIONS AND ALL CIVIL, ARCHITECTURAL, STRUCTURAL, AND MEPP CONSTRUCTION DOCUMENTS. OBTAIN DOCUMENTS FOR EACH DISCIPLINE AND THOROUGHLY REVIEW FOR INFORMATION THAT MAY BE ASSOCIATED WITH OR HAVE AN IMPACT ON THE ELECTRICAL WORK.
- B. FOR AMBIGUOUS, CONTRADICTORY, OR CONFLICTING ITEMS WITHIN THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL REQUEST CLARIFICATION BY MEANS OF A WRITTEN "REQUEST FOR INFORMATION" (RFI) SUBMITTED AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE BID DATE. RFIs THAT WERE NOT ABLE TO BE CLARIFIED PRIOR TO SUBMISSION OF BID SHALL BE PROVIDED PER THE ARCHITECT AND/OR ENGINEER IN STRICT ACCORDANCE WITH THE MOST STRINGENT MATERIALS, EQUIPMENT AND SCOPE OF WORK.
- C. SHOULD THE CONTRACTOR WISH TO SUBMIT AN ALTERNATE PRODUCT TO THE MANUFACTURERS NAMED IN THESE SPECIFICATIONS OR ON THE DRAWINGS FOR ANY EQUIPMENT, THE CONTRACTOR SHALL SUBMIT A VOLUNTARY ALTERNATIVE A MINIMUM OF SEVEN (7) CALENDAR DAYS PRIOR TO BID, STATING THE MANUFACTURER'S NAME, MODEL NUMBER, WRITTEN, DETAILED PRODUCT DATA.
- D. WHERE MATERIALS OR EQUIPMENT ARE SPECIFIED BY NAME THE PROPOSED SUBSTITUTE MATERIAL OR EQUIPMENT SHALL BE IDENTICAL TO THE SPECIFIED MATERIAL OR EQUIPMENT IN ALL CHARACTERISTICS OF QUALITY, FUNCTION AND SERVICEABILITY, REGARDLESS OF APPLICATION IN THE PROJECT AND, IN ADDITION, WHEN THE ARCHITECT DEEMS THAT AESTHETIC SIGNIFICANCE IS IMPORTANT, THE EQUAL MATERIAL OR EQUIPMENT MUST BE IDENTICAL IN ALL CHARACTERISTICS OF VISUAL APPEARANCE, DESIGN, COLOR AND TEXTURE.
- E. ANY PROPOSED EQUAL PRODUCT SHALL BE SUBMITTED TO ARCHITECT / ENGINEER FOR REVIEW AND PRIOR APPROVAL, WHICH ARCHITECT / ENGINEER MAY APPROVE OR DISAPPROVE AT ITS SOLE DISCRETION.
- F. IN ALL CASES, SHOULD THE ALTERNATE MANUFACTURER BE USED, THIS CONTRACTOR SHALL BEAR ALL ADDITIONAL COSTS INCURRED, BUT NOT LIMITED TO, RESPONSIBILITY OF COORDINATION WITH ALL OTHER TRADES, ANY CHANGES INCURRED IN PLUMBING, ELECTRICAL, MECHANICAL, GENERAL CONTRACTORS, ETC., WHICH RESULT FROM EQUIPMENT SUBSTITUTION.
- G. WORK PERFORMED OR CONSTRUCTED WITH PRODUCTS THAT ARE UNAPPROVED EQUALS IS PERFORMED AT CONTRACTOR'S RISK AND ANY REQUIRED CORRECTION OF WORK INCORPORATING UNAPPROVED EQUALS SHALL BE AT CONTRACTOR'S SOLE COST AND EXPENSE.
- H. IN THE EVENT THE SUBSTITUTED MATERIAL OR EQUIPMENT DOES NOT PERFORM TO MEET THE DESIGN INTENT, SPECIFIED STANDARDS, FIT WITHIN THE SPACE ALLOCATED OR MEET QUALITY STANDARDS, THE CONTRACTOR SHALL PROVIDE THE SPECIFIED MATERIAL OR EQUIPMENT AND BEAR ALL COSTS TO REPLACE THE SUBSTITUTE ITEM(S).

QUALITY ASSURANCE

- A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND ALL WORK SHALL BE INSTALLED WITH THE MAXIMUM SPEED CONSISTENT WITH CURRENT ACCEPTED TRADE PRACTICES.
- B. FURNISH MATERIALS AND EQUIPMENT PROMPTLY AFTER AUTHORIZATION TO PROCEED, AND PROCEED WITH WORK IN PROGRESS WITH THE OTHER CONTRACTORS ON THE PROJECT.
- C. PERFORM ALL WORK OF THIS CONTRACT IN A MANNER THAT WILL NOT CAUSE INTERFERENCES OR DELAYS TO, OR INTERFERE WITH, THE PROGRESS OF OTHER CONTRACTORS.
- D. PROVIDE PERMITS, INSPECTIONS, FINAL CERTIFICATES OF INSPECTION BY THE AUTHORITY HAVING JURISDICTION, PERMIT AND INSPECTION FEES AND ALL MATERIALS, EQUIPMENT AND LABOR AS REQUIRED FOR A COMPLETE, FUNCTIONAL, CODE COMPLIANT AND FULLY OPERATIONAL ELECTRICAL SYSTEM.
- E. INSTALL ALL WORK AND EQUIPMENT PLUMB, SQUARE, RIGID AND TRUE-TO-LINE, UNLESS NOTED OTHERWISE, SUPPORT AND MOUNTING OF EQUIPMENT, FIXTURES, ETC., SHALL THE THE MEANS AND METHODS OF THIS CONTRACTOR.
- F. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND ACCESSORIES FOR A CODE COMPLIANT INSTALLATION OF THE ELECTRICAL WORK, WHETHER OR NOT SHOWN ON THE DRAWINGS OR SPECIFIED IN THESE SPECIFICATIONS.
- G. ALL WORK SHALL BE SUPERVISED BY THE INSTALLING CONTRACTORS QUALIFIED FOREMAN. ALL WORK SHALL BE PERFORMED BY PROPERLY TRAINED AND SKILLED WORKERS. ALL WORK SHALL BE PERFORMED AND INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE ESTABLISHED QUALITY STANDARDS OF THE TRADE AND IN CONFORMANCE WITH ALL FEDERAL, STATE AND LOCAL CODES, ORDINANCES, REGULATIONS AND STANDARDS, INCLUDING ALL APPLICABLE OSHA REGULATIONS.
- H. PROPERLY PROTECT WORK DURING CONSTRUCTION, AT CONSTRUCTION COMPLETION, THOROUGHLY CLEAN ALL WORK OF THIS CONTRACT AND REMOVE ALL DEBRIS FROM THE PREMISES. ALL DEBRIS SHALL BE LEGALLY DISPOSED OF.
- I. PROVIDE ALL MOUNTING HARDWARE AND ACCESSORIES, INCLUDING BUT NOT NECESSARILY LIMITED TO STEEL SLOTTED CHANNEL, FRAMING MEMBERS, ALL THREAD RODS, BRACES, ETC, AS REQUIRED FOR THE INSTALLATION OF THE WORK.
- J. ELECTRICAL DEVICES, INCLUDING, BUT NOT NECESSARILY LIMITED TO MOTOR STARTERS, DISCONNECT SWITCHES, ETC., SHALL BE SUPPORTED INDEPENDENT OF AND ISOLATED FROM VIBRATING EQUIPMENT. SECURE ELECTRICAL EQUIPMENT TO STRUCTURE OF FIELD FABRICATED SUPPORT SYSTEM AND PROVIDE FLEXIBLE ELECTRICAL CONNECTION FROM ELECTRICAL DEVICE TO THE EQUIPMENT BEING SERVED.
- K. REQUIREMENTS OF REGULATORY AGENCIES:
1. PERMITS: ARRANGE AND PAY FOR ALL PERMITS, INSPECTIONS AND UTILITY CONNECTIONS REQUIRED.
 2. PROVIDE ALL TESTS AND INSPECTIONS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
 3. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE COMPLETION OF THE PROJECT. INCLUDE IN OPERATION AND MAINTENANCE MANUALS.
 - L. REFERENCED INDUSTRY STANDARDS:
 1. THE APPLICABLE PORTIONS OF THE FOLLOWING STANDARDS FORM A PART OF THIS PROJECT MANUAL. TO THE SAME FORCE AND EFFECT AS IF THE CONTENTS OF THE REFERENCED STANDARD ARE REPEATED HEREIN:
 - a. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 - b. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
 - c. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 - d. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - e. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
 - f. NATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

2. ALL EQUIPMENT, APPARATUS AND SYSTEMS SHALL BE RATED AND TESTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETC., ETC.) FABRICATED AND INSTALLED WITH THE APPLICABLE INDUSTRY STANDARDS.
- M. CODES AND STANDARDS
1. COMPLY WITH SPECIFIED CODES AND STANDARDS. IF CONFLICT EXISTS BETWEEN CODES OR STANDARDS AND DRAWINGS, PROJECT MANUAL OR ADDENDA REQUIREMENTS, REQUEST CLARIFICATION FROM ARCHITECT/ENGINEER.
 2. CONFORM TO THE INSTALLATION RULES AND REGULATIONS OF THE CODES AND STANDARDS LISTED INCLUDING ALL SUBSEQUENTLY PUBLISHED AMENDMENTS THERETO ISSUED PRIOR TO THE DATE OF THE BIDDING DOCUMENTS.
 3. CONFORM TO THE REQUIREMENTS OF ALL LOCAL, STATE AND FEDERAL AGENCIES WHICH HAVE AUTHORITY OVER THIS PROJECT.
 4. COMPLY WITH THE APPLICABLE EDITION OF THE FOLLOWING CODES AND STANDARDS THAT HAVE BEEN ADOPTED BY AND ARE ENFORCED BY THE AUTHORITY HAVING JURISDICTION:
 - a. 2015 INTERNATIONAL BUILDING CODE WITH LOCAL AMENDMENTS
 - b. 2015 INTERNATIONAL ENERGY CONSERVATION CODE WITH LOCAL AMENDMENTS
 - c. 2015 INTERNATIONAL MECHANICAL CODE WITH LOCAL AMENDMENTS
 - d. 2014 NATIONAL ELECTRICAL CODE (NEC), NFPA 70.
 - e. LIFE SAFETY CODE, NFPA 101
 - f. NATIONAL FIRE ALARM CODE, NFPA 72
 - g. AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
 - h. ASME A17.1, 2019 SAFETY CODE FOR ELEVATORS AND ESCALATORS
 - i. ALL LOCAL CODES AND ORDINANCES ENFORCED BY THE CITY OF MOSCOW MILLS, MISSOURI.
 - j. ALL LOCAL CODES AND ORDINANCES ENFORCED BY LINCOLN COUNTY, MISSOURI.
 - k. ALL LOCAL CODES AND ORDINANCES ADOPTED AND ENFORCED BY THE AUTHORITY HAVING JURISDICTION.
 - N. NATIONALLY RECOGNIZED TESTING LABORATORIES - REFERENCED STANDARDS:

1. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE RATED AND TESTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (UL, ETC., ETC.) FABRICATED AND INSTALLED WITH THE APPLICABLE INDUSTRY STANDARDS.
2. ALL EQUIPMENT, APPARATUS, MATERIALS AND SYSTEMS SHALL BE LISTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
- O. CONTRACTOR SHALL CONTACT AUTHORITIES HAVING JURISDICTION (AHJ) TO ARRANGE FOR ALL REGULARLY REQUIRED INSPECTIONS OF THE WORK OF THIS CONTRACT. ELECTRICAL WORK THAT WILL BE CONCEALED SHALL BE INSPECTED AND APPROVED BY THE AHJ PRIOR TO CONCEALING THE ELECTRICAL WORK.
- P. CONTRACTOR SHALL FURNISH A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM ALL AUTHORITIES HAVING JURISDICTION AND FROM ALL ENFORCEMENT AGENCIES.

ELECTRICAL CONTRACT DOCUMENTS

- A. THE ELECTRICAL DRAWINGS (DRAWINGS) AND THE SPECIFICATIONS SHALL TOGETHER FORM A SET OF CONTRACT DOCUMENTS FOR THE ELECTRICAL WORK. NEITHER THE DRAWINGS OR THE SPECIFICATIONS SHALL BE COMPLETE WITHOUT THE OTHER. ANY ITEM SHOWN ON THE DRAWINGS OR SPECIFIED IN THE SPECIFICATIONS SHALL BE CONSIDERED AS IF SHOWN AND SPECIFIED IN BOTH.
- B. ANY QUESTIONS REGARDING THE CONTENT OR INTENT OF THE DRAWINGS AND/OR SPECIFICATIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION. SHOULD DIRECTION/CLARIFICATION FROM THE ENGINEER NOT BE OBTAINED DUE TO TIME CONSTRAINTS OR COMMUNICATION LIMITATIONS, THE GREATER QUANTITY, HIGHER QUALITY OF CONDITION MOST FAVORABLE TO THE OWNER SHALL BE ASSUMED AND INCLUDED IN THE WORK OF THIS CONTRACT.
- C. ELECTRICAL DRAWINGS AND SPECIFICATIONS: COMPLY WITH THE FOLLOWING REQUIREMENTS:
1. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL DRAWINGS AND SPECIFICATIONS WITHIN THE CONTRACT DOCUMENTS, INCLUDING, BUT NOT NECESSARILY LIMITED TO, GEOTECHNICAL, LANDSCAPE, CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS.
 2. CONTRACTOR BECOME FAMILIAR WITH THE LOCATIONS OF ALL SHAFTS, CHASES, PLENUM SPACES, SUSPENDED CEILINGS, EQUIPMENT LOCATIONS AND THE WORK OF OTHER TRADES AND COORDINATE SAME WITH THE ELECTRICAL WORK TO BE PERFORMED.
 3. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE INTENDED TO INDICATE APPROXIMATE LOCATION ONLY OF ELECTRICAL WORK. THE ACTUAL LOCATION OF ANY ELECTRICAL WORK SHALL NOT INTERFERE WITH THE LOCATION OF CLEARANCES REQUIRED BY THE WORK OF OTHER TRADES.
 4. THE LOCATION OF DEVICES AND LIGHT FIXTURES AS SHOWN ON THE DRAWINGS IS DIAGRAMMATIC. THE OWNER SHALL HAVE THE RIGHT TO RELOCATE ANY DEVICES OR LIGHT FIXTURES BEFORE THEY ARE INSTALLED WITHOUT ADDITIONAL COST.
 5. PRIOR TO ROUGH-IN, CONTRACTOR SHALL COORDINATE ALL DEVICE LOCATIONS WITH THE ARCHITECTURAL WALL ELEVATIONS.
 6. DIMENSIONS INDICATED ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER DIMENSIONS OBTAINED BY MEASURING THE DRAWINGS WITH A SCALE, RULER, TAPE MEASURE, ETC. ALL DIMENSIONS, WHETHER INDICATED WITH FIGURES OR SCALED, SHALL BE VERIFIED IN THE FIELD.
 7. PRIOR TO ORDERING LARGE EQUIPMENT, INCLUDING BUT NOT NECESSARILY LIMITED TO SWITCHBOARDS, METERING EQUIPMENT, ETC. CONTRACTOR SHALL VERIFY THAT THE EQUIPMENT TO BE INSTALLED WILL FIT WITHIN THE SPACE AVAILABLE.
 8. CONTRACTOR SHALL NOTIFY THE ARCHITECT OR ENGINEER OF ANY DISCREPANCIES BETWEEN THE ELECTRICAL DRAWINGS AND THE CIVIL, STRUCTURAL, ARCHITECTURAL, PLUMBING, FIRE PROTECTION OR MECHANICAL DRAWINGS.
 9. VERIFY THE ACTUAL LOCATIONS OF DOOR SWINGS, WINDOW LOCATIONS, CASEWORK, WALL MOUNTED MARKERBOARDS, ETC. PRIOR TO THE ROUGH IN OF ELECTRICAL WORK. ALL ELECTRICAL WORK THAT HAS BEEN INSTALLED THAT IN CONFLICT WITH THE WORK OF OTHER TRADES DUE TO THE LACK OF CONTRACTOR COORDINATION SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.

- D. DEFINITIONS: THE FOLLOWING TERMS ARE USED ON THE ELECTRICAL DRAWINGS AND IN THE SPECIFICATIONS AND SHALL BE DEFINED AS FOLLOWS:

1. CONTRACTOR - THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
2. WORK - ALL MATERIAL, LABOR, TRANSPORTATION OF THE ELECTRICAL CONTRACTOR OR ANY OF THEIR SUB-CONTRACTORS.
3. FURNISH - PURCHASE, SUBMIT FOR REVIEW AND APPROVAL, COORDINATE WITH THE CONTRACT DOCUMENTS AND DELIVER TO THE PROJECT SITE IN NEW, UNDAMAGED CONDITION.
4. INSTALL - TO STORE AS DIRECTED, PROTECT FROM DAMAGE, INSTALL IN PLACE, MAKE READY FOR CONNECTION TO THE REQUIRED SERVICE.
5. CONNECT - CONNECT TO THE REQUIRED SERVICE AS REQUIRED FOR PROPER OPERATION, TEST FOR PROPER OPERATION AND FUNCTIONALITY IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND REQUIREMENTS SPECIFIED WITHIN THESE SPECIFICATIONS AND TURN OVER TO THE OWNER IN FULL OPERATING CONDITION.
6. PROVIDE - FURNISH, INSTALL AND CONNECT AS DEFINED ABOVE FOR A COMPLETE, FUNCTIONAL AND CODE COMPLIANT INSTALLATION, READY FOR INTENDED USE.
7. FINISHED SPACE - SPACES HAVING WALLS PAINTED OR FINISHED WITH WALL COVERING, LAY-IN OR DRYWALL CEILINGS, AND FINISHED FLOORING MATERIALS. EXAMPLES OF FINISHED SPACES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, ALL SPACES IN OFFICES, LOBBIES, CORRIDORS, TOILET ROOMS, ETC.
8. UNFINISHED SPACES - SPACES WITH UNFINISHED WALLS AND FLOORS AND TYPICALLY ARE NOT EQUIPPED WITH A CEILING. EXAMPLES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, MECHANICAL ROOMS, ELECTRICAL ROOMS, SERVICE AREAS, ETC.
9. REMOVE - DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF SITE UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.
10. REMOVE AND SALVAGE - CAREFULLY DETACH FROM EXISTING CONSTRUCTION IN A MANNER TO PREVENT DAMAGE AND DELIVER TO OWNER READY FOR RE-USE.
11. REMOVE AND REINSTALL - DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE FOR RE-USE, RE-INSTALL AND RECONNECT WHERE INDICATED SUCH THAT THE RE-INSTALLED ITEM IS FULLY OPERATIONAL.
12. EXISTING TO REMAIN - EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE PERMANENTLY REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, REMOVED AND SALVAGED OR REMOVED AND RE-INSTALLED.

ELECTRONIC DRAWING FILES:

- A. ELECTRONIC DRAWING FILES AS PREPARED BY CASE ENGINEERING ARE INSTRUMENTS OF SERVICE AS AND HAVE BEEN PREPARED SOLELY FOR USE AS PART OF THE WORK OF THIS CONTRACT.
- B. DURING THE COURSE OF THE IMPLEMENTATION OF THE PROJECT, COPIES OF THE DIGITAL ELECTRONIC FILES OF THESE DRAWINGS CAN BE OBTAINED FROM CASE ENGINEERING FOR THE PREPARATION OF SUBMITTALS AND SHOP DRAWINGS.
- C. ANY ELECTRONIC MEDIA TRANSMITTED TO THE CONTRACTOR SHALL REMAIN THE PROPERTY OF CASE ENGINEERING AND ARE SUBJECT TO ITS COPYRIGHT. THE FILES ARE TO BE USED SOLELY TO FACILITATE THE DEVELOPMENT OF SUBMITTALS, SHOP DRAWINGS, CONSTRUCTION AND CONSTRUCTION DOCUMENTATION FOR THE PROJECT TITLE PROJECT AND ARE NOT TO BE COPIED OR REUSED FOR OTHER PROJECTS.
- D. THESE ELECTRONIC FILES ARE NON-CERTIFIED RECORDINGS OF PRINTED DOCUMENTS PREPARED BY OR FOR CASE ENGINEERING AND ARE NOT A PART OF THE CONTRACT DOCUMENTS. THESE FILES ARE PROVIDED ONLY FOR THE CONVENIENCE OF THE RECEIVING PARTY AND OTHERS PROVIDING SERVICES TO THE RECEIVING PARTY. IN ACCORDANCE WITH THE CONSTRUCTION CONTRACT, THE OFFICIAL CONTRACT DOCUMENTS ARE THE DOCUMENTS ISSUED DURING THE BIDDING PERIOD, AS MODIFIED BY ANY SUBSEQUENT CONTRACT AMENDMENT OR MODIFICATION.
- E. ANY REVISIONS, ADDITIONS AND/OR DELETIONS TO THESE ELECTRONIC FILES, EITHER INTENTIONAL OR UNINTENTIONAL, SHALL BE MADE AT THE FULL RISK OF THE PERSON(S) MAKING SUCH REVISIONS, ADDITIONS AND/OR DELETIONS. SUCH PERSONS SHALL HOLD HARMLESS AND INDEMNIFY CASE ENGINEERING OF ANY AND ALL RESPONSIBILITIES AND LIABILITIES.
- F. CONTRACTOR ACCEPTS ELECTRONIC FILES FOR DRAWINGS AND SPECIFICATIONS "AS-IS", IN CASE OF ANY DIFFERENCES BETWEEN THESE FILES AND THE OFFICIAL CONTRACT DOCUMENTS, THE OFFICIAL CONTRACT DOCUMENTS GOVERN. IN PREPARING YOUR WORK, AND AS REQUIRED BY THE CONTRACT DOCUMENTS, YOU REMAIN RESPONSIBLE FOR COORDINATION OF THE INFORMATION WITH THE FIELD CONDITIONS, THE WORK OF OTHER TRADES AND THE CONTRACT DOCUMENTS, INCLUDING ALL REVISIONS, AMENDMENTS, AND MODIFICATIONS.
- G. ALL ELECTRONIC FILE STANDARDS ARE AS IDENTIFIED IN THE ELECTRONIC FILE EXTENSION WITHIN THE FILE. RECIPIENT AGREES THAT CASE ENGINEERING CANNOT BE HELD RESPONSIBLE FOR PROBLEMS ARISING FROM FILES

WHICH HAVE BEEN CONVERTED FROM ITS ORIGINAL FORMAT FOR USE IN NON-NATIVE APPLICATIONS (E.G. REVIT DESIGN FILES TO AUTOCAD.)

H. ANY USE OF THE INFORMATION OBTAINED OR DERIVED FROM THESE ELECTRONIC FILES WILL BE AT THE RECEIVING PARTY'S SOLE RISK AND WITHOUT LIABILITY, RISK OR LEGAL EXPOSURE TO CASE ENGINEERING. YOU AGREE TO INDEMNIFY AND HOLD HARMLESS CASE ENGINEERING AGAINST ANY CLAIMS, DAMAGES, OR LIABILITIES OF ANY KIND RELATING TO YOUR USE OF THE ABOVE TRANSMITTED INFORMATION.

SUBMITTALS

- A. REVIEW OF THE SHOP DRAWINGS IS RENDERED AS A SERVICE ONLY AND SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR OF BUILDING CONDITIONS; NOR SHALL IT BE CONSTRUED AS RELIEVING THE CONTRACTOR'S OF BASIC RESPONSIBILITIES UNDER HIS CONTRACT. ARCHITECT/ENGINEER WILL REVIEW SHOP DRAWINGS ONLY FOR CONFORMANCE WITH DESIGN CONCEPT OF THE PROJECT. REVIEW BY THE ARCHITECT/ENGINEER SHALL NOT BE CONSTRUED:
1. AS PERMITTING ANY DEPARTURE FROM THE CONTRACT REQUIREMENTS.
 2. AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY FOR ANY ERROR IN DETAILS, DIMENSIONS OR OTHERWISE THAT MAY EXIST.
3. AS APPROVED DEPARTURES FROM ADDITIONAL DETAILS OR INSTRUCTIONS PREVIOUSLY FURNISHED BY THE ARCHITECT/ENGINEER.
- B. SHOP DRAWINGS:
1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESCRIPTIVE LITERATURE OF EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. DRAWINGS SHALL STATE CAPACITIES, SIZES, ETC., OF ALL EQUIPMENT AND SHALL BE CERTIFIED. SEE GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS FOR ADDITIONAL REQUIREMENTS.
 2. EACH SHOP DRAWING, PRODUCT DATA SHEET AND/OR SPECIFICATION SHEET SHALL BE MARKED WITH THE NAME AND LOCATION OF THE PROJECT. THE SHOP DRAWINGS SHALL INCLUDE STAMPS PROVIDING EVIDENCE OF HAVING BEEN REVIEWED BY THE CONTRACTOR GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR, STAMPED AND SIGNED CERTIFYING THAT THEY HAVE FOUND THEM TO BE 100% COMPLETE AND ACCURATE, PRIOR TO SUBMISSION TO THE ENGINEER.
 3. SHOP DRAWINGS RECEIVED BY THE ENGINEER THAT HAVE NOT BEEN REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR AND THE ELECTRICAL CONTRACTOR WILL BE RETURNED WITHOUT BEING REVIEWED.
 4. PRODUCT DATA SHEETS PROVIDED AS SUBMITTALS THAT CONTAIN MULTIPLE DIFFERENT ITEMS ON A PAGE SHALL BE MARKED TO CLEARLY IDENTIFY THE SPECIFIC ITEM BEING SUBMITTED FOR REVIEW. SUBMITTALS THAT DO NOT COMPLY WITH THIS REQUIREMENT WILL BE RETURNED WITHOUT REVIEW.
 5. SHOP DRAWING REVIEW IS FOR PURPOSE OF DETERMINING ONLY THAT EQUIPMENT SUBMITTED CONFORMS WITH GENERAL DESIGN INTENT AND SHALL NOT REMOVE RESPONSIBILITY FROM CONTRACTOR.
 6. BY APPROVING AND SUBMITTING SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND SIMILAR SUBMITTALS, THE CONTRACTOR REPRESENTS THAT THE CONTRACTOR HAS DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA RELATED THERETO, OR WILL DO SO, AND HAS CHECKED AND COORDINATED THE INFORMATION CONTAINED WITHIN SUCH SUBMITTALS WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.
 7. WHERE CONTRACTOR HAS FAILED TO PROVIDE PROPER SPACE FOR EQUIPMENT AND REQUIRED CLEARANCES (AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION, AS RELATED TO CODE REQUIREMENTS, AS NOTED OR SHOWN ON PLANS OR AS NOTED ON SUBMITTALS) CONTRACTOR SHALL RELOCATE THE EQUIPMENT AS DIRECTED BY ENGINEER. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY AND ALL CHANGES RESULTING FROM SUCH RELOCATIONS AND SHALL BEAR ANY AND ALL INCREASE COSTS TO CONTRACTOR AS WELL AS COSTS TO OTHER TRADES IN MAKING SUDJ REVISIONS.

- C. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK REQUIRING SUBMITTAL AND REVIEW OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES OR SIMILAR SUBMITTALS UNTIL THE RESPECTIVE SUBMITTALS HAS BEEN APPROVED BY THE ENGINEER.

ELECTRICAL COORDINATION DRAWINGS

- A. THIS CONTRACTOR SHALL PROVIDE ALL REQUIRED SUPPORT IN THE DEVELOPMENT OF A COMBINED SET OF ELECTRONIC COORDINATION DRAWING(S). COORDINATION DRAWINGS SHALL BE 1/4" = 1'-0" ALONG WITH A DETAILED 3-D MODEL SHOWING LOCATIONS, DIMENSIONS AND HEIGHT OF INSTALLATION OF ALL MAJOR PIECES OF EQUIPMENT. DUCTWORK AND PIPING PROVIDED UNDER THEIR RESPECTIVE CONTRACTS THAT IS TO BE INSTALLED IN THE VICINITY OF AND ADJACENT TO THE ELECTRICAL WORK. COORDINATION DRAWINGS SHALL INCLUDE THE FOLLOWING ITEMS AS A MINIMUM:
- 1) BOTTOM ELEVATION OF DUCT HEIGHT AND SIZE
 - 2) PIPING ELEVATIONS AND SIZE
 - 3) CONDUIT ELEVATIONS AND SIZE
 - 4) HANGER SUPPORT LOCATIONS (DUCTWORK / PIPING / CONDUIT / CABLE TRAY)
 - 5) LIGHTING FIXTURES
 - 6) VOICE AND DATA SYSTEM COMPONENTS
 - 7) VIDEO SERVEILLANCE SYSTEM COMPONENTS
 - 8) ACCESS CONTROL SYSTEM COMPONENTS
 - 9) FIRE PROTECTION MAINS/BRANCH LINES/HEAD PLACEMENT WITH ELEVATIONS AND SIZE
 - 10) BUILDING STRUCTURE BACKGROUND
 - 11) PROPOSED LOCATIONS FOR ACCESS PANELS (DUCTWORK/PIPPING/CONDUIT/CABLE TRAY)
- B. MEET WITH REPRESENTATIVES OF THE OTHER DISCIPLINES/TRADES TO COORDINATE THE ELECTRICAL WORK WITH THE WORK OF EACH DISCIPLINE AND TO OBTAIN INFORMATION REGARDING THEIR WORK THAT IS TO BE INDICATED ON THE COORDINATION DRAWINGS.

POWER SYSTEM STUDIES - GENERAL

- A. PROVIDE COMPUTER-BASED, POWER SYSTEM STUDIES THAT INCLUDES:
1. AN OVERCURRENT PROTECTIVE DEVICE SELECTIVE COORDINATION STUDY TO DETERMINE OVERCURRENT PROTECTIVE DEVICE SETTINGS FOR SELECTIVE TRIPPING.
 2. A SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES;
 3. AN ARC-FLASH STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR ELECTRICAL EQUIPMENT.
- B. STUDIES SHALL BE PERFORMED UTILIZING COMPUTER PROGRAMS THAT ARE DISTRIBUTED NATIONALLY AND ARE IN WIDE USE. SOFTWARE ALGORITHMS SHALL COMPLY WITH REQUIREMENTS OF STANDARDS AND GUIDES SPECIFIED IN THIS SECTION. MANUAL CALCULATIONS ARE UNACCEPTABLE.
- C. STUDY SHALL BE PREPARED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MISSOURI.
- D. SOFTWARE DEVELOPERS: SUBJECT TO COMPLIANCE WITH SPECIFIED REQUIREMENTS, PERFORM STUDIES UTILIZING SOFTWARE PRODUCTS BY ONE OF THE FOLLOWING:

SEE EDITING INSTRUCTION NO.2 IN THE EVALUATIONS FOR DISCUSSION OF OPTIONAL FEATURES.

1. EASY POWER
 2. POWER ANALYTICS CORPORATION
 3. SKM SYSTEMS ANALYSIS
- E. STUDY SHALL INCLUDE AN EXECUTIVE SUMMARY, COMMENTS AND RECOMMENDATIONS FOR SYSTEM IMPROVEMENTS, WHERE NEEDED.
- F. STUDY SHALL BE SIGNED AND SEALED BY THE PROFESSIONAL ENGINEER RESPONSIBLE FOR THE PREPARATION OF THE STUDY.
- G. ALL STUDIES SHALL BE BASED ON THE DEVICE CHARACTERISTICS OF ACTUAL NEW COMPONENTS BEING INSTALLED.
- H. STUDY SHALL INCLUDE A ONE-LINE DIAGRAM, SHOWING THE FOLLOWING MINIMUM INFORMATION, AS APPLICABLE:
1. PROTECTIVE DEVICE DESIGNATIONS AND AMPERE RATINGS.
 2. CABLE SIZE AND LENGTHS.
 3. TRANSFORMER KILOVOLT AMPERE (KVA) AND VOLTAGE RATINGS.
 4. MOTOR AND GENERATOR DESIGNATIONS AND KVA RATINGS.
 5. SWITCHGEAR, SWITCHBOARD, MOTOR-CONTROL CENTER, AND PANELBOARD DESIGNATIONS.
- I. PROVIDE ALL FIELD LABOR AS REQUIRED TO OBTAIN ALL DATA NECESSARY TO CONDUCT THE STUDIES SPECIFIED HEREIN.
- J. SUBMIT STUDIES FOR REVIEW BEFORE SUBMITTING THE SYSTEM OVERCURRENT PROTECTIVE DEVICE AND POWER DISTRIBUTION EQUIPMENT SUBMITTALS. SUBMIT STUDY REPORT FOR REVIEW PRIOR TO RECEIVING FINAL APPROVAL OF THE OVERCURRENT PROTECTIVE DEVICE AND DISTRIBUTION EQUIPMENT SUBMITTALS.
- K. WHERE FORMAL COMPLETION OF STUDIES WILL CAUSE A DELAY IN THE ORDERING AND MANUFACTURING OF OVERCURRENT PROTECTIVE DEVICES AND POWER DISTRIBUTION EQUIPMENT, OBTAIN APPROVAL FROM ENGINEER FOR PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT THE SELECTION OF DEVICES AND ASSOCIATED CHARACTERISTICS IS SATISFACTORY AND IN COMPLIANCE WITH THE RESULTS OF THE STUDIES BEING PERFORMED.

OVERCURRENT PROTECTIVE DEVICE SELECTIVE COORDINATION STUDY

- A. PROVIDE A COMPUTER-BASED, OVERCURRENT PROTECTIVE DEVICE SELECTIVE COORDINATION STUDY TO DETERMINE OVERCURRENT PROTECTIVE DEVICES AND TO DETERMINE OVERCURRENT PROTECTIVE DEVICE SETTINGS FOR SELECTIVE TRIPPING.
- B. REPORT RECOMMENDED SETTINGS OF PROTECTIVE DEVICES, READY TO BE APPLIED IN THE FIELD. USE MANUFACTURER'S DATA SHEETS FOR RECORDING THE RECOMMENDED SETTING OF OVERCURRENT PROTECTIVE DEVICES WHEN AVAILABLE.
- C. COMPLY WITH IEEE 242 FOR CALCULATING SHORT-CIRCUIT CURRENTS AND DETERMINING COORDINATION TIME INTERVALS.
- D. COMPLY WITH IEEE 399 FOR GENERAL STUDY PROCEDURES.
- E. THE STUDY SHALL BE BASED ON THE DEVICE CHARACTERISTICS SUPPLIED BY DEVICE MANUFACTURER.

- F. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.
- G. GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT COORDINATION STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 FOR THE AMOUNT OF DETAIL REQUIRED TO BE ACQUIRED IN THE FIELD.
- H. FIELD DATA GATHERING SHALL BE UNDER THE DIRECT SUPERVISION AND CONTROL OF THE ENGINEER IN CHARGE OF PERFORMING THE STUDY, AND SHALL BE BY THE ENGINEER OR ITS REPRESENTATIVE WHO HOLDS NETA ETT LEVEL III CERTIFICATION OR NICET ELECTRICAL POWER TESTING LEVEL III CERTIFICATION.

SHORT CIRCUIT STUDY

- A. PROVIDE A COMPUTER-BASED, SHORT CIRCUIT STUDY TO DETERMINE THE MINIMUM INTERRUPTING CAPACITY OF CIRCUIT PROTECTIVE DEVICES.
- B. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.

SEE EDITING INSTRUCTION NO.4 IN THE EVALUATIONS FOR DATA ON NETA AND NICET CERTIFICATIONS.

- C. GATHER AND TABULATE ALL REQUIRED DATA TO SUPPORT THE SHORT-CIRCUIT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 551 AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.

ARC FLASH HAZARD STUDY

- A. PROVIDE A COMPUTER-BASED, ARC-FLASH HAZARD STUDY TO DETERMINE THE ARC-FLASH HAZARD DISTANCE AND THE INCIDENT ENERGY TO WHICH PERSONNEL COULD BE EXPOSED DURING WORK ON OR NEAR NEW ELECTRICAL EQUIPMENT.
- B. ELECTRICAL SURVEY DATA: GATHER AND TABULATE ALL REQUIRED INPUT DATA TO SUPPORT STUDY. COMPLY WITH RECOMMENDATIONS IN IEEE 1584 AND NFPA 70E AS TO THE AMOUNT OF DETAIL THAT IS REQUIRED TO BE ACQUIRED IN THE FIELD.
- C. FIELD DATA GATHERING SHALL BE UNDER THE DIRECT SUPERVISION AND CONTROL OF THE ENGINEER IN CHARGE OF PERFORMING THE STUDY, AND SHALL BE BY THE ENGINEER OR ITS REPRESENTATIVE WHO HOLDS NETA ETT LEVEL II CERTIFICATION OR NICET ELECTRICAL POWER TESTING LEVEL II CERTIFICATION.
- D. FOR NEW EQUIPMENT, USE CHARACTERISTICS SUBMITTED UNDER THE PROVISIONS OF ACTION SUBMITTALS AND INFORMATION SUBMITTALS FOR THIS PROJECT.

E. INCIDENT ENERGY AND FLASH PROTECTION BOUNDARY CALCULATIONS:

1. ARCING FAULT MAGNITUDE.
 2. PROTECTIVE DEVICE CLEARING TIME.
 3. DURATION OF ARC.
 4. ARC-FLASH BOUNDARY.
 5. WORKING DISTANCE.
 6. INCIDENT ENERGY.
 7. HAZARD RISK CATEGORY.
 8. RECOMMENDATIONS FOR ARC-FLASH ENERGY REDUCTION.
- F. HAZARD LABELS SHALL HAVE AN ORANGE HEADER WITH THE WORDING, "WARNING, ARC-FLASH HAZARD," AND SHALL INCLUDE THE FOLLOWING INFORMATION TAKEN DIRECTLY FROM THE ARC-FLASH HAZARD ANALYSIS:
1. LOCATION DESIGNATION.
 2. NOMINAL VOLTAGE.
 3. FLASH PROTECTION BOUNDARY.
 4. HAZARD RISK CATEGORY.
 5. INCIDENT ENERGY.
 6. WORKING DISTANCE.
 7. ENGINEERING REPORT NUMBER, REVISION NUMBER, AND ISSUE DATE.
- G. ARC FLASH HAZARD WARNING LABELS SHALL BE A 3.5-BY-5-INCH THERMAL TRANSFER LABEL OF HIGH-ADHESION POLYESTER FOR EACH WORK LOCATION INCLUDED IN THE ANALYSIS.
- H. LABELS SHALL BE MACHINE PRINTED, WITH NO FIELD-APPLIED MARKINGS.

Retain "Electrical Survey Data" Paragraph below if the arc-flash study is being performed independent of electrical design or on existing equipment. Coordinate requirements with Section 260572 "Overcurrent Protective Device Short-Circuit Study." Coordinate requirements with Section 260573 "Overcurrent Protective Device Coordination Study" if required. See Editing Instruction No. 4 in the Evaluations for data on NETA and NICET certification.

RECORD DOCUMENTS

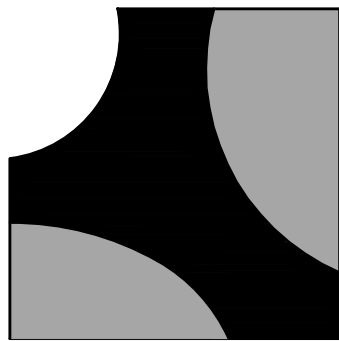
- A. DURING THE PROGRESS OF THE WORK, CONTRACTOR SHALL MAINTAIN A CURRENT (DAILY) AS-BUILT SET OF THE DRAWINGS AND SPECIFICATIONS, INDICATING THE LOCATION OF ALL WORK INSTALLED AT VARIANCE WITH SUCH CONTRACT DOCUMENTS INCLUDING, WITHOUT LIMITATION, WORK COVERED BY ADDENDA, FIELD WORK ORDERS, CHANGE ORDERS, AND ENGINEERS
- B. AT THE COMPLETION OF THE WORK, ENGINEER SHALL FURNISH CONTRACTOR WITH A COMPLETE SET OF THE LATEST REVISED RECORD DRAWINGS IN ELECTRONIC FORM, AND CONTRACTOR SHALL INDICATE THEREON ALL AS-BUILT CHANGES AND SUCH ADDITIONAL DETAILS NECESSARY OR APPROPRIATE TO PROVIDE A COMPLETE REFERENCE DOCUMENT FOR USE BY ENGINEER/OWNER. IF VARIATIONS AND DETAILS CANNOT BE SHOWN CLEARLY THEREON, THE CONTRACTOR SHALL PREPARE SUPPLEMENTAL DRAWINGS ADEQUATE TO IMPART THE INFORMATION. THESE ADDITIONAL DRAWINGS SHALL ALSO BE IN ELECTRONIC FORM. THE FOREGOING DRAWINGS COLLECTIVELY SHALL CONSTITUTE THE AS-BUILT DRAWINGS FOR THE WORK.
- C. ALL INDICATIONS ON "AS-BUILT" DRAWINGS SHALL BE EXECUTED IN A LEGIBLE MANNER AT CONTRACTOR'S COST, USING METHODS AND LEGEND PRESENTATIONS COMPATIBLE WITH THE OVERALL SCHEME OF THE RECORD DRAWINGS WITH RESPECT TO SCALE, DRAWING SHEET SIZES AND SEQUENTIAL INDEXING. ALL CHANGES SHALL BE MARKED CLEARLY IN RED AND CLOUDED.
- D. ENGINEER SHALL REVIEW CONTRACTOR'S "AS-BUILT" DRAWINGS AND NOTIFY CONTRACTOR OF OBSERVED DISCREPANCIES OR OMISSIONS. CONTRACTOR SHALL PROMPTLY CORRECT AND RESUBMIT REVISED DRAWINGS FOR ENGINEER REVIEW. COMPLETED "AS-BUILT" DRAWINGS SHALL BE DELIVERED TO OWNER THROUGH ARCHITECT.

COORDINATION WITH UTILITY COMPANIES

- A. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL COORDINATE THE WORK OF THIS CONTRACT WITH AUTHORIZED REPRESENTATIVES OF EACH SERVING UTILITY THAT WILL PROVIDE SERVICE TO THIS SITE, INCLUDING BUT NOT NECESSARILY LIMITED TO, ELECTRIC, TELEPHONE AND CABLE/SATELLITE TV SERVICE PROVIDERS.
- B. CONTRACTOR SHALL MEET WITH AUTHORIZED REPRESENTATIVES OF EACH SERVING UTILITY TO DISCUSS UTILITY COMPANY SCOPE OF WORK, CONTRACTOR SCOPE OF WORK, POINT OF SERVICE PICK-UP, DETAILS REGARDING SYSTEM INTERFACE, UTILITY COMPANY STANDARDS TO BE COMPLIED WITH, EMERGENCY GENERATOR CHARACTERISTICS, AUTOMATIC TRANSFER SWITCH CHARACTERISTICS, ETC.
- C. CONTRACTOR SHALL PREPARE MEETING NOTES FOR EACH MEETING TO DOCUMENT ITEMS DISCUSSED, AGREEMENTS REACHED, ACTION ITEMS ASSIGNED, ETC. SUBMIT MEETING MINUTES TO GENERAL CONTRACTOR AND ENGINEER OF RECORD.

COORDINATION WITH OTHER TRADES

- A. CONTRACTOR SHALL GIVE CAREFUL CONSIDERATION TO THE WORK OF OTHER TRADES ON THE PROJECT. ELECTRICAL WORK SHALL BE INSTALLED SO AS TO NOT CONFLICT WITH THE WORK OF OTHER TRADES.
- B. ANY WORK INSTALLED WITHOUT REGARD TO THE WORK OF OTHER TRADES WHICH MUST, IN THE OPINION OF THE OWNER OR ARCHITECT/ENGINEER, BE MOVED TO PERMIT THE INSTALLATION OF OTHER WORK, SHALL BE MOVED AND REPLACED AS A PART OF THIS WORK WITHOUT EXTRA CHARGE.
- C. SET ALL SLEEVES AND CUT AND PATCH ALL MISCELLANEOUS HOLES NECESSARY FOR THE CONVENIENT AND PROPER INSTALLATION OF THE WORK.
- D. CONFER WITH THE OTHER CONTRACTORS REGARDING THE LOCATION AND SIZE OF PIPES, EQUIPMENT, DUCTS, OPENINGS AND SPECIAL ARCHITECTURAL TREATMENTS IN ORDER THAT THERE MAY BE NO INTERFERENCES BETWEEN THE INSTALLATION OR THE PROGRESS OF THE WORK OF ANY CONTRACTOR ON THE PROJECT.
- E. CONTRACTOR SHALL OBTAIN AND REVIEW INSTALLATION MANUALS FOR EACH ITEM OF EQUIPMENT BEING PROVIDED BY OTHER TRADES OR THE OWNER THAT REQUIRES A POWER AND/OR CONTROL WIRING CONNECTION. OBTAIN MANUALS FROM THE MANUFACTURER PRIOR TO RECEIVING OR BEFORE ANY ELECTRICAL WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE ELECTRICAL DRAWINGS AND SPECIFICATIONS AND THE EQUIPMENT MANUALS PRIOR TO INSTALLATION OF THE WORK.
- F. ALL LINE VOLTAGE WIRING AND FINAL CONNECTIONS TO COMPLETE MECHANICAL SYSTEMS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- G. ALL ELECTRICAL CONDUIT, WIRE, AND CONNECTIONS RELATING TO MECHANICAL EQUIPMENT CONTROLS AND ALL WIRING ASSOCIATED WITH STARTER HOLDING COILS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR



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New Base Station #2 Facility for:
**Lincoln County
Ambulance District**
28 Water Court
Moscow Mills, Missouri 63362

DATE	ISSUE	BID & PERMIT SET
4-15-2022		



Darrell R Case
ENGINEER
MOW E-23303

PROJECT MANAGER: JE
DRAWN BY: CK

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
E5.0
ELECTRICAL

INSTALLING THE MECHANICAL EQUIPMENT UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

H. THE CONTRACTOR INSTALLING THE MECHANICAL EQUIPMENT SHALL BE RESPONSIBLE FOR PROVIDING MAGNETIC MOTOR STARTERS WHERE SUCH STARTERS ARE PART OF THE CONTROL PACKAGE OF THE EQUIPMENT SUPPLIED.

I. ALL OTHER STARTERS SHALL BE FURNISHED, INSTALLED AND CONNECTED BY THE ELECTRICAL CONTRACTOR. THE CONTRACTOR INSTALLING THE STARTERS THAT ARE PART OF A CONTROL PACKAGE SHALL COORDINATE STARTER REQUIREMENTS WITH THE ELECTRICAL SPECIFICATIONS.

J. ACCESS PANELS, IN WALLS OR CEILINGS, REQUIRED (I.E., AUTOMATIC OR MANUAL DAMPER, FIRE OR SMOKE DAMPER, COIL OR CONTROL INSTRUMENT MOUNTED IN A DUCT OR PIPE) SHALL BE PROVIDED BY THE RESPECTIVE CONTRACTOR. ACCESS PANELS ARE NOT REQUIRED IN AREAS WHERE THE CEILING SYSTEM IS LAY-IN TILE; HOWEVER, SUFFICIENT ACCESS SHALL BE AVAILABLE IN AND THROUGH THE CEILING SYSTEM TO ALLOW MAINTENANCE AND ADJUSTMENT OF DAMPERS, AND CLEANING OF COILS AS NECESSARY, OR A SUITABLE ACCESS PANEL SHALL BE PROVIDED FOR THAT PURPOSE. ACCESS PANELS SHALL BE MINIMUM 18 INCHES BY 18 INCHES WHEREVER POSSIBLE AND SHALL BE PROVIDED WITH FLUSH TRIM AND AN ALLEN-KEY OPERATED CAMLOCK FASTENER. PANELS SHALL BE MANUFACTURED BY KARP, MILCOR, BILCO OR NYSTROM.

K. PROVIDE ALL EXCAVATING, PUMPING, BACKFILLING AND COMPACTING AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF THE WORK OF THIS CONTRACT.

L. EQUIPMENT AND DEVICES THAT HAVE FACTORY PRIME COAT OR FINAL SURFACE FINISH SHALL BE REPLACED, REPAIRED OR REFINISHED IF DEFECTIVE OR DAMAGED DURING INSTALLATION.

M. ITEMS OF EQUIPMENT MAY BE SPECIFIED IN THE SINGULAR FORM, HOWEVER, PROVIDE AND INSTALL THE QUANTITY OF ITEMS OF EQUIPMENT AS REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.

N. ARRANGE ALL WORK SO A MINIMUM PERIOD OF INTERRUPTION OR OUTAGES WILL OCCUR IN THE TEMPORARY OR PERMANENT TRANSFER OF SERVICES AS REQUIRED FOR ALL ELECTRICAL REVISIONS. NOT LESS THAN 48 HOURS NOTICE TO THE USER/AGENCY/OWNER SHALL BE REQUIRED BEFORE APPROVAL WILL BE GRANTED FOR ANY DISRUPTION OF SERVICES. THE OUTAGE REQUEST SHALL INCLUDE THE EXTENT OF THE WORK TO BE DONE, LENGTH OF OUTAGE TIME REQUIRED AND THE TIME AT WHICH THE OUTAGE IS TO BEGIN. NO ALLOWANCE WILL BE MADE FOR EXTRA PAYMENT AS A RESULT OF SCHEDULING "OVERTIME" WORK NECESSARY TO PERFORM BEFORE OR AFTER NORMAL OR REGULAR WORKING HOURS TO ACCOMPLISH THE WORK INTENDED.

O. PROVIDE FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT FURNISHED/PROVIDED BY OTHERS, (HVAC EQUIPMENT, PLUMBING EQUIPMENT, "HEAD END" AND CONTROL EQUIPMENT FOR ALL VARIOUS LOW VOLTAGE SYSTEMS, ETC.

P. COORDINATE THE NEMA CONFIGURATION OF THE RECEPTACLE TO BE PROVIDED WITH THE NEMA PLUG CONFIGURATION OF THE CORRESPONDING ASSEMBLY TO BE INSTALLED. PROVIDE RECEPTACLES HAVING A NEMA CONFIGURATION THAT MATCHES THE NEMA CONFIGURATION OF THE PLUG ON THE EQUIPMENT.

Q. COORDINATE ELECTRICAL PANEL LOCATIONS WITH OTHER TRADES TO AVOID THE ROUTING OF PIPING OR DUCTWORK ABOVE THE ELECTRICAL PANELS.

R. PROVIDE FINAL COORDINATION OF AVAILABLE POWER (VOLTAGE/PHASE) WITH OTHER TRADES PRIOR TO THEIR ORDERING OF EQUIPMENT.

SAFETY

A. THE ENGINEER HAS NO CONTRACTUAL RESPONSIBILITY IN CONNECTION WITH JOB SITE SAFETY MEASURES OR PRECAUTIONS AS RELATED TO MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES.

B. CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SUCH SAFETY MEASURES AND SHALL CONSULT WITH THE LOCAL, STATE OR FEDERAL SAFETY INSPECTOR FOR INTERPRETATION WHENEVER IN DOUBT AS TO WHETHER SAFE CONDITIONS DO OR DO NOT EXIST, OR WHETHER THEY ARE OR ARE NOT IN COMPLIANCE WITH SAFETY REGULATIONS.

D. ALL MATERIALS INSTALLED WITHIN AIR HANDLING PLENUMS SHALL BE NON-COMBUSTIBLE AND SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723. ALL MATERIALS INSTALLED WITHIN PLENUM SPACES SHALL BE LISTED AND LABELED FOR SUCH APPLICATION.

E. PROTECT ALL WORK FROM DAMAGE AND PROTECT THE OWNER'S PROPERTY FROM DIRT, DAMAGE OR LOSS ARISING FROM THE CONTRACTOR'S WORK.

F. COMPLY WITH ALL APPLICABLE OSHA REQUIREMENT AND TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF WORKERS AND OWNER'S PERSONNEL.

G. PROTECT ALL NEW OPEN CONDUITS AND EQUIPMENT FROM CONSTRUCTION DIRT AND DUST. COVER, CAP OR PLUG OPEN ENDS OF CONDUIT. KEEP EQUIPMENT CLOSED OR COVER AND SEAL EQUIPMENT OPENINGS.

TEMPORARY CONSTRUCTION POWER AND LIGHTING

A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEMPORARY CONSTRUCTION POWER AND LIGHTING TO ALLOW ALL CONTRACTORS AND SUB-CONTRACTORS TO PERFORM THE WORK OF THEIR CONTRACTS.

B. PRIOR TO THE SUBMISSION OF A BID PROPOSAL, THE CONTRACTOR SHALL CONTACT THE GENERAL CONTRACTOR TO COORDINATE THE TYPE OF EQUIPMENT TO BE UTILIZED DURING THE WORK OF THIS CONTRACT. THE ELECTRICAL BID SHALL INCLUDE ALL MATERIAL AND LABOR COSTS ASSOCIATED WITH PROVIDING TEMPORARY CONSTRUCTION POWER AND LIGHTING SYSTEM THROUGHOUT THE PROJECT AREA FOR THE DURATION OF THE PROJECT.

C. PROVIDE TEMPORARY LIGHTING IN ALL WORK AREAS AS DIRECTED BY THE GENERAL CONTRACTOR. LAMPS FOR TEMPORARY LIGHTING SHALL BE MINIMUM 2,000 LUMENS AND SHALL BE MAINTAINED BY THE GC DURING THE ENTIRE CONSTRUCTION PERIOD.

D. PROVIDE TEMPORARY POWER DISTRIBUTION SUFFICIENT TO ACCOMMODATE THE TEMPORARY LIGHTING SYSTEM AND CONSTRUCTION OPERATIONS, INCLUDING THE USE OF POWER TOOLS (BUT NOT INCLUDING HEAVY-DUTY ELECTRIC UNITS, ELECTRIC HEATING UNITS AND START-UP OF SPECIFIED BUILDING EQUIPMENT THAT IS TO BE TESTED, STARTED, OR PLACED INTO USE PRIOR TO COMPLETION OF ITS PERMANENT POWER CONNECTIONS.

MATERIAL AND EQUIPMENT HANDLING AND STORAGE

A. COORDINATE THE DELIVERIES OF ELECTRICAL MATERIALS AND PRODUCTS WITH THE GENERAL CONTRACTOR.

B. COORDINATE THE SCHEDULING AND SEQUENCING OF THE WORK SO THAT STORAGE REQUIREMENTS AT THE PROJECT ARE MINIMIZED. IN GENERAL, DO NOT DELIVER INDIVIDUAL ITEMS OF EQUIPMENT TO THE PROJECT SUBSTANTIALLY AHEAD OF THE TIME OF INSTALLATION.

C. ALL MATERIALS SHALL BE COVERED PRIOR TO INSTALLATION AND PROTECTED FROM DAMAGE, EXTERIOR ELEMENTS, WATER AND MOISTURE INFILTRATION, ETC. UNTIL FINAL ACCEPTANCE.

D. COORDINATE THE MOVEMENT OF PERSONNEL AND THE TRANSPORTATION OF MATERIAL AND EQUIPMENT THROUGH THE BUILDING WITH THE GENERAL CONTRACTOR AND THE OWNER'S REPRESENTATIVE.

CONCRETE PADS FOR ELECTRICAL EQUIPMENT

A. ALL CONCRETE PADS FOR ALL INTERIOR AND EXTERIOR ELECTRICAL EQUIPMENT, AS NOTED ON THE DRAWINGS, SHALL BE PROVIDED AS A PART OF THE ELECTRICAL WORK.

B. PROVIDE ALL EXCAVATION, SOIL REMOVAL, FORM SITE, GRADING, COMPACTION, FORMS AND REINFORCING STEEL, CONCRETE FINISHING, FORM REMOVAL, BACKFILLING, FINISHED GRADING, ETC. AS REQUIRED FOR PAD CONSTRUCTION.

C. CONCRETE SHALL BE STEEL REINFORCED, 3,000 PSI.

D. CONCRETE PADS WITHIN THE BUILDING INTERIOR SHALL BE MINIMUM NOMINAL 4 INCH HIGH AND ANCHORED TO THE FLOOR WITH DOWELS.

E. EDGES OF CONCRETE PADS SHALL BE CHAMFERED APPROXIMATELY ONE (1) INCH TO PREVENT CHIPPING.

F. CONSTRUCT CONCRETE PADS FOR UTILITY COMPANY EQUIPMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH UTILITY COMPANY SPECIFICATIONS, REQUIREMENTS AND DETAILS. ADDITIONALLY, PROVIDE ALL CONDUIT STUB OUTS AND GROUNDING PROVISIONS AS REQUIRED BY UTILITY COMPANY.

G. CONSTRUCT CONCRETE PADS FOR ELECTRICAL EQUIPMENT SUCH AS EMERGENCY GENERATOR, ETC. TO A SIZE SIX (6) INCHES LARGER THAN THE EQUIPMENT TO BE INSTALLED ON THE PAD, ALL SIDES.

H. FINISHED GRADE AROUND EXTERIOR CONCRETE PADS SHALL BE SLOPED TO ACHIEVE POSITIVE WATER DRAINAGE AWAY FROM THE PAD.

SEQUENCING AND SCHEDULING

A. COORDINATE ELECTRICAL EQUIPMENT INSTALLATION WITH OTHER BUILDING COMPONENTS AND THE PROJECT PHASING PLAN.

B. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN BUILDING STRUCTURE DURING PROGRESS OF CONSTRUCTION TO ALLOW FOR ELECTRICAL INSTALLATIONS.

C. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLING ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK.

D. COORDINATE CONNECTING ELECTRICAL SERVICE TO COMPONENTS FURNISHED UNDER OTHER SECTIONS OR BY OTHER DISCIPLINES/TRADES.

E. COORDINATE REQUIREMENTS FOR ACCESS PANELS AND DOORS WHERE ELECTRICAL ITEMS REQUIRING ACCESS ARE CONCEALED BY FINISHED SURFACES.

MAINTENANCE OF WORK AREAS

A. DURING THE PROJECT, THIS CONTRACTOR SHALL MAINTAIN HIS WORK AREA IN AN ORGANIZED MANNER, SHALL NOT ALLOW DEBRIS TO ACCUMULATE, AND SHALL STORE EQUIPMENT, TOOLS AND SUPPLIES IN A MANNER WHICH SHALL NOT CAUSE INTERFERENCE WITH THE ACTIVITIES OF OTHERS ENGAGED ON THE PROJECT.

B. OPEN ENDS OF CONDUIT, EQUIPMENT AND SPECIALTIES SHALL BE KEPT PROPERLY CLOSED DURING CONSTRUCTION AND INSTALLATION SO AS TO AVOID CONTAMINATION.

UTILITY COMPANY METERING EQUIPMENT

A. PROVIDE ALL EQUIPMENT REQUIRED FOR ELECTRICITY METERING BY THE LOCAL SERVING UTILITY COMPANY.

B. ELECTRICAL SERVICE CONNECTIONS: COORDINATE WITH UTILITY COMPANIES AND COMPONENTS THEY FURNISH AS FOLLOWS:

- COMPLY WITH REQUIREMENTS OF UTILITIES PROVIDING ELECTRICAL POWER SERVICES.
- COORDINATE INSTALLATION AND CONNECTION OF UTILITIES AND SERVICES, INCLUDING PROVISION FOR

ELECTRICITY-METERING COMPONENTS.

C. METERS SHALL BE FURNISHED BY UTILITY COMPANY; INSTALLED BY ELECTRICAL CONTRACTOR.

RETAIN AND REVISE THE REMAINDER OF THIS ARTICLE TO REFLECT UTILITY COMPANY'S REQUIREMENTS FOR EQUIPMENT TO BE PROVIDED BY CONTRACTOR.

D. CURRENT-TRANSFORMER CABINETS: PROVIDE CURRENT TRANSFORMER CABINETS THAT COMPLY WITH REQUIREMENTS OF ELECTRICAL-POWER UTILITY COMPANY.

RETAIN ONE OR BOTH OF FIRST TWO PARAGRAPHS BELOW. RETAIN BOTH IF OWNER'S METER IS NOT IN A MODULAR METER CENTER.

E. METER SOCKETS: COMPLY WITH REQUIREMENTS OF ELECTRICAL-POWER UTILITY COMPANY.

F. INSTALL ALL CONDUITS AND EQUIPMENT ACCORDING TO UTILITY COMPANY'S WRITTEN REQUIREMENTS, PROVIDE EMPTY CONDUITS FOR METERING LEADS AND EXTEND GROUNDING CONNECTIONS AS REQUIRED BY UTILITY COMPANY.

FIRE STOPPING

A. PROVIDE FIRE STOPPING FOR PENETRATIONS BY CONDUIT OR CABLES AND OTHER EQUIPMENT THROUGH FIRE-RATED VERTICAL BARRIERS (WALLS AND PARTITIONS), HORIZONTAL BARRIERS (FLOOR/CEILING ASSEMBLIES) AND VERTICAL SHAFT WALLS AND PARTITIONS.

B. FIRESTOP SYSTEM INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF ASTM E 814 OR UL 1479 TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO OR GREATER THAN THAT OF THE CONSTRUCTION BEING PENETRATED. INSTALL FIRESTOP SYSTEM COMPONENTS IN STRICT ACCORDANCE WITH THE UL FIRE RESISTANCE DIRECTORY, THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND THE FIRESTOP SYSTEM MANUFACTURERS SPECIFIED REQUIREMENTS.

C. ONLY TESTED FIRESTOP SYSTEMS BY "3M", "MILIT", OR APPROVED EQUAL SHALL BE USED. REFER TO ARCHITECTURAL DRAWINGS FOR ASSEMBLY RATING.

SEISMIC RESTRAINT

A. PROVIDE SEISMIC RESTRAINT FOR ELECTRICAL WORK AND SYSTEMS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE APPLICABLE BUILDING CODE AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

B. SUBMIT ALL SEISMIC DETAILS TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. PROVIDE ENGINEERED SEISMIC-RESTRAINT DRAWINGS THAT ARE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS BEING CONSTRUCTED.

C. SUBMIT COPIES OF ALL DETAILS, CALCULATIONS AND DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION TO THE ARCHITECT/ENGINEER AND TO THE AUTHORITY HAVING JURISDICTION FOR REVIEW AND APPROVAL.

HOISTING

A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE HOISTING OF ALL MATERIALS AND EQUIPMENT FURNISHED OR INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS, IN ACCORDANCE WITH ALL CITY, STATE AND FEDERAL RULES AND REGULATIONS.

ACOUSTICS AND VIBRATION

A. ALL ITEMS WHICH ARE A SOURCE OF NOISE GENERATION AND/OR MECHANICAL VIBRATION SHALL BE INSTALLED WITH PROPER ATTENUATION PROVISIONS INCLUDING ABSORBERS, ISOLATORS, OR MUFFLERS AS REQUIRED TO PREVENT OBJECTIONABLE NOISES AND VIBRATIONS.

EXCAVATION AND BACKFILLING

A. PROVIDE ALL EXCAVATION REQUIRED FOR INSTALLATION OF THE ELECTRICAL WORK AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. EXCESS EXCAVATION BELOW THE REQUIRED LEVEL SHALL BE BACKFILLED WITH CLEAN EARTH AND THOROUGHLY TAMPED.

B. ELECTRICAL WORK INSTALLED WITHIN EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE PROPER INSPECTION AUTHORITY BEFORE BACKFILLING.

CUTTING & PATCHING

A. CORE-DRILL OR SAW-CUT FLOORS, WALLS, ROOF, ETC., AS REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL WORK. STRUCTURAL COMPONENTS, INCLUDING BUT NOT NECESSARILY LIMITED TO, COLUMNS, BEAMS, GIRDERS, PLATES OR JOISTS SHALL NOT BE CUT.

B. PRIOR TO PERFORMING ANY CUTTING OPERATIONS, PERFORM NON-DESTRUCTIVE TESTING TO VERIFY THE LOCATION OF HIDDEN STRUCTURAL COMPONENTS, CONDUITS OR PIPING. NOTIFY THE ARCHITECT/ENGINEER OF ANY IMPEDIMENTS AND OR DISCREPANCIES THAT ARE DISCOVERED DURING THE NON-DESTRUCTIVE TESTING.

C. PATCH OR SURROUNDING AREAS FLUSH WITH ADJACENT SURFACES AND PREPARE TO RECEIVE SPECIFIED FINISHES. PATCH AND REPAIR ROOF TO MATCH EXISTING ROOFING SYSTEM. ALL ROOF WORK SHALL BE PERFORMED TO MEET THE WARRANTY REQUIREMENTS OF THE EXISTING ROOFING SYSTEM. WORK SHALL BE PERFORMED BY TECHNICIANS CERTIFIED BY THE MANUFACTURER OF THE EXISTING OR NEW ROOFING SYSTEM, AS APPLICABLE.

D. COORDINATE REQUIRED OPENINGS AND PENETRATIONS WITH THE GENERAL CONTRACTOR AND THE OTHER TRADES.

GROUNDING

A. PROVIDE ELECTRICAL SERVICE, SYSTEM AND EQUIPMENT GROUNDING IN ACCORDANCE WITH APPLICABLE NEC REQUIREMENTS. REFER TO GROUNDING DETAIL ON DRAWINGS FOR ADDITIONAL INFORMATION.

B. THE EQUIPMENT GROUNDING SYSTEM SHALL CONSIST OF A CONTINUOUS CONDUIT INSTALLATION AND A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR.

C. PROVIDE A GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS CONTAINING FEEDERS AND BRANCH CIRCUITS.

D. EQUIPMENT GROUNDING SHALL USE ONLY APPROVED GROUNDING CLAMPS AND CONNECTORS, AS MANUFACTURED BY PENN-UNION, BURNDY, OR O-ZIGDEY.

E. PROVIDE A #6 AWG GREEN INSULATED GROUNDING CONDUCTOR FROM THE GROUND BAR AT TELEPHONE TERMINAL BOARD TO THE ELECTRICAL SERVICE GROUND.

F. PROVIDE A COPPER GROUNDING BAR AT THE TELEPHONE TERMINAL BACKBOARD. GROUNDING BAR SHALL BE 1/4 INCH X 4 INCHES X 12 INCHES, PRE-DRILLED FOR CONDUCTOR TERMINATIONS, WITH NON-METALLIC STAND-OFF BRACKETS WITH INSULATORS. CHATSWORTH PRODUCTS 10622-012 OR APPROVED EQUAL.

EQUIPMENT INSTALLATION

A. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION AND OPERATIONS MANUAL, IN ACCORDANCE WITH INDUSTRY STANDARDS AND IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND REGULATIONS.

B. PROVIDE ALL MOTORIZED EQUIPMENT WITH VIBRATION ISOLATION MOUNTING AND FLEXIBLE POWER CONNECTIONS.

C. ALL EQUIPMENT MOUNTED FROM BOLTED CONNECTIONS SHALL HAVE DOUBLE NUTS AT ATTACHMENT TO STRUCTURE AND HANGER, NO EXCEPTIONS.

EQUIPMENT IDENTIFICATION

A. PROVIDE EQUIPMENT LABELS ON PANELBOARDS, DISCONNECTS, TRANSFORMERS, CONTROLS, ETC. THAT COMPLIES WITH THE REQUIREMENTS OF NEC ARTICLE 408.4. EQUIPMENT LABELS SHALL BE ENGRAVED PHENOLIC RESIN NAMEPLATES ATTACHED TO CABINET OR ENCLOSURE WITH MECHANICAL FASTENERS. SELF-ADHESIVE NAMEPLATES ARE NOT ACCEPTABLE. LETTERING SHALL BE 1/2" HIGH, BLACK TEXT ON WHITE BACKGROUND.

B. PROVIDE CIRCUIT DIRECTORIES WITHIN PANELS THAT COMPLY WITH THE REQUIREMENTS OF NEC ARTICLE 408.4.

C. UTILIZE FINAL, OWNER ASSIGNED ROOM NAMES AND NUMBERS TO IDENTIFY SPACES WITHIN THE CIRCUIT DIRECTORIES.

D. CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN OR COMPUTER GENERATED. HANDWRITTEN CIRCUIT DIRECTORIES ARE NOT ACCEPTABLE.

E. THE COVERS OF ALL OUTLET AND JUNCTION BOXES INSTALLED ABOVE CEILINGS AND INSTALLED EXPOSED IN UNFINISHED SPACES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL, VOLTAGE, PHASE AND CIRCUIT NUMBERS CONTAINED WITHIN THE BOX. LABEL SHALL BE LEGIBLY HANDWRITTEN WITH BLACK, FELT TIP PERMANENT MARKER.

F. THE COVER PLATES OF ALL WIRING DEVICES SHALL BE LABELED TO IDENTIFY THE SERVING PANEL AND THE CIRCUITS SERVING THE DEVICE. LABELS SHALL BE MACHINE PRINTED, BLACK TEXT ON A CLEAR, SELF ADHESIVE LABEL.

G. ENGRAVED NAMEPLATES INSTALLED ON ELECTRICAL EQUIPMENT ITEMS SHALL BE ENGRAVED TO IDENTIFY THE SERVING PANEL, VOLTAGE, PHASE AND THE IDENTIFICATION TAG OF THE LOAD SERVED.

CONDUIT AND FITTINGS

A. ALL INTERIOR AND EXTERIOR CONDUIT SHALL BE INSTALLED PARALLEL WITH OR AT RIGHT ANGLES TO WALLS, BEAMS, OR STRUCTURAL ELEMENTS. CONDUIT SHALL BE INSTALLED IN A PATH AS DIRECT AS POSSIBLE. AVOID UNNECESSARY OFFSETS AND MAXIMIZE HEADROOM.

B. ALL INTERIOR AND EXTERIOR CONDUITS SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH NEC REQUIREMENTS.

C. MINIMUM CONDUIT SIZE SHALL BE 3/4" TRADE SIZE. SWITCH LEGS SHALL BE 1/2" TRADE SIZE.

D. WITHIN INTERIOR FINISHED AREAS, ALL CONDUIT SHALL BE INSTALLED CONCEALED WITHIN WALLS AND ABOVE CEILINGS.

E. CONDUIT INSTALLED WITHIN THE INTERIOR OF THE BUILDING SHALL BE GALVANIZED ELECTRICAL METALLIC TUBING (EMT). CONDUIT FITTINGS FOR INDOOR EMT CONDUITS SHALL BE CAST METAL, SET SCREW TYPE.

F. EMT SHALL BE USED FOR INTERIOR FEEDERS AND BRANCH CIRCUITS INSTALLED CONCEALED ABOVE CEILINGS, CONCEALED WITHIN INTERIOR PARTITIONS AND WHEN INSTALLED EXPOSED IN UNFINISHED SPACES.

G. CONDUITS INSTALLED EXPOSED ON THE EXTERIOR OF THE BUILDING SHALL BE GALVANIZED RIGID STEEL. FITTINGS SHALL BE THREADED TYPE.

H. CONDUITS INSTALLED UNDER SLAB ON GRADE CONSTRUCTION SHALL BE RIGID NON-METALLIC (RNC), SCHEDULE 40 PVC. RNC SHALL COMPLY WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED. FITTINGS FOR RIGID NON-METALLIC CONDUIT SHALL COMPLY WITH NEMA TC 3. MATCH TO CONDUIT TYPE AND MATERIAL. PROVIDE GALVANIZED RIGID STEEL ELBOWS WHERE SCHEDULE 40 PVC CONDUITS TURN UP FROM BELOW FLOOR SLAB AND EXTEND UP TO ABOVE THE FLOOR SLAB.

I. CONDUITS INSTALLED DIRECT BURIED WITHIN GRADE SHALL BE RIGID NON-METALLIC (RNC), SCHEDULE 40 PVC. CONDUITS INSTALLED UNDER VEHICULAR DRIVES SHALL BE (RNC), SCHEDULE 80. RNC SHALL COMPLY WITH NEMA TC 2 AND UL 651 UNLESS OTHERWISE INDICATED. FITTINGS FOR RIGID NON-METALLIC CONDUIT SHALL COMPLY WITH NEMA TC 3. MATCH TO CONDUIT TYPE AND MATERIAL. PROVIDE GALVANIZED RIGID STEEL ELBOWS WHERE PVC CONDUITS TURN UP FROM BELOW FLOOR SLAB AND EXTEND UP TO ABOVE THE FLOOR SLAB.

J. CONDUIT BENDS FOR INTERIOR POWER AND LIGHTING CIRCUITS SHALL NOT BE LESS THAN STANDARD RADIUS BENDS.

K. CONDUIT BENDS FOR FEEDERS, TELEPHONE, DATA AND COMMUNICATION WIRING SYSTEMS SHALL NOT BE LESS THAN INDUSTRY STANDARD LONG RADIUS BENDS.

L. PROVIDE CONDUIT EXPANSION FITTINGS IN ALL CONDUIT RUNS THAT EXTEND ACROSS BUILDING EXPANSION JOINTS AND WHERE MOVEMENT MAY BE ENCOUNTERED.

M. CONDUIT SHALL BE SUPPORTED FROM STRUCTURE ONLY.

N. CONDUIT SHALL BE INSTALLED AS TO BE ACCESSIBLE FOR REPLACEMENT AND MAINTENANCE.

O. SCHEDULE 40 PVC CONDUIT SHALL ONLY BE USED BELOW GRADE.

P. EXPOSED METALLIC CONDUITS THAT REQUIRE PAINTING SHALL BE PAINTED BY THE GENERAL CONTRACTOR.

Q. ALL PENETRATIONS REQUIRED THROUGH NEW FLOORS AND MASONRY WALLS SHALL BE CORE DRILLED.

R. PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO VIBRATING EQUIPMENT. MAXIMUM CONDUIT LENGTH SHALL BE 36 INCHES.

S. PROVIDE LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR CONNECTIONS TO VIBRATING EQUIPMENT IN WET OR OUTDOOR LOCATIONS. MAXIMUM CONDUIT LENGTH SHALL BE 36 INCHES.

T. PROVIDE FLEXIBLE METAL CONDUIT FOR FINAL CONNECTIONS TO RECESSES LIGHT FIXTURES (FIXTURE WHIPS). MAXIMUM CONDUIT LENGTH SHALL BE 72 INCHES.

U. ALL UNDERGROUND CONDUITS INSTALLED BEYOND THE BUILDING OUTLINE SHALL HAVE A WARNING TAPE INSTALLED WITHIN THE TRENCH. TAPE SHALL IDENTIFY THE TYPE OF SERVICE WITHIN THE TRENCH.

V. ACCEPTABLE MANUFACTURERS FOR GALVANIZED RIGID CONDUIT, EMT, FLEXIBLE METAL CONDUITS AND LIQUID-TIGHT FLEXIBLE METAL CONDUITS SHALL BE ALLIED, REPUBLIC, WHEATLAND, ELECTRI-FLEX AND ANACONDA.

W. ACCEPTABLE MANUFACTURERS FOR METAL CONDUIT FITTINGS SHALL BE THOMAS AND BETTS OR APPROVED EQUAL.

X. ACCEPTABLE MANUFACTURERS FOR RIGID NON-METALLIC CONDUIT AND ASSOCIATED FITTINGS AND ACCESSORIES: CARLON, CERTANTEED, CANTEX OR APPROVED EQUAL.

CONDUCTORS

A. ALL CONDUCTORS SHALL BE SOFT DRAWN, ANNEALED COPPER, #12 AWG MINIMUM.

B. CONDUCTORS #12 AND #10 AWG SHALL BE SOLID; #8 AWG AND LARGER SHALL BE STRANDED.

C. THE USE OF ALUMINUM CONDUCTORS IS NOT ACCEPTABLE.

D. SECONDARY SERVICE ENTRANCE: TYPE THHN/THWN, SINGLE CONDUCTORS IN CONDUIT.

E. EXTERIOR FEEDERS: TYPE THHN/THWN, SINGLE CONDUCTORS IN CONDUIT.

F. CONDUCTORS FROM POWER DISTRIBUTION EQUIPMENT TO LINE SIDE OF VFD: TYPE THHN/THWN, SINGLE CONDUCTORS IN CONDUIT.

G. CONDUCTORS FROM LOAD SIDE OF VFD TO ELECTRICAL CONNECTION POINT ON MOTOR - VFD MOTOR CABLE AS MANUFACTURED BY BELDEN.

H. EXPOSED, INTERIOR FEEDERS: TYPE THN/THWN, SINGLE CONDUCTORS IN CONDUIT.

I. FEEDERS INSTALLED CONCEALED IN CEILINGS, WALLS, PARTITIONS: TYPE THN/THWN, SINGLE CONDUCTORS IN CONDUIT.

J. FEEDERS INSTALLED CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE AND UNDERGROUND: TYPE THHN/THWN, SINGLE CONDUCTORS IN SCHEDULE 40 PVC CONDUIT.

K. EXPOSED, INTERIOR, BRANCH CIRCUITS: TYPE THHN/THWN, SINGLE CONDUCTORS IN CONDUIT.

L. BRANCH CIRCUITS CONCEALED IN NEW CEILINGS, WALLS, AND PARTITIONS: TYPE THN/THWN, SINGLE CONDUCTORS IN CONDUIT.

M. BRANCH CIRCUITS CONCEALED BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THN/THWN, SINGLE CONDUCTORS IN CONDUIT.

N. CONTINUITY: ALL CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET.

O. ACCEPTABLE MANUFACTURERS FOR CONDUCTORS: GENERAL CABLE COMPANY, CAROL, ANACONDA, ROME, SOUTHWIRE.

P. CLASS 1 CONTROL CIRCUITS: TYPE THHN/THWN, IN CONDUIT.

Q. CLASS 2 CONTROL CIRCUITS: POWER-LIMITED PLENUM RATED CABLE, CONCEALED IN BUILDING FINISHES.

R. THE USE OF NON-METALLIC-SHEATHED CABLE, TYPE NM IS NOT ACCEPTABLE.

S. THE USE OF MC CABLE IS APPROVED FOR USE ONLY WHERE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. ALL CONDUCTORS WITHIN MC CABLE SHALL BE COPPER, #12 AWG MINIMUM. ALL MC CABLE SHALL BE PROVIDED WITH AN INSULATED EQUIPMENT GROUND CONDUCTOR. EVEN WHEN ITS USE IS PERMITTED BY THE AUTHORITY HAVING JURISDICTION, METAL CLAD CABLE IS NOT ACCEPTABLE FOR BRANCH CIRCUIT HOME RUNS TO PANELBOARDS AND DEDICATED BRANCH CIRCUITS.

T. WIRE CONNECTORS SHALL BE EQUAL TO SCOTCH LOCK FOR #8 AWG AND SMALLER, THOMAS AND BETTS LOCK-TITE FOR #6 AND LARGER.

U. PROVIDE #10 AWG CONDUCTORS FOR BRANCH CIRCUITS HAVING A CONDUCTOR LENGTH LONGER THAN 75 FEET.

V. ACCEPTABLE MANUFACTURERS FOR CONDUCTORS AND MC CABLE: GENERAL CABLE COMPANY, CAROL, ANACONDA, ROME, SOUTHWIRE OR APPROVED EQUAL.

CONDUCTOR COLOR CODING

A. PROVIDE COLOR CODING SYSTEM AS LISTED BELOW FOR ALL FEEDERS AND BRANCH CIRCUITS AND USED AS A BASIS FOR BALANCING AND LOAD ON PANELS.

B. COLOR CODING FOR CONDUCTOR #12 AWG THROUGH #6 AWG SHALL CONSIST OF COLOR CODED THERMOPLASTIC INSULATION OF THE COLORS SPECIFIED HEREIN.

C. COLOR CODING FOR CONDUCTORS #8 AWG AND LARGER SHALL BE FIELD APPLIED SELF ADHESIVE TAPE OF THE COLOR SPECIFIED HEREIN FOR THE PARTICULAR PHASE. THE LAST TWO WRAPS AROUND THE CONDUCTORS SHALL BE INSTALLED WITHOUT TENSION TO PREVENT UNWRAPPING.

D. 120/240V: PHASE A-BLACK, PHASE B-RED, NEUTRAL-WHITE, EQUIPMENT GROUND-GREEN

BOXES AND FITTINGS

A. ALL OUTLET BOXES AND JUNCTION BOXES SHALL BE UL LISTED AND LABELED FOR USE IN SPACE THEY OCCUPY AND THE PURPOSE THEY SERVE.

B. SHEET METAL OUTLET AND DEVICE BOXES FOR DRY, INTERIOR APPLICATIONS: COMPLY WITH NEMA OS 1 AND UL 514A.

IN "CAST-METAL OUTLET AND DEVICE BOXES" PARAGRAPH BELOW, ALUMINUM BOXES ARE SUITABLE FOR USE WITH STEEL RACEWAYS IN MOST ENVIRONMENTS. TYPE FD IS A DEVICE BOX WITH EXTRA DEPTH. MANY OTHER CONFIGURATIONS ARE AVAILABLE.

C. CAST-METAL OUTLET AND DEVICE BOXES FOR EXTERIOR APPLICATIONS: COMPLY WITH NEMA FB 1, FERROUS ALLOY, TYPE FS OR FD, WITH GASKETED COVER.

D. OUTLET BOXES INSTALLED WITHIN FIRE RATED ASSEMBLIES SHALL HAVE A FIRE RATING EQUAL TO OR GREATER THAN THE RATING OF THE WALL IN WHICH IT IS INSTALLED.

E. WHEN INSTALLING OUTLET BOXES IN FIRE RATED ASSEMBLIES, NO TWO OUTLET BOXES SHALL BE INSTALLED IN THE SAME CAVITY BETWEEN WALL STUDS. THIS INCLUDES THE OUTLETS ON THE OTHER SIDE OF THE WALL. ALL BOXES SHALL HAVE MORE THAN 24 INCHES OF HORIZONTAL SPACING BETWEEN OUTLETS ON EITHER SIDE OF THE FIRE RATED WALL. WITHIN FIRE RATED ASSEMBLIES HAVING STUDS AT 24" OC, OUTLETBOXES SHALL BE PLACED AT LEAST ONE STUD CAVITY AWAY (BOTH SIDES OF WALL). WITHIN FIRE RATED ASSEMBLIES HAVING STUDS AT 16", OUTLET BOXES SHALL BE PLACED APPROXIMATELY TWO STUD CAVITIES AWAY (BOTH SIDES OF WALL).

F. OUTLET BOXES SHALL BE 4 INCHES SQUARE BY 2 1/8 INCHES DEEP, EXCEPT FOR 2" PARTITIONS SHALL BE AT LEAST 1-1/2" DEEP.

G. OUTLET BOXES FOR VOICE AND DATA DEVICES SHALL BE 4 11/16 INCHES SQUARE BY 2 1/8 INCHES DEEP.

H. OUTLET BOXES FOR FIRE ALARM SYSTEM DEVICES SHALL BE AS REQUIRED BY THE DEVICE TO BE INSTALLED. COORDINATE BOX REQUIREMENTS FOR FIRE ALARM SYSTEM DEVICES WITH FIRE ALARM SYSTEM VENDOR/INSTALLER.

I. ALL PULLBOXES SHALL BE CONSTRUCTED OF GALVANIZED STEEL, OF METAL GAUGE AND PHYSICAL SIZE AS REQUIRED BY THE N.E.C. FOR THE NUMBER AND SIZE OF CONDUITS AND CONDUCTORS ASSOCIATED WITH THE PULLBOX.

J. FIXTURE OUTLET BOXES INIOR ON CEILINGS SHALL NOT BE LESS THAN 1-1/2" DEEP OR LESS THAN 4" SQUARE. ALL OUTLET BOXES INTENDED TO SUPPORT FIXTURES SHALL BE EQUIPPED WITH 3/8" FIXTURE STUDS FASTENED THROUGH THE BOTTOM OF THE BOX WITH FOUR BOLTS.

K. ACCEPTABLE MANUFACTURERS FOR BOXES: APPLETON, STEEL CITY, RACO OR APPROVED EQUAL.

PANELBOARDS

GENERAL FIRE PROTECTION NOTES

1.

THE FIRE PROTECTION WORK SHALL BE "DESIGN/BUILD". THE FIRE PROTECTION CONTRACTOR (FPC) SHALL PROVIDE A COMPLETE FIRE PROTECTION INSTALLATION FOR THE SPACES SHOWN. PROVIDE ENGINEERED DRAWINGS SIGNED AND SEALED BY A MISSOURI LICENSED PROFESSIONAL ENGINEER.
2.

THE FPC SHALL PROCURE AND PAY FOR ALL REQUIRED PERMITS, TESTS, INSPECTIONS, ETC.
3.

PROVIDE FIRE PROTECTION SYSTEM COMPLETE PER THE REQUIREMENTS OF THE OWNER'S FIRE INSURANCE UNDERWRITER, ALL APPLICABLE CODES, AND IN STRICT ACCORDANCE WITH ALL AHJs.
4.

FPC SHALL PERFORM FLOW TEST AND DETERMINING AVAILABLE WATER PRESSURE AT SITE.
5.

ALL OF THE FIRE PROTECTION WORK IS NOT NECESSARILY SHOWN OR NOTED ON THESE DRAWINGS. THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY ALL EXISTING CONDITIONS RELATED TO THEIR WORK BEFORE BIDDING. THOSE ITEMS NOT SHOWN OR NOTED BUT WHICH ARE DEEMED NECESSARY FOR REMOVAL OR RELOCATION BY OWNER'S REPRESENTATIVE SHALL BE PART OF THIS CONTRACT.
6.

FPC SHALL REVIEW ALL SCHEDULING REQUIREMENTS BEFORE SUBMITTING BID. SUBMISSION OF PROPOSAL SHALL BE CONSIDERED EVIDENCE THAT THE CONTRACTOR HAS VISITED THE SITE. NO EXTRA PAYMENTS WILL BE ALLOWED THIS CONTRACTOR'S CLAIMS FOR EXTRA WORK MADE NECESSARY BY FPC'S FAILURE TO VISIT THE SITE.
7.

INSTALLATION SHALL NOT EXPOSE ANY WET PIPE TO FREEZING CONDITIONS.
8.

UNLESS NOTED OTHERWISE, ALL EQUIPMENT AND PIPING SHALL BE CONCEALED.
9.

INITIAL DESIGN OF FIRE PROTECTION SYSTEM SHALL INCLUDE MEETING AND COORDINATING WITH ALL OTHER TRADES AND G.C. SPRINKLER PIPE ROUTES, MOUNTING HEIGHTS, AND EQUIPMENT SHALL BE FULLY COORDINATED TO AVOID ALL CONFLICTS. SUBMISSION OF FIRE PROTECTION SHOP DRAWINGS SHALL REFLECT THIS COORDINATION.
10.

THE PROCEDURES USED SHALL PROVIDE FOR THE SAFE CONDUCT OF THE WORK, CAREFUL DISPOSITION AND INSTALLATION OF ALL MATERIALS, PROTECTION OF PROPERTY AND PERSONNEL, AND COORDINATION WITH OTHER WORK IN PROGRESS.
11.

DURING CONSTRUCTION OPERATIONS, ALL PERSONS AND PROPERTY SHALL BE PROTECTED. THE WORK SHALL PROCEED IN SUCH A MANNER SO AS TO MINIMIZE ANY SPREAD OF DEBRIS AND FLYING PARTICLES, AND SO THAT THE EFFECTS OF THE CONSTRUCTION DO NOT INTERFERE WITH OTHER WORK IN PROGRESS.
12.

REFER TO ARCHITECT'S PLANS FOR ALL CEILING HEIGHTS.
13.

ALL PIPING AND HEADS SHALL BE INSTALLED PER LATEST EDITION OF NFPA 13. HEAD SPACING SHALL BE BASED UPON THE APPLICABLE HAZARD GROUP.
14.

FPC SHALL PREPARE AND SUBMIT HYDRAULIC CALCULATION AND SHOP DRAWINGS. SHOP DRAWINGS SHALL INDICATE CALCULATION REFERENCE POINTS (NODES). SUBMIT SHOP DRAWINGS TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
15.

COORDINATE LOCATION OF ALL NEW SPRINKLER HEADS WITH CEILING AND LIGHTING LAYOUT. REPORT ANY DISCREPANCIES TO THE ENGINEER/ARCHITECT FOR CLARIFICATION. LOCATE SPRINKLER HEADS CENTERED IN CEILING TILES AND SYMMETRICAL. FINAL SPRINKLER HEAD LOCATIONS ARE SUBJECT TO (OWNER'S) APPROVAL. (OWNER) HEAD LOCATIONS MAY EXCEED NFPA REQUIREMENTS.
16.

PROVIDE ACCESS TO AND CEILING-MOUNTED LABELS FOR ALL ZONE VALVES LOCATED OTHER THAN IN THE SPRINKLER CLOSET.
17.

COORDINATE SPRINKLER PIPING INSTALLATION SO THAT THE PIPING DOES NOT HINDER ACCESS TO ANY NEW OR EXISTING DEVICES, JUNCTION BOXES, EQUIPMENT, ETC.
18.

ALL SPRINKLER LINES PASSING THROUGH FIRE RATED WALLS (SEE ARCHITECTURAL PLANS FOR EXACT EXTENT OF NEW RATED WALLS) SHALL BE SLEEVED AND SHALL HAVE THEIR PENETRATIONS THROUGH SUCH WALLS FIRE STOPPED WITH AN APPROVED PENETRATION SEALING SYSTEM EQUAL TO 3M CP-25 CAULKING IN A DEPTH AS REQUIRED TO MEET THE RESPECTIVE HOUR RATING OF THE WALL.
19.

SPRINKLER CONTRACTOR SHALL INSTALL ALL NEW UPRIGHT SPRINKLER HEADS ON MINIMUM 1" DIAMETER SPRIGS.
20.

PIPING 2" & SMALLER SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH STANDARD WEIGHT BLACK CAST OR DUCTILE IRON THREADED FITTINGS.
21.

PIPE 2½" & LARGER SHALL BE SCHEDULE 10 GALVANIZED STEEL WITH ROLL GROOVED JOINTS.
22.

ARM OVERS EXCEEDING 1'-0" LENGTH SHALL BE PROVIDED WITH PIPE HANGER.
23.

PIPE HANGERS AT THE END OF BRANCH LINES SHALL BE PROVIDED WITH AN APPROVED VERTICAL RESTRAINT.
24.

ALL PIPING SHALL BE SUPPORTED FROM THE STRUCTURE. DO NOT SUPPORT PIPE FROM ROOF OR FLOOR DECK. THERE SHALL BE NO EXCEPTIONS TO THIS. ANY HANGERS ATTACHED TO BAR JOISTS SHALL BE ATTACHED TO THE JOIST BOTTOM CHORD WITHIN 6" MAXIMUM DISTANCE FROM THE CHORD POINT OF THE JOIST.
25.

PROVIDE LATERAL AND LONGITUDINAL SEISMIC RESTRAINTS FOR SPRINKLER SYSTEM, AS REQUIRED. REFER TO ARCHITECTURAL PLANS FOR BUILDING SEISMIC CLASSIFICATION. IF REQUIRED BY AHJ, PROVIDE SEISMIC RESTRAINT DETAILS SIGNED AND SEALED BY A PROFESSIONAL ENGINEERING LICENSED IN THE JURISDICTION.
26.

AT PROJECT COMPLETION, PROVIDE SIGNED CERTIFICATE OF COMPLETION, SUBMIT COPIES TO OWNER'S REPRESENTATIVE, INSURANCE REPRESENTATIVE, AND PROJECT OFFICE.

FIRE PROTECTION SYSTEM SPECIFICATION AND NOTES

WET-PIPE SPRINKLER SYSTEM: AUTOMATIC SPRINKLERS ARE ATTACHED TO PIPING CONTAINING WATER AND THAT IS CONNECTED TO WATER SUPPLY THROUGH ALARM VALVE. WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS WHEN THEY ARE OPENED. SPRINKLERS OPEN WHEN HEAT MELTS FUSIBLE LINK OR DESTROYS FRANGIBLE DEVICE. HOSE CONNECTIONS ARE INCLUDED IF INDICATED.

DRY-PIPE SPRINKLER SYSTEM: AUTOMATIC SPRINKLERS ARE ATTACHED TO PIPING CONTAINING COMPRESSED AIR. OPENING OF SPRINKLER RELEASES COMPRESSED AIR AND PERMITS WATER PRESSURE TO OPEN DRY-PIPE VALVE. WATER THEN FLOWS INTO PIPING AND DISCHARGES FROM SPRINKLERS THAT ARE OPEN.

PIPING SYSTEM COMPONENTS SHALL BE LISTED FOR 175-PSIG MINIMUM WORKING PRESSURE.

FLOW TEST DATA: AVAILABLE FIRE-HYDRANT FLOW TEST RECORDS INDICATE THE FOLLOWING CONDITIONS:

- a.

DATE: 02/08/2022
- b.

TIME: 2:00 P.M.
- c.

PERFORMED BY: TONY HAKENWORTH OF HFS DESIGN.
- d.

LOCATION OF RESIDUAL FIRE HYDRANT #1: FIRST BAPTIST CHURCH.
- e.

LOCATION OF FLOW FIRE HYDRANT F: GRACIE & WALTER CT.
- f.

STATIC PRESSURE : 49 PSIG.
- g.

RESIDUAL PRESSURE AT RESIDUAL FIRE HYDRANT: 43 PSIG.
- h.

RESIDUAL FLOW AT RESIDUAL FIRE HYDRANT: 584 GPM.

SPRINKLER SYSTEM DESIGN SHALL BE APPROVED BY AUTHORITIES HAVING JURISDICTION.

MARGIN OF SAFETY FOR AVAILABLE WATER FLOW AND PRESSURE SHALL BE A MINIMUM OF: 5 PSIG, INCLUDING LOSSES THROUGH WATER-SERVICE PIPING, VALVES, AND BACKFLOW PREVENTERS. VERIFY ALL REQUIRED FLOW TEST REDUCTION SAFETY FACTORS WITH AHJ AND INSURANCE UNDERWRITER PRIOR TO BIDDING.

SPRINKLER OCCUPANCY HAZARD CLASSIFICATIONS: PER NFPA 13 REQUIREMENTS

MINIMUM DENSITY FOR AUTOMATIC-SPRINKLER PIPING DESIGN: PER NFPA 13 REQUIREMENTS

MAXIMUM PROTECTION AREA PER SPRINKLER: PER UL LISTING.

TOTAL COMBINED HOSE-STREAM DEMAND REQUIREMENT: ACCORDING TO NFPA 13 UNLESS OTHERWISE INDICATED.

ORDINARY-HAZARD OCCUPANCIES: 250 GPM

SEISMIC PERFORMANCE: SPRINKLER PIPING SHALL WITHSTAND THE EFFECTS OF EARTHQUAKE MOTIONS DETERMINED ACCORDING TO NFPA 13 AND ALL STATE AND LOCAL CODES.

SUBMITTALS

PROVIDE PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE RATED CAPACITIES, OPERATING CHARACTERISTICS, ELECTRICAL CHARACTERISTICS, AND FURNISHED SPECIALTIES AND ACCESSORIES.

PROVIDE SHOP DRAWINGS: FOR SPRINKLER SYSTEMS. INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.

CLOSEOUT SUBMITTALS

CONTRACTOR TO PROVIDE OPERATION AND MAINTENANCE DATA TO OWNER: FOR SPRINKLER SPECIALTIES TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.

FURNISH AND INSTALL SPRINKLER CABINETS: FINISHED, WALL-MOUNTED, STEEL CABINET WITH HINGED COVER, AND WITH SPACE FOR MINIMUM OF SIX SPARE SPRINKLERS PLUS SPRINKLER WRENCH. INCLUDE NUMBER OF SPRINKLERS REQUIRED BY NFPA 13 AND SPRINKLER WRENCH. INCLUDE SEPARATE CABINET WITH SPRINKLERS AND WRENCH FOR EACH TYPE OF SPRINKLER USED ON PROJECT.

INSTALLER QUALIFICATIONS:

INSTALLER'S RESPONSIBILITIES INCLUDE DESIGNING, FABRICATING, AND INSTALLING SPRINKLER SYSTEMS AND PROVIDING PROFESSIONAL ENGINEERING SERVICES NEEDED TO ASSUME ENGINEERING RESPONSIBILITY. BASE CALCULATIONS ON RESULTS OF FIRE-HYDRANT FLOW TEST.

- A.

ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
- B.

NFPA STANDARDS: SPRINKLER SYSTEM EQUIPMENT, SPECIALTIES, ACCESSORIES, INSTALLATION, AND TESTING SHALL COMPLY WITH THE FOLLOWING:

1.

NFPA 13, "INSTALLATION OF SPRINKLER SYSTEMS."

2.

NFPA 24, "INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES."

COORDINATION

COORDINATE LAYOUT AND INSTALLATION OF SPRINKLERS WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS, INCLUDING LIGHT FIXTURES, HVAC EQUIPMENT, AND PARTITION ASSEMBLIES.

SERVICE-ENTRANCE PIPING

INSTALL SHUTOFF VALVE, BACKFLOW PREVENTER, PRESSURE GAGE, DRAIN, AND OTHER ACCESSORIES INDICATED AT CONNECTION TO WATER-SERVICE PIPING.

PIPING INSTALLATION

ALL PIPING SHALL COMPLY WITH REQUIREMENTS FOR INSTALLATION OF SPRINKLER PIPING IN NFPA 13.

PROVIDE AND INSTALL SEISMIC RESTRAINTS ON PIPING. COMPLY WITH REQUIREMENTS FOR SEISMIC-RESTRAINT DEVICE MATERIALS AND INSTALLATION IN NFPA 13 AND LOCAL CODE. PROVIDE SEISMIC BRACING CALCULATIONS IF REQUIRED BY LOCAL AUTHORITIES.

USE LISTED FITTINGS TO MAKE CHANGES IN DIRECTION, BRANCH TAKEOFFS FROM MAINS, AND REDUCTIONS IN PIPE SIZES.

INSTALL "INSPECTOR'S TEST CONNECTIONS" IN SPRINKLER SYSTEM PIPING, COMPLETE WITH SHUTOFF VALVE, AND SIZED AND LOCATED ACCORDING TO NFPA 13

INSTALL SPRINKLER PIPING WITH DRAINS FOR COMPLETE SYSTEM DRAINAGE.

INSTALL SPRINKLER CONTROL VALVES, TEST ASSEMBLIES, AND DRAIN RISERS ADJACENT TO STANDPIPES WHEN SPRINKLER PIPING IS CONNECTED TO STANDPIPES.

INSTALL AUTOMATIC (BALL DRIP) DRAIN VALVE AT EACH CHECK VALVE FOR FIRE-DEPARTMENT CONNECTION, TO DRAIN PIPING BETWEEN FIRE-DEPARTMENT CONNECTION AND CHECK VALVE. INSTALL DRAIN PIPING TO AND SPILL OVER FLOOR DRAIN OR TO OUTSIDE BUILDING. IT IS THE FIRE SPRINKLER CONTRACTORS RESPONSIBILITY TO COORDINATE ALL DRAIN LOCATIONS IF REQUIRED.

INSTALL ALARM DEVICES IN PIPING SYSTEMS.

INSTALL HANGERS AND SUPPORTS FOR SPRINKLER SYSTEM PIPING ACCORDING TO NFPA 13. COMPLY WITH REQUIREMENTS FOR HANGER MATERIALS IN NFPA 13.

ALL PIPING BE SUPPORTED FROM THE STRUCTURE AND SHALL NOT BE SUPPORTED FROM THE ROOF DECK. THERE SHALL BE NO EXCEPTIONS TO THIS. ANY HANGERS ATTACHED TO JOISTS SHALL BE ATTACHED TO THE JOIST WITHIN 6" MAXIMUM FROM THE CHORD POINT OF THE BEAM.

HANGER ATTACHMENTS TO CONCRETE SHALL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE BUILDING OWNER, AND STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

INSTALL PRESSURE GAGES ON RISER OR FEED MAIN, AT EACH SPRINKLER TEST CONNECTION, AND AT TOP OF EACH STANDPIPE. INSTALL GAGES TO PERMIT REMOVAL, AND INSTALL WHERE THEY WILL NOT BE SUBJECT TO FREEZING.

PRESSURIZE AND CHECK PREACTION, DRYPIPE, AND/OR DELUGE SPRINKLER SYSTEM PIPING TRIM, AIR-PRESSURE MAINTENANCE DEVICES, AND AIR COMPRESSORS.

VALVE AND SPECIALTIES INSTALLATION

INSTALL LISTED FIRE-PROTECTION VALVES, TRIM AND DRAIN VALVES, SPECIALTY VALVES AND TRIM, CONTROLS, AND SPECIALTIES TO PROVIDE A FULLY FUNCTIONAL SPRINKLER SYSTEM ACCORDING TO NFPA 13 AND AUTHORITIES HAVING JURISDICTION.

INSTALL LISTED FIRE-PROTECTION SHUTOFF VALVES SUPERVISED OPEN, LOCATED TO CONTROL SOURCES OF WATER SUPPLY EXCEPT FROM FIRE-DEPARTMENT CONNECTIONS. INSTALL PERMANENT IDENTIFICATION SIGNS INDICATING PORTION OF SYSTEM CONTROLLED BY EACH VALVE.

SPRINKLER INSTALLATION

INSTALL SPRINKLERS IN SUSPENDED CEILINGS IN CENTER OF ACOUSTICAL CEILING PANELS.

DRY-TYPE SPRINKLERS CAN BE USED WITH WET-PIPE SPRINKLER SYSTEMS IN ACCORDANCE WITH THEIR LISTING. TYPICAL APPLICATIONS WOULD BE IN FREEZER BOXES AND AT LOADING DOCKS WHERE DRY-TYPE SPRINKLER SUPPLY PIPE EXTENDS INTO A HEATED PLACE AND CONNECTS TO WET-PIPE SYSTEM. INSTALL DRY-TYPE SPRINKLERS WITH WATER SUPPLY FROM HEATED SPACE. DO NOT INSTALL PENDENT OR SIDEWALL, WET-TYPE SPRINKLERS IN AREAS SUBJECT TO FREEZING.

IDENTIFICATION

INSTALL LABELING AND PIPE MARKERS ON EQUIPMENT AND PIPING ACCORDING TO REQUIREMENTS IN NFPA 13.

IDENTIFY SYSTEM COMPONENTS, WIRING, CABLING, AND TERMINALS.

QUALITY CONTROL

PERFORM TESTS AND INSPECTIONS PER NFPA REQUIREMENTS.

RETAIN FIRST PARAGRAPH BELOW TO DESCRIBE TESTS AND INSPECTIONS TO BE PERFORMED.

TESTS AND INSPECTIONS:

1.

LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEMS AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
2.

TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
3.

FLUSH, TEST, AND INSPECT SPRINKLER SYSTEMS ACCORDING TO NFPA 13, "SYSTEMS ACCEPTANCE" CHAPTER.
4.

ENERGIZE CIRCUITS TO ELECTRICAL EQUIPMENT AND DEVICES.
5.

COORDINATE WITH FIRE-ALARM TESTS. OPERATE AS REQUIRED.
6.

VERIFY THAT EQUIPMENT HOSE THREADS ARE SAME AS LOCAL FIRE-DEPARTMENT EQUIPMENT.

SPRINKLER PIPING SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.

PREPARE TEST AND INSPECTION REPORTS.

CLEANING

CLEAN DIRT AND DEBRIS FROM SPRINKLERS.

REMOVE AND REPLACE SPRINKLERS WITH PAINT OTHER THAN FACTORY FINISH.

DEMONSTRATION

ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN ALL VALVES AND PRESSURE-MAINTENANCE PUMPS.

FIRE DEPARTMENT CONNECTION

1.

EXPPOSED-TYPE FIRE-DEPARTMENT CONNECTIONS.

STANDARD: UL 405.

PRESSURE RATING: 175 PSIG MINIMUM.

BODY MATERIAL: CORROSION-RESISTANT METAL.

INLETS: BRASS WITH THREADS ACCORDING TO NFPA AND MATCH LOCAL FIRE-DEPARTMENT SIZES AND THREADS. INCLUDE EXTENSION PIPE NIPPLES, BRASS LUGGED SWIVEL CONNECTIONS, AND CHECK DEVICES OR CLAPPERS.

CAPS: BRASS, LUGGED TYPE, WITH GASKET AND CHAIN.

ESCUTCHEON PLATE: ROUND, BRASS, WALL TYPE WITH FINISH TO MATCH SPECIFIED FDC FINISH.

OUTLET: BACK, WITH PIPE THREADS.

NUMBER OF INLETS: TWO

ESCUTCHEON PLATE MARKING: SIMILAR TO "AUTO SPKR & STANDPIPE."

FINISH: ROUGH BRASS OR BRONZE.

OUTLET SIZE: TO MEET NFPA MINIMUM REQUIREMENT.

INSTALLER TO EXAMINE CONDITIONS AND VERIFY EXACT LOCATION AND RECIEVE APPROVAL FROM AHJ FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE OF FIRE-DEPARTMENT CONNECTIONS.

EXAMINE ROUGHING-IN FOR FIRE-SUPPRESSION STANDPIPE SYSTEM TO VERIFY ACTUAL LOCATIONS OF PIPING CONNECTIONS BEFORE FIRE-DEPARTMENT CONNECTION INSTALLATION.

PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

INSTALL PROTECTIVE PIPE BOLLARDS AROUND EACH FIRE-DEPARTMENT CONNECTION.

FIRE SUPPRESSION WATER SERVICE PIPING

FIRE PROTECTION CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT AND LABOR FOR A FULLY FUNCTIONING FIRE-SUPPRESSION WATER-SERVICE PIPING AND RELATED COMPONENTS OUTSIDE THE BUILDING AND SERVICE ENTRANCE PIPING THROUGH FLOOR INTO THE BUILDING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1.

PIPES, FITTINGS, AND SPECIALTIES.
2.

FIRE-SUPPRESSION SPECIALTY VALVES.
3.

CONCRETE VAULTS.
4.

PROTECTIVE ENCLOSURES.
5.

ALARM DEVICES.

REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION, AND COMPLETE SCOPE OF WORK.

SHOP DRAWINGS AND SUBMITTALS ARE TO INCLUDE:
DETAIL PRECAST CONCRETE VAULT ASSEMBLIES AND INDICATE DIMENSIONS, METHOD OF FIELD ASSEMBLY, AND COMPONENTS.

INCLUDE DIAGRAMS FOR POWER, SIGNAL, AND CONTROL WIRING.

COORDINATION DRAWINGS: FOR PIPING AND SPECIALTIES INCLUDING RELATION TO OTHER SERVICES IN SAME AREA, DRAWN TO SCALE. SHOW PIPING AND SPECIALTY SIZES AND VALVES, METER AND SPECIALTY LOCATIONS, AND ELEVATIONS.

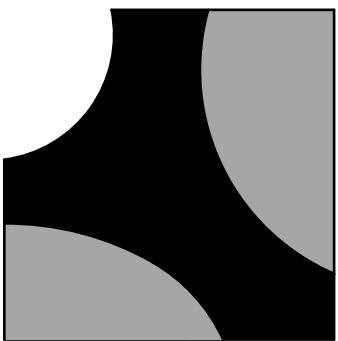
ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH STANDARDS OF UTILITY COMPANY AND AUTHORITIES HAVING JURISDICTION

PIPING MATERIALS SHALL BEAR LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING AGENCY.

ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

COMPLY WITH FM GLOBAL'S "APPROVAL GUIDE" FOR FIRE-SERVICE-MAIN PRODUCTS.

COMPLY WITH NFPA 24 FOR MATERIALS, INSTALLATIONS, TESTS, FLUSHING, AND VALVE AND HYDRANT SUPERVISION FOR FIRE-SUPPRESSION WATER-SERVICE PIPING.



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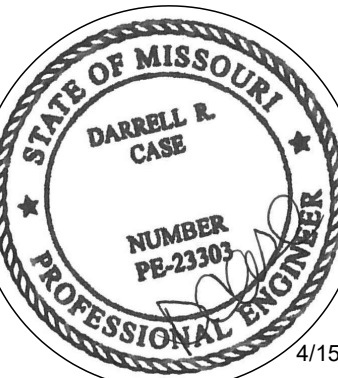
STRUCTURAL, MECHANICAL,
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New Base Station #2 Facility for:
**Lincoln County
Ambulance District**
28 Walter Court
Moscow Mills, Missouri 63362

DATE	ISSUE	R#
4-15-2022	BID & PERMIT SET	



Darrell R Case
ENGINEER
MOW E-23303

PROJECT MANAGER: JE
DRAWN BY: CK

PROJECT NUMBER
21-079
DATE
April 15, 2022

SHEET
FP0.1
GENERAL FIRE
PROTECTION NOTES &
SPECIFICATIONS



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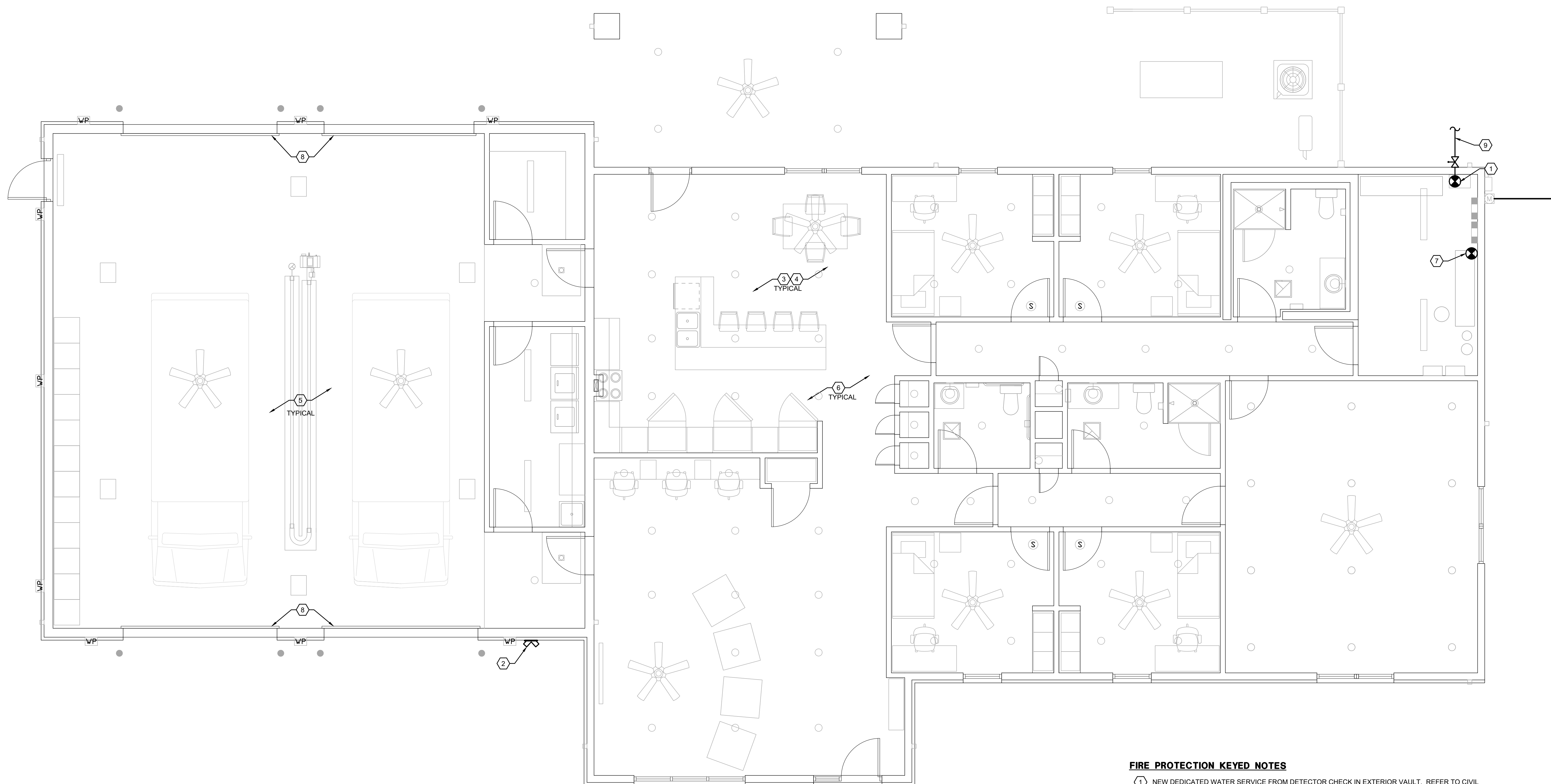
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28 Walter Court
Moscow, Mills, Missouri 63362

DATE	ISSUE BID & PERMIT SET	R#
4-15-2022		



PROJECT MANAGER: JE
DRAWN BY: CK

SHEET
FP2.0
FIRE PROTECTION
PLAN



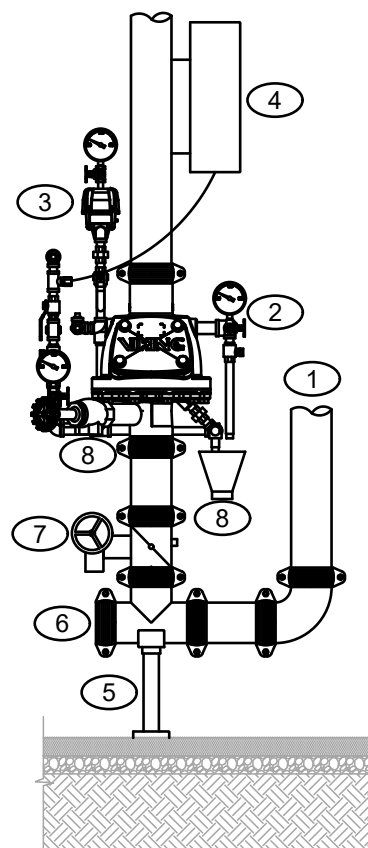
SYSTEM KEYED NOTES:

- ① INCOMING SYSTEM SUPPLY PIPING FROM BUILDING SERVICE.
- ② PROVIDE VIKING MODEL F-2 GROOVED DRY VALVE OR EQUIVALENT. PROVIDE WITH DRY-VALVE TRIM KIT.

PROVIDE WITH MODEL D-2 ACCELERATOR AND TRIM WITH INTEGRAL ANTI-FLOOD DEVICE.
- ③ PROVIDE RISER MOUNTED AIR COMPRESSOR WITH VIBRATION ISOLATION, GENERAL AIR OL1225200AC OR EQUIVALENT. PROVIDE SYSTEM WITH AIR MAINTENANCE DEVICE AND ASSOCIATED TRIM. VERIFY EXACT SIZING WITH FINAL SYSTEM VOLUME.

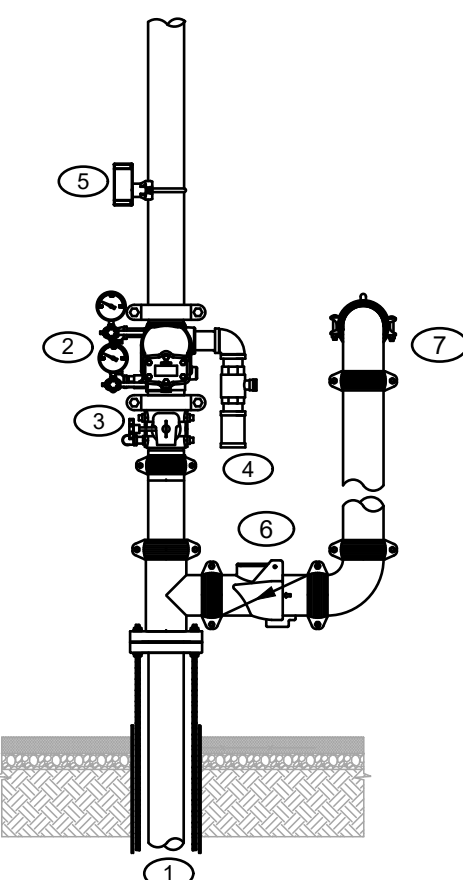
PROVIDE PIPE STAND AT BOTTOM OF DRY PIPE RISER. INSTALL ADDITIONAL BRACING AS REQUIRED
- ④ PROVIDE DRAIN CAP AND AUXILIARY DRAIN.

INSTALL RISER CONTROL CONTROL VALVE WITH WIRED TAMPER SWITCH.
- ⑤ CONNECT DRAIN PIPING AND ROUTE TO BUILDING EXTERIOR. TERMINATE DRAIN WITH GALVANIZED 45 EL. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.



SYSTEM KEYED NOTES:

- ① INCOMING SUPPLY PIPING FROM BUILDING SERVICE.
- ② INSTALL VIKING MODEL E-1 RISER SWING CHECK VALVE WITH TRIM OR EQUIVALENT.
- ③ INSTALL INDICATING CONTROL VALVE WITH WIRED TAMPER SWITCH.
- ④ PROVIDE 2" SYSTEM DRAIN. ROUTE PIPING TO BUILDING EXTERIOR. TERMINATE WITH GALVANIZED 45 EL. COORDINATE DRAINAGE DISCHARGE LOCATION WITH OWNER PRIOR TO INSTALLATION.
- ⑤ PROVIDE FLOW SWITCH AND ALARM AND PRESSURE GAUGE. COORDINATE ALL INSTALLATION REQUIREMENTS WITH G.C.
- ⑥ PROVIDE 4" GROOVED CHECK VALVE FOR FDC CONNECTION. ROUTE FDC PIPING TO APPROVED LOCATION. REFER TO PLANS FOR ADDITIONAL INFORMATION.
- ⑦ ROUTE FDC PIPING TO APPROVED LOCATION, AND PROVIDE 3/4" BALL DRIP CONNECTION THROUGH WALL, SLEEVE AND CAULK PENETRATION. VERIFY FINAL LOCATION/ELEVATION AND HOSE THREADS MEET ALL NFPA AND FIRE DEPARTMENT REQUIREMENTS.



1 FIRE PROTECTION PLAN
FP2.0 SCALE: 1/4" = 1'-0"

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

FIRE PROTECTION KEYED NOTES

- 1 NEW DEDICATED WATER SERVICE FROM DETECTOR CHECK IN EXTERIOR VAULT. REFER TO CIVIL DRAWINGS AND COORDINATE WITH ARCHITECT FOR EXACT SIZE AND ROUTING.
- 2 PROVIDE BRASS BODIED FDC CONNECTION TO MATCH LOCAL FIRE-DEPARTMENT SIZES AND THREADS. INCLUDE EXTENSION PIPE NIPPLES, BRASS LUGGED SWIVEL CONNECTIONS, AND CHECK DEVICES OR CLAMPERS. FIRE DEPARTMENT CONNECTION TO THIS LOCATION. EXTEND PIPING TO CONNECT TO FIRE RISER AS SHOWN.
- 3 ALL PENDANT SPRINKLER HEADS ARE TO BE DRY HEAD TYPES.
- 4 PROVIDE SPRINKLER PROTECT IN UNCONDITIONED COMBUSTIBLE CONCEALED SPACES IN ACCORDANCE WITH ALL NFPA REQUIREMENTS. COORDINATE SPRINKLER HEAD LOCATIONS WITH FINAL TRUSS LOCATIONS.
- 5 COORDINATE SPRINKLER HEAD TEMPERATURE RATINGS WITH UNIT MECHANICAL UNIT HEATER LOCATIONS. REFER TO MECHANICAL PLANS FOR ADDITIONAL INFORMATION.
- 6 PROVIDE NEW SPRINKLER SYSTEM PER ALL NFPA 13 REQUIREMENTS.
- 7 PROVIDE DRY-PIPE VALVE AND ALL ASSOCIATED COMPONENTS. COORDINATE EXACT LOCATION WITH OWNER. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
- 8 COORDINATE FIRE SPRINKLER PROTECTION WITH OVERHEAD BAY DOORS. PROVIDE ADEQUATE PROTECTION PER ALL NFPA 13 AND AHJ REQUIREMENTS. REFER TO FINAL ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
- 9 PROVIDE WALL-POST INDICATOR VALVE. REFER TO DETAIL FOR ADDITIONAL INFORMATION. COORDINATE EXACT LOCATION PRIOR TO ANY WORK. INSTALL IN ACCORDANCE WITH ALL NFPA AND AHJ REQUIREMENTS. PROVIDE ADEQUATE SIGNAGE AS REQUIRED PER ALL NFPA 13 AND AHJ REQUIREMENTS.

FIRE PROTECTION DRY PIPE VALVE DETAIL:
SCALE: NTS.

SCALE: NTS

FIRE PROTECTION RISER CHECK SERVICE ENTRANCE DETAIL:

SCALE: NTS.

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