



# *Florence County Government*

## Procurement Department

July 21, 2016

### **ADDENDUM NO. 2 - FRIENDFIELD FIRE STATION (BID NO. 2-16/17)**

Florence County is sending to all interested firms clarification information and answers to questions concerning this request for proposal. The answers are highlighted in blue and underlined. Please include this sheet with your proposal.

1. The Bid Documents state that a minimum Group 2 General Contractors license in the State of South Carolina is required to do this work. Per SCLLR, a Group 2 is only good to \$100,000. Should this be a Group 3 instead (good for up to \$350,000)? **A minimum Group 3 license shall be required to qualify for this bid.**
2. Is this a Normal or Essential building occupancy? **This building is classified as Risk IV (Essential occupancy).**
3. Is 26 ga liner panel allowed in lieu of 24 ga? **Yes, 26 gauge is acceptable.**
4. Is an expandable endwall required at column line 3 at A1.0? **No, we will use a standard endwall.**
5. On the riser diagram it shows (2)4-350KCMIL, 3-1/2"C, this is typical of a 600A 3 phase service. The disconnect transfer switch and panel A are all single phase 200 Amp. Can we get clarification as to if this is an error? **Yes, this was an error, and it is corrected in the updated plans. The service is 200 Amp single phase.**

We have attached a new set of Civil/Architectural drawings, which encompass comments from SCDOT, SCDHEC and Florence County. The revisions are clouded. A summary follows:

- |            |                                                                                                                                                                                |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sheet A3.0 | The elevations of the exterior lights are shown.<br>This includes light OB for the flagpole illumination.<br>Light OB for the sign was switched from a ground to a wall mount. |
| Sheet A4.0 | The colors are specified for walls and doors.                                                                                                                                  |

- Sheet A6.0 The insulation on the ceiling and walls above the liner panel will be 4" R11 white vinyl-faced insulation.
- Sheet C2.0 Added more gravel to allow the fire trucks to turn around without entering the road.  
Added striping, stop bar and stop sign (yes, a stop sign) to apron.
- Sheet C3.0 The driveway culvert has been revised from a Class III 18" RCP to a Class V 15" RCP. Note the beveled ends per SCDOT specifications.
- Sheet C8.0 NEW SHEET.  
Mostly DOT standard drawings, plus more info on the driveway pipe.
- Sheet P1.0 Exterior hose bibb HB1 shall be keyless & frostless.
- Sheet P2.0 Pex type cold water pipe is allowed below the slab.  
On hose bibs protruding from behind the metal wall liners, the shut-off valve is set above the liner for easier access.
- Sheet M1.0 On the Fan Schedule, Fan-3 (the bathroom exhaust fan) will be keyed into the light switch (not Fans 1 & 2).
- Sheet M2.0 To avoid a conflict with the overhead doors, IFH-1 was shifted.  
The gas line was extended; the control box is on the north side of the IFH.
- Sheet M3.0 Added minimum clearances for the IFH-1 unit.
- Sheet E1.0 Added missing information for the wall heaters, EWH-1 and EWH-2.
- Sheet E2.0 Lights HB-1 will be surface mounted to avoid conflicts with IFH-1 and the overhead doors.  
The OB lights will have different mounts:  
The flagpole light will be ground mounted.  
The sign light will be wall mounted.  
BX Cabling is allowed as an alternate to conduit.
- Sheet E3.0 Corrected the service lines per Item 5 above.
- Sheet E4.0 Moved the junction box on IFH-1 to the front of the building.  
Shifted HB-1 lights to avoid conflicts with IFH-1 & the overhead doors.  
Added locations of the OB lights (outdoor spotlights).

**YOU MUST ACKNOWLEDGE THIS ADDENDUM BY SIGNING BELOW AND SUBMIT IT WITH YOUR BID.**

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I have read and acknowledge pages 1, 2, and 3 of addendum no. 2 for bid no. 02-16/17.

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Authorized Signature

---

Printed Name

---

Date

---

Company Name

CONSTRUCTION PLANS  
FOR:  
**HANNAH-SALEM-FRIENDFIELD  
FIRE DEPARTMENT  
NEW STATION AT FRIENDFIELD**

Capital Project Sales Tax II  
Florence County, South Carolina

PROJECT No. AE055 April, 2016

Client:

FLORENCE COUNTY  
180 NORTH IRBY STREET, MSC-G  
FLORENCE, SOUTH CAROLINA 29501

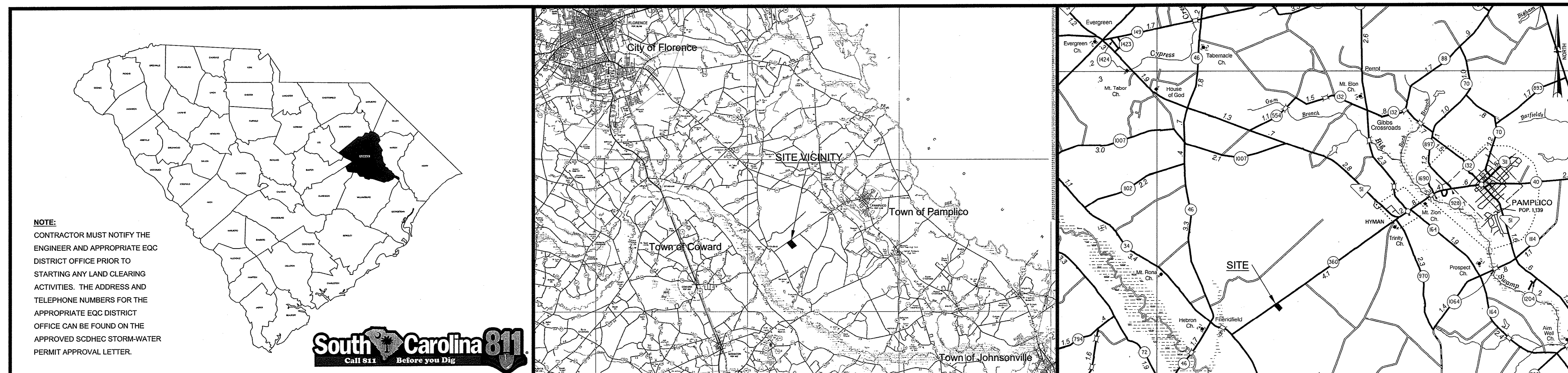
FLORENCE COUNTY CONTACT: SUZANNE KING  
PHONE: (843) 665-3035  
FIRE DEPARTMENT CONTACT: CHIEF MONTY TEDDER  
PHONE: (843) 319-8083

INDEX TO DRAWINGS:

SERIES NUMBERING							
CS	COVER SHEET	CIVIL		PLUMBING		ELECTRICAL	
ARCHITECTURAL							
A1.0	FLOOR PLAN & NOTES	C1.0	EXISTING SITE CONDITIONS	P1.0	PLUMBING NOTES	E1.0	ELECTRICAL NOTES
A2.0	REFLECTIVE CEILING & ROOF PLAN	C2.0	SITE DEVELOPMENT PLAN	P2.0	PLUMBING PLANS	E2.0	ELECTRICAL NOTES & SCHEDULES
A3.0	ELEVATIONS	C3.0	GRADING & DRAINAGE PLAN	P3.0	PLUMBING DETAILS	E3.0	ELECTRICAL DETAILS
A4.0	DETAILS & SCHEDULES	C4.0	SEDIMENT & EROSION CONTROL PLAN			E4.0	ELECTRICAL PLANS
A5.0	SECTIONS	C5.0	WATER & SEWER PLAN	MECHANICAL			
A6.0	WALL SECTIONS	C6.0	SITE DEVELOPMENT DETAILS	M1.0	MECHANICAL NOTES		
		C7.0	SEDIMENT & EROSION CONTROL DETAILS	M2.0	MECHANICAL FLOOR PLANS		
				M3.0	MECHANICAL DETAILS		

SCOPE OF WORK  
ONE 2,250 SF PRE-ENGINEERED STEEL BUILDING FOR USE AS A FIRE DEPARTMENT STATION. STAFFING WILL BE INTERMITTENT; THE BUILDING WILL CONTAIN 1-2 FIRE RIGS FOR EMERGENCY USE.  
WATER WILL BE FROM WELL ON SITE.  
SEWER WILL BE TREATED USING A DHEC DESIGNED SEPTIC SYSTEM.  
FIRE STATION & PARKING LOT WITH ACCESS TO HYMAN ROAD.

DESIGN TEAM  
PROJECT COORDINATION:  
ALIGNED ENGINEERING, LLC  
273 W. EVANS STREET  
FLORENCE, SC 29501  
(843) 713-1244  
MARTIN FOX, P.E.  
MARTIN@ALIGNEDENGINEERING.COM  
CIVIL DESIGN:  
JAMES SAWYER, P.E., ALIGNED ENGINEERING  
ARCHITECTURAL:  
MARTIN FOX, P.E. ALIGNED ENGINEERING  
STRUCTURAL:  
TODD WILKES, P.E. WILKES ENGINEERING, LLC  
414 ASHLAND RD.  
HARTSVILLE, SC 29550  
(843) 858-1074  
WILKESTB@YAHOO.COM  
PM&E:  
MARTIN FOX, P.E. ALIGNED ENGINEERING  
STEEL BUILDING DESIGN:  
MESCO BUILDING SOLUTIONS  
5244 BEAR CREEK CT.  
IRVING, TX 75061  
(214) 687-9999



Florence County,  
South Carolina

SCDOT County Map  
NTS

City Map  
NTS

DESIGNED BY:	CS	DATE:	07/20/16
DRAWN BY:	CS	DATE:	07/20/16
CHECKED BY:	CS	DATE:	07/20/16
APPROVED BY:	CS	DATE:	07/20/16
PROJECT #	AE055	PROJECT #	AE055
COUNTY	FLORENCE	COUNTY	FLORENCE
PROJECT #	AE055	PROJECT #	AE055
DATE	07/20/16	DATE	07/20/16
NO.	1	NO.	1
REVISION		REVISION	
BY		BY	

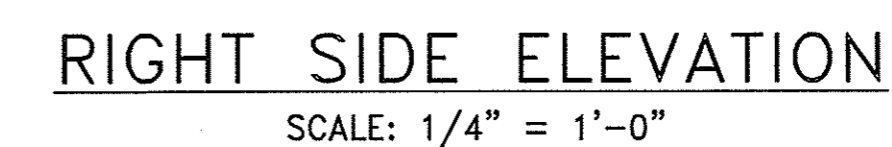
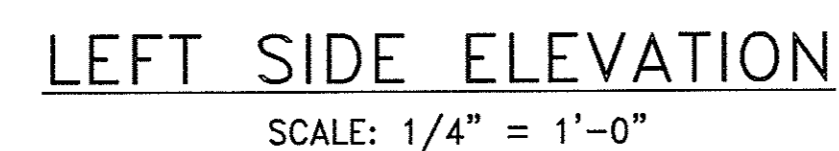
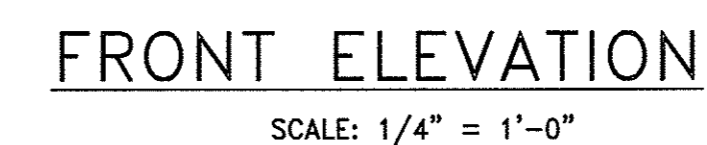
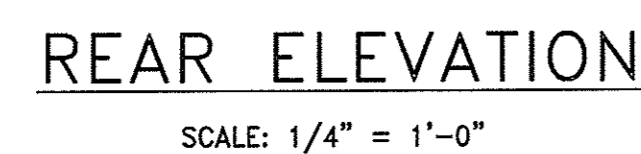
THIS DRAWING & DESIGN THEREON ARE THE PROPERTY OF ALIGNED ENGINEERING, LLC. THE REPRODUCTION, USE OR COPYING OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED.









AE ALIGNED ENGINEERING

CLIENT: HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT  
PLAN SET: NEW STATION AT FRIENDFIELD  
DESCRIPTION: COVER SHEET

PLAN SET: DESIGN  
DATE: Jul 21, 2016  
PROJECT: AE055  
SHEET: CS

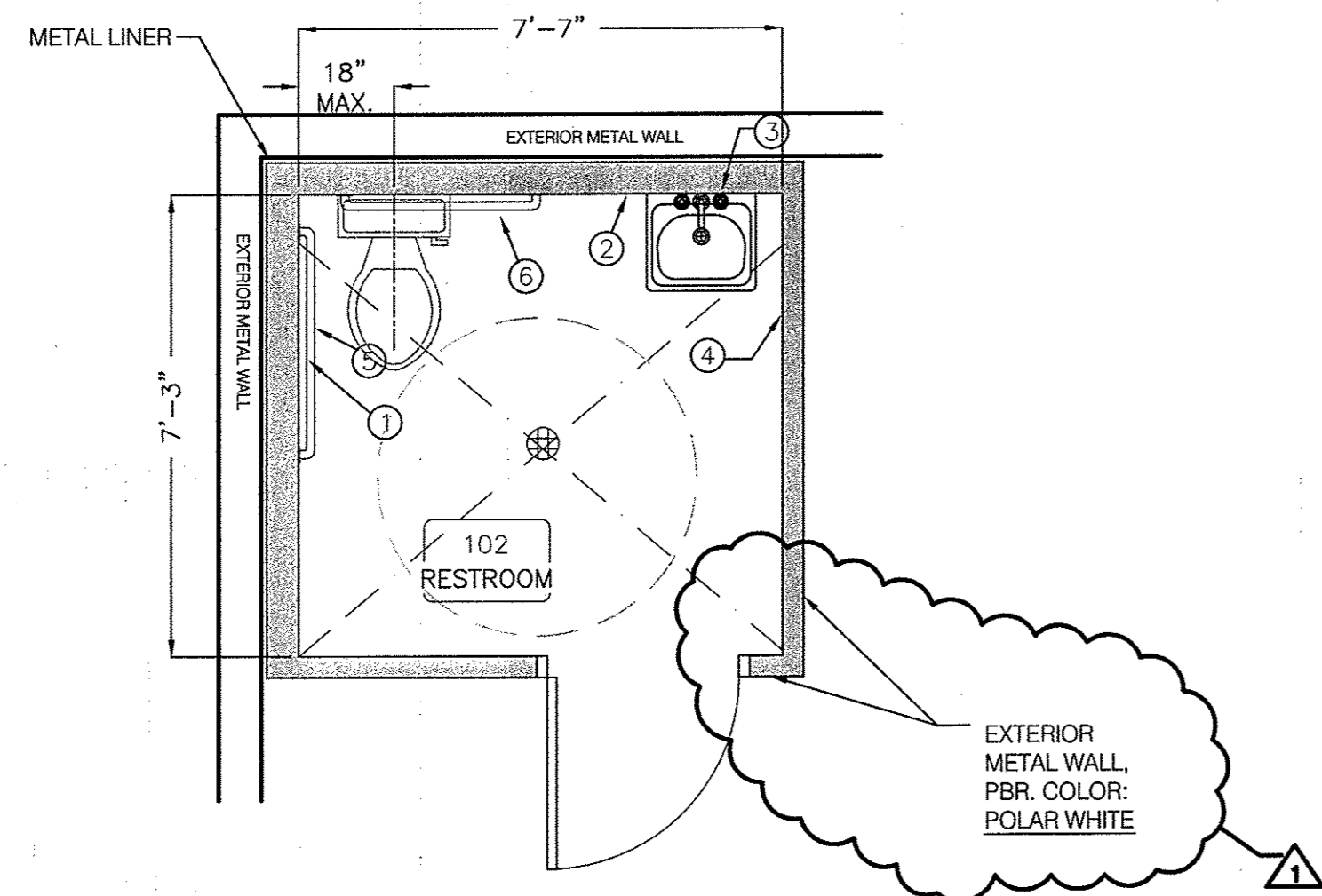




- | ELEVATION "KEY" NOTES                                                                 |                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | METAL WALL PANELS                                                                                                                                                                                                                                      |
|  | DOOR AS SCHEDULED, TYPICAL                                                                                                                                                                                                                             |
|  | ALUMINUM GUTTER AND DOWNSPOUTS (DS)                                                                                                                                                                                                                    |
|  | ALUMINUM CORNICE / RAKE TRIM<br>(MATCH GUTTER PROFILE)                                                                                                                                                                                                 |
|  | STANDING SEAM METAL ROOF (GALVALUME)                                                                                                                                                                                                                   |
|  | STEEL BOLLARD (SEE PLAN FOR LOCATIONS)                                                                                                                                                                                                                 |
|  | ALUMINUM CANOPY; PRE-ENGINEERED METAL BUILDING MANUFACTURER TO COORDINATE ATTACHMENT POINTS WITH CANOPY SUPPLIER. PROVIDE SUPPORT AS REQUIRED.                                                                                                         |
|  | LOUVER / EXHAUST FAN, TYPICAL (SEE MECHANICAL DRAWINGS) - PROVIDE CUSTOM COLOR TO MATCH METAL BUILDING METAL WALL PANEL FINISH; PRE-ENGINEERED METAL BUILDING MANUFACTURER TO COORDINATE ATTACHMENT POINTS WITH SUPPLIER. PROVIDE SUPPORT AS REQUIRED. |

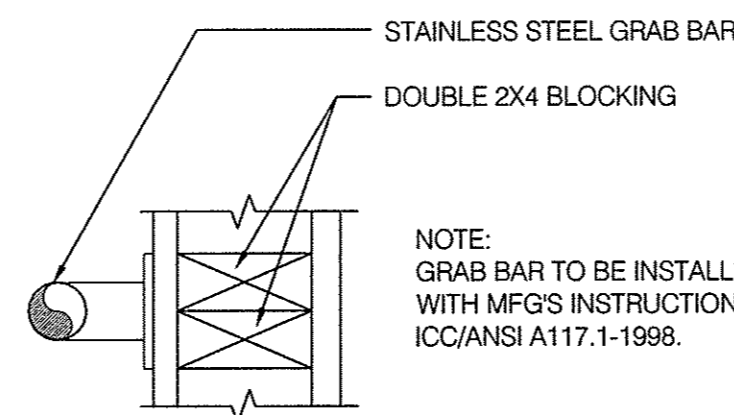
- E9 LIGHT FIXTURE (SEE ELECTRICAL-DRAWINGS)
- E10 SIGNAGE / LOGO (BY ALLOWANCE, SEE SPECIFICATIONS)
- E11 LIGHT FIXTURE OB (SEE ELECTRICAL PLANS)



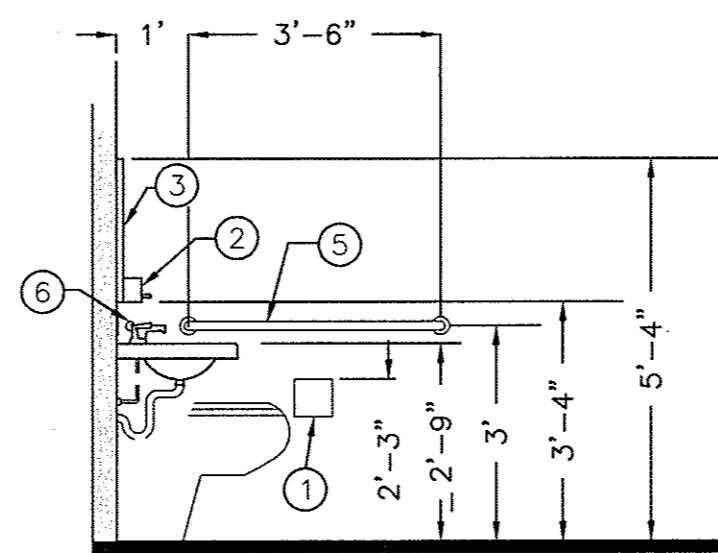


**REST ROOM**  
SCALE: 3/8"=1'-0"

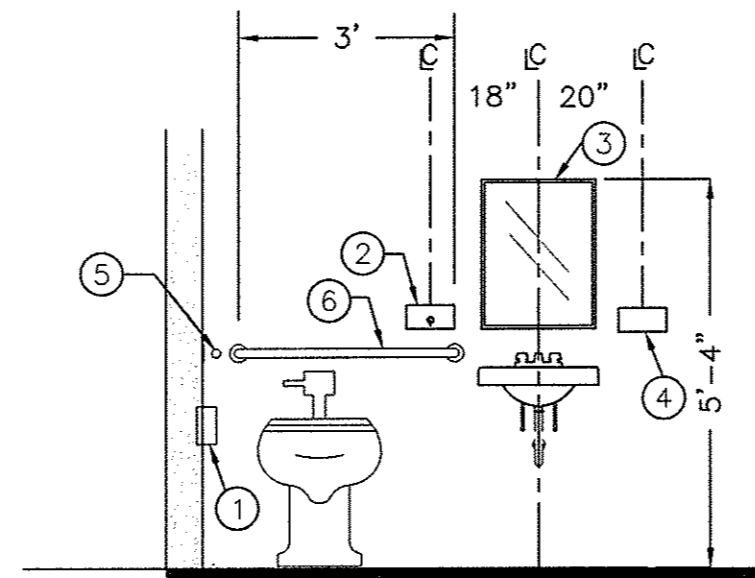
- TOILET TISSUE DISPENSER**
- ① TOILET TISSUE DISPENSER
  - ② LIQUID SOAP DISPENSER - SURFACE MOUNTED
  - ③ MIRROR-18" X 24"-GLASS-CHANNEL FRAMED
  - ④ BI-FOLD PAPER TOWEL DISPENSER
  - ⑤ GRAB BAR - 42" LONG
  - ⑥ GRAB BAR - 36" LONG



**GRAB BAR DETAIL**



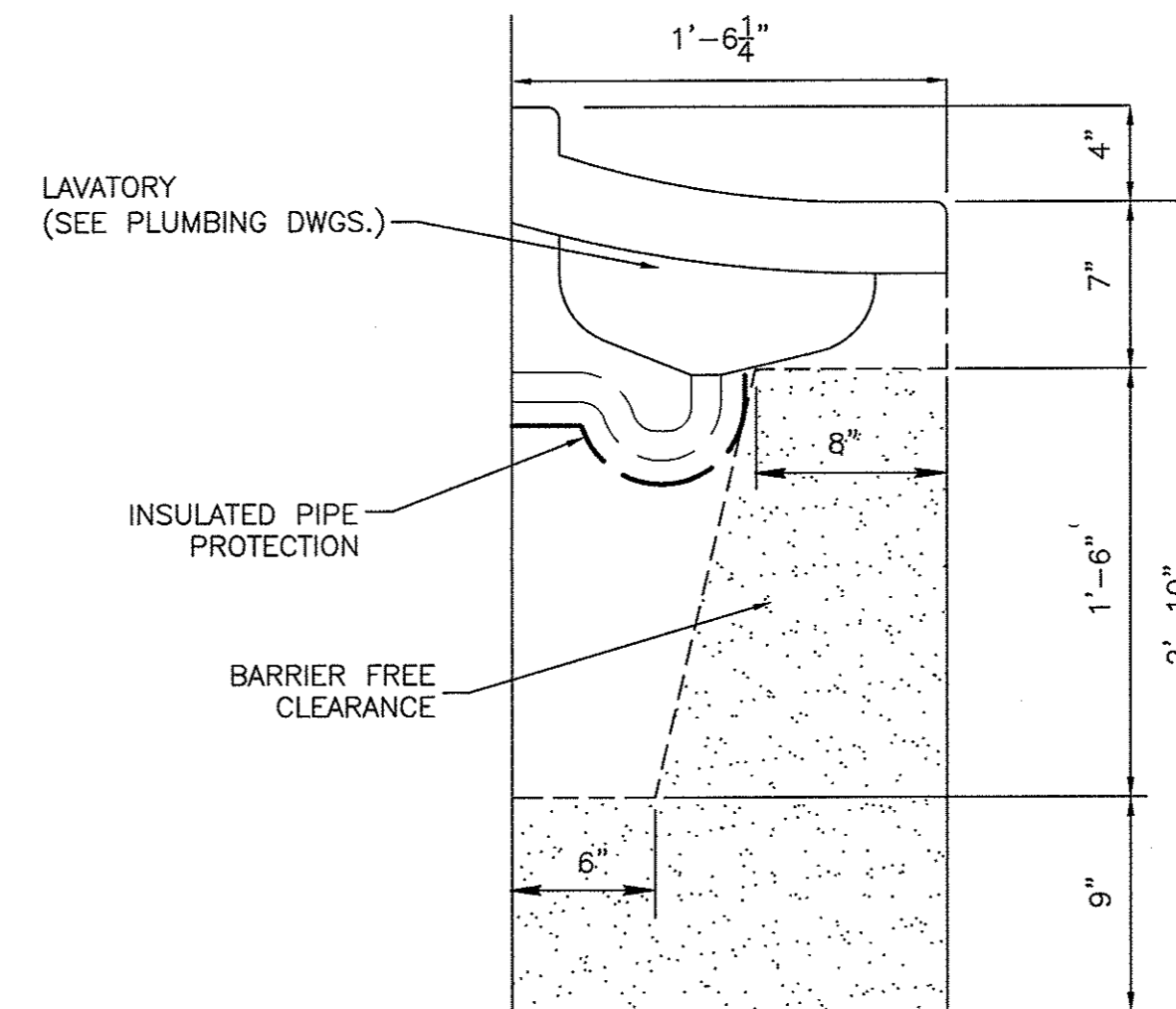
**SIDE ELEVATION**  
SCALE: 3/8"=1'-0"



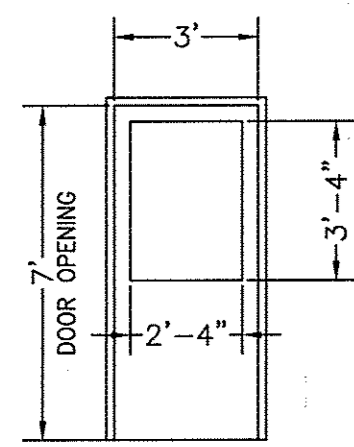
**FRONT ELEVATION**  
SCALE: 3/8"=1'-0"

GENERAL CONTRACTOR PROVIDE BLOCKING FOR ALL ACCESSORIES

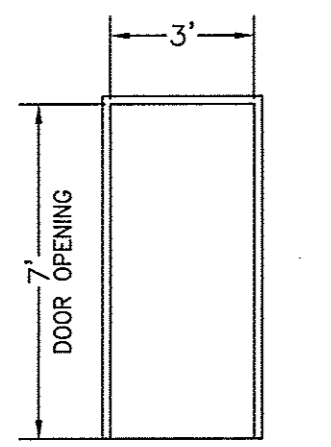
NOTE: PAINT BATHROOM INTERIOR WALL "ANTIQUE WHITE."



**HC CABINET DETAIL**  
SCALE: 1 1/2"=1'-0"

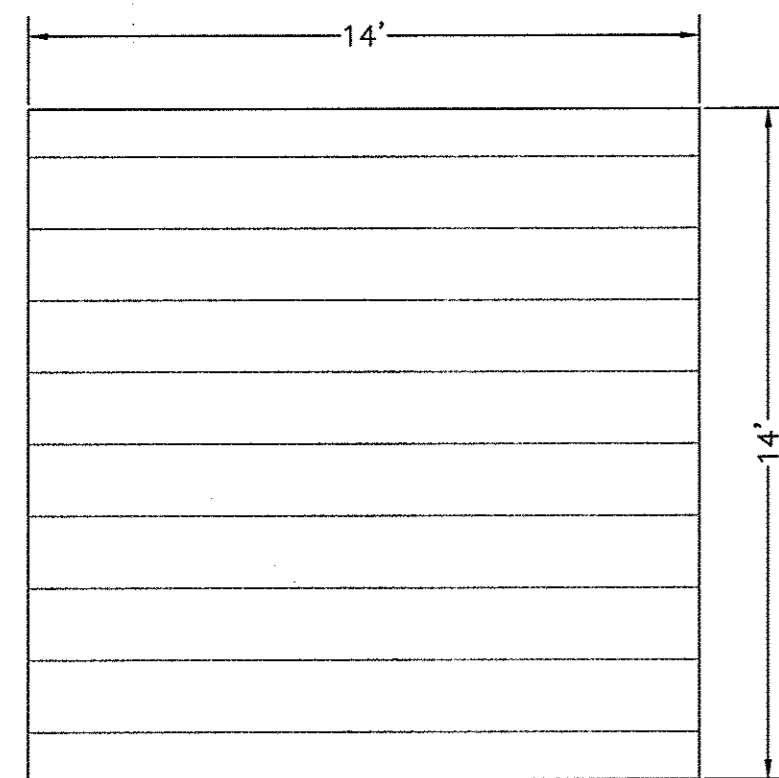


TYPE: HOLLOW METAL  
SIZE: 3'-0" X 7'-0"  
RATING: NONE  
LITE: TEMP. SAFETY  
FRAME: H/M

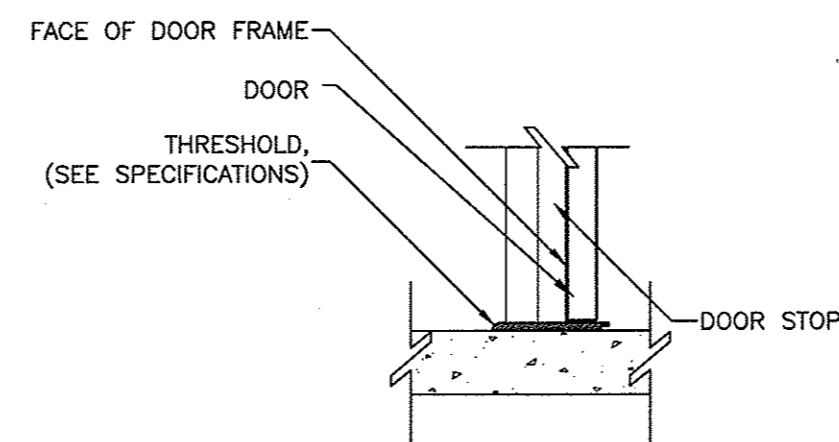
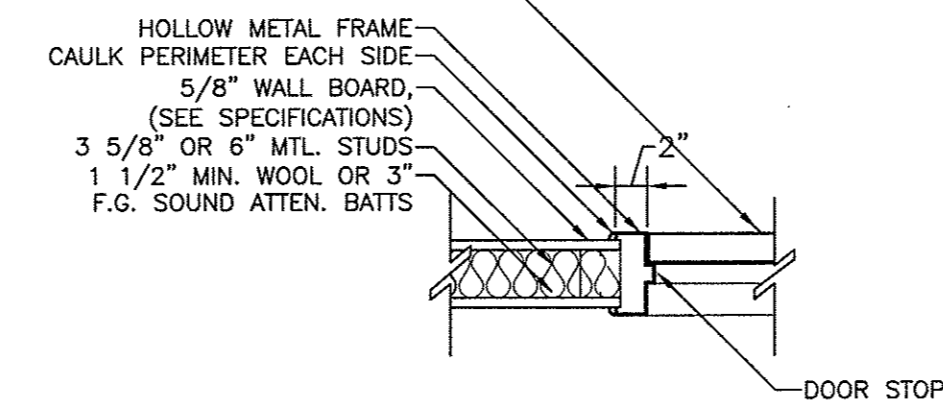
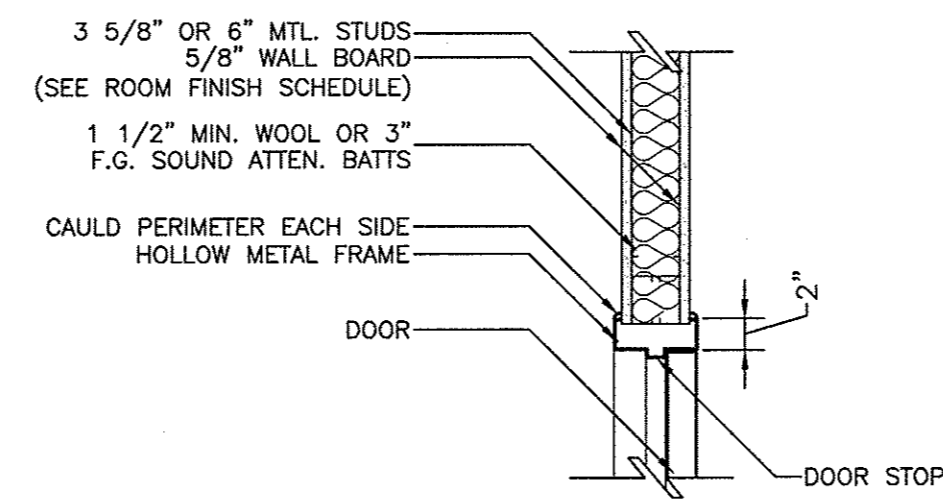


TYPE: HOLLOW METAL  
SIZE: 3'-0" X 7'-0"  
RATING: NONE  
LITE: NONE  
FRAME: H/M

COLOR: POLAR WHITE



TYPE: STEEL ROLL UP  
SIZE: 14'X14'  
RATING: NONE  
LITE: NONE  
FRAME: BY PRE-ENG. BLDG.MFG



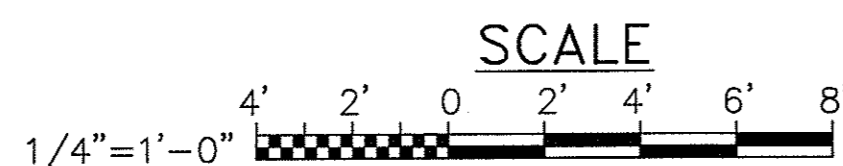
INTERIOR DOOR FRAME DETAILS

**DOORS DETAILS**

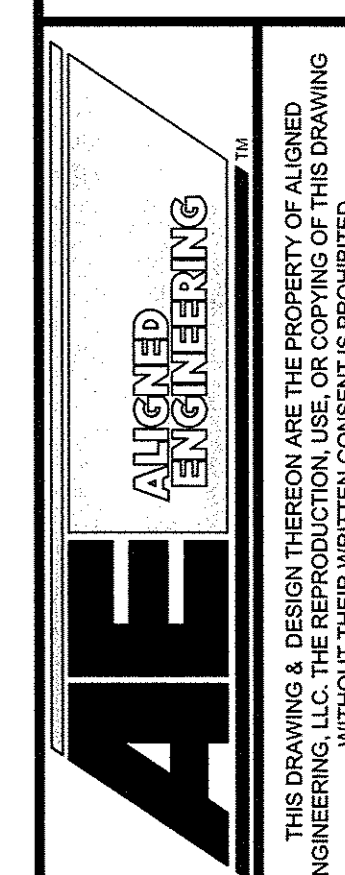
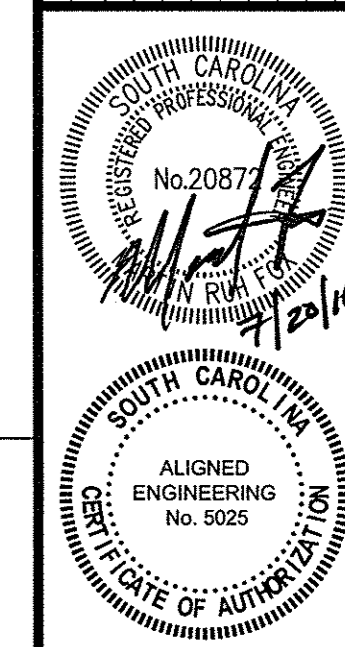
SCALE: 1/4"=1'-0"

**DOORS**

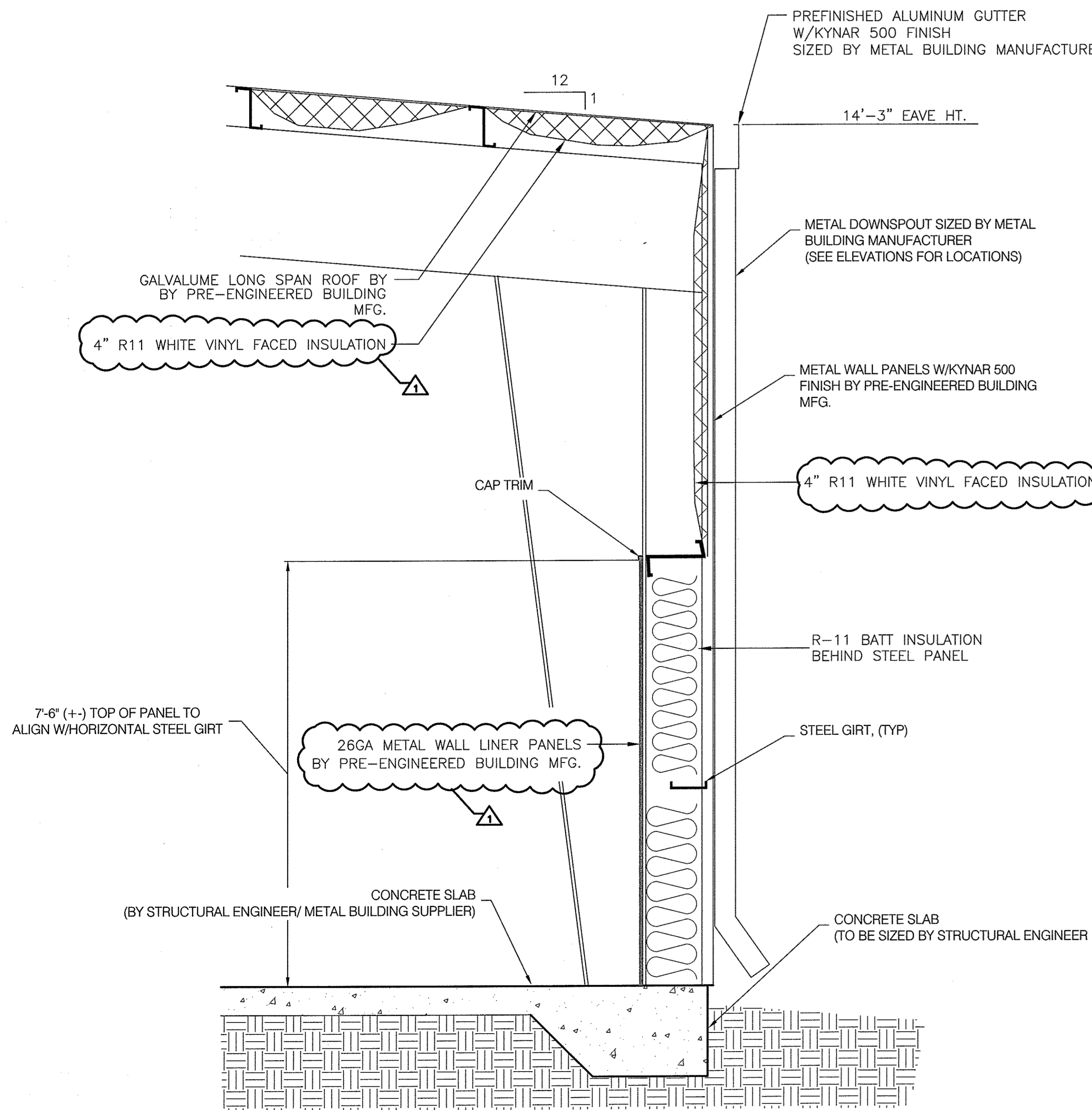
SCALE: 1/4"=1'-0"



DESIGNED BY:	MJF				
CHECKED BY:	MJF				
APPROVED BY:	MJF				
DATE:	07/21/16				
SCALE:	AS NOTED				
CITY:	FRIENDSHIP				
COUNTY:	FLORENCE				
PROJECT #	86905				
DWG. #	07/20/16				
CAD:	07/27/16				
BIG ON ADDENDUM #1 & FLORENCE PLANNING COMMENTS					
				POUNDAGE	MJF
				POUNDAGE	RD



CLIENT:	HANNAH-SALEM FRIENDFIELD
PLAN SET:	FIRE DEPARTMENT
DESCRIPTION:	NEW STATION AT FRIENDFIELD
DESC:	DETAILS & SCHEDULES
DATE:	Jul 21, 2016
PROJECT:	AE055
SHEET:	A4.0

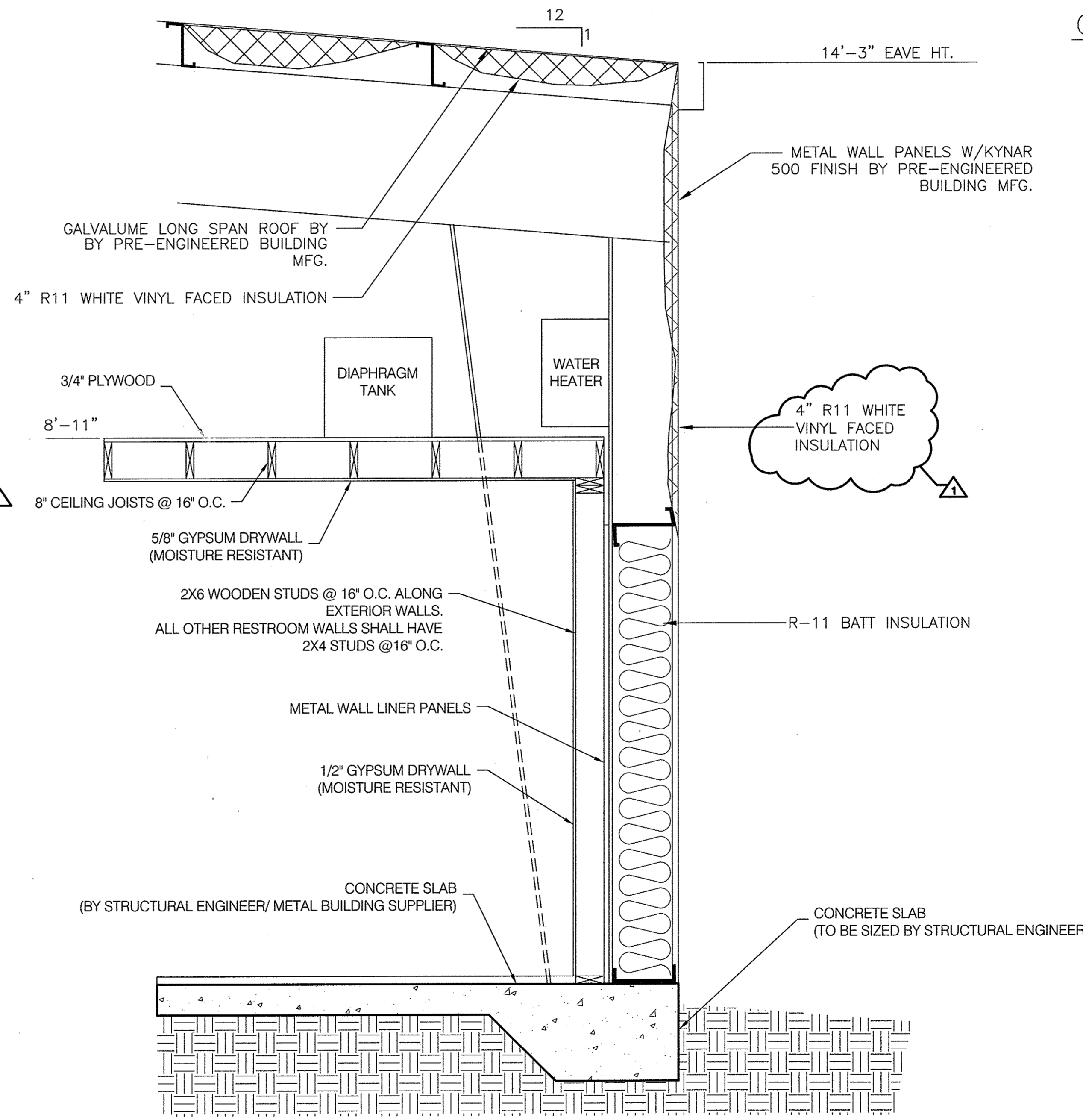


WALL SECTION @ BAY 5

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

5

A6.0

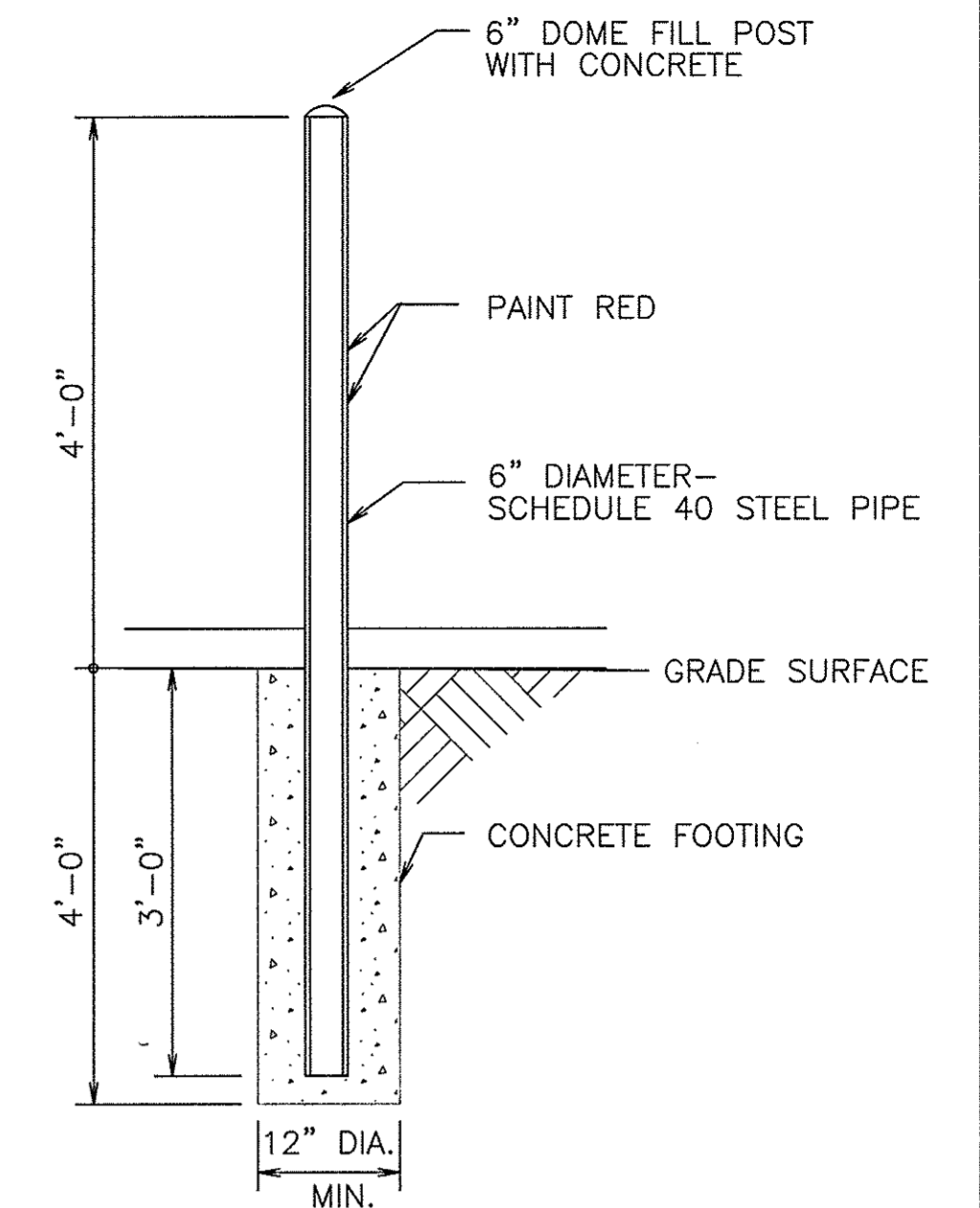


WALL SECTION @ RESTROOM 4

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

4

A6.0



GUARD POST DETAIL

N.T.S.

DESIGNED BY:	ME	DATE:	07/20/16	REVISION	NO.	DATE	BY
DRAWN BY:	JCS						
CHECKED BY:	MJE						
APPROVED BY:	MJE						
DATE:	JUL 21, 2016						
PROJECT #	AE055						
CITY:	FRIENDFIELD						
COUNTY:	FRIENDFIELD						
STATE:	SC						
PROJECT #	AE055						
DATE:	07/21/16						
BY:	AE055						

CLIENT:	HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT
PLAN SET:	DESIGN
DATE:	JUL 21, 2016
PROJECT:	AE055
SHEET:	A6.0

DESCRIPTION:	WALL SECTIONS
DATE:	07/21/16
PROJECT:	AE055
SHEET:	A6.0

1. THE AREA WITHIN THE SITE THAT HAS PROPOSED BUILDINGS, ROADS, UTILITY CONSTRUCTION, OR FILL SHALL BE STRIPPED OF ALL ASPHALT, DEBRIS, TOPSOIL, AND ORGANIC MATERIAL. TOPSOIL SHALL BE STOCK PILED FOR REPLACING ON DISTURBED AREAS.

3. THE AREA UNDER THE LOT & DRIVES SHALL BE FILLED IN WITH WELL GRADED GRANULAR, NON-EXPANSIVE MATERIAL. IT SHOULD BE PLACED IN LAYERS OF NOT MORE THAN 8 INCHES IN THICKNESS AT OPTIMUM MOISTURE AND COMPACTED TO 98% OF MAXIMUM DRY DENSITY.

3. THE AREA UNDER THE LOT & DRIVES SHALL BE FILLED IN WITH WELL GRADED GRANULAR, NON-EXPANSIVE MATERIAL. IT SHOULD BE PLACED IN LAYERS OF NOT MORE THAN 8 INCHES IN THICKNESS AT OPTIMUM MOISTURE AND COMPACTED TO 98% OF MAXIMUM DRY DENSITY.

5. SEE DETAILS SHEET FOR PAVING, BASE, AND SUB-GRADE THICKNESS.

11. ALL LAND DISTURBANCE ACTIVITIES ARE TO REMAIN WITHIN THE LIMITS OF CONSTRUCTION AS

2.) SEE SEDIMENT & EROSION CONTROL DETAILS SHEET FOR GRASSING AND SEDIMENT CONTROL INFORMATION. CONTRACTOR SHALL SPREAD TOPSOIL ON ROAD SHOULDERS, EASEMENTS, OR OTHER AREAS PRIOR TO GRASSING.

4.) THE CONTRACTOR IS TO NOTIFY THE ENGINEER OF ANY KNOWN DRAINAGE, SEWER OR WATER CONFLICTS PRIOR TO START OF WORK. IF ANY UNEXPECTED OR UNUSUAL CONDITIONS ARE ENCOUNTERED THAT MAY OR MAY NOT BECOME A CONFLICT, THE CONTRACTOR IS TO NOTIFY THE

6.) NO CONSTRUCTION IS TO TAKE PLACE WITHIN EXISTING ROAD RIGHTS OF WAY UNTIL THE APPROPRIATE ENCROACHMENT PERMITS HAVE BEEN RECEIVED FROM SCDOT OR THE APPROPRIATE CITY/COUNTY AUTHORITIES. RESTORATION OF SHOULDERS AND PAVEMENT WITHIN STREET OR

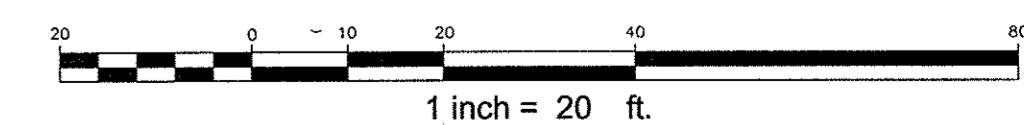
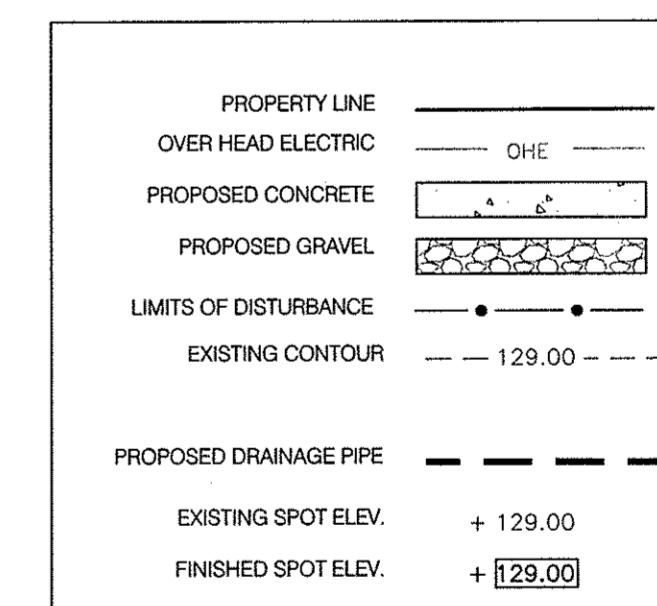
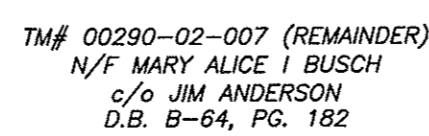
7.) DURING STAKING, THE STAKING CONTRACTOR SHALL MAKE SUCH ADDITIONAL MEASUREMENTS AS ARE NECESSARY TO FIELD VERIFY THAT USE OF THE COORDINATES SHOWN ON THIS DRAWING PLACES THE PROPOSED SITE IMPROVEMENT IN ITS CORRECT AND PROPER LOCATION. ANY SIGNIFICANT

8.) THE LOCATION OF ALL UTILITY LINES SHOWN ON THIS DRAWING ARE APPROXIMATE AND ARE SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE APPROPRIATE UTILITY COMPANIES SHOULD BE CONTACTED PRIOR TO ANY EXCAVATION TO PROVIDE LOCATION ASSISTANCE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS

PROVIDE LOCATION ASSISTANCE. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

9.) ALL DHEC SEDIMENT CONTROL STRUCTURES MUST REMAIN IN PLACE UNTIL ALL LOTS ARE DEVELOPED OR UNTIL FINAL APPROVAL HAS BEEN GIVEN BY DHEC.

10.) ALL DRIVEWAY CULVERTS SHALL BE INSTALLED AND SEALED ACCORDING TO SCDOT TYPICAL 714-205-01, ON PROPER GRADE TO ALLOW FOR POSITIVE STORM WATER FLOW WITHIN THE PIPE AND TO/FROM ADJACENT PIPES/CROSS LINES. INSTALL BEVELED END SECTIONS WITH RIPRAP ACCORDING TO SCDOT TYPICAL 719-610-00.



CLIENT: HANNAH-SALEM-FRIENDFIELD FIRE DEPARTMENT  PLAN SET: NEW STATION AT FRIENDFIELD  DESC: GRADING & DRAINAGE PLAN	DESCRIPTION: GRADING & DRAINAGE PLAN	
	PLAN SET: DESIGN DATE: Jul 21, 2016 PROJECT: AE0505 SHEET: 001	DESIGNED BY: JCS DRAWN BY: JCS CHECKED BY: GEW APPROVED BY: MJE DATE: Jul 21, 2016 SCALE: 1"=20' CITY: FRIENFIELD COUNTY: TUSSELOE PROJECT: AE0505 DWG. # 07-0516 DATE: 07-05-16 REVISION: BY

- ELECTRICAL (TELECOMMUNICATIONS) LEGEND
- TELEPHONE OUTLET
  - TELEPHONE OUTLET MOUNTED ABOVE COUNTER BACKSPLASH, OR AT HEIGHT NOTED.
  - TELE/DATA OUTLET.
  - TELE/DATA OUTLET MOUNTED ABOVE COUNTER BACKSPLASH, OR AT HEIGHT NOTED.

- TELECOMMUNICATIONS (ET) NOTES
- ET-1 FURNISH A COMPLETE TELEPHONE CONDUIT SYSTEM AS INDICATED ON THE DRAWINGS.
- ET-2 TELECOMMUNICATION OUTLETS (TELEPHONE OR TELE/DATA) SHALL CONSIST OF A 4" SQUARE DEEP BOX WITH SINGLE GANG PLASTER RING.
- ET-3 PROVIDE MINIMUM 1" RACEWAY, UNLESS OTHERWISE NOTED, FROM EACH BOX TO ABOVE NEAREST ACCESSIBLE CEILING SPACE OR CABLE TRAY AS APPLICABLE. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
- ET-4 PROVIDE RACEWAYS FOR ALL EXTERIOR AND/OR EXPOSED LOCATIONS.
- ET-5 PROVIDE GROUNDING FOR ALL TELEPHONE/DATA SYSTEMS AND EQUIPMENT PER REQUIREMENTS AND SPECIFICATIONS PROVIDED BY THE OWNERS DESIGNATED VENDOR.
- ET-6 ALL LOW-VOLTAGE CABLING SHALL BE PLENUM-RATED.
- ET-7 ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.

- MECHANICAL / ELECTRICAL LEGEND
- MECHANICAL/ELECTRICAL DISCONNECTS
- NON-FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATINGS.
  - FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATINGS.
  - BAY DOOR MOTOR CONTROL. MOUNT +48" AFF. CONTROLS SHALL BE UP, DOWN, AND STOP. MOUNTED ON 4" SQUARE BOX (FLUSH BOX)
  - CONNECTION TO MOTOR. STARTER PROVIDED BY OTHERS UNLESS OTHERWISE NOTED

- MECHANICAL/ELECTRICAL DISCONNECT (EM) NOTES
- EM-1 DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE IN NEMA 1 ENCLOSURES, UNLESS OTHERWISE NOTED.
- EM-2 DISCONNECTS SHALL BE FUSED OR NON-FUSED AS INDICATED ON PLANS. SWITCHES WILL HAVE REJECTION-TYPE FUSE CLIPS.
- EM-3 APPROVED MANUFACTURERS: EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL.
- EM-4 FUSES SHALL BE CLASS RK-5 DUAL-ELEMENT, TIME-DELAY WITH INDICATION.
- EM-5 A SET OF THREE FUSES OF EACH SIZE AND TYPE SHALL BE FURNISHED TO THE OWNER.

- MECHANICAL/ELECTRICAL COORDINATION (MEC) NOTES
- MEC-01 ELECTRICAL CONTRACTOR SHALL CONNECT AND/OR PROVIDE FINAL CONNECTIONS TO ALL PLUMBING AND MECHANICAL EQUIPMENT.
- MEC-02 ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONNECTIONS PRIOR TO ROUGH-IN USING APPROVED CATALOG SHEETS AND SHOP DRAWINGS.
- MEC-03 THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANUAL STARTER SWITCHES, DISCONNECT SWITCHES, RECEPTORS, ETC. TO MECHANICAL/PLUMBING EQUIPMENT. ALL STARTERS (OTHER THAN MANUAL STARTER SWITCHES) SHALL BE PROVIDED BY OTHERS, BUT INSTALLED BY ELECTRICAL CONTRACTOR.
- MEC-04 ALL DISCONNECT SWITCHES AND FUSE SIZES SHALL BE COORDINATED WITH SHOP DRAWINGS PRIOR TO INSTALLATION. ANY EQUIPMENT INSTALLED INCORRECTLY BECAUSE OF OR LACK OF COORDINATION WILL BE REMOVED AND INSTALLED CORRECTLY AT THE ELECTRICAL CONTRACTORS EXPENSE.
- MEC-05 ELECTRICAL CONTRACTOR SHALL INSTALL ALL STARTERS PROVIDED BY OTHER TRADES.
- MEC-06 THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT RUNS & LIGHT FIXTURE LOCATIONS ABOVE THE CEILING WITH OTHER TRADES PRIOR TO INSTALLATION.

- ELECTRICAL (E) NOTES
- CONDUIT (EC) NOTES
- EC-1 CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
- EC-2 MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR WORK.
- EC-3 FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
- EC-4 PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
- EC-5 EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL BE MADE OF STEEL.
- EC-6 ALL CONDUIT/RACEWAY SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE.
- EC-7 ALL RUNS SHALL BE NEAT AND SQUARE. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES, WHETHER EXPOSED OR NOT.
- EC-8 SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS. ALL CONDUIT SHALL BE SUPPORTED FROM STRUCTURE AND PROPERLY SECURED.
- EC-9 WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINTS, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPEES.
- EC-10 RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.
- EC-11 LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOPS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR ENTIRE LENGTH OF INACCESSIBILITY.
- EC-12 RACEWAYS USED FOR LOW VOLTAGE SYSTEMS SUCH AS TELECOMMUNICATIONS, FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARDS SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.
- EC-13 LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT. MAXIMUM LENGTH OF 3'-0".
- EC-14 FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".
- EC-15 PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 30. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE RGS.
- EC-16 ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
- EC-17 ALL UNDERGROUND RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM BITUMASTIC.
- EC-18 ALL CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETHYLENE FLUOROTHYLENE TAPE.
- EC-19 THE USE OF AC OR NM CABLE IS NOT PERMITTED.

- ELECTRICAL LEGEND
- ELECTRICAL DEVICES AND PATHWAYS
- WIRING SYSTEM CONCEALED IN WALL OR CEILING. WHEN SHOWN, CROSS LINES INDICATE NUMBER OF WIRES. (GROUND WIRES ARE NOT SHOWN)
  - WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND.
  - WIRING SYSTEM EXPOSED.
  - CONDUIT TURNED UP TO FLOOR ABOVE.
  - CONDUIT TURNED DOWN TO FLOOR BELOW
  - BRANCH CIRCUIT HOMERUN TO PANEL.
  - JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED.
  - 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
  - SHORE CONNECTION (CEILING MOUNTED); WHITE CORD REEL, WITH 50' CABLE AND OUTLETS. CONDUITX INSUL & PART #121120305016 RB-5-20R, OR REELCRAFT EQUAL.
  - SINGLE RECEPTACLE, 20 AMP, 120 VOLT HUBBELL 5251, OR EQUAL.
  - DUPLEX RECEPTACLE, 20 AMP, 120 VOLT (USE 20 AMP FOR SINGLE RECEPTACLE ON A CIRCUIT) HUBBELL 5552, OR EQUAL.
  - DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER BACKSPLASH, OR AT HEIGHT NOTED.
  - GROUND FAULT RECEPTACLE, NEMA 5-20R DUPLEX, ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 3' OF A SINK OR IN A KITCHEN SHALL BE GFCI.

- ELECTRICAL OUTLET BOX (EO) NOTES
- EO-1 JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, GROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT.
- EO-2 OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
- EO-3 ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
- EO-4 ATTACH STUDS TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
- EO-5 ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
- EO-6 ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

- ELECTRICAL WIRING DEVICE (ED) NOTES
- ED-1 WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.

- SWITCHES (120/277V) SHALL BE AS FOLLOWS:
- |                    |               |
|--------------------|---------------|
| SINGLE-POLE 20 AMP | COOPER AH1221 |
| DOUBLE-POLE 20 AMP | COOPER AH1222 |
| THREE-WAY 20 AMP   | COOPER AH1223 |
| FOUR-WAY 20 AMP    | COOPER AH1224 |
- DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:
- |                    |               |
|--------------------|---------------|
| 15 AMP DUPLEX      | COOPER 5252   |
| 20 AMP DUPLEX      | COOPER 5352   |
| 15 AMP DUPLEX GFCI | COOPER VGF15F |
| 20 AMP DUPLEX GFCI | COOPER VGF20F |

- THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE ARCHITECTURAL SPECIFICATIONS FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.
- ED-2 SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.
- ED-3 EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
- ED-4 ADJACENT DEVICES SHALL HAVE A COMMON WALL TYPE.
- ED-5 WEATHERPROOF COVERS SHALL BE "WHILE-IN-USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WU-2 DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL.
- ED-6 A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT
- ED-7 ALL WALL MOUNTED OCCUPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT WITH AN EQUIPMENT GROUNDING CONDUCTOR.
- ED-8 GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED IN ALL LOCATIONS PER NEC 210.8. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.

- ELECTRICAL (E) NOTES
- PANELBOARDS (EP)
- EP-1 PANELBOARDS SHALL BE PROVIDED AS MANUFACTURED BY EATON, SQUARE-D, GENERAL ELECTRIC OR APPROVED EQUAL. ALL NEW EQUIPMENT FOR THE PROJECT SHALL BE OF THE SAME MANUFACTURER.
- EP-2 PANELS SHALL BE FULLY RATED (AIC). NO SERIES AIC RATINGS ARE ALLOWED.
- EP-3 PANELS SHALL HAVE FULL SIZE EQUIPMENT GROUNDING BARS AND NEUTRAL BARS, EXCEPT WHERE INDICATED TO BE 200%.
- EP-4 ALL BUSSING, INCLUDING NEUTRAL AND GROUND, SHALL BE COPPER.
- EP-5 ALL BREAKERS SHALL BE AUTOMATIC THERMAL-MAGNETIC TYPE. MOLDED CASE BOLT-ON TYPE, CALIBRATED FOR 40 DEGREE C, OR AMBIENT COMPENSATION, UNLESS OTHERWISE NOTED.
- EP-6 ALL PANELBOARD AND BREAKER LUGS SHALL BE SIZED AND RATED PER THE CONDUCTOR SIZE AND MATERIAL.
- EP-7 LIGHTING AND APPLIANCE PANELS (100A TO 800A) SHALL HAVE FRONT ACCESSIBLE HINGED DOOR-IN-DOOR COVERS WITH DEAD FRONT, SHALL BE 20" WIDE MINIMUM WITH 4" WIDE MINIMUM WIRING GUTTERS.
- EP-8 DISTRIBUTION PANELS (800A TO 1200A) SHALL HAVE FRONT ACCESSIBLE DEAD FRONT COVERS.
- EP-9 PROVIDE HANDLE LOCK-ON DEVICES FOR ALL CIRCUIT BREAKERS CONNECTED TO EMERGENCY, EXIT, NIGHT LIGHTING, FIRE ALARM, TELEPHONE BOARDS, AND SECURITY SYSTEMS.
- EP-10 BREAKERS USED FOR SWITCHING SHALL BE SWITCHING DUTY (SWD) RATED.
- EP-11 BREAKERS USED FOR HEATING, AIR CONDITIONING AND/OR REFRIGERATION SHALL BE HACR RATED.
- EP-12 GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED IN ALL LOCATIONS PER NEC 210.8. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
- EP-13 BREAKERS WITH ARC-FAULT CIRCUIT-INTERRUPTER (AFCI) PROTECTION SHALL BE INSTALLED FOR ALL 120V, 15A AND 20A BRANCH CIRCUITS IN DWELLING UNITS AS DEFINED BY THE NEC. THIS EXCLUDES KITCHENS, BATHROOMS, UNFINISHED BASEMENTS, GARAGES AND OUTDOOR LOCATIONS. GUEST ROOMS/SUITES WITH PERMANENT PROVISIONS FOR COOKING SHALL BE CONSIDERED A DWELLING UNIT. STUDENT HOUSING UNITS SHALL BE CONSIDERED A DWELLING UNIT.
- EP-14 ALL OVERCURRENT DEVICES WHICH COMPRISE THE EMERGENCY SYSTEM SHALL BE SELECTIVELY COORDINATED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MANUFACTURER DOCUMENTATION INDICATING COMPLIANCE WITH THE SELECTIVE COORDINATION REQUIREMENTS PER THE NEC.

- ELECTRICAL (E) NOTES
- LIGHTING (EL)
- GENERAL (EG)
- EL-1 MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.
- EL-2 SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF FIXTURES.
- EL-3 ALL FIXTURES SHALL BE UL LISTED AND LABELED.
- EL-4 ALL FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.
- EL-5 SURFACE-MOUNTED FLUORESCENT FIXTURES INSTALLED ON COMBUSTIBLE MATERIAL SHALL BE MOUNTED AT LEAST 1/4" FROM THE SURFACE OF THE MATERIAL, EXCEPT FOR FIXTURES THAT ARE PLAINLY MARKED AS UL APPROVED FOR MOUNTING DIRECTLY TO SUCH SURFACES.
- EL-6 ALL FIXTURES SHALL BE GROUNDED PER THE NEC.
- EL-7 FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".
- EL-8 FLORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS (WHETHER INTEGRAL OR EXTERNAL) TO EACH LUMINAIRE PER NEC 410.130(G).
- EL-9 ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.

- FIXTURE/EQUIPMENT SCHEDULES
- EL-10 FIXTURE TYPES ARE AS SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES MAY BE SUBMITTED AS INDICATED ON THE FIXTURE SCHEDULE, SUBJECT TO THE ENGINEERS APPROVAL.
- EL-11 ALL COST ASSOCIATED WITH SUBSTITUTED FIXTURES TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING TRIM, ACCESS, MOUNTING, LAMPS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED FIXTURES WILL BE ACCEPTED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURERS INSTALLATION INSTRUCTIONS.
- EL-12 CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS JUNCTION BOXES, PLASTER RINGS, LOUVERS, MOUNTING EQUIPMENT, CONNECTORS, STRAPS, OR OTHER HARDWARE OR ACCESSORIES TO FIT THE FIXTURE PROPERLY TO THE STRUCTURE, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE CONTRACTOR SHALL PROVIDE ANY APPURTENANCES FOR MOUNTING OR TRIM TO CEILING OR WALL TYPE AS SPECIFIED IN THE ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF THE CATALOG NUMBER GIVEN.
- EL-13 ALL LIGHTING FIXTURES SHALL COME EQUIPPED WITH LAMPS. ACCEPTABLE LAMP MANUFACTURERS ARE GENERAL ELECTRIC, PHILIPS, OR SYLVANIA UNLESS OTHERWISE NOTED ON THE FIXTURE SCHEDULE.

- LIGHTING CONTROLS
- EL-14 TIME CONTROLLER. FURNISH AND INSTALL WHERE INDICATED AN ELECTRONIC TIME CONTROLLER AS MANUFACTURED BY TORK (NSI), PARAGON, INTRAMATIC, OR APPROVED EQUAL. CONTROLLER SHALL HAVE THE FOLLOWING CHARACTERISTICS:
- CONTRACTS: SPST, OR AS INDICATED
  - RATED 120/277 AT 20A BALLAST LOAD
  - MINIMUM 30K SWITCHING CYCLES
  - MINIMUM 4 CHANNELS, AS INDICATED, OR AS REQUIRED TO MEET THE INTENT OF THE DRAWINGS
  - EACH CHANNEL SHALL BE INDIVIDUALLY PROGRAMMABLE WITH:
    - 128 ON-OFF OPERATIONS PER WEEK
    - FOUR SEASONAL SCHEDULES TO MODIFY THE BASE PROGRAM
    - A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION
  - PHOTOELECTRIC SENSOR
  - ASTRONOMIC DIAL
  - BATTERY BACKUP
  - NON-VOLITILE MEMORY FOR SCHEDULES AND TIME CLOCK
- EL-15 CONTRACTORS. LIGHTING CONTRACTORS SHALL SWITCH LOADS AT THE VOLTAGE AND AMPERE RATING INDICATED AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS, OR AS REQUIRED. THE CONTRACTOR AND CONTRACTS SHALL BE CONTINUOUSLY RATED FOR THE LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, INDUCTIVE, AND HIGH-INRUSH BALLAST LOADS.
- EL-16 ALL LIGHTING CONTRACTORS SHALL BE ELECTRONICALLY HELD AND BE INSTALLED IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.

- ELECTRICAL (E) NOTES
- WIRING/CONDUCTOR (EW)
- EW-1 ALL CONDUCTORS SHALL BE IN CONDUIT.
- EW-2 ALL CONDUCTORS SHALL BE COPPER, RATED 75 C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR REQUIRED BY U.L. OR OTHER CODES.
- EW-3 CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SMPULL), ENCORE (SUPERBULK), UNITED COPPER (ULK), CERRO (SLP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.
- EW-4 ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER SHALL BE STRANDED.
- EW-5 BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
- EW-6 CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS AND BROWN/ORANGE/YELLOW FOR 277/480 VOLT SYSTEMS FOR A, B, AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS AND NATURAL GRAY FOR 277/480 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.
- EW-7 INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR.
- EW-8 WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABEL.
- EW-9 MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED.
- EW-10 JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAP) OR WIRENUTS. MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT. LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS.
- EW-11 ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDUCTORS AT THEIR 75 DEGREE AMPACITY AND SHALL BE SIZED TO MATCH THE CONDUCTOR SIZE.
- EW-12 CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS.
- EW-13 WIRE WITHIN PANEL BOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED.
- EW-14 ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.
- EW-15 GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT, SIZED PER NEC 250-127.
- EW-16 ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.
- EW-17 THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS OF WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V & 277V, 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT.

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VOLTAGE	CONDUCTOR LENGTH*	BRANCH CIRCUIT
120	0'-00'	#12
120	61'-00'	#10
120	91'-140'	#8
120	141'-225'	#6

\* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

- ELECTRICAL (E) NOTES
- GENERAL (EG)
- EG-1 THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS, AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
- EG-2 ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY. CONTRACTOR SHALL PAY FOR ALL REQUIRED PERMITS, FEES, INSPECTIONS, ETC.
- EG-3 CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES.
- EG-4 ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND USE EXISTS. ALL ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.
- EG-5 CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINAIRES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE.
- EG-6 ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATE WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.
- EG-7 ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE CONSTRUCTION PLANS AS THE JOB PROGRESSES.
- EG-8 COMPLETE ADEQUATE HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN CONTACT WITH THE GROUND.
- EG-9 THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED PER NEC 250.
- EG-10 PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94.
- EG-11 WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER.
- EG-12 PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE.
- EG-13 THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE DISCIPLINE.
- EG-14. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER.
- EG-15 UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT.
- EG-16 CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT ADDED COST TO THE PROJECT.
- EG-17 IT IS NOT THE INTENT OF ISSUED PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.
- EG-18 THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE, ERECT, CONNECT, AND COMPLETELY INSTALL A SYSTEMS IN PROPERLY OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE INCLUDED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.
- EG-19 THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.
- EG-20 CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILL/WORK SHOP DRAWINGS PRIOR TO ROUGH-IN.
- EG-21 ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS. CONTRACTOR SHALL REFER TO ARCHITECTURAL FLOOR PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED.
- EG-22 CONTRACTOR SHALL TEST ALL LIFE SAFETY EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. LIFE SAFETY EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE (NEC), NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
- EG-23 IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
- EG-24 WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING THE ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.
- EG-25 NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
- EG-26 EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MINIMUM OF 3'-0" FROM BOXES.
- EG-27 LIGHTING FIXTURES MOUNTED IN OR ON CEILINGS SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

- SUPPORTS
- EG-28 ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE.
- EG-29 NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
- EG-30 EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MINIMUM OF 3'-0" FROM BOXES.
- EG-31 LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.
- PAINTING
- EG-32 SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURERS STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.

- EQUIPMENT IDENTIFICATION (EI)
- EI-1 PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGHS, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, ETC. PROVIDE NAMEPLATES FOR CIRCUIT BREAKERS IN SWITCHGEARS, SWITCHBOARDS AND DISTRIBUTION PANELS. EACH NAMEPLATE SHALL INDICATE THE FOLLOWING:
- DEVICE NAME
  - SYSTEM VOLTAGE (VOLTAGE/PHASE/WIRE)
  - UPSTREAM DEVICE & CIRCUIT
- EI-2 NAMEPLATE COLORS SHALL BE AS FOLLOWS:
- | TYPE               | SURFACE COLOR | CORE COLOR |
|--------------------|---------------|------------|
| 120/208V EQUIPMENT | BLUE          | WHITE      |
| 277/480V EQUIPMENT | BLACK         | WHITE      |
| EMERGENCY          | GREEN         | WHITE      |
| FIRE ALARM         | BRIGHT RED    | WHITE      |
| SECURITY           | BURGUNDY      | WHITE      |
| TELEPHONE          | ORANGE        | WHITE      |
| DATA               | BROWN         | WHITE      |
| TV                 | PURPLE        | WHITE      |
| PAGING             | WHITE         | BLACK      |
- EI-3 PLATE THICKNESS:  
NAMEPLATES UP TO 8 SQUARE INCHES = NOT LESS THAN 1/16" THICK  
NAMEPLATES OVER 8 SQUARE INCHES = NOT LESS THAN 1/8" THICK
- EI-4 LETTERING HEIGHT = 1/32" MINIMUM
- EI-5 NAMEPLATES SHALL BE ATTACHED WITH SELF-DRILLING / SELF-TAPPING SCREWS, EXCEPT RIVETS SHALL BE USED WHERE THE END OF SCREWS NOT EFFECTIVE TO SECURE THE NAMEPLATE.
- MINIMUM NUMBER OF SCREWS:
- UP TO 5 SQUARE INCHES = 2 SCREWS  
5 TO 12 SQUARE INCHES = 4 SCREWS  
OVER 12 SQUARE INCHES = 6 SCREWS

- EW-1 MARLEY ENGINEERED PRODUCTS (OR EQUAL) 1500W-115V-IPH-12.5 AMPS CATALOG #AW1+3150F WITH RECESS MOUNT PART #SWH52
- EW-2 MARLEY ENGINEERED PRODUCTS (OR EQUAL) 1500W-115V-IPH-12.5 AMPS CATALOG #AW1+3150F WITH SURFACE MOUNT, SHALL BE PART #SWH5M

- ELECTRICAL SPECIFICATIONS:
- FIRE ALARM SYSTEM:
- A. SYSTEM SHALL BE A CENTRALIZED, ANALOG, ADDRESSABLE, FULLY ELECTRONICALLY SUPERVISED (INCLUDING AUXILIARY SYSTEMS INTERCONNECT) SYSTEM LISTED BY UL IN COMPLIANCE WITH ALL APPLICABLE NFPA 72 AND OTHER STANDARDS AS WELL AS THE AMERICANS WITH DISABILITIES ACT (ADA). ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLE, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE 424 HR MINIMUM BATTERY BACKUP.
- B. INITIATION DEVICE ACTIVATION SHALL CAUSE OPERATION OF THE PROPER ALARM CIRCUIT IN THE CONTROL PANEL, AND OPERATE ALL AUDIBLE AND VISUAL INDICATION ALARMS. ALL AIR HANDLING UNITS SHALL BE STOPPED UPON ANY ALARM INPUT. EACH AIR HANDLER UNIT SHALL BE PROVIDED WITH A SYSTEM CONTROLLED RELAY TO EFFECT SHUTDOWN. ALL ALARM DEVICES AND LAMPS SHALL CONTINUE TO OPERATE UNTIL THE INITIATING DEVICE IS RESET. SUBSEQUENT ALARMS SHALL RESOUND THE SYSTEM. AN AUDIBLE AND VISUAL SIGNAL SHALL INDICATE SYSTEM TROUBLE. THE CONTROL PANEL SHALL PROVIDE FOR ACTIVATING A UL LISTED CENTRAL STATION SIGNAL FOR NOTIFYING THE FIRE DEPARTMENT.
- C. MANUAL STATIONS SHALL BE NON-CODED, WITH PULL LEVER AND GLASS ROO, SEMI-FLUSH MOUNTED. COMBINATION LIGHT AND HORN SIGNALS SHALL BE FLUSH MOUNTED. WIRING SHALL BE IN CONDUIT AS PREVIOUSLY SPECIFIED, #14 AWG MINIMUM, THHN. ALL J-BOXES USED FOR THE FIRE ALARM SYSTEM SHALL BE PAINTED RED.
- D. CONDUCTORS SHALL BE PLENUM-RATED NOT INSTALLED IN CONDUIT AND INSTALLED IN COMPLIANCE WITH NFPA 70, ARTICLE 760; IN ADDITION TO WIRING METHODS 300.4.
- E. ALL FIRE ALARM WIRING SHALL BE CLASS B.
- F. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.
- G. SUBMIT FIRE ALARM SHOP DRAWINGS CONSISTING OF PRODUCT DATA, TO THE ENGINEER AND FOR APPROVAL.
- H. FILL OUT NFPA 72 CERTIFICATION REPORT AND SUBMIT TO ENGINEER AND AUTHORITY HAVING JURISDICTION.
- I. WARRANTY - ALL WORK PERFORMED AND ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE PROFESSIONAL ENGINEER AND/OR OWNER. THE FULL COST OF MAINTENANCE, LABOR, AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS TWO YEAR PERIOD SHALL BE IMMEDIATELY CORRECTED AT NO ADDITIONAL COST TO THE OWNER. ANY DEFECTS THAT RENDER THE SYSTEM INOPERATIVE SHALL BE REPAIRED WITHIN 24 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR. OTHER DEFECTS SHALL BE REPAIRED WITHIN 48 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR.

- FIRE STOPPING:
- J. ALL PENETRATIONS OF RATED ASSEMBLIES SHALL BE SEALED WITH RATED MATERIALS MEETING ASTM E-814.
- K. PROVIDE FIRE STOPPING DEVICES(S) OR SYSTEM(S) WHICH HAVE BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814. INSTALL THE DEVICE(S) OR SYSTEM(S) IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE THE APPROPRIATE DEVICES(S) OR SYSTEM(S) WITH AN "F" RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED.
- L. DEVICES(S) AND/OR SYSTEM(S) SHALL BE BY LIST, 3M OR EQUIVALENT.
- SEISMIC:
- M. THE ELECTRICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROVIDING SEISMIC SUPPORT AND BRACING OF ELECTRICAL COMPONENTS TO RESIST THE EFFECTS OF EARTHQUAKES ON THE ELECTRICAL SYSTEM AS WELL AS ANY AS REQUIRED. THE SEISMIC RESTRAINTS AND SPECIAL INS

LIGHT FIXTURE SCHEDULE							
SYMBOL	DESCRIPTION	LAMP DESCRIPTION	TOTAL FIXTURE WATTAGE	BALLASTS	VOLTAGE	MANUFACTURER/CATALOG NUMBER	SPECIFICS
HB1	FLUORESCENT HIGH BAY	4-LSF54/50W/835/HO/SS/ECO	216W	SYLVANIA QUICKTRONIC 2-QHE2X54T5HO/UNV PSN-HT	UNIV	METALUX HB451T5M-WGUNV-UPL-FH1	WHITE FINISH, SPECULAR REFLECTOR, WIRE GUARD MOUNTED WITH HOOK AND SEISMIC SUPPORT CABLES. MINIMUM 8% UPLIGHT, SURFACE MOUNT
OA	WALLPACK	MCP70/U/MED/830P8	77W	QTP1X70MH/UNV PULSE START METAL HALIDE	UNIV	LITHONIA TWP-70M-120-DWH-LP1-PE	DIECAST ALUMINUM HOUSING. DARK BRONZE FINISH. CLEAR TEMPERED GLASS LENS. WET LOCATION LABEL. COORDINATE HEIGHT WITH ARCHITECTURAL ELEVATIONS.
OB	GROUND MOUNTED FLOODLIGHT	MCP70/U/MED/830P8	77W	QTP1X70MH/UNV PULSE START METAL HALIDE	UNIV	LITHONIA ASF1-70M-MDF-120-PE -DDBT-LP1	HORIZONTAL FLOOD SPREAD. ONE PIECE DIECAST ALUMINUM HOUSING WITH A CONTINUOUS CYLINDER SHAPE. 3/16" CLEAR TEMPERED GLASS LENS. SEMI-GLOSS BAKED ENAMEL DARK BRONZE FINISH. MOUNT ON A STANCHION IN A 12"x12"x6" DEEP CONCRETE PAD. (FLAG POLE) WALL MOUNT ON 12" EXTENDER ARM FROM BUILDING FRONT (SIGN)
OC	LED EXTERIOR EMERGENCY EGRESS LIGHT	5.4W INCANDESCENT LAMP	11W	NONE	UNIV	CHLORIDE SYSTEMS VW2RHP LITHONIA ELAT6CSWFM12	WHITE POLYCARBONATE HOUSING. WET LOCATION LABEL. MOUNT AT 8' ABOVE FINISHED GRADE. SUPPLY WITH EMERGENCY BATTERY PACK FOR 90 MINUTE OPERATION. BATTERY PACK SHALL BE COLD WEATHER RATED.
X	LED EXIT SIGN	LED	2.5W/FACE	NONE	UNIV	CHLORIDE SYSTEMS SYMMETRY SERIES #SN1RW LITHONIA LQM SW3 120/277 ELN	POLYCARBONATE HOUSING WITH SELF-CONTAINED POWER PACK FOR 90 MINUTES OPERATION. NICAD BATTER. WHITE HOUSING. RED LETTERS.
EL	EMERGENCY LIGHT	2-20W MR16 FLOOD	40W	NONE	UNIV	CHLORIDE SYSTEMS #S250NH20FW LITHONIA ELMLT W LP06V5	POLYCARBONATE HOUSING WITH SELF-CONTAINED POWER PACK FOR 90 MINUTES OPERATION. NICAD BATTER. WHITE HOUSING.
B	FLUSH MOUNT CEILING FIXTURE	CIRCLINE T9	40W	120V 60HZ ELECTRONIC BALLAST	UNIV	LITHONIA FM72 ACLS LP R4	LOW PROFILE FLUSH MOUNT 20" SQUARE, WHITE FINISH, ACRYLIC DIFFUSER.

LIGHT FIXTURE NOTES

- LIGHTING FIXTURES, AS SPECIFIED, HAVE BEEN SELECTED TO ACHIEVE REQUIRED/DESIRED FOOT CANDLE LEVELS OF ILLUMINATION IN THEIR RESPECTIVE AREA. HENCE SPECIFIC FIXTURE CHARACTERISTICS WHICH MAY CREATE PARTICULAR ILLUMINATION RESULTS ARE ESSENTIAL. ANY DEVIATIONS FROM SPECIFIED FIXTURES SHALL DEEM THE SUBMITTING AGENT AND CONTRACTOR RESPONSIBLE IN PROVING SUCH DEVIATION WILL PROVIDE THE EXACT LIGHTING RESULT IN DUPLICATION TO THE DESIGN HEREIN.
- SUBSTITUTIONS APPROVED BY THE ENGINEER PREVIOUS TO BID ARE ACCEPTABLE AS LONG AS THEY ARE EQUAL TO SPECIFIED. THIS INCLUDES LENS, COLORS, REFLECTORS, PHOTOMETRIC, FINISHES, ETC. ANY SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER WITH COMPLETE CUT SHEETS FOR APPROVAL. 10 WORKING DAYS PRIOR TO BID. SUBSTITUTE FIXTURES SHALL BE PRICED WITH THE SPECIFIED FIXTURE AND LISTED SEPARATELY FOR THE ENGINEER AND OWNER TO MAKE AN INFORMED DECISION.
- CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN. CONTRACTOR SHALL VERIFY TYPE OF CEILING OR WALL BY REVIEWING ARCHITECTURAL FINISH SCHEDULES PRIOR TO ORDERING FIXTURES.
- ALL 3 AND 4 LAMP RECESSED TROFFER TYPE FIXTURES SHALL BE EQUIPPED WITH MORE THAN ONE BALLAST TO ALLOW FOR SEPARATE SWITCHING OF INBOARD AND OUTBOARD LAMPS WITHIN THE SAME FIXTURE. TANDEM WIRING BETWEEN FIXTURES IS ALLOWED TO ACCOMPLISH THE SAME RESULT. TANDEM WIRING MAY ALSO BE USED TO CONTROL A SINGLE LAMP IN A TWO LAMP FIXTURE WHERE MULT-LEVEL CONTROLS ARE ASSOCIATED WITH 2 LAMP FIXTURES.
- CONFIRM FINAL FIXTURE LOCATION WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS.
- ELECTRONIC BALLAST FOR T5 LAMPS SHALL HAVE END OF LIFE SHUTDOWN CAPABILITY AS STATED IN SPECIFICATIONS.
- PROVIDE LOW TEMPERATURE (0° F) BALLAST FOR ANY FIXTURE INSTALLED ON EXTERIOR OR OTHER AREAS SUBJECT TO LOW TEMPERATURES.
- FLUORESCENT FIXTURES EQUIPPED WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS AND DUAL INPUT TYPE INVERTERS WHERE SO INDICATED ON PLANS AND FED AHEAD OF SWITCHED CIRCUITS FOR THAT DESIGNATED AREA. EMERGENCY BALLAST SHALL BE INSTALLED BY THE FIXTURE MANUFACTURER.
- FLUORESCENT BALLAST THAT CAN BE SERVICED IN PLACE WALL HAVE A DISCONNECT MEANS COMPLIANT WITH NEC 410.130G.
- DURING THE BIDDING PROCESS, THE CONTRACTOR SHALL INFORM ARCHITECT AND ENGINEER OF ANY DELIVERY OR SCHEDULING ISSUES THAT MAY IMPACT THE PROJECT CRITICAL PATH SCHEDULING.
- NO FIXTURE SUBSTITUTIONS WILL BE CONSIDERED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER TIME OF BID.
- ALL MATERIAL EXPEDITING EXPENSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ANY FIXTURES BEING BEING INSTALLED IN CEILING, INDICATED BY THE ARCHITECT AS HAVING INSULATION IN CONTACT WITH THE CEILING SURFACE, SHALL BE IC RATED AND LABELED SUCH FROM THE MANUFACTURER.
- ACCEPTABLE BALLAST MANUFACTURERS FOR SUBMISSION ARE ARE OSRAM/SYLVANIA, ADVANCE, GE, PHILLIPS OR UNIVERSAL TRIAD PROVIDED THEY MEET INTENDED CRITERIA AS LISTED IN THIS SCHEDULE AND PROJECT SPECIFICATIONS.
- ALL FIXTURES SHALL BE MADE IN AMERICA IN AS MUCH AS POSSIBLE.
- ALL INCANDESCENT LIGHT FIXTURES SHALL BEAR A U.L. LABEL INDICATING THE MAXIMUM ALLOWABLE LAMP WATTAGE IN THAT FIXTURE.
- INSTALL ALL FLUORESCENT DOWN-LIGHT FIXTURES SO THAT ALL LAMPS ARE ALIGNED IN THE SAME DIRECTION.
- SUPPORT RECESSED TROFFERS AT ALL FOUR CORNERS FROM STRUCTURE.
- ALL METAL HALIDE LAMPS AND BALLAST SHALL MEET OR EXCEED THE ENERGY INDEPENDENCE AND SECURITY ACT 2001 (EISA) REQUIREMENTS.
- FLUORESCENT LAMP AND BALLAST WARRANTY SHALL BE COMPLETED BY THE ELECTRICAL CONTRACTOR AND SUBMITTED WITH A COPY TO THE OWNER UPON PROJECT CLOSE OUT.
- ALL LINEAR FLUORESCENT LAMPS SHALL BE 3500K UNLESS OTHERWISE INDICATED ON SCHEDULE.
- ALL LED SITE LIGHTING FIXTURES SHALL HAVE SURGE PROTECTION BUILT IN INTEGRAL TO THE FIXTURE.
- ALL ELECTRONIC BALLAST SERVING LINEAR FLUORESCENT LAMPS SHALL BE PROGRAM START.
- COMPLETELY EXAMINE LIGHTING PLANS TO COORDINATE SWITCHING, DIMMING AND ANY SPECIAL BALLAST CONTROLS THAT MAY BE PART OF THE DESIGN INTENT.
- EMERGENCY EGRESS FIXTURES SHALL BE IDENTIFIED WITH A 1/2" DIAMETER RED DOT ON FRAME, VISIBLE FROM THE FLOOR.
- COORDINATE CLOSELY FIXTURES CONTROLLED VIA AUTOMATIC OR DIMMING CONTROLS TO ASSURE FIXTURE APPENDAGES ARE ORDERED PROPERLY TO MEET DESIGN INTENT.
- CONTRACTOR SHALL FURNISH A COMPLETE SET OF PLANS TO HIS SUPPLIER TO ASSURE LIGHTING PACKAGE IS COMPLETE.
- ELECTRICAL VALUE ENGINEERING SHALL BE BILLED AT AN HOURLY RATE BY ENGINEERING BEFORE SUBMITTAL REVIEWS.
- EMERGENCY BALLASTS FOR LED FIXTURES MOUNTED IN UNCONDITIONED SPACES SHALL BE BODINE 'BSL10' SERIES OR EQUAL.

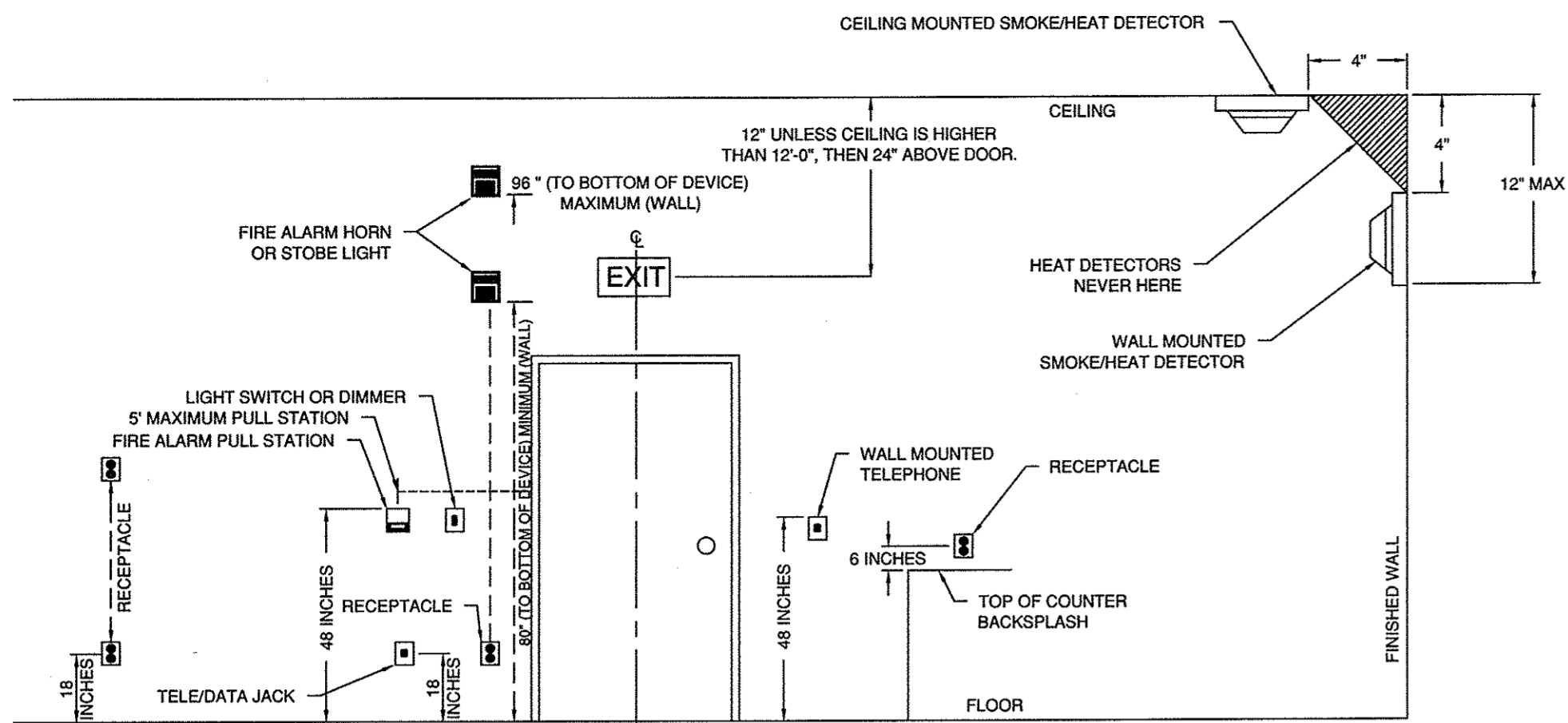
LIGHTING (SEE FIXTURE SCH.)

- FLUORESCENT OR LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
- FLUOR., LED OR H.I.D. LIGHTING FIXTURE.
- WALL MOUNTED INCANDESCENT, FLUOR, LED OR H.I.D. LIGHTING FIXTURE.
- FLUORESCENT FIXTURE WITH EMERGENCY BATTERY PACK. 1100 LUMEN INVERTER
- EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. 90 MIN. BATTERY BACKUP
- EMERGENCY BATTERY PACK FIXTURE. 90 MIN. BATTERY BACK UP
- EMERGENCY BATTERY PACK/EXIT COMBO FIXTURE. 90 MIN. BATTERY BACK UP
- EXTERIOR EMERGENCY FIXTURE. 90 MIN. BATTERY BACK UP
- FLOODLIGHT
- SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER 1221, OR EQUAL.
- THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, OR EQUAL.
- CEILING MOUNTED VACANCY SENSOR, DUAL TECHNOLOGY. WATT STOPPER DT-300 OR EQUAL W/BZ SERIES POWER PACK
- WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY, SENSOR SWITCH WSX PDT 2P 2VA OR EQUAL
- WALL MOUNTED VACANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY, SENSOR SWITCH WSX PDT 2P 2VA OR EQUAL

PANEL A: FLEMING TOWN											
120/240VAC * 1 PHASE * 3 WIRE											
SURFACE MOUNT * INDOOR NEMA Type 1 * 24 CIRCUIT											
MAIN LUG ONLY											
POWER				PHASE LOADING				LIGHTING			
DESCRIPTION	WIRE	BRKR	CKT #	A	B	CKT #	BRKR	WIRE	DESCRIPTION		
RESERVED (WELL BUILDING)	N/A	15	1	462		2	15	#8	EXTERIOR BUILDING LIGHTS		
WELL PUMP	#6	25	3		3078	4	15	#10	HIGH BAY 1 & REST ROOM		
WATER HEATER	#10	15	5	2400		6	15	#8	HIGH BAY 2		
RECEPTACLES	#8	15	7		2460	8	15	#8	HIGH BAY 3		
RECEPTACLES	#8	15	9	1671		10	15	#8	EXTERIOR FLOOD LIGHTS		
IFH-1 (INFRARED HEATING UNIT)	#10	15	11		866	12	15	N/A	FUTURE		
EXHAUST FAN FH-1	#8	20	13	1749		14	15	#10	ELECTRIC WALL HEATER EWH-1		
INTAKE FAN FH-2	#10	20	15		249	16	15	N/A	RESERVED		
FUTURE	N/A	15	17	1500		18	15	#10	ELECTRIC WALL HEATER EWH-2		
FUTURE	N/A	15	19		360	20	15	#10	SHORE POWER		
BAY DOOR MOTOR 1	#8	15	21	375		22	15	N/A	FUTURE		
BAY DOOR MOTOR 2	#8	15	23		375	24	15	N/A	FUTURE		
				8.2	7.4	TOTAL LOAD IN KWATTS PER PHASE					
				68.0	61.6	TOTAL LOAD IN AMPS PER PHASE					
				129.5				TOTAL AMPERAGE LOAD			
PANEL RATING = 150 AMP											

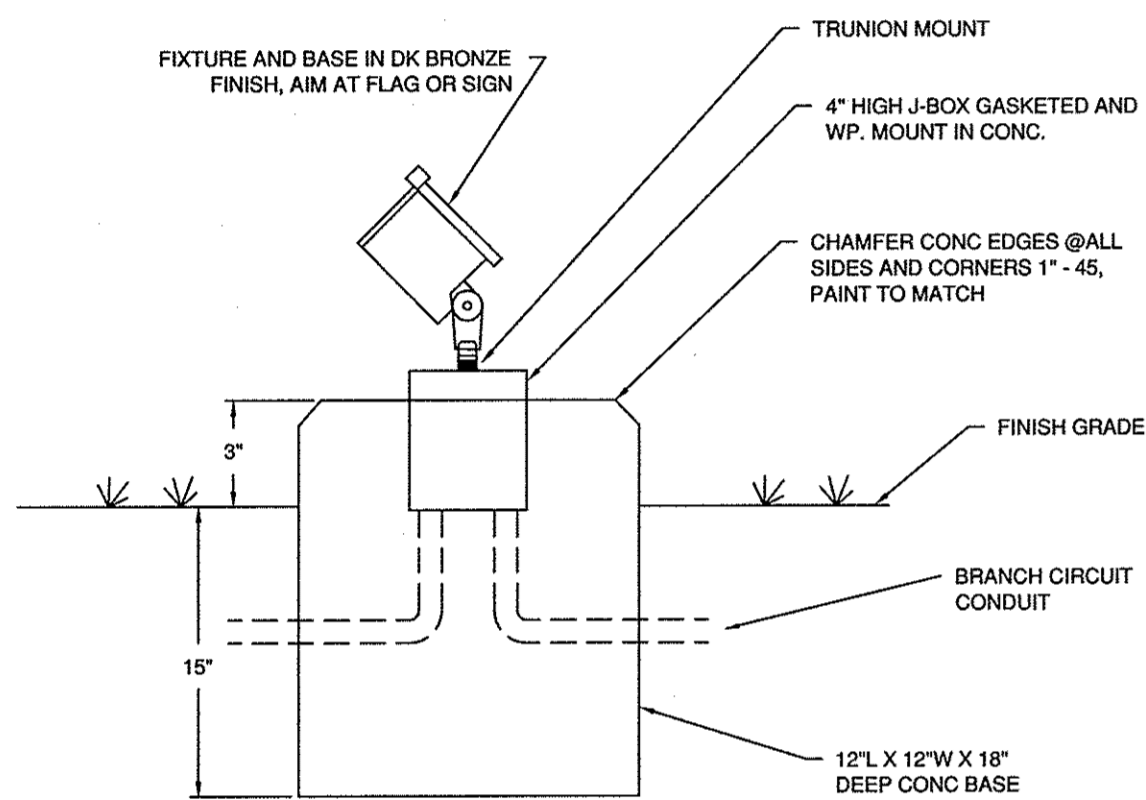
ALL WIRING TO BE BX CABLING OR PLACED INSIDE PROPERLY SIZED CONDUIT.

DESIGNED BY: MJE	CHECKED BY: JCS	APPROVED BY: MJE	DATE: JUL 21, 2016	CITY: FRIENFIELD	COUNTY: FLORENCE	PROJECT #	DATE	NO.	REVISION
BID ON ADDENDUM #1 & FLORENCE PLANNING COMMENTS						AE055	07/20/16		
HANNAH-SALEM FRIENFIELD FIRE DEPARTMENT						NEW STATION AT FRIENFIELD			
ELECTRICAL NOTES & SCHEDULES									
ELECTRICAL NOTES & SCHEDULES									
DATE: JUL 21, 2016									
PROJECT: AE055									
SHEET: E2.0									

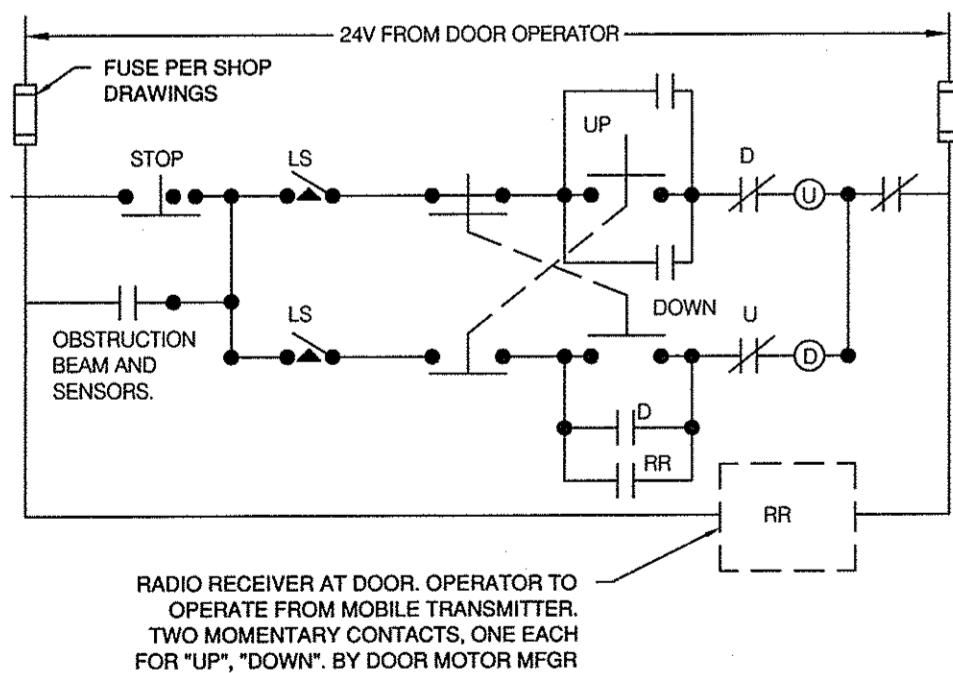


- NOTES:
1. ALL DIMENSIONS ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.
  2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.

MOUNTING HEIGHTS OF DEVICES  
NTS

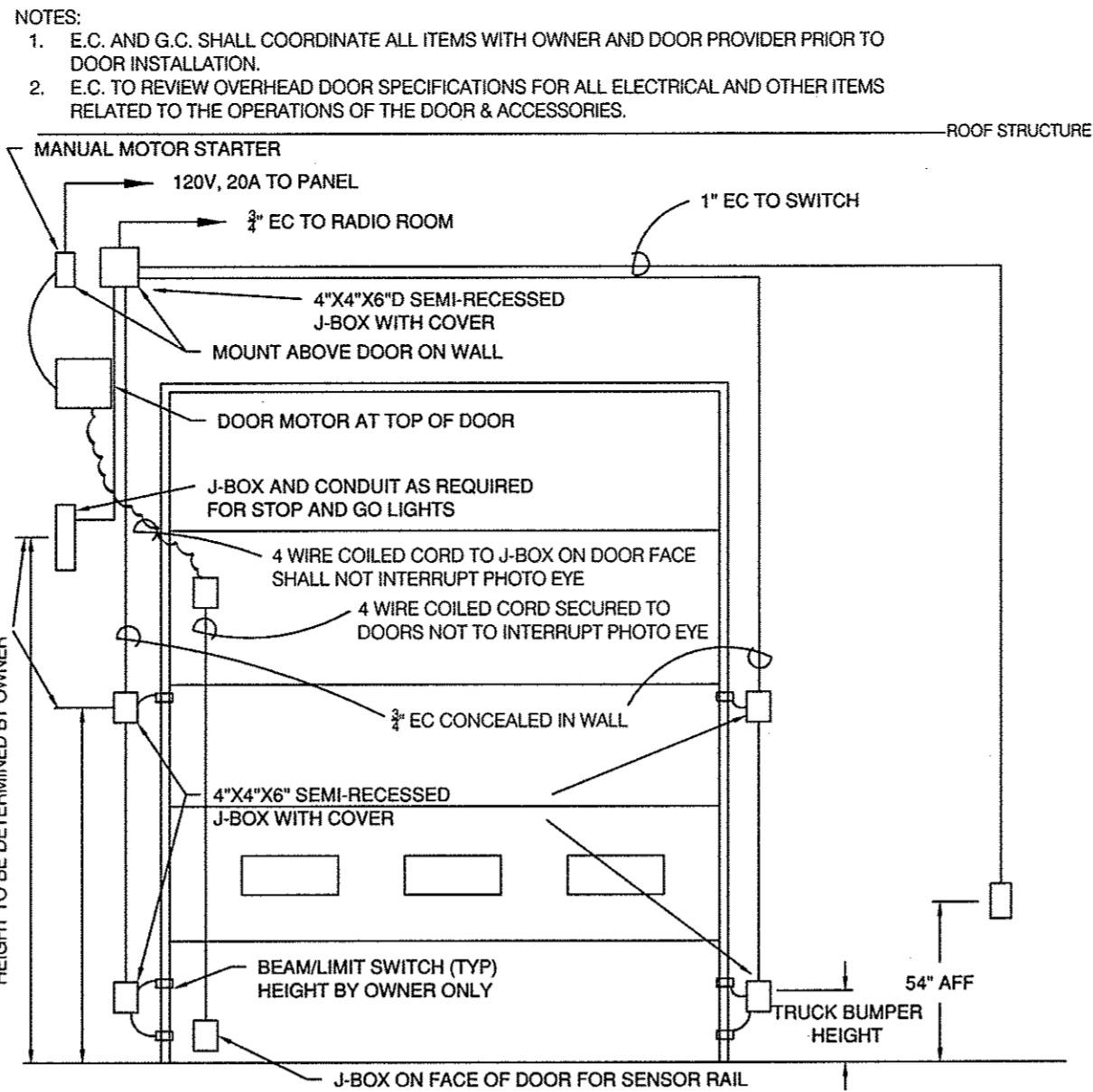


FLOODLIGHT MOUNTING - FIXTURE TYPE OB  
NTS

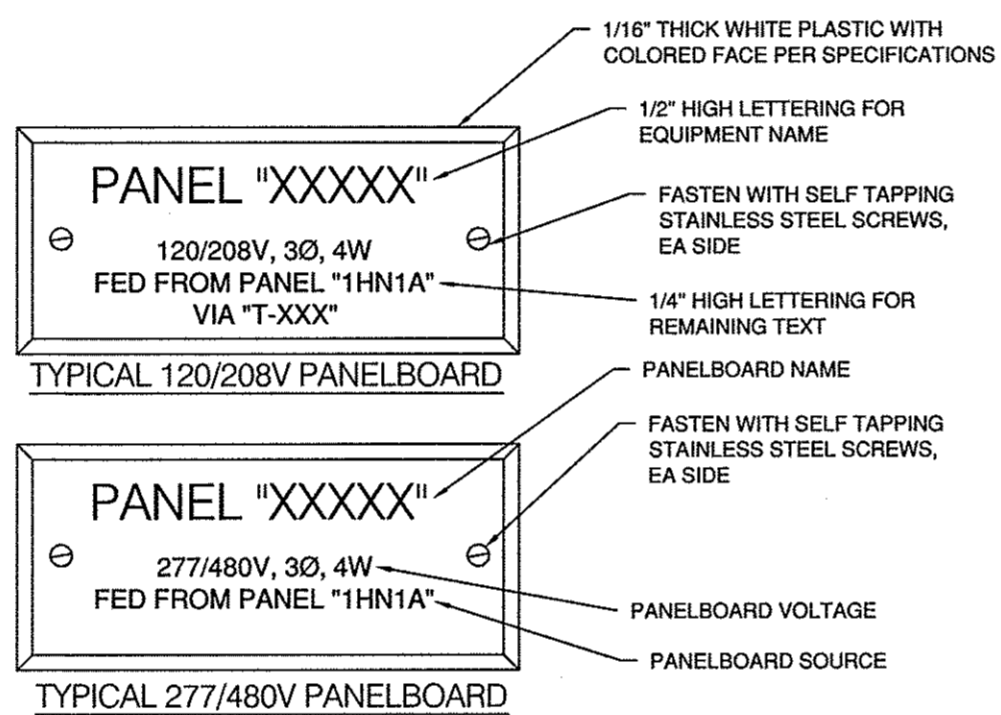


- NOTES:
1. OVERHEAD DOORS ARE TO ALSO OPERATE FROM MOBILE UNITS IN THE TRUCKS.
  2. SEE POWER PLANS FOR EXACT QUANTITY OF MOTORS.
  3. ONE SYSTEM EACH DOOR.
  4. WIRING BY E.C.
  5. MASTER CONTROL LOCATION, SHALL ACT AS A THREE WAY CONTROL. MASTER CONTROL SHALL BE ONE UP/DOWN/STOP PER DOOR. I.E. (2) TOTAL APPARATUS BAY DOORS SHALL HAVE (2) TOTAL INDIVIDUAL UP/DOWN/STOP CONTROL SWITCHES LOCATED AT THE MASTER CONTROL LOCATION.

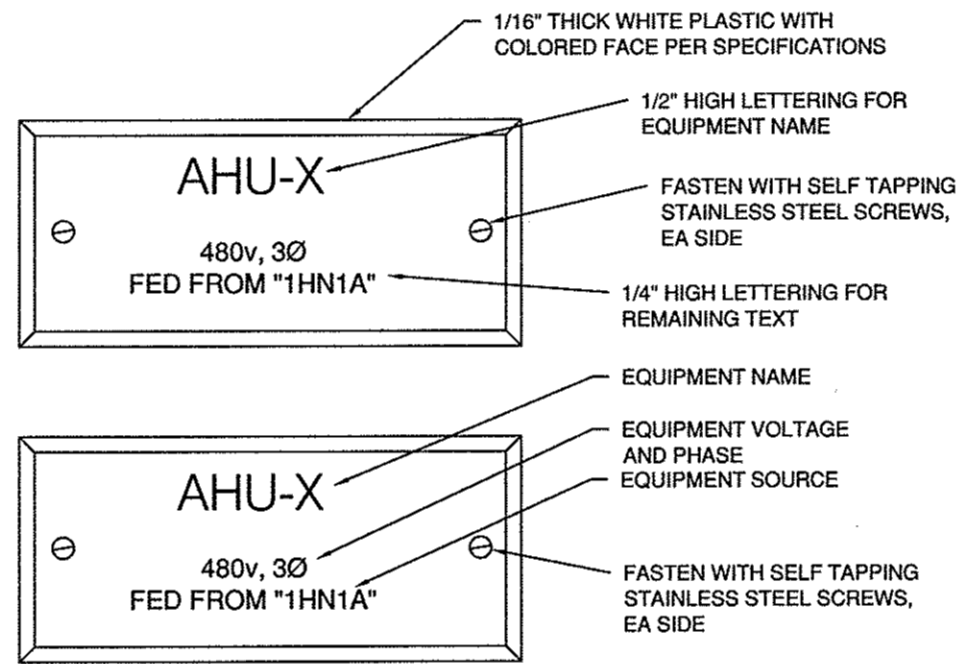
OVERHEAD BAY DOOR SCHEMATIC  
NTS



OVERHEAD BAY DOOR MOTOR DIAGRAM  
NTS

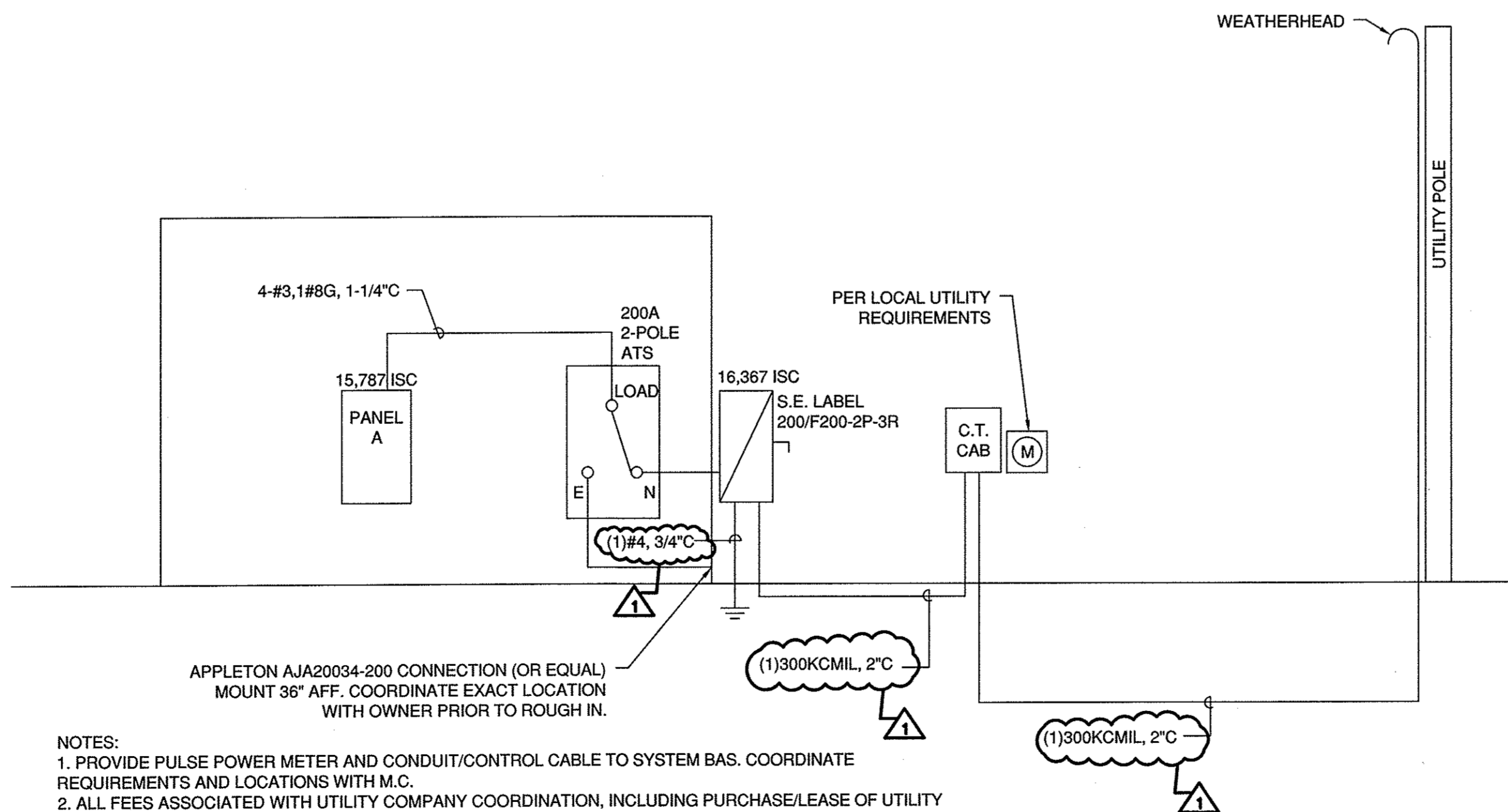


PANELBOARD NAMEPLATES



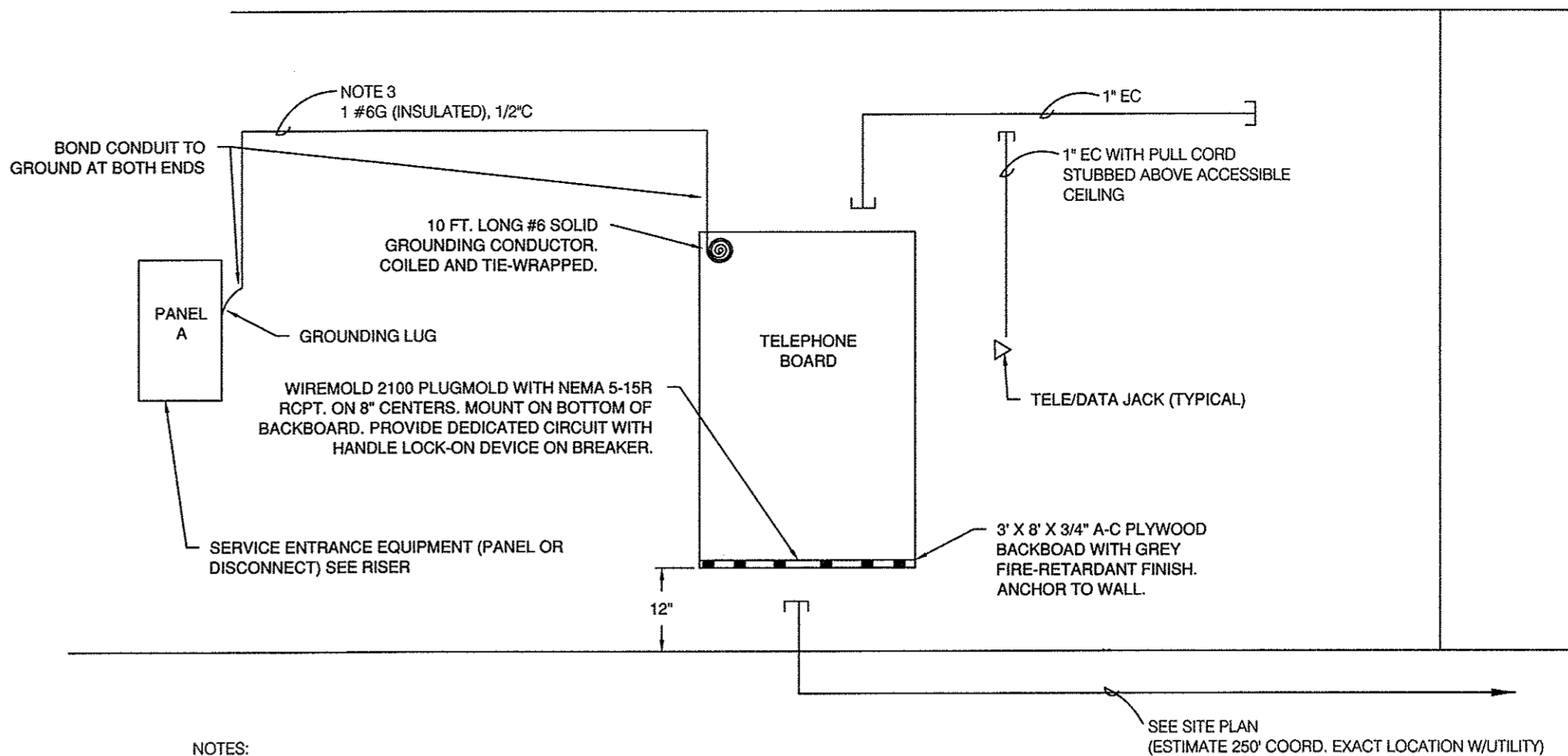
EQUIPMENT NAMEPLATES

TYPICAL NAMEPLATES DIAGRAM  
NTS



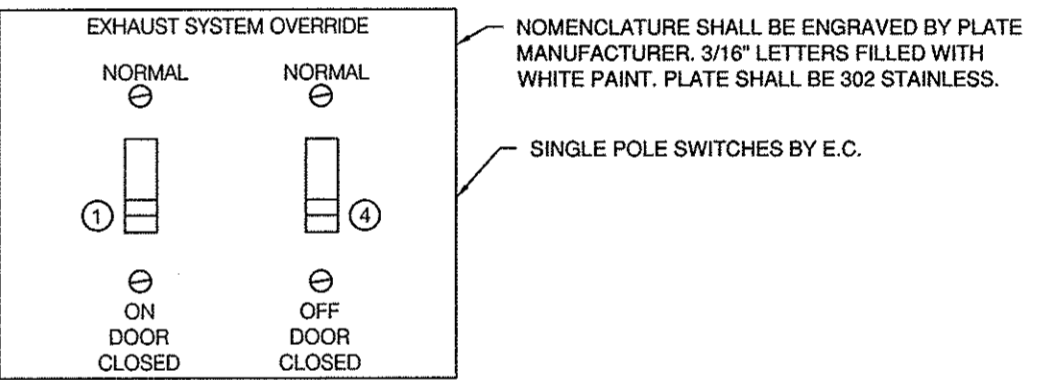
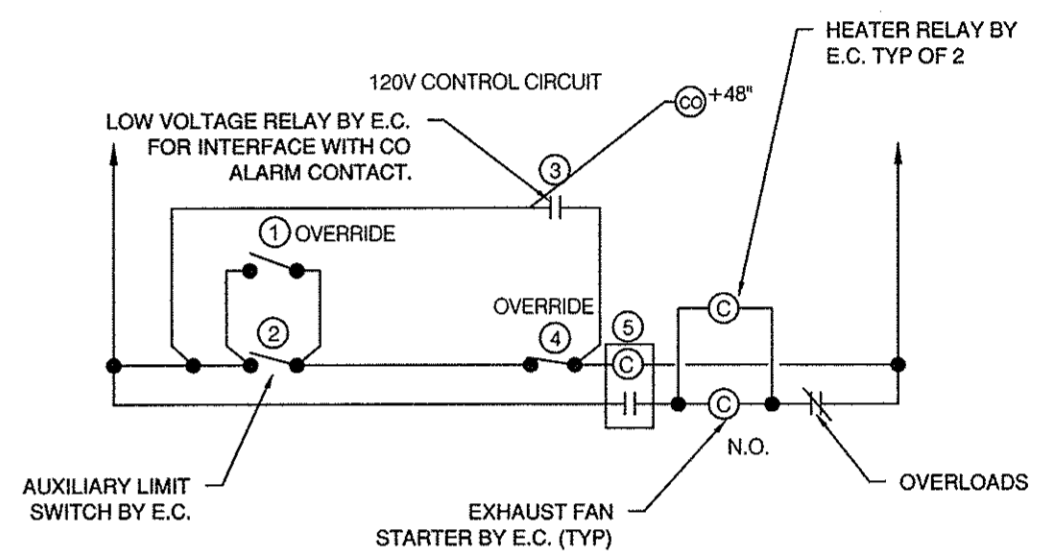
- NOTES:
1. PROVIDE PULSE POWER METER AND CONDUIT/CONTROL CABLE TO SYSTEM BAS. COORDINATE REQUIREMENTS AND LOCATIONS WITH M.C.
  2. ALL FEES ASSOCIATED WITH UTILITY COMPANY COORDINATION, INCLUDING PURCHASE/LEASE OF UTILITY TRANSFORMER, TRANSFORMER PRIMARY FEES, PAD, AND ALL ADMINISTRATIVE FEES SHALL BE INCLUDED AS PART OF THE E.C. CONTRACT. AT MINIMUM \$15,000.00 SHALL BE ESTIMATED FOR THE UNDERGROUND TRANSFORMER SERVICE FEE.

POWER RISER - BASE BID  
NTS



- NOTES:
1. FLOOR PLANS INDICATE THE EXACT QUANTITY AND LOCATION OF ALL TELEPHONE OUTLETS.
  2. ALL TELEPHONE WIRING AND EQUIPMENT IS BY E.C.
  3. IF TELEPHONE BOARD IS IN SAME ROOM AS SERVICE ENTRANCE DO NOT PROVIDE CONDUIT.

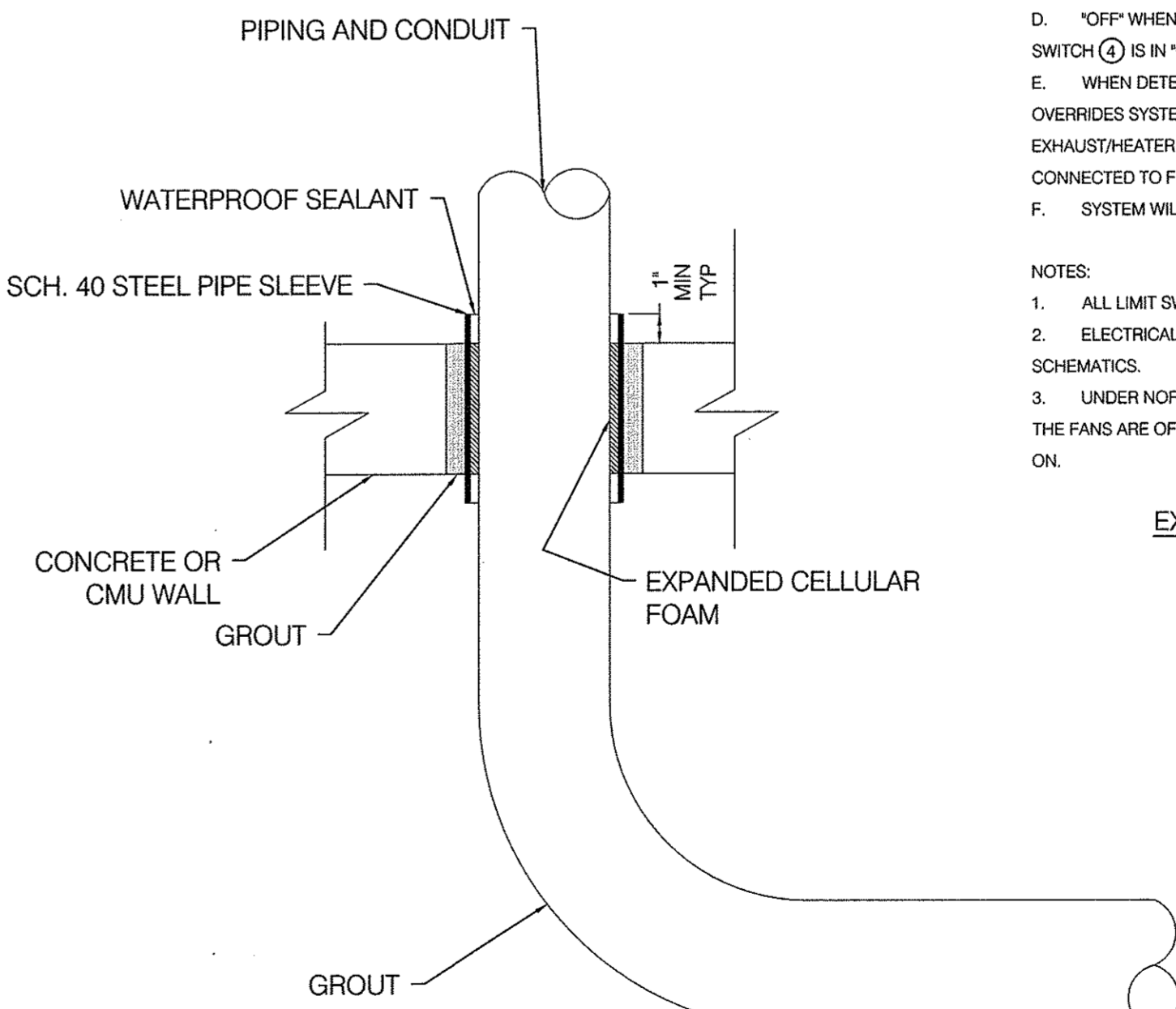
TELEPHONE RISER DIAGRAM  
NTS



- TRUCK EXHAUST SYSTEM OPERATION:
- A. "ON" WHEN RESPECTIVE DOOR IS OPENING. LIMIT SWITCH ② CLOSED.
  - B. "OFF" WHEN RESPECTIVE DOOR IS CLOSED. LIMIT SWITCH ② OPEN.
  - C. "ON" WHEN RESPECTIVE DOOR IS CLOSED AND MANUAL OVERRIDE SWITCH ① IS ACTIVATED.
  - D. "OFF" WHEN RESPECTIVE DOOR IS OPEN AND RESPECTIVE MANUAL OVERRIDE SWITCH ④ IS IN "OVERRIDE" POSITION.
  - E. WHEN DETECTOR REACHES 25PPM. LOW VOLTAGE RELAY ③ AUTOMATICALLY OVERRIDES SYSTEM. IN CASE DOORS ARE OPEN AND MANUAL OVERRIDE IS ACTIVATED, EXHAUST/HEATER SYSTEMS WILL COME ON AUTOMATICALLY UPON ALARM. CO NOT CONNECTED TO F.A.
  - F. SYSTEM WILL OPERATE VIA TIMER RELAY ⑤ FOR 10 MIN.

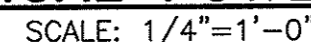
- NOTES:
1. ALL LIMIT SWITCHES FURNISHED BY ELECTRICAL CONTRACTOR (E.C.).
  2. ELECTRICAL CONTRACTOR SHALL WIRE EXHAUST/HEATER SYSTEM CONTROLS PER SCHEMATICS.
  3. UNDER NORMAL CONDITIONS THE DOORS ARE CLOSED, THE HEATERS ARE ON AND THE FANS ARE OFF. WHEN DOORS OPEN THE HEATERS TURN OFF AND THE FANS TURN ON.

EXHAUST SYSTEM SCHEMATIC  
NTS

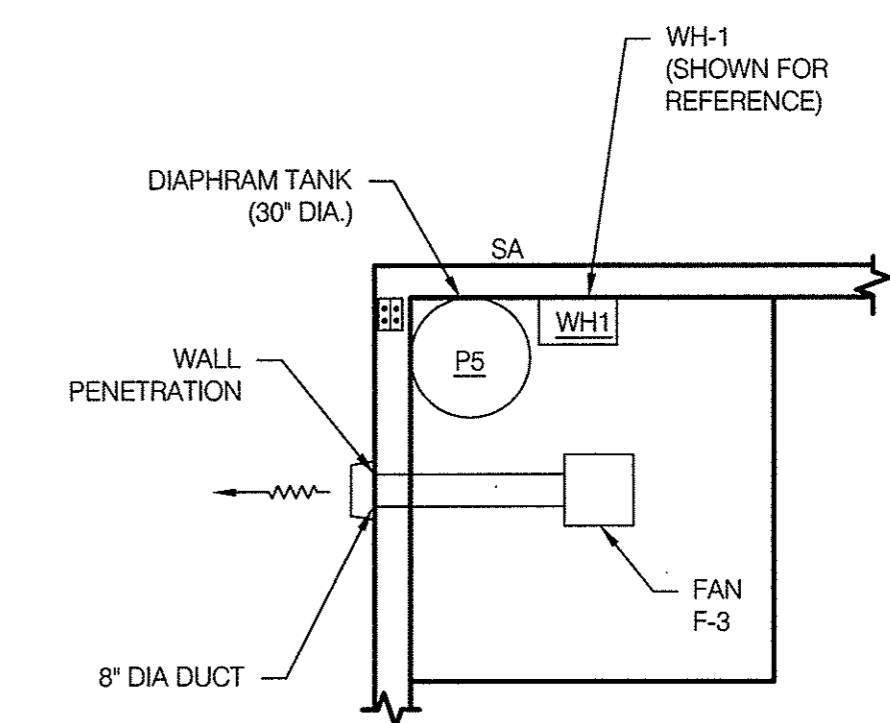


CONDUIT SLEEVE DETAIL  
THRU CONCRETE FLOORS  
NTS

DESCRIPTION:		HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT		NEW STATION AT FRIENDFIELD		ELECTRICAL DETAILS		DESIGNED BY: MJE		DATE: 07/20/16		BY: MJE	
PLAN SET: DESIGN		PROJECT: Jul 21, 2016		AE055		E03		DRAWN BY: JCS		DATE: Jul 21, 2016		REVISION	
SHEET:								APPROVED BY: MJE		DATE: Jul 21, 2016		NO.	
								CITY: FRIENFIELD		COUNTY: FLORENCE		NO.	
								PROJECT #		DWG. #		NO.	
								SCALE:		AE055-066-072116		NO.	
								PROJECT #		DWG. #		NO.	
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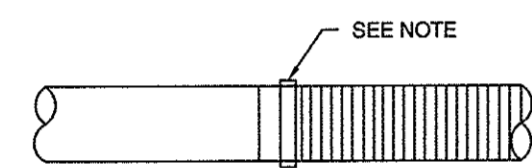


SCALE

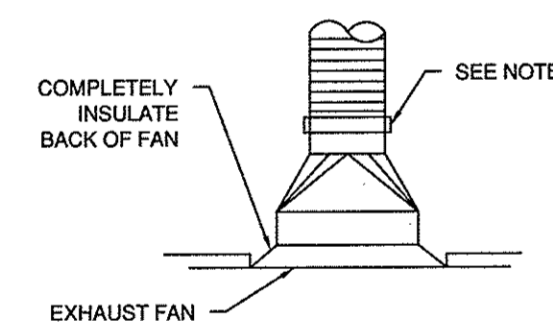
1/4"=1'-0"

4' 2' 0' 2' 4' 6' 8'

CLIENT: HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT	
PLAN SET: NEW STATION AT FRIENDFIELD	
DESC: MECHANICAL FLOOR PLANS	
DESCRIPTION: <b>MECHANICAL FLOOR PLANS</b>	
PLAN SET:	DESIGN
DATE:	Jul 21, 2016
PROJECT:	AEO055
SHEET:	M2
<div style="text-align: center;">  <p><b>ALIGNED ENGINEERING</b></p> </div> <div style="font-size: small; margin-top: 10px;">             THIS DRAWING &amp; DESIGN THEREON ARE THE PROPERTY OF ALIGNED ENGINEERING, LLC. THE REPRODUCTION, USE OR COWING OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED.           </div>	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> <b>DESIGNED BY:</b> MJF  <b>DRAWN BY:</b> JCS  <b>CHECKED BY:</b> MJF  <b>APPROVED BY:</b> MJF  <b>DATE:</b> Jul 21, 2016  <b>SCALE:</b> AS NOTED  <b>REVISIONS:</b>  <b>COUNTRY:</b> FLORENCE         </div> <div> <b>PROJECT #</b> AEO055  <b>NO.</b> M2.0  <b>FLORENCE</b> </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> <b>BID ON ADDENDUM #1 &amp; FLORENCE PLANNING COMMENTS</b>  <b>DWG. NO.</b> M2.0  <b>CAUSE</b> AEO55 dws 072116_02(2.dwg)         </div> <div> <b>DATE</b> 07/20/16  <b>NO.</b> 1         </div> </div>	
<div style="display: flex; justify-content: space-between;"> <div> <b>REVISION</b>  <b>BY</b> </div> <div> <b>DATE</b> </div> </div>	

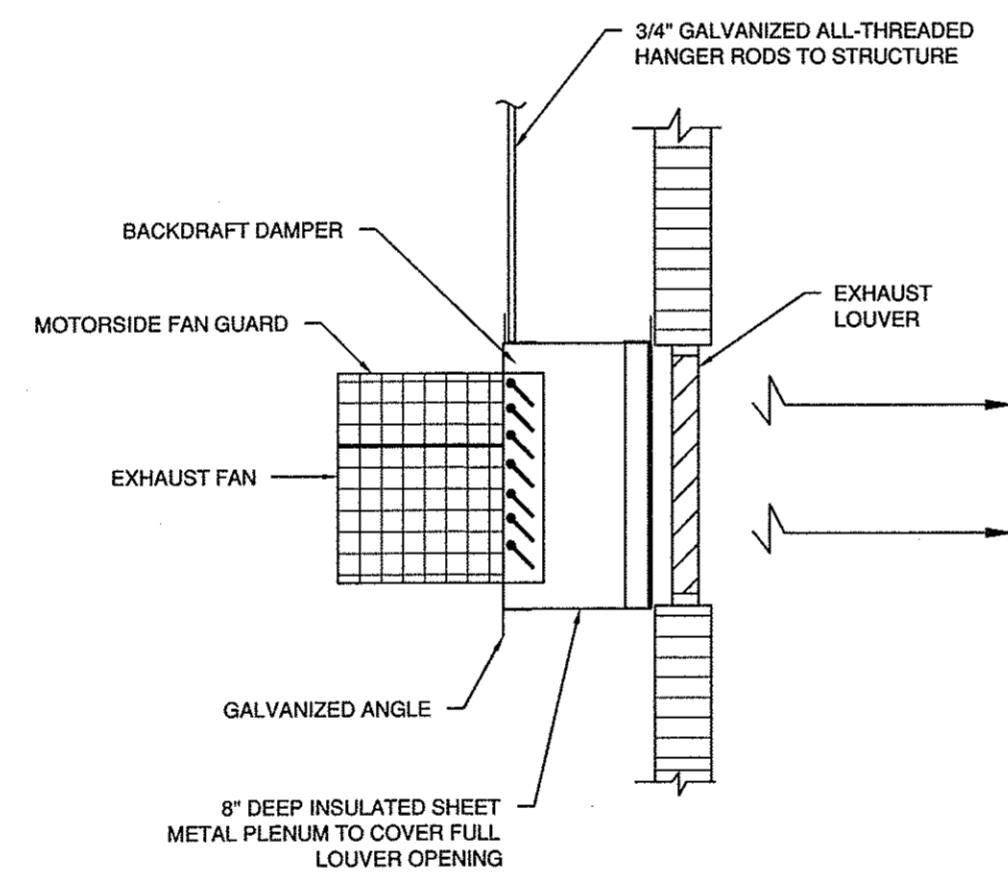


FLEXIBLE CONNECTION TO METAL DUCT  
NTS

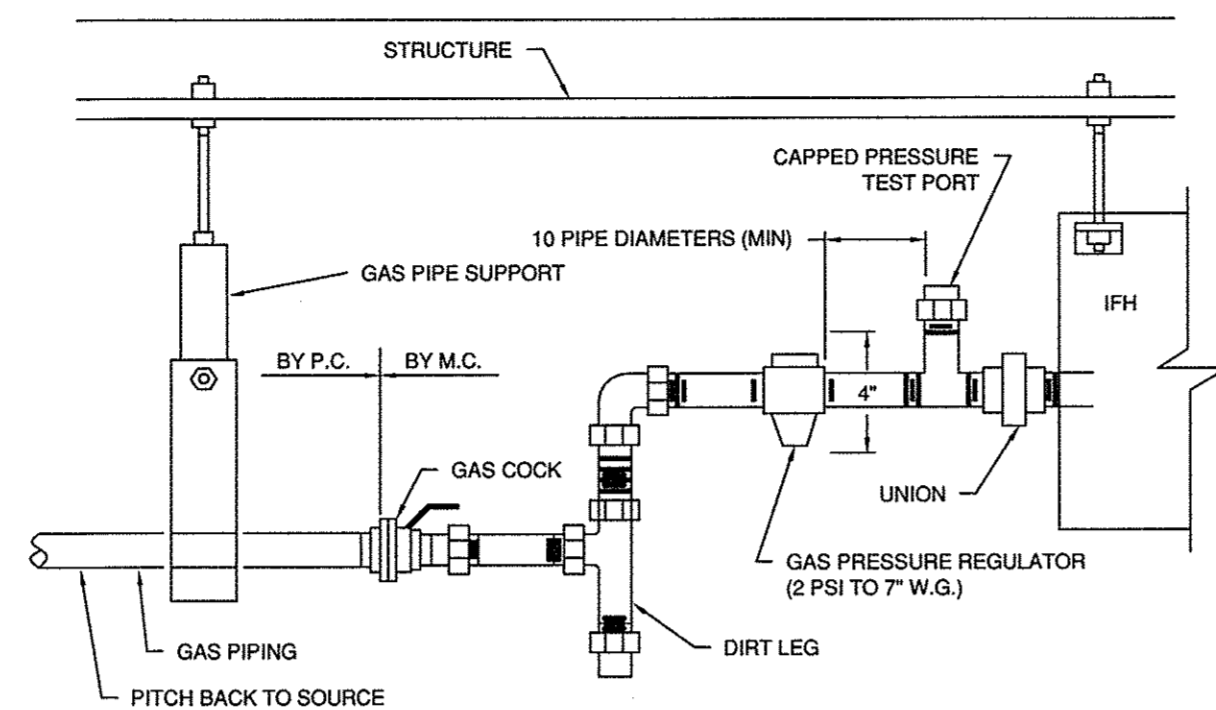


FLEXIBLE CONNECTION TO EXHAUST FAN  
NTS

NOTE:  
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL  
BE SECURED WITH APPROVED STRAP AND SEALANT.

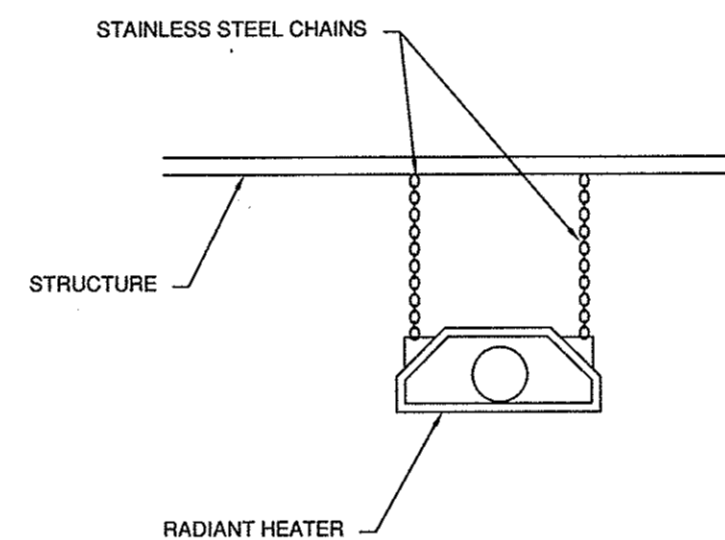


EXHAUST FAN DETAIL  
NTS



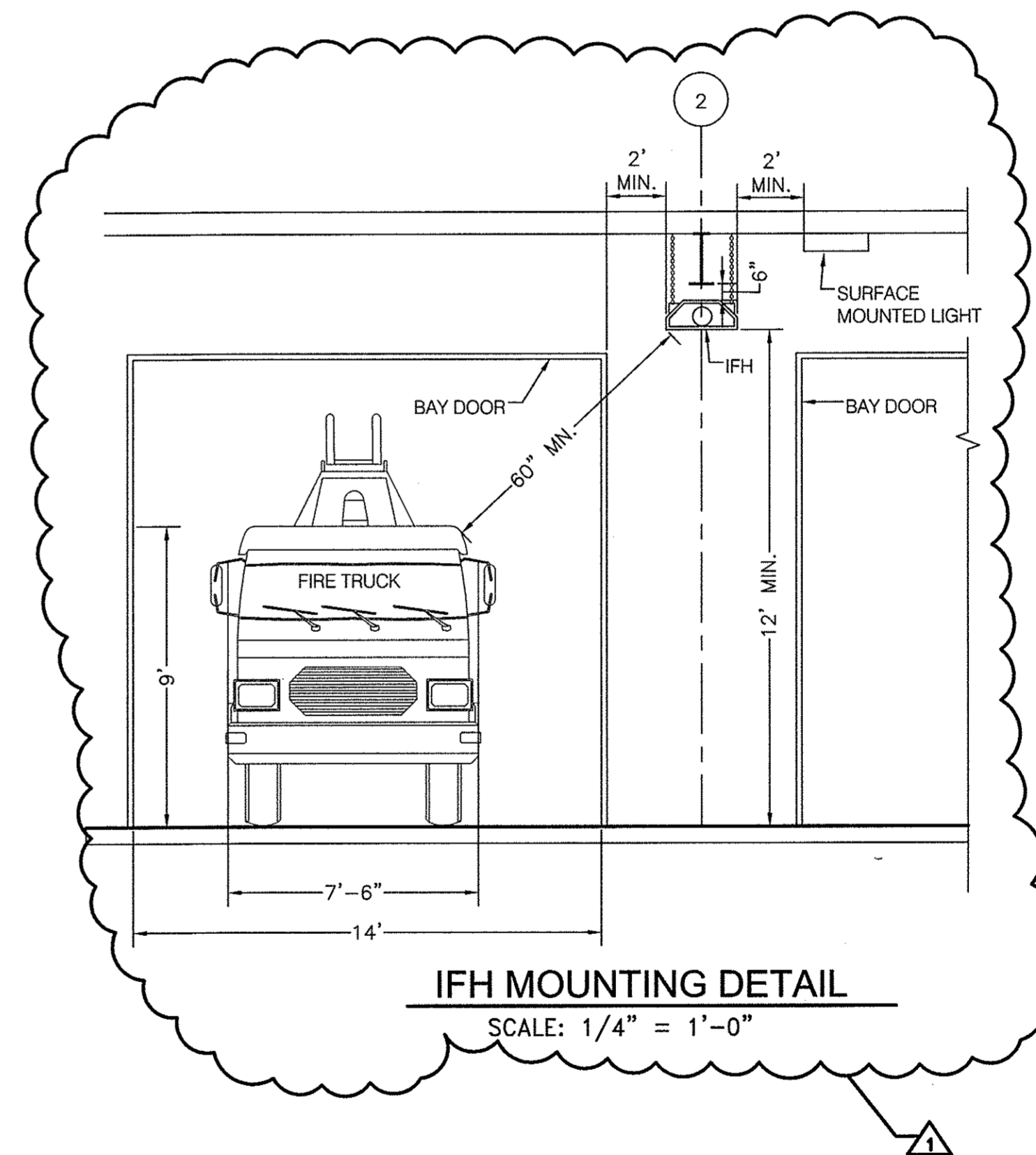
NOTE:  
1. PROVIDE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED.  
2. GAS PIPING AND SHUT-OFF VALVE SHALL BE BY PLBG. CONTR. DIRT LEG,  
REGULATOR AND FINAL CONNECTION TO UNIT SHALL BE BY MECH. CONTR.

IFH GAS CONNECTION DETAIL  
NTS



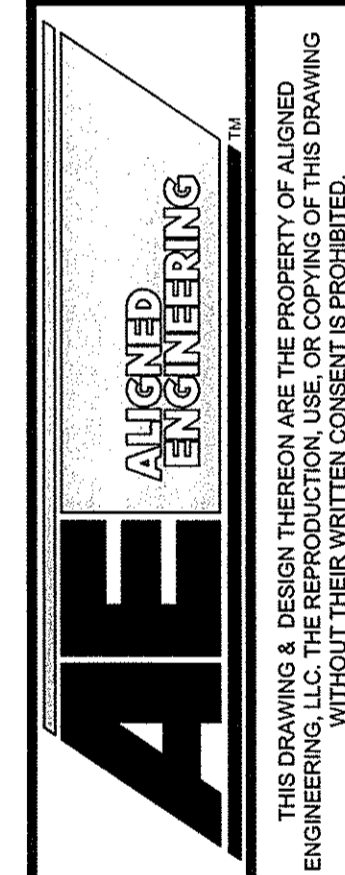
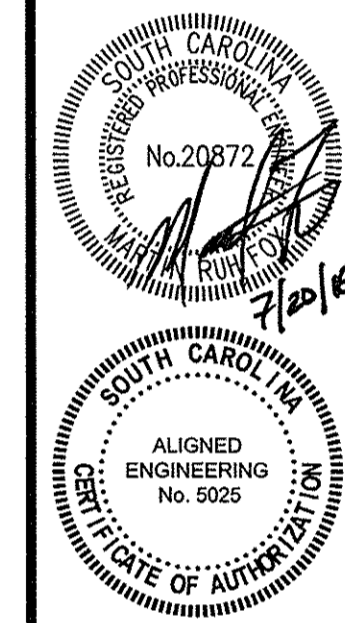
NOTES:  
1. MOUNT HEATER FROM EXPOSED STRUCTURE WITH A 24\"/>

INFRARED RADIANT HEATER (IFH) DETAIL  
NTS



IFH MOUNTING DETAIL  
SCALE: 1/4" = 1'-0"

DESIGNED BY:	M.E.	DATE:	07/20/16	NO.		BY:	
DRAWN BY:	JCS	DATE:	07/20/16	NO.		REVISION	
CHECKED BY:	M.E.	DATE:	07/20/16	NO.			
APPROVED BY:	M.E.	DATE:	07/20/16	NO.			
DATE:	JUL 21, 2016	PROJECT #	AE055	DATE	07/20/16		
SCALE:	NOT TO SCALE	DWG. #	M3.0				
COUNTY:	FLORENCE	CAD:	AE055.dwg				
PROJECT #	AE055						
BID ON ADDENDUM #1 & FLORENCE PLANNING COMMENTS							



CLIENT:	HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT	DESCRIPTION:	MECHANICAL DETAILS
PLAN SET:	NEW STATION AT FRIENDFIELD	DATE:	DESIGN JUL 21, 2016
DESC:	MECHANICAL DETAILS	PROJECT:	AE055
		SHEET:	M3.0

PLUMBING (P) NOTES

GENERAL (PG)

PG-1 SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.

PG-2 PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.

PG-3 WARRANTY: PROVIDE A ONE YEAR WARRANTY, FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER, FOR ALL PLUMBING MATERIALS AND EQUIPMENT.

PG-4 SUBSTITUTIONS: THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENT'S INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

PG-5 COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLAINT INSTALLATION FOR ALL TRADES.

PG-6 PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR ALL LOCATIONS OF PLUMBING FIXTURES, WALLS, DOORS, WINDOWS, ETC.

PG-7 PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, SEISMIC BRACING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, LP GAS PIPING.

PG-8 PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ETC

PG-9 VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT/ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE OBSERVED SYSTEM BEFORE CONTINUING WORK IN THE EFFECTED AREAS.

PG-10 WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.

PG-11 ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

PG-12 ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.

INSTALLATION (PI)

PI-1 PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE SOUTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

PI-2 PLUMBING FIXTURES AND EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION INSTRUCTIONS.

PI-3 CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.

PI-4 PLUMBING PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PLUMBING PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE. PROVIDE ACCESS DOORS FOR CONCEALED SPECIALTIES.

PI-5 PROVIDE ACCESS DOORS FOR VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC. CONCEALED IN MASONRY WALLS, GYPBOARD WALLS AND/OR CEILINGS THAT WILL REQUIRE MAINTENANCE ACCESS.

PI-6 PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.

PI-7 PIPE IDENTIFICATION:

- PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
- PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

PIPE PENETRATIONS (PP)

PP-1 FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS, AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'I' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES

PP-2 PLUMBING PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.

PP-3 DO NOT INSTALL PLUMBING PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PLUMBING PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.

SEISMIC BRACING (PB)

PB-1 PROPERLY SUPPORT AND BRACE VERTICALLY AND HORIZONTALLY ALL PIPING, APPARATUS, EQUIPMENTS, ETC. IN ACCORDANCE WITH APPLICABLE CODES TO PREVENT EXCESSIVE MOVEMENT DURING SEISMIC CONDITIONS.

PB-2 ATTACH HANGERS TO STRUCTURE, HANGERS SHALL NOT ATTACH TO THE DECK.

DOMESTIC WATER PIPING (DW)

DW-1 DOMESTIC WATER PIPING AND JOINTS BELOW GRADE: PROVIDE PEX PIPING AND JOINTS.

DW-2 DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE: PROVIDE PEX PIPE AND JOINTS.

DW-3 STERILIZE THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.

DW-4 INSULATE DOMESTIC WATER PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH X SQ. FT. FOLLOW SCHEDULE BELOW:

SERVICE TYPE	PIPE SIZES	INSULATION THICKNESS
DOMESTIC HOT WATER	1/2" - 1 1/4"	1"
DOMESTIC COLD WATER	1/2" - 1 1/4"	1/2"
DOMESTIC COLD WATER	1 1/2" - 4"	1"

DW-5 DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS, AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS.

DW-6 DOMESTIC WATER PIPING SHALL BE SLOPED FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.

SANITARY WASTE AND VENT PIPING (SS)

SS-1 SANITARY WASTE PIPING BELOW GRADE: PROVIDE SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564) OR NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED.

SS-2 SANITARY WASTE/VENT PIPING ABOVE GRADE: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED.

SS-3 SLOPE SANITARY WASTE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2 1/2" OR SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS PERMITTED OTHERWISE.

SS-4 PROVIDE CLEAN-OUTS AT EVERY TURN IN PIPING IN EXCESS OF 45 AND NO FURTHER THAN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

SS-5 PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.

SS-6 WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.

PLUMBING FIXTURE AND EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	CONNECTIONS (IN.)				SPECIFICATION	REMARKS
		W	V	CW	HW		
P1	WATER CLOSET, HET ADA COMPLIANT ELONGATED BOWL FLOOR MOUNTED FLUSH TANK, 1.28 GPF	4"	2"	1/2"	-	FIXTURE: AMERICAN STD. 211AA.104 "CHAMPION" SEAT: CHURCH 9500CT STOP: McGUIRE 185-LK MATERIAL: VITREOUS CHINA COLOR: WHITE	SEAT HEIGHT 17"-19" PROVIDE LEVER ON WIDE SIDE OF STALL.
P2	LAVATORY ADA COMPLIANT 20"x18" WLL MOUNTED 0.5 GPM FAUCET	2"	1 1/2"	1/2"	1/2"	FIXTURE: AMERICAN STD. 0355.012 "LUCERNE" GRID DRAIN: McGUIRE 155A GRID STRAINER FAUCET: MOEN 8210F05 (LEVER HANDLES) P-TRAP: McGUIRE 8902 1 1/2" X 1 1/2" STOPS: McGUIRE 175-LK	SEE NOTE 1 BELOW SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE 0.5 GPM AERATOR
P3	S.S. UTILITY SINK FREE STANDING (24"x24" BOWL) WALL MOUNTED SERVICE FAUCET	1 1/2"	1 1/2"	1/2"	1/2"	FIXTURE: JUST F-127 DRAIN: JUST J-35-SF FAUCET: JUST JVB-1200 P-TRAP: McGUIRE 8912 1 1/2"x1 1/2" STOPS: McGUIRE 175	
HB1	HOSE BIBB, EXPOSED FROST PROOF, AUTOMATIC DRAINING ANTI-SIPHON VACUUM BREAKER, KEYLESS	-	-	3/4"	-	EQUIPMENT: WOODFORD 65EP	EXTERIOR: MOUNT 18" AFF. INTERIOR: MOUNT 24" AFF.
FCO	FLOOR CLEANOUT CAST IRON BODY ADJUSTABLE TOP	4"	-	-	-	CLEANOUT: JAY R. SMITH 4020 SERIES OUTLET: NO-HUB PLUG: ABS, IRON OR BRONZED WITH GASKET SEAL COVER: ROUND, NICKEL BRONZE	
YCO	YARD CLEANOUT ADJUSTABLE, CST IRON BODY, COATED CAST IRON TOP	4"	-	-	-	CLEANOUT: JAY R. SMITH 4050 SERIES OUTLET: NO-HUB PLUG: ABS, GASKET SEAL COVER: CAST IRON, HEAVY DUTY	SET IN CONCRETE PAD 18"W X 18"L X 6" THICK
ED1	FLOOR DRAIN CAST IRON BODY ADJUSTABLE TOP	2"	-	-	-	DRAIN: ZURN INDUSTRIES STRAINER: 5" DIA. TYPE - , NICKEL BRONZE P-TRAP: DEEP SEAL (MATCH DRAIN SIZE)	
SA	SHOCK ARRESTOR	-	-	1/2"	-	SHIUX CHIEF 650 SERIES WATTS PPP, INC	PDI WH201 STANDARD DESIGNATION "A" INSTALL PER PDI WH201 GUIDELINES
WH1	GAS FIRED TANKLESS WATER HEATER	-	-	1"	1"	NORITZ MODEL WC1991-OD-LP FLUE SIZE: PER MFG GAS INLET PRESSURE: 8" WC BTU/HR INPUT: 199000 FLOW RATE AT 80°F RISE: 4.6	EQUIV MFG: RINNAI, TAKAXX ELEC RMTS: 120v 15 AMP BREAKER
P-4	EYE WASH (FAUCET MOUNT)	-	-	-	-	ITEM# 8UKUO MFR. MODEL# OK II LAB UNSPSC# 46181810	
P-5	DIAPHRAGM TANK	-	-	-	-	UTILITECH 52-GALLON VERTICAL PRESSURE TANK, 50 PSI RATED	
ID1	TRENCH DRAIN PRE-CAST POLYESTER CONCRETE DUCTILE IRON GRATE 6" WIDECCHANNEL SECTIONS	-	-	-	-	DRAIN: SMITH 9820 GRATE: SMITH 8970-465D-MS	EXTRA HEAVY DUTY GRATE (TRAFFIC RATED)

NOTES:

- PROVIDE PRE-MANUFACTURED INSULATION KIT FOR EXPOSED TRIM UNDER SINK.
- PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER IN FLOOR DRAIN FOR WATERLESS TRAP PRIMER.

APPROVED EQUALS:

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.

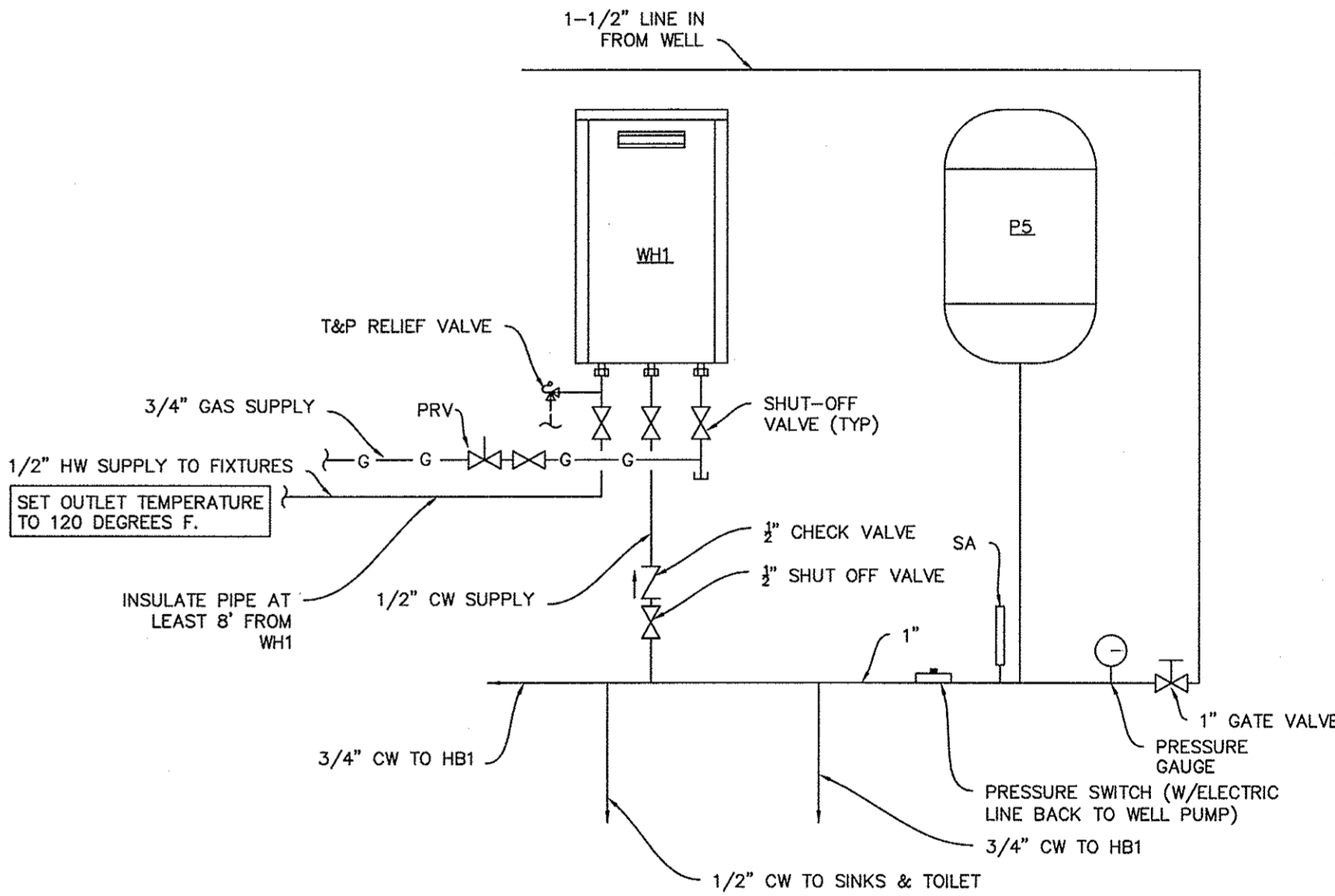
SPECIFIED PRODUCT:

AMERICAN STANDARD (VITREOUS CHINA FIXTURES)  
MOEN (FAUCETS)  
ELKAY (S.S. SINKS)  
McGUIRE (SUPPLY STOPS)  
JAY R. SMITH (DRAINS, CLEANOUTS)

ACCEPTED EQUAL:

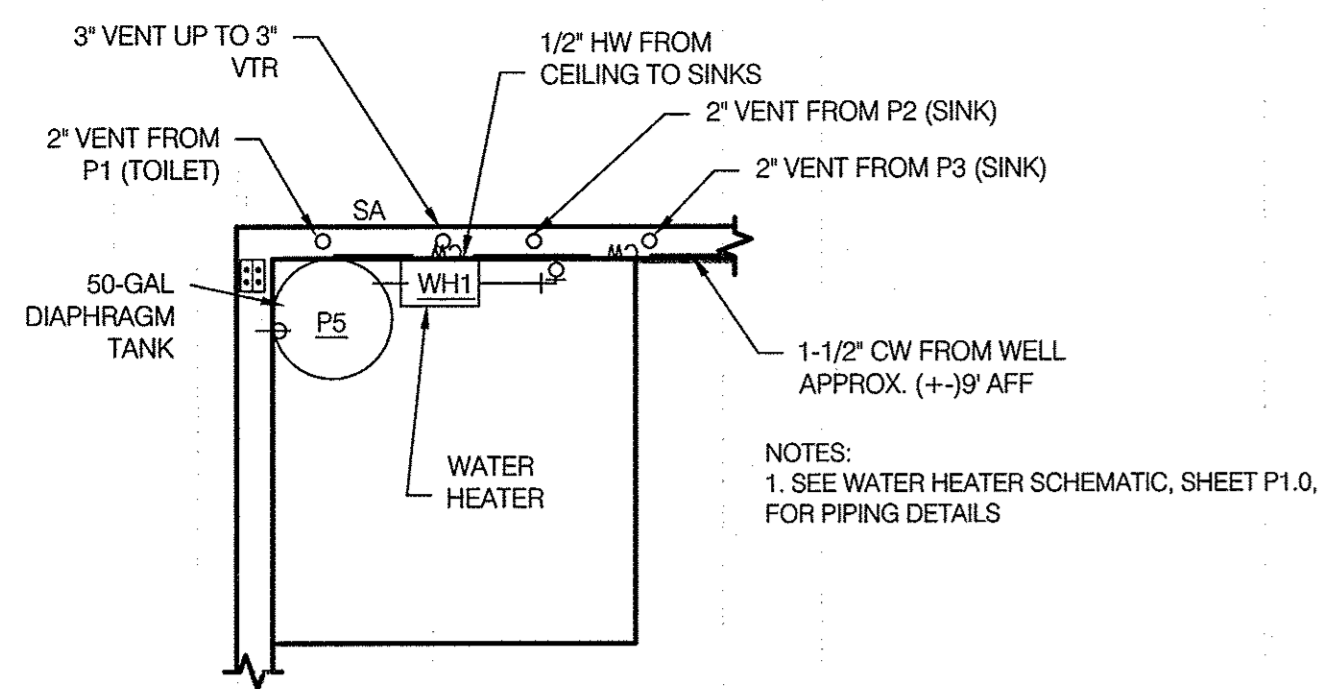
KOHLER, ELJER, TOPO  
DELTA, KOHLER, AMERICAN STANDARD  
JUST, ACCORN  
BRASSCRAFT, E.B.C.  
ZURN, WADE

ABBR	DESCRIPTION
CW	COLD WATER PIPING
HW	HOT WATER PIPING
W	SANITARY WASTE PIPING
V	SANITARY VENT PIPING
G	GAS PIPING
D	DRAIN
-	ELBOW DOWN
-	ELBOW UP
-	PIPE CAP
GV	GATE VALVE
CV	CHECK VALVE
-	DIRECTION OF FLOW
-	REDUCER
FCO	FLOOR CLEAN OUT
YCO	YARD CLEAN OUT
FD	FLOOR DRAIN
HB	HOSE BIBB/WALL HYDRANT
SA	SHOCK ARRESTOR



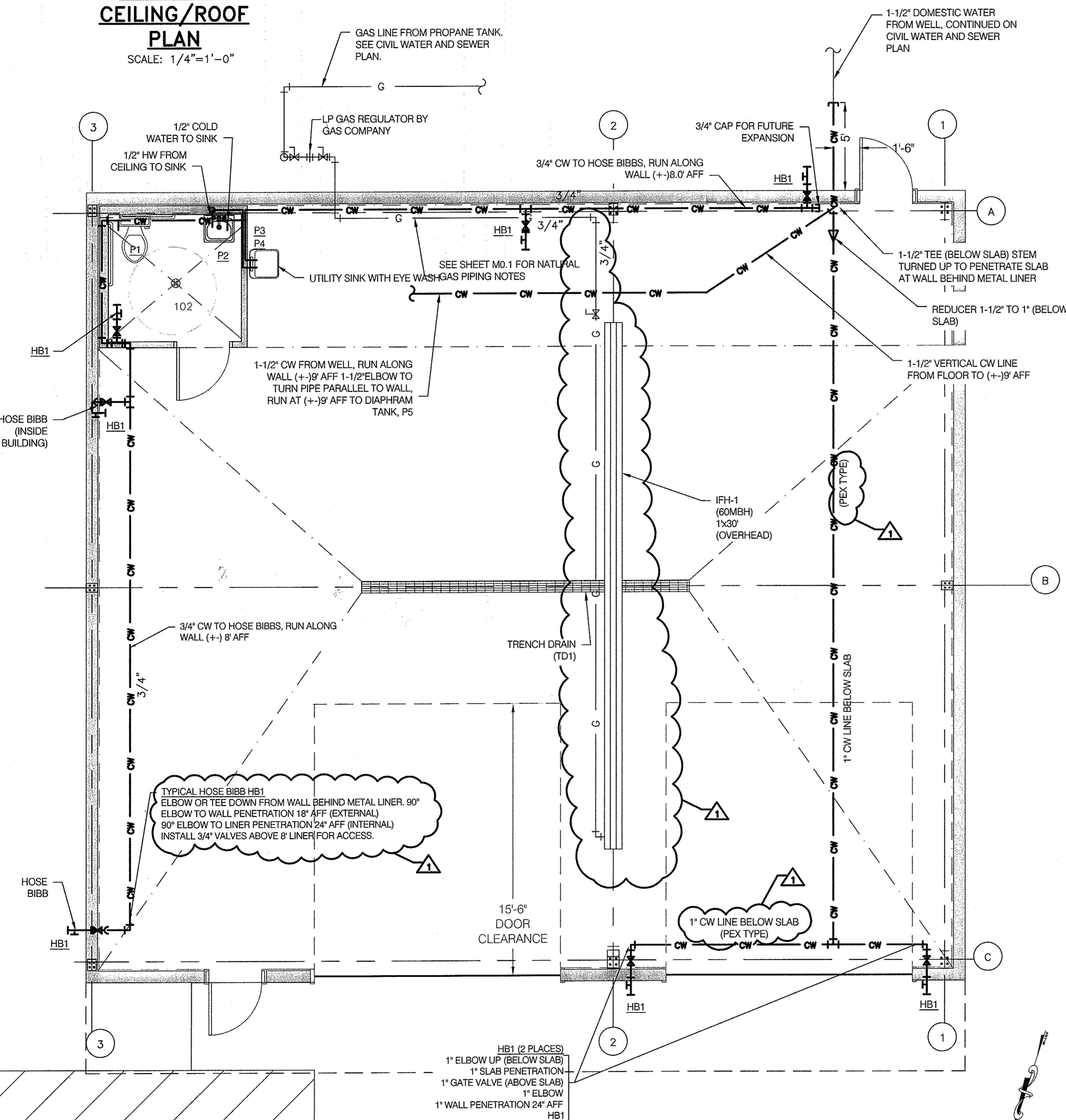
WATER HEATER SCHEMATIC  
NO SCALE

DESIGNED BY: MJE	CHECKED BY: JWS	APPROVED BY: MJE	DATE: JUL 21, 2016	COUNTY: FLORENCE	PROJECT #	DWG #	SCALE	07/20/16	DATE	NO.	REVISION	BY
BID ON ADDENDUM #1 & FLORENCE PLANNING COMMENTS												
SOUTH CAROLINA PROFESSIONAL ENGINEERING BOARD No. 209872 7/21/16 SOUTH CAROLINA PROFESSIONAL ENGINEERING BOARD No. 5025 DATE OF AUTHORIZATION: 7/21/16												
HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT NEW STATION AT FRIENDFIELD PLUMBING NOTES												
CLIENT: HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT PLAN SET: NEW STATION AT FRIENDFIELD DESC: PLUMBING NOTES												
DESIGN: DESIGN DATE: JUL 21, 2016 PROJECT: AE055 SHEET: P1.0												



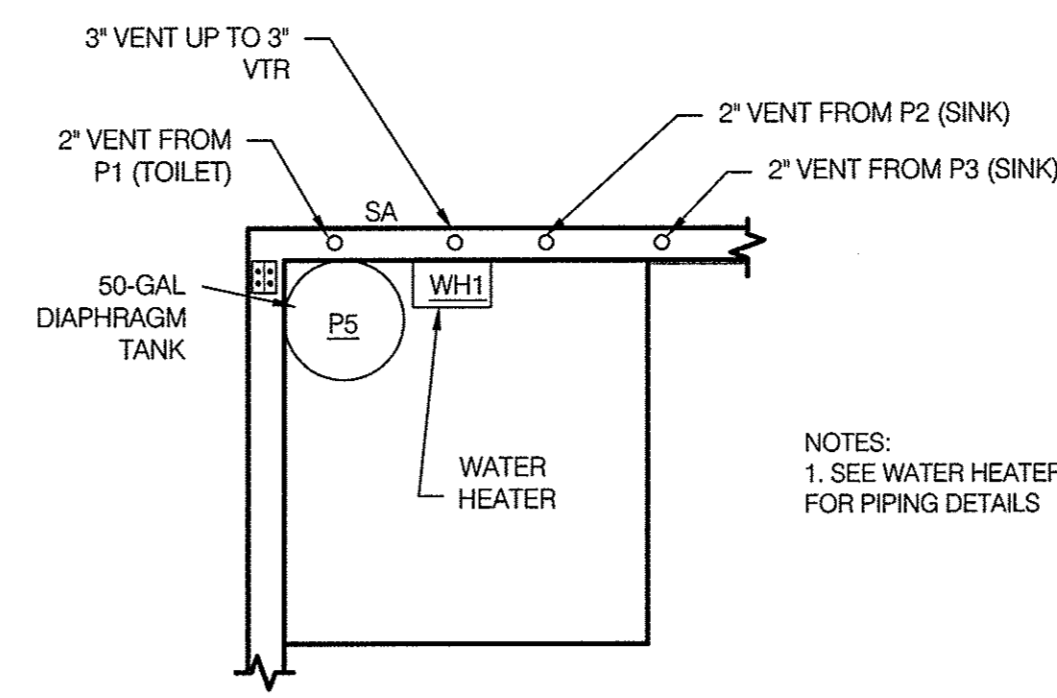
# **RESTROOM CEILING/ROOF PLAN**

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



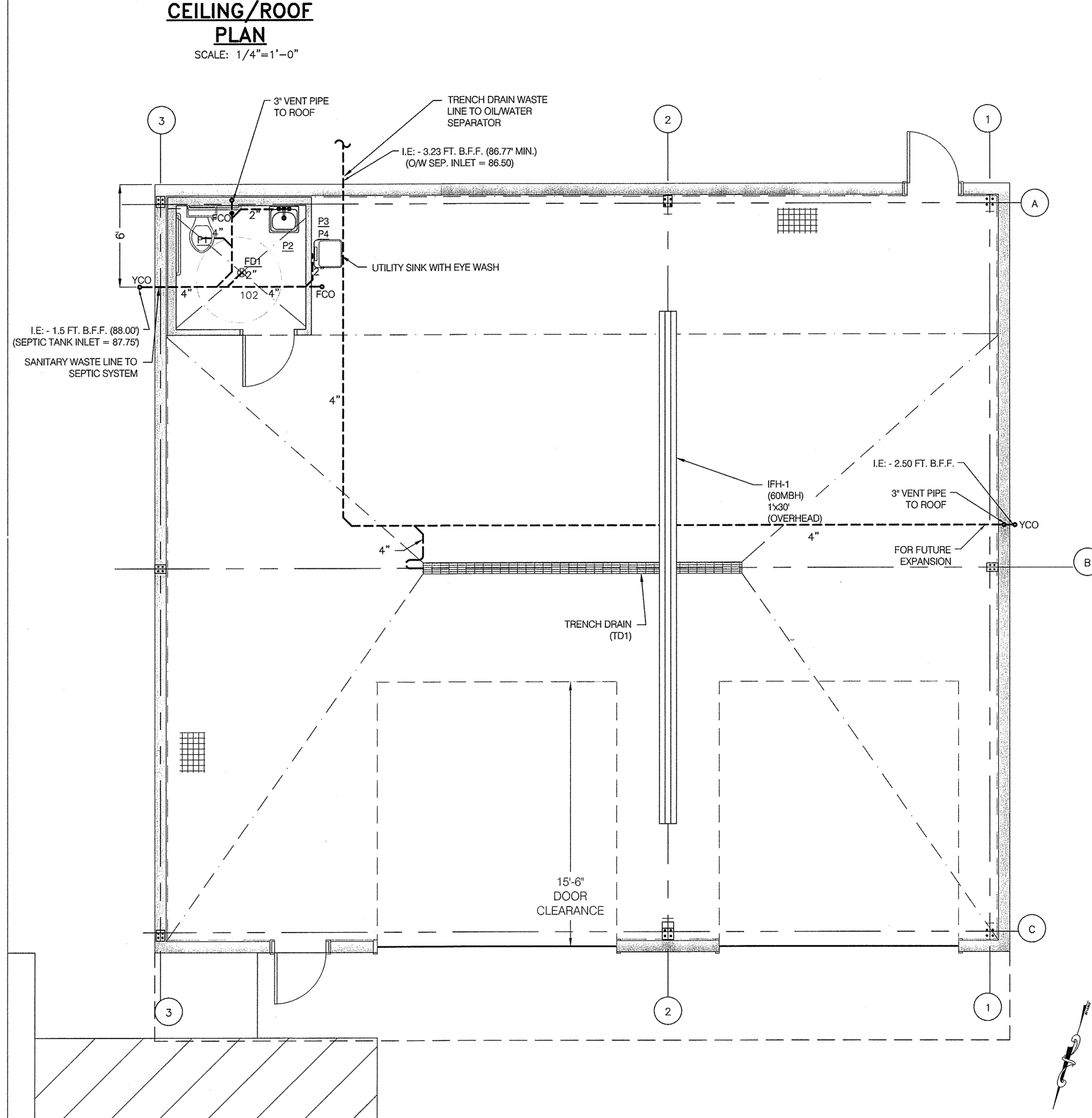
# **WATER PLUMBING PLAN**

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



# **RESTROOM CEILING/ROOF PLAN**

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



# **SEWER PLUMBING PLAN**

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



DESIGNED BY: JAC	CHECKED BY: MJE	DATE: JUL 21, 2016	SCALE: 1/4"=1'-0"	COUNTY: FLORENCE	PROJECT #	DWG. #	DATE	NO.	REVISION	BY
SOUTH CAROLINA PROFESSIONAL ENGINEERING BOARD No. 20872 7/20/16 SOUTH CAROLINA PROFESSIONAL ENGINEERING BOARD No. 5205 7/20/16 ENGINEERING No. 5205 7/20/16 THIS DRAWING & DESIGN THEREON ARE THE PROPERTY OF ALIGNED ENGINEERING, L.L.C. THE REPRODUCTION, USE, OR COPYING OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED.										
CLIENT: HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT	PLAN SET: NEW STATION AT FRIENDFIELD	DESCRIPTION: PLUMBING PLANS	DESIGN: DESIGN	DATE: JUL 21, 2016	PROJECT: AE055	SHEET: P2.0				

[illegible]

CLIENT: HANNAH-SALEM FRIENDFIELD FIRE DEPARTMENT  PLAN SET: NEW STATION AT FRIENDFIELD  DESCRIPTION: PLUMBING DETAILS	DATE: Jul 21, 2016	PROJECT: AE0505	PLAN SET: DESIGN
	SHEET: P3.0	DATE: 07/21/16 NO. 1 REVISION	COMMENTS: BID ON ADDENDUM #1 & FLORENCE PLANNING COMMENTS