# JUNE 5, 2019 BOARD OF COUNTY COMMISSIONERS ORANGE COUNTY, FLORIDA ADDENDUM NO. 2, IFB Y19-754-RC ORANGE COUNTY FIRE RESCUE FIRE STATION #30 HVAC REPLACEMENT

#### THE REVISED BID OPENING DATE IS: JUNE 25, 2019

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to, and shall take precedence over, the original documents. <u>Underlining</u> indicates additions, deletions are indicated by strikethrough.

A. The bid opening date has been revised from June 6, 2019 to June 25, 2019 at 2:00 P.M.

Second Site visit has been scheduled for Friday June 14, 2019 1:30 PM

- B. Questions and Answers:
- **1. QUESTION:** Who is the existing BMS in this facility **ANSWER:** There is currently no BMS at this location.
- **2. QUESTION**: Who is the existing fire alarm?

**ANSWER:** Signature Systems is the existing Fire Alarm Monitoring company.

**3. QUESTION**: Please confirm the contractor will have exclusive access to the areas highlighted on drawing A-1.1.4 during each phase. There is a substantial amount of overhead work to be done inside the Fire Station and this is necessary for the safety of the Fire Fighters

**ANSWER:** The contractor will have full access within the respective phasing space they are working in at the time.

**4. QUESTION**: How will this phasing plan effect the occupants when the sleeping quarters are under construction seeing how this is a 24 hour facility? Will the county provide alternate sleeping arrangements?

**ANSWER:** The firefighters will have to sleep in another section of the station while the work going on in the sleeping quarters. The firefighters will make their own sleeping arrangements.

**5. QUESTION**: During the walk through contractors were not allowed to look above the ceilings to see existing conditions due to liability of being on a ladder. Can pictures be provided of:

Y19-754-RC Addendum No. 2 June 5, 2019

- The perimeter wall above the ceiling where the contractor is to install the vapor barrier, in various locations (more than one)?
- General pictures of above ceilings where all the duct work modifications will occur?
- General pictures of above ceiling where the existing ducts to remain are to be professionally cleaned? To assess the labor which will be involved.
- Various pictures to properly assess the labor involved in installing the insulation to the underside of the roof decking?
- Pictures of the through wall penetrations where the fire dampers will need to be installed (taken from the side of the living quarters)?

**ANSWER:** Second Site visit has been scheduled for **Friday June 14, 2019 1:30 PM** See attached "ORANGE COUNTY, FLORIDA AGREEMENT ASSUMING RISK OF INJURY OR DAMAGE RELEASE OF LIABILITY AND INDEMNITY AGREEMENT "which will need to be signed and completed to permit participation.

**6. QUESTION**: When is the county planning on awarding this project and issuing NTP?

**ANSWER:** The award date will be revised depending on the number of addendums issued. NTP will be issued after the contract is awarded.

**7. QUESTION**: Can the NTP be issued once submittals have been approved and once the permit has been issued? If not, will the county extend the substantial completion time frame to account for the time it will take to obtain these items due to the fact that all physical construction will not be able to start until these items have been obtained.

**ANSWER:** The NTP will be issued after contract award. The county will review the substantial completion date with the contractor with regards to submittals and permits.

**8. QUESTION**: Who is responsible for removing and storing owner/occupant's furniture and personal belongings?

**ANSWER:** The contractor will be responsible for relocating the furniture and any other items that must be moved with the exception of any items belonging to the Firefighters themselves (e.g. personal affects, firefighting gear, etc).

**9**. **QUESTION:** Drawing M-001, Mechanical General Notes, Note #2 appears to be missing, please clarify.

ANSWER: General Note 2 is "Not Used".

**10. QUESTION:** Drawing M-001, Mechanical General Notes, Note #11 states "All HVAC equipment location & weight shall be coordinated and approved by the structural engineer...". Who is responsible for hiring and paying for the structural engineer?

**ANSWER:** Where size and weight of new equipment differs substantially from the existing being replaced, contractor shall engage structural engineer to verify adequacy of support structure.

11. QUESTION: Drawing M-100, Plan Key Notes, Note #4 states to remove existing drywells and provide new. It was noticed at the Prebid meeting that from the Hastings Street entrance (east side of building) that the area indicated on the plans as the location of one of the two drywells is under an existing concrete drive way (see attached photos). Is the contractor expected to cut and remove the concrete, which will hinder the fire department from accessing that bay for an indefinite amount of time, to remove and replace the drywell then patch the concrete when finished? If so please provide a specification for that specific drywell to include DOT/traffic ratings. Please provide a detail on how to patch the concrete in this area.

**ANSWER:** Please see revised drawing sheets M-100 and M-101 as well as NDS Flo-Well Drywall Spec.

**12. QUESTION**: For the drywell to be installed on the west side of the facility which is in a non-traffic area will the attached drywell submittal be acceptable? If not, please provide a specification.

**ANSWER**: Please see revised drawing sheets M-100 and M-101 as well as NDS Flo-Well Drywall Spec. Provide drywells in the turfed areas as shown in the revised drawings. The attached "Flo-Well" drywell is acceptable.

**13. QUESTION**: Drawing M-101, Plan Key Notes, Note #3 states "Provide new 14" DIA. return duct and register and connect to existing return as indicated." At the #3 hex note on the Mezzanine Plan view shows only a 20"x28" and a 20"x26" duct. No 14"Ø ducts are found in this area nor are any registers shown, please clarify.

**ANSWER:** See the floor plan; a new 14"Ø duct is shown from the Dayroom returning to the main AHU-1 return duct.

**14. QUESTION:** I cannot seem to find where the condensing units are being fed from. Drawings state there is an existing breaker that is to be reused but fail to show where in the building it is located. Please clarify from where the condensing units are being fed and if there is indeed an existing breaker or not.

ANSWER: Please see revised drawing sheets E-101 and E-601.

#### C. Clarifications

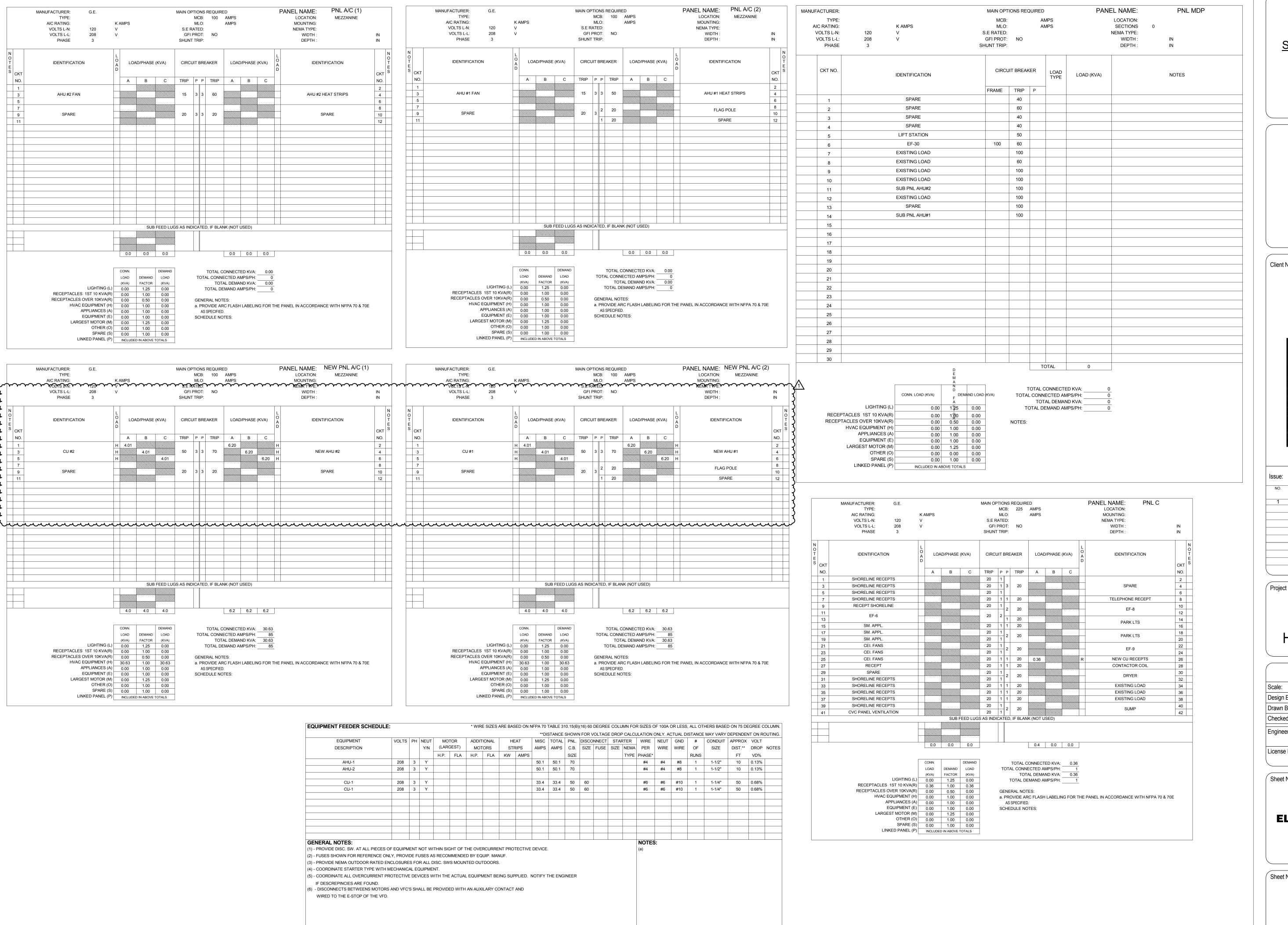
a. Please see revised architectural drawings that change the mechanical equipment pads to full concrete slab.

#### D. ACKNOWLEDGEMENT OF ADDENDA

3. Receipt acknowledged by:

- 1. The Bidder/Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later that the date and time for receipt of the bid or proposal.
- 2. All other terms and conditions of the IFB remain the same.

Authorized Signature	Date Signed
Title	
Name of Firm	



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MEP CONSULTING ENGINEERS

Client Name:

**ORANGE COUNTY** 

FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



Issue:	100% PERMIT DOCUMENTS 02-07-19		
NO.	DESCRIPTION	DATE	
1	PRE-BID RFI	05/15/19	

Project Name:

ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT** 

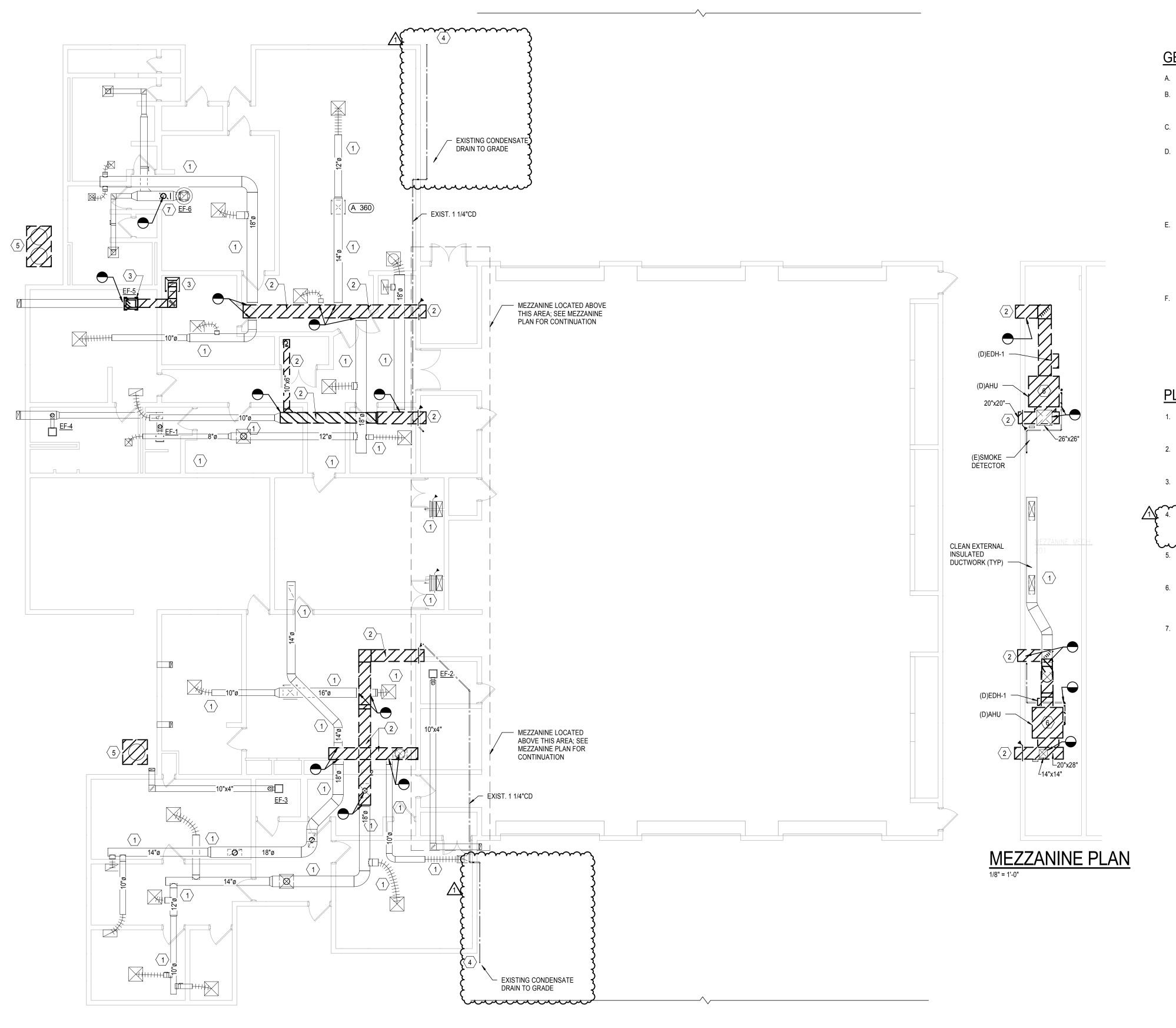
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Sheet Name:

**ELECTRICAL SCHEDULES** 

Sheet Number:

E-601



### **GENERAL NOTES:**

- A. REFER TO SHEET M0.01 FOR GENERAL NOTES.
- B. ROUTE NEW AHU CONDENSATE DRAINS FULL SIZE OF NEW UNIT TO EXISTING CONDENSATE DRAINS WITHIN MECHANICAL
- C. RECONNECT EXISTING DUCT SMOKE DETECTOR SMOKE CONTROLS TO NEW AHU'S (TYP)
- D. CONTRACTOR SHALL PROVIDE TEMPORARY COOLING IN ALL AREAS WHERE THE COOLING SYSTEM WILL BE DOWN FOR REPLACEMENT. TEMPORARY COOLING SHALL CONSIST OF SPOT COOLERS FURNISHED BY CONTRACTOR. CONTRACTOR SHALL MAINTAIN AND DRAIN SPOT COOLERS AS REQUIRED DURING THE DAY AND BEFORE LEAVING FOR THE NIGHT. ALL PHASES SHALL BE PROVIDED WITH TEMP. COOLING WHILE
- E. SEE PHASING DRAWING FOR CONSTRUCTION PHASING. AHU'S SHALL BE REPLACED IN A MANNER THAT FOLLOWS THE PHASING PLAN. AHU-1 SHALL BE REPLACED & DUCTWORK MODIFICATIONS ACCOMPLISHED DURING PHASES 1,2 & 3 WITH PHASE 2 RESTROOMS AVAILABLE WITH TEMPORARY COOLING DURING AHU-1 REPLACEMENT. AHU-2 SHALL BE REPLACED & DUCTWORK MODIFICATIONS ACCOMPLISHED DURING PHASE 5 & 6, AFTER AHU-1 IS UP AND RUNNING.
- REBALANCE ALL HVAC SYSTEMS ONCE AHU REPLACEMENT AND HVAC MODIFICATIONS HAVE BEEN ACCOMPLISHED. NEW CONTROLS SHALL BE COMMISSIONED WITH OWNER REPRESENTATIVE PRESENT TO VERIFY EQUIPMENT OPERATIONS AND ALLOW FOR TRAINING OF CONTROLS AND FOR NEW HVAC SYSTEMS.

### PLAN KEY NOTES: 🕸

- CLEAN ALL EXISTING SUPPLY AND RETURN ROUND BRANCH DUCTWORK AND RECONNECT TO EXISTING MAIN SUPPLY AND RETURN DUCTWORK.
- DEMOLISH SUPPLY AND RETURN MAIN DUCTWORK PREPARE FOR NEW. COORDINATE EXISTING ROUND SUB-MAINS THAT CONNECT WITH MAIN IN FIELD AND ADJUST ACCORDINGLY.
- 3. DEMOLISH EXHAUST FAN, DUCTWORK AND GRILLE. CAP EXHAUST GRILLE IN SOFFIT. DEMOLISH RETURN REGISTER IN LINEN CLOSET AND DUCT CONNECTION; PREPARE FOR NEW REMOVE EXISTING CONDENSATE TO GRADE. PREPARE PIPING BELOW GRADE FOR CONNECTION TO NEW DRYWELL EXCAVATE BY HAND AS REPLACED TO AVOID DAMAGE TO EXISTING
- 5. DEMOLISH AND REMOVE CONDENSING UNITS; DEMOLISH REFRIGERANT PIPING TO WITIHIN BLDG. AND SEAL BLDG PENETRATIONS WATERTIGHT.
- 6. DEMOLISH AHU AND ASSOCIATED DUCTWORK AND PIPING TO ALLOW FOR NEW. DEMOLISH DUCT HEATER AND PREPARE FOR NEW. DEMOLISH EXISTING OA DUCTWORK TO ALLOW FOR NEW MOTOR OPERATED DAMPER.
- 7. DEMOLISH EXHAUST GRILLE AND PATCH REPAIR DUCTWORK.



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Issue:	100% PERMIT DOCUMENTS 02-07-19		
NO.	DESCRIPTION	DATE	
1	PRE-BID RFI	05/15/19	
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ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT** 

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cked By:	30	
neer of Recor	d:	STATE OF STA
nse Number:		MINIMUM SONAL ENGLISH

Sheet Name:

**MECHANICAL DEMOLITION FLOOR PLAN** 

**M-100** 

MASTER KEYNOTE LEGEND MASTER KEYNOTE LEGEND MASTER KEYNOTE LEGEND KEY KEY KEY **TEXT TEXT TEXT** 02 41 19.0001 TYP. REMOVE EXISTING ACOUSTICAL CEILING TILE, GRID & WIRES COMPLETE. 02 41 19.0002 TYP. REMOVE EXISTING GYPSUM DRYWALL CEILING 02 41 19.0003 TYP. REMOVE EXISTING ALUMINUM SOFFIT SYSTEM COMPLETE. 06 10 00.0034 TYP. 3/4" C.D.X. PLYWOOD ALONG OUTSIDE EDGE OF EXTERIOR WALLS. 06 10 00.0100 TYP. WHITE, RUSTIC STYLE HARDIE BOARD. PAINTED. 3/4" X 10" 06 10 00.0712 TYP. WHITE, RUSTIC STYLE HARDIE BOARD. PAINTED. 3/4" X 7 1/2" 07 21 16.0030 TYP. BLANKET INSULATION, R-30 SECURED WITH GALVANIZED STEEL MESH OVER ALL AREAS IN SCOPE, EXCLUDING MEZZANINE. 07 42 93.0000 TYP. ALUM SYSTEM SOFFIT & CEILING. 07 81 10.0000 TYP. FIRE STOPPING MATERIAL. 07 89 00.0000 TYP. DRAFTSTOPPING MATERIAL AT PENETRATIONS, VERTICAL OR HORIZONTAL AT WALLS. 09 21 16.0058 TYP. 5/8" GWB" 09 51 23.0000 TYP. ACCOUSTIC LAY IN PANELS AND GRID SYSTEM. 09 51 23.0001 TYP. VINYL FACED GYPSUM: 24" X 24" X 5/8" CLASS A. MOLD AND MILDEW RESISTANT, HUMIGUARD WITH 15/16" PRELUDE LAY IN CEILING PANELS. ARMSTRONG KITCHEN ZONE #673 OR APPROVED EQUAL. 09 91 00.0000 TYP. PAINT

INDEX OF DRAWINGS

Δ NO. DATE DESCRIPTION

**GENERAL** 

ABBREVIATIONS SYMBOLS AND SHEET INDEX

**ARCHITECTURE - DEMOLITION** AD-2.1.1 DEMO FLOOR PLAN AD-2.2.1 DEMO CEILING PLAN

ARCHITECTURE

LIFE SAFETY DETAILS PENETRATION TYP.

**UL DETAIL PENETRATIONS** 

A-1.1.4 PHASING PLAN

FLOOR PLAN

A-2.1.2 MEZZANINE PLAN

**CEILING PLAN** 

**BUILDING SECTIONS** 

A-7.1.1 ROOM FINISH SCHEDULE

A-8.1.1 A-8.1.2

**DETAILS** DETAILS MATERIALS LEGEND

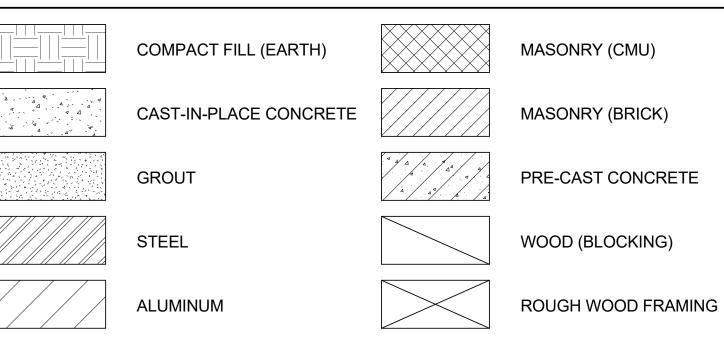
ORNAMENTAL METAL

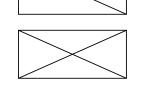
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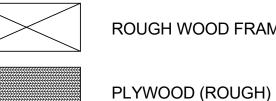
LATH AND STUCCO

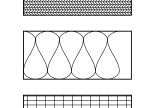
**GLASS** 

**PLASTIC** 











**RIGID INSULATION** 



SITE PHOTOGRAPHY REFERENCE DIRECTION INDICATOR DETAIL NUMBER

DRAWING NUMBER

### **ABBREVIATIONS**

A/C	AIR CONDITION,-ED,-ER,-ING	L.L.H.	LONG LEG HORIZONTAL
ADJ.	ADJUSTABLE	L.L.V.	LONG LEG VERTICAL
A.F.F.	ABOVE FINISH FLOOR	MAT; MAT'L	MATERIAL
ALUM.	ALUMINUM	MAX.	MAXIMUM
&	AND	MECH.	MECHANICAL
L	ANGLE	MFRS.	MANUFACTURER
APPROX.	APPROXIMATELY	MIN.	MINIMUM
@	AT	MISC.	MISCELLANEOUS
BLDG.	BUILDING	M.O.	MASONRY OPENING
B.O.	BOTTOM OF	MTD.	MOUNTED
CEIL./CLG.	CEILING	MTL.	METAL
C.J.	CONTROL JOINT	N.	NATURAL; NORTH
	CENTER LINE	NO., #	NUMBER
ፍ CLO./CL.	CLOSET	NOM.	NOMINAL
CLR.	CLEAR	N.I.C.	NOT IN CONTRACT
COL.	COLUMN	O.C.	ON CENTER
CONC.	CONCRETE	OD	OUTSIDE DIAMETER
CONST.	CONSTRUCTION	OPNG.	OPENING
CONT.	CONTINUOUS	PL.	PLATE
C.M.U	CONCRETE MASONRY UNIT	PLY.	PLYWOOD
D.F.	DRINKING FOUNTAIN	P.P.	POWER POLE
DIA. / Ø	DIAMETER	PT./PTD.	PAINT / PAINTED
DIM.	DIMENSION	P.T.	PRESSURE TREATED
DISP.	DISPENSER / DISPOSAL	P.T.D.	PAPER TOWEL DISPENSER
DN.	DOWN	P.T.H.	PAPER TOWEL HOLDER
DR.	DOOR	P.V.C.	POLYVINYL CHLORIDE
DTL./DET.	DETAIL	PNL.	PANEL
DWG.	DRAWING	R., RAD.	RADIUS OF GYRATION
E.	EAST	R.C.P.	REINFORCED CONCRETE PIPE
EA.	EACH	R.D.	ROOF DRAIN
E.J.	EXPANSION JOINT	RECT.	RECTANGULAR
ELEC.	ELECTRICIAN, ELECTRICAL	REINF.	REINFORCEMENT
ELEV.	ELEVATOR	REQ'D.	REQUIRED
ENCL.	ENCLOSURE	RM.	ROOM
EQ.	EQUAL	R.O.	ROUGH OPENING
EQUIP.	EQUIPMENT	R.O.W.	RIGHT-OF-WAY
E.W.C.	ELECTRIC WATER COOLER	S.	SUCTION; SINGLE ENTRANCE; SOUTH
EXIST.	EXISTING	SCH.; SCHED.	SCHEDULE
EXT.	EXTERIOR	S.D.	SOAP DISPENSER
F.D.	FLOOR DRAIN	S.H.	SOAP HOLDER
F.E.	FIRE EXTINGUISHER	SHT.	SHEET
F.F.	FINISH FLOOR	S.M.S.	STRUCTURAL METAL STUD
F.H.	FIRE HYDRANT	SPC.	SPACE
F.H.C.	FIRE HOSE CABINET	SPECS.	SPECIFICATIONS
FIN.	FINISH	SQ.	SQUARE
FLR.	FLOOR	S.S.	STAINLESS STEEL / SERVICE SINK
F.R.	FIRE RESISTANT	STD.	STANDARD
FT.	FEET / FOOT	STD. ST.; STL.	STEEL
FTG.	FOOTING	STRUCT.	STRUCTURAL
GA.	GAUGE	T.	TOILET
GALV.	GALVANIZED	т. Т.В.	TIE BEAM
G.B.	GRAB BAR	т.в. Т & G.	TONGUE AND GROOVE; TAR AND GRAVE
G.C.	GENERAL CONTRACTOR	T.O.	TOP OF
G.W.B.	GYPSUM WALL BOARD		
GYP.	GYPSUM	T.P.H.	TOILET PAPER HOLDER
HCPD.	HANDICAPPED	TYP.	TYPICAL
		U.O.N.	UNLESS OTHERWISE NOTED
H.M.	HOLLOW METAL	UR.	URINAL
HORIZ.	HORIZONTAL	V.C.P.	VITREOUS CLAY PIPE
HT.	HEIGHT	VERT.	VERTICAL
INV. JAN	INVERT JANITOR	W	WIRE; WATT; WIDE; WEST
			\A/ITLI

### SYMBOL LEGEND

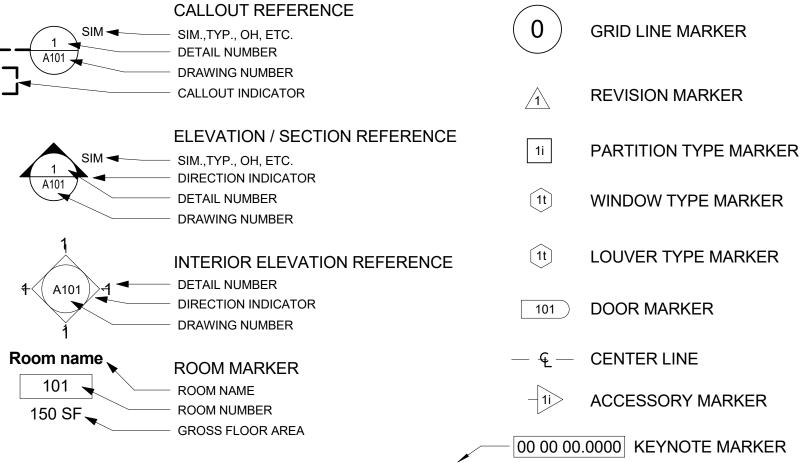
**JANITOR** 

LAMINATED

LAVATORY

JOINT

JAN.

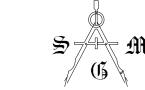


W.C.

WATER COLUMN; WATER CLOSET

WOOD

WATER HEATER



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Client Name:

### **ORANGE COUNTY**

FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



Issue:	PERMIT DOCUMENTS 02-07-1	9
NO.	DESCRIPTION	DATE

Project Name:

ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT** 

<b>,</b>		
Scale:	AS NOTED	Seal:
Design By:	Designer	
Drawn By:	Author	
Checked By:	Checker	
Architect of Record:		
MIGUEL LAZ	ARO MARTIN	
License Number:		
AR	8255	

Sheet Name:

**ABBREVIATIONS SYMBOLS AND SHEET INDEX** 

Sheet Number:

**IS-0.0.1** 

PROTECT ADJACENT EXISTING

FOUNDATIONS FROM DAMAGE

**DORMITORY** 

TYP. REMOVE ALL VEGETATION, ORGANIC MATERIAL, AND TOP SOIL

RELOCATE AND CAP EXISTING

COORDINATE WORK IN THIS AREA

WITH ORANGE COUNTY PM AND FIRE STATION FOR PHASING AND

WITH CAUTION

IRRIGATION LINES

FOR ALL WORK, PERFORM SOFT DIG

SLABS, WALLS, STEPS AND

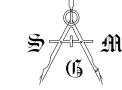
**MENS RR** 

130

131

**LOCKER RM** 

128



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Client Name:

### **ORANGE COUNTY**

FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



Issue:	PERMIT DOCUMENTS 02-07	7-19
NO.	DESCRIPTION	DATE
1	PRE-BID RFI	05/15/2019

Project Name:

ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

Scale:	AS NOTED	Seal:
Design By:	MLM	
Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Record:		
MIGUEL LAZ	ARO MARTIN	
License Numbe	r:	
AR	8255	

Sheet Name:

**DEMO FLOOR PLAN** 

Sheet Number:

**AD-2.1.1** 

REFLECTED CEILING PLAN

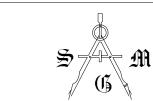
**A1** 

1/8" = 1'-0"

Keynote Legend

Key Value Keynote Text

02 41 19.0001 TYP. REMOVE EXISTING ACOUSTICAL CEILING TILE, GRID & WIRES COMPLETE.
02 41 19.0002 TYP. REMOVE EXISTING GYPSUM DRYWALL CEILING COMPLETE.
02 41 19.0003 TYP. REMOVE EXISTING ALUMINUM SOFFIT SYSTEM COMPLETE.



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FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



Issue:	PERMIT DOCUMENTS 02-07-19	
NO.	DESCRIPTION	DATE

### DEMO CEILING LEGEND

TYP. GYPSUM CEILING T DEMO
TYP. 2X4 ACCOUSTIC CEILING TILE TO DEMO

TYP. 2X4 LIGHTING REMOVE AND REINSTALL

TYP. 2X2 LIGHTING
REMOVE AND REINSTALL

TYP. 1X4 LIGHTING
REMOVE AND REINSTALL

TPY. CIRCULAR CEILING
LIGHT REMOVE AND

REINSTALL

HVAC SUPPLY GRILL
REMOVE/SEE ME

HVAC RETURN REGISTER REMOVE/SEE ME

© CEILING MOUNTED
SPEAKER REMOVE AND
REINSTALL

SMOKE DETECTOR REMOVE AND REINSTALL

• TYP. SPRINKLER TO REMAIN

ORANGE COUNTY
FIRE STATION #30
HVAC REPLACEMENT

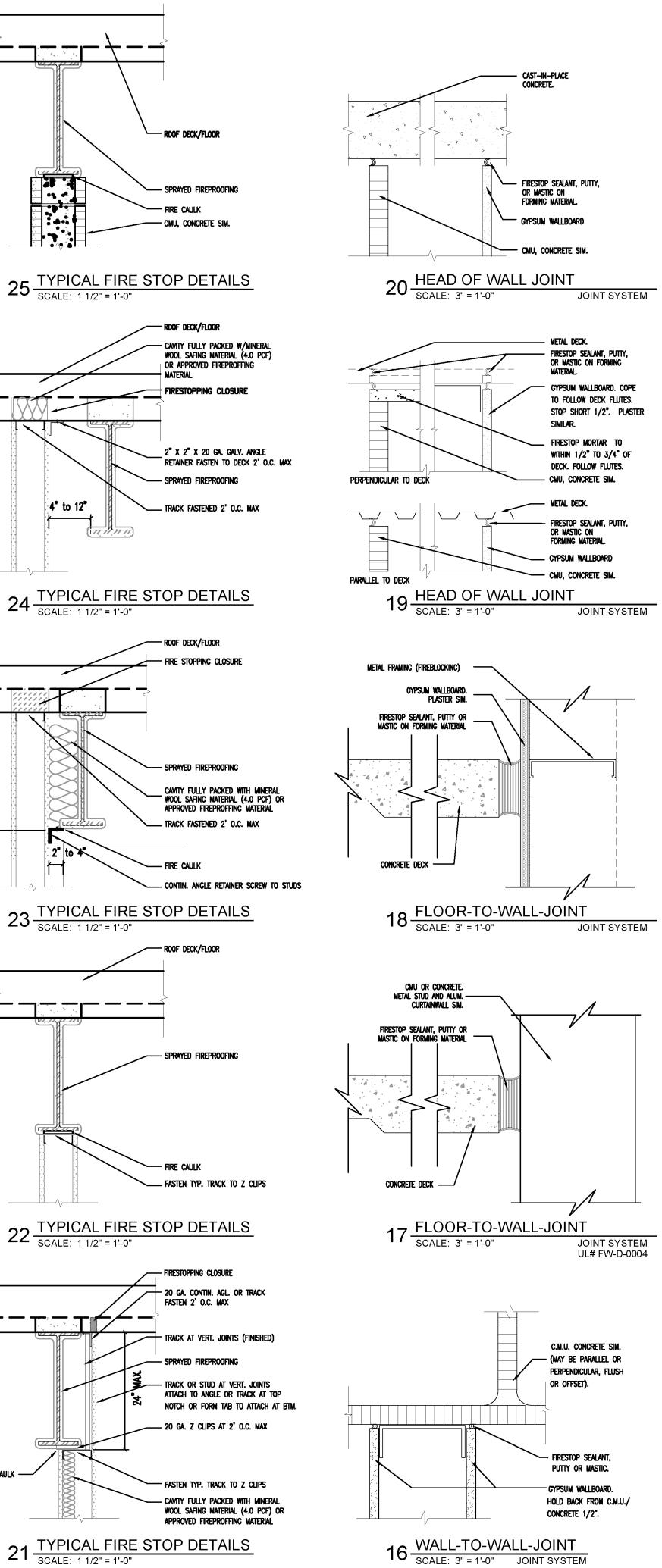
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Design By:	MLM	
Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Rec	cord:	
MIGUEL LAZ	ZARO MARTIN	
License Numbe	r:	
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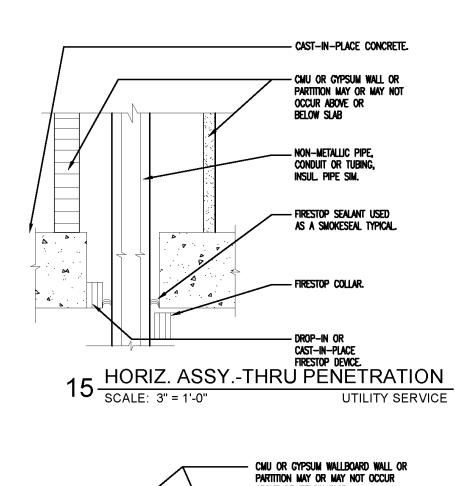
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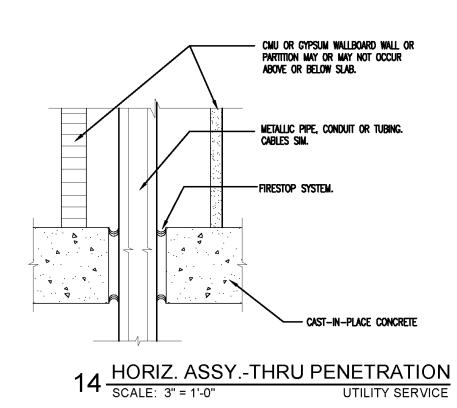
**DEMO CEILING PLAN** 

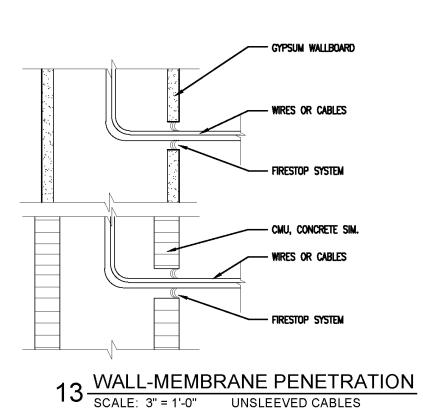
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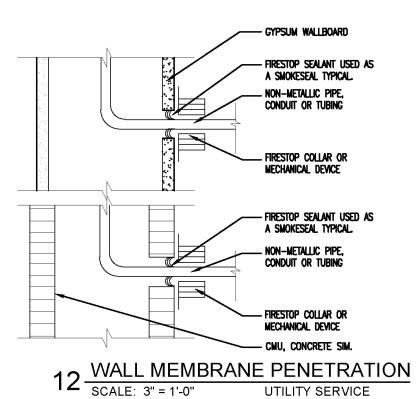
**AD-2.2.1** 

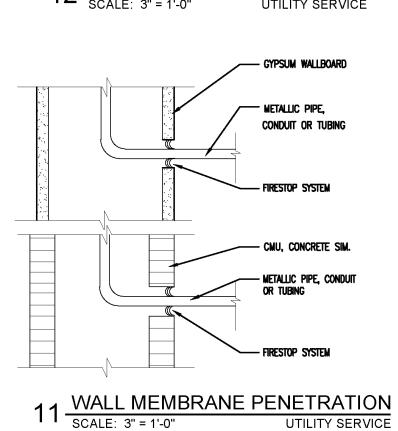


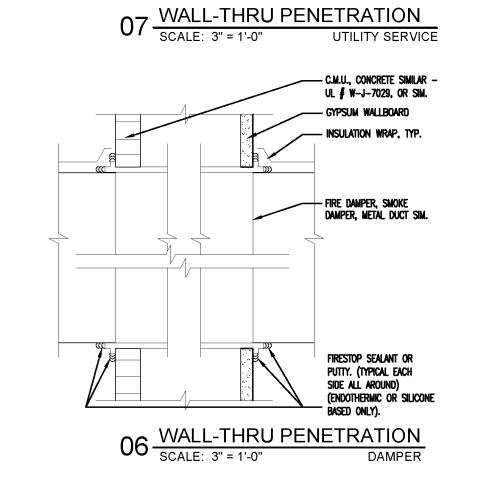












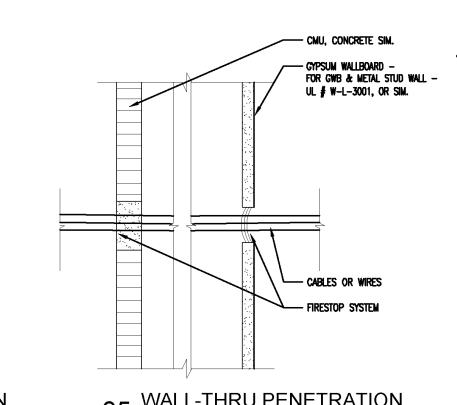
- CMU, CONCRETE SIM.

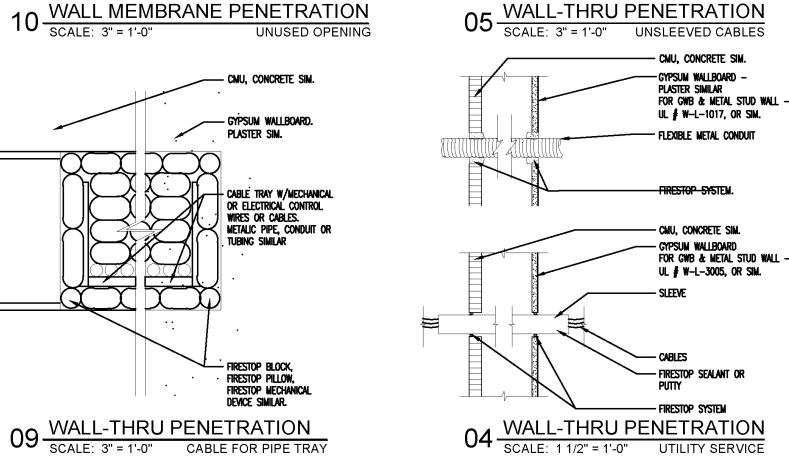
FOR GWB & METAL STUD WALL — UL # W-L-2002, OR SIM.

- FIRESTOP SEALANT USED AS A SMOKESEAL TYPICAL.

— FIRESTOP COLLAR,

MECHANICAL DEVICE SIM.



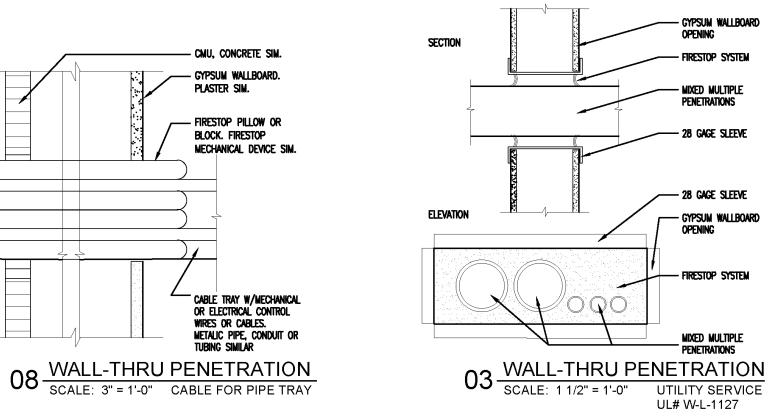


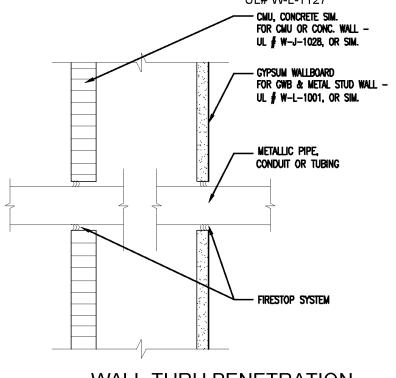
— Gypsum Wallboard

- FIRESTOP SYSTEM

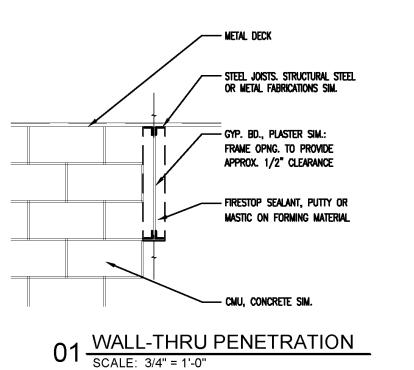
- CMU, CONCRETE SIM.

HORIZONTAL ASSEMBLY
AND THRU PENETRATION
UNUSED OPENINGS SIMILAR.









#### GENERAL NOTES

1. SPECIFIC FIRESTOPPING AND ASSEMBLY PER
APPROVAL TEST OR ENGINEERING OPINION. REFER
TO DIVISION 7 SECTION "FIRESTOPPING". SYSTEM
NUMBERS THEREIN ARE FROM UL FOR
CONVENIENCE ONLY AND ARE NOT INTENDED
TO BE EXHAUSTIVE OR EXCLUSIVE.

2. A COMBINATION OF MULTIPLE DETAILS MAY BE NECESSARY TO ADDRESS A SPECIFIC JOB CONDITION, SUCH AS MULTIPLE OR DIFFERING PENETRANTS THRU A SINGLE OPENING OR A HEAD-OF-WALL JOINT WITH A PENETRATION OF THE WALL OR HORIZONTAL ASSEMBLY.

U.L. PENEIR	ATION ASSEMBLIES
FLOOR	PENETRATIONS
	CONCRETE W/ A MIN. THICKNESS LESS THAN OR EQUAL TO 5"
NO PENETRATION ITEMS	F-A-0005
METALLIC PIPE, CONDUIT, OR TUBING	F-A-1029
NON-METALLIC PIPE, CONDUIT, OR TUBING	F-A-2067
SLEEVED WIRING OR CABLES	C-AJ-3152
UNSLEEVED WIRING OR CABLES	F-A-3004
WALL	PENETRATIONS
	CONCRETE OR MASONRY W/ A MIN. THICKNESS LESS THAN OR EQUAL TO
NO PENETRATION ITEMS	C-AJ-0087
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1291
NON-METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2028
SLEEVED WIRING OR CABLES	C-AJ-3036
UNSLEEVED WIRING OR CABLES	W-J-3036
	FRAMED WALLS
NO PENETRATION ITEMS	W-L-0013
METALLIC PIPE, CONDUIT, OR TUBING	W-L-1290
NON-METALLIC PIPE, CONDUIT, OR TUBING	W-L-2335
SLEEVED WIRING OR CABLES	W-L-3112
UNSLEEVED WIRING OR	W-L-3079

CONTRACTOR RESPONSIBLE FOR
CONFIRMATION OF ASSEMBLY APPLICABILITY OF
CONDITIONS ENCOUNTERED



/ (B)

SGM ENGINEERING, INC.

MEP CONSULTING ENGINEERS

CA-00006208

935 Lake Baldwin Lane

Orlando, FL 32814



Suite 107 407 894 1338 fax Maitland, FL 32751

Client Name:

### ORANGE COUNTY

FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



ATE

Project Name:

ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

,		
Scale:	AS NOTED	Seal:
Design By:	MLM	
Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Rec	cord:	
MIGUEL LAZ	ZARO MARTIN	
License Numbe	er:	
AR	8255	

Sheet Name:

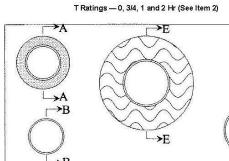
DETAILS PENETRATION TYP.

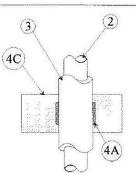
Sheet Number:

A-1.1.2

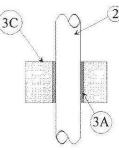
System No. C-AJ-8055 February 15, 2006

F Rating — 2 Hr

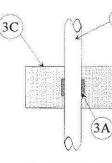




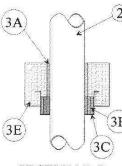
SECTION A-A FIRESTOP CONFIGURATION A-A



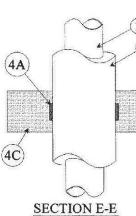
SECTION B-B FIRESTOP CONFIGURATION B-B



SECTION C-C FIRESTOP CONFIGURATION C-C



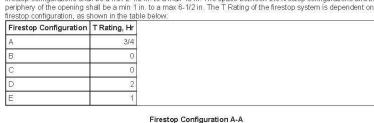
SECTION D-D FIRESTOP CONFIGURATION D-D



CONFIGURATION E-E

1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max area of opening is 288 sq in. with max See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Firestop System — The firestop system consists of any combination of the four individual firestop configurations described below, installed within the opening. Each configuration consists of a through penetrant, wrap strip and/or putty pads, forms and mortar, installed within the opening around the various configurations. The space between the firestop configurations shall be a min 2-1/12 in. to a max 13 in. The space between the firestop configurations and the periphery of the opening shall be a min 1 in. to a max 6-1/2 in. The T Rating of the firestop system is dependent on the



2. **Through-Penetrants** — One metallic pipe or tubing to be installed within the opening. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be

- A. Steel Pipe Nom 3 in. diam (or smaller) Schedule 10 (or heavier) steel pipe. B. Iron Pipe - Nom 3 in. diam (or smaller) cast or ductile iron pipe.
- C. Copper Tubing Nom 3 in. diam (or smaller) Type L (or heavier) copper tubing.
- D. Copper Pipe Nom 3 in, diam (or smaller) Regular (or heavier) copper pipe. 3, Tube Insulation — Plastics# — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam See Plastics+ (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. Firestop Configuration — The firestop configuration shall consist of the following:

A. Fill, Void or Cavity Material\* — Wrap Strip — Nom 1/4 in. thick intumescent material faced on A. Fill, Vold or Carty Marie — wrap strip — Norm 1/4 in. Interminate landed on both sides with a plastic film, supplied in 1-1/2 in. wide strips. One layer of wrap strip installed around outer circumference of the insulated through penetrant with ends butted and held in place with a layer of aluminum foil tape. The wrap strip shall be recessed 1-1/2 in. from the bottom surface of the concrete floor. In walls having a thickness of 5 in. or less, the wrap strip shall be centered at middepth of wall assembly. In walls having a thickness greater than 5 in., the wrap strip shall be installed on both surfaces of the wall such that the exposed edge of the wrap strip is recessed 1-1/4 in, from SPECIFIED TECHNOLOGIES INC — SpecSeal RED Wrap Strip

to be rigid sheet material, cut to fit the contour of the insulated penetrating item and positioned on the bottom surface of the floor or both sides of the wall as required to accomodate the required thickness of fill material. Forms to be removed after fill material has cured.

C. Fill, Void or Cavity Material\* — Mortar — Min 3-1/2 in. thickness of fill material applied within the annulus. The mortar shall be recessed 1/2 in, from the bottom surface of the floor or from each surface of the wall. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight in accordance with the installation instructions supplied with the product. SPECIFIED TECHNOLOGIES INC - SpecSeal Mortar

B. Forms - (Not Shown) - Used as a form to prevent the leakage of fill material installation. Forms

#### Firestop Configuration B-B.

Through Penetrants — One metallic pipe or tubing to be installed within the opening. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be

A. Steel Pipe - Nom 3 in. diam (or smaller) Schedule 10 (or heavier) steel pipe B. Iron Pipe - Nom 3 in. diam (or smaller) cast or ductile iron pipe.

C. Copper Tubing - Nom 3 in. diam (or smaller) Type L (or heavier) copper tubing D. Copper Pipe - Nom 3 in. diam (or smaller) Regular (or heavier) copper pipe

3. Firestop Configuration — The firestop configuration shall consist of the following: A. Fill, Void or Cavity Material" — Putty Pad — Nom 3-1/2 in: wide moldable putty. A single layer of putty pads shall be wrapped around outer circumference of through penetrant with ends buttled. In floors, the putty pad shall be recessed 1/2 in. from the bottom surface of the floor and flush with the bottom edge of mortar (Item 3C). In walls, the putty pad shall be recessed min 1/2 in. from each surface of the wall and flush with each surface of mortar.

SPECIFIED TECHNOLOGIES INC — SpecSeal Putty Pads

B. Forms - (Not Shown) - Used as a form to prevent the leakage of fill material installation. Forms to be rigid sheet material, cut to fit the contour of the penetrating item and positioned on the bottom surface of the floor of both sides of the wall as required to accommodate the required thickness of fill material. Forms to be removed after fill material has cured.

C, Fill, Void or Cavity Material\* - Mortar - Min 3-1/2 in thickness of fill material applied within the annulus. Fill material to be recessed 1/2 in. from the bottom surface of floor or both surfaces of the wall assembly. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by nce with the installation instructions supplied with the product. SPECIFIED TECHNOLOGIES INC — SpecSeal Mortar

#### Firestop Configuration C-C

Through Penetrants — One nonmetallic pipe or conduit to be installed within the opening. The pipe or conduit to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes or conduit may be used: A. Polyvinyl Chloride (PVC) Pipe — Norr 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. C. Rigid Nonmetallic Conduit+ - Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code, (NFPA No. 70). 3. Firestop Configuration — The firestop configuration shall consist of the following:

A. Fill, Void or Cavity Material\* - Wrap Strip - Nom 1/4 in. thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in, wide strip. One layer of wrap strip installed around outer circumference of through penetrant with ends butted and held in place with a layer of attiminum foil tape. In floors, the bottom edge of the wrap strip shall be recessed 1-1/2 in. from the bottom surface of the floor. In walls having a thickness of 5 in. or less, the wrap strip shall be centered at middepth of wall assembly. In walls having a thickess of greater than 5 in., the wrap strip shall be installed on both surfaces of the wall such that the exposed edge of the wrap strip is recessed 1-1/4 SPECIFIED TECHNOLOGIES INC — SpecSeal RED Wrap Strip

B. Forms — (Not Shown) — Used as a form to prevent the leakage of fill material installation. Forms to be rigid sheet material, cut to fit the contour of the penetrating item and positioned on the bottom surface of the floor or both sides of the wall as required to accompdate the required thickness of fill material. Forms to be removed after fill material has cured.

C. Fill, Void or Cavity Material\* - Mortar - Min 3-1/2 in: thickness of fill material applied within the annulus. Fill material to be recessed 1/2 in. from both surfaces of floor or wall assembly. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight in accordance with the installation instructions supplied with the product.

SPECIFIED TECHNOLOGIES INC — SpecSeal Mortar

#### Firestop Configuration D-D

Through Penetrants — One nonmetallic pipe or conduit to be installed within the opening. The pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of pipes or conduits may be

A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in, diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems B, Chlorinated Polyvinyl Chloride (CPVC) Pipe - Nom 4 in, diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems C. Rigid Nonmetallic Conduit+ - Nom 4 in. diam (or smaller) Schedule 40 PVC conduit installed in ccordance with Article 347 of the National Electrical Code, (NFPA No. 70).

3. Firestop Configuration — The firestop configuration shall consist of the following: A. Fill, Void or Cavity Material\* - Putty Pad - Nom 3/16 in, thick by 2-3/4 in, wide moldable putty A single layer of putty pads shall be wrapped around outer circumference of through penetrant with butted ends. In floors, the bottom edge of the putty pad shall be recessed 1-1/4 in, above the bottom surface of the floor. In walls, the putty pad shall be centered at mid-depth of wall assembly. SPECIFIED TECHNOLOGIES INC — SpecSeal Putty Pads.

B. Fill, Void or Cavity Material\* - Wrap Strip - Nom 1/4 in thick intumescent material faced on b. Fill, Vold or Cavity Material — wrap strip — Norm 1/4 in. Mick Internescent material race of both sides with a plastic film, supplied in 1-1/2 in. wide strips. The layers of wrap strips are individually wrapped around the through penetrant with the ends butted and held in place with masking tape. Butted ends in successive layers shall be aligned or offset. In floor assemblies, the wrap strips are installed on the bottom side of the concrete floor such that the bottom edge of the wrap strips shall extend 1/4 in. below the bottom surface of the floor. In wall assemblies, the wrap strips are installed on each side of the concrete wall such that the exposed end of the wrap strip extend 1/4 in beyon ach surface of the wall. The number of wrap strips required is dependent upon the diam of the through penetrant as tabulated below:

SPECIFIED TECHNOLOGIES INC - SpecSeal RED Strip

C. Steel Collar - Collar fabricated from coils of precut 0.016 in, thick (30 MSG) galv sheet steel C. Steel Collar — Collar labricated from colls of precut 0.016 in; thick (30 MSG) gain sheet steel available from wrap strip manufacturer. Collar shall be nom 1-1/2 in, deep with min four 1 in, wide by 2 in. long another tabs. Another tabs are folded 90 degrees away from pipe. Retainer tabs, 3/4 in, wide tapering down to 1/4 in, wide and located opposite the another tabs are folded 90 degrees toward pipe. surface to maintain the annular space around the through penetrant and to retain the wrap strips. Steel collar wrapped around wrap strips and through penetrant with a 1 in. wide overlap along its perimeter joint and secured together by means of a min 1/2 in. wide by 0.028 in. thick stainless steel hose clamp installed at mid-depth of the steel collar. As an alternate to the steel hose clamp, the seel collar may be secured together by means of three No, 8 steel sheet metal screws. The length of the steel screws is dependent upon the number of layers of wrap strip used within the steel collar. For steel collars incorporating a single layer of wrap strip, the length of the steel screws shall be 1/4 in long. For steel collars incorporating two or more layers of wrap strip, the length of the steel screws shall be 3/8 in. long, in the floor assemblies, one collar is used on the bottom side of the concret floor such that the exposed end of the collar extends 1/4 in. beyond the bottom surface of the floor in wall assemblies, a collar is used on each side of the concrete wall such that the exposed end of the collar extends 1/4 in: beyond each side of the wall.

D. Forms — (Not Shown) — Used as a form to prevent the leakage of fill material installation. Forms to be rigid sheet material, cut to fit the contour of the penetrating item and positioned on the bottom surface of the floor or both sides of the wall as required to accommodate the required thickness of fill material. Forms to be removed after fill material has cured. E. Fill, Void or Cavity Material" - Mortar - Min 3-1/2 in, thickness of fill material applied within the

annulus. Fill material shall be recessed 1/2 in. above the bottom surface of the floor or 1/2 in. from each surface of wall. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight in accordance with the installation instruction supplied with the product.

SPECIFIED TECHNOLOGIES INC — SpecSeal Mortar.

#### Firestop Configuration E — E

2. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:

A. Steel Pipe - Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe B. Iron Pipe - Nom 4 in. diam (or smaller) cast or ductile iron pipe.

C. Copper Tubing - Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing D. Copper Pipe - Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe. 3. Pipe Coverings — One of the following types of pipe coverings shall be used:

A, Pipe and Equipment Covering Materials\* — Max 2 in, thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with but tape supplied with the product.

See Pipe and Equipment Covering-Materials (BRGU) category in the Building Materials Directory. or names of manufacturers. Any pipe covering material meeting the above specifications and bearing he UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index

B. Pipe Covering Materials\* — Max 2 in. thick unfaced mineral fiber pipe insulation sized to the outside diam of pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. NDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High

C. Sheathing Material\* — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape. See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the U lassification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50

#### 4. Firestop System — The firestop system shall consist of the following:

A. Fill, Void or Cavity Material\* — Wrap Strip — Nom 1/4 in. thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. wide strips. One layer of wrap strip installed around outer circumference of the insulated through penetrant with ends butted and held in place with a layer of aluminum foil tape. The wrap strip shall be recessed 1-1/2 in. from the bottom surface of the concrete floor. In walls having a thickness of 5 in. or less, the wrap strip shall be centered at middepth of wall assembly. In walls having a thickness greater than 5 in., the wrap strip shall be installed on both surfaces of the wall such that the exposed edge of the wrap strip is recessed 1-1/4 in. from each side of the wall. SPECIFIED TECHNOLOGIES INC — SpecSeal RED Wrap Strip

B. Forms — (Not Shown) — Used as a form to prevent the leakage of fill material during installation. Forms to be rigid sheet material, cut to fit the contour of the insulated penetrating item and positioned on the bottom surface of the floor or both sides of the wall as required to accommodate the required thickness of fill material. Forms to be removed after the fill material has cured. C. Fill, Void or Cavity Material\* — Mortar — Min 3-1/2 in. thickness of fill material applied within the annulus. The mortar shall be recessed a 1/2 in. from bottom surface of the floor or from each surface of the wall. Mortar to be mixed with water at a rate of 1.4 parts dry mixture to 1.0 part water by weight

n accordance with the installation instructions supplied with the product. \*Bearing the UL Classification Marking

+Bearing the UL Listing Mark #Bearing the UL Recognized Component Mark

#### Last Updated on 2006-02-15 Design/System/Construction/Assembly Usage Disclaimer

 Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.

 Authorities Having Jurisdiction should be consulted before construction. Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the . When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction. · Only products which bear UL's Mark are considered Certified.

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product

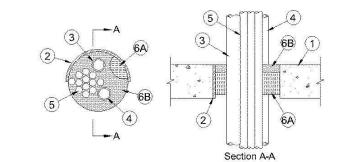
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#### THROUGH-PENETRATION FIRESTOP SYSTEM

XHEZ - Through-penetration Firestop Systems XHEZ7 - Through-penetration Firestop Systems Certified for Canada

#### System No. C-AJ-8131 August 18, 2011

	CAN/ULC S115	ANSI/UL1479 (ASTM E814)
ating - 2 Hr	F Ratio	F Rating - 2 Hr
3, 4 and 5)	FT Ratings - 1/4, 1/2, 3/4 and 2 Hr (See Items 2, 3,	T Ratings - 1/4, 1/2, 3/4 and 2 Hr (See Items 2, 3, 4 and 5)
ating - 2 Hr	FH Rati	
3, 4 and 5)	FTH Ratings - 1/4, 1/2, 3/4 and 2 Hr (See Items 2, 3,	



1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete floor or wall assembly. Floor may also be constructed of any min 6 in. (152 mm) thick hollow core UL. Classified **Precast Concrete Units\***. Wall may also be constructed of any UL. Classified **Concrete Blocks\***. Max diam of opening is 8 in. (203 mm). Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in. (178 mm).

See Concrete Blocks (CAZT) or Precast Concrete Units (CFTV) categories in the Fire Resistance

2. Steel Sleeve — (Optional) - Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into concrete flush with or extending max 2 in. (51 mm) beyond floor or wall surfaces. When steel sleeve is 3. **Metallic Penetrants** — One or more metallic pipes, conduits or tubing installed concentrically or eccentrically within the opening. Annular space between metallic penetrants and periphery of opening to be min 0 in. (point contact) to max 2 in. (51 mm). Annular space between metallic penetrants and nonmetallic penetrants or cables to be min 1/2 in. mm) to max 1-1/2 in. (38 mm). Metallic pipes, conduits or tubing to be rigidly supported on both sides of floor or vall assembly. Any combination of the following types and sizes of metallic pipes, conduits or tubing may be installed

A. Steel Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. B. Iron Pipe — Nom 2 in. (51 mm) diam (or smaller) cast or ductile iron pipe. C. Conduit — Nom 2 in. (51 mm) diam (or smaller) rigid steel conduits, electrical metallic tubing (EMT) or flexible steel conduit. The max T Rating is 3/4 hr when Item 3 is used.

eccentrically within the opening. Annular space between nonmetallic penetrants and metallic penetrants or cables to be min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm). Annular space between nonmetallic penetrants and periphery of opening to be min 1/2 in. to max 2 in. Nonmetallic pipes, conduits or tubing to be rigidly supported on both sides of floor or wall assembly. Any combination of the following types and sizes of nonmetallic pipes, conduits or tubing may be installed within the opening:

4. Nonmetallic Penetrants — One or more nonmetallic pipes, conduits or tubing installed concentrically or

A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping systems. B. Chlorinate Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR11 CPVC pipe for use in closed (process or supply) piping systems. C. Rigid Nonmetallic Conduit (RNC)+ — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC

conduit installed in accordance with the National Electrical Code (NFPA 70) D. Electrical Nonmetallic Tubing (ENT)+ — Nom 2 in. (51 mm) diam (or smaller) ENT formed from E. Optical Fiber Raceway (OFR)+ - Nom 2 in. (51 mm) diam (or smaller) optical fiber raceway

5. Cables — Nom 4 in. (102 mm) diam (or smaller) tight bundle of cables. Cable bundle spaced min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm) from metallic and nonmetallic penetrants. Cable bundle spaced 0 in. (point contact) to 2 in. (5 mm) from periphery of opening. Cable bundle to be rigidly supported on both sides of floor or wall assembly. Any combination of the following types and sizes of cables may be used:

A. Max 100 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation

B. Max 1/C No. 500 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC

D. Max 4/C No. 4/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad

F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket. G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC

H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket. I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with PVC jacket and insulation. J. Max 4/C with ground No. 2/0 (or smaller) aluminum or copper conductor Metal-Clad+ or Armored-

#### Clad+ cable with steel or aluminum jacketing. AFC CABLE SYSTEMS INC When Item D is used the T Rating is 1/4 hr, otherwise the T Rating is 3/4 Hr. 6. Firestop System — The firestop system consists of the following:

A. Packing Material — Min 3 in. (76 mm) depth of min 4 pcf (64 kg/m<sup>3</sup>) density mineral wool batt insulation tightly-packed into opening. In floors, packing material recessed from top surface of floor or steel sleeve as required to accommodate the required thickness of fill material (Item 4B). In floors constructed of hollow-core precast concrete units, mineral wool packing material to extend below exposed cores in precast concrete units. In walls, packing material recessed from both surfaces of wall or from both ends of sleeve to accommodate the required thickness of fill material. B. Fill, Void or Cavity Material\* - Sealant — Min 1 in. (25 mm) thickness of fill material applied flush with top surface of floor or both surfaces of wall. At point contact locations, apply a min 3/8 in. (10 mm) diam bead of fill material at the penetrant/steel sleeve or concrete interface.

SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

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

#### Last Updated on 2011-08-18

Design/System/Construction/Assembly Usage Disclaimer

+Bearing the UL Listing Mark

. Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.

Authorities Having Jurisdiction should be consulted before construction.

Fire resistance assembles and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the

. When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.

Only products which bear UL's Mark are considered Certified.

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and

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#### THROUGH-PENETRATION FIRESTOP SYSTEM

#### XHEZ - Through-penetration Firestop Systems

#### System No. C-AJ-8179

#### December 02, 2005

F Rating — 2 Hr

# T Rating — 1/4 Hr

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 600-2400 kg/m³) concrete floor or wall assembly. Floor may also be constructed of any min 6 in. (152 mm) thick ollow core UL Classified **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete** Blocks\*, Max diam of opening is 5 in. (127 mr

Section A-A

See Concrete Blocks (CAZT) or Precast Concrete Units (CFTV) categories in the Fire Resistance

2. Steel Sleeve — (Optional) - Nom 5 in. (127 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into concrete flush with floor or wall surfaces. 3. **Through Penetrants** — Pipes, conduits, tubing or cables to be bundled within opening such that the aggregate cross-sectional area of penetrants in opening to be max 54 percent of the cross-sectional area of the opening in floor or wall. The space between the penetrants and between the penetrants and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1-1/2 in. (38 mm). Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

A. Metallic Penetrants — The following types and sizes of metallic pipes, conduits or tubing may be

A1. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) A2. Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe. A3. Conduit — Nom 3/4 in. (19 mm) diam (or smaller) rigid steel conduit, steel electrical metallic tubing (EMT), or flexible steel conduit. A4. Copper Pipe or Tubing — Nom 3/4 in. (19 mm) diam (or smaller) Type L (or B. Nonmetallic Penetrants — The following types and sizes of nonmetallic pipes, conduits or tubing B1. Polyvinyl Chloride (PVC) Pipe — Nom 1-1/4 in. (32 mm) diam (or smaller)

B2. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 1-1/4 in. (32 mm) diam or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping B3. Rigid Nonmetallic Conduit+ — Nom 1-1/4 in. (32 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA 70).

edule 40 PVC pipe for use in vented (drain, waste or vent) or closed (process or

supply) piping systems.

 $\hbox{C. {\bf Cables --} 4 pair No. 18 AWG copper conductor thermostat cable with PVC jacket and insulation.}\\$ D. Pipe Covering — The following types of pipe covering materials may be installed on one or more of the metallic pipes or tubing: D1. Tube Insulation## — Nom 1/2 in. (13 mm) thick acrylonitrile butadiene/polyvinyl

Chloride (AB/PVC) flexible foam furnished in the form of tubing.

See Plastics (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used. D2. Pipe Covering\* - Nom 1/2 in. (13 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m<sup>3</sup>) glass fiber units jacketed on the outside with an all service

jacket. Longitudinal seams sealed with metal fasteners or factory-applied selfsealing lap tape. Transverse joints sealed with metal fasteners or with butt tape upplied with the product. See Pipe and Equipment Covering Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meetin the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be

Firestop System — The firestop system shall consist of the following: A. Packing Material — Min 4 in. (102 mm) thickness of 4 pcf (64 kg/m<sub>2</sub>) density mineral wool batt

insulation tightly-packed into annular space. In floors constructed of hollow-core precast concrete units, mineral wool packing material to extend below exposed cores in precast concrete units. Packing material recessed from top surface of floor or from both surfaces of wall as required to accommodate sealant (Item 4C). B. Fill, Void or Cavity Material\* - Sealant — Min 1/2 in. (13 mm) thickness applied flush with top of floor or with both sides of wall. Fill material forced into grouped penetrant interstices to max extent. Min 1/4in. (6 mm) diam bead of sealant applied at point contact location. SPECIFIED TECHNOLOGIES INC — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant, SpecSeal

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

##Bearing the UL Recognized Component Marking

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+Bearing the UL Listing Mark

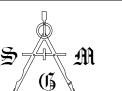
### Last Updated on 2005-12-02

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of UL Certified products, equipment, system, devices, and materials · Authorities Having Jurisdiction should be consulted before construction Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.

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Maitland, FL 32751

Client Name:

**ORANGE COUNTY** 

FIRE STATION #30 20 SOUTH HASTINGS ST ORLANDO, FL 32835



Issue: PERMIT DOCUMENTS 02-07-19 DESCRIPTION

> **Project Name: ORANGE COUNTY** FIRE STATION #30 **HVAC REPLACEMENT**

Scale:	AS NOTED
Design By:	MLM
Drawn By:	ST
Checked By:	MAM-AA
Architect of Rec	ord:
MIGUEL LAZ	ZARO MARTIN
License Number	r:
AR	8255

Sheet Name:

**UL DETAIL PENETRATIONS** 

Sheet Number:

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	NO.	DESCRIPTION	DATE

Project Name:

PHASING LEGEND

PHASE 1

PHASE 2

PHASE 3

PHASE 4

PHASE 5

SEE MECHANICAL FOR DISCRIPTION OF PHASING

### ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT**

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Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Reco	ord:	
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License Number		
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PHASING PLAN

Sheet Number:

A-1.1.4

PHASING FLOOR PLAN

A1

Keynote Legend

Key Value Keynote Text

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Project Name:

ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

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Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Rec	cord:	
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AR	8255	

Sheet Name:

**FLOOR PLAN** 

Sheet Number:

**A-2.1.1** 

A1 LEVEL 1 FLOOR PLAN

Keynote Legend

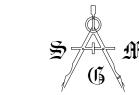
Keynote Text

Of 10 00.0034 Typ. 3/4" C.D.X. PLYWOOD ALONG OUTSIDE EDGE OF EXTERIOR WALLS.

Of 21 16.0030 Typ. BLANKET INSULATION, R-30 SECURED WITH GALVANIZED STEEL MESH OVER ALL AREAS IN SCOPE, EXCLUDING MEZZANINE.

Of 81 10.0000 Typ. FIRE STOPPING MATERIAL.

Of 89 00.0000 Typ. DRAFTSTOPPING MATERIAL AT PENETRATIONS, VERTICAL OR HORIZONTAL AT WALLS.



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Architect of Rec	cord:	
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License Numbe	er:	
AR	8255	

Sheet Name:

**MEZZANINE PLAN** 

Sheet Number:

**A-2.1.2** 

MEZZANINE

**A1** 



Keynote Legend Key Value Keynote Text 07 42 93.0000 TYP. ALUM SYSTEM SOFFIT & CEILING. 09 51 23.0000 TYP. ACCOUSTIC LAY IN PANELS AND GRID 09 51 23.0001 TYP. VINYL FACED GYPSUM: 24" X 24" X 5/8" CLASS A, MOLD AND MILDEW RESISTANT, HUMIGUARD WITH 15/16" PRELUDE LAY IN CEILING PANELS . ARMSTRONG KITCHEN ZONE #673 OR APPROVED EQUAL





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### CEILING LEGEND

TYP. 2X2 ACCOUSTIC **CEILING TILE** 

TYP. 2X2 KITCHEN ACCOUSTIC CEILING TILE

TYP. GYPSUM CEILING - 1

TYP. GYPSUM CEILING - 2 NON-PERFORATED

**ALUMINIM SOFFIT** 

2X4 MOUNTED CEILING LIGHT

2X2 MOUNTED CEILING LIGHT 1X4 MOUNTED CEILING LIGHT

CIRCULAR RECESSED CEILING LIGHT 0

**HVAC SUPPLY** 

**HVAC RETURN** 

CEILING MOUNTED SPEAKER EXISTING SPRINKLER TO REMAIN

**EXIT LAMPS** 

Project Name:

ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT** 

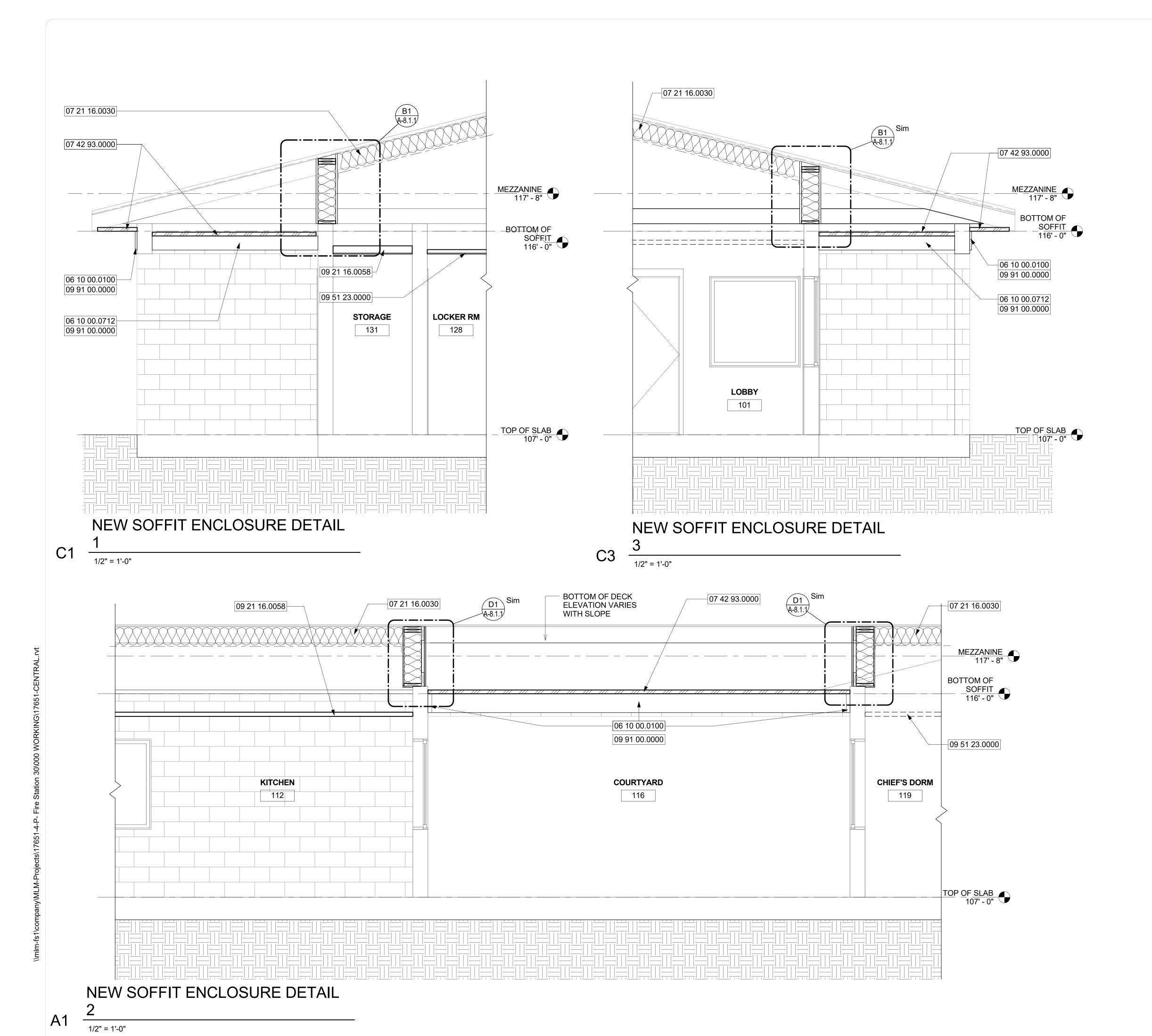
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Drawn By:	ST	
Checked By:	MAM-AA	
Architect of Red	cord:	
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License Numbe	er:	
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Sheet Name:

**CEILING PLAN** 

Sheet Number:

**A-2.2.1** 



Keynote Legend Keynote Text Key Value 06 10 00.0100 TYP. WHITE, RUSTIC STYLE HARDIE BOARD. PAINTED. 3/4" X 10" 06 10 00.0712 TYP. WHITE, RUSTIC STYLE HARDIE BOARD. PAINTED. 3/4" X 7 1/2" 07 21 16.0030 TYP. BLANKET INSULATION, R-30 SECURED WITH GALVANIZED STEEL MESH OVER ALL AREAS IN SCOPE, EXCLUDING MEZZANINE. 07 42 93.0000 TYP. ALUM SYSTEM SOFFIT & CEILING. 09 21 16.0058 TYP. 5/8" GWB" 09 51 23.0000 TYP. ACCOUSTIC LAY IN PANELS AND GRID SYSTEM. 09 91 00.0000 TYP. PAINT





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Architect of Rec	cord:	
MIGUEL LAZ	ZARO MARTIN	
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Sheet Name:

**BUILDING SECTIONS** 

Sheet Number:

A-5.1.1

,	ROOIVI FINISI	H SCHEDULE			
			CEILING		
NUMBER	NAME	FINISH	CODE	HEIGHT	REMARKS
101	LOBBY	ACT	FF	8' - 5"	
102	HCW	GWB-1	P1	8' - 0"	
103	DIVISION CHIEF	ACT	FF	8' - 0"	
104	SECRETARY	ACT	FF	8' - 0"	
105	STORAGE	ACT	FF	8' - 0"	
106	BATTALION CHIEF OFFICE	ACT	FF	8' - 0"	
107	OFFICER'S OFFICE	ACT	FF	8' - 0"	
108	STORAGE	ACT	FF	8' - 0"	
109	MED	GWB-1	P1	8' - 0"	
110	CORRIDOR	ACT	FF	8' - 0"	
112	KITCHEN	ACT-2	FF	8' - 0"	
113	DINING	ACT	FF	8' - 8"	
114	HCM	GWB-1	P1	8' - 0"	
115	DAY ROOM	GWB-1	P1		
116	COURTYARD	OPEN	-		
118	ELEC.	ACT	FF	8' - 0"	
119	CHIEF'S DORM	ACT	FF	8' - 0"	
120	CHIEF'S RR	GWB-2	P1	8' - 0"	
121	OFFICER'S TOILET	GWB-2	P1	8' - 0"	
122	OFFICER'S DORM	ACT	FF	8' - 0"	
123	LINEN	GWB-1	P1	8' - 0"	
125	STUDY AREA	ACT	FF	8' - 0"	
126	EXERCISE	ACT	FF	8' - 0"	
127	DORMITORY	ACT	FF	9' - 0"	
128	LOCKER RM	ACT	FF	8' - 0"	
129	WOMENS RR	GWB-2	P1	8' - 0"	
130	MENS RR	GWB-2	P1	8' - 0"	
131	STORAGE	GWB-1	P1	8' - 0"	
137	EQUIP. ROOM	GWB-1	P1	8' - 0"	
141	APPARATUS	OPEN	-	18' - 8"	
142	CASCADE	OPEN	_	8' - 0"	
143	CUSTODIAL	OPEN	-	8' - 0"	
145	HOSE STORAGE	OPEN	-	8' - 0"	
148	CLOSET	GWB-1	P1	8' - 0"	
149	CLOSET	GWB-1	P1	8' - 0"	

CONTRACTOR TO VERIFY AND MATCH EXISTING CEILING HEIGHTS

REMARK

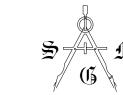
ACT TYP. 24" X 24" X 5/8" ACCOUSTIC LAY IN PANELS AND GRID SYSTEM

ACT-2 TYP. VINYL FACED GYPSUM: 24" X 24" X 5/8" CLASS A, MOLD AND MILDEW RESISTANT, HUMIGUARD WITH 15/16" PRELUDE LAY IN CEILING PANELS . ARMSTRONG KITCHEN

GWB-1 TYP. GYPSUM CEILING
GWB-2 TYP. WATER-RESISTANT GYPSUM CEILING

	FINISH CODES
	CODE
FF	FACTORY FINISH: AS SUPPLIED
P1	PAINT, COLOR TO MATCH EXISTING CEILINGS

ZONE #673 OR APPROVED EQUAL



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ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

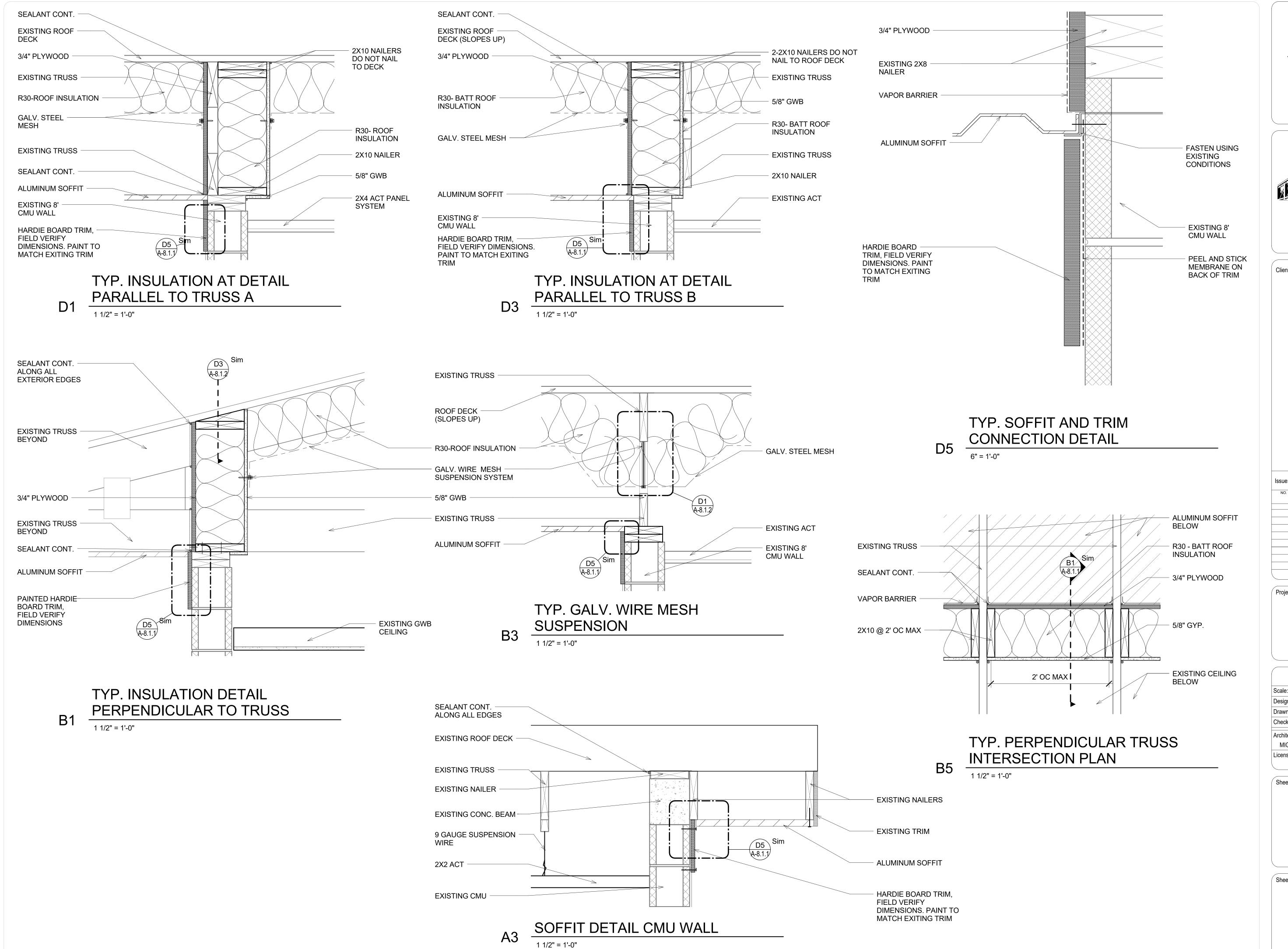
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Drawn By:	ST
Checked By:	MAM-AA
Architect of Recor	-d:
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AR 82	255

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**ROOM FINISH SCHEDULE** 

Chaot Number

**A-7.1.1** 



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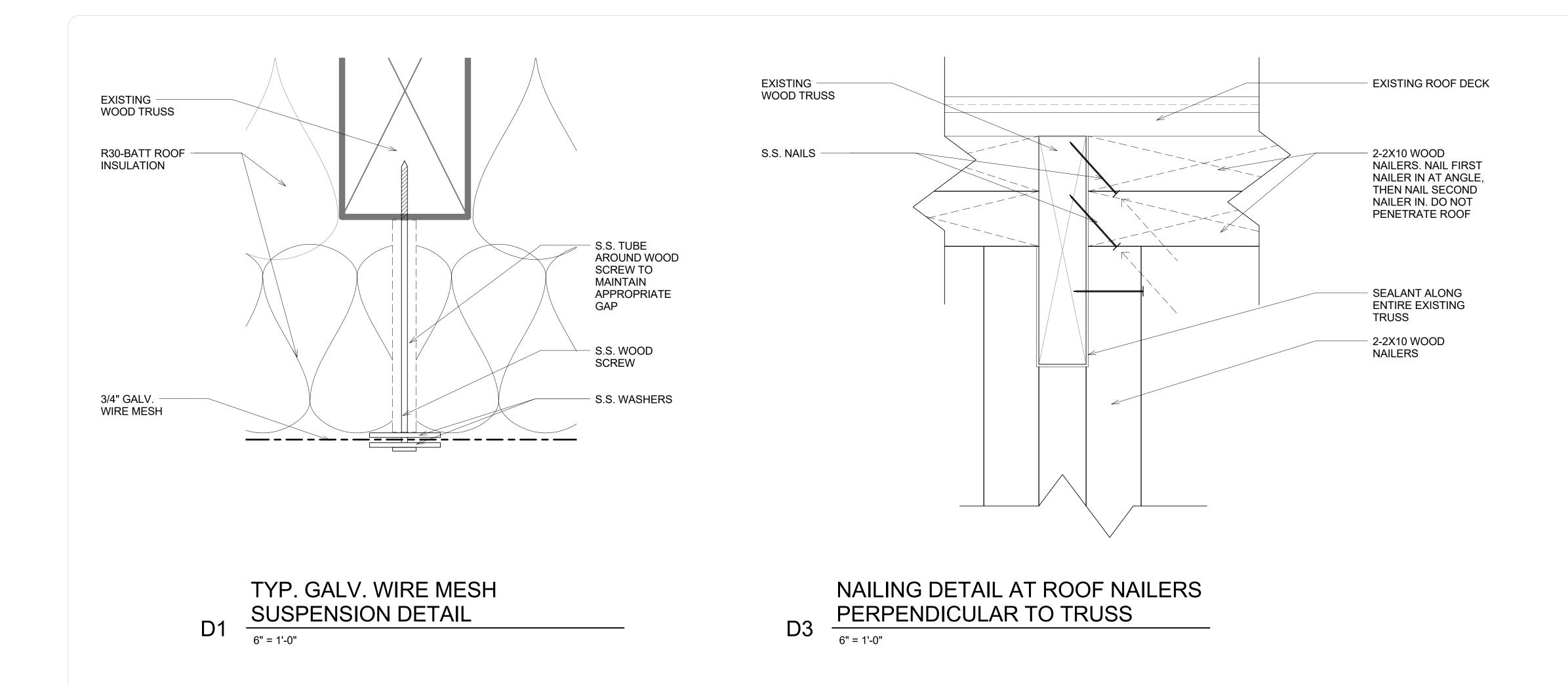
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Architect of Rec	ord:	
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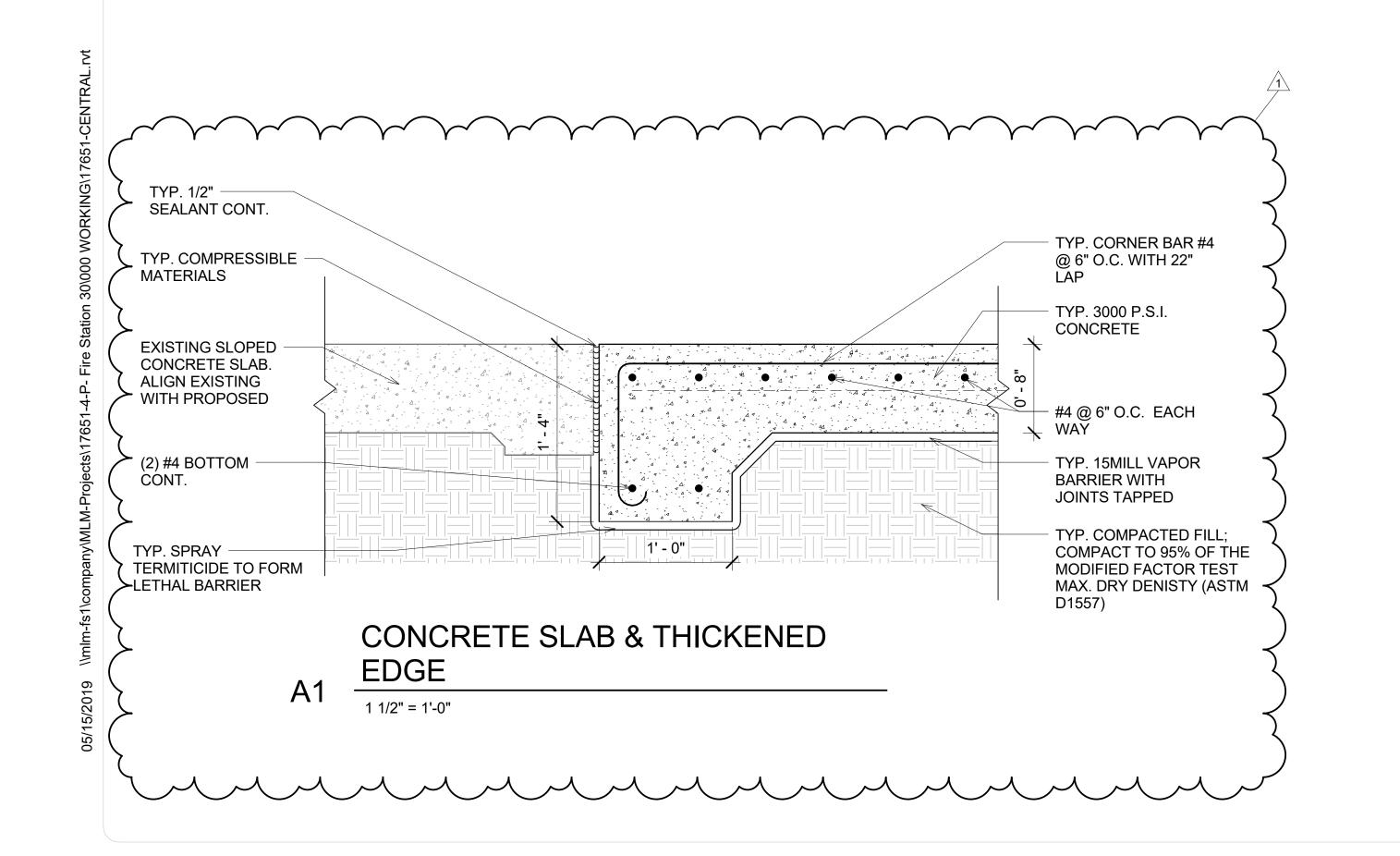
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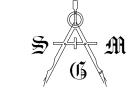
**DETAILS** 

Sheet Number:

A-8.1.1







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Project Name:

### ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

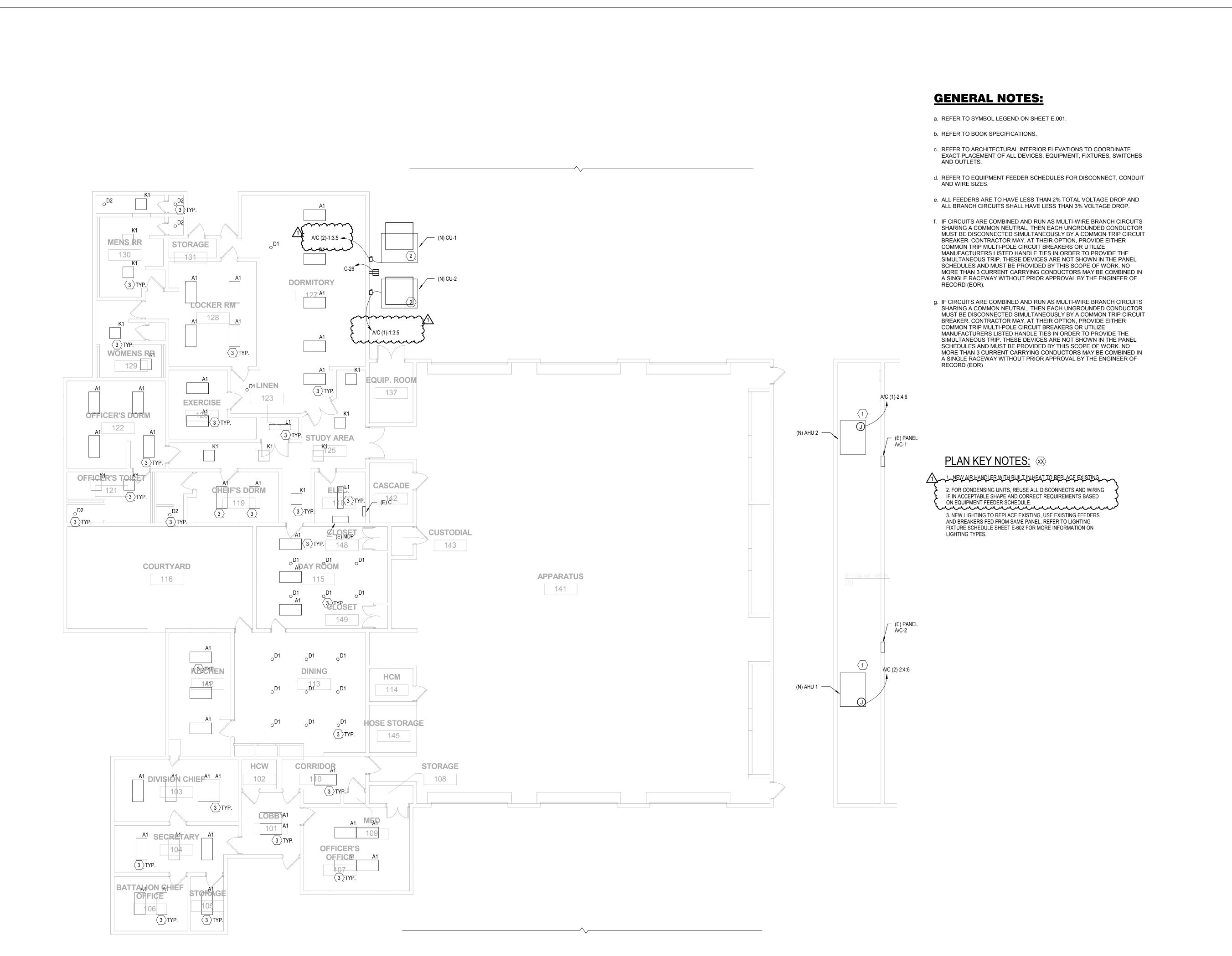
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**DETAILS** 

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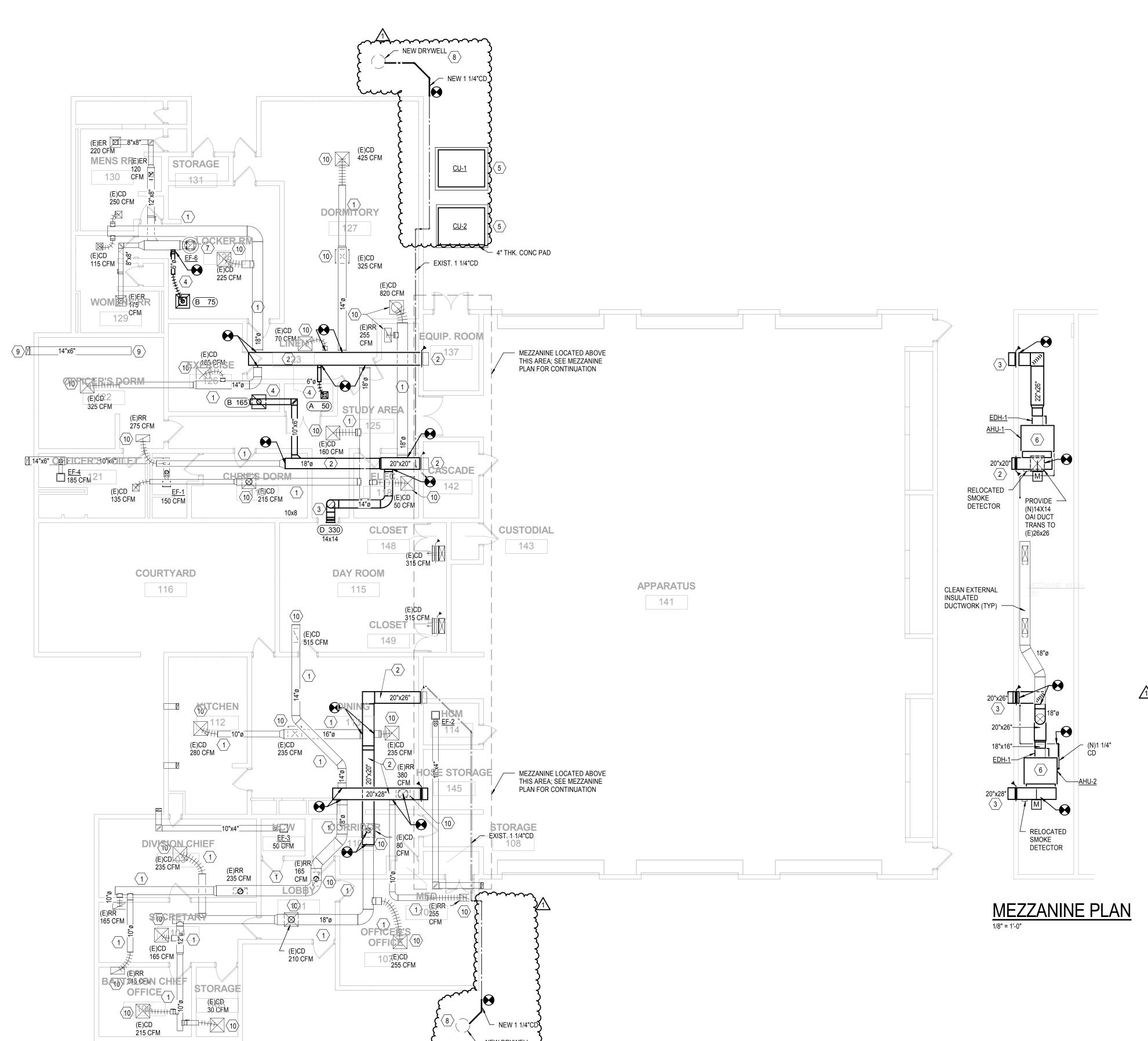
ORANGE COUNTY FIRE STATION #30 **HVAC REPLACEMENT** 

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Checked By:	JM	No. 70700
Engineer of Recor	rd:	STATE OF STA
License Number:		MINING ONAL ENGINE

Sheet Name:

**ELECTRICAL FLOOR PLAN** 

E-101



NEW DRYWELL

#### **GENERAL NOTES:**

- A. REFER TO SHEET M0.01 FOR GENERAL NOTES.
- B. ROUTE NEW AHU CONDENSATE DRAINS FULL SIZE OF NEW UNIT TO EXISTING CONDENSATE DRAINS WITHIN MECHANICAL ROOM
- C. RECONNECT EXISTING DUCT SMOKE DETECTOR SMOKE CONTROLS TO NEW AHU'S (TYP)
- D. CONTRACTOR SHALL PROVIDE TEMPORARY COOLING IN ALL AREAS WHERE THE COOLING SYSTEM WILL BE DOWN FOR REPLACEMENT. TEMPORARY COOLING SHALL CONSIST OF SPOT COOLERS FURNISHED BY CONTRACTOR. CONTRACTOR SHALL MAINTAIN AND DRAIN SPOT COOLERS AS REQUIRED DURING THE DAY AND BEFORE LEAVING FOR THE NIGHT. ALL PHASES SHALL BE PROVIDED WITH TEMP. COOLING WHILE OCCUPIED.
- E. SEE PHASING DRAWING FOR CONSTRUCTION PHASING.
  AHU'S SHALL BE REPLACED IN A MANNER THAT FOLLOWS THE
  PHASING PLAN. AHU-1 SHALL BE REPLACED & DUCTWORK
  MODIFICATIONS ACCOMPLISHED DURING PHASES 1,2 & 3
  WITH PHASE 2 RESTROOMS AVAILABLE WITH TEMPORARY
  COOLING DURING AHU-1 REPLACEMENT. AHU-2 SHALL BE
  REPLACED & DUCTWORK MODIFICATIONS ACCOMPLISHED
  DURING PHASE 5 & 6, AFTER AHU-1 IS UP AND RUNNING.
- F. REBALANCE ALL HVAC SYSTEMS ONCE AHU REPLACEMENT AND HVAC MODIFICATIONS HAVE BEEN ACCOMPLISHED. NEW CONTROLS SHALL BE COMMISSIONED WITH OWNER REPRESENTATIVE PRESENT TO VERIFY EQUIPMENT OPERATIONS AND ALLOW FOR TRAINING OF CONTROLS AND FOR NEW HVAC SYSTEMS.

### PLAN KEY NOTES: 🕸

- CLEAN ALL EXISTING SUPPLY AND RETURN ROUND BRANCH DUCTWORK AND RECONNECT TO EXISTING MAIN SUPPLY AND RETURN DUCTWORK.
- 2. PROVIDE NEW MAIN SUPPLY AND RETURN DUCTWORK AND RECONNECT EXISTING SUPPLY AND RETURN SUB-MAINS AS INDICATED (COORD. WITH EXISTING CONDITIONS). PROVIDE NEW FIRE DAMPERS. PROVIDE NEW 2" EXTERNAL BATT INSULATION FOR ALL NEW DUCTWORK. SEAL ALL EXISTING DUCTS AT CONNECTIONS TO NEW.
- 3. PROVIDE NEW 14" DIA. RETURN DUCT AND REGISTER AND CONNECT TO EXISTING RETURN AS INDICATED.
- 4. PROVIDE NEW DUCTWORK AND DIFFUSERS/REGISTERS AS INDICATED; RECONNECT TO EXISTING RETURN
- 5. PROVIDE NEW CONDENSING UNITS; PROVIDE CONCRETE PADS AND ANCHOR PER DETAILS
- 6. PROVIDE NEW AHU'S WITH DISCHARGE HEATER; PROVIDE NEW DUCTWORK AND CONDENSATE PIPING AS REQUIRED. INSTALL NEW REFRIG. PIPING. SIZE PER MANUFACTURER'S RECOMMENDATIONS. SEAL ALL WALL PENETRATIONS WATERTIGHT. PROVIDE NEW MOD I NOA DUCT; BALANCE PER
- 7. REBALANCE EXHAUST FAN TO NEW AIRFLOW; ADJUST PULLEY
  SHEAVE SYSTEM TO ALLOW FOR NEW AIRFLOW

  8. TIE IN TO EXISTING CONDENSATE LINE BELOW GRADE AND
- 8. TIE IN TO EXISTING CONDENSATE LINE BELOW GRADE AND PROVIDE NEW DRYWELL IN TURFED AREA. EXCAVATE BY HAD AS REQUIRED TO AVOID DAMAGE TO EXISTING UTILITIES.

  9. CAP EXHAUST DUCT AND BLANK OFF EXISTING GRILLE IN
- 10. RELOCATE EXISTING DIFFUSERS TO WITHIN NEW CEILING GRID

Client Name:

### ORANGE COUNTY

SGM ENGINEERING, INC.

Phone: 407-767-5188 Fax: 407-767-5772 www.sgmengineering.com

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CA-00006208
935 Lake Baldwin Lane
Orlando, FL 32814

FIRE STATION #30 20 SOUTH HASTINGS ST. ORLANDO, FL 32835



Issue:	100% PERMIT DOCUMENTS 02-07-19				
NO.	DESCRIPTION	DATE			
1	PRE-BID RFI	05/15/19			

Project Name:

ORANGE COUNTY FIRE STATION #30 HVAC REPLACEMENT

Scale:	As indicated	Seal:    Seal:
Design By:	GJ	THINK SILL SIMILE
Drawn By:	GJ	THE NOTE WELL
Checked By:	JS	No. 68794
Engineer of Recor	rd:	STATE OF STA
License Number:		SONAL ENGLIGHT

Sheet Name:

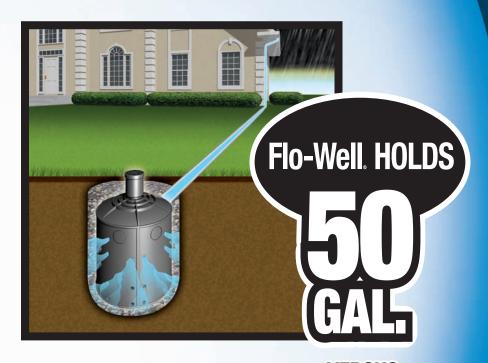
MECHANICAL FLOOR PLAN

Sheet Number:

M-101

### Flo-Well

**Manufactured Dry Well** 



TRADITIONAL PEASTONE DRYWELL HOLDS ONLY

20

GAL5

LEED credits:

Make your
site green

Retains storm water on-site

Less costly to install than pipe or concrete

Expands to manage large volumes of water

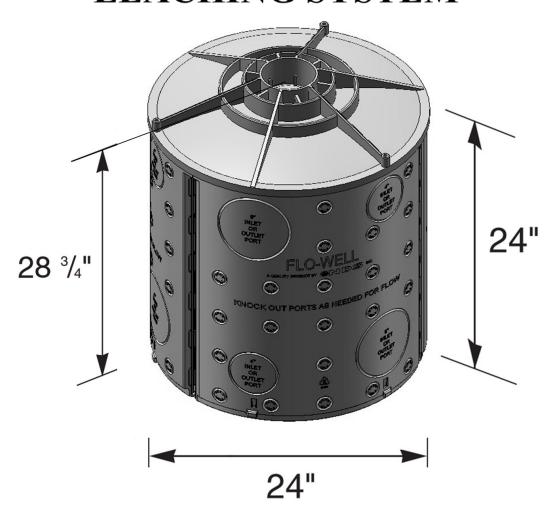






## TECHNICAL SPECIFICATIONS

# FLO-WELL® STORM WATER LEACHING SYSTEM



Part #: FWAS24

Material: UV Protected High Density Polypropylene (HDPE)

Colors: Black

Weight: 18.96 lbs each

Fits: 4" SCH-40 and DWV pipe Will hold 50 gallons of water

Includes (3) FWSPS33 Side Panels and (1) FWAS24C cover \*\*LFWAS24 also includes (1) FWFF67 Filter Fabric Wrap\*\*





# FIO-Well Manufactured Dry Well

	Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class	
28 3/4	FWAS24	24" diam. x 28.75"H Flo-Well® Storm water leaching system Includes 3 side panels, 1 Top Component Fits 4" SCH-40 Pipe and 4" DWV Pipe	Black e	1	25.15	10FW	NDS #FWAS24 structural foam polyolefin round drywell system with UV inhibitors. 24" dia., 28.75" high, 49 gal. with 18- 1.5" Knockout leaching ports and 3- 4.5" knockout inlet/outlet ports per panel.
24"	Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class	Specifications
4 5/8" 24 1/4"	FWAS24C	24" diam. Flo-Well® Cover Use with #FWAS24	Black	2	8.00	10FW	NDS#FWAS24C structural foam polyolefin round drywell system cover with UV inhibitors. 24 1/4" dia., 4 5/8" height, 3/4" outer lip, 4.5" center knockout fits NDS #FWAS24, NDS #FWSPS3.
24 74	Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class	Specifications
24"	FWSPS3	Flo-Well® Side Panels/ Extension Only Includes 3 side panels; makes 1 roun Fits #FWAS24 (May also be used as a durable comp	·	1	5.00	10FW	NDS #FWSPS3 structural foam polyolefin side panels with UV inhibitors with 18-1 1/2" knockout leaching ports and 3- 4.5" knockout inlet/outlet ports per panel. 24" high with recessed .75" lip for firm stacking.
25 1/8"	Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class	Specifications
	FWBP24	24" diam. Flo-Well® Bottom Fits #FWAS24	Black	5	3.50	10FW	NDS #FWBP24 structural foam polyoloffir round Flo. War bottom with UV mhibitors. 24" diameter with six 1 1/2" leaching ports. 4.5" center knockout for strut coupling.
24"	Part No.	Description	Color	r kg. Qty.	Wt. Ea. (lbs.)	Product Class	, 0
9" 7 1/2	FWSD69	4" SCH40 Surface Drain Inletwith Grate  Fits #FWMS24 and #FWAS24C  ADA Compliant	Black	8	1.85	10FW	NDS #FWSD69 structural foam polyolefin 6" grate with 4" inlet with UV inhibitors. 6" Diameter at inlet. 9" high. 4.5" OD fits Sch. 40 PVC fittings.
4 1/2"	Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class	
2'	FWFF67	Porous Filter Fabric Wrap for Flo-Well® Use with #FWAS24	Black	20	0.35	10FW	7' long x 2' wide to surround Flo-Well® Drywell System. Non-woven fabric. Weight 1 oz. Mullen burst 175 psi. 200 GPM flow through.
7'			N	D:	TM		800-726-1994 vard Ave. Lindsay, CA 93247



#### **ORANGE COUNTY, FLORIDA**

### AGREEMENT ASSUMING RISK OF INJURY OR DAMAGE RELEASE OF LIABILITY AND INDEMNITY AGREEMENT

WHEREAS, I,	<del>,</del>
having made a voluntary request to utilize to ladders in order to view Orange Cour	hteen and not being employed by Orange County, ze Orange County equipment including but not limited nty property that my company may have an interest in pleted. This release shall govern the property at
(Address)	
I do hereby:	
should an accident occur, any liability,	dge that by my voluntary participation in this event, damages, claims and demands of every kind and cident shall be applied to my own personal insurance
agents from any liability, actions, cause	ischarge Orange County, its officers, employees and is of action, damages, claims, and demands of every of or resulting from the activities described above.
employees, and agents, against any a debts, claims, demands, or damages or	, and hold harmless Orange County, its officers, and all manner of actions, causes of actions, suits, liability or expense of every kind and nature incurred r claimed wrongful act or omission of mine while e.
This release, waiver and hold ha heirs, personal representatives, success	armless agreement shall be binding upon me and my sors, and assigns.
I hereby represent that I have document and sign the same of my own	carefully read and understand the contents of this free will.
Date	Signature
	Print Name
Witness	Address