

August 20, 2015

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
ADDENDUM NO. 3 / IFB Y15-7010-EB

Bid Opening Date: September 1, 2015

ORANGE COUNTY ADMINISTRATION BUILDING HVAC - UPPER ROOF RTU
REPLACEMENT

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. Additions are indicated by underlining, deletions are indicated by ~~striketrough~~.

- A. The bid opening date remains **September 1, 2015**.
- B. The purpose of this Addendum is to address ductwork modifications on the 5th floor, some detail additions and modify the RTU schedule as per the following drawings that replace existing drawings:

MECHANICAL

- 1. Replace Sheet M105 with revised Sheet M105 in its entirety.
- 2. Replace Sheet M106 with revised Sheet M106 in its entirety.
- 3. Replace Sheet M601 with revised Sheet M601 in its entirety.
- 4. Replace Sheet M901 with revised Sheet M901 in its entirety.
- 5. Replace Sheet E501 with revised Sheet E501 in its entirety.
- 6. Replace Sheet E601 with revised Sheet E601 in its entirety.

C. ACKNOWLEDGEMENT OF ADDENDA

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 than the date and time for receipt of the bid or proposal.

2. **Receipt acknowledged by:**

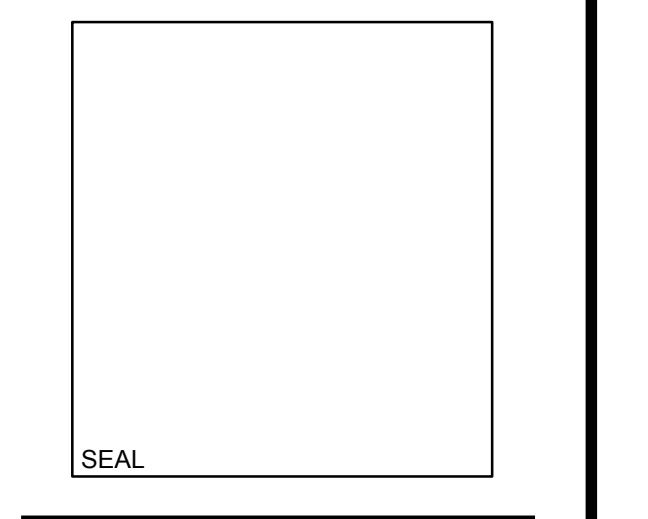
3. All other terms and conditions of the IFB remain the same.

Authorized Signature

Date Signed

Title

Name of Firm



Revisions

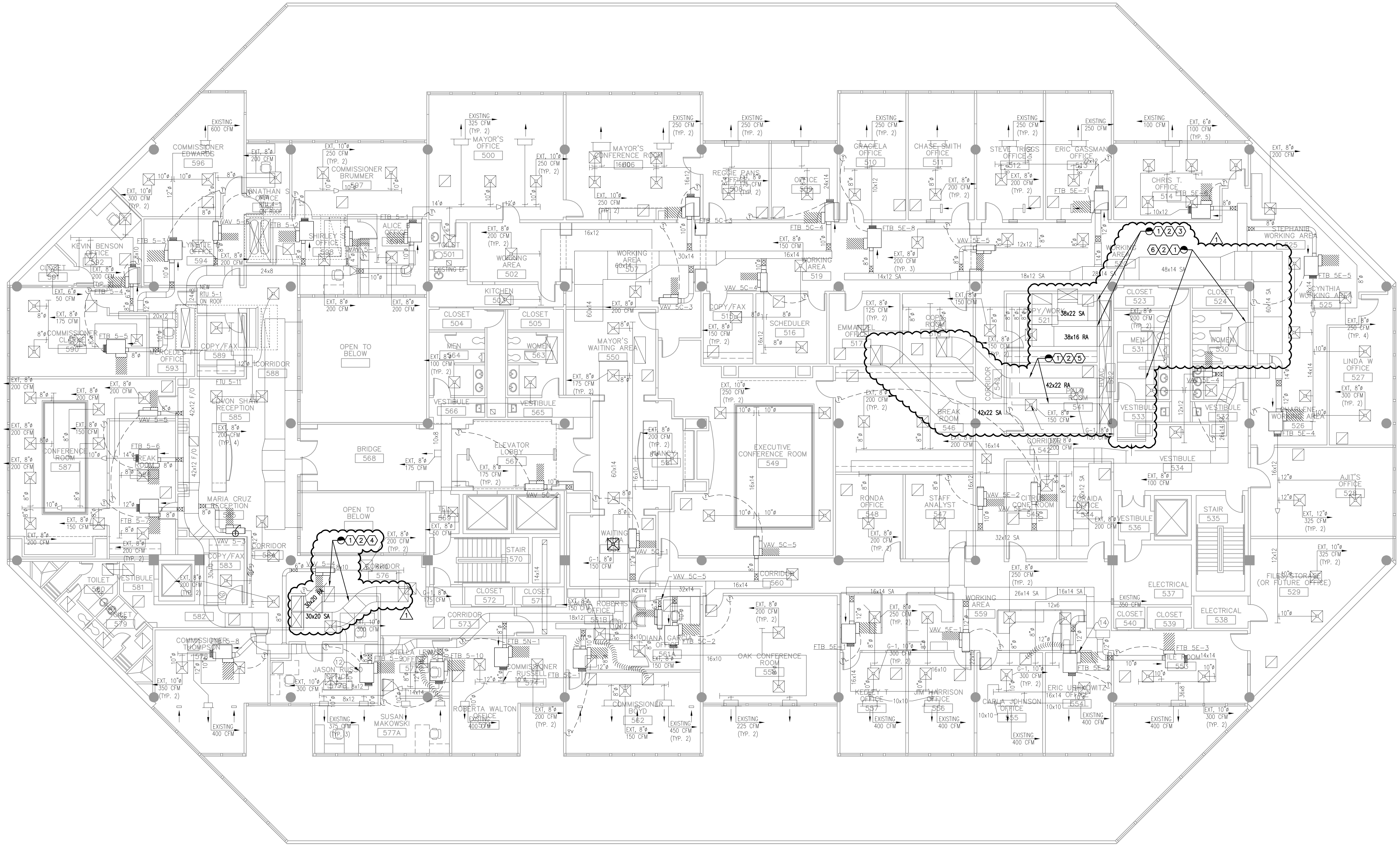
| No. | Date | Description |
|-----|----------|-------------|
| 1 | 08-17-15 | ADDENDUM #3 |

Key Plan

Designed By: JS
 Drawn By: JS/DS
 Checked By: BWP
 Issue Date: 06/24/15
 Drawing Scale: 1/8"=1'-0"

Drawing Title:
**RENO FLOOR PLAN -
 5TH FLOOR -
 MECHANICAL**

BID DOCUMENTS
 Drawing No.
M-105



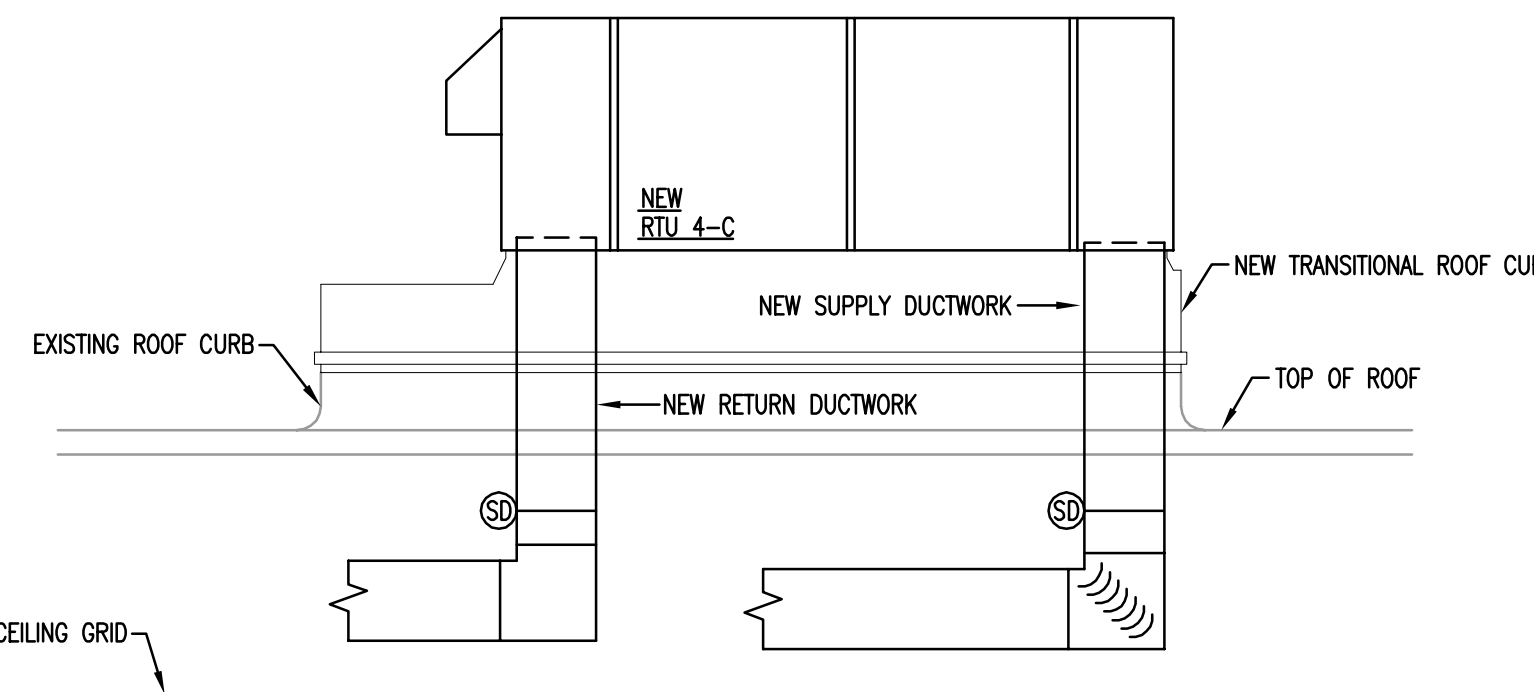
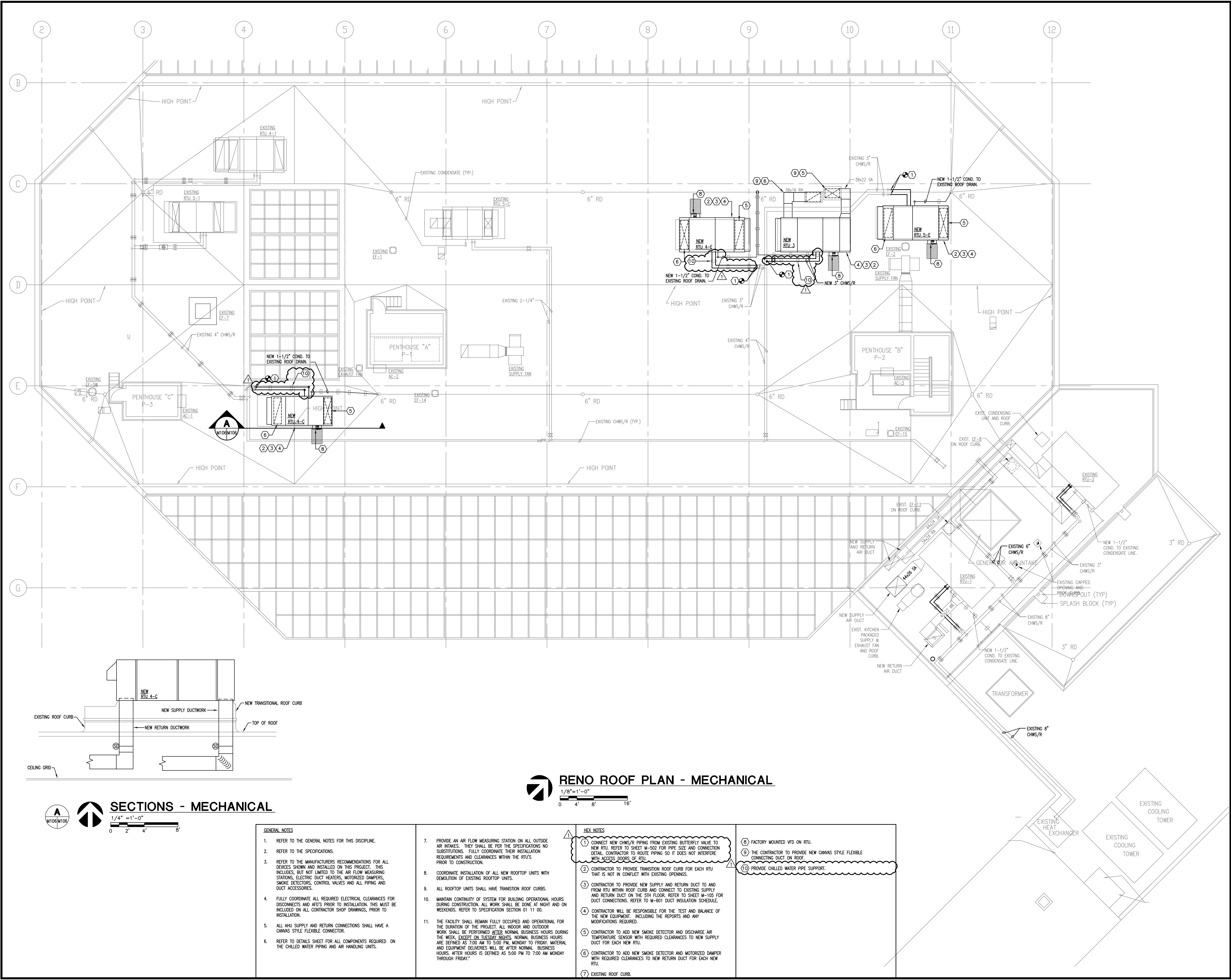
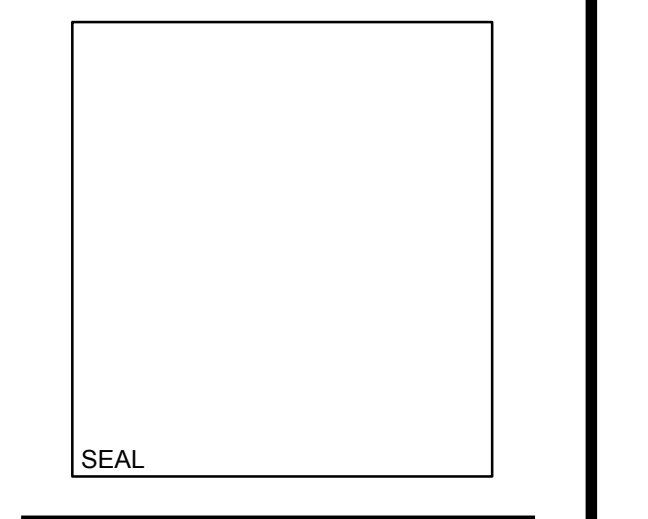
RENO FLOOR PLAN - 5TH FLOOR - MECHANICAL
 1/8"=1'-0"
 0 4 8 16'

- GENERAL NOTES**
- REFER TO GENERAL NOTES FOR THIS DISCIPLINE.
 - REFER TO SPECIFICATIONS.
 - ALL HEX NOTES NOT NECESSARILY USED ON ALL SHEETS.
 - MAINTAIN CONTINUITY OF SYSTEM FOR BUILDING OPERATIONAL HOURS DURING CONSTRUCTION. ALL WORK SHALL BE DONE AT NIGHT AND ON WEEKENDS. REFER TO SPECIFICATION SECTION 01 11 00.
 - ALL EXISTING AIR HANDLING SYSTEMS UTILIZE A PLENUM RETURN AIR SYSTEM WITH AIR TRANSFER DUCTS AND OPENINGS ABOVE CEILING.
 - THE FACILITY SHALL REMAIN FULLY OCCUPIED AND OPERATIONAL FOR THE DURATION OF THE PROJECT. ALL INDOOR AND OUTDOOR WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS DURING THE WEEK, EXCEPT ON TUESDAY NIGHTS. NORMAL BUSINESS HOURS ARE DEFINED AS 7:00 AM TO 5:00 PM, MONDAY TO FRIDAY. MATERIAL AND EQUIPMENT DELIVERIES WILL BE AFTER NORMAL BUSINESS HOURS. AFTER HOURS IS DEFINED AS 5:00 PM TO 7:00 AM, MONDAY THROUGH FRIDAY.
 - THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING DUCT LEAKAGE TESTING ON ALL DUCTWORK WITHIN THEIR SCOPE OF WORK. REFER TO SPECIFICATION SECTION 23 31 01 FOR MORE INFORMATION.

- HEX NOTES**
- CONTRACTOR TO REMOVE AND PRESERVE CEILING TILES IN ORDER TO FACILITATE THE INSTALLATION OF DUCTWORK AS NEEDED THROUGHOUT THE FLOOR. ALL CEILING GRIDS ARE TO BE RE-INSTALLED BACK INTO ORIGINAL PLACEMENT AS FOUND BEFORE CONSTRUCTION. CONTRACTOR TO REPLACE ALL BROKEN CEILING TILES AND GRID WITH NEW AS REQUIRED. REFER TO SPECIFICATION SECTION 09 51 13.
 - CONTRACTOR TO REMOVE AND PRESERVE LIGHT FIXTURES IN ORDER TO FACILITATE THE INSTALLATION OF DUCTWORK AS NEEDED. ALL LIGHT FIXTURES ARE TO BE RE-INSTALLED BACK INTO ORIGINAL PLACEMENT AS FOUND BEFORE CONSTRUCTION. CONTRACTOR TO REPLACE ALL BROKEN CEILING TILES AND GRID WITH NEW AS REQUIRED.
 - THE PORTION OF EXISTING SUPPLY AND RETURN DUCTWORK ON THE 5TH FLOOR THAT IS CONNECTED TO RTU-3 IS TO BE PRESSURE TESTED, CLEANED AND REPAIRED WHERE LEAKS ARE FOUND. DUCTWORK JOINTS ARE TO BE SEALED AND RE-INSULATED.
 - THE PORTION OF EXISTING SUPPLY AND RETURN DUCTWORK ON THE 5TH FLOOR THAT IS CONNECTED TO RTU-4C IS TO BE PRESSURE TESTED, CLEANED AND REPAIRED WHERE LEAKS ARE FOUND. DUCTWORK JOINTS ARE TO BE SEALED AND RE-INSULATED.
 - THE PORTION OF EXISTING SUPPLY AND RETURN DUCTWORK ON THE 5TH FLOOR THAT IS CONNECTED TO RTU-4E IS TO BE PRESSURE TESTED, CLEANED AND REPAIRED WHERE LEAKS ARE FOUND. DUCTWORK JOINTS ARE TO BE SEALED AND RE-INSULATED.

6 EXISTING MAIN SUPPLY AND RETURN DUCTWORK ON THAT 5TH FLOOR THAT IS CONNECTED TO RTU-5E IS TO BE PRESSURE TESTED, CLEANED AND REPAIRED WHERE LEAKS ARE FOUND. DUCTWORK JOINTS ARE TO BE SEALED AND RE-INSULATED.

J:\2012\2012-085D_O.C. Administration Building HVAC Replacement Upper Roof RTU Replacement\Upper Roof RTU Replacement\032012-085D_M105.dwg
 PLOT DATE: 9/12/2015 8:03:04 PM
 LAST SAVED BY: JSCOTT
 LAST SAVED: 02/20/15 4:05:57 PM
 ORIGINATOR: 5/10/2015 4:06:58 PM



RENO ROOF PLAN - MECHANICAL
1/8"=1'-0"
0 4 8 16'

SECTIONS - MECHANICAL
1/4"=1'-0"
0 2' 4' 8'

- GENERAL NOTES**
- REFER TO THE GENERAL NOTES FOR THIS DISCIPLINE.
 - REFER TO THE SPECIFICATIONS.
 - REFER TO THE MANUFACTURER'S RECOMMENDATIONS FOR ALL DEVICES SHOWN AND INSTALLED ON THIS PROJECT. THIS INCLUDES, BUT NOT LIMITED TO THE AIR FLOW MEASURING STATIONS, ELECTRIC DUCT HEATERS, MOTORIZED DAMPERS, SMOKE DETECTORS, CONTROL VALVES AND ALL PIPING AND DUCT ACCESSORIES.
 - FULLY COORDINATE ALL REQUIRED ELECTRICAL CLEARANCES FOR DISCONNECTS AND APDS PRIOR TO INSTALLATION. THIS MUST BE INCLUDED ON ALL CONTRACTOR SHOP DRAWINGS, PRIOR TO INSTALLATION.
 - ALL AHU SUPPLY AND RETURN CONNECTIONS SHALL HAVE A CANVAS STYLE FLEXIBLE CONNECTOR.
 - REFER TO DETAILS SHEET FOR ALL COMPONENTS REQUIRED ON THE CHILLED WATER PIPING AND AIR HANDLING UNITS.
 - PROVIDE AN AIR FLOW MEASURING STATION ON ALL OUTSIDE AIR INTAKES. THEY SHALL BE PER THE SPECIFICATIONS NO SUBSTITUTIONS. FULLY COORDINATE THEIR INSTALLATION REQUIREMENTS AND CLEARANCES WITHIN THE RTU'S PRIOR TO CONSTRUCTION.
 - COORDINATE INSTALLATION OF ALL NEW ROOFTOP UNITS WITH DEMOLITION OF EXISTING ROOFTOP UNITS.
 - ALL ROOFTOP UNITS SHALL HAVE TRANSITION ROOF CURBS.
 - MAINTAIN CONTINUITY OF SYSTEM FOR BUILDING OPERATIONAL HOURS DURING CONSTRUCTION. ALL WORK SHALL BE DONE AT NIGHT AND ON WEEKENDS. REFER TO SPECIFICATION SECTION 01 11 00.
 - THE FACILITY SHALL REMAIN FULLY OCCUPIED AND OPERATIONAL FOR THE DURATION OF THE PROJECT. ALL INDOOR AND OUTDOOR WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS DURING THE WEEK, EXCEPT ON TUESDAY NIGHTS. NORMAL BUSINESS HOURS ARE DEFINED AS 7:00 AM TO 5:00 PM, MONDAY TO FRIDAY. MATERIAL AND EQUIPMENT DELIVERIES WILL BE AFTER NORMAL BUSINESS HOURS. AFTER HOURS IS DEFINED AS 5:00 PM TO 7:00 AM MONDAY THROUGH FRIDAY.

- HEX NOTES**
- CONNECT NEW CHWS/R PIPING FROM EXISTING BUTTERFLY VALVE TO NEW RTU. REFER TO SHEET M-502 FOR PIPE SIZE AND CONNECTION DETAIL. CONTRACTOR TO ROUTE PIPING SO IT DOES NOT INTERFERE WITH ACCESS DECKS OF RTU.
 - CONTRACTOR TO PROVIDE TRANSITION ROOF CURB FOR EACH RTU THAT IS NOT IN CONFLICT WITH EXISTING OPENINGS.
 - CONTRACTOR TO PROVIDE NEW SUPPLY AND RETURN DUCT TO AND FROM RTU WITHIN ROOF CURB AND CONNECT TO EXISTING SUPPLY AND RETURN DUCT ON THE 5TH FLOOR. REFER TO SHEET M-105 FOR DUCT CONNECTIONS. REFER TO M-601 DUCT INSULATION SCHEDULE.
 - CONTRACTOR WILL BE RESPONSIBLE FOR THE TEST AND ANALYSIS OF THE NEW EQUIPMENT, INCLUDING THE REPORTS AND ANY MODIFICATIONS REQUIRED.
 - CONTRACTOR TO ADD NEW SMOKE DETECTOR AND DISCHARGE AIR TEMPERATURE SENSOR WITH REQUIRED CLEARANCES TO NEW SUPPLY DUCT FOR EACH NEW RTU.
 - CONTRACTOR TO ADD NEW SMOKE DETECTOR AND MOTORIZED DAMPER WITH REQUIRED CLEARANCES TO NEW RETURN DUCT FOR EACH NEW RTU.
 - EXISTING ROOF CURB.
 - FACTORY MOUNTED VFD ON RTU.
 - THE CONTRACTOR TO PROVIDE NEW CANVAS STYLE FLEXIBLE CONNECTING DUCT ON ROOF.
 - PROVIDE CHILLED WATER PIPE SUPPORT.

Revisions

| No. | Date | Description |
|-----|----------|-------------|
| Δ | 08-17-15 | ADDENDUM #3 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Key Plan

Designed By: JS
 Drawn By: JS/DS
 Checked By: BWP
 Issue Date: 06/24/15
 Drawing Scale: 1/8"=1'-0"

Drawing Title:
RENO ROOF PLAN - MECHANICAL

BID DOCUMENTS
 Drawing No.
M-106

LIST SWED BY: JSCOTT
 LIST SWED: 01/20/15 5:14:18 PM
 CREAT DATE: 5/10/2015 4:26:38 PM
 MPE JOB #: 2012-085D
 2/20/2015 2:48:03 D.C. Administration Building HVAC Replacement Upper Roof RTU Replacement 02/20/2015 2:48:03 MPE Job
 MATERN PROFESSIONAL ENGINEERING PLO DATE: 9/10/2015 8:07:07 PM

PACKAGED ROOFTOP AIR HANDLING UNIT SCHEDULE:

| UNIT NO. | SERVING | TOTAL MAX. CFM | PRIMARY CFM | O.A. CFM | SUPPLY AIR FAN DATA | | | | | | | | | | COOLING COIL DATA | | | | | | | | | | SELECTION BASED ON | | REMARKS | | | | | | | | |
|----------|-------------|----------------|-------------|----------|---------------------|------------|------------|----------|---------------------|-------------------------------|---------------------------|------------------------------|------------|-------------|-------------------|------|----|--------|------|-------|------|------|---------------|------|--------------------|-------|---------|-----------------|-----------|--|-----------------|---------------------------------------|--------|----------|-------------|
| | | | | | FAN DATA | | | | | OCTAVE BANDS | | | | | MOTOR DATA | | | | | EAT F | | | | | LAT F | | | | | AIR PRESSURE DROP AT MD LIFE CONDITION | QUANTITY & SIZE | MANUF. | MODEL | | |
| | | | | | FAN QTY | ESP IN H2O | TSP IN H2O | FAN DIA. | BLADE TYPE | DISCHARGE 63/125/250/500/1000 | INLET 63/125/250/500/1000 | RADIATED 63/125/250/500/1000 | HP PER FAN | BHP PER FAN | FAN RPM | VOLT | PH | CFM | DB | WB | DB | WB | AIR PD IN H2O | GPM | EWT F | LWT F | | WATER PD FT H2O | MIN. ROWS | | | | | FINS/FT. | FACE AREA |
| RTU-3 | THIRD FLOOR | 10,000 | 5,900 | 4,100 | 1 | 3.0 | 4.54 | 24.5 | DIRECT DRIVE PLENUM | 79/71/74/72/71 | 78/71/78/67/65 | 76/71/74/65/63 | 15 | 10.4 | 1750 | 480 | 3 | 10,000 | 85 | 71.5 | 51.4 | 51.2 | 0.83 | 68.8 | 42 | 60 | 8.7 | 8 | 144 | 24.33 | 0.66 | (2) 20x24x2, (6) 20x20x2, (3) 12x24x2 | MCQUAY | OAH025 | 1,2,3,4,5,6 |
| RTU-4C | 4TH FLOOR | 8,700 | 7,200 | 1,500 | 1 | 3.0 | 4.60 | 22.25 | DIRECT DRIVE PLENUM | 78/74/78/71/72 | 75/74/78/71/72 | 75/74/78/66/64 | 15 | 9.28 | 1750 | 460 | 3 | 8,700 | 82.9 | 70.2 | 51.8 | 51.6 | 0.9 | 58.2 | 42 | 60 | 7.7 | 8 | 144 | 20.13 | 0.67 | (4) 20x24x2, (4) 20x20x2 | MCQUAY | OAH012 | 1,2,3,4,5,6 |
| RTU-4E | 4TH FLOOR | 14,000 | 11,550 | 2,450 | 1 | 2.5 | 4.35 | 27" | DIRECT DRIVE PLENUM | 80/73/78/74/73 | 77/73/81/69/68 | 77/73/77/67/65 | 20 | 14.6 | 1750 | 480 | 3 | 14,000 | 82.9 | 70.2 | 51.7 | 51.5 | 1.1 | 90.7 | 42 | 60 | 17.1 | 8 | 144 | 28.33 | 0.64 | (8) 20x24x2, (4) 12x24x2 | MCQUAY | OAH030 | 1,2,3,4,5,6 |
| RTU-5E | 5TH FLOOR | 13,700 | 12,700 | 1,000 | 1 | 2.5 | 4.30 | 27" | DIRECT DRIVE PLENUM | 80/73/78/74/73 | 77/73/81/69/68 | 77/73/77/67/65 | 20 | 14 | 1750 | 480 | 3 | 13,700 | 82.9 | 70.2 | 51.6 | 51.4 | 1.1 | 89.3 | 42 | 60 | 16.7 | 8 | 144 | 33.38 | 0.64 | (8) 20x24x2, (4) 12x24x2 | MCQUAY | OAH030 | 1,2,3,4,5,6 |

- REMARKS:
- 1 UNIT TO HAVE TOP/BOTTOM/SIDE DISCHARGE (AS SHOWN ON DRAWINGS) AND DISCHARGE AIR PLENUM
 - 2 VAV - VFD CONTROLLED ; PROVIDE DUAL MOTOR OUTPUT VFD FOR DUAL MOTOR UNITS
 - 3 PROVIDE ACCESS DOORS UPSTREAM AND DOWNSTREAM OF ALL HEATING AND COOLING COILS
 - 4 REFER TO THE SPECIFICATIONS FOR ALL REQUIREMENTS BEYOND THIS SCHEDULE
 - 5 PANELS AND ACCESS DOORS SHALL HAVE 2-INCH THICK, THERMAL BROKE DOUBLE WALL ASSEMBLY, INJECTED WITH FOAM INSULATION EQUAL TO R-13.
 - 6 FACTORY MOUNTED VFD

NOTE: THE VENTILATION RATE PROCEDURE USED FOR THIS PROJECT COMPLIES WITH ASHRAE STANDARD 62.1-2007.

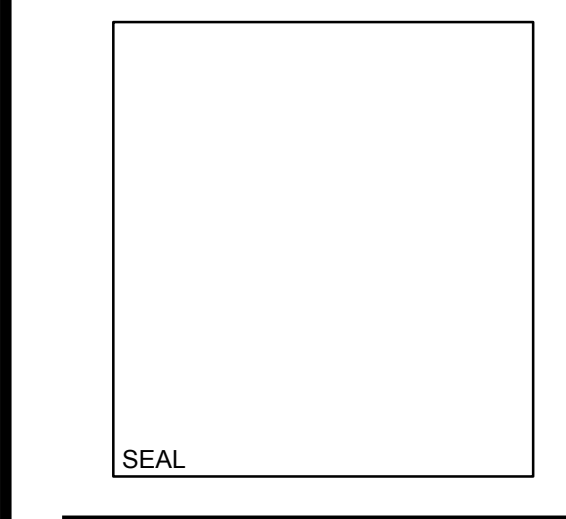
Duct & Pipe Construction & Insulation Requirements Schedule

| Service | Thickness | Type | Notes |
|---|---------------------|--|---|
| Factory Packaged Air Conditioning Unit Casing | | Factory Furnished | |
| Factory Built Return Air Plenums/Mixing Boxes | Double Wall | Factory Furnished | No Field Built Plenums |
| Supply Air Ducts | | | |
| From AHU's connection to 50 feet downstream on supply side for all air handling unit systems: | 1" Internally lined | with perforated inner liner and mylar film separating insulation from air stream | Double Wall Duct |
| After 50 feet downstream of AHU on supply side for all air handling units: | | Concealed - 2" thick external wrap with corner angles. | Exposed - 1-1/2" rigid board |
| Ducts located outdoors or in soffit exposed to weather: | Installed R-8 | Exposed: Rigid fiberglass with corner angles with outer weatherproof sheet metal jacket sealed with Flex-Clad 400 as manufactured by MFM Building Products Corp. Concealed: 75# density blanket | |
| AC Unit to Terminal - Balance of ductwork to terminal 50 deg air system: | Installed R-6 | Exposed: 2" rigid fiberglass with corner angles Concealed: 2" with 1.5# density blanket | |
| AC Unit to Terminal - Balance of ductwork to terminal exposed 50 deg air system: | Installed R-6 | Exposed: 2" rigid fiberglass with corner angles. Concealed: 75# density blanket. | |
| Terminal to Outlet: | Installed R-6 | 75# density blanket. | |
| Fire Dampers and reheat coils in internally insulated duct: | | Exposed: 1" rigid fiberglass with corner angles. Concealed: installed R-8 with 75# density blanket. | |
| Return Air Ducts | | | |
| From AHU connection to 50 feet upstream on return side for all air handling unit systems | 1" Internally lined | with perforated inner liner and mylar film separating insulation from air stream | Double Wall Duct |
| All other return air ductwork: | | Concealed - 2" thick external wrap with corner angles | Exposed - 1-1/2" rigid board |
| Ducts located outside: | | Internal Specified in Specification Section 23 31 01. Insulating duct specified in Specification Section 23 33 00 or Flex-Clad 400 as manufactured by MFM Building Products Corp. | |
| Chilled Water (46 deg F) | | | |
| Chilled Water (CHS) (CHR) (42 deg F and above) - Conditioned: | | Up to 2": 1-1/2" Closed Cell Elast. 2-1/2" thru 4": 1-1/2" Foamglas 5" thru 8": 2" Foamglas 10" thru Larger: 2-1/2" Foamglas | with Aluminum Jacket for all rooftop piping |
| Chilled Water (CHS) (CHR) (42 deg F and above) - Unconditioned: | | Up to 2": 1-1/2" Foamglas 2-1/2" thru 4": 2" Foamglas 5" thru 14": 2-1/2" Foamglas 16" thru Larger: 3" Foamglas | with Aluminum Jacket in the CEP or to any exterior chillers |
| Cold Pipe Hanger Support Blocks: | | Match - Foamglas Insulation | |
| NOTES: | | | |
| Refer to specification section 23 07 00 for more details and information | | | |
| Insulation must meet or exceed ASHRAE 90.1-2010, Table 6.8.3 (whichever is greater) | | | |



ORANGE COUNTY ADMINISTRATION BUILDING UPPER ROOF RTU REPLACEMENT

mp MATERN PROFESSIONAL ENGINEERING, INC.
 CERT. OF AUTH. No. 5096
 130 Candace Drive
 Maitland, FL 32751-3331
 PHONE (407) 740-5020
 FAX (407) 740-0395
 MPE JOB #: 2012-085D



Revisions

| No. | Date | Description |
|-----|----------|-------------|
| Δ | 08-17-15 | ADDENDUM #3 |
| | | |
| | | |
| | | |
| | | |

Key Plan

Designed By: JS
 Drawn By: JS/DS
 Checked By: BWP
 Issue Date: 06/24/15
 Drawing Scale: NO SCALE

Drawing Title:

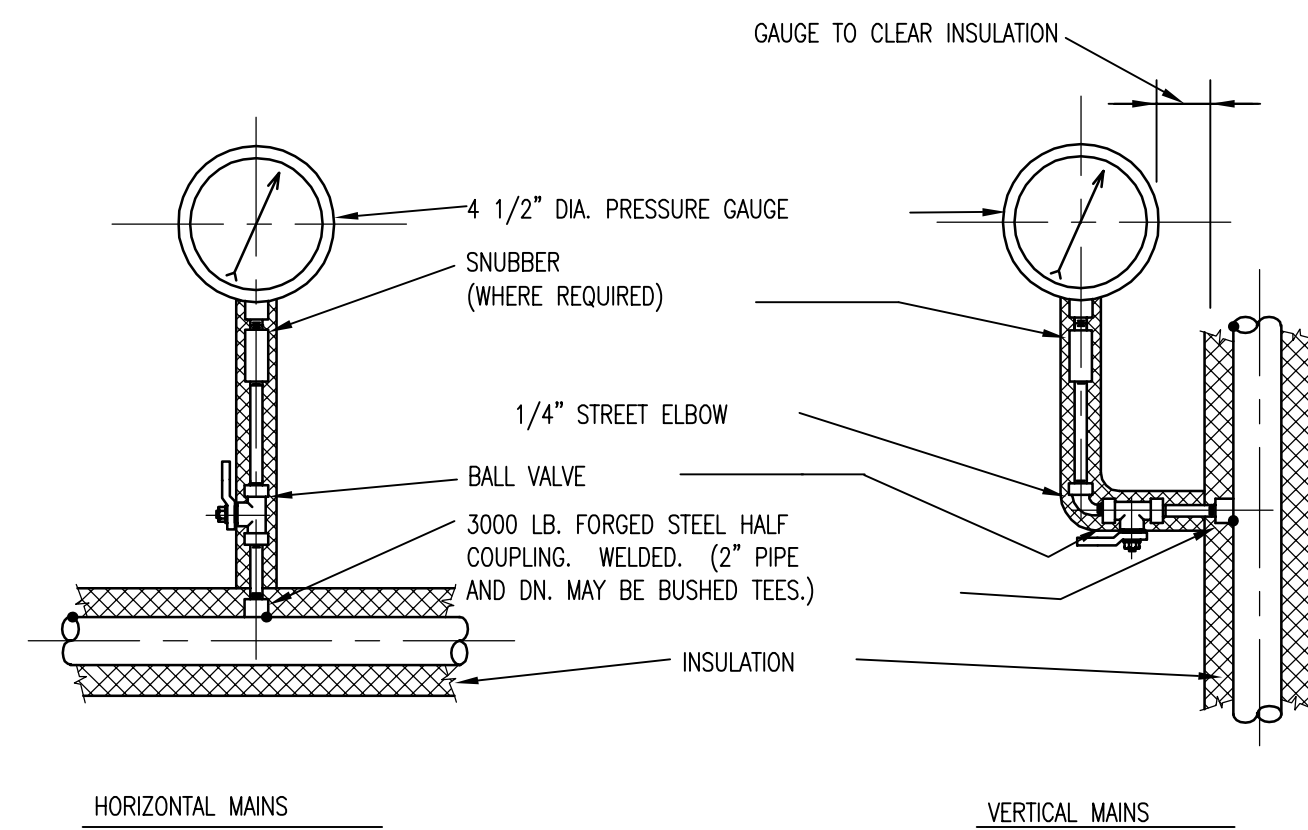
SCHEDULES - MECHANICAL

BID DOCUMENTS

Drawing No.

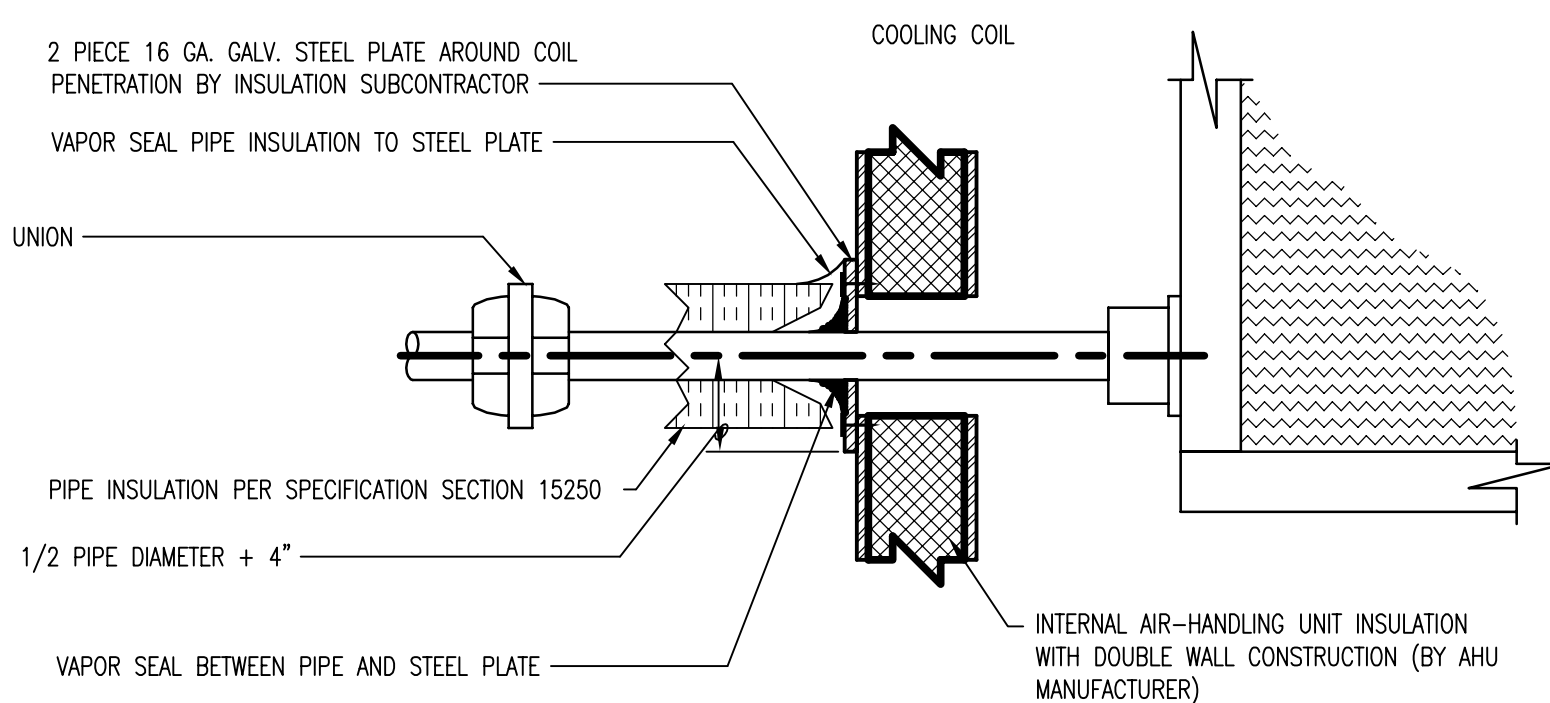
M-601

JSCOTT
 LAST SAVED BY: 01/20/15 12:25:51 PM
 06/24/15 12:40:07 PM
 05/20/15 12:40:07 PM
 MPE JOB #: 2012-085D
 D:\Administration Building HVAC Replacement\Upper Roof RTU Replacement\062015\085D_M001.dwg
 06/24/15 10:52:22 PM
 MATERN PROFESSIONAL ENGINEERING
 PLOT DATE: 01/20/15 10:52:22 PM

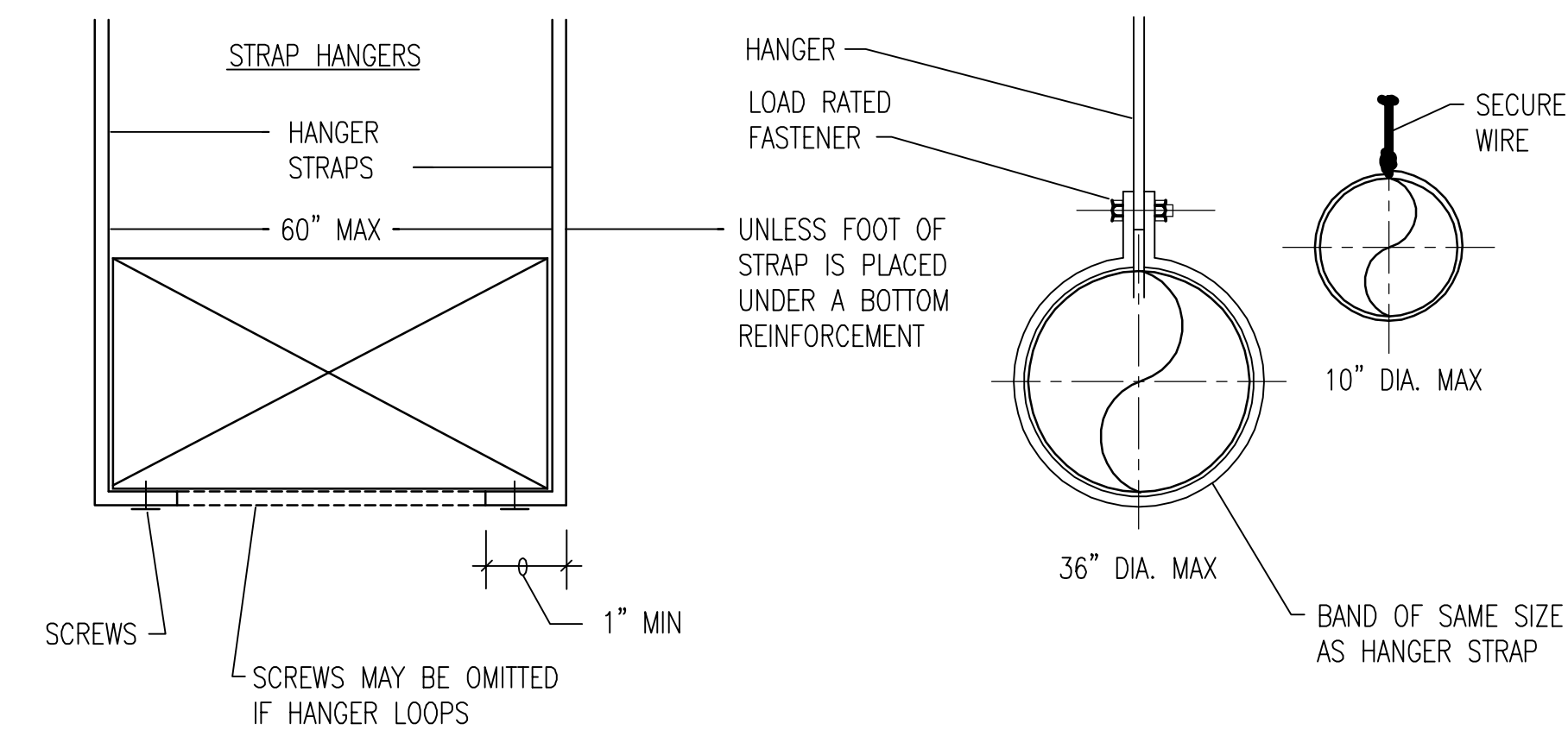


**WATER SYSTEMS
PRESSURE GAUGE MOUNTING**
NO SCALE

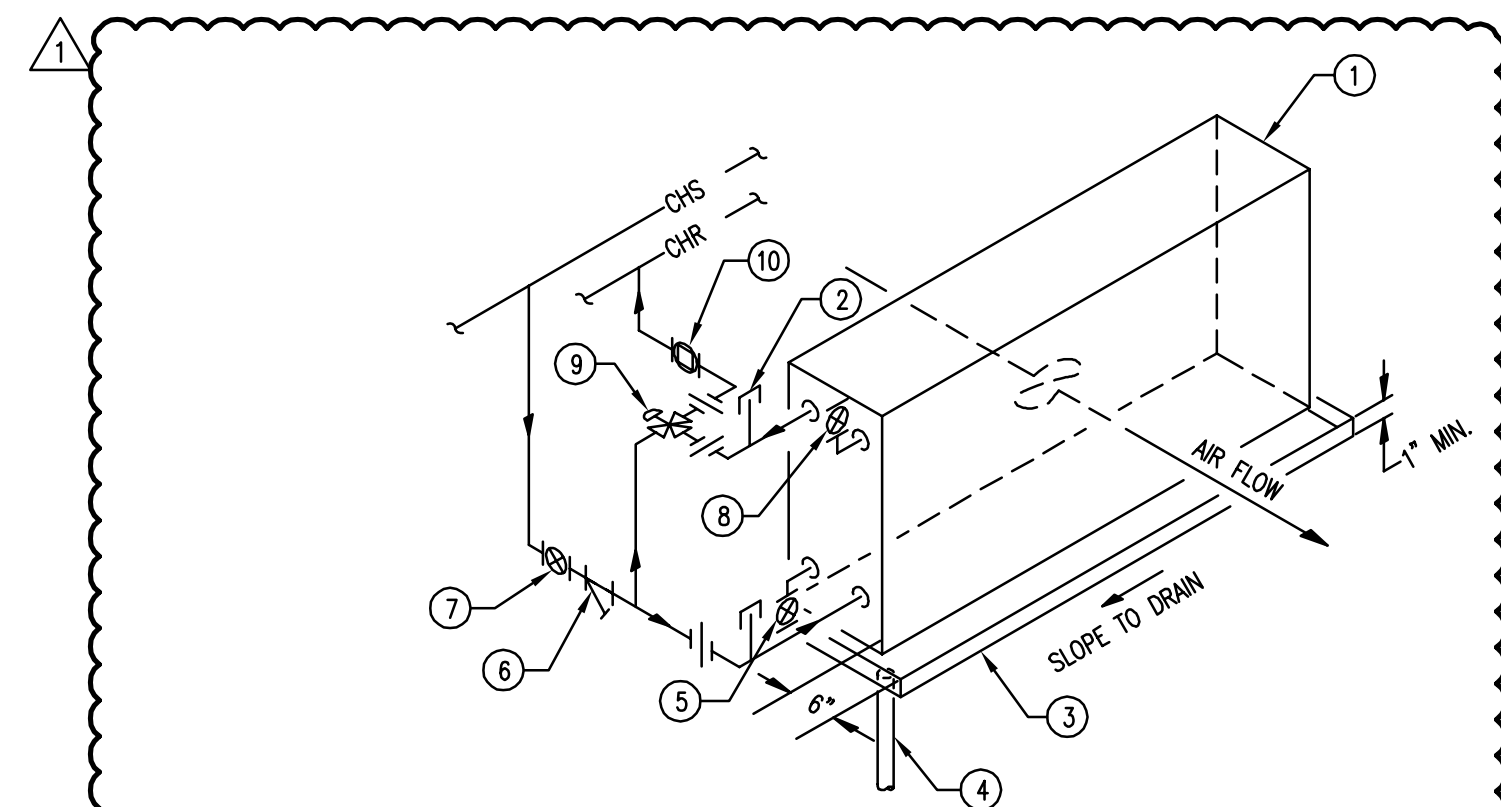
NOTES: 1. WHERE PRESSURE TAPS ONLY ARE CALLED FOR, INSTALL PIPE PLUG IN VALVE OUTLET.



**CHILLED WATER COIL
INSULATION REQUIREMENTS**
NO SCALE



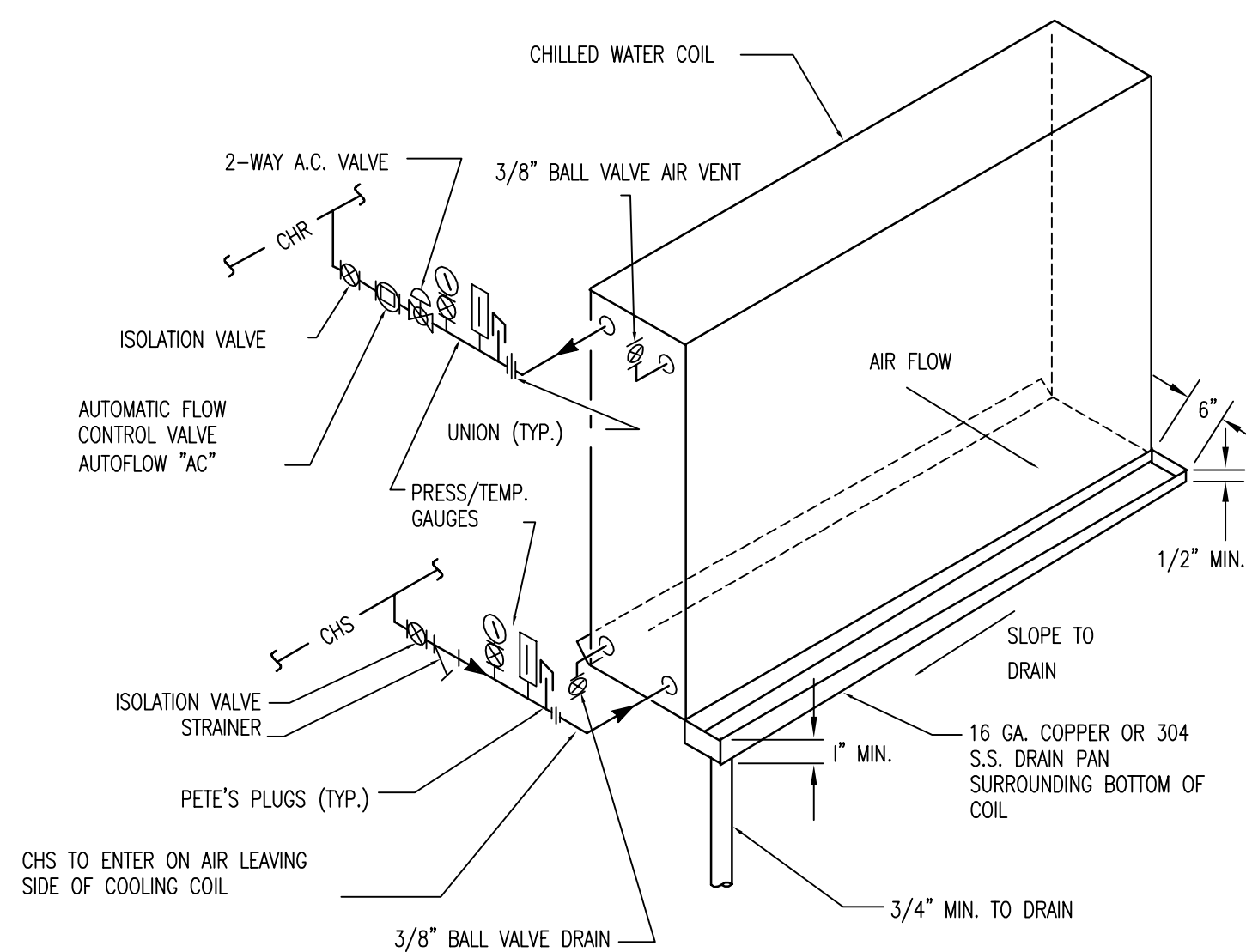
DUCT HANGERS
NO SCALE



- NOTES:
1. CHILLED WATER COIL.
 2. P/T PLUG (TYP.)
 3. 304 S.S. DRAIN PAN SURROUNDING BOTTOM OF COIL, REFER TO SPECIFICATIONS.
 4. 3/4" MIN. TO DRAIN, REFER TO DRAWINGS FOR SPECIFIC SIZE.
 5. 3/8" BALL VALVE AIR VENT.
 6. STRAINER.
 7. BALL VALVE 2" OR LESS, BUTTERFLY VALVE 2-1/2" OR GREATER.
 8. 3/8" DIA. VALVE AIR VENT.
 9. 3-WAY AUTOMATIC CONTROL VALVE.
 10. AUTOMATIC FLOW CONTROL VALVE (TYPICAL TO AN AUTO-FLOW) REFER TO SPECIFICATIONS FOR MODEL NUMBER.

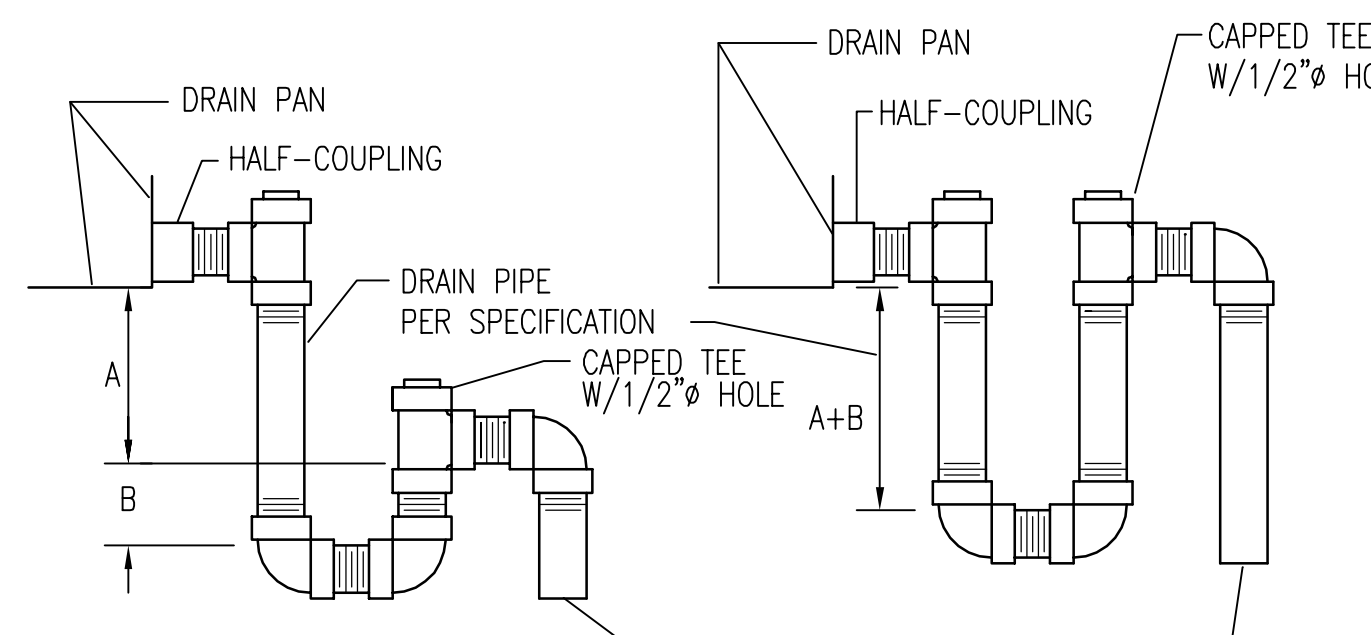
NOTES:
IF RUNOUTS FROM COILS EXCEED 2" IN SIZE USE BUTTERFLY AND Y-STRAINER ON SUPPLY, AND BUTTERFLY WITH URT OR FL ON RETURN.
THIS COIL IS SHOWN PIPED FOR RIGHT HAND COIL CONNECTIONS, BOTTOM INLET, TOP OUTLET, & COUNTER FLOW (ENTERING WATER TO THE LEAVING AIR). SOME COILS WILL BE PIPED LEFT HAND. SOME MANUFACTURERS USE AN OPPOSITE DESIGNATION FOR "HAND". COILS MAY HAVE THE SUPPLY IN THE TOP, CENTER, OR BOTTOM. HOWEVER THE COILS MUST BE PIPED FOR COUNTER FLOW (ENTERING WATER TO LEAVING AIR).
ALL COOLING COILS MUST BE PROVIDED WITH A CONDENSATE COLLECTING DRAIN PAN AND PIPED TO DRAIN. DRAIN PANS NOT FURNISHED AS A PART OF FACTORY BUILT A.C. UNITS SHALL BE CONSTRUCTED OF NOT LESS THAN 16 GA. COPPER SHEET OR 304 S.S.

**CHILLED WATER PIPING
SINGLE COIL, 3 - WAY VALVE**
N.T.S.



**CHILLED WATER PIPING
SINGLE COIL, 2-WAY VALVE**
N.T.S.

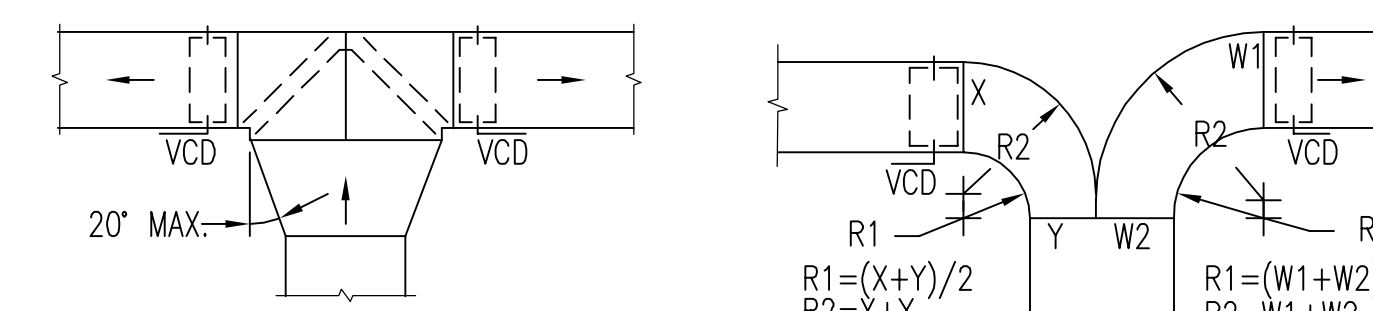
NOTES:
IF RUNOUTS FROM COILS EXCEED 2" IN SIZE USE BUTTERFLY AND Y-STRAINER ON SUPPLY, AND BUTTERFLY WITH URT OR FL ON RETURN.
THIS COIL IS SHOWN PIPED FOR RIGHT HAND COIL CONNECTIONS, BOTTOM INLET, TOP OUTLET, & COUNTER FLOW (ENTERING WATER TO THE LEAVING AIR). SOME COILS WILL BE PIPED LEFT HAND. SOME MANUFACTURERS USE AN OPPOSITE DESIGNATION FOR "HAND". COILS MAY HAVE THE SUPPLY IN THE TOP, CENTER, OR BOTTOM. HOWEVER THE COILS MUST BE PIPED FOR COUNTER FLOW (ENTERING WATER TO LEAVING AIR). ALL COOLING COILS MUST BE PROVIDED WITH A CONDENSATE COLLECTING DRAIN PAN AND PIPED TO DRAIN. DRAIN PANS NOT FURNISHED AS A PART OF FACTORY BUILT A.C. UNITS SHALL BE CONSTRUCTED OF NOT LESS THAN 16 GA. COPPER SHEET OR 304 S.S.



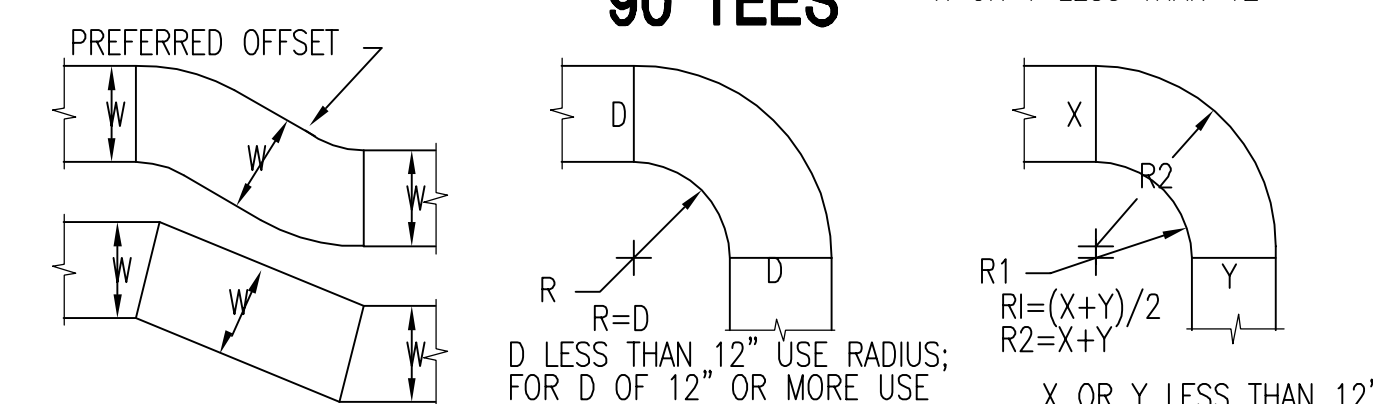
**DRAIN PAN ON FAN INLET
(NEGATIVE PRESSURE)** **DRAIN PAN ON FAN OUTLET
(POSITIVE PRESSURE)**

- NOTE:
1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT LESS THAN 3/4" PIPE SIZE.
 2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT.
"B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

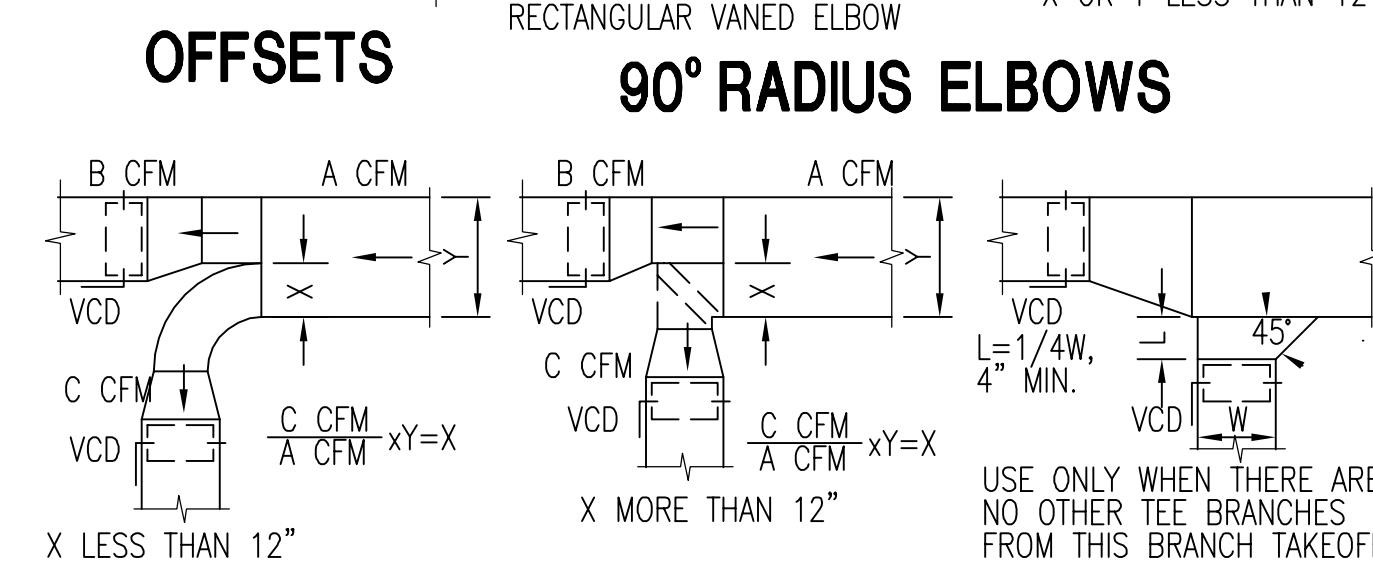
AIR HANDLING UNIT DRAINS
NO SCALE



90° TEES

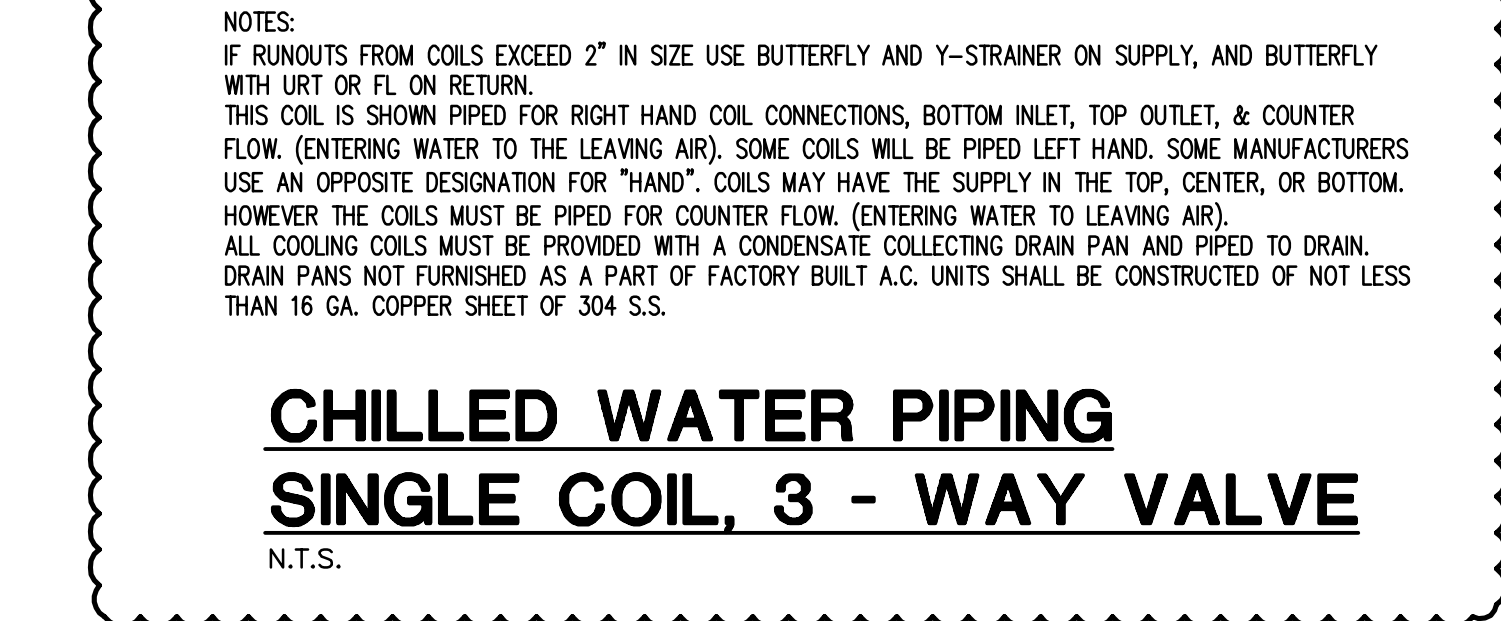


90° RADIUS ELBOWS

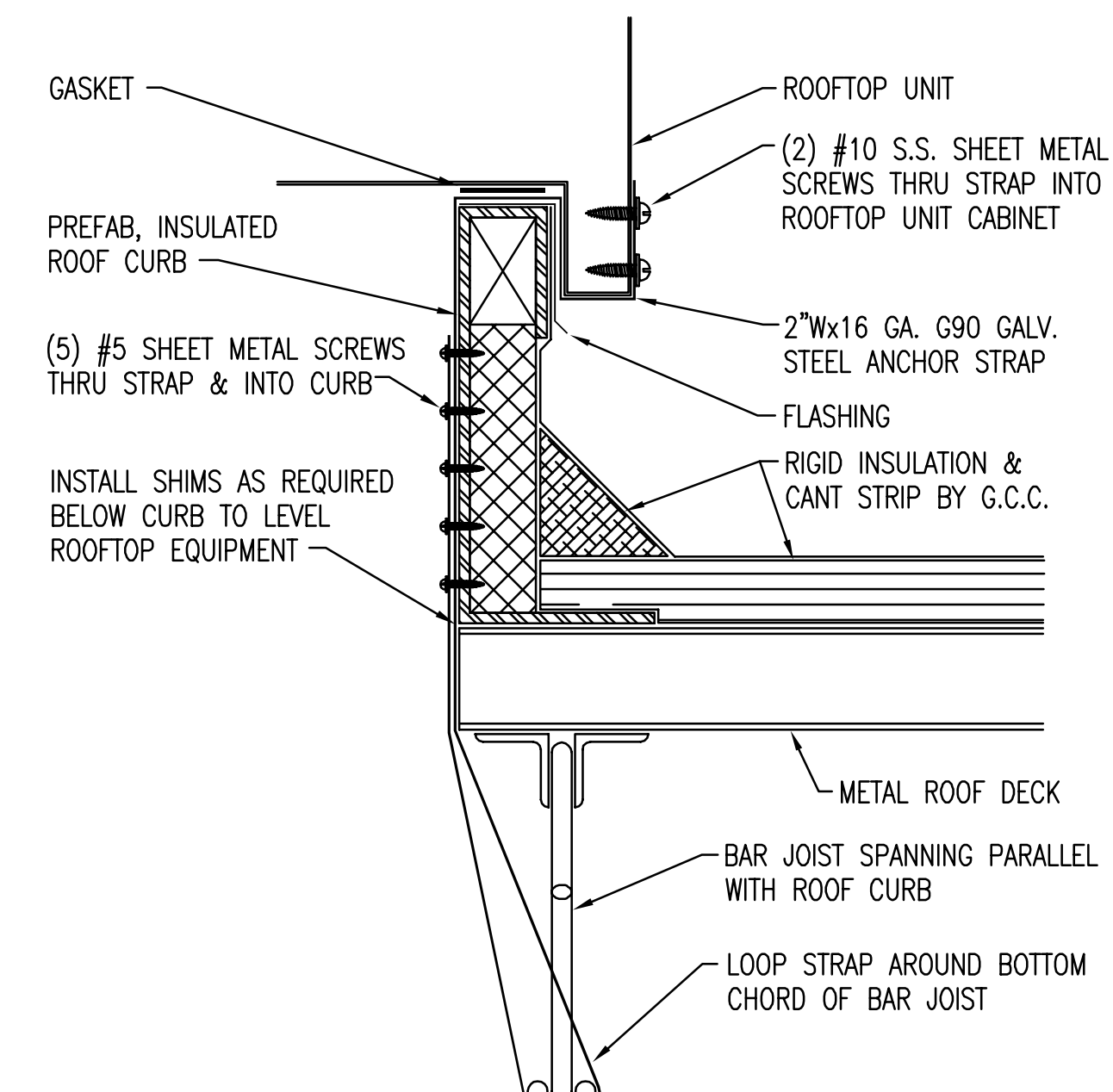


OFFSETS

BRANCH TAKEOFFS
NO SCALE

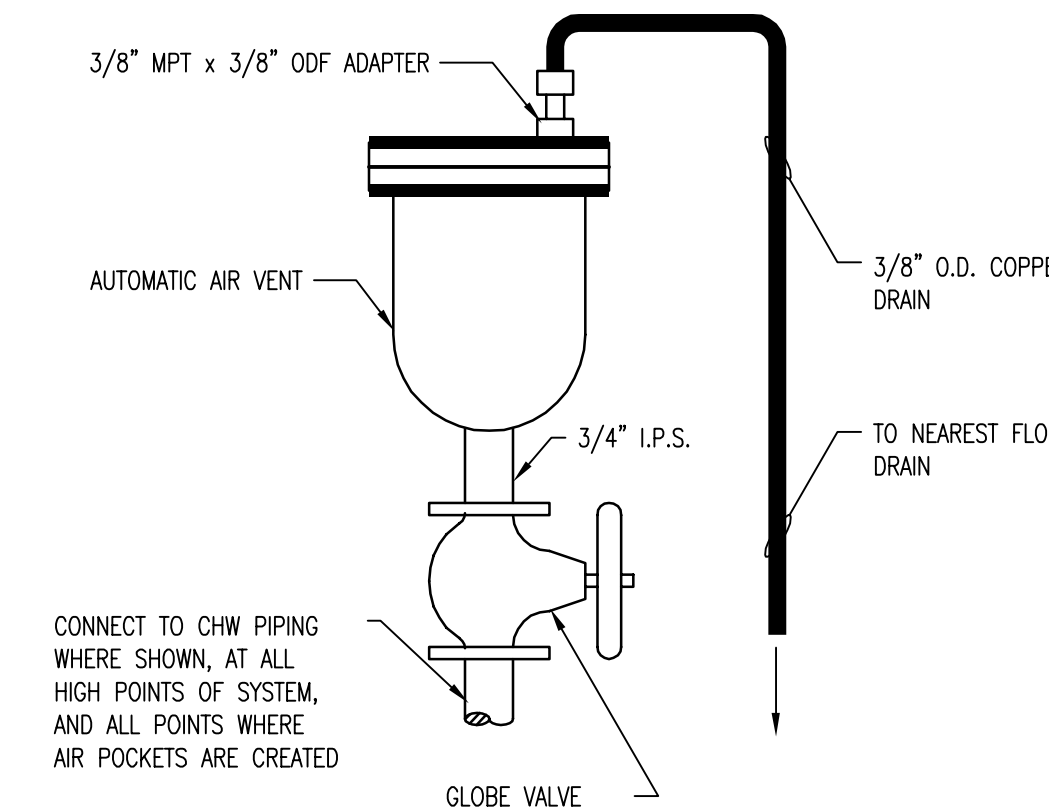


**DETAIL OF SUPPORT FOR ROOF
MOUNTED DUCTWORK**
N.T.S.



**ROOFTOP AIR UNIT CURB
ANCHORING DETAIL**
NO SCALE

NOTE:
INSTALL (1) ANCHOR STRAP ARRANGEMENT AT EACH CORNER OF ROOFTOP UNIT CURB. UTILIZE BAR JOISTS LOCATED NEAREST CURB. EQUIPMENT SHALL BE ANCHORED TO WITHSTAND TOTAL WIND LOAD AT 127 MPH.

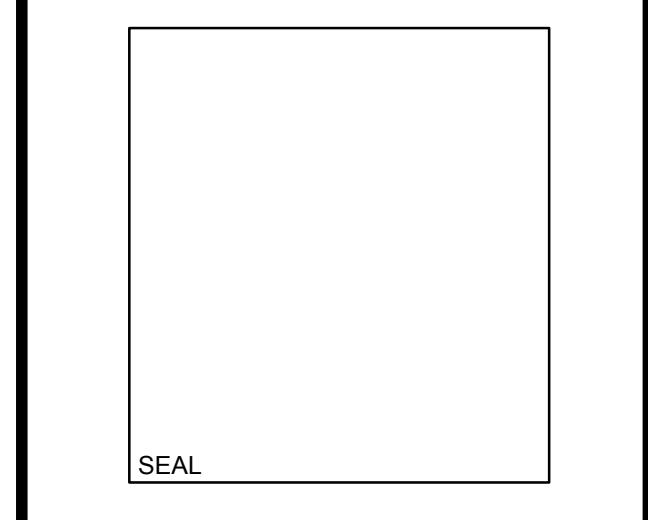


AUTOMATIC AIR VENT DETAIL
NO SCALE



**ORANGE COUNTY
ADMINISTRATION
BUILDING
UPPER ROOF RTU
REPLACEMENT**

mp MATERN PROFESSIONAL ENGINEERING, INC.
ENG. BUS. No. EB-000596
CERT. OF AUTH. No. 5096
130 Candace Drive
Melbourne, FL 32751-3331
PHONE (407) 740-5020
FAX (407) 740-0395
MPE JOB #: 2012-085D



Revisions

| No. | Date | Description |
|-----|----------|-------------|
| Δ | 08-17-15 | ADDENDUM #3 |
| | | |
| | | |
| | | |
| | | |
| | | |

Key Plan

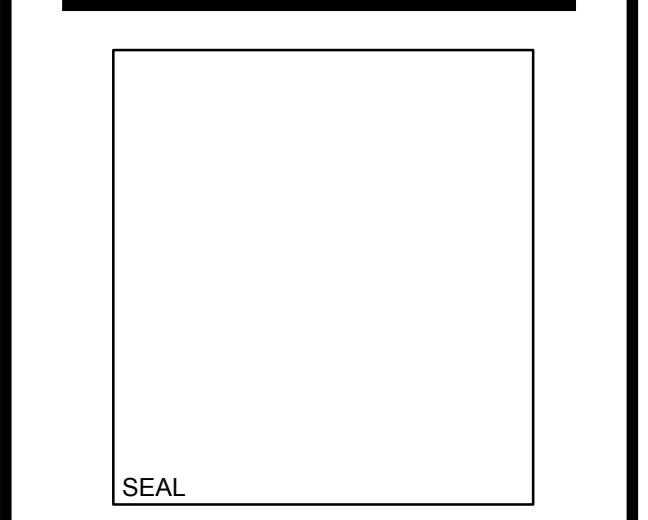
| | |
|----------------|----------|
| Designed By: | JS |
| Drawn By: | JS/DS |
| Checked By: | BWP |
| Issue Date: | 06/24/15 |
| Drawing Scale: | NO SCALE |
| Drawing Title: | |

**DETAILS -
MECHANICAL**

BID DOCUMENTS

Drawing No.

M-901



Revisions

| No. | Date | Description |
|-----|----------|-------------|
| 1 | 08-17-15 | ADDENDUM #3 |
| | | |
| | | |
| | | |
| | | |
| | | |

Key Plan

Designed By: MN
 Drawn By: MN/DS
 Checked By: CET
 Issue Date: 06/24/15
 Drawing Scale: 1/8"=1'-0"

Drawing Title:
ELECTRICAL SCHEDULES AND RISER DIAGRAMS

BID DOCUMENTS

Drawing No.

E-501

| MECHANICAL/KITCHEN EQUIPMENT FEEDER SCHEDULE FOR (S): 2012-085D OC Admin Bldg. RTU Replacement | | | | | | | | | | | | | | COPYRIGHT ME, LLC Version: W11a | | | | REVISED: April 6, 2015 | | | | DATE: August 18, 2015 | | | | | | | | |
|--|-------|----|-------------|---------------|------|-------|-------------------|-----|------------------|-----|----------------|------|-----------|---------------------------------|----------|-----------|--------------|------------------------|----------|----------|--------------|-----------------------|------------------|-------------|---------------|-----------|--------------|------|-------------------|----------|
| EQUIPMENT DESCRIPTION | VOLTS | PH | NEUTRAL Y/N | LARGEST MOTOR | | | COMPRESSOR FLA(1) | LRA | ADD'L MOTORS FLA | LRA | HEAT STRIPS KW | AMPS | MISC AMPS | TOTAL FLA | MCA (10) | MOCF (10) | PANEL CB (S) | DISCONNECT SWITCH | | | STARTER TYPE | WIRE PER PHASE (6) | NEUTRAL WIRE (7) | GROUND WIRE | WIRE MATERIAL | # OF RUNS | CONDUIT SIZE | % VD | NOTES (SEE BELOW) | |
| | | | | HP | FLA | LRA | | | | | | | | | | | | CODE | SIZE (1) | FUSE (2) | | | | | | | | | | TYPE (3) |
| RTU 3 | 480 | 3 | N | 15.00 | 21.0 | 116.0 | | | | | | | | 21 | | | 45 | | | 3R | 6 | VFD/AFD | #10 | | #10 | COPPER | 1 | 0.50 | 0.80 | C |
| RTU 4-C | 480 | 3 | N | 15.00 | 21.0 | 116.0 | | | | | | | | 21 | | | 45 | | | 3R | 6 | VFD/AFD | #10 | | #10 | COPPER | 1 | 0.50 | 0.80 | C |
| RTU 4-E | 480 | 3 | N | 20.00 | 27.0 | 145.0 | | | | | | | | 27 | | | 60 | | | 3R | 6 | VFD/AFD | #8 | | #10 | COPPER | 1 | 0.75 | 0.68 | C |
| RTU 5-E | 480 | 3 | N | 20.00 | 27.0 | 145.0 | | | | | | | | 27 | | | 60 | | | 3R | 6 | VFD/AFD | #8 | | #10 | COPPER | 1 | 0.75 | 0.68 | C |

NOTES (1)

(1) PROVIDE DISC SW AT ALL PIECES OF EQUIPMENT AS REQUIRED BY THE N.E.C. AND AHJ UNLESS PROVIDED BY OTHERS (INCLUDING AT MOTORS AND AT STARTERS).

(2) FUSES SHOWN FOR REFERENCE ONLY. PROVIDE FUSES AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

(3) PROVIDE NEMA OUTDOOR RATED ENCLOSURES FOR ALL DISC SWS MOUNTED OUTDOORS.

(4) COORDINATE STARTER TYPE WITH MECH EQUIP INSTALLER.

(5) CONTRACTOR TO VERIFY THAT C.B. FOR COMPRESSORS IS SUFFICIENT TO ALLOW STARTING OF UNIT, IF REQUIRED FOR STARTING C.B. TO BE INCREASED TO A MAX ALLOWED BY N.E.C. CB TO BE HACR RATED.

(6) #12 FEEDERS SHOWN AND OVER 50FT. LONG TO BE #10 FOR 120V CIRCUITS. #12 FEEDERS SHOWN AND OVER 100 FT. LONG TO BE #10 FOR 277 V CIRCUITS.

(7) NEUTRAL CONDUCTOR TO BE SAME SIZE AS PHASE CONDUCTORS.

(8) MOTOR CB IS SIZED BASED ON NEMA CODE "F" OR HIGHER. CHANGE CB SIZE IF REQUIRED DUE TO NEMA CODE OF MOTOR PER N.E.C.

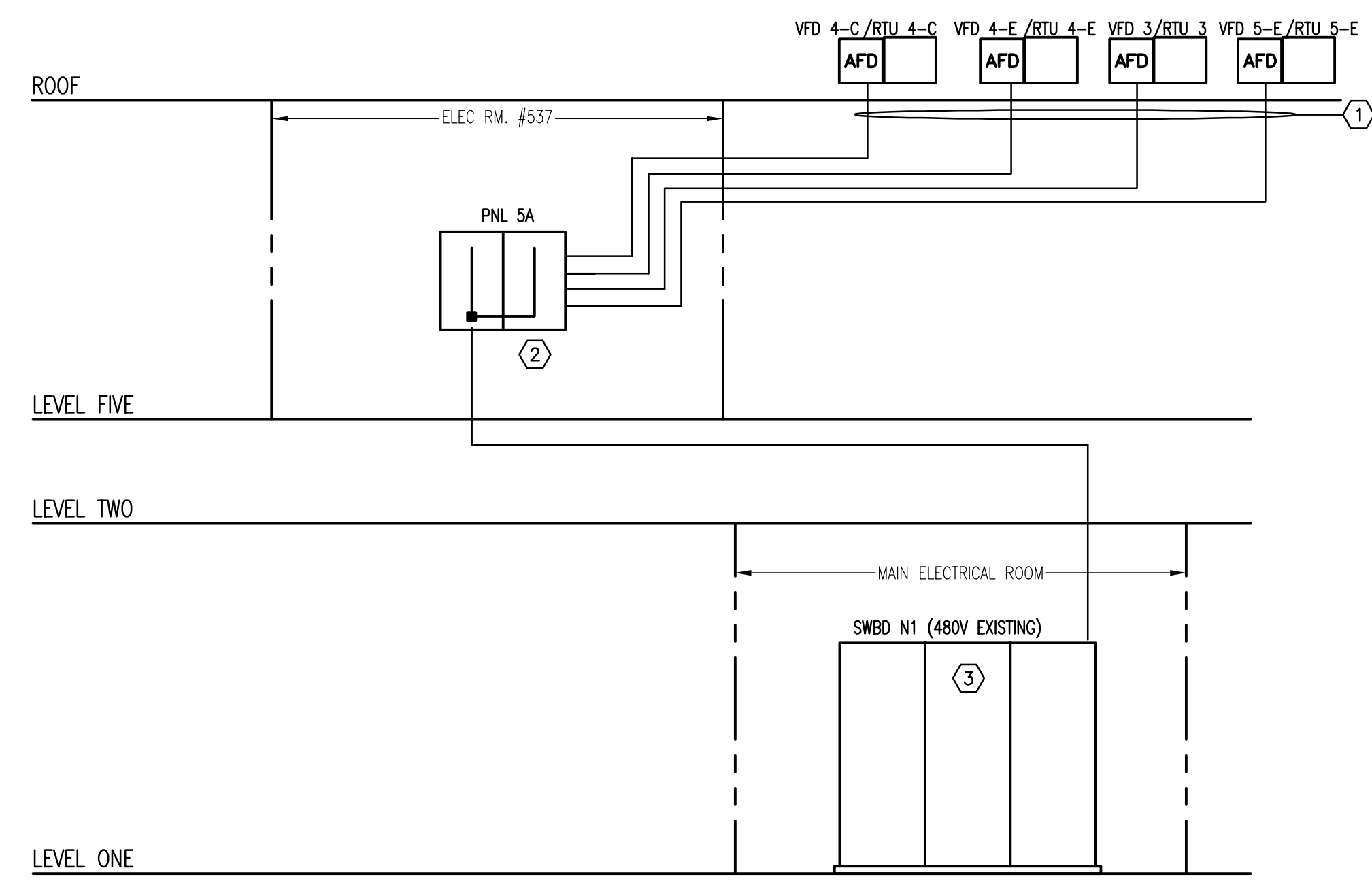
(9) ALL FEEDERS 100 AMP AND LESS ARE BASED ON 90 DEGREE CONDUCTOR/TERMINATION RATING. ALL OTHER FEEDERS ARE BASED ON 75 DEGREE CONDUCTOR TERMINATIONS. PROVIDE AND INSTALL PROPER TERMINATIONS ON ALL EQUIPMENT PROVIDED BY ANY DIVISION AND/OR SECTION OF THE CONTRACT DOCUMENTS. PROPER TERMINATIONS TO BE AS REQUIRED TO MATCH CONDUCTOR WITH REQUIRED AMPACITY.

(10) BASED ON MANUFACTURER'S RECOMMENDATION.

(11) OR BRANCH CIRCUIT SELECTION CURRENT WHEN AVAILABLE.

MCP = MOTOR CIRCUIT PROTECTOR W/COMBINATION STARTER
 MMS = MANUAL MOTOR STARTER SWITCH WITH OVERLOADS AND PILOT LIGHT
 I = NEMA 1 ENCLOSURE
 3R = NEMA 3R ENCLOSURE
 4SS = NEMA 4 WATER TIGHT STAINLESS STEEL ENCLOSURE
 4 = NEMA 4 WATER TIGHT NON-CORROSIVE ENCLOSURE
 VFD/AFD = VARIABLE (ADJUSTABLE-APD) FREQ DRIVE UNIT
 NF = NON-FUSED. WHERE ACCEPTABLE TO AHJ CONTRACTOR MAY USE PROPERLY RATED MOTOR SWITCH FOR DISCONNECT SWITCH
 AHJ = AUTHORITY HAVING JURISDICTION.
 FNVR = FULL VOLTAGE NON-REVERSING
 DFNVR = DUAL VOLTAGE NON-REVERSING
 FVC = FULL VOLTAGE CONTACTOR

(A)=CONNECT VIA LINE VOLTAGE T'STAT BY DIV. 1523 CONTRACTOR.
 (B)=CONNECT VIA CONTROL DEVICES BY DIV. 1523 CONTRACTOR.
 (C)=CONNECT VIA VFD/AFD WITH INTEGRAL DISC. SW.
 (D)=CONNECT VIA COMBINATION DISC/STARTER BY DIV. 1523 CONTRACTOR.
 (E)=CONNECT VIA DISC SWITCH AT EQUIP. BY DIV. 1523 CONTRACTOR.
 (F)=PROVIDE FULL SIZE NEUTRAL.
 (G)=MMS WITHOUT OVERLOADS.
 (H)=CONNECT VIA STARTER IN MCC (BY DIV 1626).
 (I)=2 SPEED, 1 WINDING MOTOR/STARTER.
 (J)=COORDINATE WITH DIV.15 TO BALANCE LOAD OF 1 PHASE FTB MOTORS.
 (K)=PROVIDE NEW STARTER IN MCC TO MATCH EXISTING. SEE MCC SCHED.
 (L)=WHERE MOTOR IS FED FROM MCC, PANEL CB NOT REQUIRED
 (M)=CONNECT EXIST DISC SWITCH AT MOTOR. MODIFY AS NOTED ON DRWSG
 (N)=
 (O)=
 (P)=



GENERAL NOTES

- REFER TO GENERAL NOTES FOR THIS DISCIPLINE.
- REFER TO SPECIFICATIONS.
- NO MULTI-WIRE BRANCH CIRCUITS ARE TO BE USED. EACH CIRCUIT IS TO HAVE SEPARATE INDIVIDUAL NEUTRAL.
- REWORK/RELOCATE EXISTING ELECTRICAL AS REQUIRED TO FACILITATE REMODELING.
- CONTRACTOR SHALL MAINTAIN CONTINUITY TO EXISTING DEVICES REMAINING.
- ALL DISCONNECTING MEANS (SWITCHES) FEEDING FAN TERMINAL BOXES SHALL BE MOTOR RATED SWITCHES.
- REFER TO MECHANICAL EQUIPMENT FEEDER AND PANEL SCHEDULES FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL AND PLUMBING EQUIPMENT INCLUDING CIRCUIT NUMBERS.
- MOUNT ALL DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT WITHIN SIX (6) FEET OF EQUIPMENT AS REQUIRED BY APPLICABLE CODES AND STANDARDS. RELOCATE DISCONNECT SWITCHES SHOWN ON DRAWINGS TO LOCATION REQUIRED TO COMPLY WITH THIS REQUIREMENT AND APPLICABLE CODES/STANDARDS. LOCATIONS FOR DISCONNECT SWITCHES SHOWN ON DRAWINGS IS FOR GENERAL INFORMATION ONLY.

KEY NOTES

- EXISTING CONDUIT, PENETRATIONS AND FEEDERS FROM 5TH FLOOR TO ROOF TO BE REUSED. REFER TO MECHANICAL FEEDER SCHEDULE.
- PANEL TO REMAIN ACTIVE. SEE PANEL SCHEDULE FOR NEW BREAKERS.
- TO REMAIN ACTIVE.

LAST SAVED BY: MN/DS 08/18/15 12:42:13 PM
 CREAT DATE: 08/20/15 08:44 PM
 LAST SAVED BY: MN/DS 08/18/15 10:28:38 PM
 MPE PROFESSIONAL ENGINEERING

LAST SAVED BY: MNRD0
 LAST SAVED: 01/05/2015 12:40:10 PM
 ORANGE COUNTY ADMINISTRATION BUILDING UPPER ROOF RTU REPLACEMENT
 ORANGE COUNTY ADMINISTRATION BUILDING HVAC Replacement Upper Roof RTU Replacement 02/20/2015 08:01 EBT1.dwg
 2/20/2015 10:32:52 PM
 MATERIA PROFESSIONAL ENGINEERING
 PLOT DATE: 01/05/2015 10:32:52 PM

COPYRIGHT ME, LLC 06/01/03 VERSION: C2] REVISED: 03/30/15

VOLTS LN: 277
 VOLTS PH: 480
 PHASE : 3
 MOUNTING : SURFACE
 TYPE :
 MFR : SQ D

PANEL : SA (Existing)
 MLO(**) : 400
 MCB :
 SH,TRIP :
 GFP :
 EXISTING : YES
 SECTIONS : 1
 NEMA 3R :
 :
 :

GENERAL NOTES:
 (1) ALL C.B.'S FEEDING HVAC EQUIPMENT TO BE HACR TYPE.
 (2) ALL C.B.'S FEEDING ELEV EQUIP TO BE SHUNT TRIP TYPE.
 (3) ALL C.B.'S FEEDING ELEV EQUIP TO BE SIZED AS REQ'D BY MFR.
 (4) ALL C.B.'S FEEDING HID LTG TO BE HID RATED.
 (5) NO MULTIWIRE BRANCH CKTS ARE ALLOWED
 (6) NOT USED.

NOTES AND REFERENCE NOTES:
 MFR = SIZE CB PER MFR. RECOMMENDATIONS.
 \$ = NEW CB IN EXIST SPACE
 & = REPLACE EXIST CB WITH NEW
 SH = SHUNT TRIP C.B.
 AF = ARC FAULT CB

OPTIONAL CALC
 ACTUAL CONN LOAD 175 KVA 211 AMPS
 DEMAND 175 KVA 211 AMPS
 DIVERSITY 175 KVA 211 AMPS
 TRANSFORMER SIZE KVA

TOTAL AMPS A PH 216
 TOTAL AMPS B PH 208
 TOTAL AMPS C PH 208
 INFO CODE:

SECTION 1 WITH MAINS WIDTH: 20 DEPTH: 6.00

| DESCRIPTION | LOAD | | | | | C.B. AMPS | C.B. POLE | REF NOTE | CKT. NO. | REF NOTE | C.B. POLE | LOAD | | | DESCRIPTION | CONN | TYPE | | | | |
|----------------------|------|------|------|------|------|-----------|-----------|----------|----------|----------|-----------|------|------|------|-------------|------|----------|----|------|------|-----|
| | CONN | TYPE | AMPS | AMPS | AMPS | | | | | | | AMPS | AMPS | AMPS | | | | | | | |
| RTU-3 | 44 | 10.0 | 44 | | | 60 | 3 | | 1 | 2 | 3 | 60 | 44 | 44 | | | RTU-4E | 44 | 10.0 | | |
| | 44 | 10.0 | 44 | | | | | | 3 | 4 | | | | | | | | | 44 | 10.0 | |
| | 44 | 10.0 | 44 | | | | | | 5 | 6 | | | 44 | | | | | | 44 | 10.0 | |
| RTU-4C | 44 | 10.0 | 44 | | | 60 | 3 | | 7 | 8 | 3 | 60 | 38 | | | | RTU-5E | 38 | 10.0 | | |
| | 44 | 10.0 | | 44 | | | | | 9 | 10 | | | 38 | | | | | | 38 | 10.0 | |
| | 44 | 10.0 | | | 44 | | | | 11 | 12 | | | | 38 | | | | | 38 | 10.0 | |
| EF-1 | 4 | 5.0 | 4 | | | 20 | 1 | | 13 | 14 | 3 | 60 | 38 | | | | AC-1,2,3 | 38 | 10.0 | | |
| SPACE | | | | | | | | | 15 | 16 | | | 38 | | | | | | 38 | 10.0 | |
| SPACE | | | | | | | | | 17 | 18 | | | | 38 | | | | | 38 | 10.0 | |
| SPACE | | | | | | | | | 19 | 20 | 1 | 20 | 4 | | | | | | | 4 | 5.0 |
| SPACE | | | | | | | | | 21 | 22 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 23 | 24 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 25 | 26 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 27 | 28 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 29 | 30 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 31 | 32 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 33 | 34 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 35 | 36 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 37 | 38 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 39 | 40 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 41 | 42 | 1 | | | | | | | | | | |
| SUBFEED LUGS/BREAKER | | | | | | | | | | | | | | | | | | | | | |

COPYRIGHT ME, LLC 06/01/03 VERSION: C2] REVISED: 03/30/15

VOLTS LN: 277
 VOLTS PH: 480
 PHASE : 3
 MOUNTING : SURFACE
 TYPE :
 MFR : SQ D

PANEL : SA (Exist. Revised)
 MLO(**) : 400
 MCB :
 SH,TRIP :
 GFP :
 EXISTING : YES
 SECTIONS : 1
 NEMA 3R :
 :
 :

GENERAL NOTES:
 (1) ALL C.B.'S FEEDING HVAC EQUIPMENT TO BE HACR TYPE.
 (2) ALL C.B.'S FEEDING ELEV EQUIP TO BE SHUNT TRIP TYPE.
 (3) ALL C.B.'S FEEDING ELEV EQUIP TO BE SIZED AS REQ'D BY MFR.
 (4) ALL C.B.'S FEEDING HID LTG TO BE HID RATED.
 (5) NO MULTIWIRE BRANCH CKTS ARE ALLOWED
 (6) NOT USED.

NOTES AND REFERENCE NOTES:
 MFR = SIZE CB PER MFR. RECOMMENDATIONS.
 \$ = NEW CB IN EXIST SPACE
 & = REPLACE EXIST CB WITH NEW
 SH = SHUNT TRIP C.B.
 AF = ARC FAULT CB

OPTIONAL CALC
 ACTUAL CONN LOAD 114 KVA 137 AMPS
 DEMAND 114 KVA 137 AMPS
 DIVERSITY 114 KVA 137 AMPS
 TRANSFORMER SIZE KVA

TOTAL AMPS A PH 142
 TOTAL AMPS B PH 134
 TOTAL AMPS C PH 134
 INFO CODE:

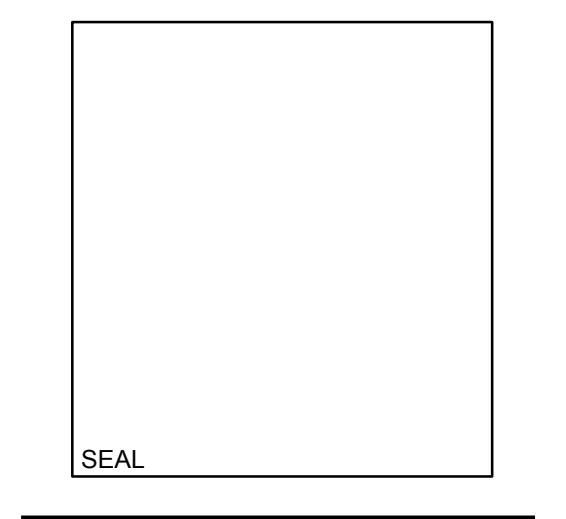
SECTION 1 WITH MAINS WIDTH: 20 DEPTH: 6.00

| DESCRIPTION | LOAD | | | | | C.B. AMPS | C.B. POLE | REF NOTE | CKT. NO. | REF NOTE | C.B. POLE | LOAD | | | DESCRIPTION | CONN | TYPE | | | | |
|----------------------|------|------|------|------|------|-----------|-----------|----------|----------|----------|-----------|------|------|------|-------------|------|----------|----|------|------|-----|
| | CONN | TYPE | AMPS | AMPS | AMPS | | | | | | | AMPS | AMPS | AMPS | | | | | | | |
| RTU-3 | 21 | 10.0 | 21 | | | 45 | 3 | | 1 | 2 | & | 3 | 60 | 27 | | | RTU-4E | 27 | 10.0 | | |
| | 21 | 10.0 | 21 | | | | | | 3 | 4 | | | | 27 | | | | | 27 | 10.0 | |
| | 21 | 10.0 | 21 | | | | | | 5 | 6 | | | | 27 | | | | | 27 | 10.0 | |
| RTU-4C | 21 | 10.0 | 21 | | | 45 | 3 | | 7 | 8 | & | 3 | 60 | 27 | | | RTU-5E | 27 | 10.0 | | |
| | 21 | 10.0 | | 21 | | | | | 9 | 10 | | | | 27 | | | | | 27 | 10.0 | |
| | 21 | 10.0 | | | 21 | | | | 11 | 12 | | | | 27 | | | | | 27 | 10.0 | |
| EF-1 | 4 | 5.0 | 4 | | | 20 | 1 | | 13 | 14 | 3 | 60 | 38 | | | | AC-1,2,3 | 38 | 10.0 | | |
| SPACE | | | | | | | | | 15 | 16 | | | 38 | | | | | | 38 | 10.0 | |
| SPACE | | | | | | | | | 17 | 18 | | | | 38 | | | | | 38 | 10.0 | |
| SPACE | | | | | | | | | 19 | 20 | 1 | 20 | 4 | | | | | | | 4 | 5.0 |
| SPACE | | | | | | | | | 21 | 22 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 23 | 24 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 25 | 26 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 27 | 28 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 29 | 30 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 31 | 32 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 33 | 34 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 35 | 36 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 37 | 38 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 39 | 40 | 1 | | | | | | | | | | |
| SPACE | | | | | | | | | 41 | 42 | 1 | | | | | | | | | | |
| SUBFEED LUGS/BREAKER | | | | | | | | | | | | | | | | | | | | | |



ORANGE COUNTY ADMINISTRATION BUILDING UPPER ROOF RTU REPLACEMENT

mp MATERN PROFESSIONAL ENGINEERING, INC.
 CERT. OF AUTH. No. 5096
 ENG. BUS. No. EB-000596
 130 Candace Drive
 Maitland, FL 32751-3331
 PHONE (407) 740-5020
 FAX (407) 740-0395
 MPE JOB #: 2012-085D



| No. | Date | Description |
|-----|----------|-------------|
| 1 | 08-17-15 | ADDENDUM #3 |
| | | |
| | | |
| | | |
| | | |

Key Plan

Designed By: MN
 Drawn By: MN/DS
 Checked By: CET
 Issue Date: 06/24/15
 Drawing Scale: 1/8"=1'-0"

Drawing Title:
ELECTRICAL SCHEDULES

BID DOCUMENTS
 Drawing No.
E-601