



- ELECTRICAL KEYNOTES:** (E)
- E1. DAMPERS: 120V TO SMOKE DAMPERS ON SOUTH WALL ELEVATOR MACH. ROOM 9F-102.
- E2. AHU-1: DIVISION 23 CONTRACTOR TO PROVIDE VFD DISCONNECT, AHU-1 IS RATED 460V, 3-PHASE, WITH MINIMUM CIRCUIT AMPACITY OF 40A. PROVIDE CONDUIT AND CONDUCTORS DIRECTLY TO THE VFD FOR TERMINATIONS. PROVIDE NEW 50A BREAKER IN PANEL HTE AS INDICATED. PROVIDE (3) #6 AND (1) #6 GND IN 1% COORDINATE WITH DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN AND FOR CONNECTION REQUIREMENT. RE: 7/E401
- E3. PROVIDE 120V FOR CONTROLS AND 120V FOR PUMP HOUSE HEATER ON EXISTING PANEL "LPE-24".
- E4. CHILLER: PROVIDE 600V, 3 POLE 150A DISCONNECT MOUNTED AT MAXIMUM 60" HIGH. COORDINATE WITH DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN FOR EXACT LOCATION. CHILLER RATED AT 460V, 3-PHASE, WITH MINIMUM AMPACITY OF 119A.
- E5. 120V NORMAL BRANCH: PROVIDE NEW WEATHERPROOF "WHALE IN USE" GFCI RECEPTACLE ON LIFE SAFETY OR EQUIPMENT BRANCH. PROVIDE CONNECTION TO PUMP HOUSE HEATERS ON AHU FROM THE SAME CIRCUIT. RE: 9/E401
- E6. HEAT TRACE: HEAT TRACE IS RATED 5W/FT AND REQUIRES A 20A/1P GFCI RECEPTACLE ON EMERGENCY BRANCH. COORDINATE WITH MECHANICAL CONTRACTOR FOR LOCATION OF CONTROLS FOR HEAT TRACE AND DISCONNECT REQUIREMENTS. PROVIDE (2) #6 AND (1) #10 GND IN 3/4", FROM HEAT TRACE CONTROLLER TO NEW CIRCUIT BREAKER.
- E7. EXPOSED CONDUIT: CONDUIT ROUTED ON EXPOSED ROOF SHALL BE GALVANIZED RIGID STEEL WITH THREADED CONNECTIONS, RACKED ON ROOF WITH MANUFACTURER APPROVED SUPPORTS. PROVIDE EXPANSION FITTINGS AT BUILDING EXPANSION JOINTS. RE: 8/E401
- E8. DUCT DETECTOR: COORDINATE DUCT DETECTOR DEVICES WITH DIVISION 23 CONTRACTOR. PROVIDE LOCATION OF CONTROLS FOR HEAT TRACE AND DISCONNECT REQUIREMENTS. PROVIDE (2) #6 AND (1) #10 GND IN 3/4", FROM HEAT TRACE CONTROLLER TO NEW CIRCUIT BREAKER.
- E9. EXHAUST FANS: PROVIDE DISCONNECT FUSED AT 20A. PROVIDE (2) #12 AND (1) #12 GND FOR THESE CIRCUITS.
- E10. COORDINATE NEW LOADS WITH EXISTING PANELBOARDS FOR SICU ADDITION AND POWER DISTRIBUTION UPDATE.
- E11. CHP-1 & CHP-2: COORDINATE WITH CONTROL REPRESENTATIVE BEFORE ROUGH-IN. CHP-2 IS SPARE AND BACK-UP FOR CHP-1.
- E12. CONTROL POWER: PROVIDE J-BOX, CONDUIT AND CONDUCTORS FOR CONTROL POWER. COORDINATE WITH DIVISION 23 CONTRACTOR FOR EXACT LOCATION PRIOR TO ROUGH-IN.
- E13. HEAT TRACE EVAPORATOR IN STORAGE TANK. PROVIDE J-BOX, CONDUIT AND CONDUCTORS FOR HEAT TRACE. COORDINATE EXACT LOCATION WITH DIVISION 23 CONTRACTOR PRIOR TO ROUGH-IN.
- KEYNOTES:** (K)
1. BOTTOM OF OUTSIDE AIR INTAKE TO BE A MINIMUM OF 36" ABOVE FINISHED ROOF.
2. 25'-0" OUTSIDE AIR INTAKE CLEARANCE AREA.
3. PROVIDE COOLING COIL WITH P-TRAPPED TYPE "M" CONDENSATE PIPING. PROVIDE TRAP WITH CLEANOUTS AND VENT ON DISCHARGE SIDE OF TRAP. ROUTE TO NEAREST ROOF DRAIN AND TERMINATE WITH AN AIR GAP. HEAT TRACE CONDENSATE PIPING PER KEYNOTE 5 BELOW.
4. SUPPORT PIPE WITH 4X4 BLOCKS. SECURE PIPES TO BLOCKS USING ONE PIPE SIZE LARGER CONTAINMENT STRAPS. SET BLOCKS ATOP ROOF TREAD MATS EXTENDING 6" IN ALL DIRECTIONS. COORDINATE EXACT ROUTING WITH EXISTING CONDITIONS AND ALL NEW WORK OF OTHER TRADES.
5. DOUBLE HEAT TRACE ENTIRE LENGTH OF ROOF MOUNTED PIPING. INSULATE AND PROVIDE ALUMINUM JACKET COVER. HEAT TRACE EQUAL TO RAYCHEM XL-TRACE HEATING CABLE TYPE SXL1-CR (HEAT LOSS APPROXIMATELY 5W/FT). PROVIDE APPROPRIATE POWER CONNECTION KIT WITH END SEALS, TEE KITS AND SPLICES AND OTHER MANUFACTURER RECOMMENDED COMPONENTS FOR COMPLETE FUNCTIONAL SYSTEM. PROVIDE CIRCUIT, CIRCUIT TO BE 120V/1PH WITH 15A MAX BREAKER SIZE. PROVIDE AMBIENT SENSING THERMOSTAT. INSTALL ALL COMPONENTS OF HEAT TRACE SYSTEM PER MANUFACTURER'S INSTALLATION REQUIREMENTS AND RECOMMENDATIONS. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR. HEAT TRACE ALL ROOF MOUNTED CONDENSATE PIPING, CHILLED WATER SUPPLY AND CHILLED WATER RETURN PIPING.
6. COORDINATE EXACT LOCATION OF AHU AND CHILLER WITH STRUCTURAL CONDITIONS, SUCH THAT NO JOIST HAVE TO BE CUT. TRANSITION DUCT DROPS DOWN THROUGH ROOF WHERE REQUIRED TO AVOID CONFLICTS WITH EXISTING STRUCTURE.
7. EXTEND NEW CHILLED WATER SUPPLY AND RETURN PIPING TO CONNECT TO 4" CHILLED WATER PIPING LOCATED IN THIS AREA. REFER TO SICU DRAWING SHEET MP401 BY BENHAM ARCHITECTS/ENGINEERS DATED MAY 2012. PROVIDE AN ISOLATION VALVE AT POINT OF TIE-IN. COORDINATE EXACT ROUTING WITH ALL EXISTING CONDITIONS AND NEW WORK OF OTHER TRADES.
8. SLEEVE, CALK, AND SEAL STEAM PIPE PENETRATIONS THROUGH FLOOR. ROUTE PIPE IN CEILING OF EIGHTH FLOOR TO CHASE LOCATED AT GRID LINE H5. ROUTE PIPING DOWN THROUGH EIGHTH FLOOR AND CONNECT TO MEDIUM PRESSURE STEAM MAIN LOCATED JUST TO THE EAST OF SEVENTH FLOOR NEW CARDIAC OPERATING ROOM. REFER TO PLAN 1/M201.
9. ROUTE STEAM PIPING DOWN THROUGH FLOOR. SLEEVE, CALK, AND SEAL STEAM PIPE PENETRATION THROUGH FLOOR.
10. ROUTE LOW PRESSURE STEAM PIPING IN CEILING OF EIGHTH FLOOR. EXTEND TO CONNECT TO AHU'S STEAM PREHEAT AND HUMIDIFIER COILS.
11. CONNECT 1" STEAM PIPING TO HUMIDIFIER COIL. PROVIDE A SEPARATOR, A LOC STEAM ACTUATOR AND VALVE PRIOR TO CONNECTING TO COIL. INSTALL PIPING PER STEAM COIL MANUFACTURER'S INSTALLATION RECOMMENDATIONS AND REQUIREMENTS.
12. PROVIDE A F&T STEAM TRAP ON DOWN STREAM SIDE OF HUMIDIFIER SEPARATOR. EXTEND CONDENSATE RETURN IN CEILING OF EIGHTH FLOOR OVER TO CHASE LOCATED AT GRID LINE H5. ROUTE PIPING DOWN THROUGH EIGHTH FLOOR AND CONNECT TO THE LOW PRESSURE RETURN MAIN LOCATED JUST TO THE EAST OF THE SEVENTH FLOOR NEW CARDIAC OPERATING ROOM. REFER TO PLAN 1/M201. ROUTE PREHEAT COIL CONDENSATE TO SAME LOCATION.
13. EXTEND HUMIDIFIER NON-PRESSURIZED CONDENSATE DOWN INTO EIGHTH FLOOR CEILING SPACE. PROVIDE AN F&T STEAM TRAP ON CONDENSATE. INSTALL PIPING PER STEAM COIL MANUFACTURER'S INSTALLATION RECOMMENDATIONS AND REQUIREMENTS. ROUTE PIPING, IN THE CEILING OF THE EIGHTH FLOOR AS HIGH AS POSSIBLE AND IN COORDINATION WITH EXISTING CONDITIONS AND NEW WORK OF OTHER TRADES. PROVIDE IN HOUSEKEEPING CLOSET 8F-144 A DRAIN WATER COOLER. ROUTE CONDENSATE DRAINAGE THROUGH COOLER AND EXTEND CONDENSATE TO TERMINATE WITH A 2" AIR GAP INTO MOP SINK LOCATED IN HOUSEKEEPING CLOSET 8F-144. PROVIDE A 1/2" COLD WATER CONNECTION TO DRAIN WATER COOLER.
14. COMBINE STEAM CONDENSATE PIPING FROM EQUIPMENT LOCATED IN THIS ROOM AND EXTEND CONDENSATE RETURN DOWN THROUGH FLOOR AND ROUTE IN CEILING OF EIGHTH FLOOR OVER TO CHASE LOCATED AT GRID LINE H5. ROUTE PIPING DOWN THROUGH EIGHTH FLOOR AND CONNECT TO THE LOW PRESSURE RETURN MAIN LOCATED JUST TO THE EAST OF THE SEVENTH FLOOR OPERATING ROOM. REFER TO PLAN 1/M201.
15. INSTALL FAN AND ASSOCIATED CURB ON ROOF PER FAN MANUFACTURER'S INSTALLATION REQUIREMENTS AND RECOMMENDATIONS AND IN COMPLIANCE WITH ROOF MANUFACTURER'S WARRANTY REQUIREMENTS, TO MAINTAIN ROOF WARRANTY.
16. EXTEND DUCT UP THROUGH ROOF CURB. PROVIDE FLASHING, COUNTER FLASHING, AND WEATHER COLLAR. PROVIDE FLEXIBLE CONNECTOR AT FAN INTAKE CONNECTION. REFERENCE SMACNA DETAILS. TRANSITION DUCT TO ROUND.
17. EXTEND DUCTWORK OUT SFT. FROM FAN DISCHARGE. DUCT SIZE SHALL BE SAME AS OUTLET OPENING. ALL JOINTS AND CONNECTIONS BETWEEN FAN DISCHARGE AND FILTER BANK MUST BE WELDED TO PREVENT ANY LEAKAGE OF CONTAMINATED AIR.
18. PROVIDE WEATHER TIGHT SIDE ACCESS FILTER HOUSING TO ACCOMMODATE 2" FLEATED MEDIA 30% PRE-FILTER AND 24"x12"x11.5" DEEP EXTENDED MEDIA SEPARATOR TYPE RIGID FILTERS. MINIMUM EFFICIENCY OF 99.9% NON-WOVEN WATER-RESISTANT FIBERGLASS MEDIA (EST-89-C001 TYPE A) IN A 16 GAUGE FRAME. HOUSING SHALL INCLUDE PRE-FILTER TRACKS TO ACCOMMODATE 24"x12"x2" REINFORCED NON-WOVEN COTTON/SYNTHETIC BLEND MEDIA LAMINATE AND EXPANDED MEDIA GRID ON THE AIR LEAVING SIDE. MINIMUM EFFICIENCY OF 25-30% AS DETERMINED BY ASHRAE STANDARD 52.1 TEST METHODS. ACCESS DOORS SHALL BE HINGED/REMOVABLE AND HAVE CONTINUOUS NEOPRENE GASKETING. PROVIDE PRESSURE DIFFERENTIAL GAUGE TO MEASURE PRESSURE DROP ACROSS FILTERS. INTERLOCK WITH FACILITIES BMS SYSTEM.
19. SUPPORT DUCTWORK AND FILTER BOX ABOVE ROOF WITH 4X4 REDWOOD SET ON ROOF TREAD MATS. SUPPORT DUCT FROM REDWOOD WITH UNISTRUT FRAMING. SECURE REDWOOD TO TREAD MATS.
20. PROVIDE NEW 1-1/4" DOMESTIC WATER MAKE-UP LINE WITH NEW RPZ BACKFLOW PREVENTER. PROVIDE MAKE-UP WATER METER.
21. CROSSOVER BRIDGE. REFER TO CHILLER PIPING DIAGRAM, 7/M302.
22. REFER TO CHILLER PIPING DIAGRAM FOR VALVING REQUIREMENTS.
23. FILL AHU CURB WITH ALTERNATING LAYERS OF SOUND ATTENUATING MATERIALS CONSISTING OF 2-LAYERS OF 6" BATT INSULATION, AND 1-LAYER OF 5/8" GYPSUM BOARD. REPEAT 3 TIMES AND FILL REMAINDER OF CURB WITH 6" BATT INSULATION. NOTE NOT USED.
24. PUMP HOUSE HEATER. REFER TO AHU SCHEDULE. COORDINATE LOCATION WITH ALL OTHER COMPONENTS LOCATED IN PIPE ENCLOSURE.
25. EXISTING FAN TO BE RELOCATED TO THIS LOCATION. INSTALL FAN AND NEW CURB ON ROOF PER FAN MANUFACTURER'S INSTALLATION REQUIREMENTS AND RECOMMENDATIONS AND IN COMPLIANCE WITH ROOF MANUFACTURER'S WARRANTY REQUIREMENTS, TO MAINTAIN ROOF WARRANTY. PROVIDE A NEW CURB EQUAL TO THE EXISTING FAN AND ORIGINAL CURB, REFER TO BENHAM DRAWINGS FOR ORIGINAL CURB INFORMATION.
26. SUPPORT EQUIPMENT FROM STRUCTURE WITH ANGLE IRON, ALL THREAD ROD, AND VIBRATION ISOLATORS. HOLD EQUIPMENT AS HIGH AS POSSIBLE.
27. CONNECT NEW 1-1/4" MAKE-UP COLD WATER TO EXISTING 2" COLD WATER LINE IN THE CEILING SPACE OF THE 8TH FLOOR.
28. PROVIDE FLEXIBLE VIBRATION ISOLATION CONNECTION ON CHILLED WATER CONNECTION TO CHILLER.
29. CHILLED WATER AND CONDENSATE PIPING TO ENTER INTO AHU AT PIPE ENCLOSURE. MAINTAIN FULL ACCESS TO PIPE ENCLOSURE ACCESS DOORS. (TYP)

**1 MEP ROOF/PENTHOUSE PLAN**  
Scale: 1/8"=1'-0"

<table border="1"> <thead> <tr> <th>Revisions:</th> <th>Description</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Revisions:	Description	Date							<p><b>ARCHITECTS &amp; INTERIORS</b></p> <p><b>MEDICAL ARCHITECTURE</b> Medical Architecture &amp; Interior Design 1401 South Denver, Ste C Tulsa, Oklahoma 74119 Phone: 583.7600 Fax: 583.7604</p>	<p><b>MEP ENGRS</b></p> <p><b>AEG</b> ALLIED ENGINEERING GROUP, LLC 1401 SOUTH DENVER STREET SUITE A TULSA, OK 74119</p>	<p><b>STRUCTURAL</b></p> <p><b>SNOWDEN ENGINEERING INC.</b> STRUCTURAL CONSULTANTS 8128 EAST 103RD TULSA, OKLAHOMA 74133 (918)252-4557 FAX (918)254-0838</p>	<p>STAFF REVIEWER'S NAME, TITLE &amp; SIGNATURE</p> <table border="1"> <thead> <tr> <th>TITLE:</th> <th>NAME:</th> <th>SIGNATURE:</th> </tr> </thead> <tbody> <tr> <td>MEDICAL CENTER DIRECTOR</td> <td> </td> <td> </td> </tr> <tr> <td>ASSOCIATE DIRECTOR</td> <td> </td> <td> </td> </tr> <tr> <td>ASSOCIATE DIRECTOR PATIENT CARE SERVICE</td> <td> </td> <td> </td> </tr> <tr> <td>ASSISTANT DIRECTOR</td> <td> </td> <td> </td> </tr> <tr> <td>CHIEF OF STAFF</td> <td> </td> <td> </td> </tr> <tr> <td>CHIEF, ENGINEERING SERVICE</td> <td> </td> <td> </td> </tr> <tr> <td>CHIEF, PROJECT SECTION</td> <td> </td> <td> </td> </tr> <tr> <td>CHIEF OF SURGERY</td> <td> </td> <td> </td> </tr> </tbody> </table>	TITLE:	NAME:	SIGNATURE:	MEDICAL CENTER DIRECTOR			ASSOCIATE DIRECTOR			ASSOCIATE DIRECTOR PATIENT CARE SERVICE			ASSISTANT DIRECTOR			CHIEF OF STAFF			CHIEF, ENGINEERING SERVICE			CHIEF, PROJECT SECTION			CHIEF OF SURGERY			<p>SEAL</p> <p><b>GAYLE D. GWINUP</b> 15478 Oklahoma State Board of Professional Engineers 4/15/2014</p>	<p>Drawing Title</p> <p><b>MEP ROOF/PENTHOUSE PLAN</b></p> <p>KEY PLAN</p>	<p>Project Title</p> <p><b>RENOVATION &amp; EXPANSION OF THE OPERATORY SUITE</b></p> <p>Date: 15 APRIL 2014</p> <p>Checked: <input type="checkbox"/> Drawn: <input type="checkbox"/></p>	<p>Project Number</p> <p><b>635-12-302</b></p> <p>Building Number</p> <p> </p> <p>Drawing Number</p> <p><b>MEP101</b></p>	<p>Office of Construction and Facilities Management</p> <p>Department of Veterans Affairs</p>
Revisions:	Description	Date																																											
TITLE:	NAME:	SIGNATURE:																																											
MEDICAL CENTER DIRECTOR																																													
ASSOCIATE DIRECTOR																																													
ASSOCIATE DIRECTOR PATIENT CARE SERVICE																																													
ASSISTANT DIRECTOR																																													
CHIEF OF STAFF																																													
CHIEF, ENGINEERING SERVICE																																													
CHIEF, PROJECT SECTION																																													
CHIEF OF SURGERY																																													