ADDENDUM NO. 1

PROJECT NAME: **Wick Alumni Center Life Safety & HVAC Improvements**
UNL PROJECT NUMBER: **C120P021**
BID INVITATION NUMBER: **2222-13-7200**

CONSULTANT: Farris Engineering
ADDRESS: 818 P Street, Suite 100

DATE OF ISSUANCE: September 3, 2013
DATE OF BID OPENING: September 18, 2013

The bid documents dated August 16, 2013 for the above referenced project are amended by this addendum.

NOTICE: This Addendum is issued to all interested prospective bidders as an amendment to the project manual or other parts of the bidding (contract) documents for the above named project. Reference to this Addendum must be included in the Bid proposal. The information contained herein shall be fully incorporated into the contract documents as though originally included therein.

MODIFICATIONS TO THE PROJECT MANUAL:

1. SECTION 01 50 00 – TEMPORARY FACILITIES:

   A. Under Section 3.4 – 'Temporary Construction and support Facilities Installation', add the following paragraph S:

   "S. Humidity Control: The Contractor is to provide, install and maintain a device on each floor, where work is being performed and/or the building air handler is affected by construction, to measure relative humidity. If the relative humidity measurements are above 60% for 48 hours or more, the contractor is to provide humidity control to bring the humidity down and maintain the relative humidity below 60%."

2. SECTION 07 53 00 – EPDM ROOFING:

   A. Under Section 1.09 – 'Warranty', change the manufacturer 'Mule Hide' to 'Johns Manville'.
   B. Under Section 2.01 – 'EPDM Roofing Membrane', change the manufacturer under item 2.01-A-1-a from 'Mule Hide' to 'Johns Manville'.

3. SECTION 09 91 00 – PAINTING: Under Section 3.06 - 'Schedule', add paragraph C-7 as follows:

   "7. Concrete Block (CMU) Substrates: Egg-Shell sheen at walls:
      a. Block Filler: ProMar Block Filler B25125.
      b. First Coat: ProMar 200 zero Eg-Shel B20W2251 series.
      c. Second Coat: ProMar 200 zero Eg-Shel B20W2251 series."

4. SECTION 12 21 00 – FIRE SUPPRESSION SYSTEMS:

   A. Section 2.1.A.15 – Delete in its entirety.

B. Section 2.3.E – Delete in its entirety.
C. Section 2.4.J – Delete in its entirety.
D. Section 2.4.O through 2.4.Q – Delete in its entirety.
E. Section 2.5.E – Delete in its entirety.
F. Section 2.9.E – Replace the words "Satin chrome" with "Factory applied white finish."
G. Section 2.9.G.1 – Replace the words "Satin chrome plated" with "Factory applied white finish."
H. Section 2.9.G.2 – Replace the words "Satin chrome plated" with "Factory applied white finish."
I. Section 2.12 – Delete in its entirety.
J. Section 3.4.A.7 – Delete in its entirety.

5. SECTION 28 31 00 – DIGITAL ADDRESSABLE FIRE ALARM SYSTEM:

A. Section 2.3.A – Allowable manufacturers shall be Notifier, Siemens and Edwards.
B. Section 2.3.D – Delete in its entirety.
C. Section 2.3.K – Provide a Valcom unit for voice over paging.
D. Section 2.3.K.3 – Provide 2 amplifiers not exceeding 60% load on each circuit.
E. Section 2.11 – Network communications shall automatically notify the University operator over an IP based network.
F. Devices installed on the ceiling shall be white.

MODIFICATIONS TO THE DRAWINGS:

1. SHEET A0.0 – GENERAL NOTES: At General Note W, add the following: At Storage Rooms 025 and 026 and at Equipment Room 031, existing storage shelving and stored items will remain in place. The Contractor is responsible to cover, protect and clean the stored items.

2. SHEET AD1-1, DEMOLITION PLANS: At the 'General Demolition Notes' note G, add the following: "Any work performed on the roofing system before August 1, 2014 must be performed by Dynamic Roofing Inc. 2130 Magnum Cr, Suite 2, Lincoln, NE 68522."

3. SHEET AD1-1, DEMOLITION PLANS: At the Storage Rooms 025 and 026 and at Equipment Room 031, note that existing storage shelving and stored items will remain in place. The Contractor is responsible to cover, protect and clean the stored items.

4. SHEET AD1-1, DEMOLITION PLANS: Include a fire rated poly dust partition along column line C extending from the Meter Room 028 to the Office 017B.

5. SHEET AD1-2, DEMOLITION PLANS AND SHEET A1-2, RENOVATION PLANS: At Offices 204, 205, 206, 207, 303, 304, 305 and 306, add a note that thermostat work will require removal of some gyp board at walls between offices."

6. SHEET SHEET A1-2, RENOVATION PLANS: At Offices 204, 205, 206, 207, 303, 304, 305 and 306, add a note that thermostat work will require patching of gyp board and paint at walls between offices. Coordinate with UNL exact location of thermostats."

7. SHEET A1-3, MECHANICAL 401 RENOVATION PLAN: At the north wall of Mechanical Room 401, add the following note: "See Sheet M2-3 'Mechanical 401 HVAC Piping Plan' for exterior pipe penetration requiring sealant".

8. SHEET FD1-2, THIRD FLOOR FIRE SUPPRESSION DEMOLITION PLAN:

   A. Change “FIRST FLOOR DEMOLITION KEYNOTES” to read “THIRD FLOOR DEMOLITION KEYNOTES”.

9. SHEET FD1-3, PENTHOUSE FIRE SUPPRESSION DEMOLITION PLAN:

   A. Change “BASEMENT DEMOLITION KEYNOTES” to read “PENTHOUSE DEMOLITION KEYNOTES”.

10. SHEET F1-3, PENTHOUSE FIRE SUPPRESSION PLAN:

   A. Change “FIRE PROTECTION FIRST FLOOR KEYNOTES” to read “FIRE PROTECTION PENTHOUSE KEYNOTES”.
   B. Change the last sentence in Fire Protection Keynote #3 to read: “PROVIDE WALL PLATE AROUND PIPE OPENING THAT IS PRIMED FINISH FOR PAINTING BY OTHERS.”

11. SHEET M1-2, SECOND AND THIRD FLOOR HVAC PLANS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. Thermostats have been relocated in Rooms 204, 205, 206, 207, 303, 304, 305, 306.

12. SHEET M2-3, LARGE-SCALE HVAC PIPING AND PLUMBING PLANS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. “MECHANICAL ROOMS 027, 028 HVAC PIPING AND PLUMBING PLAN” has been revised.
   C. Mechanical Keynote #27 has been revised.

13. SHEET MD2-3, LARGE-SCALE HVAC PIPING AND PLUMBING DEMOLITION PLANS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. “METER ROOM 028 HVAC PIPING DEMOLITION SCHEMATIC” has been revised.
   C. “METER ROOM 028 HVAC PIPING SCHEMATIC” has been revised.
   D. Mechanical Keynote #1 has been revised.

14. SHEET M5-1, MECHANICAL SCHEMATICS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. “HOT WATER SYSTEM DIAGRAM” has been renamed to “HYDRONIC SYSTEM DIAGRAM”, and has been revised.

15. SHEET M5-2, MECHANICAL DETAILS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. Added new detail “FLASH TANK DETAIL”.
   C. Added new detail “KNEE BRACE DETAIL”.
   D. Added new detail “PIPE SLEEVE FOR COLD BARE PIPE BELOW GRADE DETAIL”.

16. SHEET M5-3, MECHANICAL DETAILS:

   A. This sheet has been reissued in its entirety as a part of Addendum No.1.
   B. “STEAM PRESSURE REDUCING STATION DETAIL” has been revised.
   C. “DUPLEX CONDENSATE PUMP DETAIL” has been revised.

17. SHEET M6-3, MECHANICAL SCHEDULES:

A. This sheet has been reissued in its entirety as a part of Addendum No.1.
B. "STEAM PRESSURE REDUCING STATION SCHEDULE" has been revised.
C. Added new schedule "FLASH TANK SCHEDULE".

18. SHEET ED1-2, SECOND FLOOR ELECTRICAL DEMOLITION PLAN:

A. Remove power to the projection screen in the Great Hall 211B.

19. SHEET E2-1, FIRST FLOOR POWER AND FIRE ALARM PLAN:

A. REMOVE THE MAGNETIC DOOR HOLDERS FROM THE EAST DOUBLE DOORS FROM BOARD ROOM 106.
B. PROVIDE WALL MOUNTED SPEAKER STROBES IN LIEU OF CEILING MOUNTED SPEAKER STROBES IN STAIRS 010 AND 103.
C. IN BOARD ROOM 106, PROVIDE A CEILING MOUNTED SPEAKER STROBE IN LIEU OF THE WALL MOUNTED SPEAKER STROBES IN THE LOW CEILING. CENTER WITH THE SMOKE DETECTOR.
D. IN THE GREAT HALL 105. PROVIDE A CEILING MOUNTED SPEAKER STROBE IN LIEU OF THE WALL MOUNTED SPEAKER STROBE IN THE LOW CEILING AT THE SOUTH WALL.

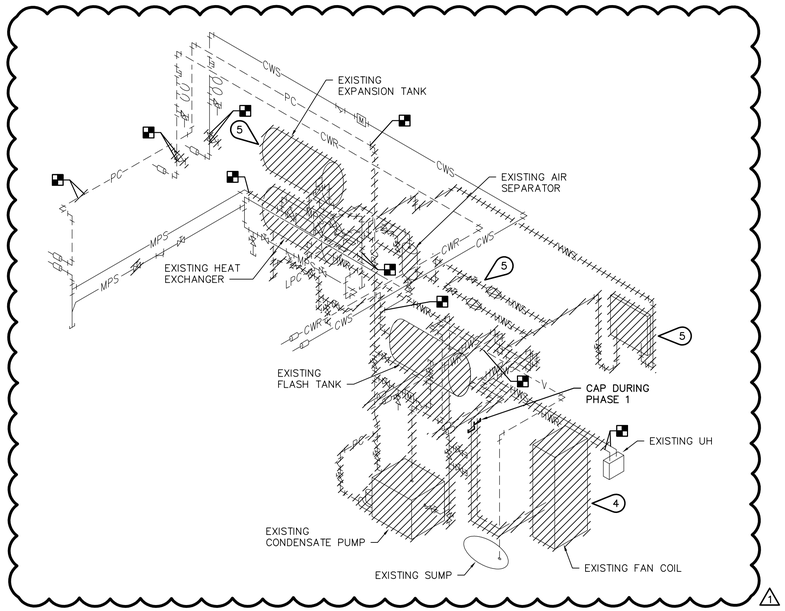
20. SHEET E2-2 SECOND FLOOR POWER AND FIRE ALARM PLAN:

A. Provide wall mounted speaker strobe in lieu of ceiling mounted speaker strobe in stair 200.

21. SHEET E2-2 THIRD FLOOR POWER AND FIRE ALARM PLAN:

A. Provide wall mounted speaker strobe in lieu of ceiling mounted speaker strobe in stairs 300.

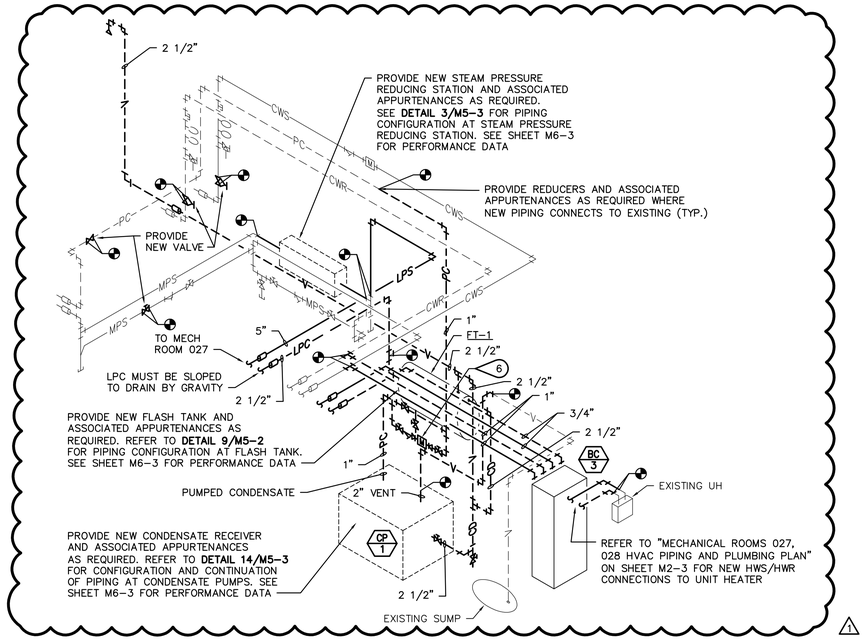
END OF ADDENDUM NO. *1*



METER ROOM 028 HVAC PIPING DEMOLITION SCHEMATIC

NO SCALE

NOTE: SEE PHASING PLAN, SHEET PH1–1 FOR SEQUENCING OF DEMOLITION AND NEW CONSTRUCTION IN ROOM 028.



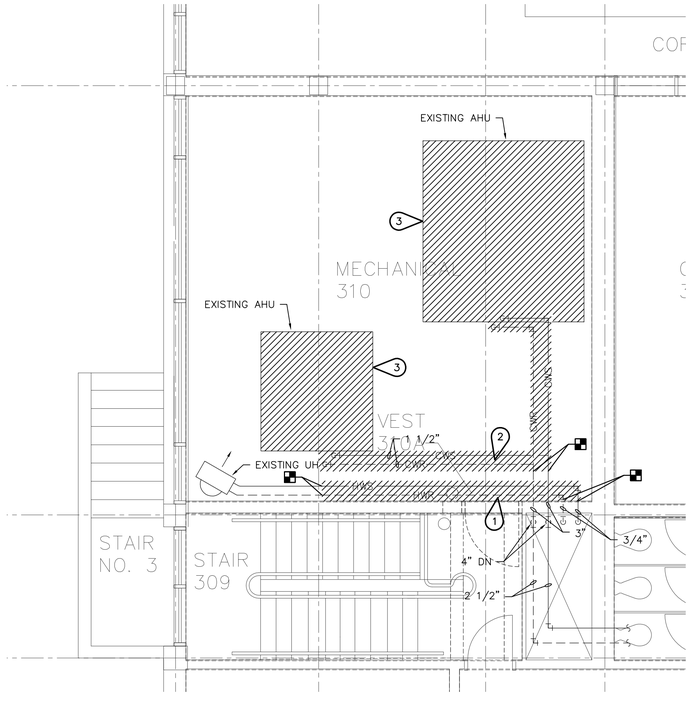
METER ROOM 028 HVAC PIPING SCHEMATIC

NO SCALE

NOTE: SEE PHASING PLAN, SHEET PH1–1 FOR SEQUENCING OF DEMOLITION AND NEW CONSTRUCTION IN ROOM 028.

MECHANICAL KEYNOTES: (◇)

1. REMOVE EXISTING HWS AND HWR PIPING AND ASSOCIATED APPURTENANCES AS SHOWN. CAP EXISTING HWS AND HWR PIPING AT FLOOR.
2. REMOVE EXISTING CWS AND CWR PIPING AND ASSOCIATED APPURTENANCES AS SHOWN.
3. SEE SHEET MD1–3 FOR HVAC EQUIPMENT REMOVAL.
4. REMOVE EXISTING FAN COIL UNIT AND ASSOCIATED HWS AND HWR PIPING AND CAP AS SHOWN DURING PHASE 1A.
5. REMOVE EXISTING HWS/HWR AND STEAM PIPING AND ASSOCIATED APPURTENANCES SHOWN HATCHED AFTER PHASES 1B THRU 5.
6. NEW CONDENSATE METER BY UNL BSM.
7. RELOCATE EXISTING UNIT HEATER TO LOCATION SHOWN ON M2–3 TO ACCOMMODATE NEW VESTIBULE. EXTEND HWS AND HWR PIPING TO NEW UNIT HEATER LOCATION AS SHOWN ON M2–3.

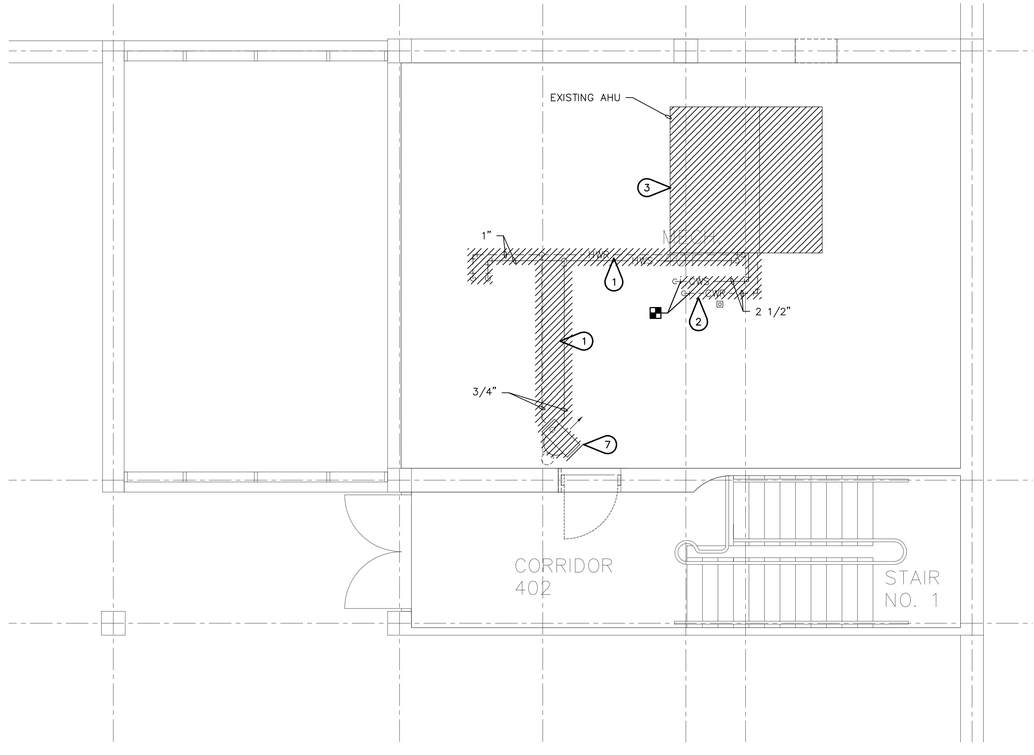


MECHANICAL 310 HVAC PIPING DEMOLITION PLAN

SCALE: 1/4 INCH = 1 FOOT

12" 0 5'

NORTH



MECHANICAL 401 HVAC PIPING DEMOLITION PLAN

SCALE: 1/4 INCH = 1 FOOT

12" 0 5'

NORTH

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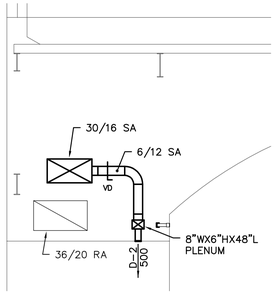
REVISIONS
1 9/3/2013 ADDENDUM NO. 1

WICK Alumni Center
Part Two - HVAC Improvements
Lincoln, Nebraska
UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

SHEET TITLE
LARGE-SCALE HVAC PIPING AND PLUMBING DEMOLITION PLANS

SHEET NO
MD2–3

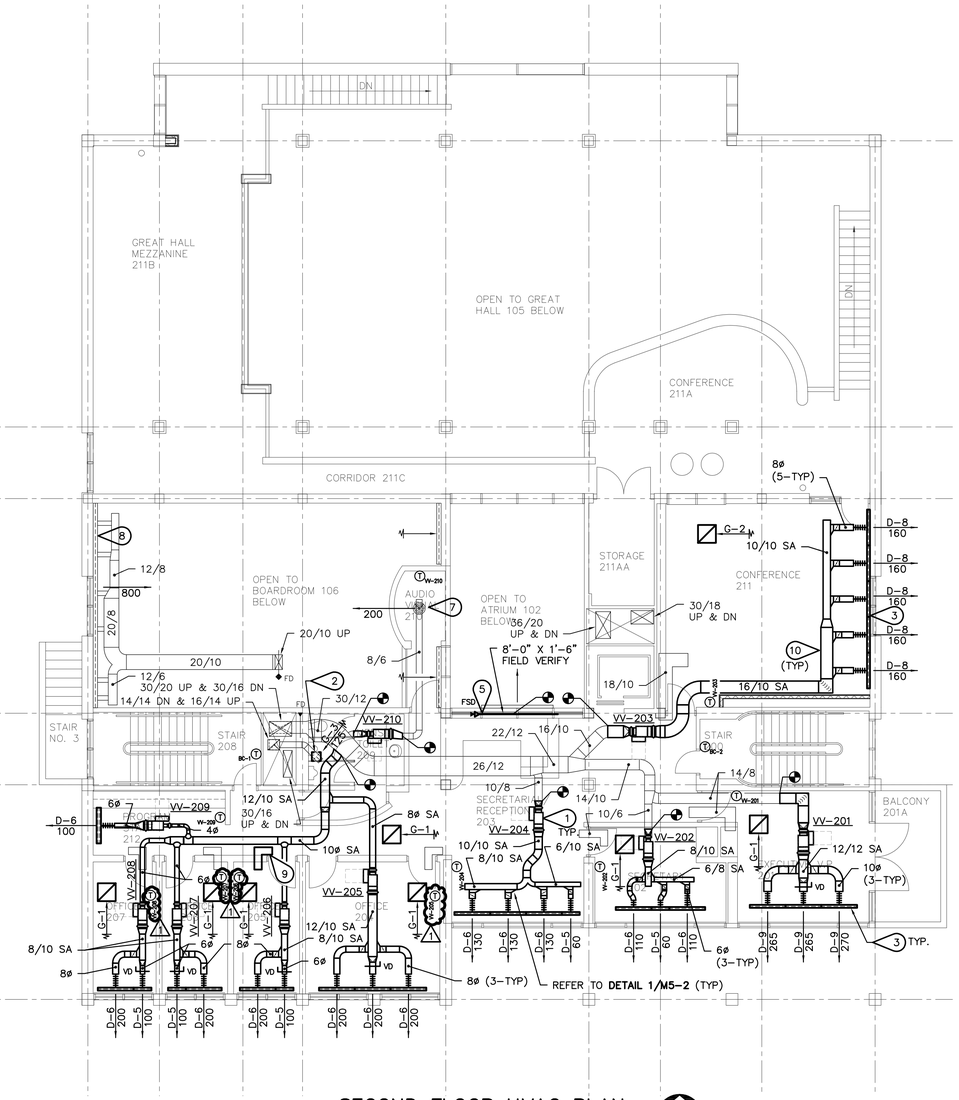


COVE SECTION A

NO SCALE

MECHANICAL KEYNOTES: (◇)

1. PROVIDE NEW VAV BOXES AND ASSOCIATED APPURTENANCES AS REQUIRED. WHEN NEW VAV BOXES ARE INSTALLED IN EXISTING DUCTWORK, FIELD VERIFY EXISTING DUCTWORK SIZES AND PROVIDE TRANSITIONS AS REQUIRED. COORDINATE LOCATION OF VAV BOXES AND LOCATION OF CONTROL BOX ON VAV UNITS WITH NEW LIGHTING, NEW CEILING/ACCESS PANELS, AND EXISTING CONDITIONS ABOVE CEILING. SEE **DETAIL 5/M5-2** FOR VAV BOX DETAIL. SEE SHEET M6-1 FOR VAV BOX PERFORMANCE DATE AND SHEET M2-1 FOR HVAC PIPING TO VAV BOXES.
2. PROVIDE NEW REGISTERS, GRILLES, AND DIFFUSERS AS SHOWN. SEE **DETAILS 2/M5-2** AND **3/M5-2** FOR DIFFUSER DETAILS. SEE SHEET M6-1 FOR PERFORMANCE DATA.
3. PROVIDE NEW SLOTTED, LINEAR DIFFUSERS AS SHOWN. SET FLOW PATTERN FOR VERTICAL THROW TO WIPE WINDOWS, DOORS AND WALLS. SEE SHEET M6-1 FOR PERFORMANCE DATA.
4. EXISTING SIDE-WALL, SLOTTED, LINEAR DIFFUSERS IN THE GREAT HALL ARE ABANDONED IN PLACE.
5. PROVIDE NEW SMOKE/FIRE DAMPER.
6. PROVIDE NEW CEILING-MOUNTED, SLOTTED, LINEAR DIFFUSERS IN THE GREAT HALL AS SHOWN. SET FLOW PATTERN FOR ANGLED DOWN DISCHARGE TOWARDS CENTER OF ROOM. SEE SHEET M6-1 FOR PERFORMANCE DATA.
7. EXISTING CEILING-MOUNTED, DIFFUSER TO REMAIN. RE-BALANCE TO CFM SHOWN.
8. EXISTING CEILING-MOUNTED, SLOTTED, LINEAR DIFFUSER TO REMAIN. RE-BALANCE TO CFM SHOWN.
9. RELOCATE EXISTING 10/6 TRANSFER TO THIS LOCATION.
10. REFER TO DUCTWORK HANGERS **DETAIL 6/M5-2** (TYP)

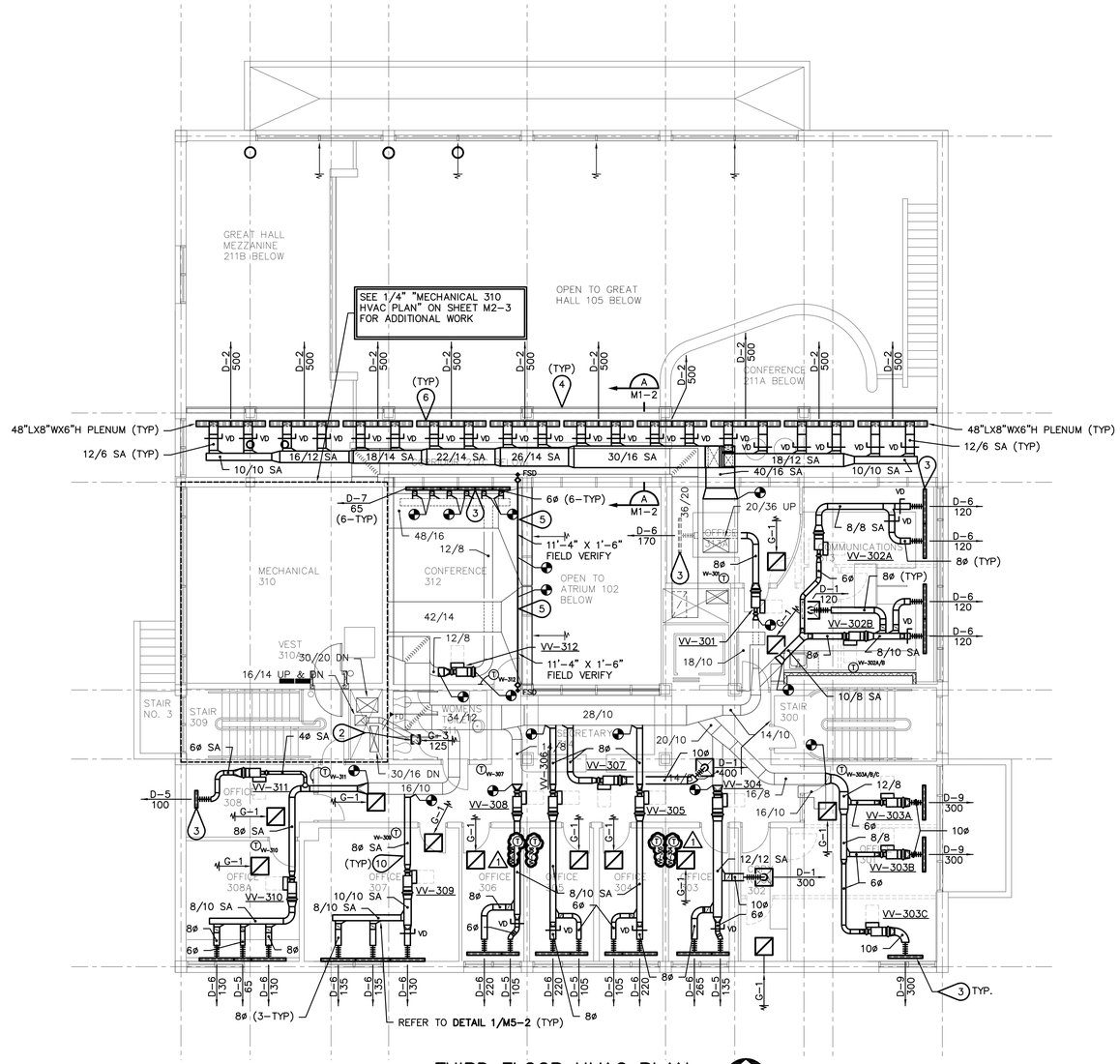


SECOND FLOOR HVAC PLAN

SCALE: 1/8 INCH = 1 FOOT

12" 0 5' 10' 15'

NORTH



THIRD FLOOR HVAC PLAN

SCALE: 1/8 INCH = 1 FOOT

12" 0 5' 10' 15'

NORTH

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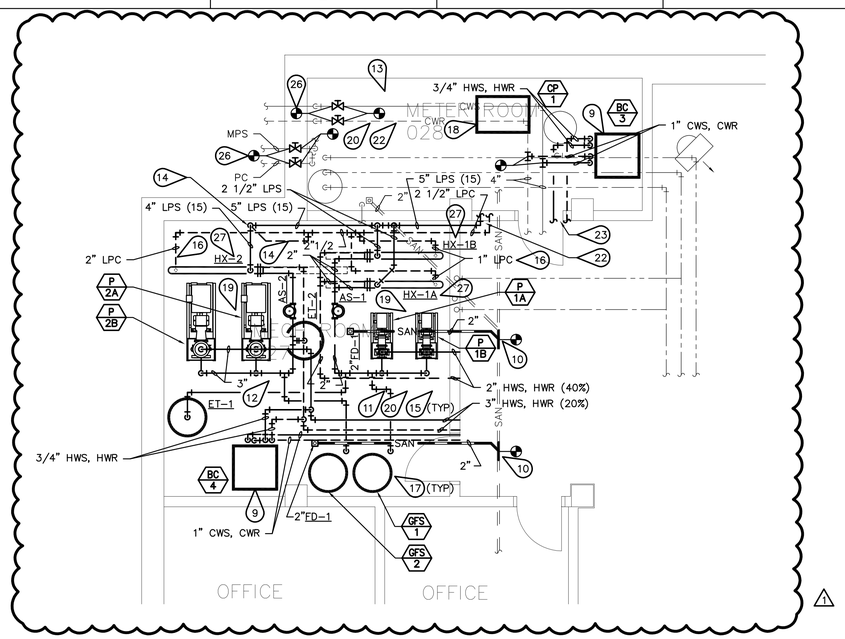
Part Two - HVAC Improvements
Lincoln, Nebraska
UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

SHEET TITLE: SECOND AND THIRD FLOOR HVAC PLANS

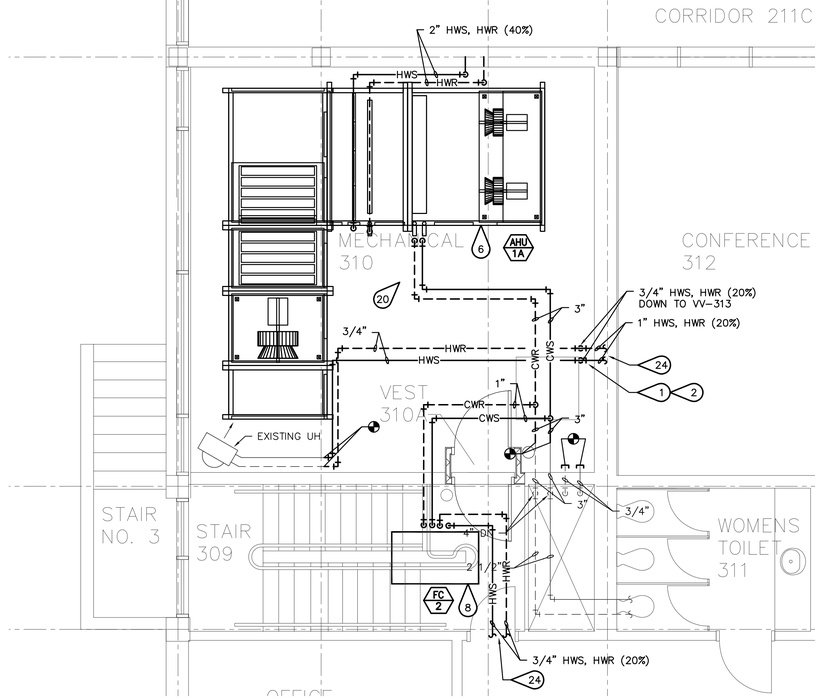
SHEET NO: **M1-2**



MECHANICAL ROOMS 027, 028
HVAC PIPING AND PLUMBING PLAN

NORTH

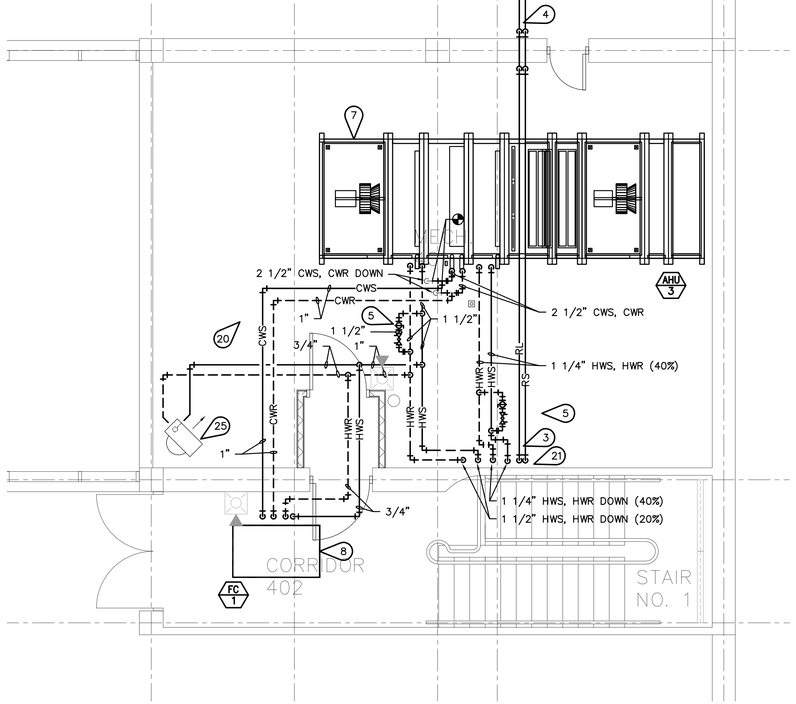
SCALE: 1/4 INCH = 1 FOOT
12" 0 5'



MECHANICAL 310 HVAC PIPING PLAN

SCALE: 1/4 INCH = 1 FOOT
12" 0 5'

NORTH



MECHANICAL 401 HVAC PIPING PLAN

SCALE: 1/4 INCH = 1 FOOT
12" 0 5'

NORTH

MECHANICAL KEYNOTES: (◇)

1. CONTROL VALVE FOR EXISTING HEATING DEVICE (FINTUBE, CABINET VENTILATOR, CABINET UNIT HEATER) SHALL BE INTERLOCKED WITH THE VARIABLE AIR TERMINAL UNIT AND ASSOCIATED SPACE SENSOR INDICATED, PER UNL CONTROL SEQUENCE. IN THE OCCUPIED CONDITION, VALVE SHALL ONLY OPEN ON A CALL FOR HEAT FROM THE SPACE SENSOR, AND WORK IN UNISON WITH THE VAV BOX REHEAT COIL. IN THE UNOCCUPIED CONDITION (AHU-1A OFF) THE VALVE SHALL OPEN AS REQUIRED TO MEET UNOCCUPIED HEATING SETPOINT. COORDINATE WITH UNL.
2. PROVIDE NEW CONTROL VALVES TO CONTROL EXISTING HEATING DEVICE PER KEYNOTE #1, THIS SHEET.
3. PROVIDE REFRIGERANT LINES AND WIRING BETWEEN SPLIT SYSTEM INDOOR AND OUTDOOR UNITS PER MANUFACTURER RECOMMENDATIONS AND SPECIFICATIONS.
4. ROUTE REFRIGERANT LINES THROUGH EXTERIOR WALL ABOVE EXISTING LOUVER, AND ROUTE EXPOSED DOWN EXTERIOR WALL TO ROOF. SUPPORT PER SPECIFICATIONS.
5. PROVIDE BY-PASS AS SHOWN TO ALLOW FOR MINIMUM SYSTEM PUMP FLOW (VFD OPERATION) WHEN COILS DO NOT CALL FOR FLOW.
6. CONNECT NEW 40% GLYCOL HWS/HWR PIPING AND CWS/CWR PIPING TO NEW AHU-1A. ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. SEE **DETAILS 5/M5-3, 8/M5-3** AND **9/M5-3**.
7. CONNECT NEW 20% GLYCOL HWS/HWR PIPING, 40% GLYCOL HWS/HWR PIPING, AND CWS/CWR PIPING TO NEW AHU-3. ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. SEE **DETAILS 5/M5-3, 8/M5-3** AND **9/M5-3**.
8. CONNECT NEW 20% GLYCOL HWS/HWR PIPING AND CWS/CWR PIPING TO NEW FC-1 AND FC-2. ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. SEE **DETAIL 7/M5-3**.
9. CONNECT NEW 20% GLYCOL HWS/HWR PIPING AND CWS/CWR PIPING TO NEW BC-3 AND BC-4. ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. SIMILAR TO **DETAIL 7/M5-3**.
10. PROVIDE NEW 2" SANITARY LINE AND NEW 2" FLOOR DRAIN. INSTALL PER LOCAL CODES. PATCH FLOOR TO MATCH EXISTING.
11. PROVIDE NEW 40% GLYCOL HOT WATER SYSTEM AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 1/M5-3** FOR PIPING SCHEMATIC.
12. PROVIDE NEW 20% GLYCOL HOT WATER SYSTEM AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 2/M5-3** FOR PIPING SCHEMATIC.
13. PROVIDE NEW STEAM PRESSURE REDUCING STATION AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 3/M5-3** AND SHEET MD2-3.
14. PROVIDE END OF STEAM MAIN DRIP AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAILS 6/M5-3**, AND **12/M5-3**.
15. PROVIDE NEW CHEMICAL POT FEEDER AND ASSOCIATED APPURTENANCES AS REQUIRED FOR EACH HOT WATER SYSTEM. SEE **DETAIL 10/M5-3**.
16. PROVIDE NEW STEAM TRAP ASSEMBLY AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 11/M5-3** AND **12/M5-3**.
17. PROVIDE NEW 20% GLYCOL FEED SYSTEM, NEW 40% GLYCOL FEED SYSTEM AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 13/M5-3**.
18. PROVIDE DUPLEX CONDENSATE PUMP SYSTEM AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 14/M5-3**.
19. PROVIDE BASE-MOUNTED HOT WATER PUMPS AND ASSOCIATED APPURTENANCES AS REQUIRED. SEE **DETAIL 15/M5-3**.
20. ROUTE PIPING IN MECHANICAL ROOMS AS HIGH AS POSSIBLE. COORDINATE ROUTING WITH EXISTING AND NEW MECHANICAL, ELECTRICAL, AND STRUCTURAL ELEMENTS.
21. FOR PIPING FLOOR PENETRATIONS INTO MECHANICAL ROOM, SEE **DETAIL 8/M5-2**.
22. FOR CONTINUATION AND ADDITIONAL PIPING WORK IN METER ROOM 028, SEE SHEET MD2-3.
23. FOR CONTINUATION, SEE SHEET M2-1.
24. FOR CONTINUATION, SEE SHEET M2-2.
25. RELOCATE EXISTING UNIT HEATER TO THIS LOCATION.
26. PROVIDE NEW VALVES.
27. STEAM TO HOT WATER CONVERTER INSTALLATION: HEAT EXCHANGERS SHALL BE ARRANGED AS SHOWN ON **DETAILS 1 AND 2/SHEET M5-3**, AND MOUNTED ON FIELD-FABRICATED SUPPORTS, ANCHORED TO THE FLOOR. THE MOUNTING HEIGHT OF HEAT EXCHANGERS SHALL BE DETERMINED IN FIELD, BASED ON ACTUAL MOUNTING HEIGHT OF NEW FLASH TANK (WHICH RECEIVES CONDENSATE FROM HEAT EXCHANGER VIA GRAVITY DRAIN), AND OUTLET ELEVATION OF CONDENSATE DRAIN FROM HEAT EXCHANGER. NEW FLASH TANK DRAINS VIA GRAVITY TO NEW CONDENSATE RECEIVER. CONFIGURE SUPPORTS SUCH THAT RECOMMENDED SERVICE CLEARANCES TO HEAT EXCHANGERS ARE PROVIDED, AND ACCESS TO OTHER EQUIPMENT IN ROOM 027 IS COORDINATED. FIELD-ROUTE LOW PRESSURE CONDENSATE DRAIN TO FLASH TANK.

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UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

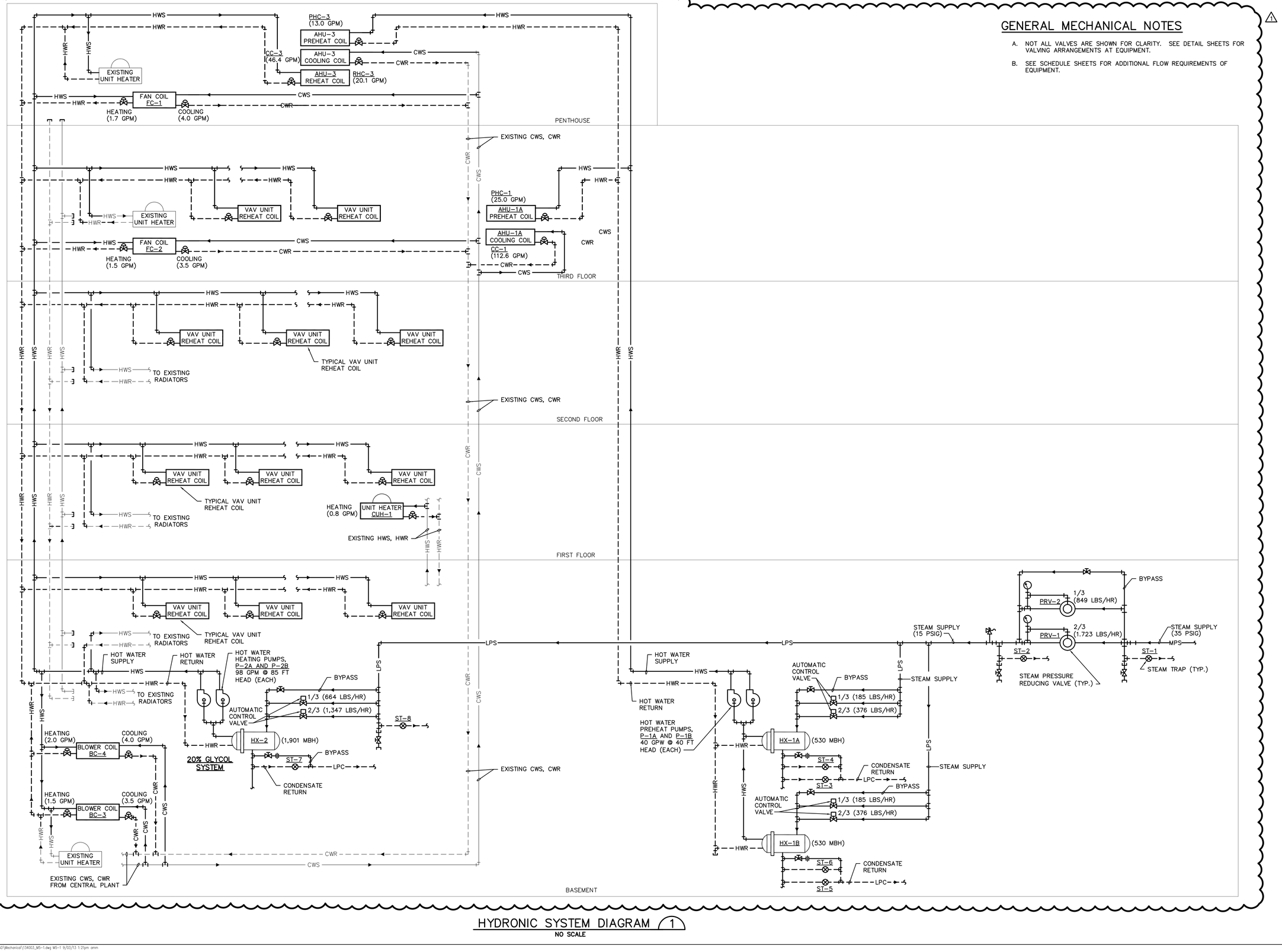
SHEET TITLE
LARGE-SCALE HVAC PIPING AND PLUMBING PLANS

SHEET NO
M2-3

GENERAL MECHANICAL NOTES

A. NOT ALL VALVES ARE SHOWN FOR CLARITY. SEE DETAIL SHEETS FOR VALVING ARRANGEMENTS AT EQUIPMENT.

B. SEE SCHEDULE SHEETS FOR ADDITIONAL FLOW REQUIREMENTS OF EQUIPMENT.



HYDRONIC SYSTEM DIAGRAM 1

NO SCALE

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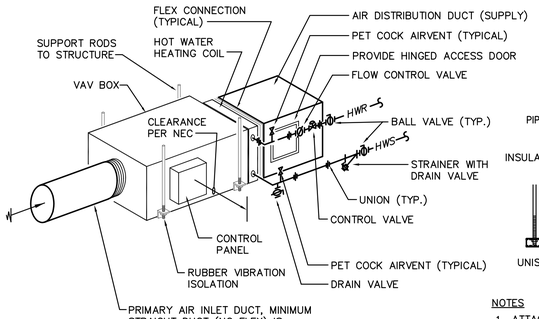
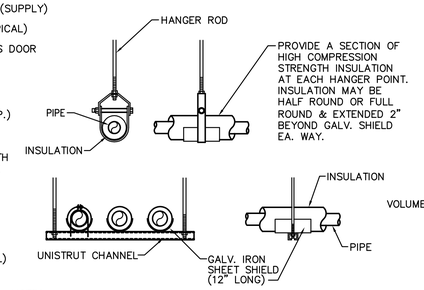
SHEET TITLE: MECHANICAL SCHEMATICS

SHEET NO: **M5-1**



VAV BOX DETAIL 5

NO SCALE

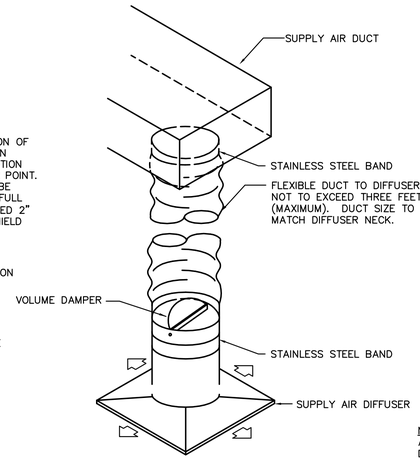


NOTES

1. ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OR BEAMS.
2. PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.

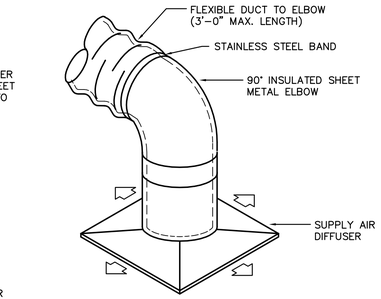
PIPE INSULATION DETAIL 4

NO SCALE



DIFFUSER CONNECTION DETAIL 3

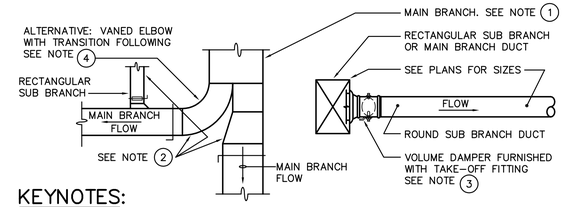
NO SCALE



NOTE:
ALL DUCTWORK TO BE INSULATED DOWN TO AND INCLUDING DIFFUSER NECK AND BACK OF DIFFUSER.

DIFFUSER CONNECTION DETAIL 2

NO SCALE

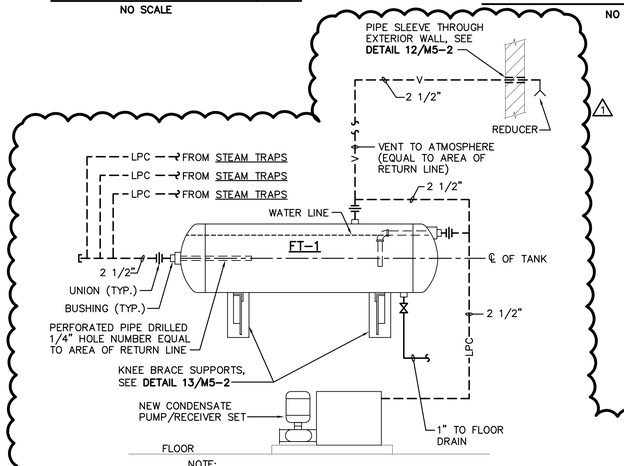


KEYNOTES:

1. DUCT SPLITS TO DIVIDE FLOW SHALL BE PROPORTIONATE TO SUM TOTAL OF BRANCH DUCT CFM SHOWN ON FLOOR PLANS.
2. ELBOW RADIUS, TAKE-OFF ANGLE AND TRANSITION ANGLE SHALL BE PER SMACNA RECOMMENDATIONS.
3. ROUND DUCT TAKE-OFFS FROM RECTANGULAR DUCTS SHALL BE MADE WITH A HIGH EFFICIENCY FLANGED AND GASKETED FITTING. THE MOUNTING GROOVE SHALL BE SO CONSTRUCTED AS TO ENSURE CONSTANT FIT CONTROL. BALANCING DAMPERS SHALL BE FACTORY INSTALLED WITH SPRING LOADED RETRACTABLE BEARINGS AND A POSITIVE LOCKING WING NUT FOR EASY READJUSTMENT WHEN NEEDED. FITTING SHALL BE FULLY GASKETED ON ALL FLANGES AND CORNERS FOR HIGH EFFICIENCY TAKE-OFF FITTINGS.
4. ALL ELBOWS SHALL BE RADIUS TYPE, EXCEPT WHERE SPACE RESTRICTIONS NECESSITATE USING 90° MITERED VANED ELBOWS.
5. VOLUME DAMPERS SHALL BE PROVIDED ON ALL LOW PRESSURE SUPPLY DUCT BRANCHES AND ON ALL RETURN AND EXHAUST DUCT BRANCHES.

TYPICAL LOW PRESSURE DUCT DETAIL 1

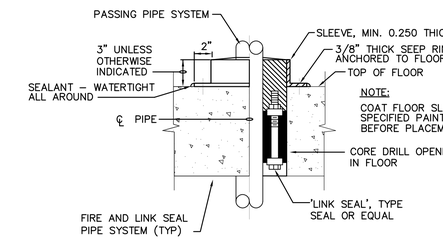
NO SCALE



NOTE:
PROVIDE WALL MOUNTING BRACKETS OR SUSPEND FROM CEILING.

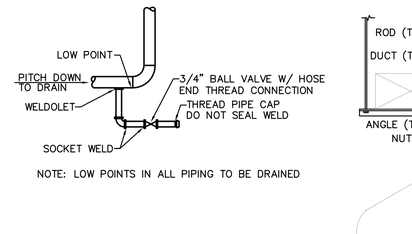
FLASH TANK DETAIL 9

NO SCALE



PIPE FLOOR SLEEVE DETAIL 8

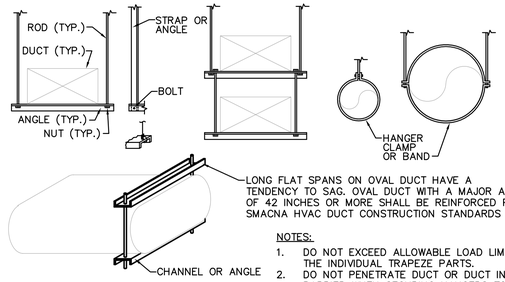
NO SCALE



NOTE: LOW POINTS IN ALL PIPING TO BE DRAINED

HVAC PIPING DRAIN 7

NO SCALE

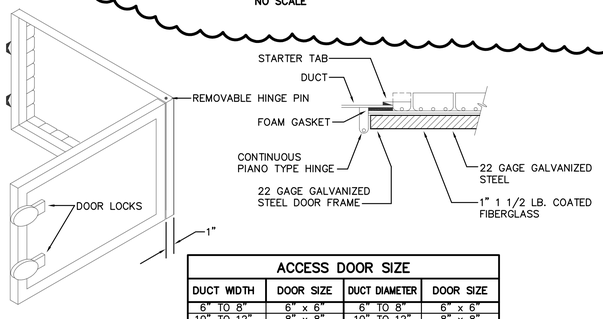


NOTES:

1. DO NOT EXCEED ALLOWABLE LOAD LIMITS OF ANY OR ALL OF THE INDIVIDUAL TRAPEZE PARTS.
2. DO NOT PENETRATE DUCT OR DUCT INSULATION VAPOR BARRIER WHEN SECURING HANGERS TO DUCTWORK. EVENTUALLY THE PENETRATIONS WILL LEAK.
3. USE HANGER CLAMPS OR BANDS FOR ROUND DUCT AS ROUND DUCT TENDS TO DEFORM ON TRAPEZE HANGERS.
4. TEARS, PUNCTURES, ETC. SHALL BE REPAIRED WITH TAPE OR MASTIC TO MAINTAIN THE INTEGRITY OF THE VAPOR BARRIER.
5. DO NOT USE ANY STRAP HANGERS WITH SCREWS ON ANY DUCTWORK THAT IS EXTERNALLY WRAPPED.

DUCTWORK HANGERS 6

NO SCALE



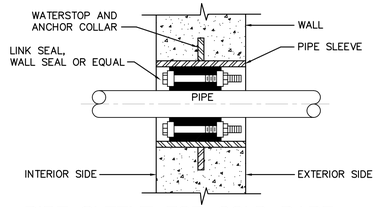
ACCESS DOOR SIZE			
DUCT WIDTH	DOOR SIZE	DUCT DIAMETER	DOOR SIZE
6" TO 8"	6" x 6"	6" TO 8"	6" x 6"
10" TO 12"	8" x 8"	10" TO 12"	8" x 8"
14" TO 16"	10" x 10"	14" TO 16"	10" x 10"
18" TO 22"	14" x 14"	18" TO 22"	14" x 14"
22" AND UP	18" x 18"	22" AND UP	18" x 18"

NOTE:
1. PROVIDE RUSKIN MODEL ADH22 (OR EQUAL) AT ALL FIRE, SMOKE AND FIRE/SMOKE DAMPER LOCATIONS, SEE SPECIFICATIONS. MINIMUM SIZE IS 6"x6".

2. WHERE DUCT ACCESS DOORS OCCUR ABOVE GYP BOARD CEILINGS, MECHANICAL CONTRACTOR SHALL PROVIDE A CEILING ACCESS DOOR OF ADEQUATE SIZE TO ACCESS THE DUCT ACCESS DOOR. SEE 230500 FOR CEILING ACCESS DOORS.

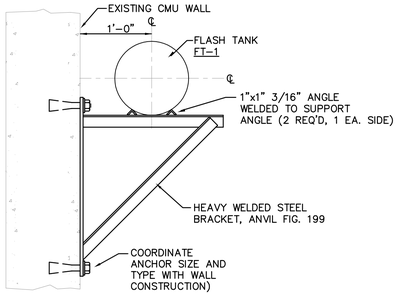
ACCESS DOOR DETAIL 14

NO SCALE



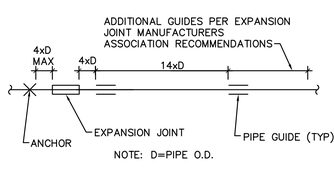
PIPE SLEEVE FOR COLD BARE PIPE BELOW GRADE DETAIL 12

NO SCALE



KNEE BRACE DETAIL 13

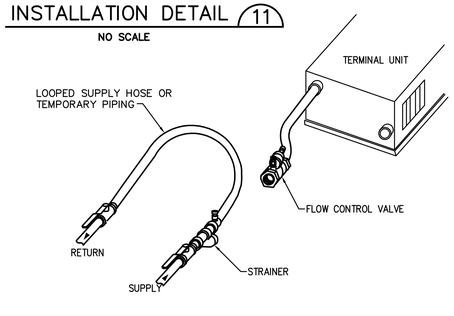
NO SCALE



NOTE: D=PIPE O.D.

PIPE GUIDE INSTALLATION DETAIL 11

NO SCALE



THIS DETAIL IS NOT TO BE USED AS THE PIPING CONNECTION DETAIL FOR THE TERMINAL UNITS. THE PURPOSE OF THIS DETAIL IS TO ILLUSTRATE THE PROCEDURE TO BE USED FOR BYPASSING THE TERMINAL UNITS DURING THE FLUSHING AND CLEANING OF THE HYDRONIC SYSTEM. THIS IS METHODOLOGY AS OUTLINED BY GRISWOLD CONTROLS. REFER TO OTHER DETAILS ON THIS SHEET FOR UNIT CONNECTION DETAIL.

FLUSHING PIPING CONNECTION 10

NO SCALE

CLEANING AND DRAINING THE SYSTEM

PRIOR TO FULL SYSTEM START-UP, ALL PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE DIRT AND DEBRIS. TO FLUSH OUT THE PIPING SYSTEM PROPERLY, THE HOSE KITS SHALL BE MODIFIED AS SHOWN ON THE DETAIL BY "LOOPING" THE SUPPLY HOSE AND RETURN PIPING TOGETHER, THUS BY-PASSING THE TERMINAL UNIT, AND FLOW CONTROL VALVE. THIS PROCEDURE SHALL BE USED TO PROTECT THE TERMINAL UNITS FROM CONTAMINATION.

PROCEDURE FOR "LOOPING" HOSES:

1. DISASSEMBLE THE RETURN SIDE HOSE KIT ASSEMBLY, BUT LEAVE THE BALL VALVE CONNECTED TO THE RETURN PIPE.
2. REMOVE THE INTERNAL SCREEN FROM THE Y-STRAINER WHILE FLUSHING THE SYSTEM.
3. LOOSEN THE SUPPLY SIDE HOSE FROM THE TERMINAL UNIT, AND "LOOP" IT DIRECTLY TO THE BALL VALVE ON THE RETURN SIDE PIPING (A COUPLING MAY BE REQUIRED DEPENDING ON THE BALL
4. AFTER ALL HOSES HAVE BEEN "LOOPED", START THE SYSTEM PUMP TO CLEAN THE PIPING SYSTEM OF PARTICLES LARGER THAN APPROXIMATELY 1/16" IN DIAMETER (I.E., WELD SPLATTER, MILL SCALE, AND OTHER CONTAMINANTS). REFER TO SECTION 15181 FOR CLEANING AND FLUSHING INSTRUCTIONS.

FINAL CONNECTIONS:

1. SHUT OFF BOTH BALL VALVES ON THE SUPPLY AND RETURN CONNECTIONS TO THE UNITS. IF A STRAINER AND DRAIN VALVE ARE INSTALLED, OPEN THE DRAIN VALVE TO REMOVE THE FLUSHING WATER FROM THE CONNECTING HOSE.
2. BREAK THE TEMPORARY "LOOP", AND REINSTALL THE FLOW CONTROL VALVE AND THE RETURN SIDE HOSE.
3. CONNECT BOTH HOSES TO THE TERMINAL UNIT AS SHOWN ON DETAILS ON THIS SHEET.
4. RE-INSTALL THE INTERNAL SCREEN IN THE Y-STRAINER.
5. OPEN BOTH SUPPLY AND RETURN BALL VALVES, AND FILL THE SYSTEM WITH FLUID.
6. BLEED ANY ENTRAINED AIR SO THAT THE FLOW CONTROL VALVE WILL REMAIN FULL OF FLUID DURING OPERATION.

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PROFESSIONAL MECHANICAL ENGINEER
RYAN D. KING
E-10693
STATE OF NEBRASKA
8-16-13

100% CONSTRUCTION DOCUMENTS

REVISIONS
1 9/3/2013 ADDENDUM NO. 1

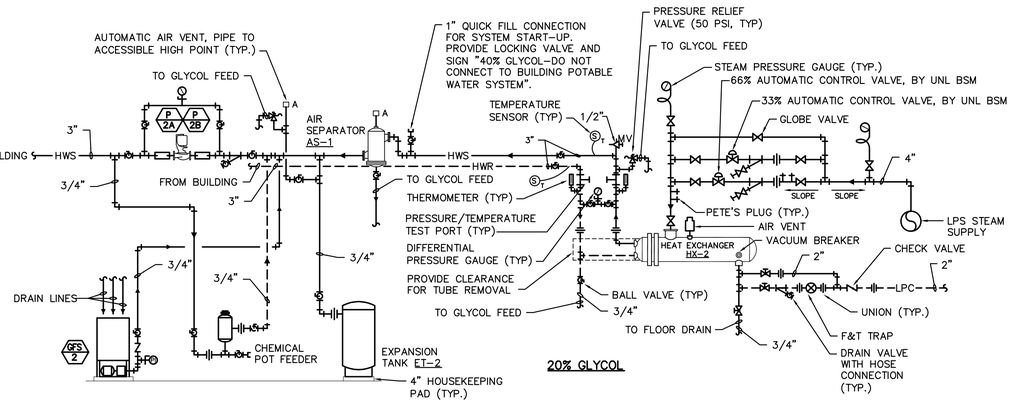
WICK Alumni Center
Part Two - HVAC Improvements
Lincoln, Nebraska
UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

SHEET TITLE
MECHANICAL DETAILS

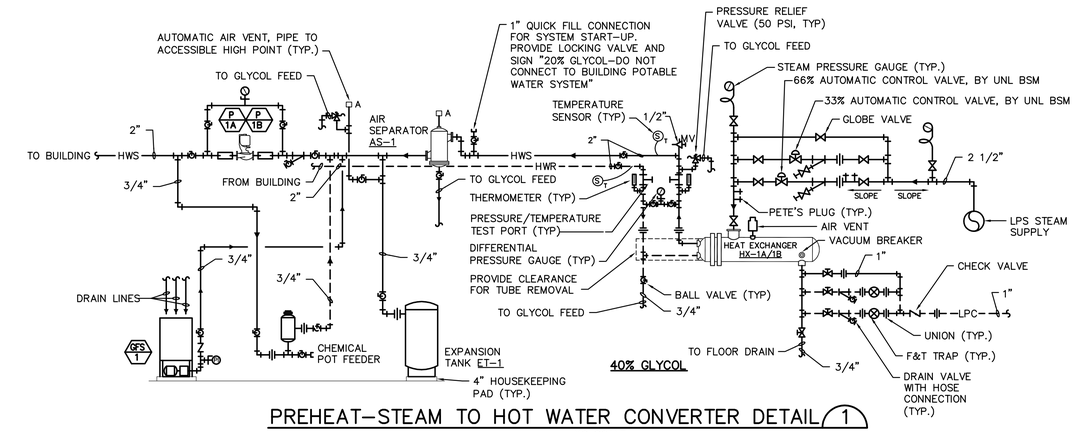
SHEET NO
M5-2

G:\2013\134003\CAD\Mechanical\134003_M5-1.dwg M5-2 9/03/13 1:37pm amm



REHEAT–STEAM TO HOT WATER CONVERTER DETAIL 2

NO SCALE



PREHEAT–STEAM TO HOT WATER CONVERTER DETAIL 1

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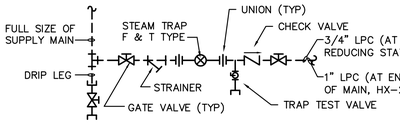
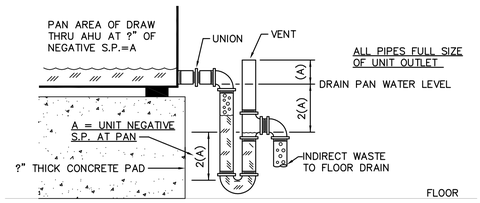


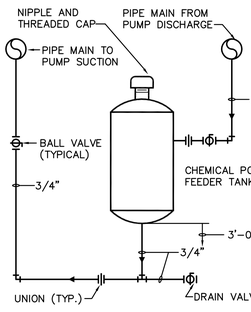
TYPICAL END OF MAIN DRIP DETAIL 6

NO SCALE



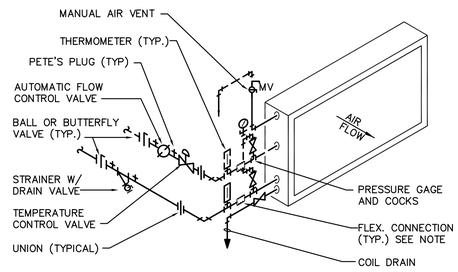
DRAW THRU AHU CONDENSATE DRAIN DETAIL 5

NO SCALE



CHEMICAL POT FEEDER DETAIL 10

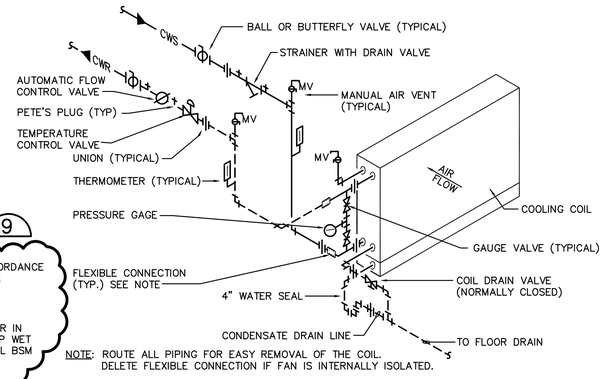
NO SCALE



NOTE: ROUTE ALL PIPING FOR EASY REMOVAL OF THE COIL. DELETE FLEXIBLE CONNECTION IF FAN IS INTERNALLY ISOLATED.

HOT WATER HEATING COIL DETAIL (2–WAY VALVE) 9

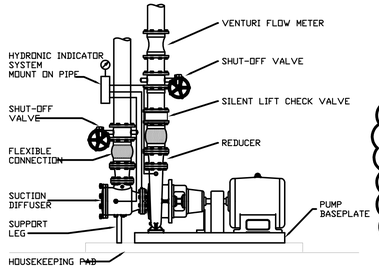
NO SCALE



NOTE: ROUTE ALL PIPING FOR EASY REMOVAL OF THE COIL. DELETE FLEXIBLE CONNECTION IF FAN IS INTERNALLY ISOLATED.

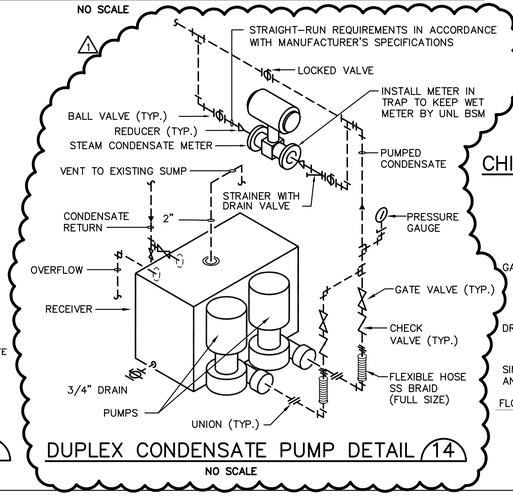
CHILLED WATER COIL W/2–WAY VALVE PIPING DETAIL 8

NO SCALE



BASE MOUNTED PUMP DETAIL 15

NO SCALE



DUPLEX CONDENSATE PUMP DETAIL 14

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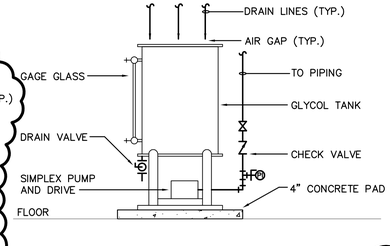

GLYCOL FEED PUMP DETAIL 13

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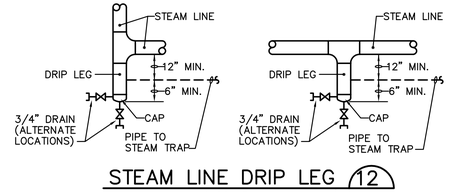
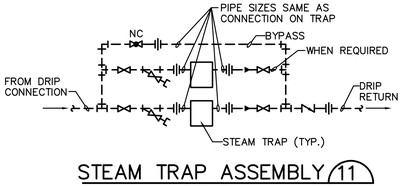


STEAM LINE DRIP LEG 12

NO SCALE

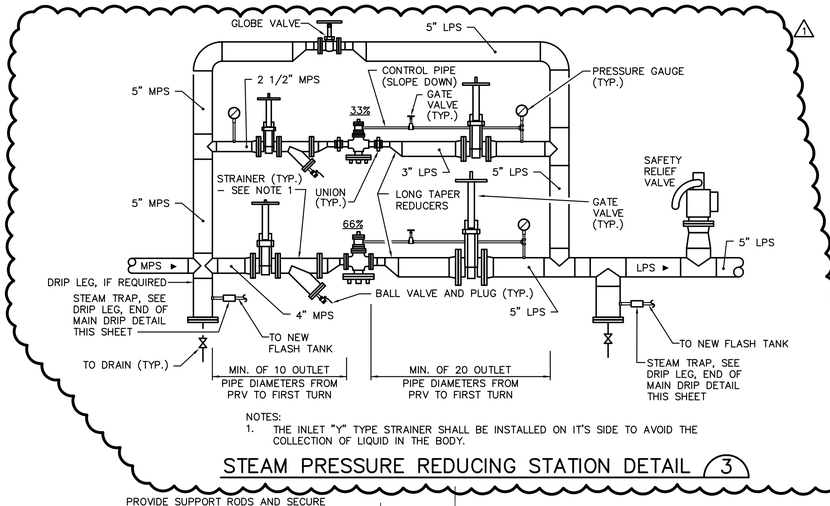


STEAM LINE DRIP LEG 12

NO SCALE

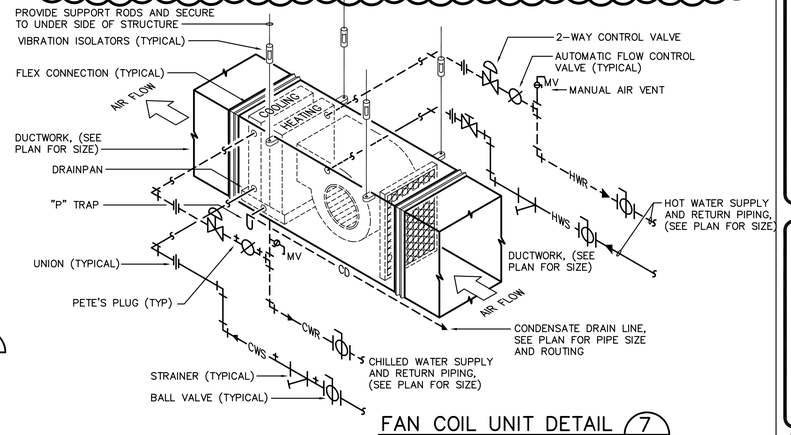
STEAM TRAP ASSEMBLY 11

NO SCALE



NOTES:
1. THE INLET "Y" TYPE STRAINER SHALL BE INSTALLED ON IT'S SIDE TO AVOID THE COLLECTION OF LIQUID IN THE BODY.

STEAM PRESSURE REDUCING STATION DETAIL 3



FAN COIL UNIT DETAIL 7

NO SCALE

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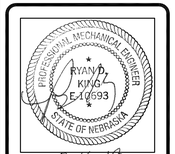

8-16-13

100% CONSTRUCTION DOCUMENTS

REVISIONS
1 9/3/2013 ADDENDUM NO. 1

WICK Alumni Center
Part Two - HVAC Improvements
Lincoln, Nebraska
UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

SHEET TITLE: MECHANICAL DETAILS

SHEET NO: **M5-3**

CABINET UNIT HEATER - HOT WATER HEAT

MARK	LOCATION	SERVES	TYPE	ARRANGMENT	SUPPLY CFM	E.S.P. (IN WG)	ELECTRICAL DATA			HOT WATER COIL DATA								BASIS OF DESIGN	REMARKS
							FLA	V	PH	CAP (MBH)	GPM	WPD (FT WG)	ROWS	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)		
CUH-1	ABOVE CORRIDOR RM 105.4	RM 105.4 - CORRIDOR	HORIZONTAL FAN COIL	CONCEALED ABOVE-CEILING	190	0.10	0.5	115	1	11.4	0.8	0.5	2	70	125	180	150.0	IEC CBY01	1,2,3,4,5

REMARKS:
1. PROVIDE EQUIPMENT WITH (1) 1" MERV 4 FILTERS, 1/4-INCH CLOSED-CELL INSULATED CASING, AND HANGERS WITH VIBRATION ISOLATION.
2. PROVIDE BOTTOM SUPPY AND BOTTOM RETURN.
3. PROVIDE INTERNAL FACTORY VALVE PACKAGE. ALL VALVES AND FILTER SHALL BE ACCESSIBLE FROM ROOM BELOW VIA HINGED PANEL ON BOTTOM OF UNIT.
4. HEATING COIL CAPACITY BASED ON A 20% PROPYLENE GLYCOL/80% WATER MIXTURE, PER UNL STANDARDS.
5. SEE MECHANICAL/ELECTRICAL COORDINATION SCHEDULE FOR ADDITIONAL ELECTRICAL DATA.

PUMPS

MARK	SERVES	LOCATION	PUMP TYPE	GPM	PUMP HEAD (FT WG)	MIN EFF (%)	MOTOR DATA					BASIS OF DESIGN	MECH NOTES
							HP (WATTS)	V	PH	HZ	RPM		
P-1A	PREHEATING HOT WATER (40% GLYCOL)	MECH RM 027	END SUCTION	38	40	62	3/4	208	3	60	1760	TACO FI1206	1,2,4
P-1B	PREHEATING HOT WATER (40% GLYCOL)	MECH RM 027	END SUCTION	38	40	62	3/4	208	3	60	1760	TACO FI1206	1,2,4
P-2A	REHEATING HOT WATER (20% GLYCOL)	MECH RM 027	END SUCTION	98	85	62	5	208	3	60	1760	TACO FI1509C	1,3,4
P-2B	REHEATING HOT WATER (20% GLYCOL)	MECH RM 027	END SUCTION	98	85	62	5	208	3	60	1760	TACO FI1509C	1,3,4
CP-1	DUPLEX STEAM CONDENSATE PUMP / RECEIVER	METER RM 028	PACKAGED DUPLEX	18	20 PSI	-	1/3 EACH	115	1	60	-	SKIDMORE XS2D451	4,5,6

MECHANICAL NOTES:
1. EQUIPPED WITH VARIABLE FREQUENCY DRIVES. SEE VFD SCHEDULE.
2. GPM AND HEAD DATA ARE BASED ON A 40% PROPYLENE GLYCOL / 60% WATER SOLUTION.
3. GPM AND HEAD DATA ARE BASED ON A 20% PROPYLENE GLYCOL / 80% WATER SOLUTION.
4. SEE MECHANICAL/ELECTRICAL COORDINATION SCHEDULE FOR ELECTRICAL DATA.
5. UNIT REPLACES EXISTING RECEIVER/PUMPS. RECONNECT TO EXISTING PIPING. UNIT SIZED FOR 1,572 LBS/HR FROM HX-1A AND HX-2, WITH 45-GALLON RECEIVER.
6. PROVIDE RECEIVER WITH MECHANICAL FLOAT / ALTERNATOR SWITCH FOR CONTROLS.

COIL - HOT WATER

MARK	SERVES	APPLICATION	CFM	COIL SIZE W x H (IN)	MIN ROWS	AIR SIDE					WATER SIDE				BASIS OF DESIGN	REMARKS
						MAX FACE VELOCITY (FPM)	MAX AIR PD (IN WG)	MIN TOTAL CAP (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	GPM	MAX WATER PD (FT WG)	EWT (°F)	LWT (°F)		
PHC-1A	AHU-1A	PREHEATING COIL FOR MIXED AIR	18800	76 x 33	1	540	0.05	349	43.0	60.0	25.0	2.3	190	160.0	DAIKIN MCQUAY 5WB0601A	1,2,5,7
PHC-3	AHU-3	PREHEATING COIL FOR MIXED AIR	7600	64 x 27	1	633	0.07	178	43.0	64.4	13.0	1.2	190	160.0	DAIKIN MCQUAY 5WH0601A	1,3,5,7
RHC-3	AHU-3	REHEATING COIL FOR SUPPLY AIR	7600	64 X 36	2	475	0.09	307	55.0	91.9	20.1	1.1	190	158.3	DAIKIN MCQUAY 5WB0802A	1,4,6,8

REMARKS:
1. SCHEDULED MAXIMUM FACE VELOCITY AND AIR PRESSURE DROP ARE BASED ON AIR HANDLING UNIT IN PEAK CFM (COOLING MODE)
2. ENTERING MIXED AIR TEMPERATURE OF PREHEAT COIL PHC-1A BASED ON MAXIMUM VAV BOX AIRFLOW SETTINGS (18,800 CFM): 30% O.A. (5,640 CFM @ -20 F, AND 13,160 CFM RETURN AIR @ 70 F.
3. ENTERING MIXED AIR TEMPERATURE OF PREHEAT COIL PHC-3 BASED ON CONSTANT AHU-3 SUPPLY AIRFLOW OF 7,600 CFM: 30% O.A. (2,280 CFM) @ -20 F, AND 5,320 CFM RETURN AIR @ 70 F.
4. ENTERING AIR TEMPERATURE OF REHEAT COIL RHC-3 BASED ON LAT OF 55 DEG F FROM THE COOLING COIL/PREHEAT COIL.
5. PREHEATING COIL CAPACITY (PREHEAT) BASED ON A 40% PROPYLENE GLYCOL/60% WATER MIXTURE, PER UNL STANDARDS.
6. REHEATING COIL CAPACITY (REHEAT) BASED ON A 20% PROPYLENE GLYCOL/80% WATER MIXTURE, PER UNL STANDARDS.
7. COIL CRITERIA: 72 FINS PER FOOT MAXIMUM AND A FOULING FACTOR OF 0.0005.
8. COIL CRITERIA: 96 FINS PER FOOT MAXIMUM AND A FOULING FACTOR OF 0.0005.

COIL - CHILLED WATER

MARK	SERVES	APPLICATION	CFM	COIL SIZE W x H (IN)	MIN ROWS	AIR SIDE						WATER SIDE				COND DRAIN SIZE (IN)	BASIS OF DESIGN	REMARKS
						MAX FACE VELOCITY (FPM)	MAX AIR PD (IN WG)	MIN SENS CAP (MBH)	MIN TOTAL CAP (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	GPM	MAX WATER PD (FT WG)	EWT (°F)	LWT (°F)			
CC-1A	AHU-1A	COOLING COIL	18800	79 X 33	8	519	0.54	504	683	81.0/68.0	52.5/52.1	112.6	12.4	44	56.1	2"	DAIKIN MCQUAY 5WL1106A	1,2,4
CC-3	AHU-3	COOLING COIL	7600	67 x 36	8	454	0.38	203	278	81.0/68.0	53.8/53.2	46.4	6.8	44	56.0	1-1/4"	DAIKIN MCQUAY 5WL0808A	1,3,5

REMARKS:
1. SCHEDULED MAXIMUM FACE VELOCITY AND AIR PRESSURE DROP ARE BASED ON AIR HANDLING UNIT IN PEAK CFM (COOLING MODE)
2. ENTERING MIXED AIR TEMPERATURE OF COOLING COIL CC-1A BASED ON PEAK DESIGN CFM, WITH DESIGN MINIMUM 1,508 CFM O.A. @ 95 F DB/78 F WB, AND RETURN AIR @ 75 F DB/50% R.H.
3. ENTERING MIXED AIR TEMPERATURE OF COOLING COIL CC-3 BASED ON PEAK DESIGN CFM, WITH DESIGN MINIMUM 1,326 CFM O.A. @ 95 F DB/78 F WB, AND RETURN AIR @ 75 F DB/50% R.H.
4. COIL CRITERIA: 132 FINS PER FOOT MAXIMUM AND A FOULING FACTOR OF 0.0005.
5. COIL CRITERIA: 96 FINS PER FOOT MAXIMUM AND A FOULING FACTOR OF 0.0005.

ROOF HOODS

MARK	SERVES	CFM	MAX STATIC PRESS. DROP (IN WG)	DUCT CONNECTION (W x H) (IN)	HOOD OVERALL SIZE (L x W x H) (IN)	THROAT SIZE (L x W) (IN)	THROAT FREE AREA (SQ. FT)	FREE AREA FACE VELOCITY (FPM)	MINIMUM CURB HT. (IN)	BASIS OF DESIGN	MECH NOTES
RH-1	AHU-1A RELIEF AIR	5665	0.107	26 x 26	48 x 40 x 19	30 x 30	6.25	906	16	GREENHECK FGR	1,2,3,4

MECHANICAL NOTES:
1. PROVIDE 16 INCH HIGH INSULATED ROOF CURB AND INSECT SCREEN.
2. TRANSITION FROM DUCT CONNECTION TO THROAT SIZE BELOW ROOF STRUCTURE, PER THE PLANS.
3. PROVIDE WITH MOTORIZED CONTROL DAMPER, IN DUCT BELOW ROOF STRUCTURE. SEE SECTION 23 09 93 FOR DAMPER REQUIREMENTS AND SEQUENCE OF OPERATION WITH RELATED EQUIPMENT.
4. AIRFLOW LISTED IS FOR ECONOMIZER MODE OF AHU-1A, WHICH OCCURS IN COOLING MODE WITH VAV BOXES AT MINIMUM SETTINGS (5,665 CFM), AT 55 DEG F OUTDOOR TEMPERATURE.

STEAM PRESSURE REDUCING STATION SCHEDULE

MARK	SERVES	PRESSURE RANGE		CAPACITY (LBS/HR)	RELIEF SIZE	REMARKS
		FIRST STAGE	SECOND STAGE			
PRV-1	STEAM TO HOT WATER HEAT EXCHANGERS	35	15	1,723	SEE NOTE 2	1, 2
PRV-2	STEAM TO HOT WATER HEAT EXCHANGERS	35	15	849	SEE NOTE 2	1, 2

REMARKS:
1. REFER TO SPECIFICATION SECTION "STEAM AND CONDENSATE PIPING SPECIALITIES" FOR ADDITIONAL REQUIREMENTS.
2. SAFETY RELIEF VALVE SET AT 20 PSIG AND SIZED FOR 3,000 LB/HR. ROUTE TO EXTERIOR OF BUILDING. TERMINATE AT 10'-0" ABOVE GRADE WITH GOOSENECK AND BIRDSCREEN.

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FLASH TANK SCHEDULE

MARK	LOCATION	SERVICE	TYPE	DISCHARGE STEAM PRESS., PSI	TANK DIA., IN.	TANK LENGTH, IN.	INLET, IN.	OUTLET, IN.	DRAIN, IN.	OPERATING WEIGHT, LBS	MANUFACTURER	MODEL	MECH NOTES
FT-1	MECH. ROOM 028	LPR	HORIZONTAL	15	10.75	39	1 1/2	1 1/2	1		JOHN WOOD	JFSR-26-501	1, 2

MECHANICAL NOTES:
1. ASME RATED VESSEL
2. PROVIDE STEEL SUPPORT; SECURE TANK TO SUPPORT

1

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RYAN D. KING
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STATE OF NEBRASKA
8-16-13

100% CONSTRUCTION DOCUMENTS

REVISIONS
1 9/3/2013 ADDENDUM NO. 1

WICK Alumni Center
Part Two - HVAC Improvements
Lincoln, Nebraska
UNL Project No: C120P021

DESIGNED BY: RDK
DRAWN BY: LMB
CHECKED BY: JMM
DATE: 08/16/13
FEI PROJECT NO: 134003

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO
M6-3