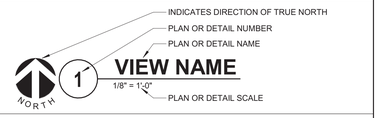
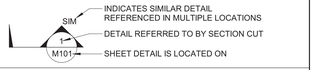
VIEW KEY

NAME — LEVEL NAME
10' - 0" — HEIGHT ABOVE PROJECT 0' - 0"

1 — INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL





LINE TYPE AND TAG KEY:

- NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)
- NEW WORK UNDERFLOOR OR UNDERGROUND BY THIS CONTRACTOR (DARK LONG DASHED LINE)
- NEW WORK BY OTHERS AND/OR EXISTING TO REMAIN (LIGHT SOLID LINE)
- EXISTING TO BE REMOVED BY THIS CONTRACTOR (DARK SHORT DASHED LINE)
- 'TAG'-E — TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
A.C.	ASBESTOS ABATEMENT CONTRACTOR
C.C.	CIVIL CONTRACTOR
C.O.R.	CONTRACTING OFFICER'S REPRESENTATIVE
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	ERIC HENDERSON, PE
MECHANICAL	DELLAN LLEWELLYN, EIT
ELECTRICAL	KRISTEN SPINA, PE
STRUCTURAL	ALEX CARNAHAN, SE, PE

MECHANICAL ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
EA	EXHAUST/RELIEF AIR
FD	FIRE DAMPER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
RA	RETURN AIR
SA	SUPPLY AIR
SCCR	SHORT CIRCUIT CURRENT RATING
SD	SMOKE DAMPER
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE

MECHANICAL SYMBOL LIST

SYMBOL:	DESCRIPTION:
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
H	HUMIDIFIER
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
T	THERMOSTAT/SENSOR
T	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
PC	PUMPED CONDENSATE
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	NEW CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	BALANCING VALVE (NUMBER INDICATES GPM)
	CONTROL VALVE (TWO-WAY)
	CHECK VALVE
	BACKFLOW PREVENTER
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	PRESSURE REDUCING VALVE (STEAM)
	TRIPLE DUTY VALVE (ANGLE TYPE)
	TRIPLE DUTY VALVE (IN-LINE TYPE)
	PUMP
	VACUUM BREAKER
	"WYE" - STRAINER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	SUCTION DIFFUSER WITH SUPPORT FOOT
	AUTOMATIC AIR VENT
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
P	PRESSURE SENSOR (FURNISHED WITH BALL VALVE)
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
FM	FLOW METER
F	FLOW SWITCH
T	TEMPERATURE SENSOR WITH WELL
T	THERMOMETER WITH WELL (DIAL TYPE)
T	THERMOMETER WITH WELL (FILLED TYPE)
T T.*	STEAM TRAP (REFER TO SCHEDULE)
T.*	F&T STEAM TRAP (REFER TO SCHEDULE)
T.*	INVERTED BUCKET STEAM TRAP (REFER TO SCHEDULE)
	ALIGNMENT GUIDE
	PIPE ANCHOR
M	METER

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, MECHANICAL, FIRE PROTECTION, AND PLUMBING.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCE REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.
4. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.
6. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.
7. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER MECHANICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
8. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.
9. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.
10. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.
11. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT APPROVED SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.
12. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
13. MAINTAIN MINIMUM 3'-6" CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS, MOTOR STARTERS, SWITCHES, AND DISCONNECTS.
14. PROVIDE CONCRETE EQUIPMENT PAD FOR ALL FLOOR MOUNTED EQUIPMENT. PAD SHALL EXTEND MINIMUM 6" BEYOND ALL SIDES OF EQUIPMENT.
15. DO NOT SUPPORT EQUIPMENT, PIPING, OR DUCTWORK FROM METAL DECKING OR OTHER NON-STRUCTURAL BUILDING ELEMENTS. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, MECHANICAL, FIRE PROTECTION, AND PLUMBING.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.
2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.
3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF HIS/HER WORK AND SHALL NOTIFY THE CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO HIS/HER AREA OF WORK.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CUTTING, REMOVAL AND PATCHING OF ROOFS, WALLS, AND FLOORS ASSOCIATED WITH WORK BY ALL CONTRACTORS. CONTRACTORS SHALL NOTIFY THE GC OF AFFECTED AREAS PRIOR TO BIDDING.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS. NOTIFY THE GENERAL CONTRACTOR OF AFFECTED AREAS PRIOR TO BIDDING.
7. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.
8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.
9. OBTAIN PERMISSION FROM THE CONTRACTING OFFICER'S REPRESENTATIVE BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.
10. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

VENTILATION GENERAL NOTES:

1. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
2. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.

PIPING GENERAL NOTES:

1. THE SIZE OF BRANCH PIPING TO TERMINAL HEATING DEVICES AND COILS SHALL BE 1" UNLESS NOTED OTHERWISE.
2. PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.
3. INSTALL ALL REFRIGERANT LIQUID AND SUCTION PIPING SIZED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS.

MECHANICAL SHEET INDEX

IMEG
2892 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 190042469.01

REFERENCE SCALE IN INCHES
0 1 2 3

Revisions:	Date:

CONSULTANT

IMEG

ARCHITECT/ENGINEER OF RECORD

ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL COVERSHEET	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: NWIHCS - CONSTRUCT AIR HANDLING TOWER	Project Number: 636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 / Checked: DAVING / Drawn: DELLLE	Drawing Number: M000

BID SET

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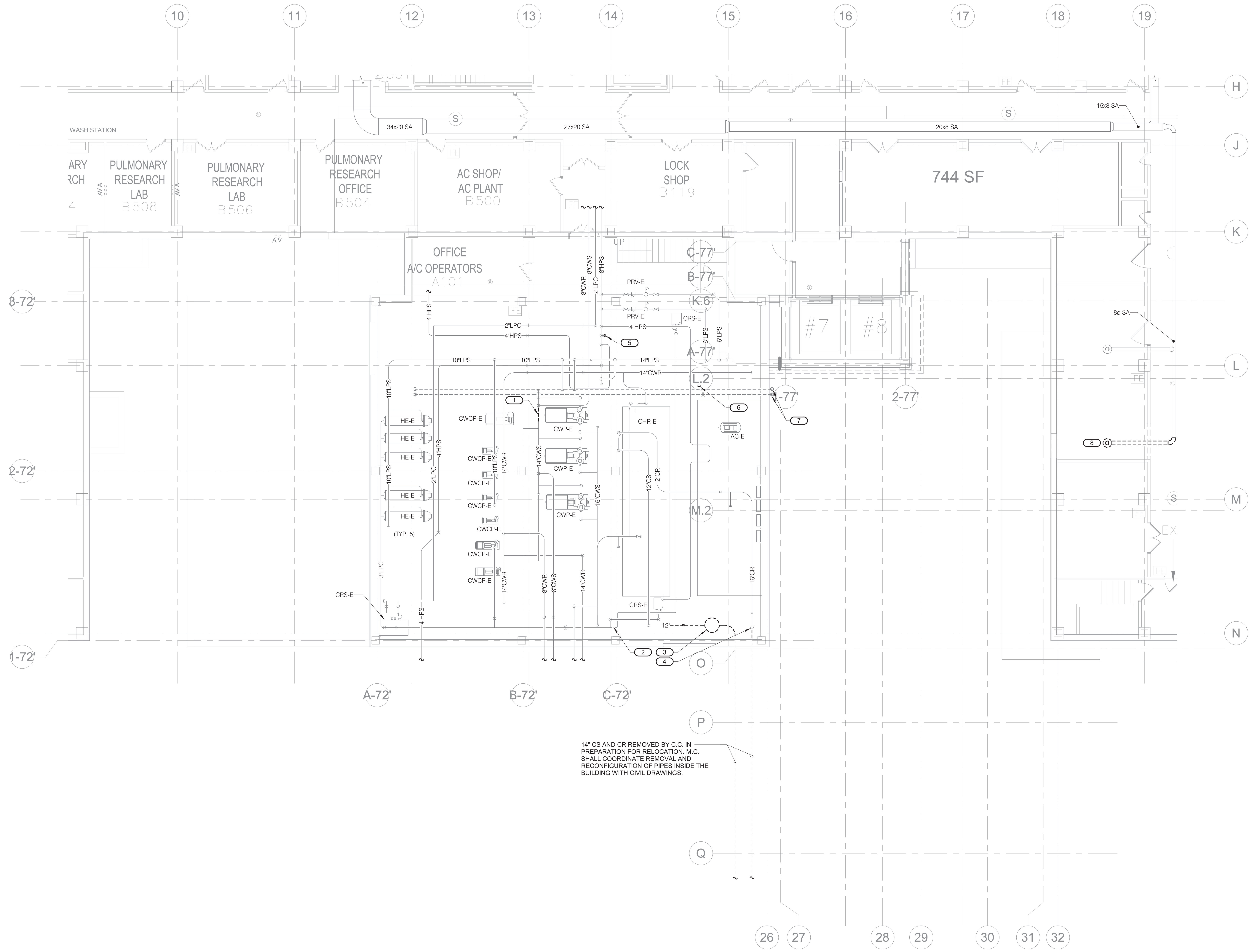

1 BASEMENT DEMOLITION - MECHANICAL

1/8" = 1'-0"

NORTH

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 FOR MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. COORDINATE ANY SYSTEM SHUTDOWNS WITH C.O.R. SCHEDULE WORK TO MINIMIZE SYSTEM DOWNTIME AS MUCH AS POSSIBLE.

KEYNOTES: (#)

1. REMOVE PORTION OF PIPING IN PREPARATION FOR INSTALLATION OF NEW TEE FOR NEW CONNECTION TO TOWER CHILLED WATER CONNECTION. REFER TO M100 FOR NEW WORK SCOPE.
2. REMOVE PORTION OF PIPING IN PREPARATION FOR INSTALLATION OF NEW TEE FOR NEW CONNECTION TO TOWER LOW PRESSURE CONDENSATE CONNECTION. REFER TO M100 FOR NEW WORK SCOPE.
3. REMOVE EXISTING BASKET STRAINER AND SALVAGE FOR REINSTALLATION APPROXIMATELY 4' WEST OF CURRENT LOCATION FOR RELOCATED SITE UTILITY PIPING. EXISTING BASKET STRAINER SUPPORT STAND AND BLOW DOWN METER SHALL BE SALVAGED FOR REINSTALLATION.
4. COORDINATE DISCONNECTION OF EXISTING CONDENSER WATER FILL AND MAKE-UP WATER CONNECTIONS WITH P.C.
5. REMOVE CAP FROM EXISTING HIGH PRESSURE STEAM TAP AND PREPARE FOR NEW CONNECTION. REFER TO M100 FOR NEW WORK SCOPE.
6. REMOVE CAP FROM EXISTING CHILLED WATER RETURN TAP AND PREPARE FOR NEW CONNECTION. REFER TO M100 FOR NEW WORK SCOPE.
7. REMOVE 1" HEATING WATER SUPPLY AND RETURN PIPING SERVING EXISTING TEMPORARY CONFERENCE CENTER BUILDING.
8. REMOVE EXISTING DIFFUSER AND DUCTWORK AS SHOWN AND SALVAGE FOR RELOCATION IN NEW WORK SCOPE. PRIOR TO REMOVAL, MEASURE AIRFLOW FOR USE WHEN BALANCING FOLLOWING REINSTALLATION.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 19004249.01

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ARCHITECT/ENGINEER OF RECORD
ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

STAMP: LICENSED PROFESSIONAL ENGINEER, ERIC J. ... 20825, IOWA, 05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
BASEMENT DEMOLITION - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLLE	Drawing Number: MD100

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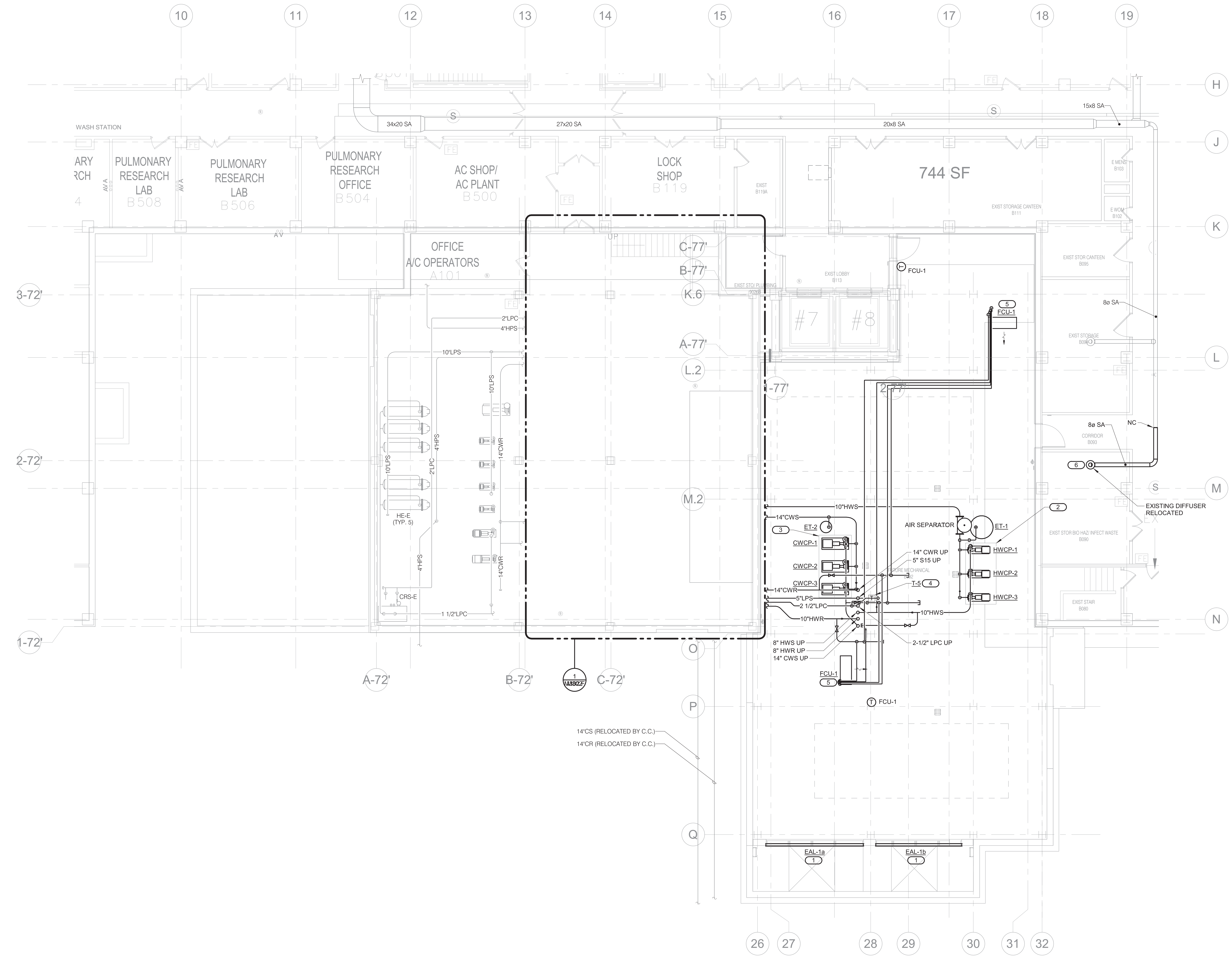
GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1” UNLESS NOTED OTHERWISE.
3. COORDINATE ANY SYSTEM SHUTDOWNS WITH C.O.R. SCHEDULE WORK TO MINIMIZE SYSTEM DOWNTIME AS MUCH AS POSSIBLE.
4. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
5. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
6. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. PROVIDE OVERSIZED COMMON HOUSEKEEPING PAD FOR HEATING WATER CIRCULATION PUMPS IN ORDER TO ACCOMMODATE FUTURE INCREASE IN PUMP SIZE. FUTURE PUMPS ARE APPROXIMATELY 22"x52". REFER TO 6/M301 FOR SEISMIC HOUSEKEEPING PAD DETAIL.
3. PROVIDE OVERSIZED COMMON HOUSEKEEPING PAD FOR CHILLED WATER CIRCULATION PUMPS IN ORDER TO ACCOMMODATE FUTURE INCREASE IN PUMP SIZE. FUTURE PUMPS ARE APPROXIMATELY 28"x59". REFER TO 6/M301 FOR SEISMIC HOUSEKEEPING PAD DETAIL.
4. REFER TO 10/M301 FOR STEAM MAIN DRIP CONNECTION DETAIL.
5. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.
6. RELOCATE EXISTING DIFFUSER TO MAINTAIN SUPPLY AIR DELIVERY TO ROOM B090. EXTEND DUCTWORK AS NECESSARY FOR RELOCATION; MATCH NEW DUCTWORK TO CONSTRUCTION OF EXISTING DUCTWORK. REBALANCE TO EXISTING AIRFLOW.



1 BASEMENT PLAN - MECHANICAL

1/8" = 1'-0"

NORTH

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 19004249.01

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ARCHITECT/ENGINEER OF RECORD

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13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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ERIC J. REYNOLDSON
20825
IOWA
05/28/21

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VA U.S. Department of Veterans Affairs

Drawing Title	BASEMENT PLAN - MECHANICAL
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	NWIHCS - CONSTRUCT AIR HANDLING TOWER
Location	OMAHA, NE
Issue Date	05/28/21
Checked	DAVING
Drawn	DELLLE
Project Number	636-18-303
Building Number	1
Drawing Number	M100

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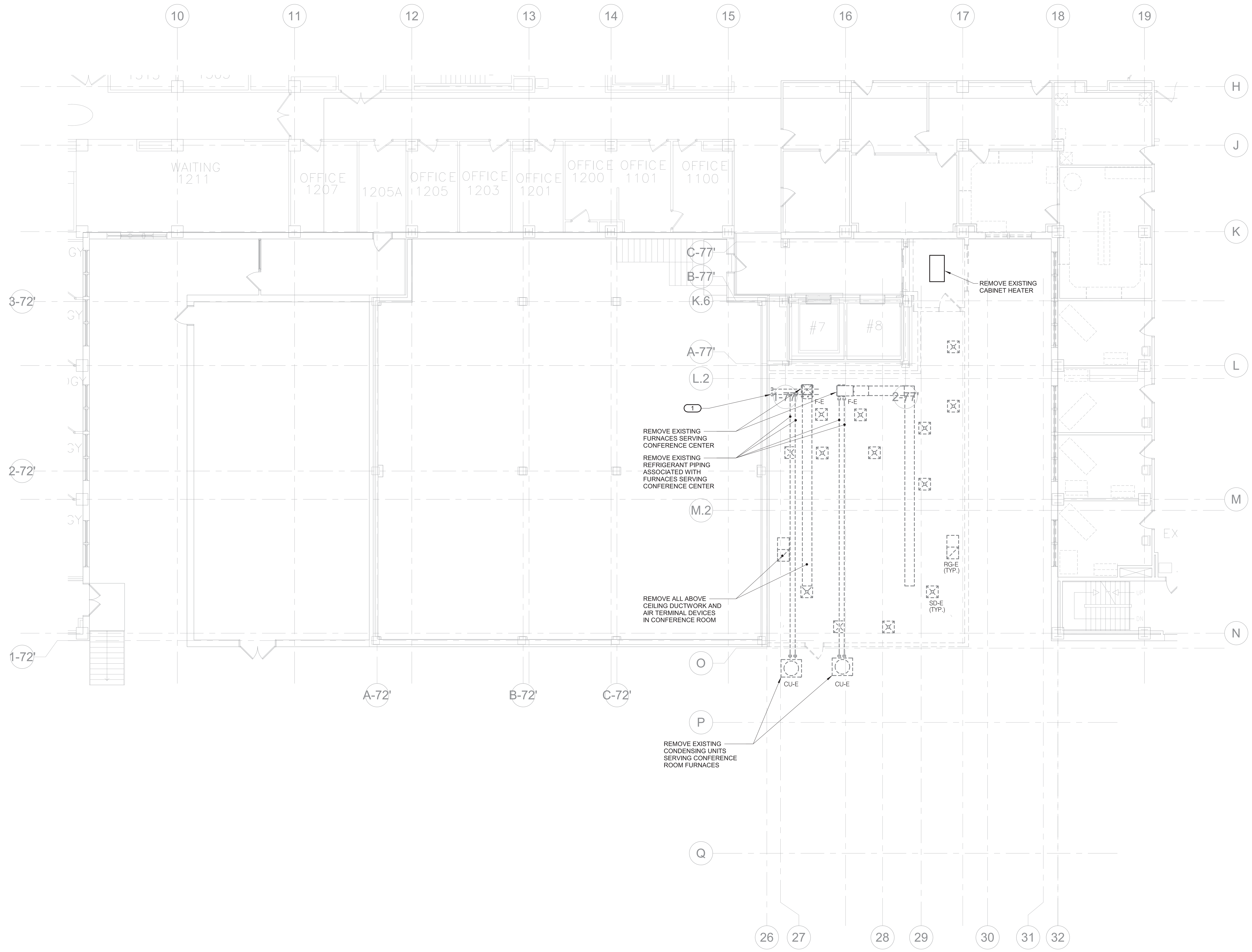
GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 FOR MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. COORDINATE ANY SYSTEM SHUTDOWNS WITH C.O.R. SCHEDULE WORK TO MINIMIZE SYSTEM DOWNTIME AS MUCH AS POSSIBLE.

KEYNOTES: (#)

1. REMOVE 1" HEATING WATER SUPPLY AND RETURN PIPING SERVING EXISTING TEMPORARY CONFERENCE CENTER BUILDING.



1 FIRST LEVEL FLOOR DEMOLITION - MECHANICAL

1/8" = 1'-0"

NORTH

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 19004249.01

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CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	FIRST LEVEL DEMOLITION - MECHANICAL
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	NWIHCS - CONSTRUCT AIR HANDLING TOWER
Location	OMAHA, NE
Issue Date	05/28/21
Checked	DAVING
Drawn	DELLLE
Project Number	636-18-303
Building Number	1
Drawing Number	MD101

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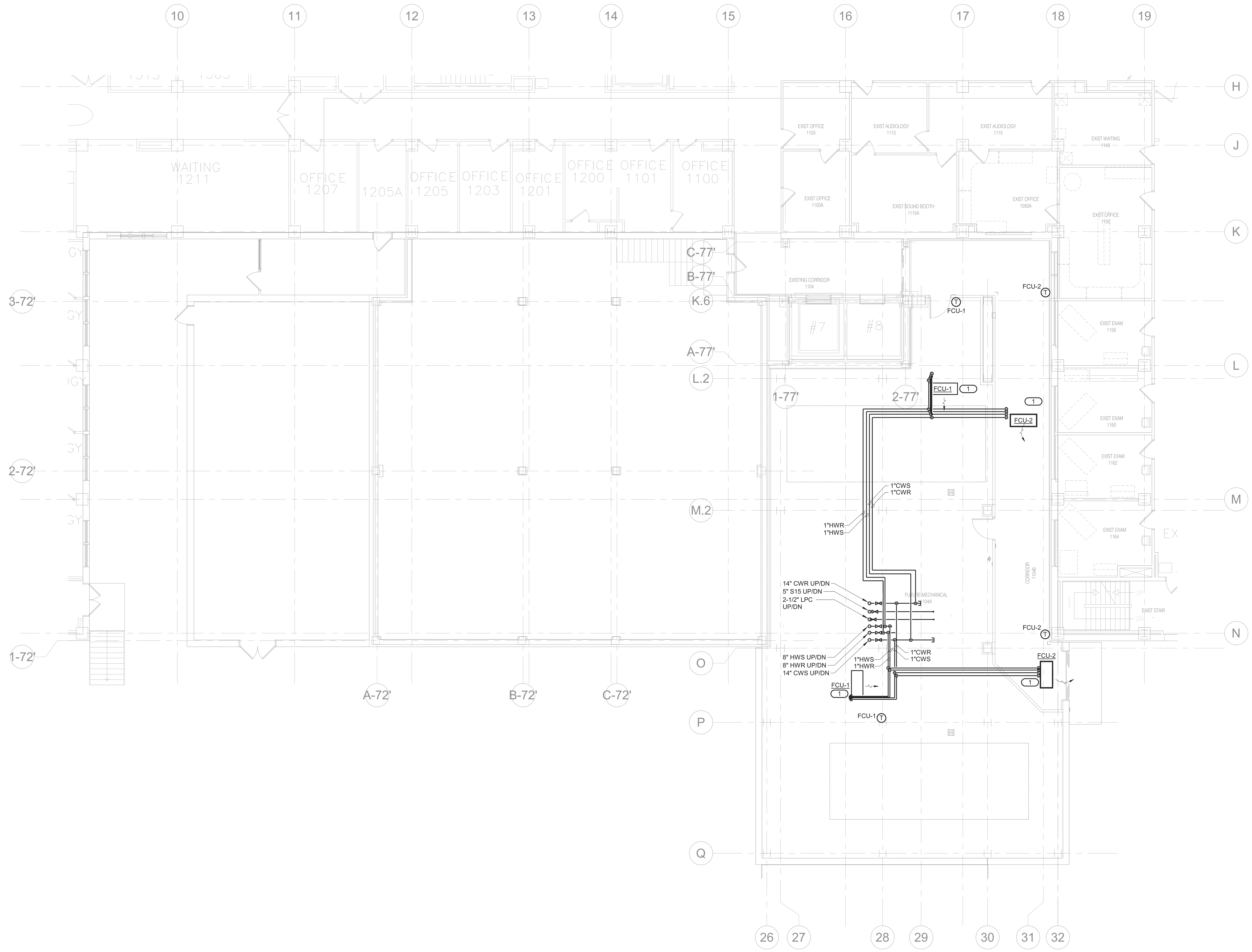

1 FIRST LEVEL FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
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VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
FIRST LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLLE	Drawing Number: M101

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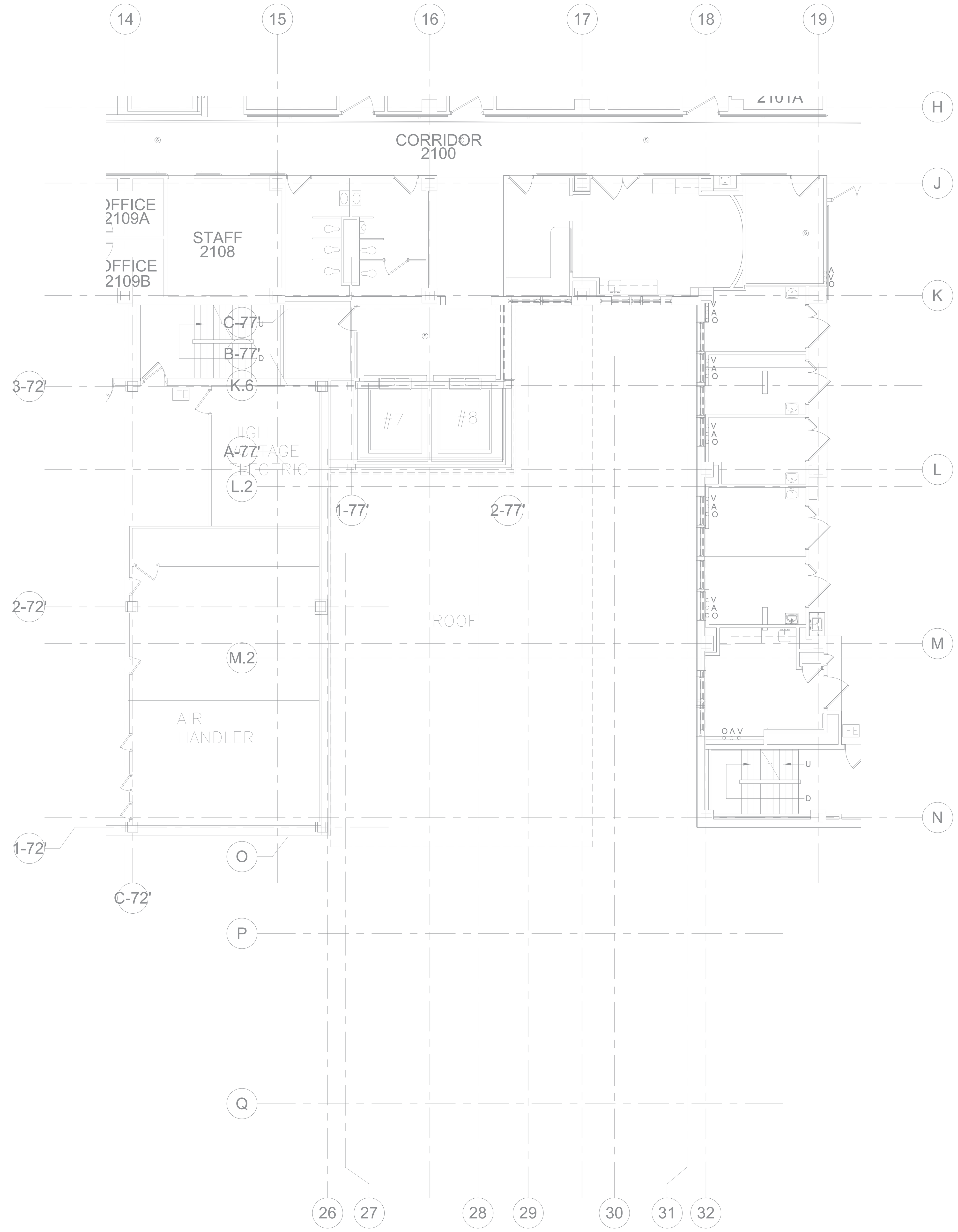
GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

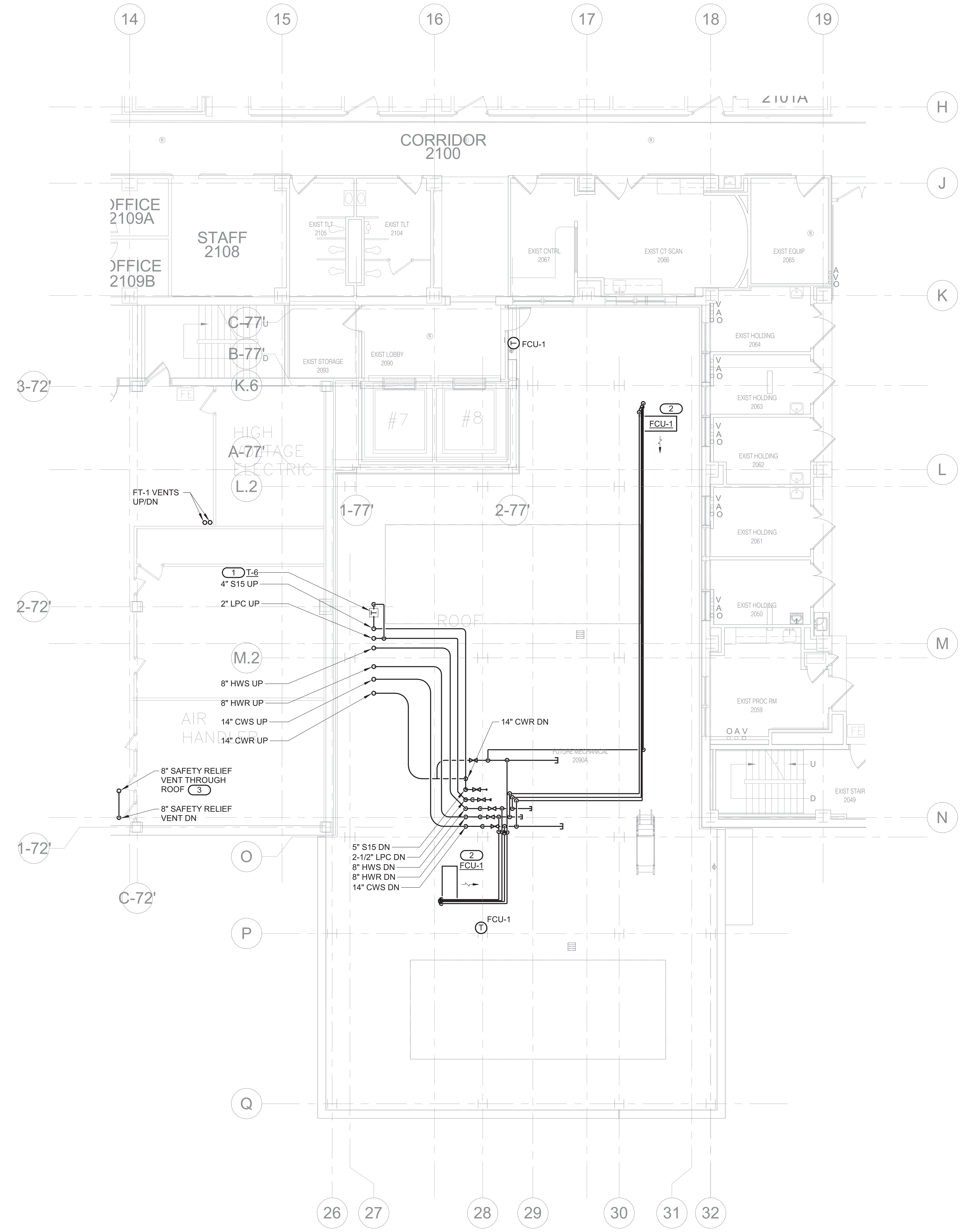
KEYNOTES: (#)

1. REFER TO 10/M301 FOR STEAM MAIN DRIP CONNECTION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.
3. REFER TO 9/M301 FOR SAFETY VALVE DISCHARGE PIPING DETAIL.



1 SECONDLEVEL FLOOR DEMOLITION - MECHANICAL

1/8" = 1'-0"



2 SECOND LEVEL FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

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DES MOINES, IA 50322
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PROJECT # 19004249.01

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Revisions: | Date:

CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

STAMP: LICENSED PROFESSIONAL ENGINEER, ERIC J. [illegible], 20825, IOWA, 05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
SECOND LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLE	Drawing Number: M102

VA FORM 08 - 6231

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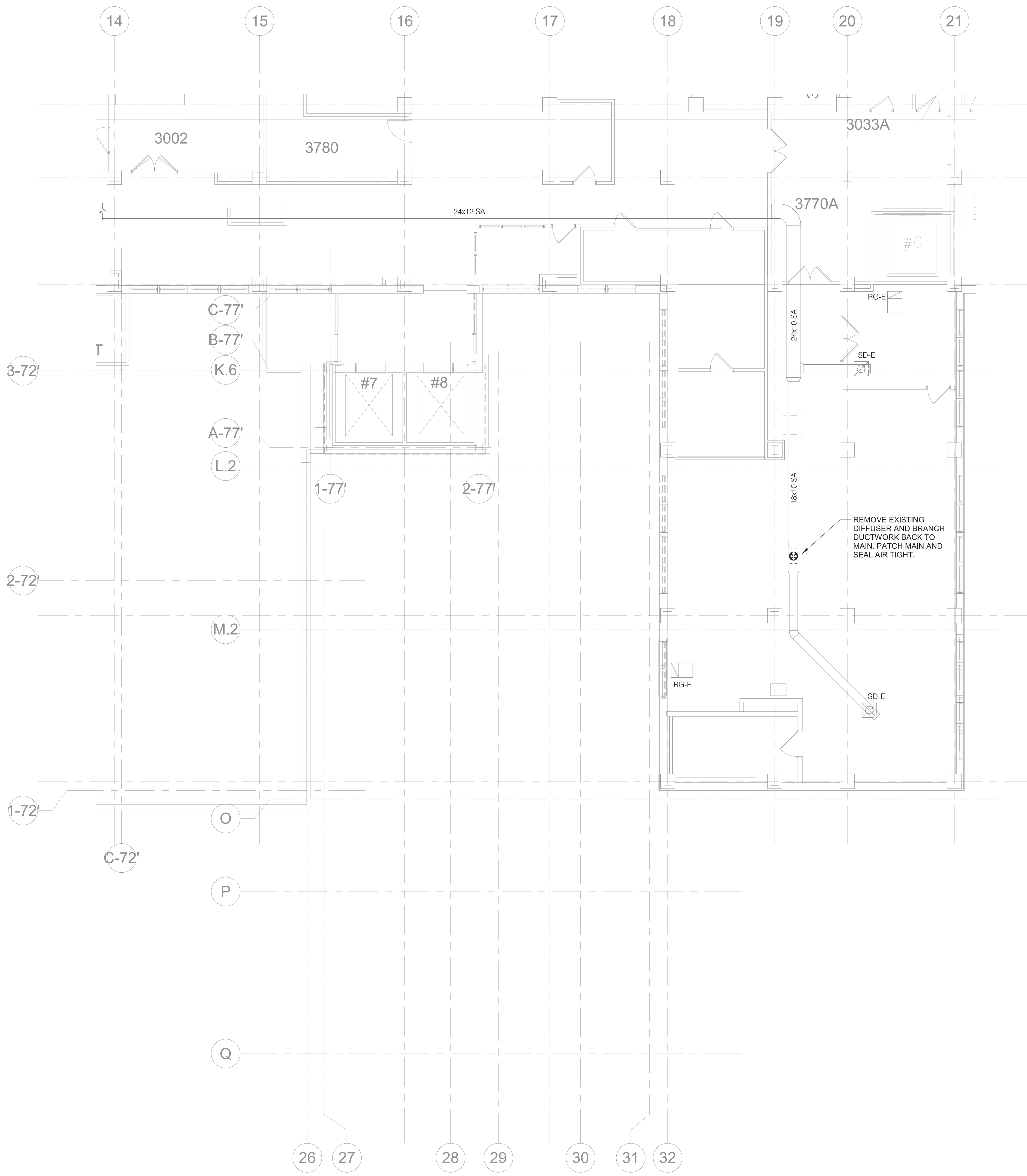
KEYNOTES: #

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

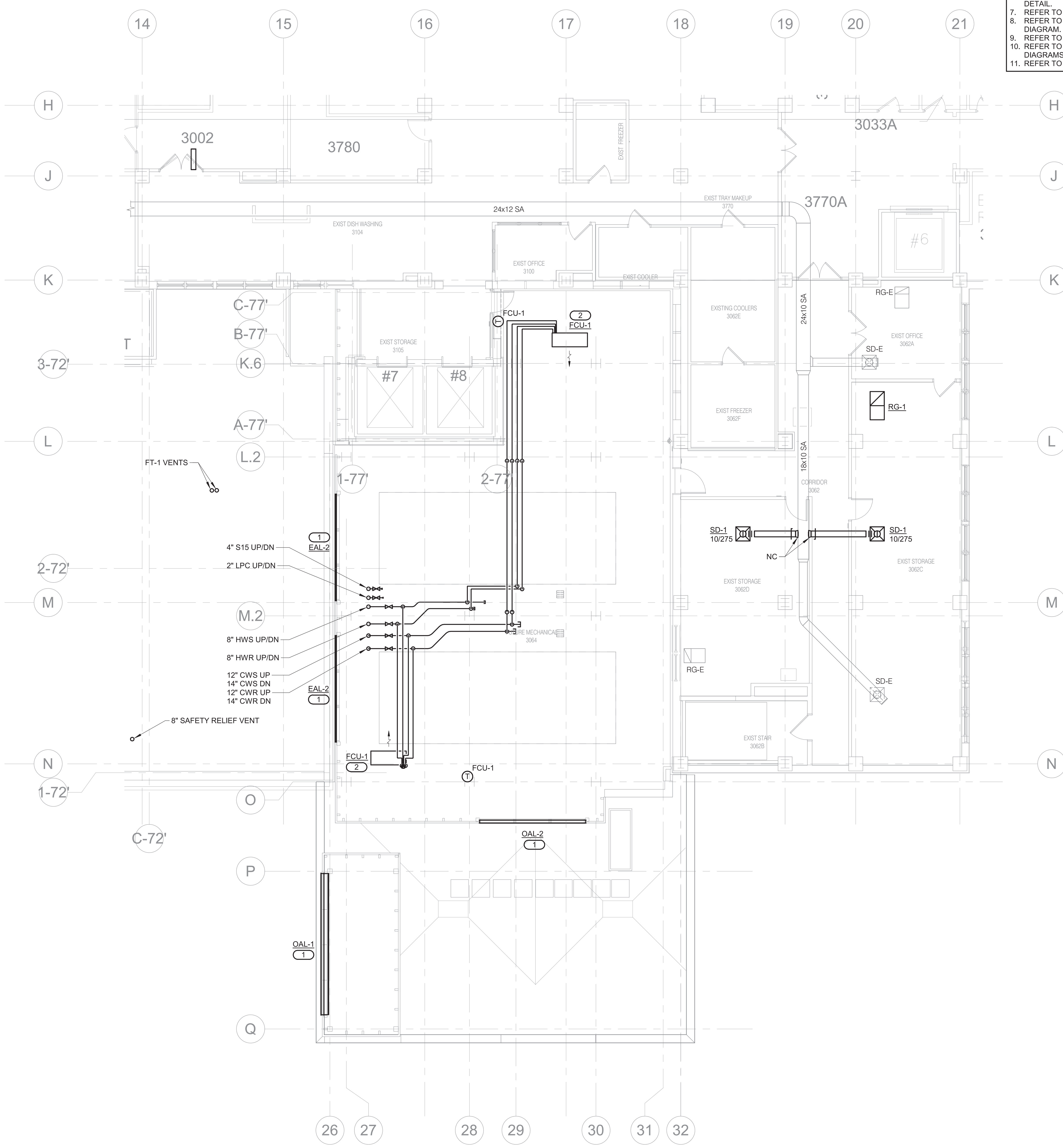
GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.



1 THIRD LEVEL FLOOR DEMOLITION - MECHANICAL

1/8" = 1'-0"



2 THIRD LEVEL FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

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2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
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ARCHITECT/ENGINEER OF RECORD

ANDERSON

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P 763.412.4000 | F 763.412.4090 | ae-mn.com
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LICENSED PROFESSIONAL ENGINEER ERIC J. ... 20825 IOWA
05/28/21

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
THIRD LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
			Building Number: 1
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Drawing Number: M103
		Issue Date: 05/28/21; Checked: DAVING; Drawn: DELLLE	

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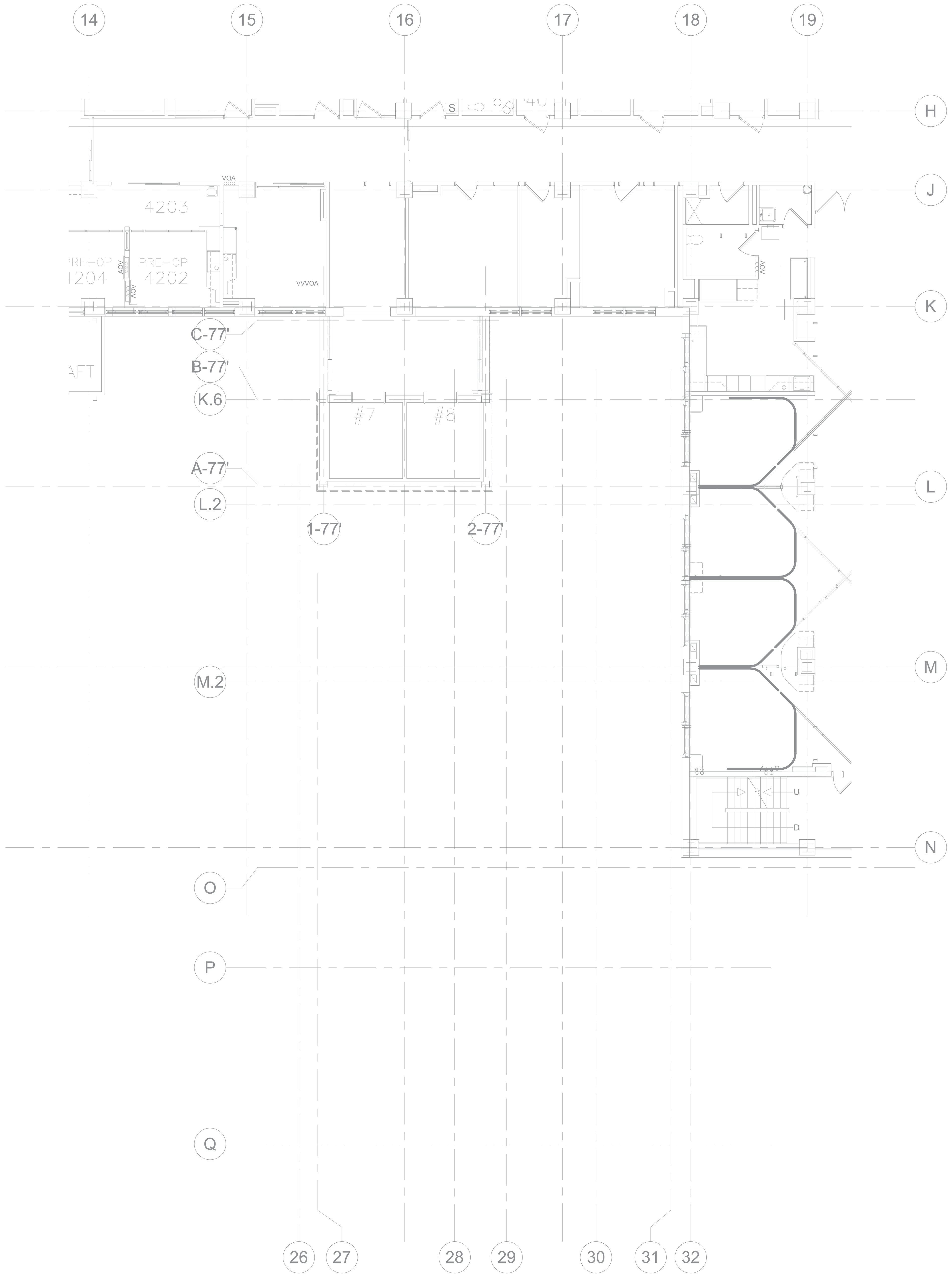
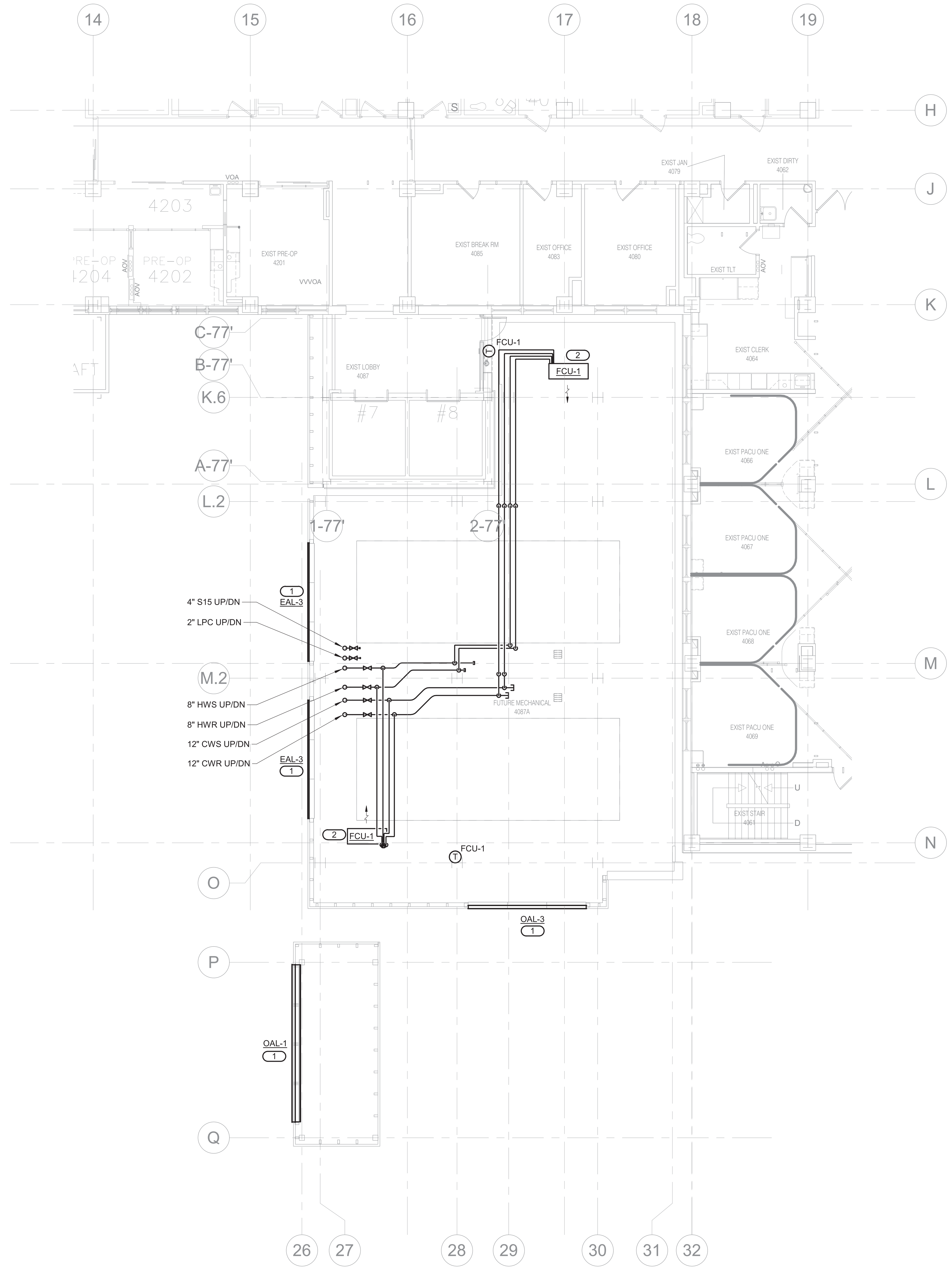


1 FOURTH LEVEL FLOOR DEMOLITION - MECHANICAL
1/8" = 1'-0"



2 FOURTH LEVEL FLOOR PLAN - MECHANICAL
1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 19004249.01

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ARCHITECT/ENGINEER OF RECORD

ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

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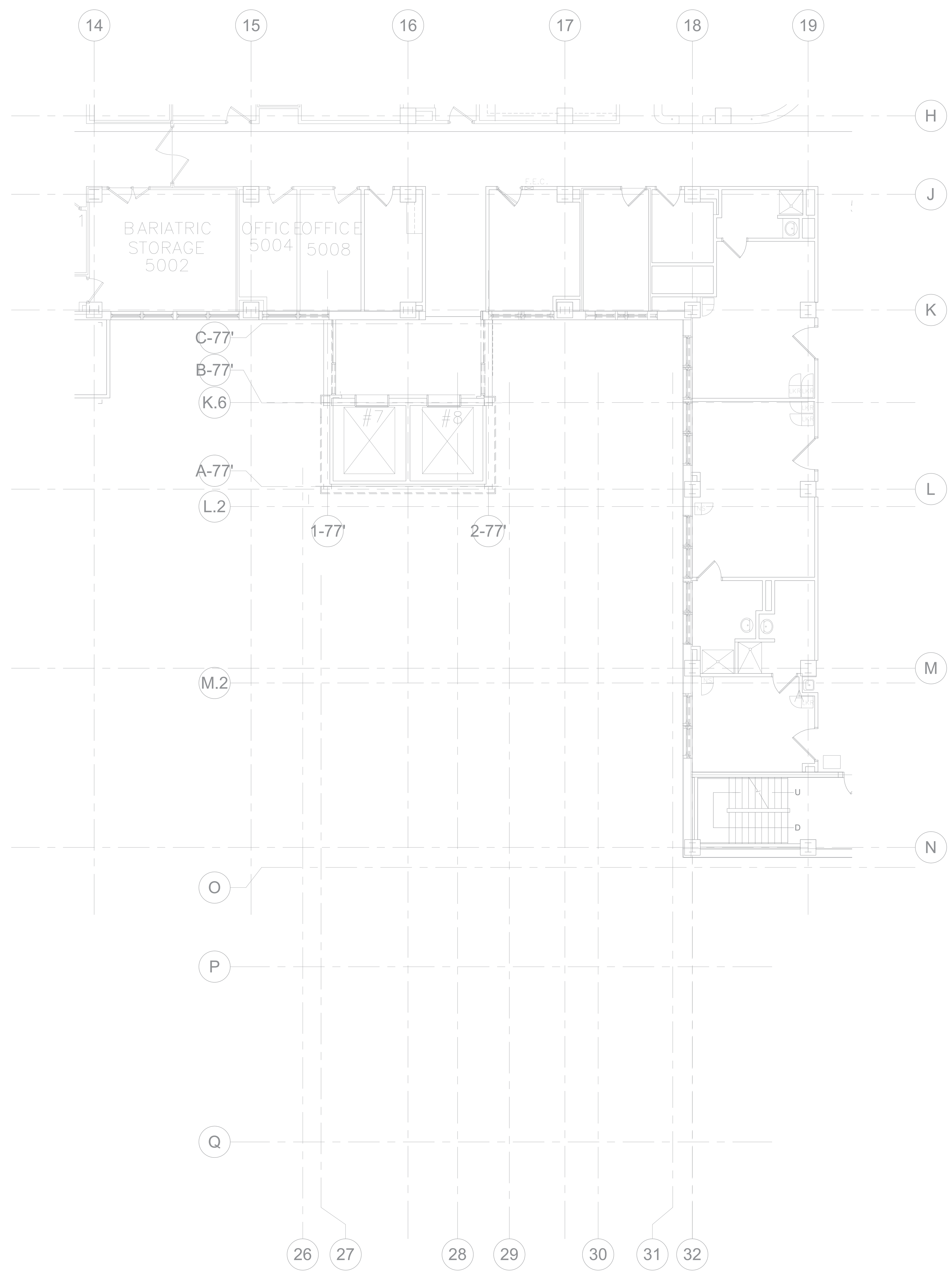
LICENSED PROFESSIONAL ENGINEER
ERIC J. HENDERSON
20825
IOWA
05/28/21

Office of Construction and Facilities Management

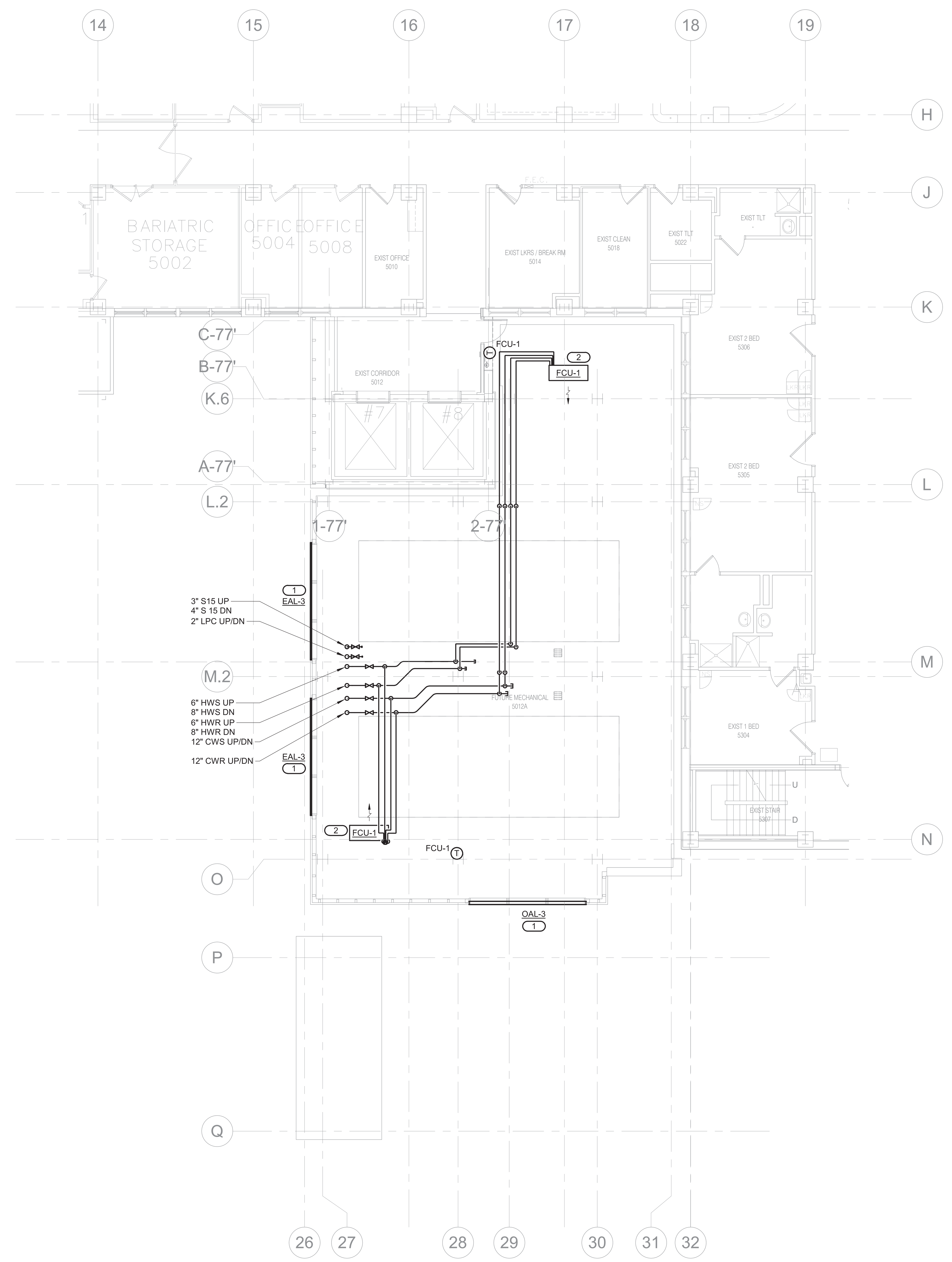
VA | U.S. Department of Veterans Affairs

Drawing Title	FOURTH LEVEL FLOOR PLAN - MECHANICAL
Approved:	
Phase	100% CONSTRUCTION DOCUMENTS
	FULLY SPRINKLERED
Project Title	NWIHCS - CONSTRUCT AIR HANDLING TOWER
Location	OMAHA, NE
Issue Date	05/28/21
Checked	DAVING
Drawn	DELLLE
Project Number	636-18-303
Building Number	1
Drawing Number	M104



1 FIFTH LEVEL FLOOR DEMOLITION - MECHANICAL

1/8" = 1'-0"



2 FIFTH LEVEL FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: #

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

ALT DEDUCT #1:
OMIT CONSTRUCTION OF THE SEVENTH FLOOR; ROOF LEVEL AT SEVENTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SEVENTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE EIGHTH FLOOR.

ALT DEDUCT #2:
OMIT CONSTRUCTION OF THE SIXTH AND SEVENTH FLOORS; ROOF LEVEL AT SIXTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SIXTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SEVENTH OR EIGHTH FLOOR.

ALT DEDUCT #3:
OMIT CONSTRUCTION OF THE FIFTH, SIXTH, AND SEVENTH FLOORS; ROOF LEVEL AT FIFTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE FIFTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SIXTH, SEVENTH, OR EIGHTH FLOOR.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
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ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

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LICENSED PROFESSIONAL ENGINEER ERIC J. PETERSON 20825 IOWA
05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
FIFTH LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLE	Drawing Number: M105

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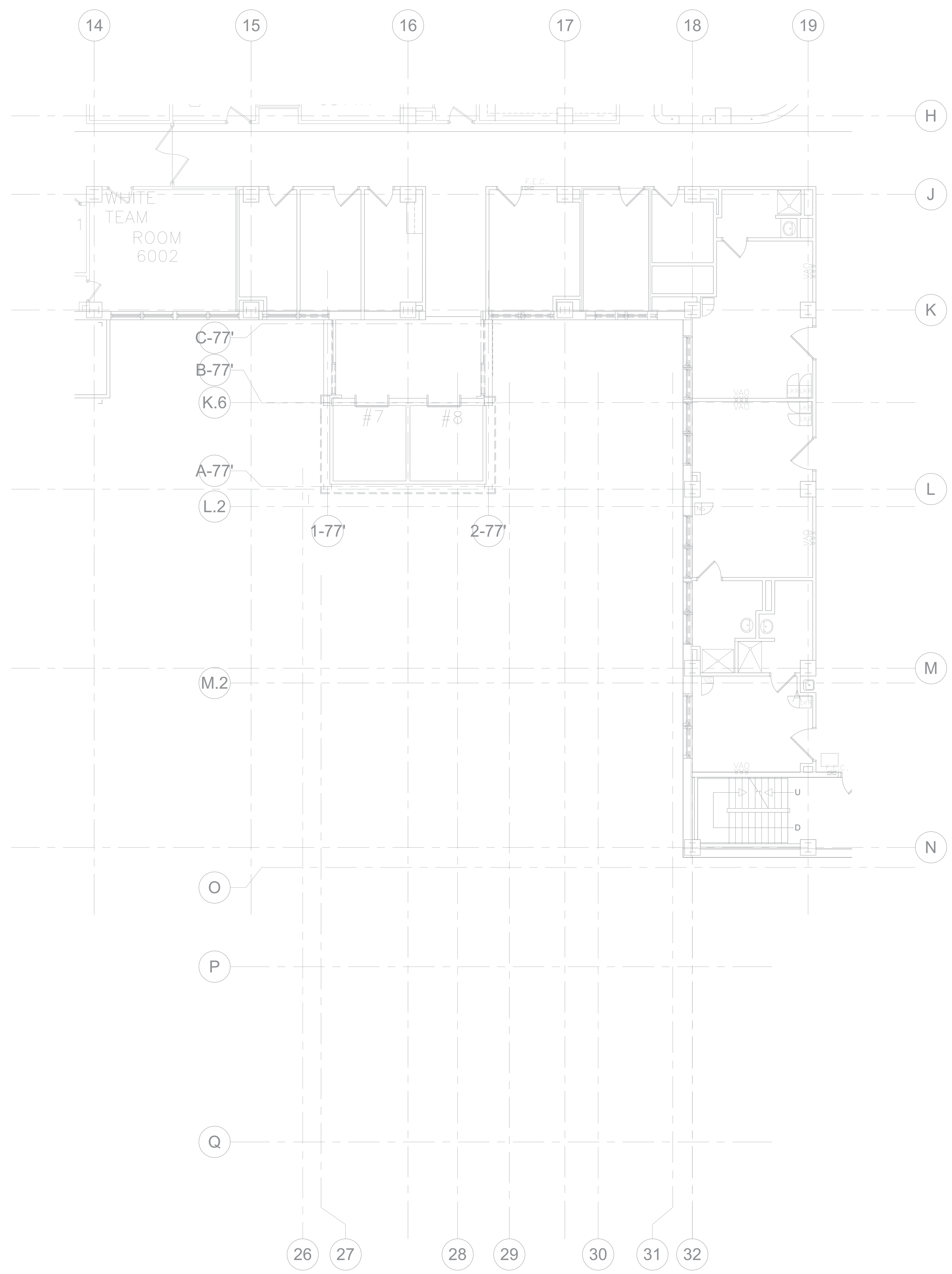
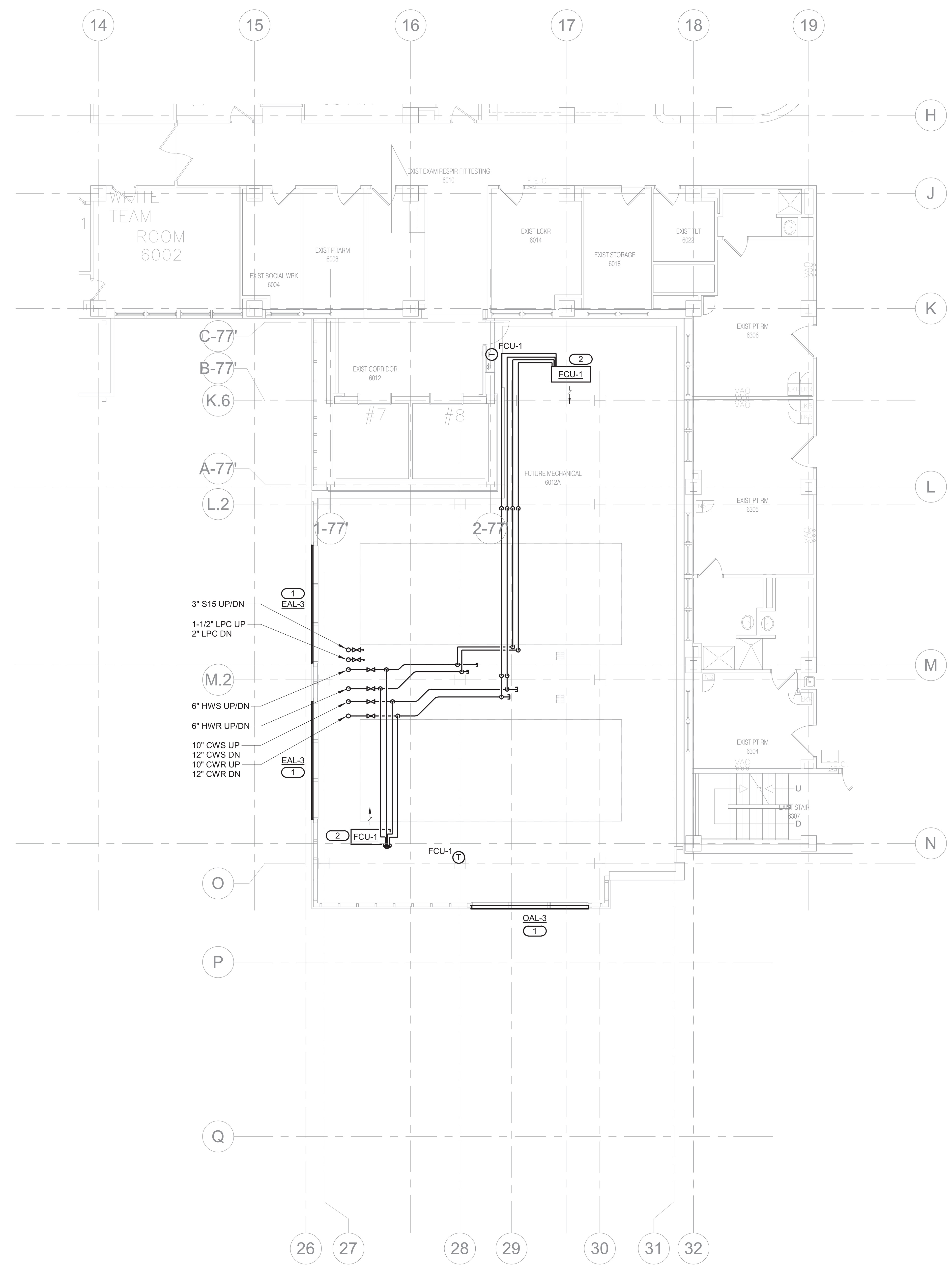


1 SIXTH LEVEL FLOOR DEMOLITION - MECHANICAL
1/8" = 1'-0"



2 SIXTH LEVEL FLOOR PLAN - MECHANICAL
1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

ALT DEDUCT #1:
OMIT CONSTRUCTION OF THE SEVENTH FLOOR; ROOF LEVEL AT SEVENTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SEVENTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE EIGHTH FLOOR.

ALT DEDUCT #2:
OMIT CONSTRUCTION OF THE SIXTH AND SEVENTH FLOORS; ROOF LEVEL AT SIXTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SIXTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SEVENTH OR EIGHTH FLOOR.

ALT DEDUCT #3:
OMIT CONSTRUCTION OF THE FIFTH, SIXTH, AND SEVENTH FLOORS; ROOF LEVEL AT FIFTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE FIFTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SIXTH, SEVENTH, OR EIGHTH FLOOR.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 19004249.01

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ARCHITECT/ENGINEER OF RECORD
ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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LICENSED PROFESSIONAL ENGINEER ERIC J. REYNOLDSON 20825 IOWA
05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
SIXTH LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21; Checked: DAVING; Drawn: DELLE	Drawing Number: M106

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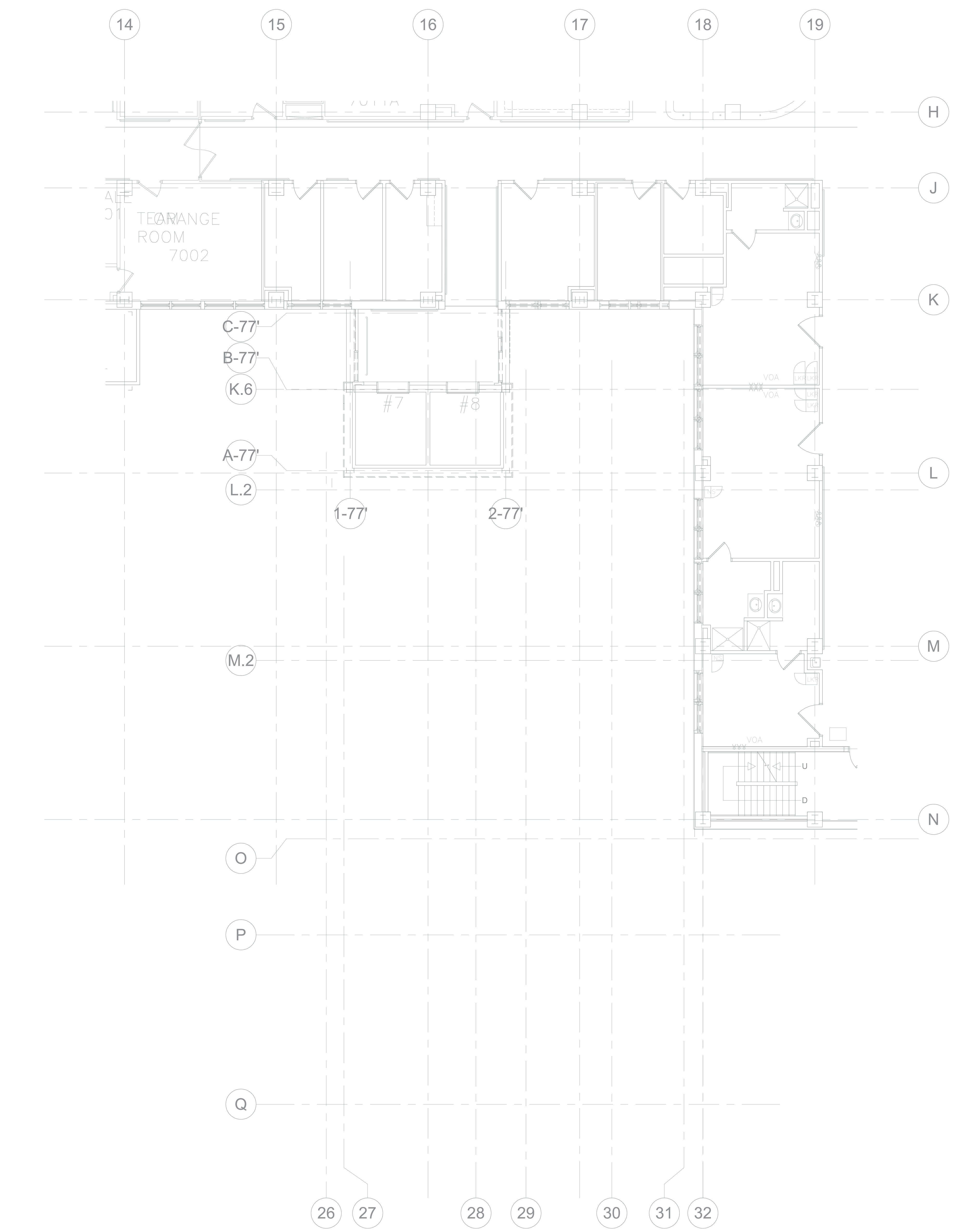
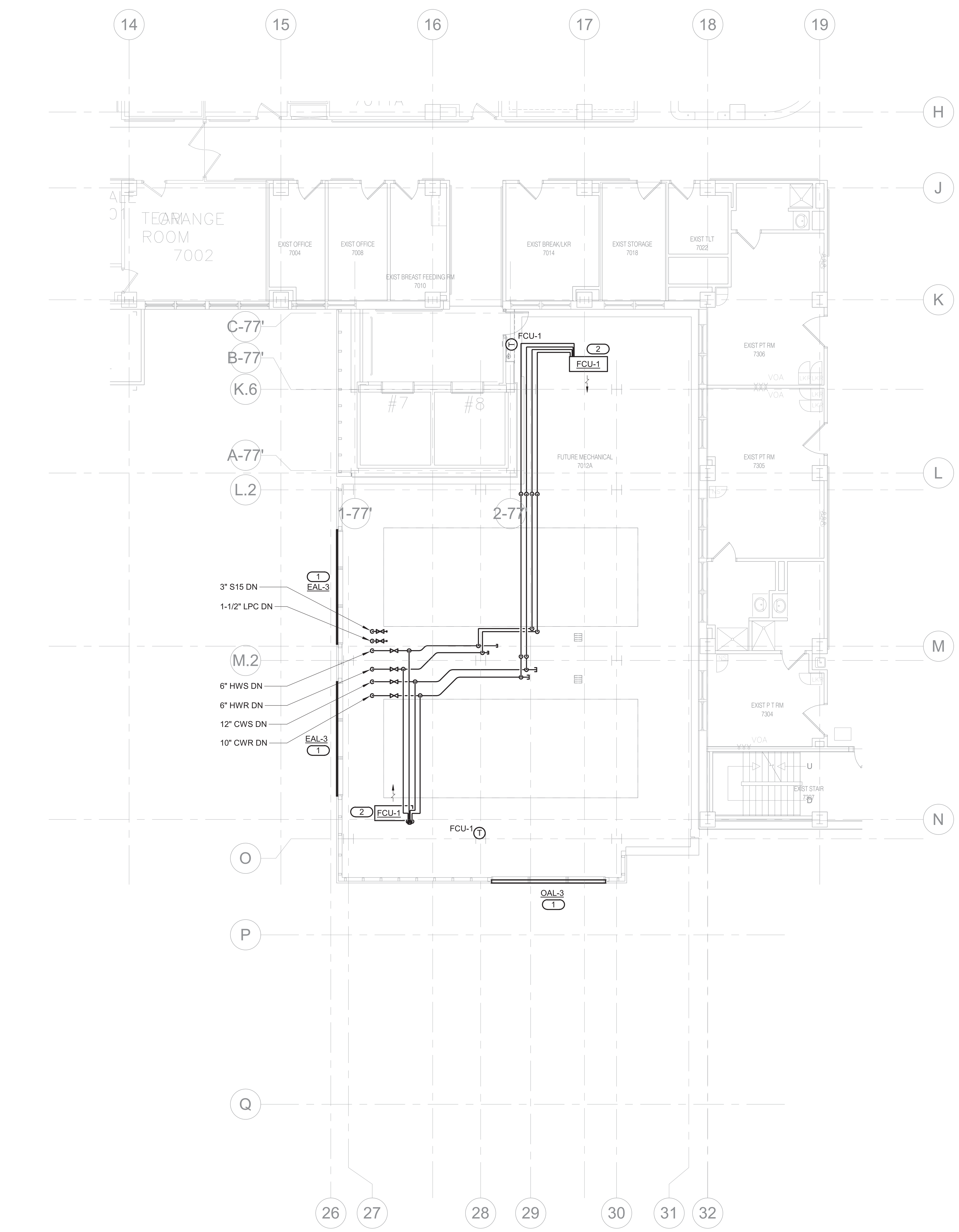


1 SEVENTH LEVEL FLOOR DEMOLITION - MECHANICAL

1/8" = 1'-0"

NORTH



2 SEVENTH LEVEL FLOOR PLAN - MECHANICAL

1/8" = 1'-0"

NORTH

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. ALL BRANCH PIPING SERVING A SINGLE FAN COIL UNIT SHALL BE 1" UNLESS NOTED OTHERWISE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 3/M301 FOR PIPE THROUGH NON-FIRE RATED WALL DETAIL.
5. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
6. REFER TO 7/M301 FOR SEISMIC RISER PIPING SUPPORT DETAIL.
7. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
8. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
9. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
10. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
11. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. REFER TO 6/M300 FOR LOUVER INSTALLATION DETAIL.
2. REFER TO 3/M400 FOR FAN COIL UNIT CHILLED WATER PIPING DETAIL. REFER TO 3/M402 FOR FAN COIL UNIT HEATING WATER PIPING DETAIL.

ALT DEDUCT #1:
OMIT CONSTRUCTION OF THE SEVENTH FLOOR; ROOF LEVEL AT SEVENTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SEVENTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE EIGHTH FLOOR.

ALT DEDUCT #2:
OMIT CONSTRUCTION OF THE SIXTH AND SEVENTH FLOORS; ROOF LEVEL AT SIXTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SIXTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SEVENTH OR EIGHTH FLOOR.

ALT DEDUCT #3:
OMIT CONSTRUCTION OF THE FIFTH, SIXTH, AND SEVENTH FLOORS; ROOF LEVEL AT FIFTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE FIFTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SIXTH, SEVENTH, OR EIGHTH FLOOR.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
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ARCHITECT/ENGINEER OF RECORD
ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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LICENSED PROFESSIONAL ENGINEER — ERIC J. [illegible] — 20825 — IOWA
05/28/21

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VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
SEVENTH LEVEL FLOOR PLAN - MECHANICAL	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
			Building Number: 1
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Drawing Number: M107
		Issue Date: 05/28/21; Checked: DAVING; Drawn: DELLLE	

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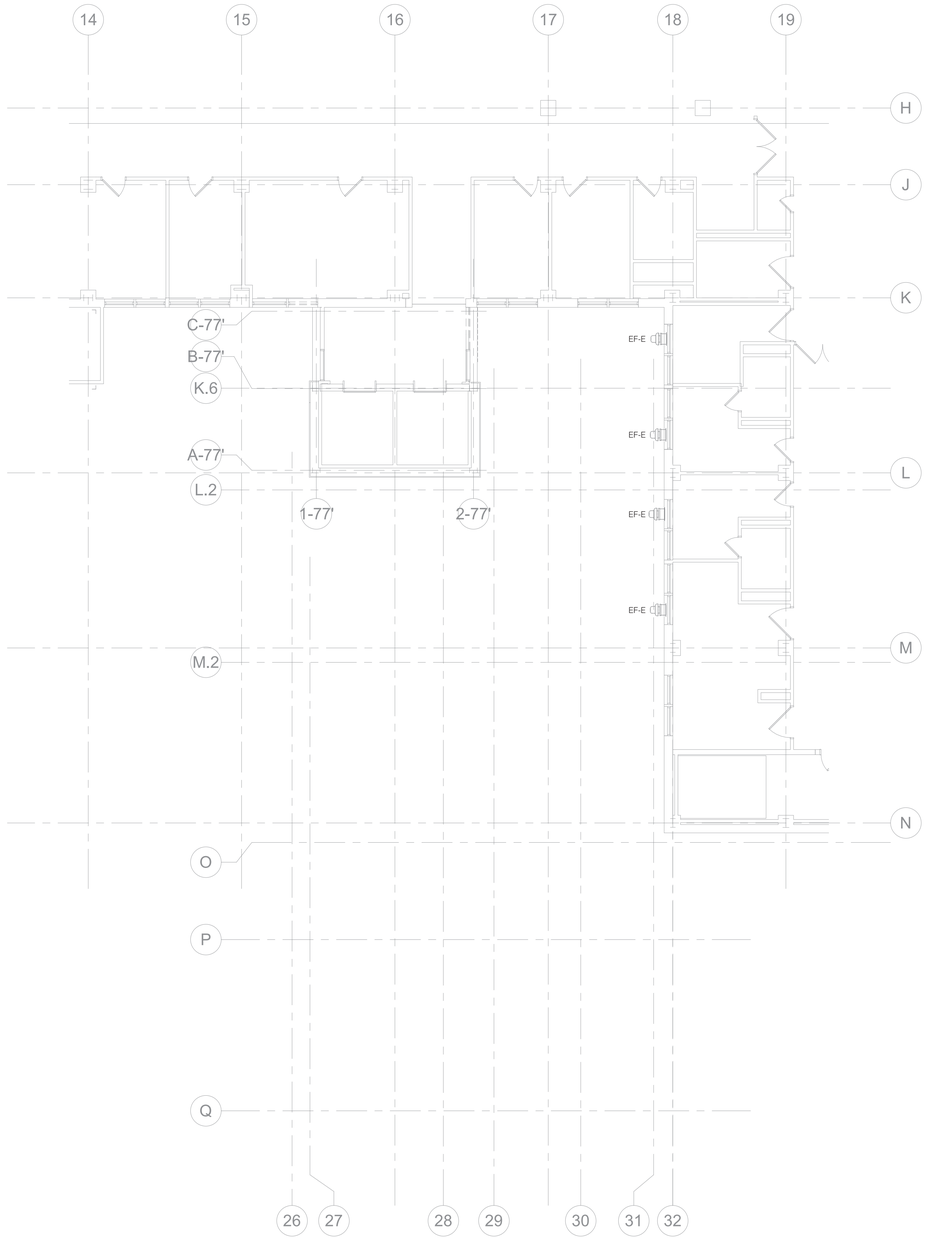
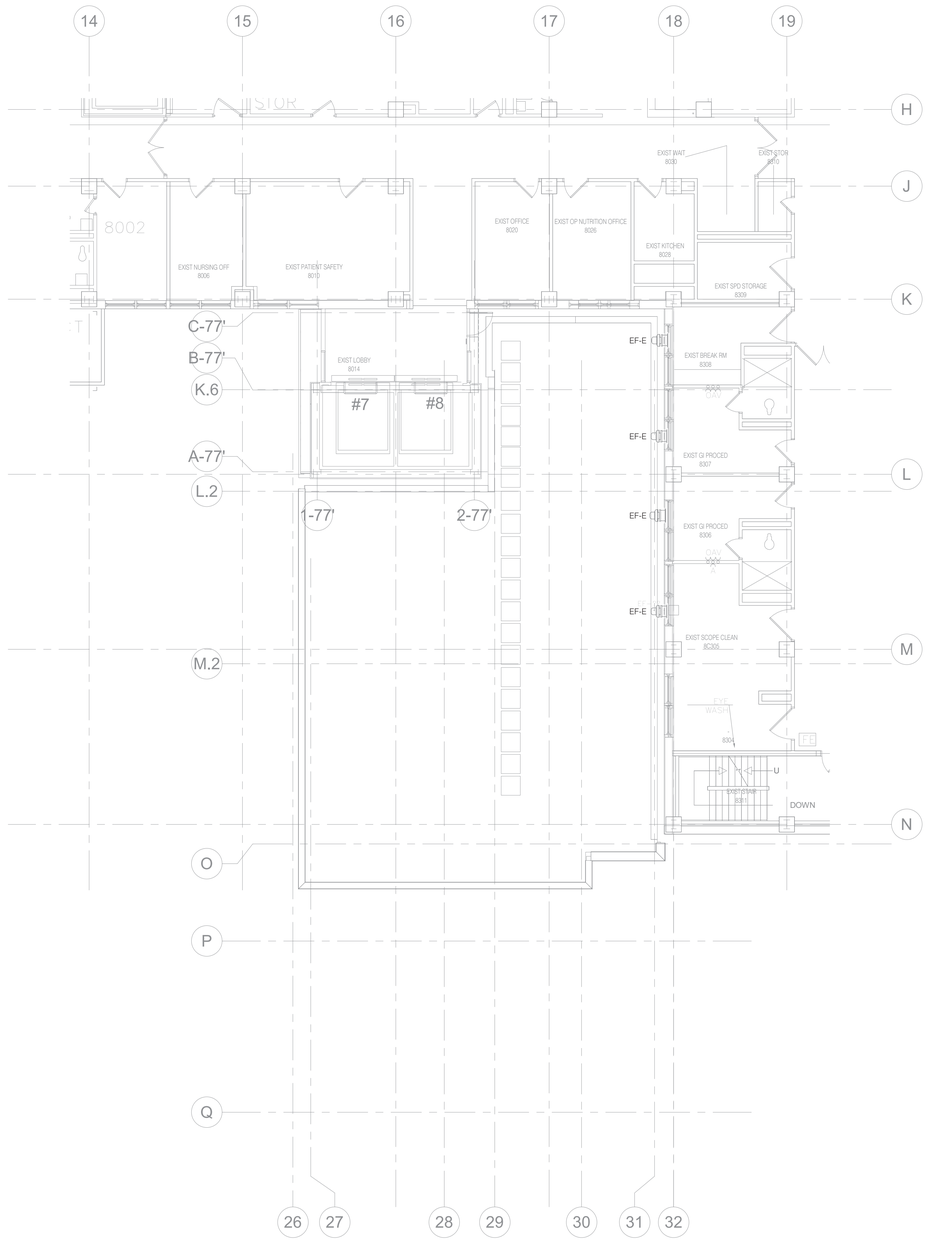


2 EIGHTH LEVEL FLOOR DEMOLITION - MECHANICAL
1/8" = 1'-0"



1 EIGHTH LEVEL FLOOR PLAN - MECHANICAL
1/8" = 1'-0"

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
3. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
4. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
5. REFER TO M600 FOR MECHANICAL SCHEDULES.

ALT DEDUCT #1:
OMIT CONSTRUCTION OF THE SEVENTH FLOOR; ROOF LEVEL AT SEVENTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SEVENTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE EIGHTH FLOOR.

ALT DEDUCT #2:
OMIT CONSTRUCTION OF THE SIXTH AND SEVENTH FLOORS; ROOF LEVEL AT SIXTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE SIXTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SEVENTH OR EIGHTH FLOOR.

ALT DEDUCT #3:
OMIT CONSTRUCTION OF THE FIFTH, SIXTH, AND SEVENTH FLOORS; ROOF LEVEL AT FIFTH FLOOR. THE SCOPE OF WORK CAPTURED IN THIS PLAN VIEW SHOULD BE APPLIED TO THE FIFTH FLOOR LEVEL. NO PROJECT SCOPE OF WORK REQUIRED ON THE SIXTH, SEVENTH, OR EIGHTH FLOOR.

IMEG
2892 106TH STREET
DES MOINES, IA 50322
515.334.9908 FAX: 515.334.9908
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PROJECT # 19004249.01

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Revisions:	Date:

CONSULTANT
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ARCHITECT/ENGINEER OF RECORD
ANDERSON
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LICENSED PROFESSIONAL ENGINEER
ERIC J. REYNOLDS
20825
IOWA
05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title: EIGHTH LEVEL FLOOR PLAN - MECHANICAL	Phase: 100% CONSTRUCTION DOCUMENTS	Project Title: NWIHCS - CONSTRUCT AIR HANDLING TOWER	Project Number: 636-18-303
			Building Number: 1
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Drawing Number: M108
		Issue Date: 05/28/21 / Checked: DAVING / Drawn: DELLLE	

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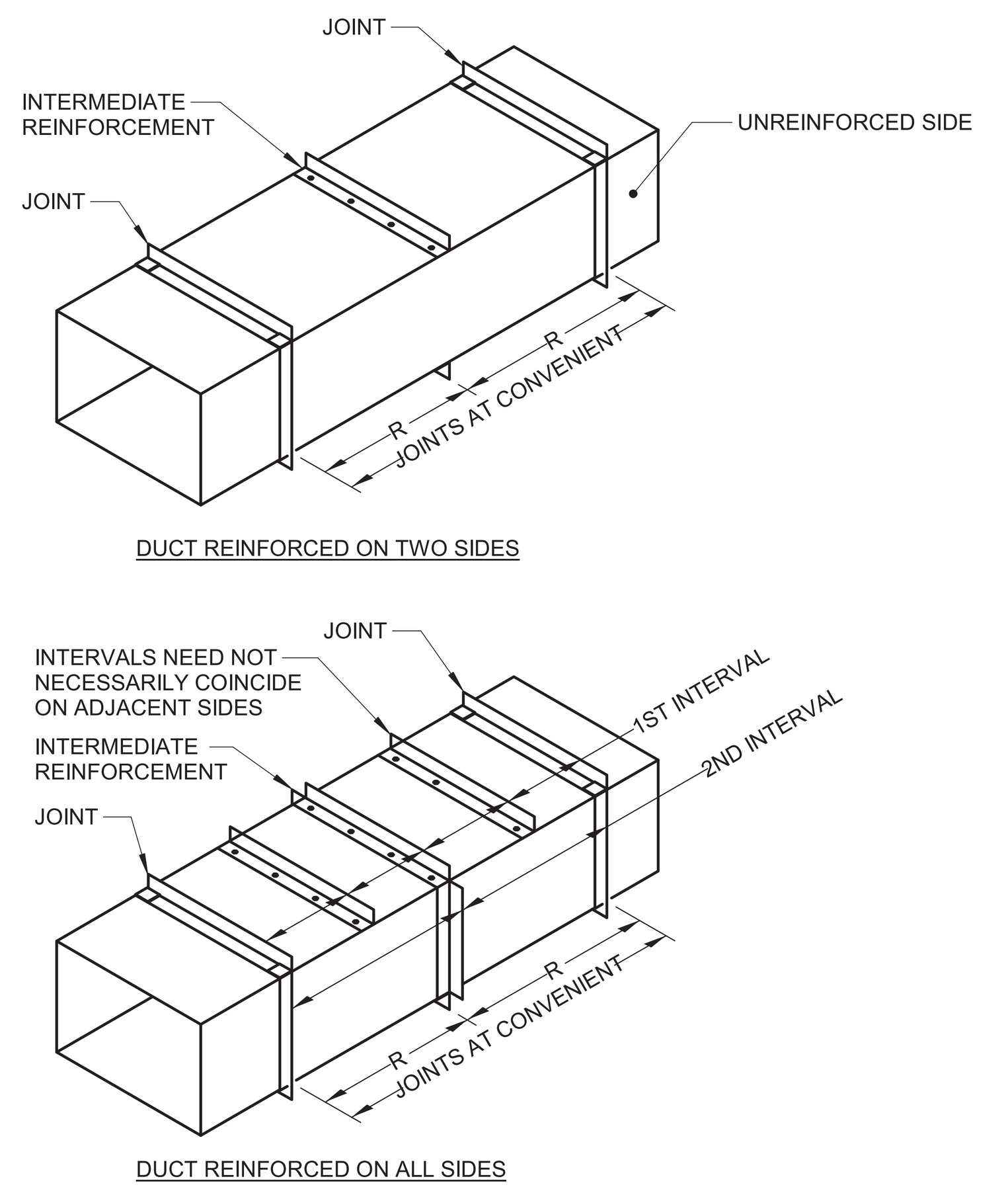
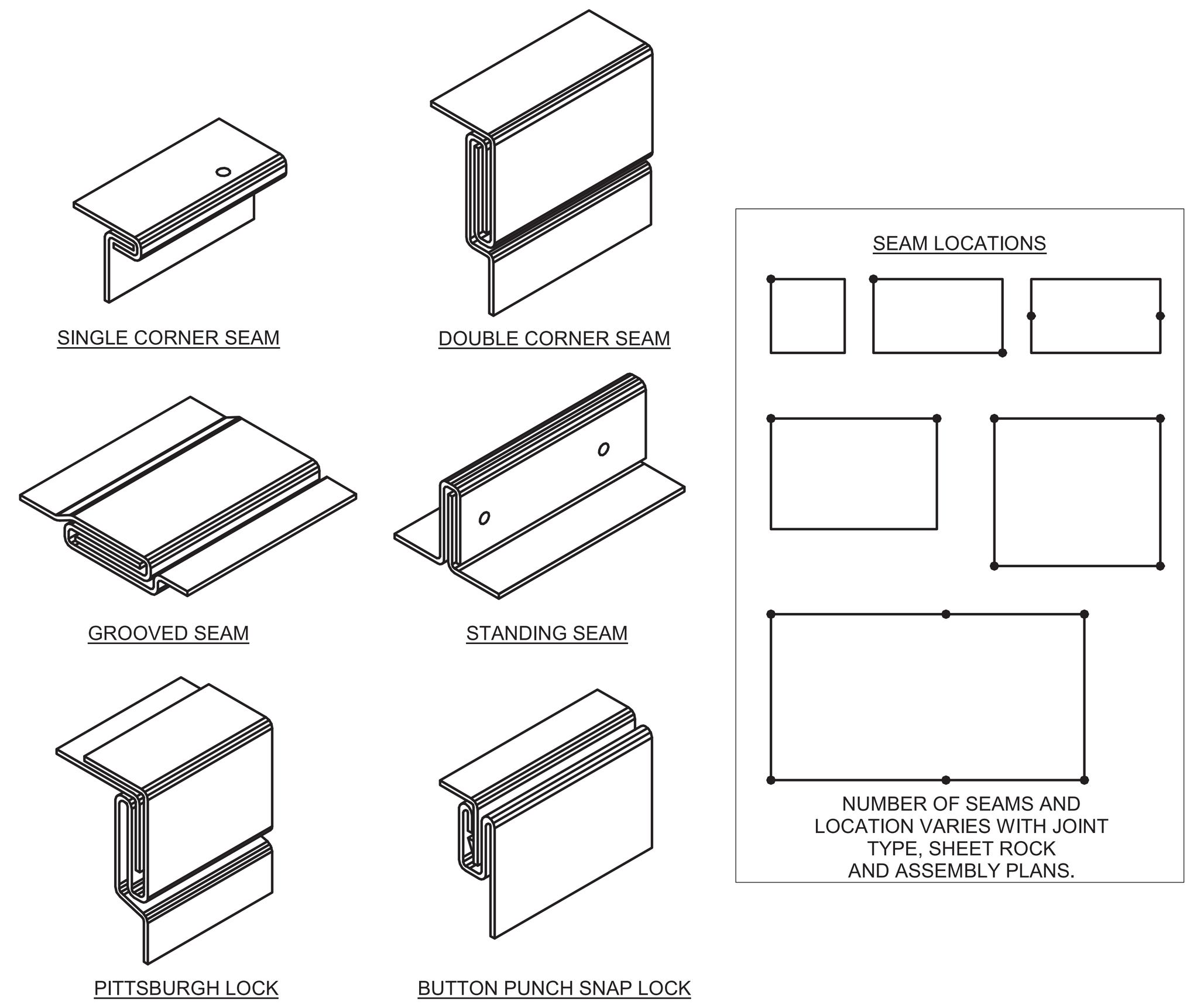


1 DUCT REINFORCEMENT DETAIL

NO SCALE

NOTES:

1. 'R' IS AN ALLOWABLE REINFORCEMENT INTERVAL.
2. TOP AND BOTTOM JOINTS MUST QUALIFY AS REINFORCEMENT
3. DUCT SIZES THAT ARE 19 INCHES (483 mm) AND OVER ARE 20 GAGE (1.00 mm) OR LESS, WITH MORE THAN 10 SQUARE FEET (0.93 SQUARE METER) OF UNBRACED PANEL AREA, SHALL BE CROSSBROKEN OR BEADED UNLESS THEY ARE LINED OR EXTERNALLY INSULATED. DUCTS THAT ARE OF HEAVIER GAGE, SMALLER DIMENSIONS, AND SMALLER PANEL AREA AND THOSE THAT ARE LINED OR EXTERNALLY INSULATED ARE NOT REQUIRED TO HAVE CROSSBREAKING OR BEADING.
4. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

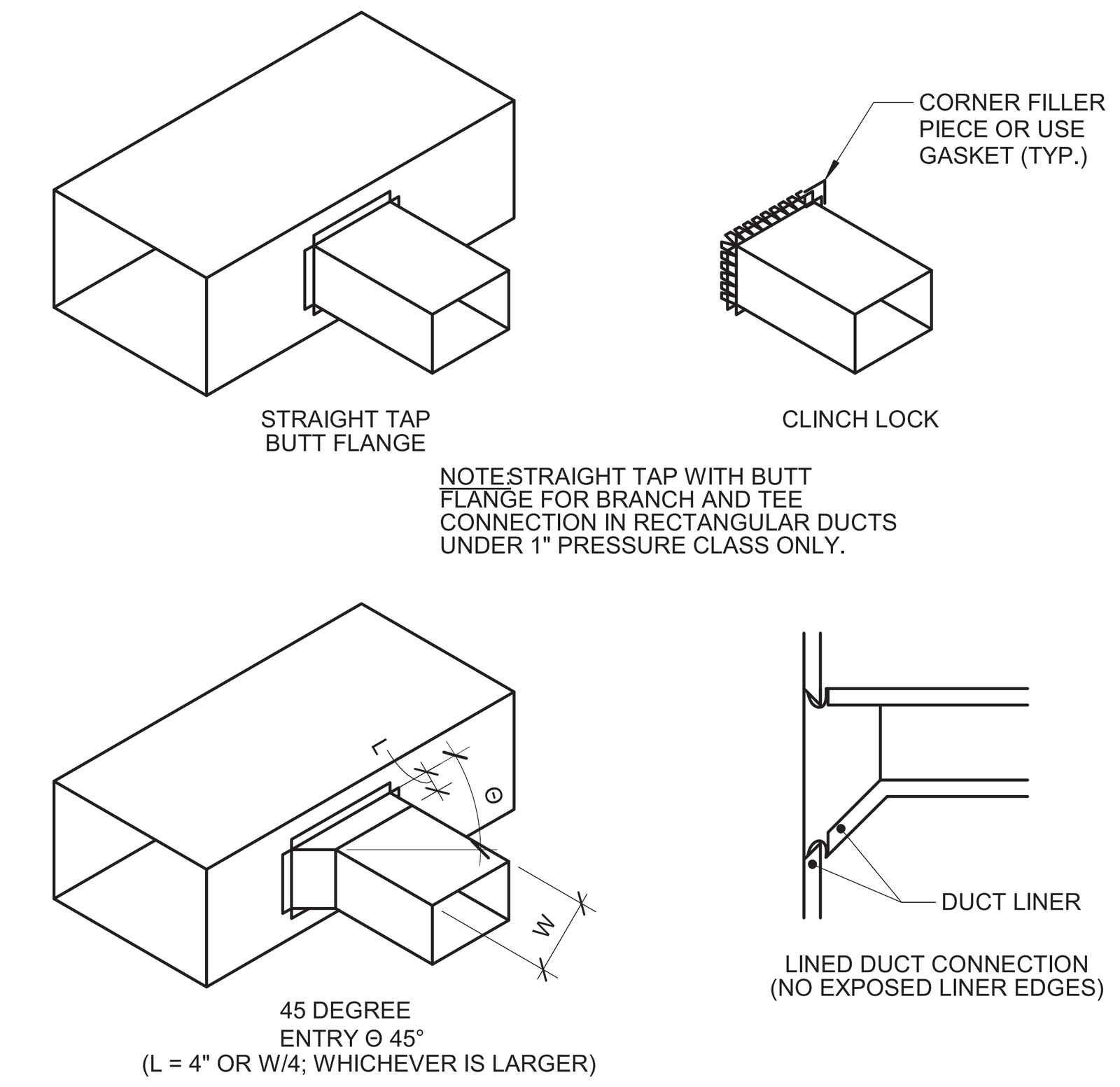


2 LONGITUDINAL SEAMS - RECTANGULAR DUCT

NO SCALE

NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

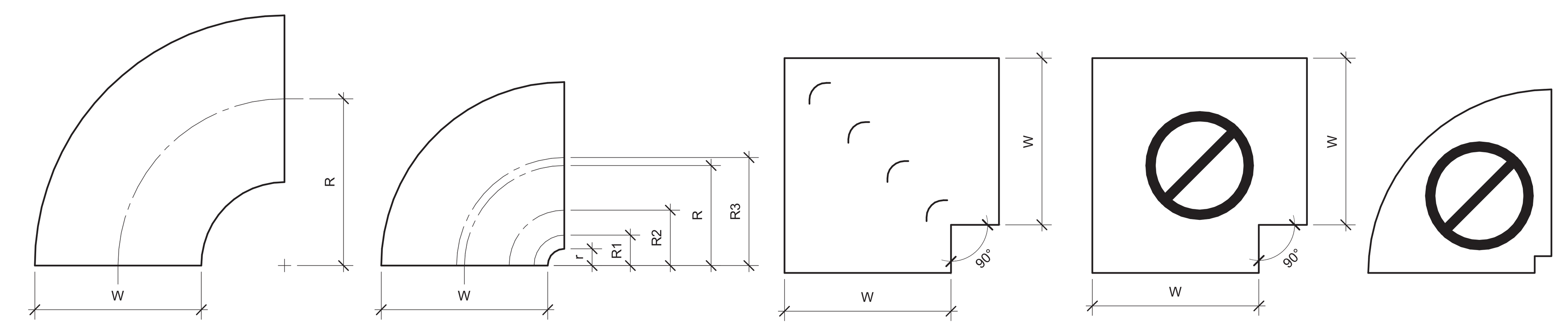


3 BRANCH CONNECTIONS

NO SCALE

NOTES:

1. DO NOT USE CONNECTIONS WITH SCOOPS.
2. FIT ALL CONNECTIONS TO AVOID VISIBLE OPENINGS AND SECURE THEM SUITABLY FOR THE PRESSURE CLASS.
3. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



RECTANGULAR RADIUS ELBOW TYPE RE1

R/W = 1.0 (MINIMUM)
R/W < 1.0 SHALL BE TYPE RE3

RECTANGULAR RADIUS ELBOW WITH VANES TYPE RE3

REFER TO SMACNA HVAC SYSTEMS DUCT DESIGN MANUAL, FOURTH EDITION, SECTION 5.14 "SPLITTER VANES" AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS, THIRD EDITION, FIGURES 4-2 AND 4-9 AND CHARTS 4-1 AND 4-1M. ELBOW SHALL HAVE THREE SPLITTER VANES AND r/W = 0.10 (R/W = 0.60) UNLESS NOTED OTHERWISE.

RECTANGULAR MITERED ELBOW WITH VANES TYPE RE2

RECTANGULAR / OVAL / ROUND MITERED ELBOW WITHOUT VANES TYPE RE4

NOT ALLOWED

RECTANGULAR RADIUS ELBOW WITH SQUARE THROAT

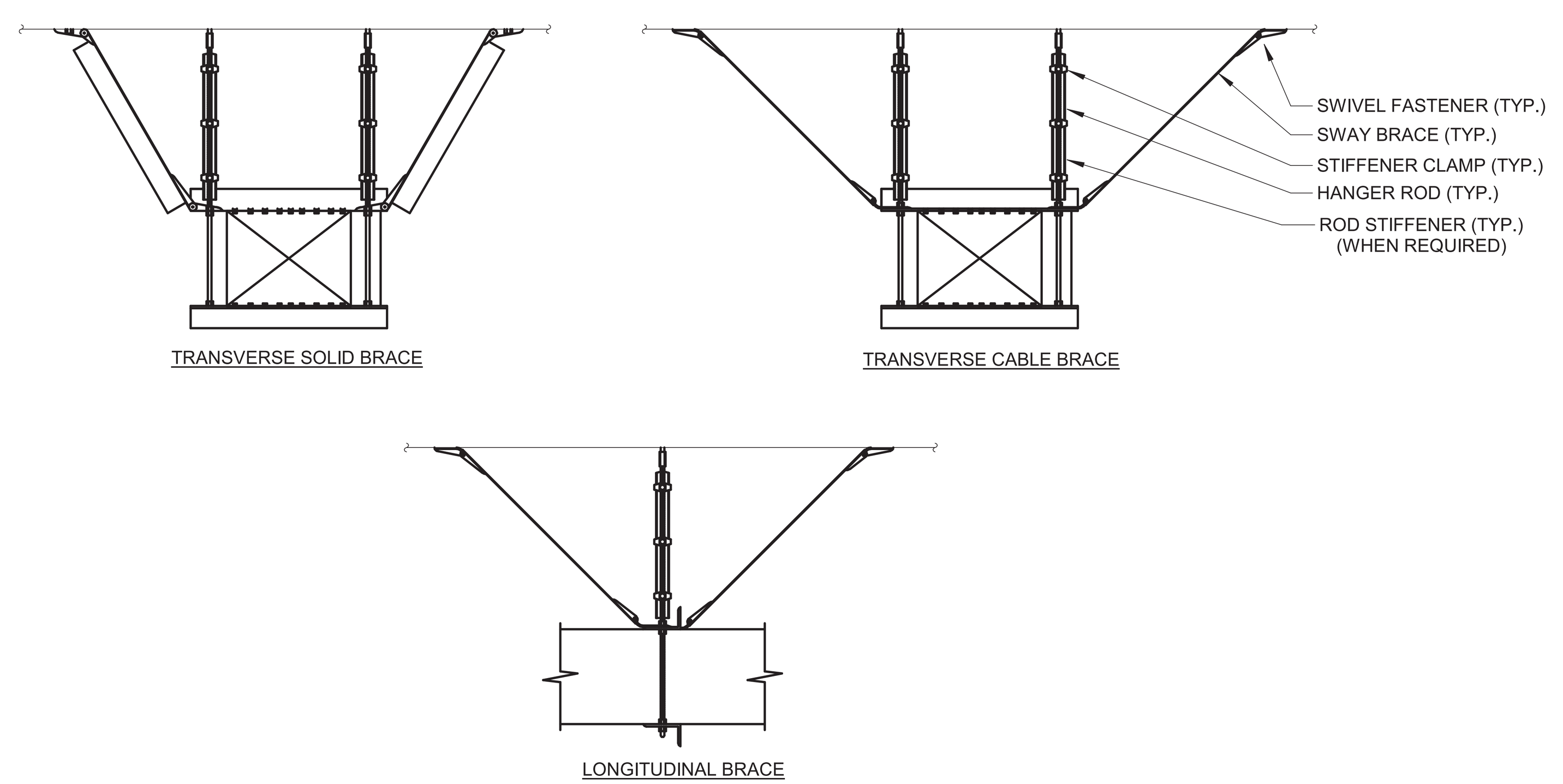
NOT ALLOWED

4 ELBOW CONSTRUCTION

NO SCALE

NOTES:

1. BEAD, CROSSBREAK, AND REINFORCE FLAT SURFACES AS IN STRAIGHT DUCT.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. DEFAULT ELBOW SHALL BE TYPE "RE1".
4. ELBOW TYPES SHALL BE INSTALLED AS SHOWN AND NOT BE SUBSTITUTED WITHOUT PERMISSION. EXCEPTION: RE1 OR RE3 MAY BE SUBSTITUTED FOR RE2.

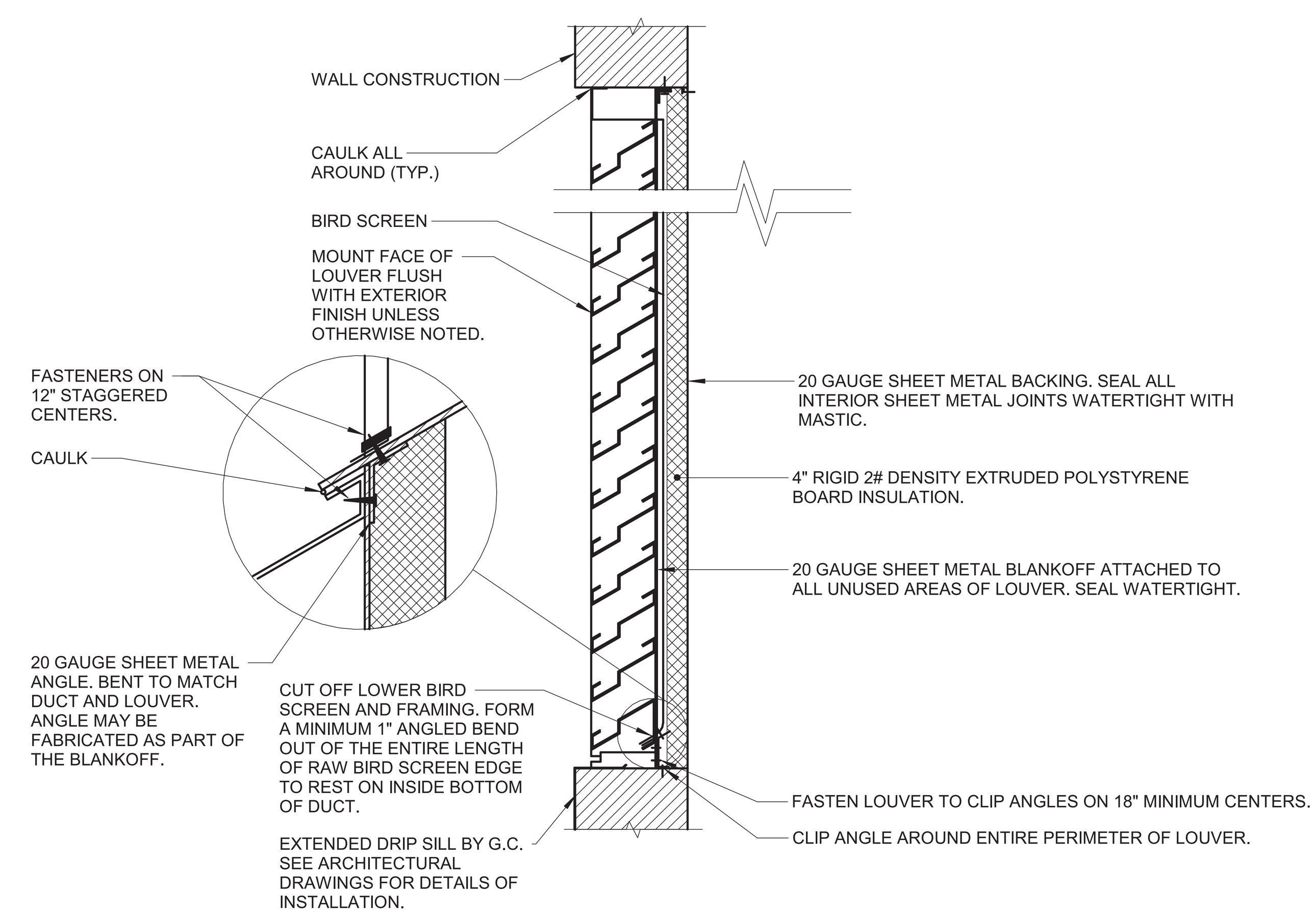


5 SEISMIC BRACING OF SUSPENDED DUCTWORK

NO SCALE

NOTES:

1. GENERAL REQUIREMENTS FOR SEISMIC RESTRAINT OF DUCTWORK ARE SHOWN. SPECIFIC REQUIREMENTS, INCLUDING ATTACHMENT TO BUILDING STRUCTURE, SHALL BE DETERMINED BY THE SEISMIC RESTRAINT DESIGNER. REFER TO SPECIFICATION SECTION 23 05 50 FOR REQUIREMENTS.



6 LOUVER INSTALLATION DETAIL

NO SCALE

NOTES:

1. CAULK SHEETMETAL SCREWS WHERE THEY PENETRATE METAL.

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DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9900
www.imegcorp.com
PROJECT # 19004249.01

REFERENCE SCALE IN INCHES
0 1 2 3

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Revisions:	Date:

CONSULTANT
IMEG

ARCHITECT/ENGINEER OF RECORD
ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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LICENSED PROFESSIONAL ENGINEER ERIC J. HEYERMAN 20825 IOWA
05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
MECHANICAL DETAILS	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
			Building Number: 1
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Drawing Number: M300
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLLE	

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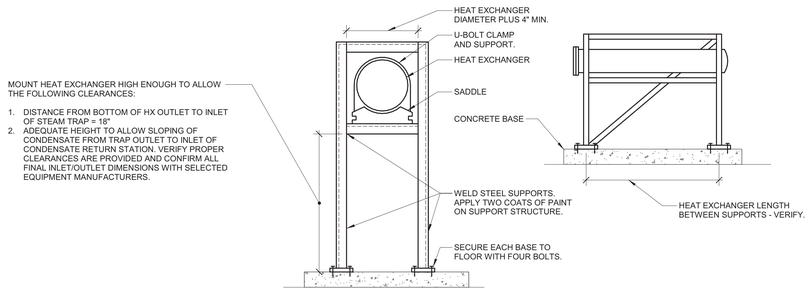
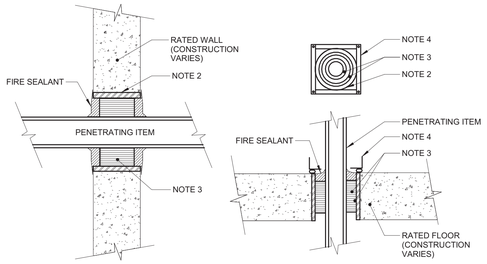


1 HEAT EXCHANGER SUPPORT DETAIL

NO SCALE

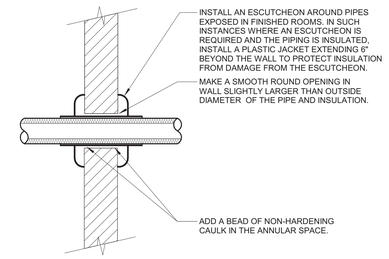


2 RATED FIRE BARRIER PENETRATION

NO SCALE

NOTES:

1. THIS GENERAL DETAIL APPLIES TO ALL ITEMS PENETRATING FIRE RATED WALLS OR FLOORS. THE INTENT IS TO MAINTAIN THE FIRE RATING AND TO ALLOW LONGITUDINAL MOVEMENT. REFER TO SPECIFICATION SECTION 07840 (07 84 00) (SECTION 21 05 03 - FIRE PROTECTION, SECTION 22 05 03 - PLUMBING , SECTION 23 05 03 - HVAC) FOR SELECTION OF THROUGH PENETRATION FIRE STOPPING.
2. SCHEDULE 5 PIPE SLEEVE EMBEDDED IN WALL OR FLOOR, OR SMOOTH CORE DRILL. EACH CONTRACTOR FURNISHES SLEEVE TO G.C., COORDINATES SLEEVE LOCATIONS AND DEBURS SLEEVE. G.C. BUILDS SLEEVE INTO WALL OR FLOOR ALLOWING NO GAP AROUND SLEEVE. IF SLEEVE IS NOT PROVIDED WHEN WALL OR FLOOR IS BUILT, CONTRACTOR SHALL INSTALL SLEEVE. SLEEVE SIZE SHALL ALLOW ANNULAR SPACE REQUIRED BY THE SELECTED FIRE STOP SYSTEM.
3. INSTALL BACKING MATERIAL, SUCH AS MINERAL WOOL SAFING, AS REQUIRED FOR FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH FIRE STOP SYSTEM APPLICATION LISTING. SECURE TO WALL OR FLOOR TO ALLOW LONGITUDINAL MOVEMENT OF PENETRATING ITEM WITHOUT MOVEMENT OF FIRE BARRIER.
4. WATERTIGHT WELDED 1"x1" 20 GAUGE MINIMUM GALVANIZED SHEET METAL ANGLE FRAME, BY CONTRACTOR IN EQUIPMENT ROOMS FOR WATER STOP. PLACE A BEAD OF WATERPROOF SEALANT BETWEEN FLOOR AND BOTTOM OF ANGLE FRAME. SECURE TO FLOOR WITH MASONRY ANCHORS IN CORNERS AND ON 12" MAXIMUM CENTERS. MULTIPLE PENETRATING ITEMS MAY BE ENCLOSED IN ONE FRAME.

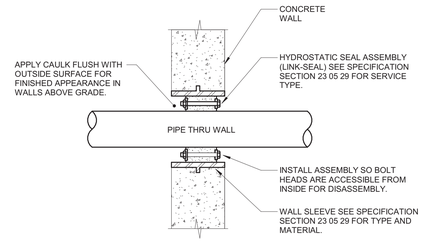


3 PIPE THROUGH NON-FIRE RATED WALL

NO SCALE

NOTES:

1. THIS DETAIL APPLIES TO ALL PIPES. THE INTENTION IS TO CONTINUE THE INSULATION AND VAPOR BARRIER THROUGH ALL PENETRATIONS. PERMIT THERMAL EXPANSION WITHOUT DAMAGING INSULATION, AND TO SEAL AIRTIGHT AROUND INSULATED AND UNINSULATED PIPES FOR NOISE TRANSMISSION CONTROL.
2. FLOOR OPENINGS ARE SIMILAR SEE SPECIFICATION SECTION 23 05 29 FOR DIFFERENCES BETWEEN FLOOR AND WALL PENETRATIONS.
3. SEE SPECIFICATION SECTION 23 05 03 AND SECTION 23 05 29 FOR ADDITIONAL INFORMATION.

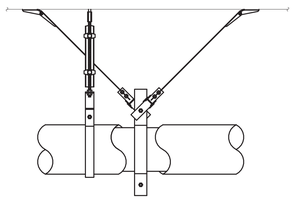


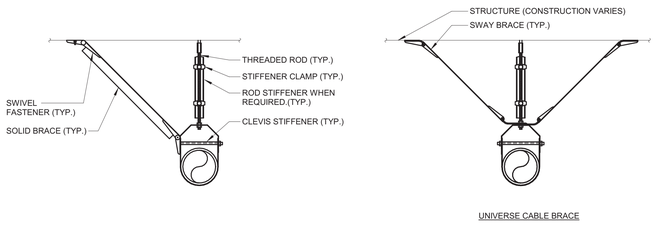
4 EXTERIOR WALL PENETRATION

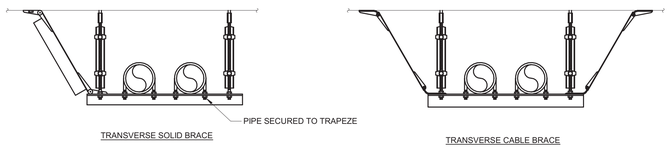
NO SCALE

NOTES:

1. CONTRACTOR MAY FABRICATE PIPE SLEEVE.
2. SEAL SELECTION BASED ON O.D. OF PIPE THRU WALL AND I.D. OF SLEEVE.
3. SLEEVE NOT REQUIRED FOR CORE DRILLED PENETRATIONS.





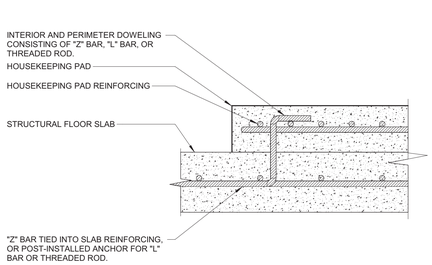


5 SEISMIC BRACING OF SUSPENDED PIPING

NO SCALE

NOTES:

1. GENERAL REQUIREMENTS FOR TRANSVERSE AND LONGITUDINAL BRACING OF PIPES ARE SHOWN. SPECIFIC REQUIREMENTS, INCLUDING ATTACHMENT TO BUILDING STRUCTURE, SHALL BE DETERMINED BY THE SEISMIC RESTRAINT DESIGNER. REFER TO SPECIFICATION SECTION (SECTION 21 05 50 - FIRE SUPPRESSION, SECTION 22 05 50 - PLUMBING, SECTION 23 05 50 - HVAC) FOR REQUIREMENTS.
2. REFER TO GENERAL PIPE SUPPORT DETAIL AND SPECIFICATION SECTION (SECTION 22 05 29 - PLUMBING, SECTION 23 05 29 - HVAC) FOR INSULATED PIPING CONSIDERATIONS.

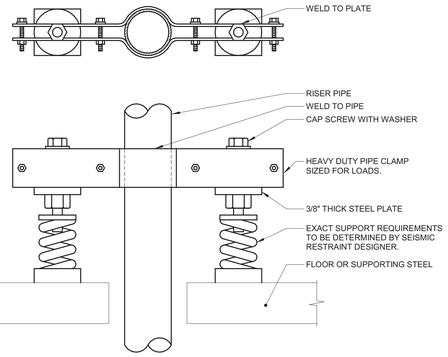


6 SEISMIC HOUSEKEEPING PAD

NO SCALE

NOTES:

1. GENERAL REQUIREMENTS FOR SEISMIC HOUSEKEEPING PADS ARE SHOWN. SPECIFIC REQUIREMENTS, INCLUDING ATTACHMENT TO BUILDING STRUCTURE, SHALL BE DETERMINED BY THE SEISMIC RESTRAINT DESIGNER. REFER TO SPECIFICATION SECTION (SECTION 21 05 50 - FIRE SUPPRESSION, SECTION 22 05 50 - PLUMBING, SECTION 23 05 50 - HVAC) FOR REQUIREMENTS.

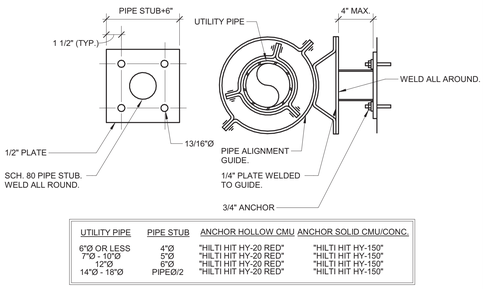


7 SEISMIC RISER PIPING SUPPORT

NO SCALE

NOTES:

1. GENERAL REQUIREMENTS FOR SEISMIC RESTRAINT OF PIPING ARE SHOWN. SPECIFIC REQUIREMENTS, INCLUDING ATTACHMENT TO BUILDING STRUCTURE, SHALL BE DETERMINED BY THE SEISMIC RESTRAINT DESIGNER. REFER TO SPECIFICATION SECTION (SECTION 21 05 50 - FIRE SUPPRESSION, SECTION 22 05 50 - PLUMBING, SECTION 23 05 50 - HVAC) FOR REQUIREMENTS.



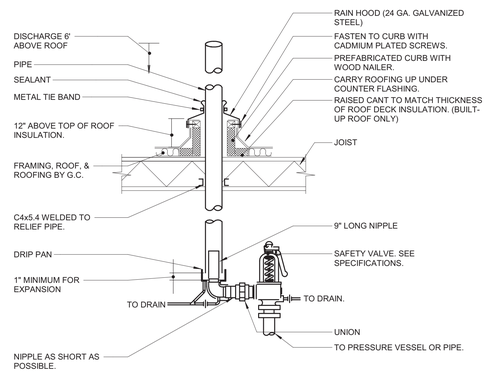
UTILITY PIPE	PIPE STUB	ANCHOR HOLLOW CMU	ANCHOR SOLID CMU/CONC.
6"Ø OR LESS	4"Ø	"HILTI HIT HY-20 RED"	"HILTI HIT HY-150"
7"Ø - 10"Ø	5"Ø	"HILTI HIT HY-20 RED"	"HILTI HIT HY-150"
12"Ø	6"Ø	"HILTI HIT HY-20 RED"	"HILTI HIT HY-150"
14"Ø - 18"Ø	PIPEØ/2	"HILTI HIT HY-20 RED"	"HILTI HIT HY-150"

8 ALIGNMENT GUIDE DETAIL

NO SCALE

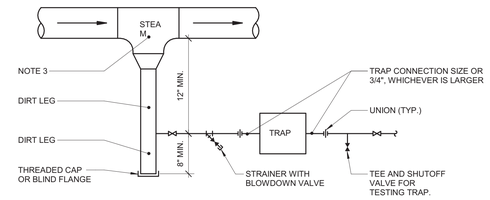
NOTES:

1. MATERIAL - CARBON STEEL IN DRY AREAS, ALL STAINLESS STEEL IN TUNNELS AND CORROSIVE AREAS.



9 SAFETY VALVE DISCHARGE PIPING - HPS

NO SCALE



10 STEAM MAIN DRIP CONNECTION

NO SCALE

NOTES:

1. DRIP AND DIRT LEGS SHALL BE AT LEAST TWICE THE DIAMETER OF THE TRAP INLET.
2. INSTALL LEGS OF STRAINERS IN HORIZONTAL POSITION TO MINIMIZE CONDENSATE HOLDING.
3. TEE SHALL BE FILL SIZE FOR 4" AND SMALLER MAINS. 4" FOR 5" AND 6" MAINS AND 1/2 OF MAIN DIAMETER FOR LARGER MAINS.
4. LOCATE DRIP TRAPS AT 300 FOOT MAXIMUM INTERVALS AND UPSTREAM OF ALL EXPANSION DEVICES, BRANCH CONNECTIONS OR CONTROL VALVES.

Revisions:	Date:

CONSULTANT

IMEG

ARCHITECT/ENGINEER OF RECORD

ANDERSON

13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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LICENSED PROFESSIONAL ENGINEER — ERIC J. REHFELDT — 20025 — IOWA — 05/28/21

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL DETAILS	Phase: 100% CONSTRUCTION DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: NWIHCS - CONSTRUCT AIR HANDLING TOWER	Project Number: 636-18-303
	Building Number: 1
Location: OMAHA, NE	Drawing Number: M301
Issue Date: 05/28/21	Checked: DAVING
	Drawn: DELLLE

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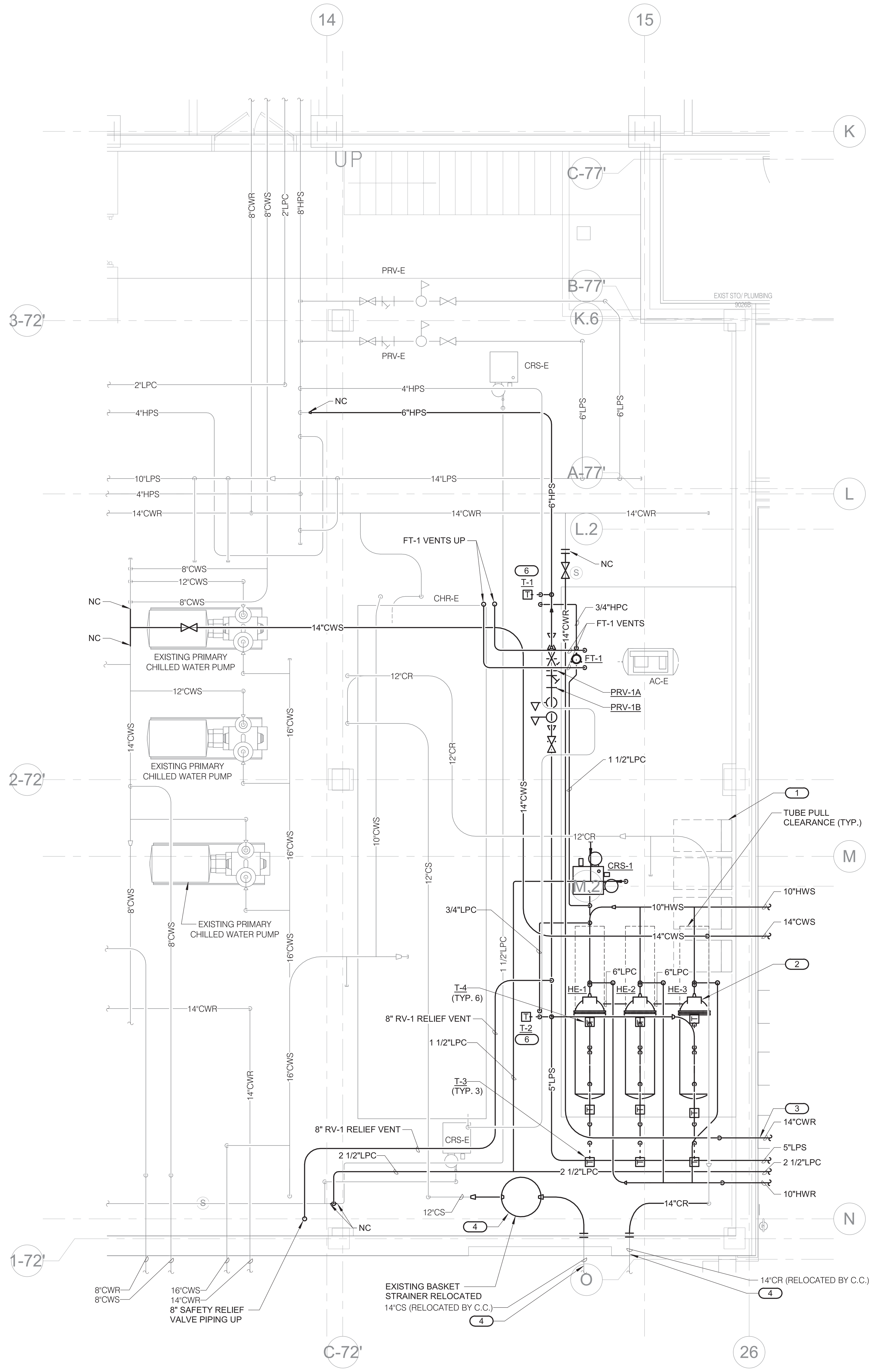

1 BUILDING 17 MECHANICAL ROOM - ENLARGED PLAN

1/4" = 1'-0"

NORTH

GENERAL FIRE PROTECTION NOTES:

1. REFER TO M000 MECHANICAL COVERSHEET FOR MECHANICAL GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS.
2. COORDINATE ANY SYSTEM SHUTDOWNS WITH C.O.R. SCHEDULE WORK TO MINIMIZE SYSTEM DOWNTIME AS MUCH AS POSSIBLE.
3. REFER TO 2/M301 FOR RATED FIRE BARRIER PENETRATION DETAIL.
4. REFER TO 5/M301 FOR SEISMIC BRACING OF SUSPENDED PIPING DETAIL.
5. REFER TO M400 FOR CHILLED WATER FLOW DIAGRAM.
6. REFER TO M401 FOR STEAM AND CONDENSATE FLOW DIAGRAM.
7. REFER TO M401 FOR HEATING WATER FLOW DIAGRAM.
8. REFER TO M500 FOR MECHANICAL EQUIPMENT CONTROL DIAGRAMS.
9. REFER TO M600 FOR MECHANICAL SCHEDULES.

KEYNOTES: (#)

1. EXISTING TEMPERATURE CONTROL PANELS (TYP. 4) PROVIDE DRAIN PANS WHERE PIPES PENETRATE EAST WALL ABOVE CONTROL PANELS.
2. PROVIDE HEAT EXCHANGER SUPPORT STRUCTURES OF ADEQUATE HEIGHT TO DRAIN LOW PRESSURE CONDENSATE TO CRS-1 INLET WITHOUT LIFTING CONDENSATE. REFER TO 1/M301 FOR HEAT EXCHANGER SUPPORT DETAIL.
3. COORDINATE ELEVATIONS OF PIPE PENETRATIONS AT EAST WALL WITH EXISTING CONDUITS. COORDINATE WITH ELECTRICAL CONTRACTOR TO RELOCATE CONDUITS AS NECESSARY TO KEEP PIPES AS HIGH AS POSSIBLE IN NEW TOWER BASEMENT MECHANICAL ROOM.
4. EXISTING CONDENSER WATER SUPPLY AND RETURN PIPING IS BEING RELOCATED ON SITE BY THE CIVIL CONTRACTOR. COORDINATE RELOCATION OF CONDENSER WATER SUPPLY AND RETURN PENETRATIONS THROUGH FOUNDATION WALL, BASKET STRAINER, AND BLOW DOWN METER WITH CIVIL CONTRACTOR. REFER TO 4/M301 FOR EXTERIOR WALL PENETRATION DETAIL.
5. REFER TO 9/M301 FOR SAFETY VALVE DISCHARGE PIPING DETAIL.
6. REFER TO 10/M301 FOR STEAM MAIN DRIP CONNECTION DETAIL.

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
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ANDERSON
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P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

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LICENSED PROFESSIONAL ENGINEER
ERIC J. [illegible]
20825
IOWA
05/28/21

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VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
MECHANICAL ENLARGED PLANS AND DETAILS	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
			Building Number: 1
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Drawing Number: M302
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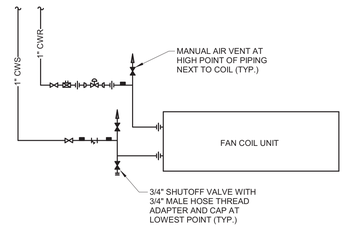
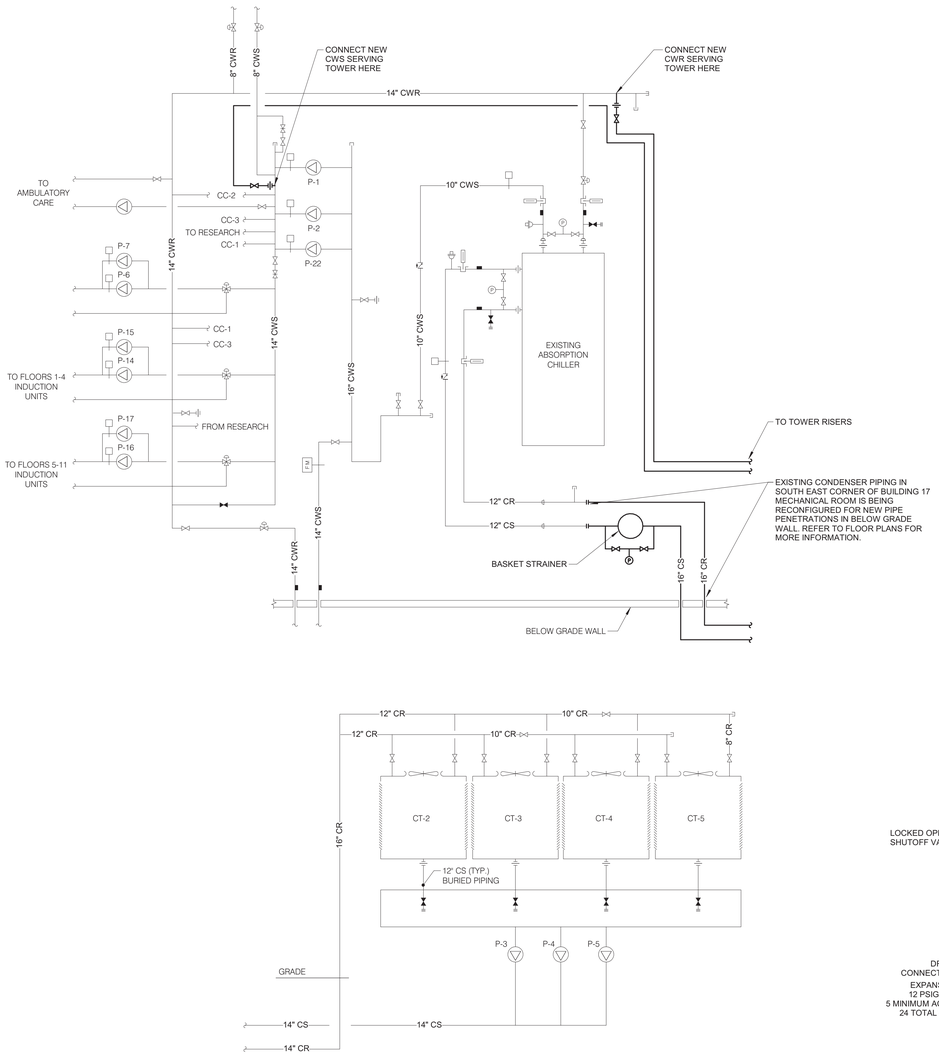


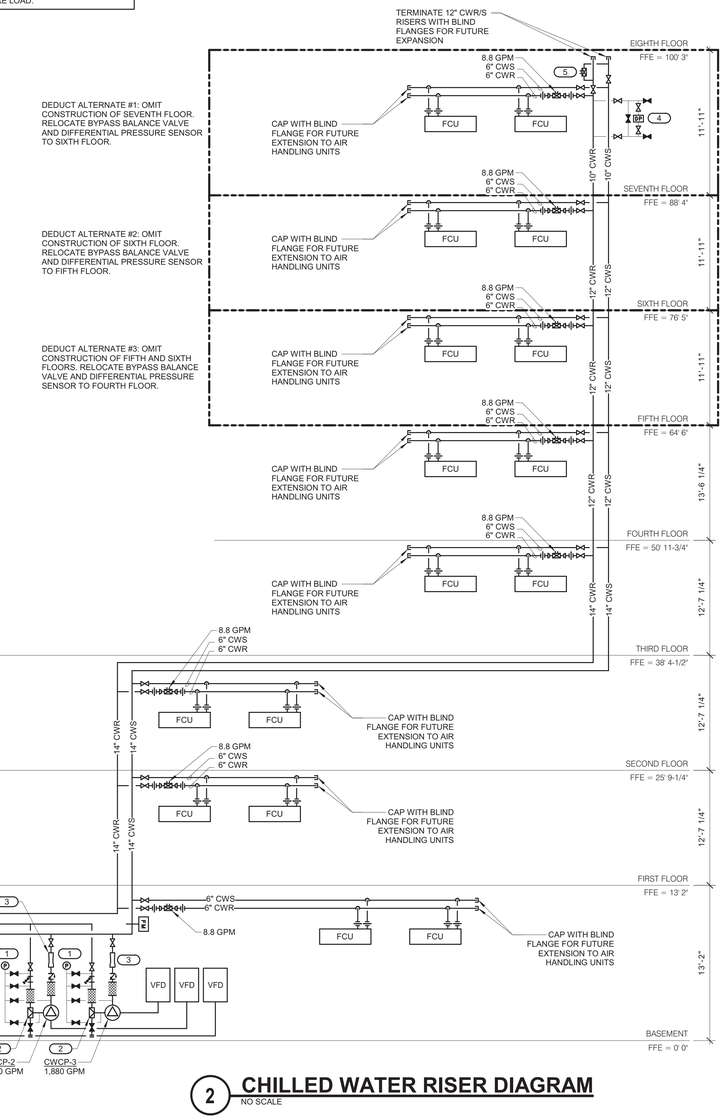
3 FAN COIL UNIT - CHILLED WATER PIPING DETAIL
NO SCALE

KEYNOTES: (#)

1. PRESSURE GAUGE WITH SNUBBER PER SPECIFICATIONS. MOUNT ON WALL, STAND, OR VIBRATION-FREE PIPE BRACKET ABOVE PUMP. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. GAUGE SHALL BE GLYCERIN FILLED. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER & PUMP INLET, (c) GAUGE TAPPING ON PUMP INLET FLANGE, (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
2. REMOVE & RETAIN TEMPORARY STRAINER FROM SUCTION DIFFUSER AT END OF CONSTRUCTION. PROVIDE SUPPORT LEG AS REQUIRED BY MANUFACTURER.
3. TRIPLE DUTY OR BALANCING VALVES ARE NOT PERMITTED ON VARIABLE FLOW SYSTEMS. PROVIDE VENTURI FLOW MEASUREMENT FOR TESTING.
4. DIFFERENTIAL PRESSURE SENSOR FIELD SET AT 5 PSID. (ADJUSTABLE). DIFFERENTIAL PRESSURE SENSOR USED TO CONTROL SECONDARY PUMP VFD'S. PIPE PER MANUFACTURER'S RECOMMENDATIONS. VERIFY FINAL LOCATIONS WITH ENGINEER.
5. 4" BYPASS BALANCING VALVE. BALANCE TO 140 GPM. SIZED FOR 280 GPM FUTURE LOAD.



1 CHILLED WATER FLOW DIAGRAM
NO SCALE



2 CHILLED WATER RISER DIAGRAM
NO SCALE

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9908
www.imegcorp.com
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CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
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VA | U.S. Department of Veterans Affairs

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Approved:	FULLY SPRINKLERED

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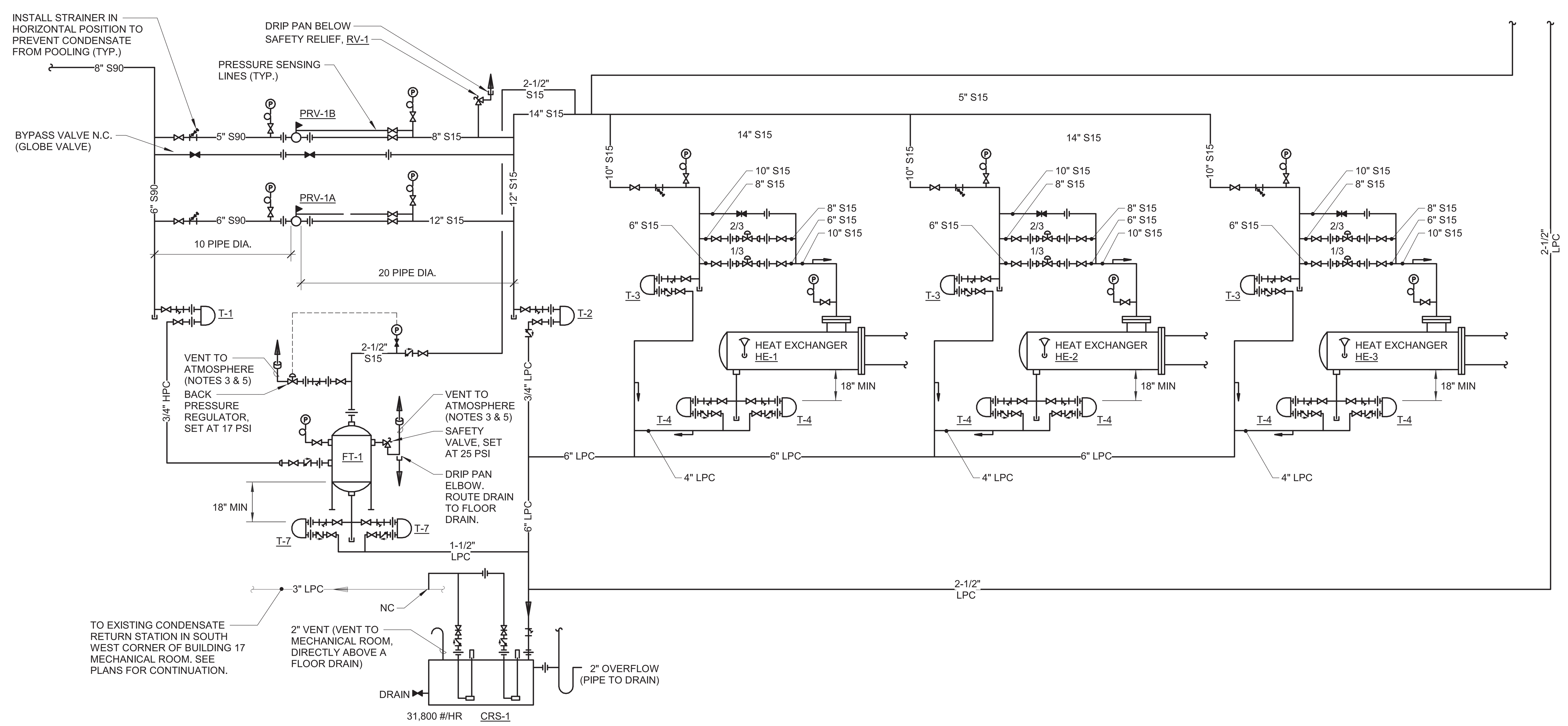
KEYNOTES: (#)

1. PROVIDE NESTED PREMANUFACTURED PIPE EXPANSION LOOPS. BASIS OF DESIGN IS METRAFLEX METRALOOP WITH 321 STAINLESS STEEL HOSE AND 304 STAINLESS STEEL BRAID (STEAM EXPANSION LOOP SHALL BE DOUBLE BRAIDED. EXPANSION LOOPS SHALL ACCOMMODATE +/- 4" OF PIPE MOVEMENT.

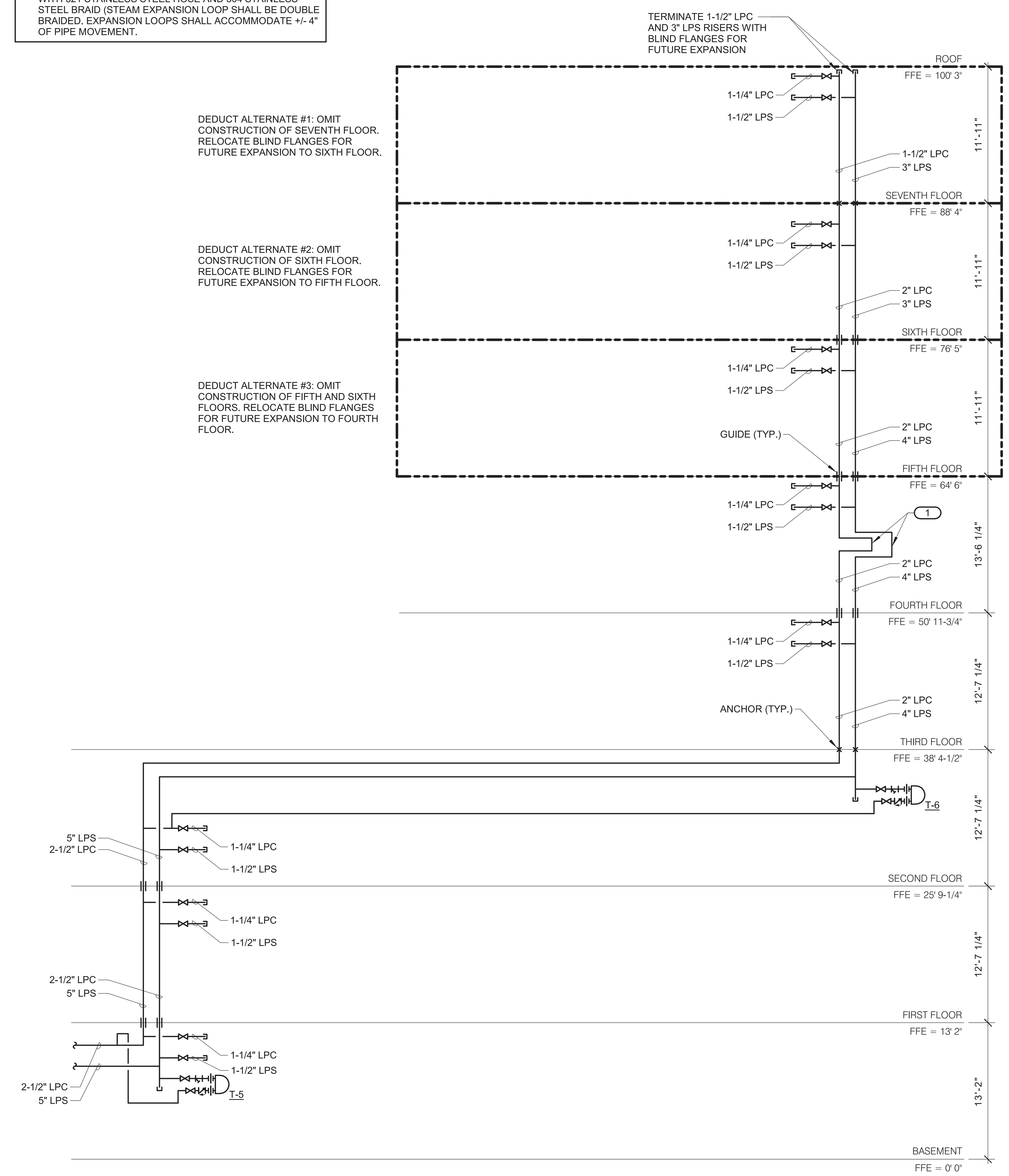


1 STEAM-CONDENSATE FLOW DIAGRAM

NO SCALE

NOTES:

1. PIPE AND COORDINATE RECEIVER STATIONS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS INCLUDING OVERFLOW, DRAIN, VENT, PUMP AND DISCHARGE PIPING AND ALL LOOSE COMPONENTS SUPPLIED WITH SYSTEM.
2. PRV'S ARE DESIGNED TO REDUCE THE TOTAL STEAM LOAD. THE LARGER PRV SHALL BE SET 2-3 PSI BELOW THE SMALLER CAPACITY PRV.
3. ROUTE SAFETY RELIEF VALVE DISCHARGE UP THROUGH THE ROOF AND TERMINATE SIX FEET ABOVE ROOF. TERMINATION OF RELIEF VENTS MUST BE AT LEAST 15 FT ABOVE ANY WALKWAY AND AT LEAST 10 FT ABOVE GRADE AND DIRECTED AWAY FROM ANY ACCESSIBLE AREA. REFER TO FLOOR PLANS FOR ROUTING.
4. CV OF BYPASS VALVE SHALL NOT BE GREATER THAN CV OF LARGEST PRV.
5. SIZE FLASH TANK SAFETY RELIEF VENTS PER FLASH TANK MANUFACTURER RECOMMENDATIONS.



2 STEAM AND CONDENSATE RISER DIAGRAM

NO SCALE

BID SET

Revisions:	Date:

CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

STAMP: LICENSED PROFESSIONAL ENGINEER, ERIC J. ... 20825, IOWA, 05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
STEAM AND CONDENSATE FLOW DIAGRAM	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21; Checked: DAVING; Drawn: DELLLE	Drawing Number: M401

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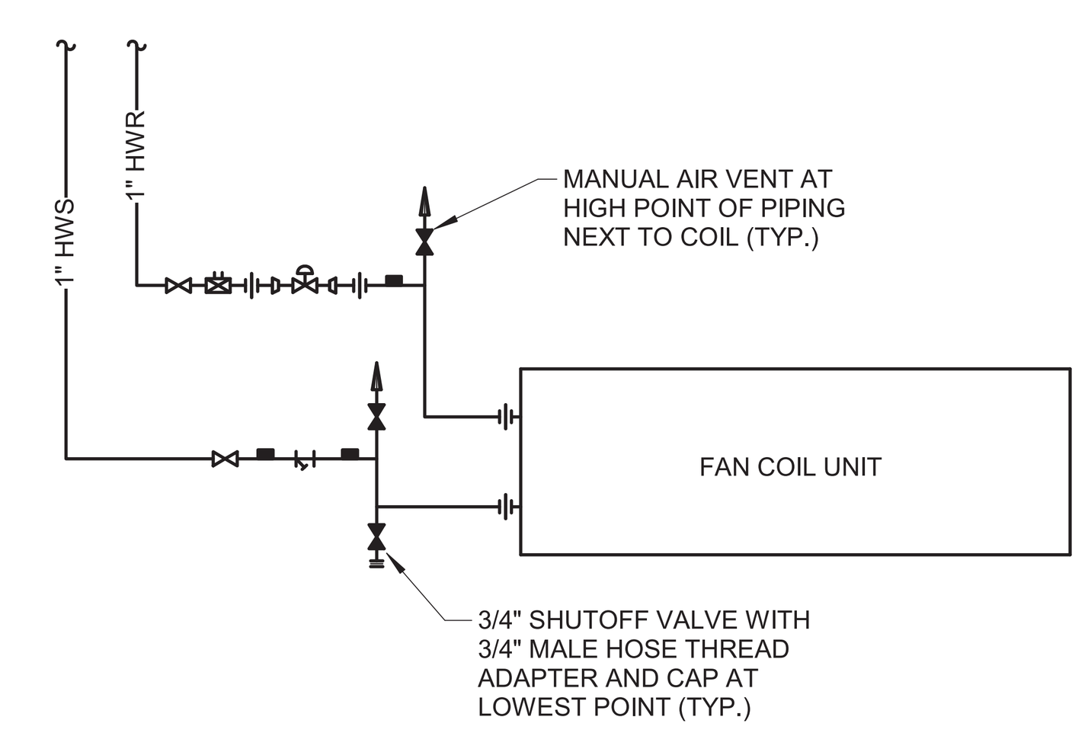
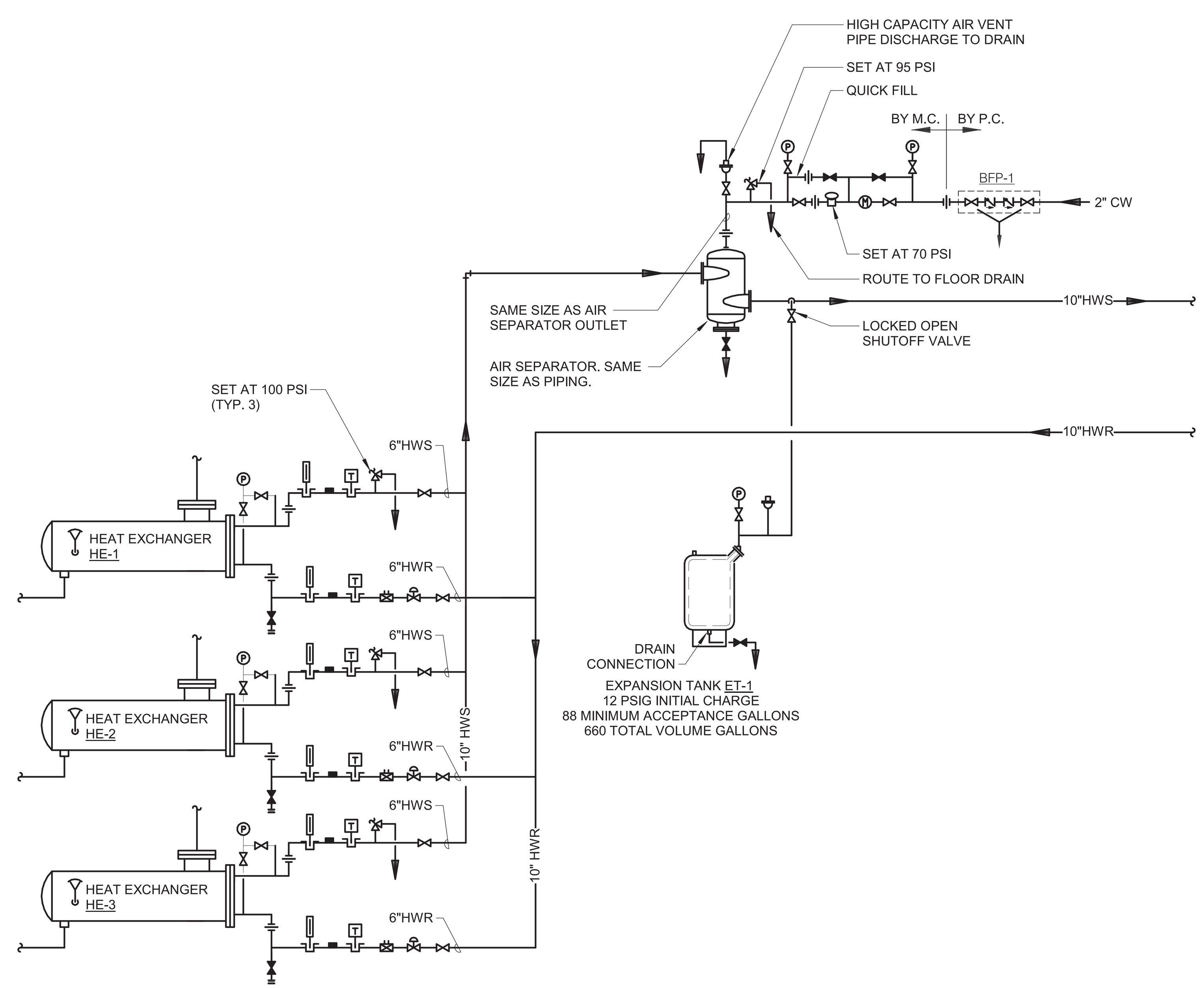
KEYNOTES: (#)

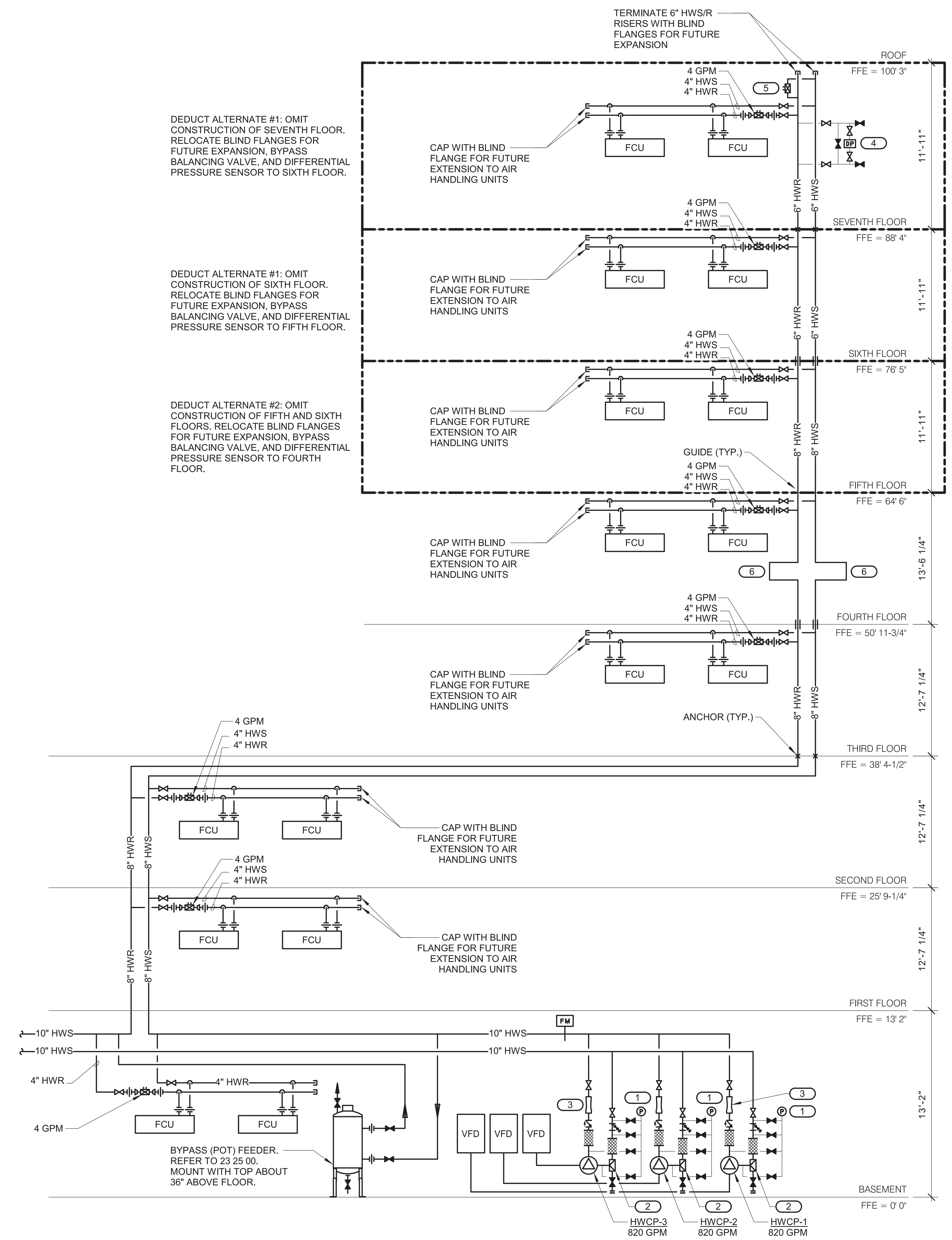
1. PRESSURE GAUGE WITH SNUBBER PER SPECIFICATIONS. MOUNT ON WALL, STAND, OR VIBRATION-FREE PIPE BRACKET ABOVE PUMP. INSTALL FLEXIBLE COPPER TUBING TO PIPING CONNECTIONS TO AVOID VIBRATION DAMAGE TO THE GAUGE. GAUGE SHALL BE GLYCERIN FILLED. PREFERRED CONNECTION LOCATIONS ARE: (a) JUST UPSTREAM OF STRAINER, (b) GAUGE PORT ON SUCTION DIFFUSER OR BETWEEN STRAINER & PUMP INLET, (c) GAUGE TAPPING ON PUMP INLET FLANGE, (d) GAUGE TAPPING ON PUMP OUTLET FLANGE.
2. REMOVE & RETAIN TEMPORARY STRAINER FROM SUCTION DIFFUSER AT END OF CONSTRUCTION. PROVIDE SUPPORT LEG AS REQUIRED BY MANUFACTURER.
3. TRIPLE DUTY OR BALANCING VALVES ARE NOT PERMITTED ON VARIABLE FLOW SYSTEMS. PROVIDE VENTURI FLOW MEASUREMENT FOR TESTING.
4. DIFFERENTIAL PRESSURE SENSOR FIELD SET AT 5 PSID. (ADJUSTABLE). DIFFERENTIAL PRESSURE SENSOR USED TO CONTROL SECONDARY PUMP VFD'S. PIPE PER MANUFACTURER'S RECOMMENDATIONS. VERIFY FINAL LOCATIONS WITH ENGINEER.
5. 3" BYPASS BALANCING VALVE. BALANCE TO 60 GPM. SIZED FOR 120 GPM FUTURE LOAD.
6. PROVIDE PREMANUFACTURED PIPE EXPANSION LOOPS. BASIS OF DESIGN IS METRAFLEX METRALOOP WITH 321 STAINLESS STEEL HOSE AND 304 STAINLESS STEEL BRAID. EXPANSION LOOPS SHALL ACCOMMODATE +/- 4" OF PIPE MOVEMENT.



3 FAN COIL UNIT - HEATING WATER PIPING DETAIL
NO SCALE



1 HEATING WATER FLOW DIAGRAM
NO SCALE



2 HEATING WATER RISER DIAGRAM
NO SCALE

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9906
www.imegcorp.com
PROJECT # 19004249.01

REFERENCE SCALE IN INCHES

BID SET

Revisions:	Date:

CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

STAMP: LICENSED PROFESSIONAL ENGINEER ERIC J. HENDRICKSON 20825 IOWA 05/28/21

Office of Construction and Facilities Management
VA U.S. Department of Veterans Affairs

Drawing Title	Phase	Project Title	Project Number
HEATING WATER FLOW DIAGRAM	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
		Issue Date: 05/28/21 · Checked: DAVING · Drawn: DELLLE	Drawing Number: M402

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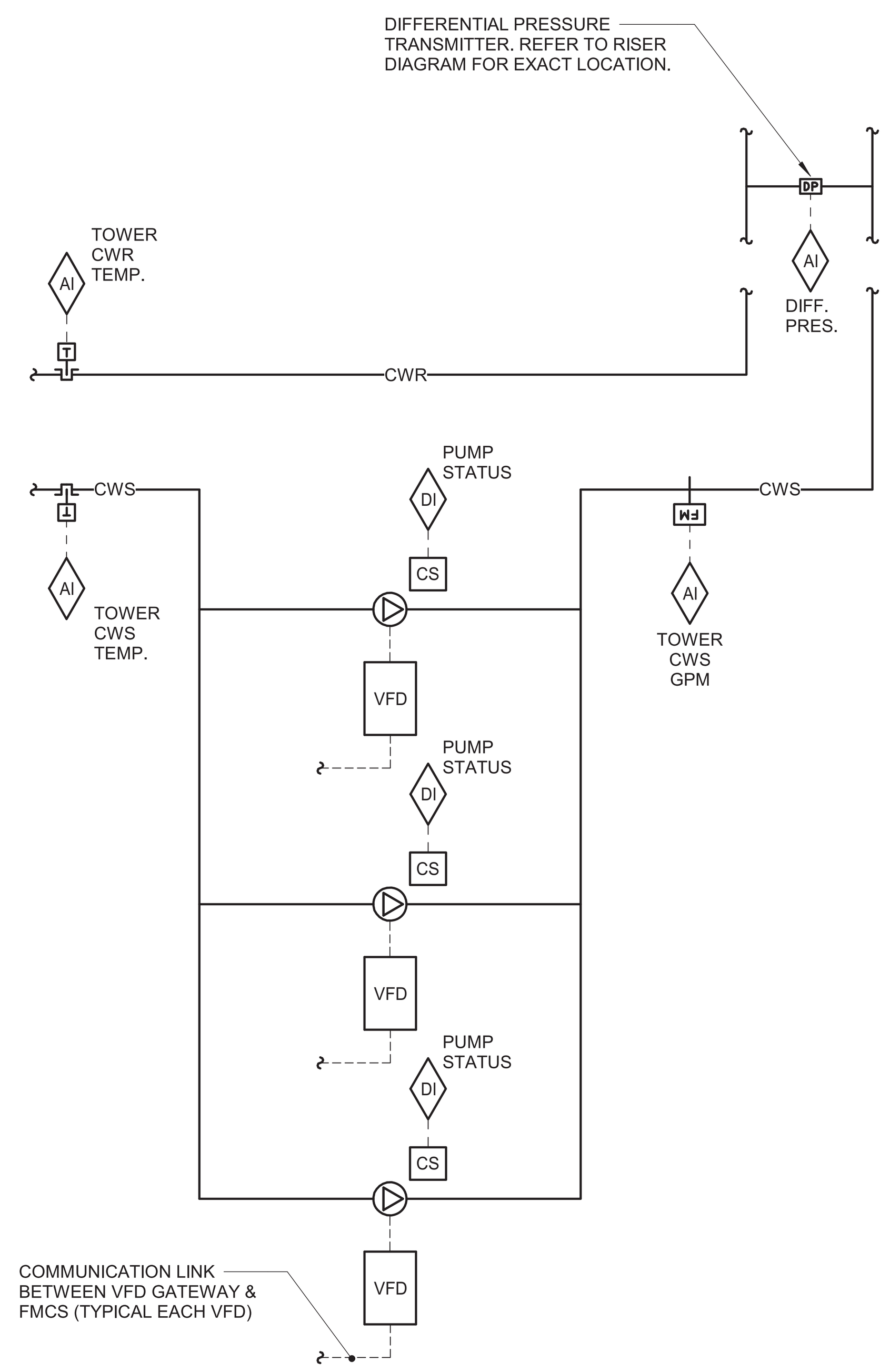


1 SECONDARY CHILLED WATER PUMPS CONTROL DIAGRAM

NO SCALE

SEQUENCE OF OPERATION

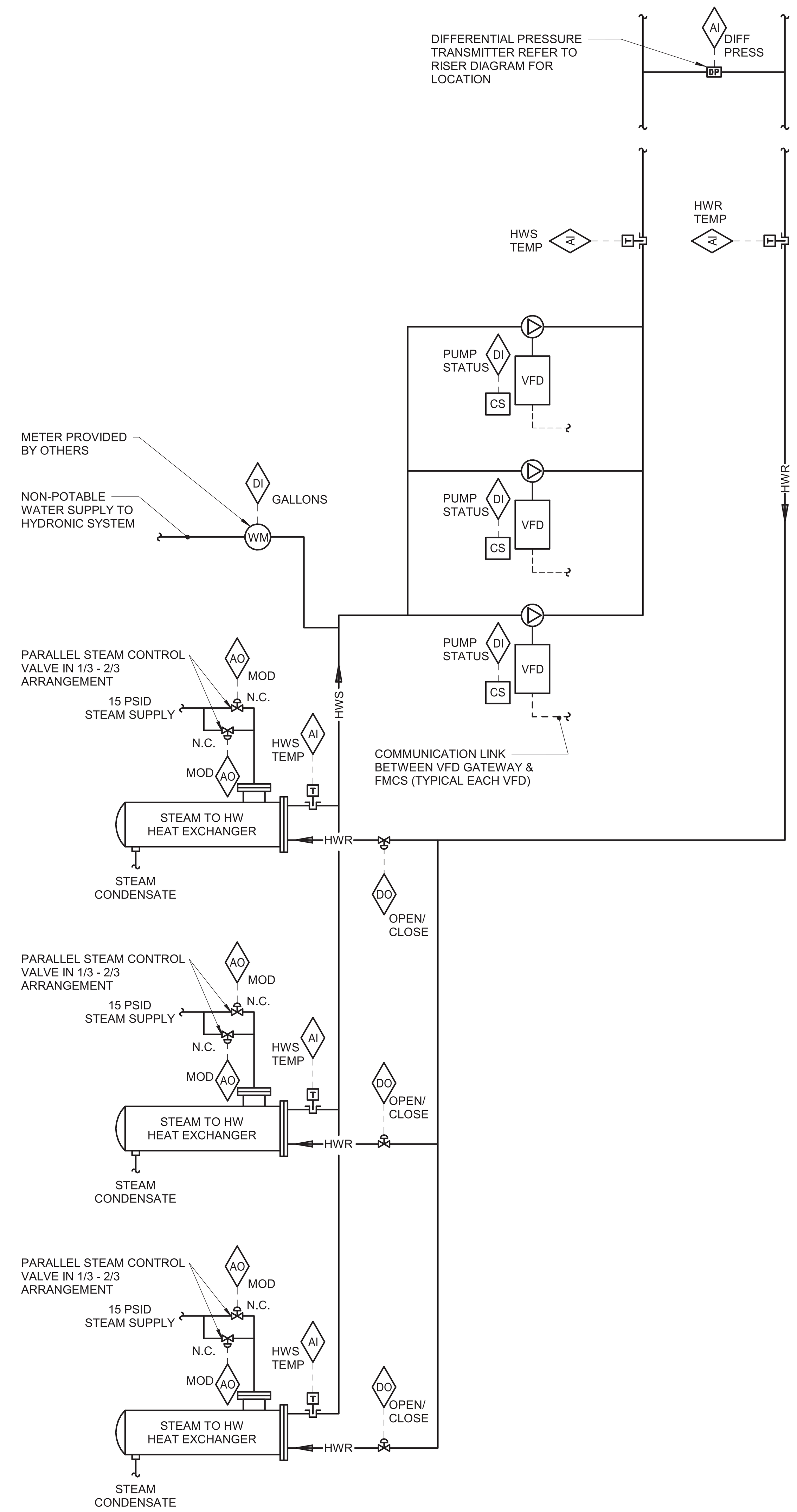
CHILLER CONTROL:
EXISTING CHILLER OPERATION SHALL REMAIN CONTROLLED BY THE FMCS AS IT IS CURRENTLY PROGRAMMED.

SECONDARY CHILLED WATER PUMP CONTROL:
ONLY TWO SECONDARY PUMPS SHALL RUN AT A TIME. THE THIRD PUMP IS 50% REDUNDANT. THE FMCS SHALL LEAD/LAG/IDLE THE SECONDARY PUMPS BASED ON RUN TIME: SWITCH EVERY 400 HOURS (ADJ.). PROVIDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD, WHICH IS LAG, AND WHICH IS IDLE.

THE FMCS SHALL MODULATE OUTPUT TO THE SECONDARY PUMP VFDs AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK). FMCS SHALL RESET THE DP SETPOINT UNTIL ONE MODULATING CONTROL VALVE IS 95% OPEN. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ) OR DROP BELOW 2 PSID.

COOLING TOWER CONTROL:
EXISTING COOLING TOWER OPERATION SHALL REMAIN CONTROLLED BY THE FMCS AS IT IS CURRENTLY PROGRAMMED.

ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE INDICATED AT THE FMCS WHEN THE FOLLOWING OCCUR:
- IF CHILLED WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- SHOULD THE FMCS COMMAND THE LEAD PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND A LAG PUMP SHALL AUTOMATICALLY START.
- AN ALARM CONDITION OCCURS AT ANY VFD.
- IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).



2 HEATING CONTROL - HEAT EXCHANGER VARIABLE/PRIMARY

NO SCALE

SEQUENCE OF OPERATION:
THE STEAM CONTROL VALVES SHALL MODULATE TO THE HEAT EXCHANGER AS REQUIRED TO MAINTAIN SYSTEM SUPPLY TEMP AS FOLLOWS:
- THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL BE MODULATED IN ORDER TO MAINTAIN THE HEATING WATER SUPPLY TEMPERATURE.
- IF THE 1/3 CAPACITY CONTROL VALVE IS 100% OPEN AND THE HEAT EXCHANGER IS UNABLE TO MAINTAIN SETPOINT, THE 1/3 CAPACITY CONTROL VALVE SHALL CLOSE AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT.
- IF THE 2/3 CAPACITY CONTROL VALVE IS 100% OPEN AND IS UNABLE TO MAINTAIN SETPOINT, THE 2/3 CAPACITY CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY CONTROL VALVE SHALL ALSO MODULATE OPEN TO MAINTAIN SETPOINT.
- ON A DECREASE IN LOAD, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN OPEN AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED.
- ON A FURTHER DECREASE IN LOAD, THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL REMAIN SHUT AND THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE CLOSED UNTIL SETPOINT IS ACHIEVED OR UNTIL IT REACHES 40% (ADJ.) OPEN.
- IF THE 2/3 CAPACITY STEAM CONTROL VALVE REACHES 40% (ADJ.) OPEN AND SETPOINT IS STILL NOT ACHIEVED, THE 2/3 CAPACITY STEAM CONTROL VALVE SHALL CLOSE AND THE 1/3 CAPACITY STEAM CONTROL VALVE SHALL MODULATE OPEN UNTIL SETPOINT IS ACHIEVED.

STEAM CONTROL VALVE OPERATION SHALL NOT BE ENABLED UNLESS ONE HW PUMP IS RUNNING AS PROVEN BY VFD STATUS. FMCS SHALL LIMIT THE HWS TEMP TO MAX. 190°F (ADJ.).

THE FMCS SHALL MODULATE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. THE DP SETPOINT SHOULD BE MAINTAINED AT THE BOTH DP TRANSMITTERS. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK). FMCS SHALL RESET THE DP SETPOINT UNTIL ONE MODULATING CONTROL VALVE IS 95% OPEN. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ) OR DROP BELOW 2 PSID.

HWS TEMP SETPOINT:
FMCS SHALL RESET THE HWS TEMP IN ACCORDANCE WITH HWS RESET SCHEDULE.

HEATING WATER PUMP CONTROL:
ONLY TWO PUMPS SHALL RUN AT A TIME. THE THIRD PUMP IS 50% REDUNDANT. THE FMCS SHALL LEAD/LAG/IDLE THE PUMPS BASED ON RUN TIME: SWITCH EVERY 400 HOURS (ADJ.). PROVIDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD, WHICH IS LAG, AND WHICH IS IDLE.

START/STOP: THE FMCS SHALL START THE LEAD PUMP VIA THE VFD AND SHALL RUN CONTINUOUSLY. HEATING WATER PUMPS SHALL BE STARTED AND STOPPED THROUGH A HAND-OFF-AUTO SWITCH ON THE FACE OF THE VFD. WHEN PLACED IN THE HAND POSITION, PUMP MOTOR SHALL RUN CONTINUOUSLY. WHEN PLACED IN THE AUTO POSITION, THE FMCS SHALL CONTROL PUMP OPERATION AS DESCRIBED BELOW. WHEN PLACED IN THE OFF POSITION, THE PUMP MOTOR SHALL BE DE-ENERGIZED.

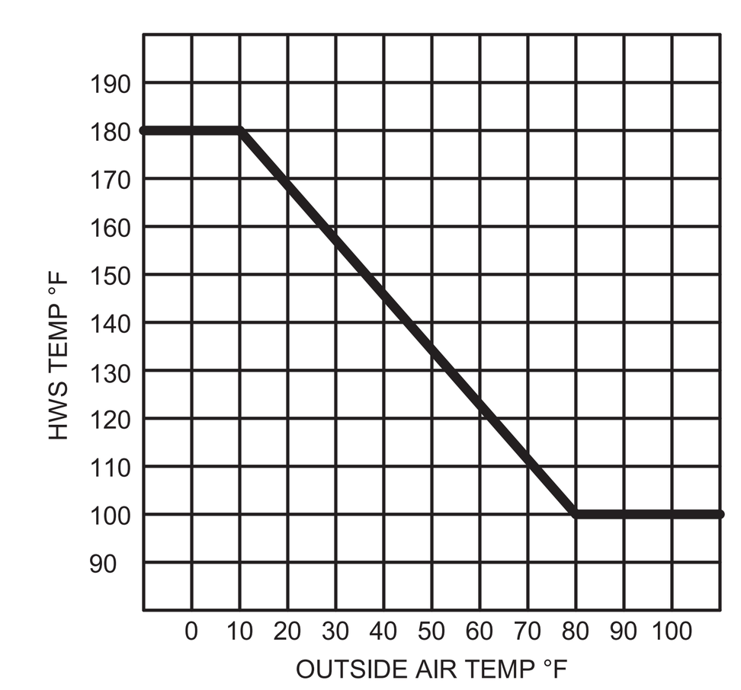
THE FMCS SHALL MODULATE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN DP SETPOINT AT THE LOCATION OF THE DP TRANSMITTER. DP TRANSMITTER SIGNAL SHALL BE WIRED DIRECTLY TO THE CONTROLLER SERVING PUMP VFD (SIGNAL SHALL NOT BE TRANSMITTED ACROSS THE FMCS NETWORK.) FMCS SHALL RESET THE DP SETPOINT UNTIL ONE SYSTEM COIL MODULATING CONTROL VALVE IS 95% OPEN. IN NO CASE SHALL DP SETPOINT EXCEED 10 PSID (ADJ) OR DROP BELOW 2 PSID.

PUMP SETTING: IF THE OPERATING PUMP(S) CANNOT MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT FOR 10 MINUTES (ADJ). THE OPERATING PUMP(S) SPEED SHALL BE REDUCED TO 60% (ADJ). AND THE LAG PUMP SHALL START. ONCE ALL OPERATING PUMP(S) ARE AT 60% (ADJ) SPEED. THE PUMPS SHALL MODULATE IN UNISON TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT.

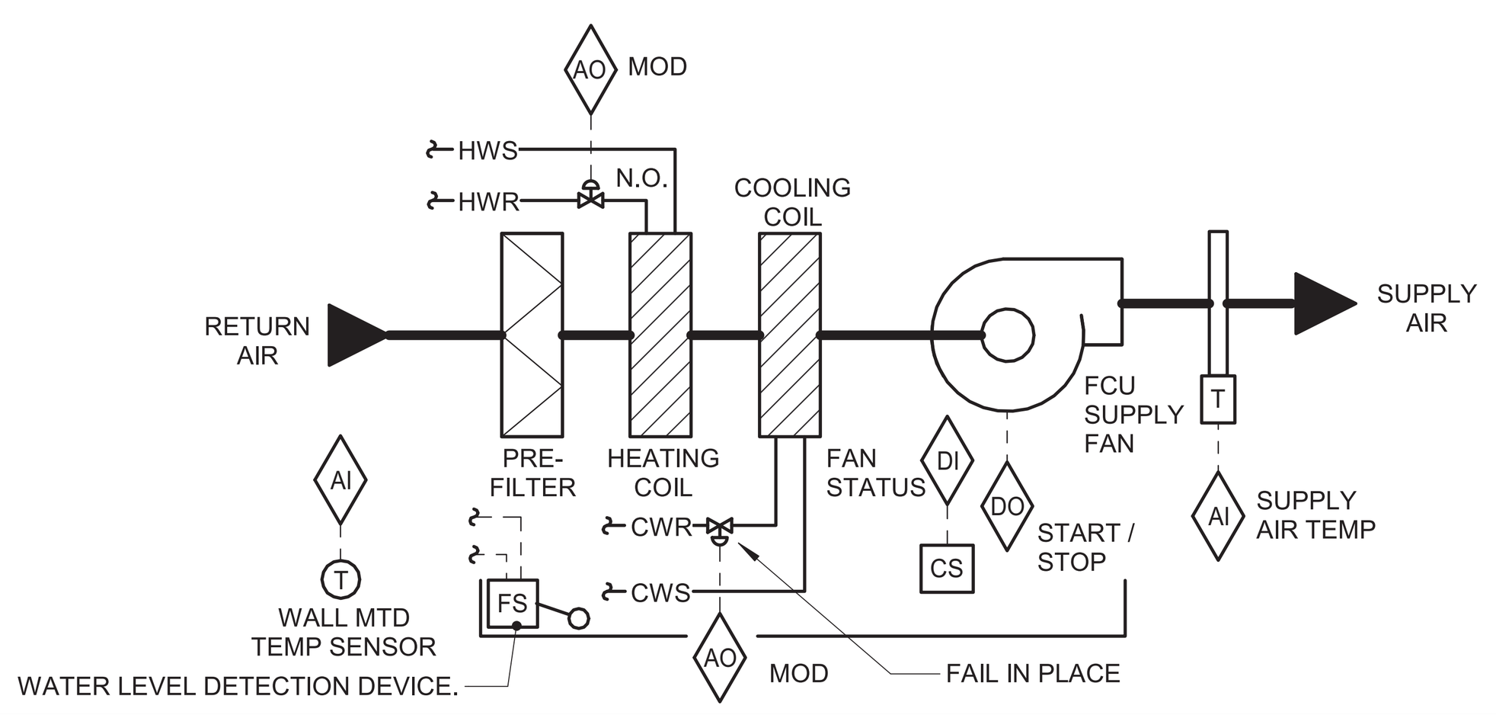
WHEN THE OPERATING PUMP(S) SPEED BELOW 40% (ADJ) FOR 15 MINUTES (ADJ). TURN OFF THE LAG PUMP. THE REMAINING OPERATING PUMPS SHALL MODULATE IN UNISON TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT.

THE FMCS SHALL LEAD/LAG THE PUMPS ON A WEEKLY BASIS. INCLUDE GRAPHIC TOGGLE ON OPERATOR WORKSTATION GRAPHICAL SCREEN TO ALLOW OPERATOR TO MANUALLY SELECT WHICH PUMP IS LEAD AND WHICH IS LAG.

ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- SHOULD THE FMCS COMMAND THE LEAD HW PUMP TO OPERATE AND THE PUMP FAILS TO DO SO AS DETERMINED BY THE VFD STATUS, AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG HW PUMP SHALL AUTOMATICALLY START.
- AN ALARM CONDITION OCCURS AT ANY VFD.
- WHEN 2 GALLONS (ADJ.) OF HYDRONIC SYSTEM MAKE-UP WATER FLOWS THROUGH METER AFTER THE LAST ACKNOWLEDGEMENT. WHEN ALARM IS MANUALLY ACKNOWLEDGED, THE FMCS SHALL RE-ZERO THE COUNTER.
- IF HEATING WATER SUPPLY TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT FOR MORE THAN 10 MINUTES (ADJ.).
- IF SYSTEM DIFFERENTIAL PRESSURE IS NOT MAINTAINED FOR MORE THAN 15 MINUTES (ADJ.).



HWS TEMP RESET SCHEDULE



SEQUENCE OF OPERATION:
SUPPLY FAN OPERATION SHALL BE CONTROLLED BY THE FMCS THROUGH A CONTACTOR. THE UNIT SHALL MAINTAIN A ROOM AIR TEMPERATURE SETPOINT.

WHENEVER THE ROOM AIR TEMPERATURE IS 2°F (ADJ.) ABOVE THE SETPOINT, THE FOLLOWING SHALL OCCUR:
- THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.
- THE CHILLED WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT.

WHENEVER THE ROOM AIR TEMPERATURE IS 3°F (ADJ.) BELOW THE SETPOINT, THE FOLLOWING SHALL OCCUR:
- THE CHILLED COIL CONTROL VALVE SHALL BE CLOSED.
- THE HEATING WATER CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT.

IF ROOM AIR TEMPERATURE IS MAINTAINED AND BOTH THE HEATING AND COOLING COIL ARE VALVES CLOSED, THE SUPPLY FAN SHALL BE DE-ENERGIZED. IF EITHER OF THE COIL CONTROL VALVES OPEN, THE SUPPLY FAN SHALL BE ENERGIZED.

WHEN FLOATING CV'S ARE USED, FMCS SHALL PERFORM AN AUTO-ZERO FUNCTION EVERY NIGHT DURING UNOCCUPIED TIMES. THE FMCS SHALL STAGGER AUTO-ZERO SEQUENCES SO THAT ALL VALVES DO NOT SIMULTANEOUSLY CLOSE.

ALARMS, INTERLOCKS & SAFETIES:
WHEN THE FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, FCU SHALL SHUTDOWN.

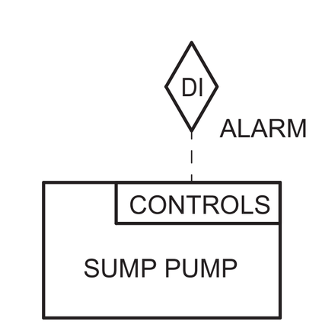
A WATER LEVEL DETECTION DEVICE SHALL CLOSE THE CHILLED WATER VALVE AND PREVENT SUPPLY FAN OPERATION UPON DETECTION OF HIGH WATER LEVEL AND SHALL INDICATE AN ALARM TO THE OPERATOR WORKSTATION.

FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IF THE FMCS COMMANDS ANY SUPPLY FAN TO OPERATE AND THE FAN CURRENT RELAY DETECTS INSUFFICIENT CURRENT FLOW.

WHENEVER FCU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
- HEATING AND CHILLED WATER CONTROL VALVE SHALL CLOSE.
- SUPPLY FAN SHALL BE DE-ENERGIZED.

3 FAN COIL UNIT CONTROL

NO SCALE



ALARMS, INTERLOCKS & SAFETIES:
FMCS SHALL INDICATE AN ALARM TO THE FMCS OPERATOR WORKSTATION IN THE EVENT THE FOLLOWING OCCUR:
- HIGH WATER CONDITION.
- CONTROLLER INDICATES AN ALARM CONDITION.

4 SUMP PUMP MONITORING

NO SCALE

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9906 FAX: 515.334.9906
www.imegcorp.com
PROJECT # 19004249.01

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CONSULTANT	ARCHITECT/ENGINEER OF RECORD	STAMP		Drawing Title	Phase	Project Title	Project Number
IMEG	ANDERSON 13605 1st Ave. N. #100 Plymouth, MN 55441 P 763.412.4000 | F 763.412.4090 | ae-mn.com Anderson Engineering of Minnesota, LLC | Proj # 15744	LICENSED PROFESSIONAL ENGINEER ERIC J. ... IOWA 05/28/21	Office of Construction and Facilities Management; VA U.S. Department of Veterans Affairs	CONTROL DIAGRAMS	100% CONSTRUCTION DOCUMENTS	NWIHCS - CONSTRUCT AIR HANDLING TOWER	636-18-303
				Approved:	FULLY SPRINKLERED	Location: OMAHA, NE	Building Number: 1
						Issue Date: 05/28/21; Checked: DAVING; Drawn: DELLE	Drawing Number: M500

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PUMP SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2.ONE PUMP IS 50% REDUNDANT.

							ELECTRICAL (NOTE 1)							MAX. DIMENSIONS				VIBRATION ISOLATION				
												DISCONNECT		CONTROLLER/ STARTER								
TAG NAME	SERVICE	GPM	PUMP FT. HEAD AT DESIGN	MINIMUM PUMP EFFICIENCY	INLET SIZE	IMPELLER SIZE	HP (NOTE E)	RPM	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	LENGTH	WIDTH	HEIGHT	WEIGHT	TYPE	DEFL.	MANUFACTURER	MODEL	NOTES
CWCP-1	TOWER CHILLED WATER	920.0	90.00	80.6	6"	11.375	40	1602	480	3	EC	NF	EC	VFD	56"	26.5	30.5	1525	3	3/4"	Bell & Gossett	5 GB	NOTE 2
CWCP-2	TOWER CHILLED WATER	920.0	90.00	80.6	6"	11.375	40	1602	480	3	EC	NF	EC	VFD	56"	26.5	30.5	1525	3	3/4"	Bell & Gossett	5 GB	NOTE 2
CWCP-3	TOWER CHILLED WATER	920.0	90.00	80.6	6"	11.375	40	1602	480	3	EC	NF	EC	VFD	56"	26.5	30.5	1525	3	3/4"	Bell & Gossett	5 GB	NOTE 2
HWCP-1	TOWER HEATING WATER	385.0	80.00	78	4"	10.375	15	1614	480	3	EC	NF	EC	VFD	42.25"	21.5"	25.5"	762	3	3/4"	Bell & Gossett	3 EB	NOTE 2
HWCP-2	TOWER HEATING WATER	385.0	80.00	78	4"	10.375	15	1614	480	3	EC	NF	EC	VFD	42.25"	21.5"	25.5"	762	3	3/4"	Bell & Gossett	3 EB	NOTE 2
HWCP-3	TOWER HEATING WATER	385.0	80.00	78	4"	10.375	15	1614	480	3	EC	NF	EC	VFD	42.25"	21.5"	25.5"	762	3	3/4"	Bell & Gossett	3 EB	NOTE 2

HEAT EXCHANGER SCHEDULE - STEAM TO WATER

NOTES:
1.STEAM PRESSURE INDICATED IS THE PRESSURE AVAILABLE DOWNSTREAM OF THE CONTROL VALVE.
2.ONE HEAT EXCHANGER IS 50% REDUNDANT.

		WATER				STEAM (NOTE 1)		HEATING SURFACE FT²	FOULING FACTOR	MAX. DIMENSIONS		WEIGHT			
TAG NAME	SERVICE	GPM	W.P.D. FT. HEAD	EWT °F	LWT °F	PSIG	LB/HR			LENGTH	DIAMETER	DRY	MANUFACTURER	MODEL	NOTES
HE-1	TOWER HEATING WATER	820.0	0.7	150	180	15	11500	248.5	0.0003	76"	1'-10"	1396	TACO	E2220SS	NOTE 2
HE-2	TOWER HEATING WATER	820.0	0.7	150	180	15	11500	248.5	0.0003	76"	1'-10"	1396	TACO	E2220SS	NOTE 2
HE-3	TOWER HEATING WATER	820.0	0.7	150	180	15	11500	248.5	0.0003	76"	1'-10"	1396	TACO	E2220SS	NOTE 2

PRESSURE REDUCING VALVE SCHEDULE

NOTES:
1.COMPLETE STATION TO INCLUDE SAFETY VALVE, BYPASS, STEAM TRAPS, ETC. REFER TO STEAM AND CONDENSATE FLOW DIAGRAM FOR ADDITIONAL REQUIREMENTS.
2.REFER TO SPECIFICATION SECTION 23 22 13 FOR ADDITIONAL INFORMATION.

TAG NAME	SERVICE	LB/HR	INLET PRESSURE PSI	OUTLET PRESSURE PSI	VALVE SIZE	MANUFACTURER	MODEL	NOTES
PRV-1A	TOWER HEATING WATER AND HUMIDIFICATION	18200	90	15	3"	THERMAFLOW	JVV	NOTES 1 & 2
PRV-1B	TOWER HEATING WATER AND HUMIDIFICATION	8600	90	15	2"	THERMAFLOW	JVV	NOTES 1 & 2

FLASH TANK SCHEDULE

NOTES:
1.CLOSED TYPE, WELDED STEEL CONSTRUCTION, TESTED AND STAMPED IN ACCORDANCE WITH SECTION 8D OF ANSI/ASME BOILERS AND PRESSURE VESSELS CODE FOR 150 PSI WORKING PRESSURE; STAINLESS STEEL WEAR PLATE, CLEANED, PRIME COATED AND SUPPLIED WITH STEEL SUPPORT LEGS. CONSTRUCT WITH NOZZLES AND TAPPINGS FOR ACCESSORIES AND PIPE CONNECTIONS.
2.FLASH TANK SHALL BE SIZED FOR UP TO 2500 PPH OF CONDENSATE INLET FLOW.

	SERVICE												
TAG NAME	INLET	OUTLET	DESIGN PRESSURE (PSIG)	OPERATING PRESSURE (PSIG)	INLET & VENT CONNECT TYPE	INLET FLOW LBS/HR	PERCENT FLASH	INLET SIZE	VENT SIZE	CONDENSATE OUTLET CONNECT TYPE	COND OUTLET SIZE	MANUFACTURER	MODEL	REMARKS
FT-1	HPC (90 PSIG)	S15 SYSTEM	90	15	150# FLANGE	100	8%	2"	2 1/2"	NPT	1 1/2"	CEMLINE	V4FST	NOTES 1 & 2

RELIEF VALVE SCHEDULE

NOTES:
1.ASME CODE STAMPED VALVE PROVIDED WITH PRV TO RELIEVE MAXIMUM COMBINED CAPACITY OF STATION.
2.PROVIDE WITH DRIP PAN BELOW.

TAG NAME	SYSTEM SERVED	CAPACITY LB/HR	SET POINT PSIG	INLET SIZE (IN.)	OUTLET SIZE (IN.)	ORIFICE (IN.)	MANUFACTURER	MODEL	NOTES
RV-1	PRV-1A/1B	33981	25	6	8"	4.73"	KUNKLE	6252	NOTES 1 & 2

TRAP SCHEDULE

NOTES:
1.CAPACITY LISTED IS FOR EACH TRAP AND INCLUDES SAFETY FACTOR.
2.SUITABLE TO 125 PSIG, SIDE INLET & OUTLET, SS FLOAT MECHANISM AND VALVE, CAST IRON BODY, BALANCED PRESSURE THERMOSTATIC AIR VENT, ALL INTERNALS REPLACEABLE IN-LINE.
3.CAPACITY AT OTHER DIFFERENTIAL PRESSURES SHALL BE AT LEAST 525#/HR AT 10 PSID, AND 1080#/HR AT 75 PSID. 1/8" ORIFICE.
4.WITH INTEGRAL VACUUM BREAKER.
5.SIDE INLET AND OUTLET INVERTED BUCKET TRAP. 250 PSIG RATED. CAST IRON BODY, ALL INTERNAL COMPONENTS OF STAINLESS STEEL AND REPLACEABLE IN-LINE.
6.CAPACITY AT OTHER DIFFERENTIAL PRESSURES SHALL BE AT LEAST 150#/HR AT 10 PSID, 310#/HR AT 40 PSID, & 420#/HR AT 75 PSID. #38 ORIFICE.

TAG NAME	SERVICE	TYPE	SAFETY FACTOR	SIZE	CAPACITY LB HR (NOTE 1)	PRESSURE DIFFERENTIAL	MANUFACTURER	MODEL	NOTES
T-1	PRV INLET DRIP	F & T	2	3/4"	100	85	ARMSTRONG	125-A SERIES	NOTES 2, 3, & 4
T-2	PRV OUTLET DRIP	F & T	2	3/4"	100	15	ARMSTRONG	125-A SERIES	NOTES 2, 3, & 4
T-3	HEAT EXCHANGER DRIPS	F & T	2	3/4"	100	15	ARMSTRONG	125-A SERIES	NOTES 2, 3, & 4
T-4	HEAT EXCHANGER OUTLETS	F & T	1.25	2 1/2"	15900	0.5	HOFFMAN SPECIALTY	C SERIES	NOTES 2, 3, & 4
T-5	TOWER RISER DRIP	I.B.	2	1 1/2"	100	10	ARMSTRONG	800T	NOTES 5 & 6
T-6	TOWER RISER DRIP	I.B.	2	1 1/2"	100	10	ARMSTRONG	800T	NOTES 5 & 6

CONDENSATE RETURN STATION SCHEDULE

NOTES:
1.LB/HR IS ACTUAL MAXIMUM LOAD OF SYSTEM.
2.PROVIDE WITH GAUGE GLASS, DIAL THERMOMETER, INLET BASKET STRAINER, DISCHARGE PRESSURE GAUGE, LIFTING EYES, NEMA 1 HIGH LEVEL FLOAT SWITCH, AND SUCTION ISOLATION VALVES.
3.PROVIDE HARD WIRED CONNECTION TO BAS FOR PUMP FAILURE ALARM.

										ELECTRICAL							MAX. DIMENSIONS					
														DISCONNECT		CONTROLLER/ STARTER						
TAG NAME	SERVICE	CONFIGURATION	LB/HR (NOTE 1)	CONDENSATE TEMPERATURE °F	GPM TOTAL	RECEIVER CAPACITY GALLONS	DISCHARGE PRESSURE (PSI)	RECEIVER PRESSURE RATING (PSIG)	NO. OF PUMPS	HP EA.	NO OF POWER CONNECTIONS	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	SCCR	LENGTH	WIDTH	HEIGHT	MANUFACTURER	MODEL	NOTES
CRS-1	HEAT EXCHANGERS AND PRVs	DUPLEX	31800	210 °F	22 GPM	23 gal	40	15	2	1.5	2	120 V	1	EC	NF	MFR	5000	38 3/8"	37 3/4"	36 1/4"	DOMESTIC PUMP	23	NOTES 2 & 3

FAN COIL UNIT SCHEDULE - HYDRONIC

NOTES:
1.PROVIDE FAN COIL UNIT WITH CONDENSATE PUMP.
2.PROVIDE FAN COIL UNIT WITH WALL MOUNTED THERMOSTAT. SEE PLANS FOR LOCATIONS.
3.FAN COIL UNITS IN AREAS WITH EXPOSED CEILINGS HAVE WILD RETURN AND WILD SUPPLY OPENINGS. UNITS ARE NOT DUCTED.
4.FAN COIL UNITS IN AREAS WITH CEILINGS ARE TELESCOPING TYPE WITH BOTTOM FACE RETURN AND BOTTOM FACE SUPPLY. PROVIDE WITH MANUFACTURER'S GRILLE STAMPED ACCESS PANEL.
5.SCHEDULED LOADS ARE MINIMUM CAPACITIES BASED ON ZONE HEATING AND COOLING LOADS. FAN COIL UNIT CAPACITIES MAY BE GREATER.
6.LISTED GPM IS MAXIMUM GPM FOR BASIS OF DESIGN EQUIPMENT. COORDINATE BALANCE GPMS WITH BALANCING CONTRACTOR BASED ON PERFORMANCE OF FAN COIL UNITS BEING PROVIDED OPERATING AT THE HEATING AND COOLING LOADS LISTED.

					EAT		COOLING COIL						HEATING COIL						ELECTRICAL								MAX. DIMENSIONS			WEIGHT		VIBRATION ISOLATION				
																				DISCONNECT		CONTROLLER/ STARTER													
TAG NAME	SERVICE	CFM	EXT. S.P. IN W.C.	LAT DB	DB °F	WB °F	TOTAL MBH	SENSIBLE MBH	GPM	EWT °F	LWT °F	W.P.D. FT. HD	TOTAL MBH	GPM	EWT °F	LWT °F	W.P.D. FT. HD	HP	RPM	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE C)	TYPE (NOTE C)	SCCR	LENGTH	WIDTH	HEIGHT	DRY	OPERATING	TYPE	DEFL.	MANUFACTURER	MODEL	NOTES
FCU-1	MECHANICAL ROOMS	730	0.0	55 °F	70.0	58.0	21.8	15.8	4.4	44	54	12.00	30	2.0	180	150	12.00	0.34	0	120	1	EC	NF	MFR	ECM	5000	60"	33 7/8"	12"	178	185	3	3/4"	IEC	CXB08A6	NOTES 1, 2, 3, 5, & 6
FCU-2	LEVEL 1 CORRIDOR	730	0.0	55 °F	70.0	58.0	21.8	15.8	4.4	44	54	12.00	30	2.0	180	150	12.00	0.34	0	120	1	EC	NF	MFR	ECM	5000	53"	35-7/8"	14"	82	98	3	3/4"	IEC	CBY06A7	NOTES 1, 2, 4, 5, & 6

LOUVER SCHEDULE

NOTES:
1.FINISH TYPES: TYPE 1 - MILL FINISH, TYPE 2 - 204-R1 SATIN ANODIZED, TYPE 3 - BAKED ENAMEL FINISH ON PRETREATED PRIME PAINT, STANDARD COLOR - SELECTION BY ARCHITECT. TYPE 4 - BAKED EPOXY FINISH ON PRIME COATED METAL. STANDARD COLOR - SELECTION BY ARCHITECT. TYPE 5 - DURANODIC BRONZE - LIGHT, MEDIUM, DARK. TYPE 6 - PVDF (KYNAR 500, HYLAR 5000, OR DURANAR). STANDARD COLOR - SELECTION BY ARCHITECT.

TAG NAME	AREA SERVED	CFM	SIZE (INCHES)		FREE AREA VELOCITY	S.P. IN. W.C.	FINISH (NOTE 1)	MANUFACTURER	MODEL	NOTES
			WIDTH	HEIGHT						
EAL-1a	PODIUM	80000	204	120	971	0.18	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
EAL-1b	PODIUM	70000	180	120	971	0.18	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
EAL-2	TOWER	50000	180	84	501	0.05	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
EAL-3	TOWER	50000	180	120	345	0.02	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
OAL-1	PODIUM	150000	240	192	959	0.15	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
OAL-2	TOWER	50000	180	120	1001	0.16	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	
OAL-3	TOWER	50000	180	120	690	0.08	TYPE 3	CONSTRUCTION SPECIALTIES	BLH	

AIR TERMINAL SCHEDULE

NOTES:
1.CONTRACTOR SHALL DETERMINE PROPER BORDER TYPE TO MATCH CEILING CONSTRUCTION.
2.REFER TO DRAWINGS FOR NECK SIZE.

TAG NAME	FACE SIZE (IN.) (NOTE 2)	TYPE	BORDER (NOTE 1)	MATERIAL	FINISH	VOLUME DAMPER REQUIRED	MANUFACTURER	MODEL	NOTES
ER-1	INLET +2	35 DEGREE DEFLECTION	1 1/4"	STEEL	WHITE	YES	TITUS	350R	
SD-1	24x24	PANEL FACE	LAY-IN	STEEL	WHITE	NO	TITUS	OMNI	FLUSH FACE PANEL

SCHEDULE GENERAL NOTES:

A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY:
MFR = MANUFACTURER
EC = ELECTRICAL CONTRACTOR.
MC = FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
MFR/EC = FURNISHED LOOSE BY MANUFACTURER INSTALLED BY ELECTRICAL CONTRACTOR...

B. DISCONNECT TYPE:
F = FUSED
NF = NON-FUSED

C. CONTROLLER STARTER TYPE:
FV = FULL VOLTAGE
WYE = WYE-DELTA
SS = SOLID STATE (SOFT START)
MS = MANUAL STARTER
VFD = VARIABLE FREQUENCY DRIVE
VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS

D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE, WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.

E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.

F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

G. CURB TYPE:
MFR = STANDARD CURB BY MANUFACTURER
GC = BY GENERAL CONTRACTOR
SAC = SOUND ATTENUATOR CURB

IMEG
2882 106TH STREET
DES MOINES, IA 50322
515.334.9908 FAX: 515.334.9908
www.imegcorp.com
PROJECT # 190042491.01

REFERENCE SCALE IN INCHES
0 1 2 3

Revisions:	Date:

CONSULTANT: IMEG

ARCHITECT/ENGINEER OF RECORD: ANDERSON
13605 1st Ave. N. #100 Plymouth, MN 55441
P 763.412.4000 | F 763.412.4090 | ae-mn.com
Anderson Engineering of Minnesota, LLC | Proj # 15744

STAMP: LICENSED PROFESSIONAL ENGINEER — ERIC J. REYNOLDS — 20825 — IOWA — 05/28/21

Office of Construction and Facilities Management
VA | U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SCHEDULES
Phase: 100% CONSTRUCTION DOCUMENTS
Project Title: NWIHCS - CONSTRUCT AIR HANDLING TOWER
Project Number: 636-18-303
Building Number: 1
Approved:
Location: OMAHA, NE
Issue Date: 05/28/21
Checked: DAVING
Drawn: DELLLE
Drawing Number: M600

BID SET