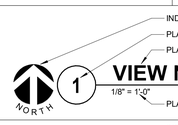
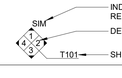
VIEW KEY

NAME
10' - 0"
LEVEL NAME
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 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)

FIRE / SMOKE BARRIER DESIGNATIONS

REFER TO ARCHITECTURAL LIFE SAFETY PLANS FOR WALL, FLOOR AND FLOOR CEILING RATINGS.

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
N.C.C.	NURSE CALL CONTRACTOR
S.C.	SECURITY CONTRACTOR
T.C.	TECHNOLOGY CONTRACTOR

CONTACT PERSONS:

DESCRIPTION:	PERSON:
PROJECT MANAGER	PAUL VANDUYNE JR
MECHANICAL ENGINEER	PAUL VANDUYNE JR
ELECTRICAL ENGINEER	KELSEY RICHMOND
TECHNOLOGY ENGINEER	DONALD PAUL

MECHANICAL SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LPS	LOW PRESSURE STEAM
LPC	LOW PRESSURE CONDENSATE
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	ROUTE TO DRAIN
	NEW CONNECTION
	DIELECTRIC CONNECTION
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	THROTTLING VALVE
	BALANCING VALVE (NUMBER INDICATES GPM)
	AUTOMATIC BALANCING VALVE
	MIXING VALVE
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	SOLENOID VALVE
	CHECK VALVE
	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
	CHECK VALVE
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	BASKET STRAINER
	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

VENTILATION ABBREVIATION KEY

ABBR:	DESCRIPTION:
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
CD-E	CEILING DIFFUSER - EXISTING
CFSD	CONTROL/FIRE/SMOKE DAMPER
DPG (0-2")	DIFFERENTIAL PRESSURE GAUGE (RANGE)
DPS	DIFFERENTIAL PRESSURE SWITCH
EA	EXHAUST/RELIEF AIR
ECFSD	EXISTING CONTROL FIRE SMOKE DAMPER
EFD	EXISTING FIRE DAMPER
EFSD	EXISTING FIRE SMOKE DAMPER
ESD	EXISTING SMOKE DAMPER
FD	FIRE DAMPER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FSD	FIRE/SMOKE DAMPER
H	EXHAUST HOOD
MA	MIXED AIR
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
RA	RETURN AIR
RAD	RADIATOR
RCP	RADIANT CEILING PANEL
SA	SUPPLY AIR
SD	SMOKE DAMPER
TAB	TERMINAL AIR BOX
TD	TRANSFER DUCT
TYP	TYPICAL
UC-1	DOOR UNDERCUT BY OTHERS (1" TYPICAL)
UNO	UNLESS NOTED OTHERWISE

VENTILATION SYMBOL LIST

NOT ALL SYMBOLS MAY APPLY.

SYMBOL:	DESCRIPTION:
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
R	RISE IN DIRECTION OF AIR FLOW
D	DROP IN DIRECTION OF AIR FLOW
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	4-WAY DIFFUSER WITH BLANKOFF IN ONE DIRECTION
CD-1 6/115	AIR TERMINAL PROPERTIES SYMBOL / NECK SIZE/CFM
###	TERMINAL AIR BOX (REFER TO SCHEDULE)
###	TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
	SERIES FAN POWERED TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
	PARALLEL FAN POWERED TERMINAL AIR BOX w/REHEAT COIL (REFER TO SCHEDULE)
H	HUMIDIFIER
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
	DIFFERENTIAL PRESSURE SENSOR
C	CARBON MONOXIDE SENSOR
CO2	CARBON DIOXIDE SENSOR
H	HUMIDISTAT SENSOR
H	HUMIDISTAT/SENSOR (DUCT MOUNTED)
O	OCCUPANCY SENSOR
P	PRESSURE SENSOR/MONITOR
P	PRESSURE SENSOR (DUCT MOUNTED)
T	THERMOSTAT/SENSOR
T	TEMPERATURE SENSOR (DUCT MOUNTED)
	THERMOSTAT/SENSOR WITH HEAVY DUTY ENCLOSURE
XX-Y	AIRFLOW MEASUREMENT SYMBOL XX - AHU SYMBOL Y - SEQUENTIAL NUMBER

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

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 CLEARANCES 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. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONDITION, PAINTING, AND FINISH.
9. IN AREAS WITH DRYWALL CEILINGS COORDINATE LOCATIONS OF ACCESS PANELS WITH THE GC FOR ACCESS TO VALVES, DUCTWORK ACCESSORIES, DAMPERS, ETC. COORDINATE PANEL TYPE AND COLOR WITH ARCHITECT. NOTIFY THE GC OF THE REQUIRED ACCESS PANELS PRIOR TO BIDDING.
10. 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.
11. 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.
12. 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.
13. 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.
14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.
15. MAINTAIN MINIMUM 3'-6" CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS, MOTOR STARTERS, SWITCHES, AND DISCONNECTS.
16. 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, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

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 GENERAL CONTRACTOR 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. ALL 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 OWNER 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.
11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

MECHANICAL PHASING NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, FIRE PROTECTION, PLUMBING, MEDICAL GAS, VENTILATION, PIPING AND TEMPERATURE CONTROL.

1. REFER TO ARCHITECTURAL DRAWINGS FOR GENERAL DESCRIPTION OF PHASES. REFER TO ARCHITECTS INSTRUCTIONS FOR MORE DETAILS, PHASING SCHEDULES AND FOR CONCURRENT WORK. MECHANICAL, ELECTRICAL AND TECHNOLOGY DRAWINGS DEPICT THE INTENT OF THE FINAL DESIGN. THE MECHANICAL, ELECTRICAL, AND TECHNOLOGY DRAWINGS DO NOT DEPICT THE MEANS AND METHODS TO MEET THE REQUIREMENTS OF THE PHASING CRITERIA.
2. REVIEW PROJECT PHASING PLANS TO COORDINATE DEMOLITION WORK, OUTAGES, ETC. WITH AFFECTED ADJACENT AREAS.
3. PROVIDE TEMPORARY DUCTWORK, PIPING, SHUTOFF VALVES, ZONE VALVES, ZONE ALARMS, ETC. AS NEEDED TO MAINTAIN SERVICE TO ALL AREAS DURING ALL PHASES OF PROJECT.
4. INSTALL TEMPORARY DUCTWORK, PIPING, SHUTOFF VALVES, ETC. AS NECESSARY TO KEEP ALL OCCUPIED SPACES OPERATIONAL THROUGHOUT ALL PHASES OF THE PROJECT
5. PHASE DEMOLITION WORK TO MINIMIZE DOWNTIME.

VENTILATION GENERAL NOTES:

1. THE SIZE OF EACH BRANCH DUCT TO A TERMINAL AIR BOX (TAB) SHALL MATCH THE TAB'S INLET SIZE UNLESS THE BRANCH IS GREATER THAN 6 FEET IN LENGTH, IN WHICH CASE THE BRANCH SHOULD BE INCREASED ONE DUCT SIZE, OR AS NOTED OTHERWISE.
2. ALIGN TEMPERATURE SENSORS WITH LIGHT SWITCHES AND WHEN IN CLOSE PROXIMITY TO EACH OTHER.
3. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.
4. EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL USE PRE-BALANCE VALUES, AND NOT EXISTING CFM SHOWN ON DRAWINGS.
5. CONTRACTOR MAY REUSE PORTIONS OF EXISTING DUCT PROVIDED SIZES AND PRESSURE CLASSES ARE CORRECT, DUCT IS THOROUGHLY CLEANED AND FREE OF DEFECTS, AND ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS ARE SEALED AS SPECIFIED FOR NEW DUCTWORK.

TAB PRE-DEMOLITION NOTES:

1. BEFORE ANY DEMOLITION WORK IS BEGUN A COMPLETE AIR BALANCE TEST SHALL BE PERFORMED BY THE TESTING, ADJUSTING AND BALANCING (TAB) CONTRACTOR ON EXISTING AIR HANDLERS AND EXHAUST FANS SERVING THE AREAS AFFECTED BY CONSTRUCTION. EQUIPMENT TO BE DEMOLISHED DOES NOT REQUIRE TESTING. PROVIDE AIR BALANCE TESTING ONLY ON EQUIPMENT THAT WILL CONTINUE TO BE USED TO SERVE RENOVATED AREAS AFTER THE CONSTRUCTION PHASE IS COMPLETED.
2. PROVIDE DUCT TRAVERSE READINGS AT LOCATIONS DESIGNATED ON THE DRAWINGS BY THE "AIRFLOW MEASUREMENT SYMBOL". THOSE MEASUREMENTS SHALL BE INCLUDED IN THE PRE DEMOLITION REPORT AND SHALL BE DESIGNATED WITH THE IDENTIFIER AS MARKED ON THE DRAWINGS. READINGS SHALL BE DESIGNATED WITH THE ROOM NAME AND NUMBER AS MARKED ON THE DRAWINGS. IF FLOOR PLANS DO NOT HAVE UNIQUE ROOM NAMES AND NUMBERS, TAB CONTRACTOR SHALL INCLUDE FLOOR PLAN WITH UNIQUE NUMBER DESIGNATIONS ASSIGNED TO READINGS THAT MATCH THOSE USED IN THE FINAL PRE-DEMOLITION REPORT. DRAWINGS THAT ARE HAND-MARKED WITH RED INK ARE ACCEPTABLE, PROVIDED THEY ARE LEGIBLE
3. IN THE EVENT A DUCT TRAVERSE LOCATION AS MARKED ON THIS PLAN IS INACCESSIBLE FOR MEASUREMENT, THE TAB CONTRACTOR SHALL PERFORM THE TRAVERSE AT AN ALTERNATE LOCATION OR SHALL TAKE MULTIPLE DUCT TRAVERSES AND/OR READINGS AS REQUIRED TO DETERMINE THE AIRFLOW READING WHERE THE DUCT TRAVERSE SYMBOL IS SHOWN. IN THE EVENT TRAVERSES ARE TAKEN AT ALTERNATE LOCATION(S), TAB CONTRACTOR SHALL INCLUDE A DRAWING THAT SHOWS THE LOCATIONS WHERE THE ACTUAL MEASUREMENTS WERE TAKEN.
4. TAKE A DUCT STATIC PRESSURE READING AT EACH LOCATION WHERE A DUCT TRAVERSE READING IS TAKEN AND INCLUDE IN THE FINAL PRE-DEMOLITION TAB REPORT.
5. TAB CONTRACTOR SHALL COMPILE AND SUBMIT FOUR COPIES OF THE FINAL PRE-DEMOLITION REPORT WITHIN 10 WORKING DAYS AFTER THE FIELD MEASUREMENTS ARE COMPLETED. FINAL TAB REPORT SHALL BE SUBMITTED FOR REVIEW TO THE ARCHITECT/ENGINEER. TESTING SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.
6. TAB CONTRACTOR SHALL PROVIDE DUCT TRAVERSE READINGS AT LOCATIONS DESIGNATED ON THE DRAWINGS BY THE "AIRFLOW MEASUREMENT SYMBOL". THOSE MEASUREMENTS SHALL BE INCLUDED IN THE POST-CONSTRUCTION REPORT AND SHALL BE DESIGNATED WITH THE IDENTIFIER AS MARKED ON THE CONSTRUCTION DRAWINGS. GRILLE AND DIFFUSER READINGS SHALL BE DESIGNATED WITH THE ROOM NAME AND NUMBER AS MARKED ON THE DRAWINGS. IF THE DRAWINGS DO NOT HAVE UNIQUE ROOM NAMES AND NUMBERS, TAB CONTRACTOR SHALL INCLUDE FLOOR PLANS WITH UNIQUE NUMBER DESIGNATIONS ASSIGNED TO TRAVERSES, GRILLES, AND DIFFUSERS THAT MATCH THOSE USED IN THE FINAL PRE-DEMOLITION REPORT. SIMILAR ROOM NAMES, NUMBERS, OR DESIGNATIONS SHALL BE USED TO SIMPLIFY THE CROSS- REFERENCING OF READINGS TAKEN BETWEEN PRE-DEMOLITION AND POST-CONSTRUCTION REPORTS.
7. BALANCING CONTRACTOR SHALL PRE-BALANCE ALL EXISTING SYSTEMS TO REMAIN PER SPECIFICATION SECTION 23 05 93. BALANCE READINGS WILL BE REQUIRED AT AIR OUTLETS AND DUCT TRAVERSES TO VERIFY EXISTING AIRFLOW TO UNAFFECTED SPACES.

TAB POST-CONSTRUCTION NOTES:

1. AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE, TESTING, ADJUSTING (TAB) AND BALANCING CONTRACTOR SHALL REBALANCE AIR HANDLING UNITS AND EXHAUST FANS AS REQUIRED TO ACHIEVE THE NEW AIRFLOW VALUES SHOWN ON THE CONSTRUCTION DRAWINGS.
2. AREAS SERVED BY THIS EQUIPMENT WHICH WERE NOT RENOVATED SHALL BE RE-BALANCED TO THE AIRFLOW RATES MEASURED BEFORE THE RENOVATION OCCURRED (REFER TO THE FINAL PRE- DEMOLITION REPORT).
3. IF DUCT TRAVERSE LOCATION AS MARKED ON THE DRAWINGS IS INACCESSIBLE FOR MEASUREMENT, THE TAB CONTRACTOR SHALL PERFORM THE TRAVERSE AT AN ALTERNATE LOCATION OR SHALL TAKE MULTIPLE DUCT TRAVERSES AND/OR GRILLE READINGS AS REQUIRED TO DETERMINE THE FLOW RATE. IN THE EVENT TRAVERSES ARE TAKEN AT AN ALTERNATE LOCATION(S), TAB CONTRACTOR SHALL INCLUDE A DRAWING THAT SHOWS THE LOCATIONS WHERE THE ACTUAL MEASUREMENTS WERE TAKEN.
4. A DUCT STATIC PRESSURE READING SHALL BE TAKEN AT EACH LOCATION WHERE A DUCT TRAVERSE READING IS TAKEN AND SHALL BE INCLUDED IN THE FINAL POST-CONSTRUCTION TAB REPORT.
5. TAB CONTRACTOR SHALL COMPILE AND SUBMIT COPIES OF THE FINAL POST-CONSTRUCTION TAB REPORT AS REQUIRED BY SECTION 23 05 93.
6. THE FINAL POST CONSTRUCTION REPORT SHALL INCLUDE ALL ITEMS REQUIRED IN THE SPECIFICATIONS.

MECHANICAL SHEET INDEX

M000	MECHANICAL COVER SHEET
MPD100	LOWER LEVEL DEMOLITION PLAN - PIPING
MVD100	LOWER LEVEL DEMOLITION PLAN - VENTILATION
MP100	LOWER LEVEL FLOOR PLAN - PIPING
MV100	LOWER LEVEL FLOOR PLAN - VENTILATION
M200	ROOF PLAN - MECHANICAL
M300	DETAILS - MECHANICAL
M301	DETAILS - MECHANICAL
M400	CONTROL DIAGRAMS - MECHANICAL
M401	CONTROL DIAGRAMS - MECHANICAL
M402	CONTROL DIAGRAMS - MECHANICAL
M500	SCHEDULES - MECHANICAL

Kahler Slater
experience design

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
MECHANICAL COVER SHEET

111 West Wisconsin Avenue, Milwaukee, Wisconsin 53203
Telephone 414.272.2000 Fax 414.272.2001

44 East Mifflin Street, Suite 700, Madison, Wisconsin 53703
Telephone 608.283.6300 Fax 608.283.6317

Sheet No.
M000

IMEG
1800 DEMING WAY, SUITE 200
MIDDLETON, WI 53562
608.223.9600 FAX: 608.836.6415
www.imegcorp.com
PROJECT # 17001340.00

REFERENCE SCALE IN INCHES
0 1 2 3

7/10/2018 11:08:34 AM

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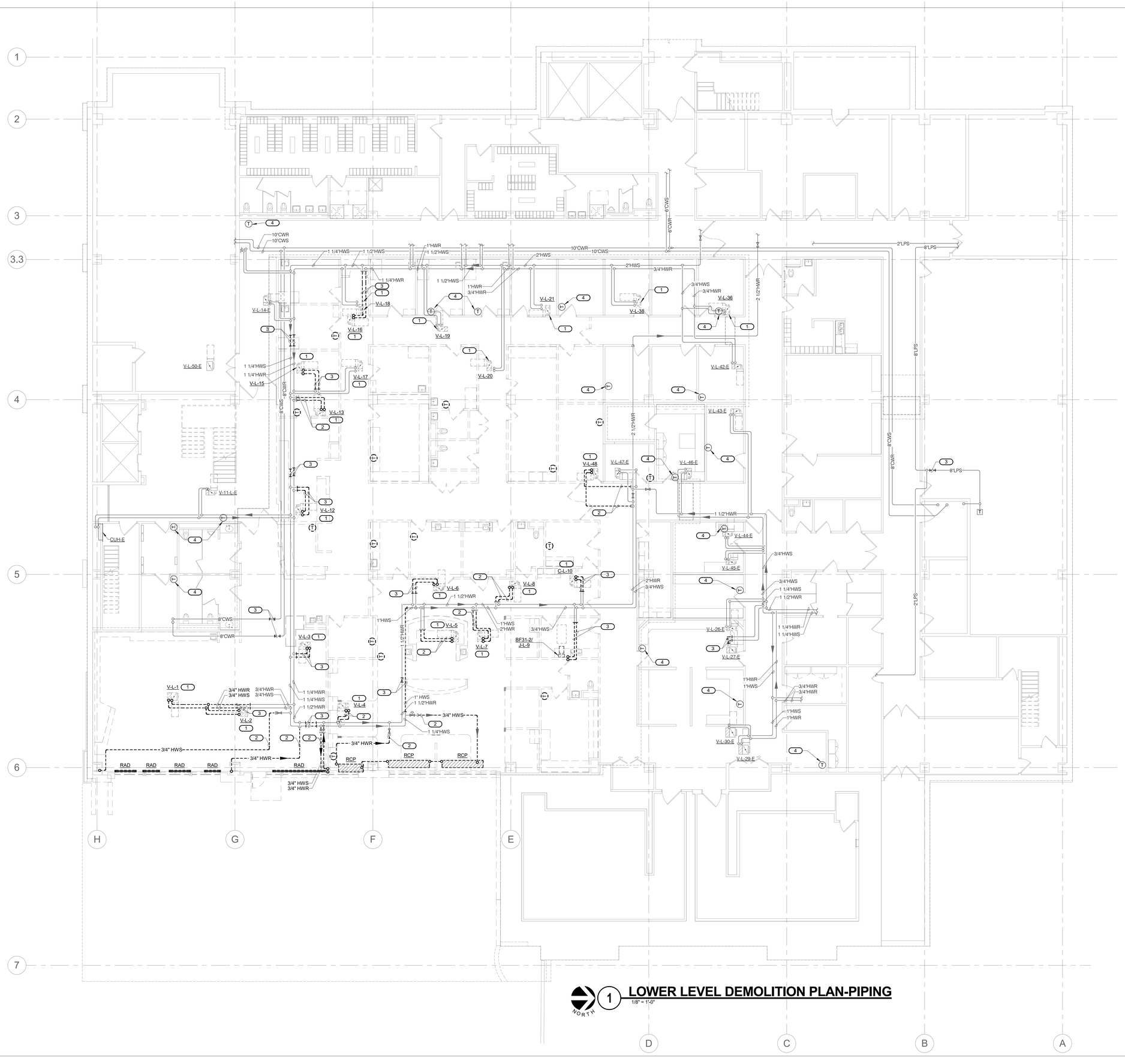
experience design

KEYNOTES: (#)

1. REMOVE EXISTING TERMINAL AIR BOX AND ASSOCIATED PIPING TO ACCOMMODATE FLOOR PLAN AND CEILING CHANGES. REFER TO MP100 FOR NEW REQUIREMENTS.
2. REMOVE EXISTING HYDRONIC PIPING BACK TO MAIN AND CAP. REFER TO MP100 FOR NEW REQUIREMENTS.
3. REMOVE EXISTING HYDRONIC PIPING AND PREPARE FOR NEW CONNECTION. REFER TO MP100 FOR NEW REQUIREMENTS.
4. EXISTING THERMOSTATS TO REMAIN.



1 LOWER LEVEL DEMOLITION PLAN-PIPING

1/8" = 1'-0"

NORTH

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
LOWER LEVEL DEMOLITION PLAN - PIPING

111 West Wisconsin Avenue, Milwaukee, Wisconsin 53203
Telephone 414.272.2000 Fax 414.272.2001

44 East Mifflin Street, Suite 700, Madison, Wisconsin 53703
Telephone 608.283.6300 Fax 608.283.6317

Sheet No.
MPD100

IMEG
1800 DEMING WAY, SUITE 200
MIDDLETON, WI 53562
608.223.9600 FAX: 608.836.0415
www.imegcorp.com
PROJECT # 17001340.00

REFERENCE SCALE IN INCHES
0 1 2 3

7/10/2018 11:17:34 AM

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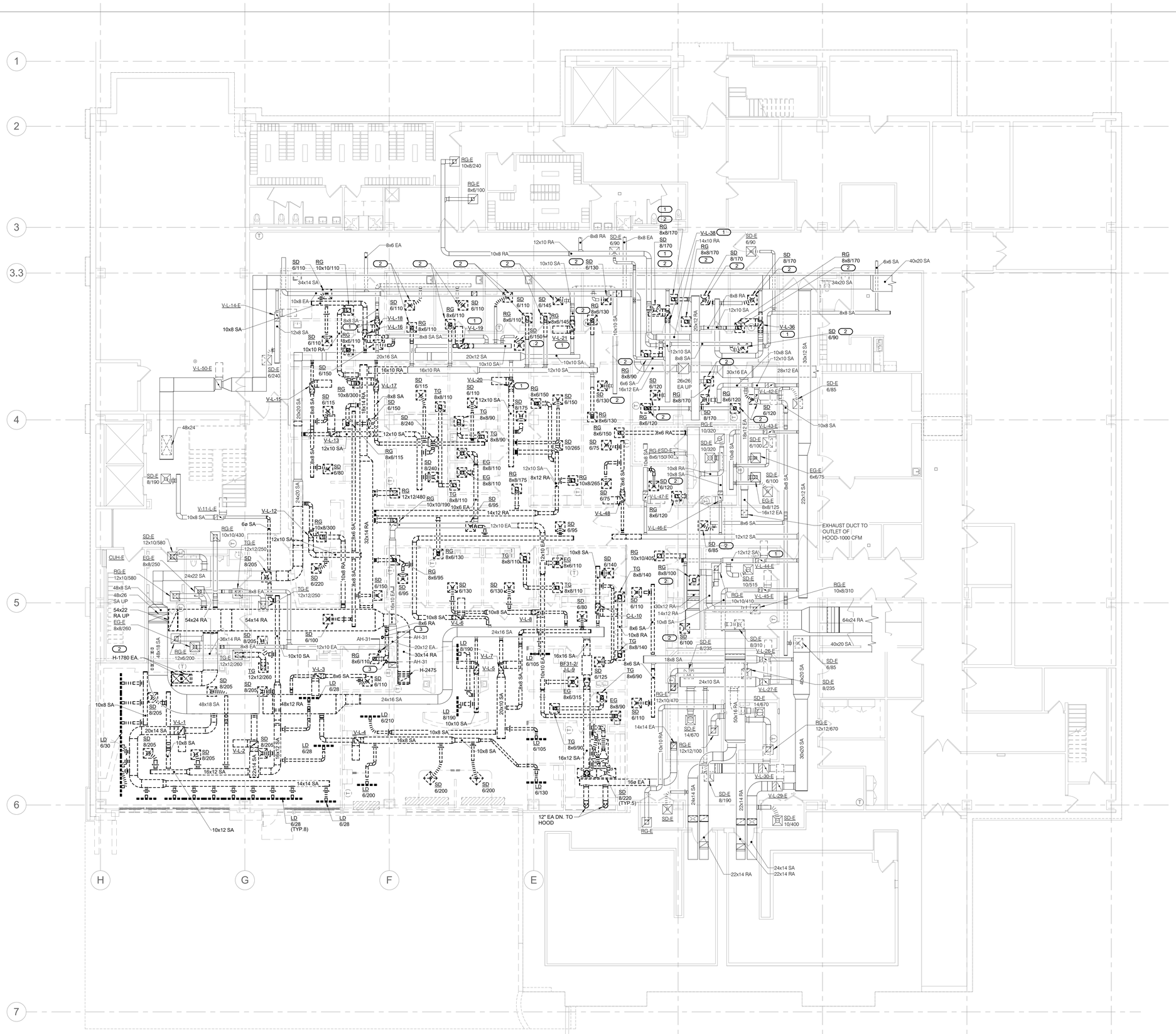
experience design

KEYNOTES: (#)

1. PRE-BALANCE EXISTING TERMINAL AIR BOX, SUPPLY AND RETURN AIR FLOW IN THE AREA/S SERVED BY THIS TERMINAL AIR BOX.
2. REMOVE AND PREPARE FOR RELOCATION AS NECESSARY TO ACCOMODATE CEILING CHANGES. REFER TO MV100 FOR NEW REQUIREMENTS.
3. DUCT TRAVERSE LOCATION TO MEASURE EXISTING AIR FLOW IN EXISTING DUCT.



Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
LOWER LEVEL DEMOLITION PLAN - VENTILATION

111 West Wisconsin Avenue, Milwaukee, Wisconsin 53203
Telephone 414.272.2000 Fax 414.272.2001

44 East Mifflin Street, Suite 700, Madison, Wisconsin 53703
Telephone 608.283.6300 Fax 608.283.6317

Sheet No.
MVD100

IMEG
1800 DEMING WAY, SUITE 200
MIDDLETON, WI 53562
608.223.9600 FAX: 608.836.0415
www.imegcorp.com
PROJECT # 17001348.00

REFERENCE SCALE IN INCHES
0 1 2 3

7/10/2018 11:19:44 AM

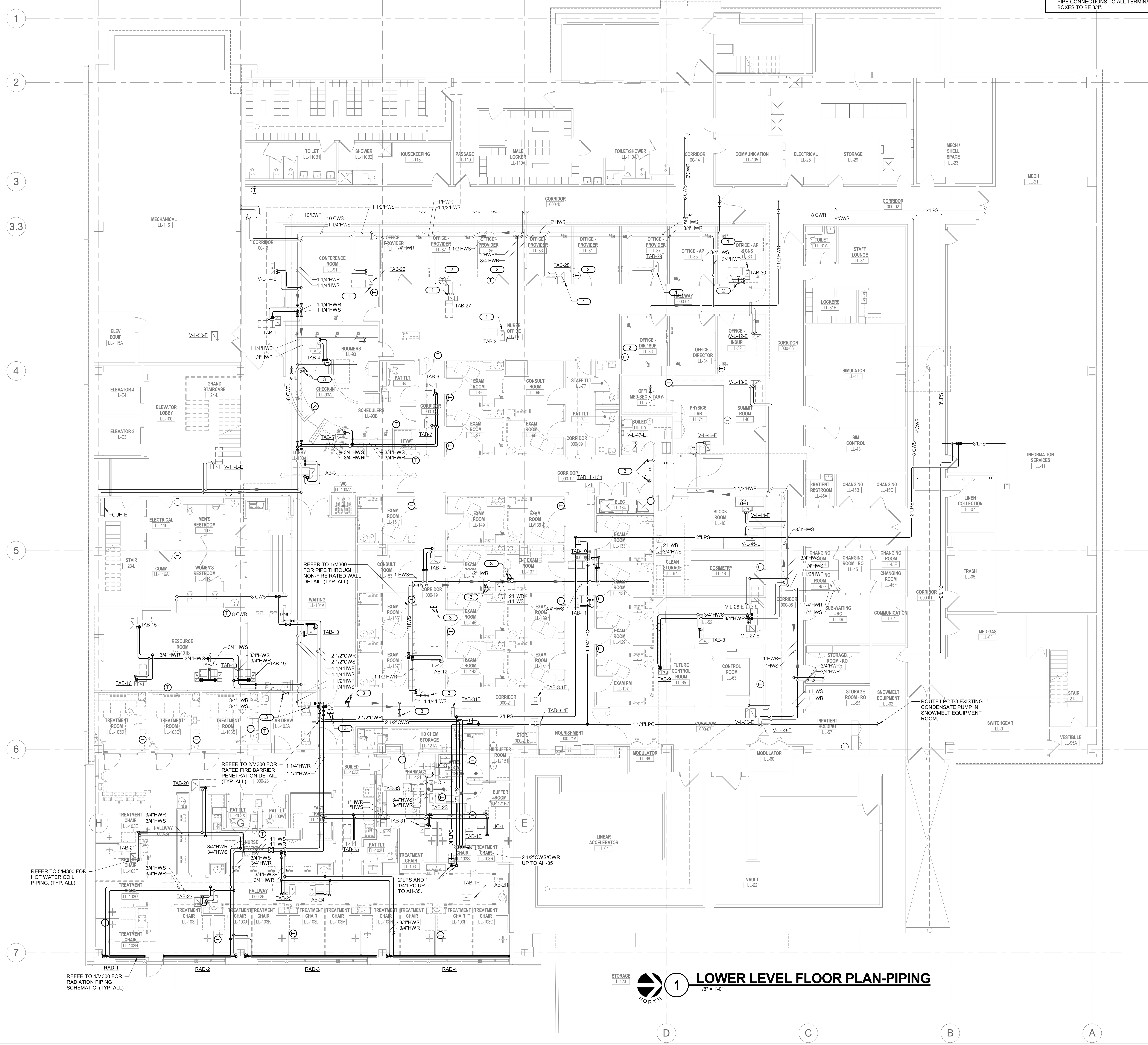
Kahler Slater
experience design

GENERAL NOTES:

1. UNLESS NOTED OTHERWISE ALL HYDRONIC PIPE CONNECTIONS TO ALL TERMINAL AIR BOXES TO BE 3/4".

KEYNOTES:

1. REMOVE AND REPLACE EXISTING TERMINAL AIR BOX WITH NEW TERMINAL AIR BOX. CONNECT EXISTING PIPING TO NEW TERMINAL AIR BOX.
2. REUSE EXISTING THERMOSTATS FOR NEW TERMINAL AIR BOXES.
3. CAP EXISTING HYDRONIC PIPING.



1 LOWER LEVEL FLOOR PLAN-PIPING

1/8" = 1'-0"

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
LOWER LEVEL FLOOR PLAN - PIPING

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REFERENCE SCALE IN INCHES
0 1 2 3

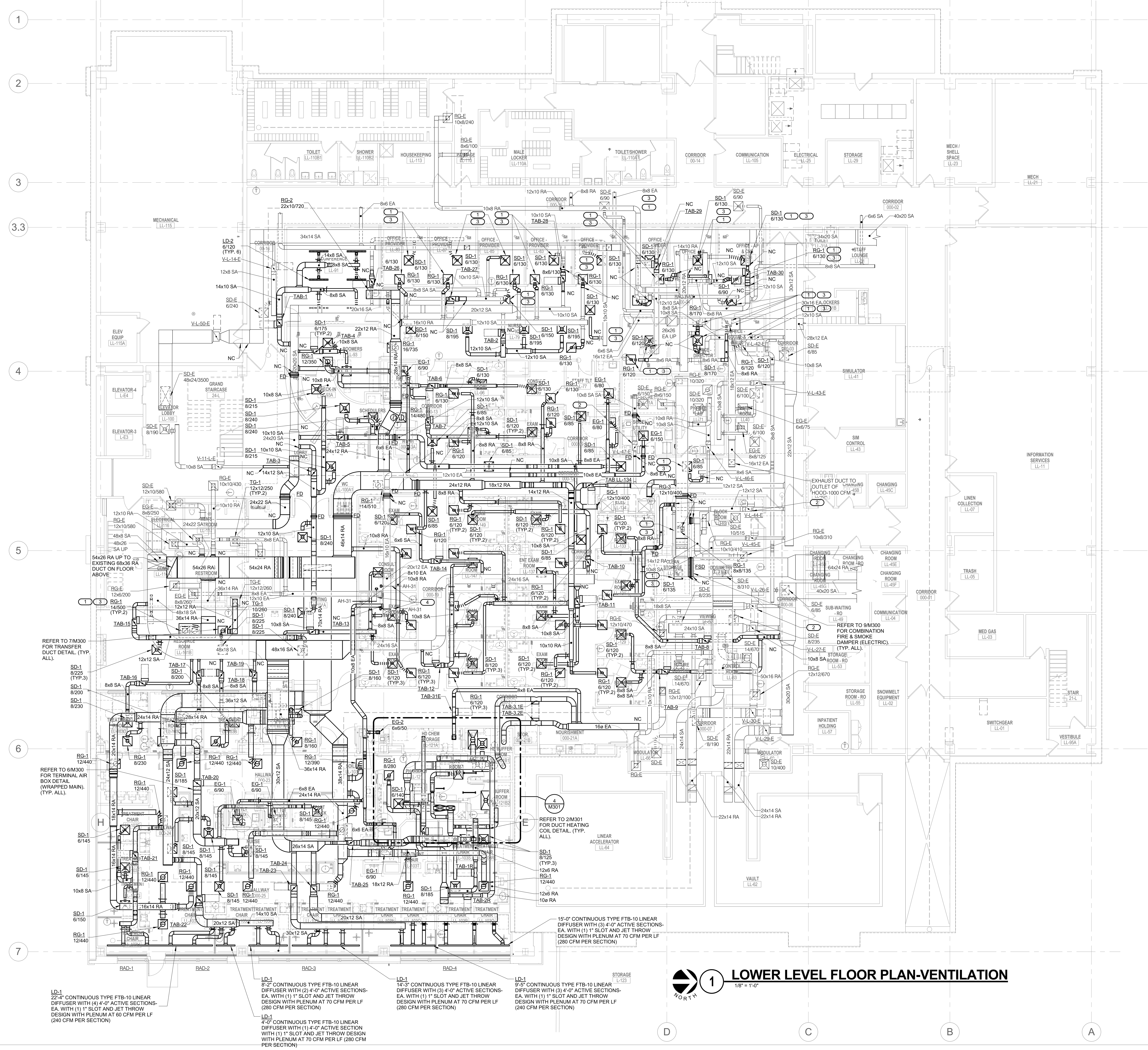
Sheet No.
MP100

7/10/2018 11:16:37 AM

Kahler Slater
experience design

KEYNOTES: (#)

1. REBALANCE EXISTING DIFFUSER/GRILLE TO MATCH NEW AIRFLOWS.
2. REBALANCE EXISTING TERMINAL AIR BOX TO MATCH NEW AIRFLOWS.
3. RELOCATE EXISTING DIFFUSER OR GRILLE AS NECESSARY TO ACCOMODATE CEILING CHANGES. REUSE EXISTING DUCTWORK IF IN GOOD CONDITION AS MENTIONED IN SECTION 23 05 05 AND MAKE NEW CONNECTIONS TO RELOCATED DIFFUSERS AND GRILLES.
4. DUCT TRAVERSE LOCATION TO MEASURE NEW AIR FLOW IN EXISTING DUCT.



1 LOWER LEVEL FLOOR PLAN-VENTILATION

1/8" = 1'-0"

7/10/2018 11:18:27 AM

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

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217050

Sheet Title
LOWER LEVEL FLOOR PLAN - VENTILATION

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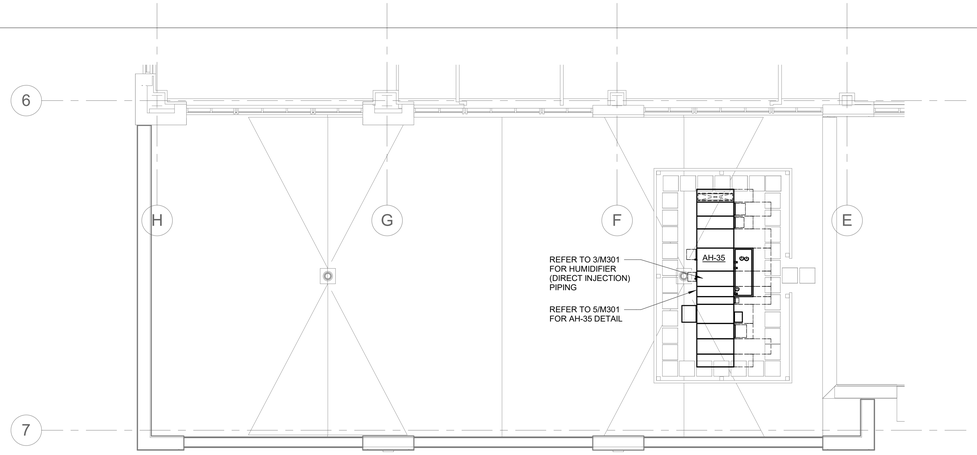
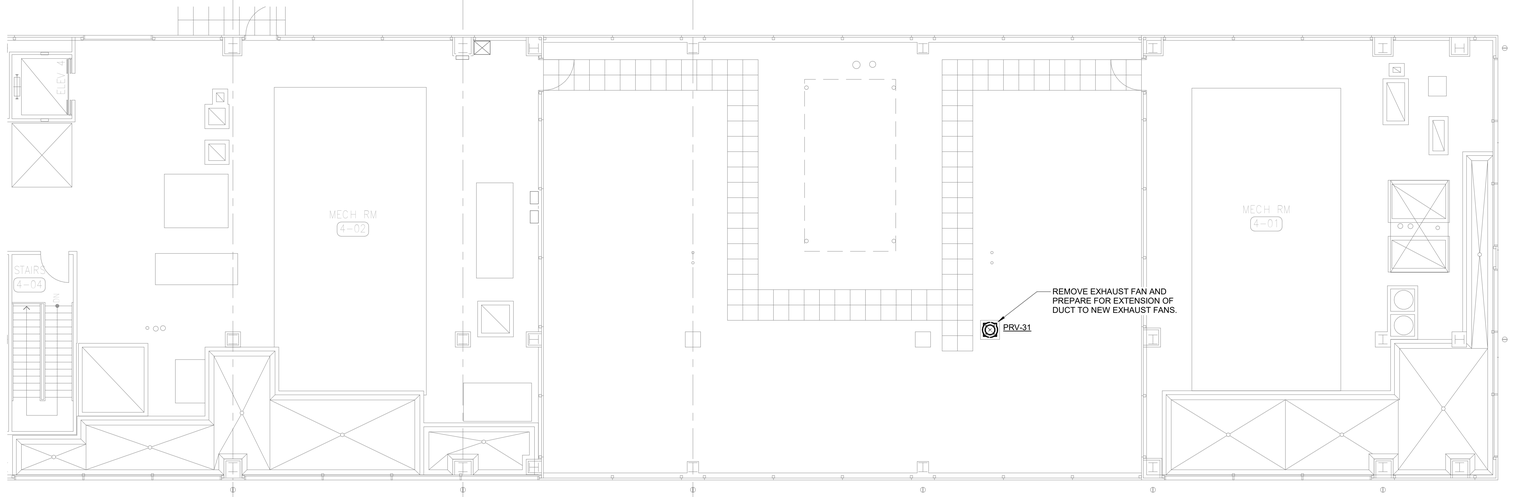
Sheet No.
MV100



1 LOWER ROOF PLAN - MECHANICAL
1/8" = 1'-0"



2 UPPER ROOF DEMOLITION PLAN - MECHANICAL
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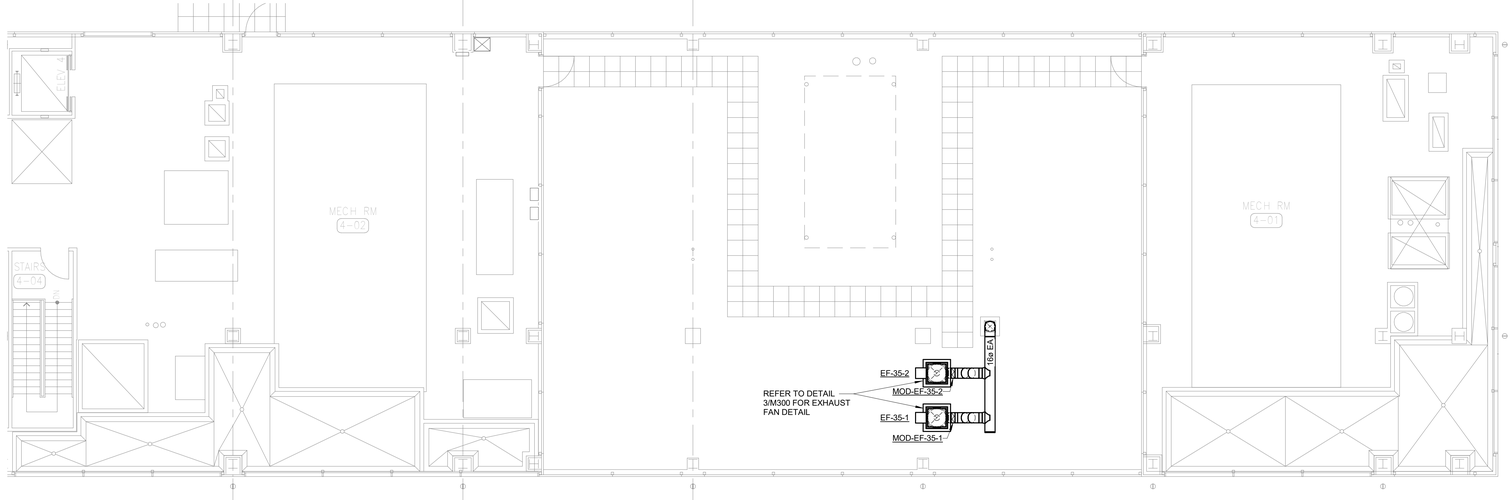

3 UPPER ROOF PLAN - MECHANICAL
1/8" = 1'-0"

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Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
ROOF PLAN - MECHANICAL

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PROJECT # 170013480.00

REFERENCE SCALE IN INCHES
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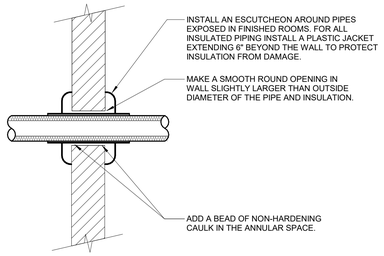
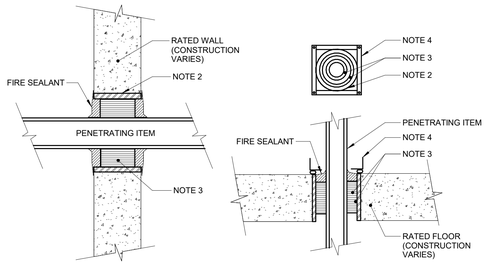


1 PIPE THROUGH NON-FIRE RATED WALL

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 - HVAC FOR DIFFERENCES BETWEEN FLOOR AND WALL PENETRATIONS.
3. SEE SPECIFICATION SECTION 23 05 03 - HVAC AND SECTION 23 05 29 - HVAC FOR ADDITIONAL INFORMATION.

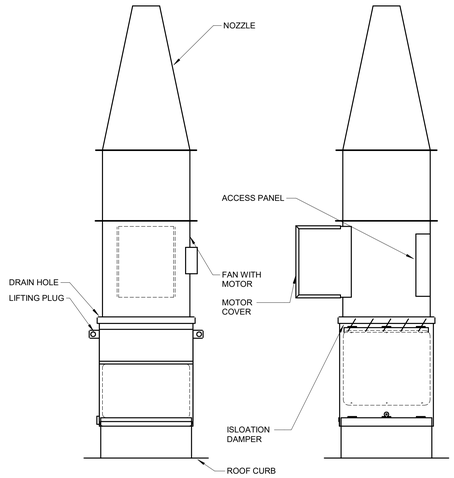


2 RATED FIRE BARRIER PENETRATION

NO SCALE

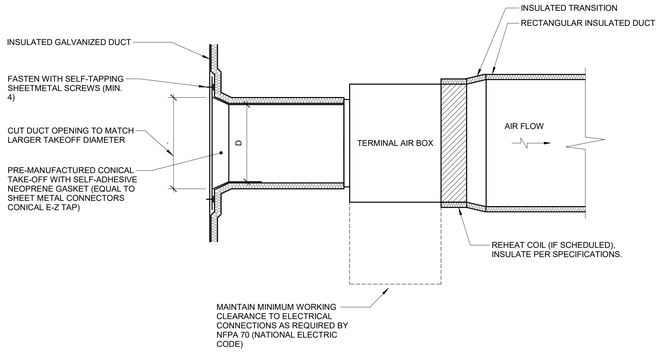
NOTES:

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 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 LABORATORY EXHAUST FAN DETAIL

NO SCALE



6 TERMINAL AIR BOX DETAIL (WRAPPED MAIN)

NO SCALE

NOTES:

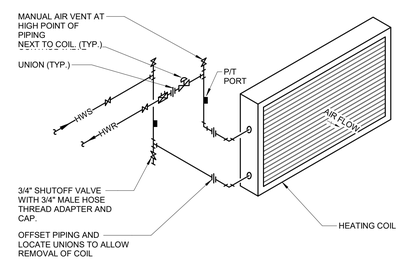
1. THIS DETAIL APPLIES ONLY TO TAPS OFF WRAPPED DUCTS.
2. THIS DETAIL APPLIES TO TERMINAL AIR BOXES WITH ROUND INLETS AND RECTANGULAR OUTLETS.
3. DUCT LEADING TO TAB INLET MUST BE STRAIGHT FOR 1.5 DIAMETER UPSTREAM.
4. MAINTAIN VAPOR BARRIER FROM MAIN TO BRANCH DUCT.

4 RADIATION PIPING SCHEMATIC

NO SCALE

NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR CABINET AND CABINET COUNTERTOP DIMENSIONS.

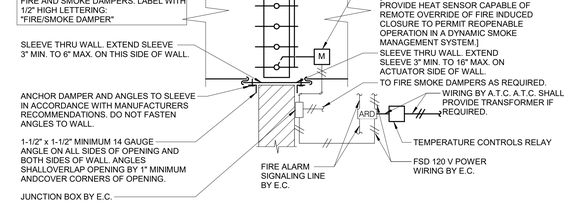


5 HEATING WATER COIL PIPING

NO SCALE

NOTES:

1. SEE SPECIFICATION SECTION 23 21 00 - HYDRONIC PIPING FOR BALANCE VALVE SIZING REQUIREMENTS.

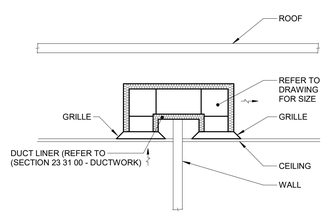


9 COMBINATION FIRE & SMOKE DAMPER (ELECTRIC)

NO SCALE

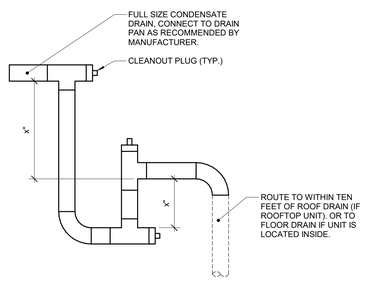
NOTES:

1. CONNECTION OF DAMPER TO SLEEVE SHALL BE AS SHOWN IN FIGURE 1 OF SMACNA "FIRE DAMPER AND HEAT STOP GUIDE FOR AIR HANDLING SYSTEMS", SECOND EDITION.
2. DAMPER CLOSES BY SPRING ACTION IN EVENT OF HIGH TEMPERATURE.
3. FLOOR MOUNTED DAMPER SIMILAR WITH ACTUATOR ON SIDE WITH ACCESS DOOR.
4. WHERE DUCT SMOKE DETECTORS CANNOT BE ACCESSED BY THE DAMPER ACCESS DOOR THE ELECTRICAL CONTRACTOR SHALL FURNISH A DUCT ACCESS DOOR FOR THE DETECTOR. THE MECHANICAL CONTRACTOR SHALL INSTALL THE DOOR IN THE DUCT.
5. SEE SMOKE DAMPER CONTROLLER SCHEMATIC DETAIL ON ELECTRICAL DRAWINGS FOR WIRING DETAILS. A.T.C. SHALL PROVIDE RELAYS TO CLOSE FIRE SMOKE DAMPERS IN NON-FIRE EVENTS. REFER TO ELECTRICAL DRAWINGS FOR ARD LOCATIONS.



7 TRANSFER DUCT DETAIL

NO SCALE



8 CONDENSATE TRAP DETAIL (DRAW-THROUGH)

NO SCALE

REFERENCE SCALE IN INCHES: 0 1 2 3

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Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
DETAILS - MECHANICAL

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Telephone 414.272.2000 Fax 414.272.2001

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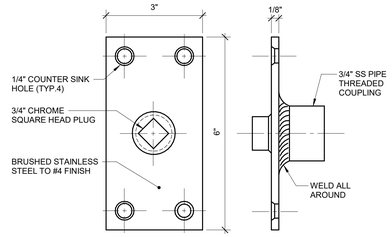
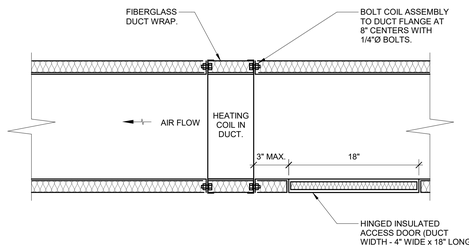
Sheet No.
M300



1 PHARMACY CHALLENGE PORT

NO SCALE

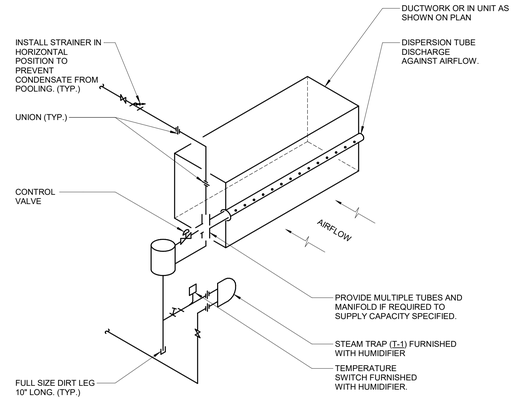


2 DUCT HEATING COIL DETAIL (WRAPPED DUCT)

NO SCALE

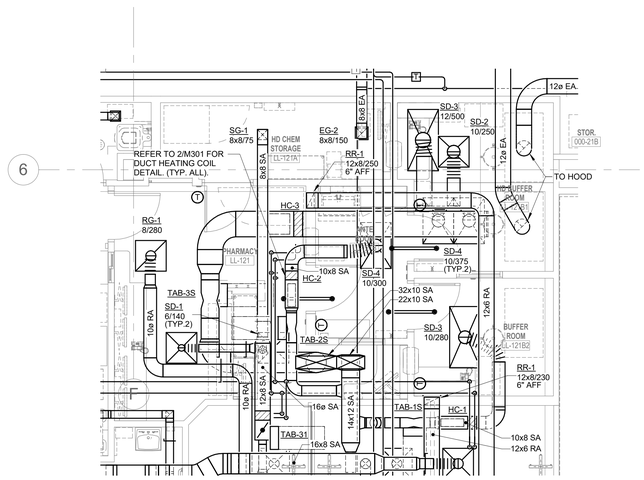
NOTES:

1. THIS DETAIL APPLIES TO ALL HEATING COILS INSTALLED IN DUCTS. ACCESS DOORS AND FLANGED CONNECTIONS MUST BE PROVIDED AT ALL COILS UNLESS SPECIFICALLY NOTED OTHERWISE.
2. PROVIDE FLANGED CONNECTION ON BOTH SIDES OF COILS. ACCESS DOORS ARE ONLY REQUIRED UPSTREAM OF COILS.



3 HUMIDIFIER (DIRECT INJECTION) PIPING

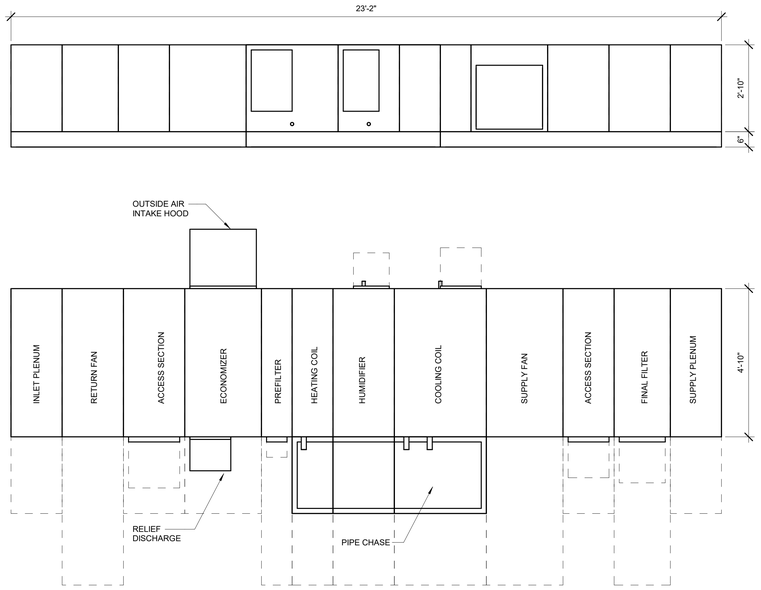
NO SCALE



NORTH

4 PHARMACY ENLARGED PLAN - VENTILATION

1/4" = 1'-0"



5 AH-35 DETAIL

1/2" = 1'-0"

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
DETAILS - MECHANICAL

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M301

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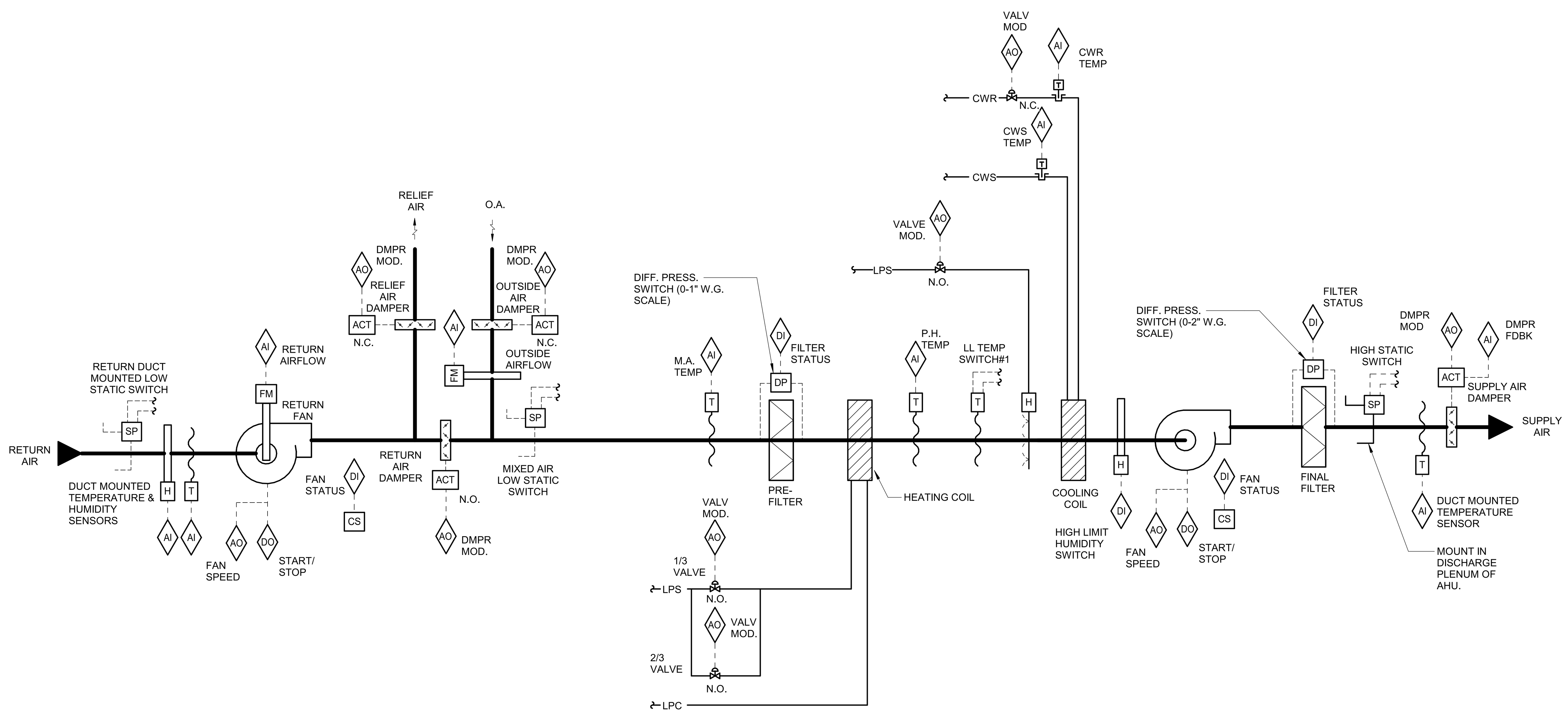


SEQUENCE OF OPERATION:

WHEN RTU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:
- OUTSIDE AIR, RETURN AIR, AND SUPPLY AIR DAMPERS SHALL OPEN.
- AFTER A 30 SECOND DELAY TO ALLOW FOR OPENING OF DAMPERS. SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE RETURN FAN SHALL START.

SUPPLY FAN OPERATION:
THE FMCS WILL MODULATE THE SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE SET POINT OF 2.75 IN. W.G. (ADJ.) MEASURED AT DUCT STATIC PRESSURE SENSOR IN SUPPLY PLENUM AS SHOWN ON DRAWINGS.

RETURN FAN OPERATION:
- RETURN FAN SHALL BE INDEXED TO RUN WHEN THE SUPPLY FAN IS OPERATIONAL.
- FAN SHALL OPERATE AT SPEED AS SET BY AIR BALANCER DURING BALANCING OF AIR SYSTEM.

DISCHARGE AIR TEMPERATURE CONTROL:
THE FMCS WILL MODULATED THE COOLING COIL CONTROL VALVE AND HEATING CONTROL VALVE TO CONTROL THE DISCHARGE AIR TEMPERATURE TO 52ºF (ADJ.).

AT FULL HEATING THE COOLING COIL CONTROL VALVE SHALL BE CLOSED AND THE HEATING COIL CONTROL VALVES SHALL BE 100% OPEN. WHENEVER THE DISCHARGE AIR TEMPERATURE IS ABOVE THE SETPOINT THE FOLLOWING SHALL OCCUR:
- THE 1/3 HEATING COIL CONTROL VALVE SHALL MODULATE CLOSED.
- ONCE THE 1/3 HEATING COIL CONTROL VALVE HAS FULLY CLOSED, THE 2/3 HEATING COIL CONTROL VALVE SHALL MODULATE CLOSED.
- ONCE THE 2/3 HEATING COIL CONTROL VALVE HAS REACHED 20% OPEN, THE 1/3 HEATING COIL CONTROL VALVE SHALL MODULATE OPEN AND THE 2/3 HEATING COIL CONTROL VALVE SHALL FULLY CLOSE.
- ONCE THE HEATING COIL CONTROL VALVE HAS REACHED 100% CLOSED THE COOLING COIL CONTROL VALVE SHALL MODULATE OPEN.

AT FULL COOLING THE COOLING COIL CONTROL VALVE SHALL BE 100% OPEN AND THE HEATING COIL CONTROL VALVES SHALL BE CLOSED. WHENEVER THE DISCHARGE AIR TEMPERATURE IS BELOW SETPOINT THE FOLLOWING SHALL OCCUR:
- THE COOLING COIL CONTROL VALVE SHALL MODULATE CLOSED.
- ONCE THE COOLING COIL CONTROL VALVE IS FULLY CLOSED THE 1/3 HEATING COIL CONTROL VALVE SHALL MODULATE OPEN.
- ONCE THE 1/3 HEATING COIL CONTROL VALVE IS 100% OPEN, THE 2/3 HEATING COIL CONTROL VALVE SHALL MODULATE OPEN AND THE 1/3 CONTROL VALVE SHALL MODULATE CLOSED.
- ONCE THE 2/3 HEATING CONTROL VALVE IS 100% OPEN, THE 1/3 HEATING CONTROL VALVE SHALL MODULATE OPEN.

ECONOMIZER OPERATION:
WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY BULB TEMPERATURE THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN OUTSIDE AIR DRY BULB TEMPERATURE IS GREATER THAN THE RETURN AIR DRY BULB TEMPERATURE FOR 10 MINUTES THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MINIMUM OUTSIDE AIR MODE. ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MINIMUM OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCH BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

HUMIDIFIER OPERATION:
HUMIDIFIER CONTROL VALVE SHALL MODULATE TO MAINTAIN 30% RH (ADJ.) MEASURED AT THE RETURN AIR HUMIDITY SENSOR.

ALARMS, INTERLOCKS, AND SAFETIES:
WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

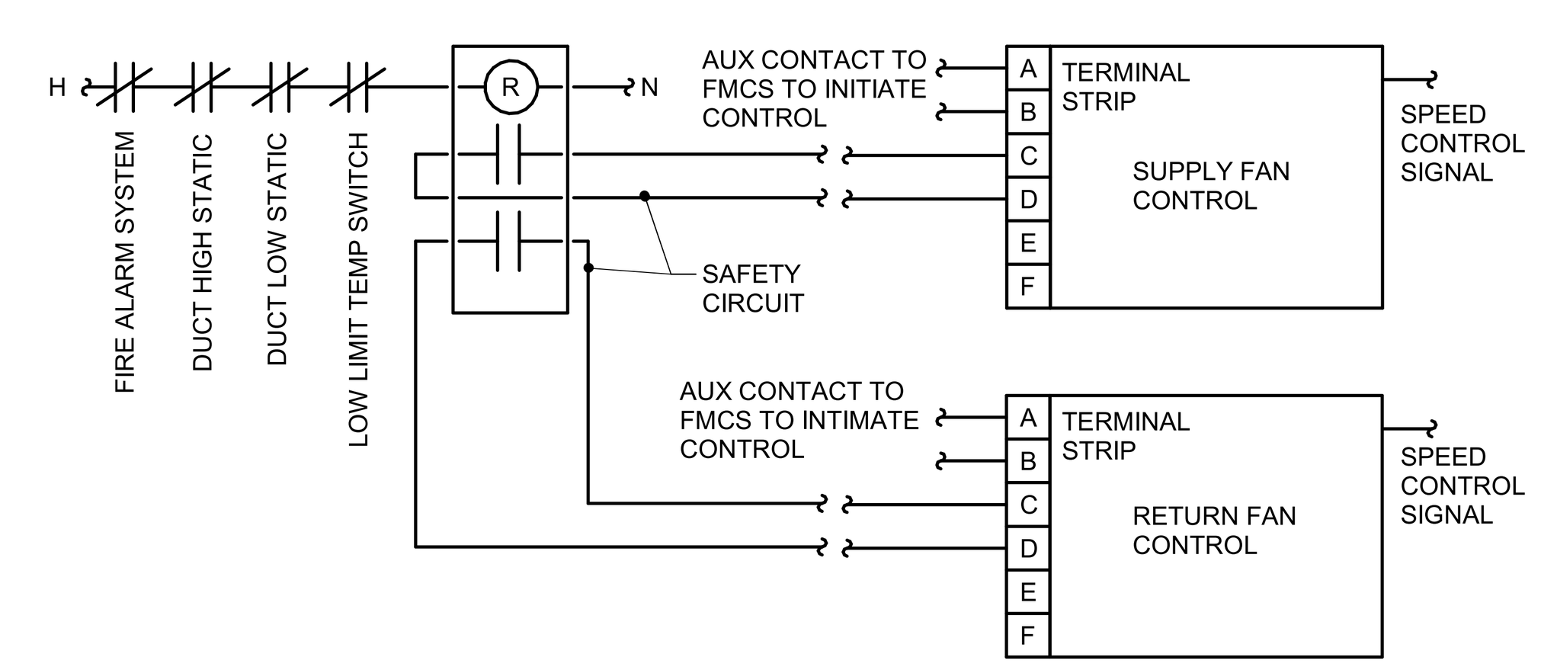
THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION:
- LOW STATIC PRESSURE SWITCH INDICATES RETURN DUCT PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS.
- IN THE EVENT THE FMCS COMMANDS THE RETURN FAN TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.
- HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY DUCT STATIC PRESSURE GREATER THAN THE SPECIFIED DUCT PRESSURE CLASS.
- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH SENSE AIR TEMP <34°F (ADJ.).

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS, HOWEVER AHU SHALL CONTINUE TO OPERATE:
- AN ALARM IS INDICATED AT SUPPLY FAN VFD.
- DIFFERENTIAL PRESSURE SWITCH ACROSS PRE-FILTER BANK EXCEEDS 0.8 INCHES W.G. (ADJ.)
- DIFFERENTIAL PRESSURE SWITCH ACROSS FINAL FILTER BANK EXCEEDS 1.3 INCHES W.G. (ADJ.)
- HUMIDITY HIGH LIMIT SWITCH SENSES HUMIDITY LEVEL >90% RH (ADJ.).
- PRE-HEAT TEMPERATURE SENSOR SENSES TEMPERATURE AFTER THE PREHEAT COIL OF <38°F (ADJ.)

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:
- HEATING COIL STEAM VALVE SHALL MAINTAIN A PREHEAT TEMPERATURE OF 50°F (ADJ.).
- COOLING CONTROL VALVE SHALL FULLY CLOSE.
- SUPPLY FAN AND RETURN FAN SHALL BE DE-ENERGIZED.
- THE OUSIDE AIR DAMPER, RETURN AIR DAMPER, AND SUPPLY AIR DAMPER SHALL FULLY CLOSE.

GRAPHICAL DISPLAY:
DISPLAY THE GLOBAL OUTSIDE AIR TEMPERATURE AND HUMIDITY ON AHU GRAPHIC PAGE.

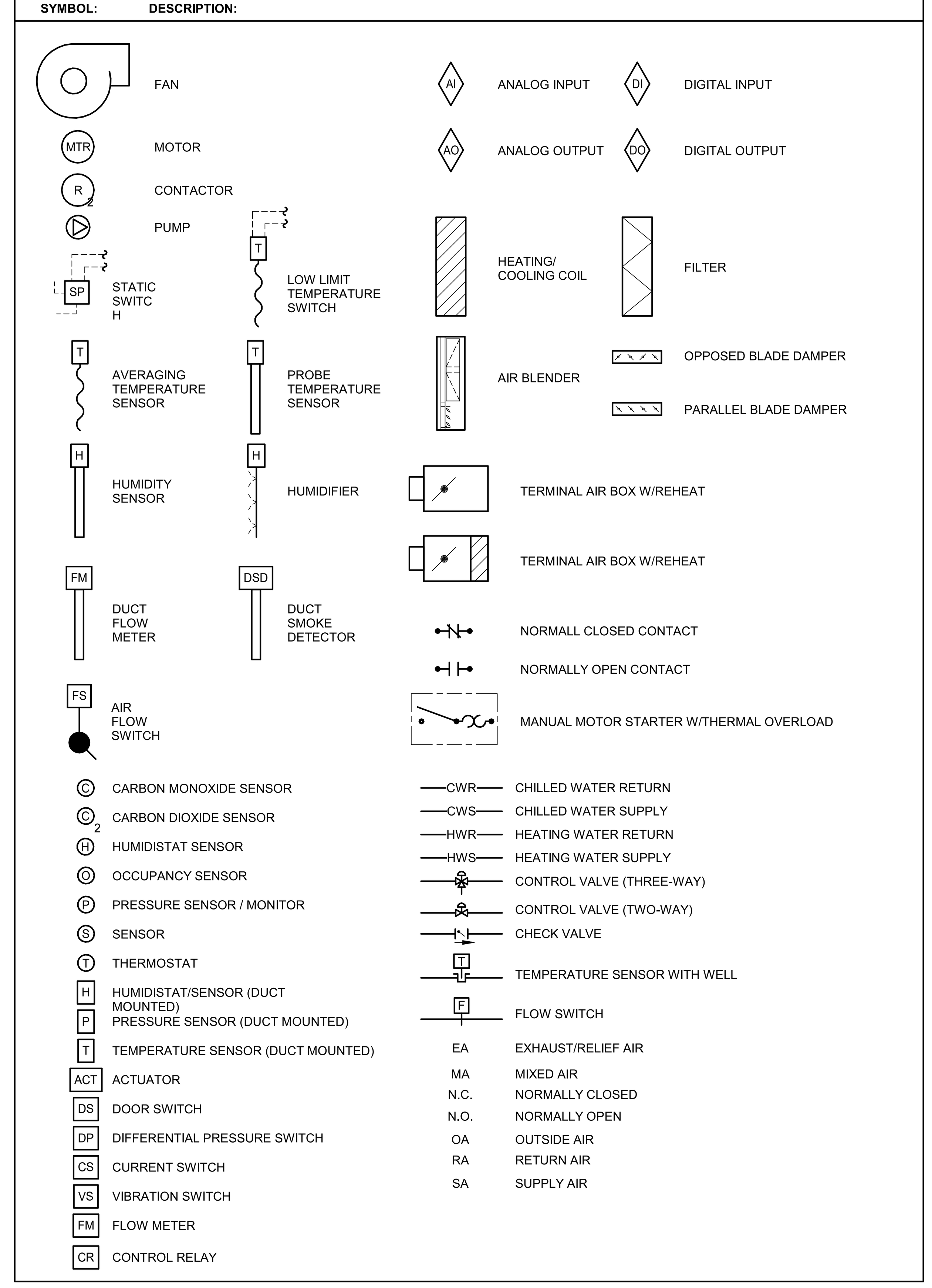


SUPPLY & RETURN FAN SAFETY RELAY CONTROL

1 **AIR HANDLING UNIT CONTROL - AH-35**
NO SCALE

GENERAL CONTROL NOTES:
1. REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT. REFER TO TERMINAL AIR BOX (TAB) SCHEDULES FOR TEMP SENSOR REQUIREMENTS FOR EACH TAB.
2. EACH D.I., D.O., A.I. AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.
3. ALL WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.
4. ALL ACTUATORS SHALL BE OF THE ELECTRICAL TYPE FOR THIS PROJECT UNLESS AN ACTUATOR IS SPECIFICALLY INDICATED ON THE DRAWINGS OR SPECIFICATIONS TO BE PNEUMATIC.
5. ALL MODULATING DAMPER AND VALVE ACTUATORS SHOWN WITH POSITION FEEDBACK SHALL HAVE THE VALVE POSITION DISPLAYED ON GRAPHICAL SCREEN ADJACENT TO THE DAMPER/VALVE COMMAND SIGNAL. DISPLAYED VALVE POSITION SHALL BE FROM THE FEEDBACK DEVICE/CIRCUIT (OUTPUT SIGNAL FROM THE FMCS TO THE ACTUATOR IS NOT ACCEPTABLE)
6. MODULATING SIGNALS SHALL BE DISPAYED AS % OPEN (SIGNALS DISPLAYED AS % CLOSED ARE NOT ACCEPTABLE).
7. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DUCT STATIC PRESSURE SHALL BE WIRED DIRECTLY TO THE CONTROLLER WHICH MODULATES FAN SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.
8. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DIFFERENTIAL PRESSURE OF ANY PUMPED WATER SYSTEM (E.G. HEATING HOT WATER, CHILLED WATER AND THE LIKE) SHALL BE WIRED DIRECTLY TO THE CONTROLLER WHICH MODULATES PUMP SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.
9. ALL CONTROL COMPONENTS SUCH AS RELAYS, SWITCHES, DDC CONTROLLERS, ETC. SHALL BE MOUNTED IN STEEL ENCLOSURES WITH STEEL MOUNTING BACKPLATES PER SPECIFICATION 23 09 00.
10. EACH CONTROL PANEL SHALL HAVE A LAMINATED COPY OF THE APPLICABLE SEQUENCE OF OPERATION AND CONTROL DIAGRAM INDICATING THE POINTS, COMPONENTS AND OPERATION OF EQUIPMENT ASSOCIATED WITH EACH PANEL. REFER TO SECTION 23 09 00 FOR ADDITIONAL REQUIREMENTS.
11. TCC SHALL WIRE THE CONTROL SIGNAL FROM THE ASSOCIATED AIR HANDLING UNIT RTU CONTROL PANEL TO CONTROL THE OPERATION OF SMOKE DAMPERS IN ACCORDANCE WITH SEQUENCE OF OPERATION. TCC SHALL PROVIDE ALL WIRING, CONDUIT, TRANSFORMERS, FUSING AND ALL OTHER ELECTRICAL COMPONENTS REQUIRED FOR COMPLETE INSTALLATION.
12. TCC SHALL EXTEND CONTROL SIGNAL FROM ADDRESSABLE RELAY DEVICE SERVING EACH AIR HANDLING UNIT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS. TCC SHALL EXTEND AND TERMINATE WIRING AS REQUIRED FOR EQUIPMENT SHUTDOWN.
13. TCC SHALL EXTEND 24 VOLT POWER FROM CONTROL POWER SHOWN ON FLOOR PLANS TO ALL TERMINAL AIR BOX CONTROLLERS JUNCTION BOX. TCC SHALL PROVIDE ALL WIRING, SUPPORTS, FUSING SPACE, TOGGLE SWITCHES, AND ALL OTHER ELECTRICAL COMPONENTS REQUIRED FOR COMPLETE INSTALLATION.
14. ELEMENT LENGTHS FOR BOTH MIXED AIR TEMP SENSORS AND LOW LIMIT TEMP SWITCHES SHALL BE MINIMUM 1 LINEAR FOOT PER SQUARE FOOT OF COIL SURFACE AREA. PROVIDE MULTIPLE SENSORS AND SWITCHES AS NEEDED TO ACHIEVE REQUIRED ELEMENT LENGTHS. LOCATE RESET SWITCHES MAX. 6'-6" ABOVE ADJACENT STANDING SURFACE (I.E. ROOF, PLATFORM OR FLOOR) SO THE RESET SWITCH CAN BE CYCLED WITHOUT THE NEED FOR A LADDER.
15. TO PREVENT GENERATOR OVERLOADING, TCC SHALL PROGRAM A STAGGERED START TIME FOR ALL MECHANICAL EQUIPMENT THAT IS CONTROLLED BY FMCS TO INCLUDE, BUT NOT LIMITED TO, AIR HANDLERS, PUMPS, AND EXHAUST FANS. THE FIRST EQUIPMENT SHALL START 2 MINUTES (ADJ.) FROM THE TIME THE FMCS RECEIVES THE SIGNAL THAT THE TRANSFER SWITCH CHANGED TO EMERGENCY POWER SOURCE WITH ALL EQUIPMENT BEING ENERGIZED WITHIN A 20 MINUTE (ADJ.) TIME SPAN. COORDINATE ORDER OF EQUIPMENT STAGING WITH OWNER'S REPRESENTATIVE.
16. CONTROL DIAGRAMS ARE SCHEMATIC IN NATURE AND DO NOT SHOW ALL REQUIRED CONTROL DEVICES AND COMPONENTS. REFER TO FLOOR PLANS, FLOW DIAGRAMS AND DETAILS FOR ADDITIONAL CONTROL DEVICES, COMPONENTS AND REQUIREMENTS NOT SHOWN ON THESE CONTROL DRAWINGS.
17. TCC SHALL PROVIDE ALL CONTROL COMPONENTS AND ACCESSORIES AS REQUIRED FOR EQUIPMENT TO BE CONTROLLED AS DESCRIBED IN THE SEQUENCE OF OPERATION REGARDLESS OF WHETHER ALL CONTROL COMPONENTS OR POINTS ARE SHOWN IN THE ASSOCIATED CONTROL DIAGRAM.

CONTROL SYMBOLS LIST



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experience design

Revisions

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CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
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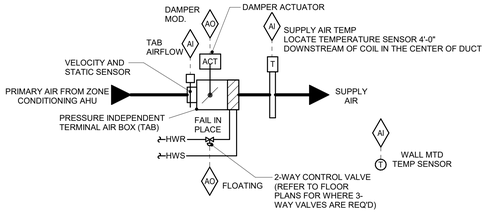


SEQUENCE OF OPERATION:

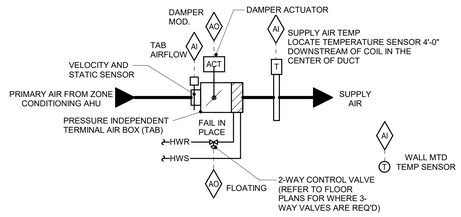
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER TO MAINTAIN CONSTANT SUPPLY AIRFLOW TO THE ROOM.
- FMCS TAB CONTROLLER SHALL MODULATE TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

1 CONSTANT VOLUME TAB CONTROL - TAB-X

NO SCALE



SEQUENCE OF OPERATION:

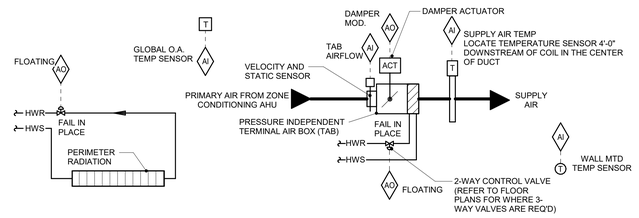
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER AND TAB HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3° F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

2 TAB CONTROL W/ HOT WATER REHEAT - TAB-X

NO SCALE



SEQUENCE OF OPERATION:

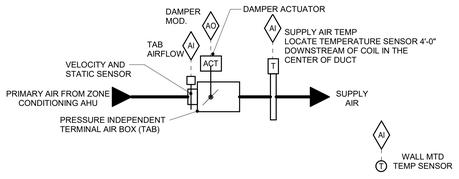
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER, TAB HEATING WATER REHEAT COIL, AND PERIMETER RADIATION CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE AND PERIMETER RADIATION CONTROL VALVE SHALL BE CLOSED.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE. THE REHEAT COIL CONTROL VALVE AND PERIMETER RADIATION CONTROL VALVE SHALL BE CLOSED.
- THE TAB CONTROLLER SHALL ENABLE PERIMETER RADIATION CONTROLS WHEN THE O.A. TEMP DROPS BELOW 35°F (ADJ.). WHEN THE O.A. TEMP RISES ABOVE 40°F (ADJ.) PERIMETER RADIATION CONTROLS SHALL BE DISABLED.
- AS SPACE TEMP DROPS BELOW SETPOINT AND TAB DAMPER IS AT MINIMUM SCHEDULED CFM, TAB CONTROLLER SHALL MODULATE THE PERIMETER RADIATION CONTROL VALVE OPEN AS REQUIRED TO MAINTAIN SPACE TEMP.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE IS 20°F ABOVE ROOM TEMPERATURE SETPOINT.
- UPON A FURTHER FALL IN SPACE TEMPERATURE, TAB SHALL OPEN TO MAINTAIN SETPOINT UNTIL TAB AIRFLOW REACHES ITS MAXIMUM HEATING SETTING. THE REHEAT CONTROL VALVE SHALL CONTINUE TO MODULATE OPEN TO MAINTAIN MAXIMUM DELTA T LISTED ABOVE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

3 TAB CONTROL W/ HOT WATER REHEAT AND PERIMETER RADIATION - TAB-X

NO SCALE



SEQUENCE OF OPERATION:

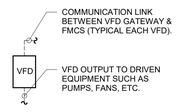
- FMCS TAB CONTROLLER SHALL MODULATE THE TAB DAMPER TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- AT FULL COOLING, THE TAB SHALL BE OPEN TO MAXIMUM CFM POSITION.
- UPON A FALL IN SPACE TEMPERATURE, THE TAB SHALL MODULATE CLOSED UNTIL SPACE SETPOINT IS MAINTAINED, OR UNTIL IT REACHES ITS MINIMUM SCHEDULED CFM POSITION PER THE TAB SCHEDULE.
- THE FMCS SHALL UTILIZE OUTPUT FROM ALL TERMINAL AIR BOX POSITIONS TO RESET THE SUPPLY DUCT DIFFERENTIAL STATIC PRESSURE.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.

4 COOLING ONLY TAB CONTROL- TAB-X

NO SCALE



SEQUENCE OF OPERATION:
FMCS SHALL CONTROL EACH VFD AS DESCRIBED IN THE SEQUENCE OF OPERATION OF THE EQUIPMENT. DRIVE SHALL BE EQUIPPED BY THE VFD MANUFACTURER WITH A COMMUNICATION CARD THAT IS COMPATIBLE WITH THE FMCS CONTROL SYSTEM. TCC SHALL PROVIDE COMMUNICATIONS WIRING AND PROGRAMMING AS REQUIRED FOR THE FMCS TO COMMUNICATE WITH EACH VFD AS DESCRIBED BELOW.

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT LIMITED TO) SHALL BE CONTROLLED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
- SYSTEM STATUS: [ENABLE/DISABLE]
- SPEED SET ADJUSTMENT: [%]
- CURRENT LIMIT: [AMPS]

THE FOLLOWING VFD CONTROL PANEL POINTS (TO INCLUDE BUT NOT LIMITED TO) SHALL BE MONITORED BY THE FMCS AND DISPLAYED ON THE OPERATOR WORKSTATION (OWS) GRAPHICAL SCREEN:
- SYSTEM STATUS: [DISABLED/MANUAL OPERATION/REMOTE OPERATION/AUTO/FAULT]
- INPUT SPEED: [0 - 100%]
- OUTPUT SPEED: [0 - 100%]
- CURRENT: [AMPS]
- POWER: [kW]
- DRIVE TEMPERATURE: [°F]
- RUN HOURS: [NUMERICAL]
- DIAGNOSTIC AND FAULT CODES: [NUMERICAL]
- BYPASS OPERATION: [ENABLED/DISABLED]

TCC SHALL PROVIDE A CURRENT SENSING RELAY ON ANY VFD EQUIPPED WITH A BYPASS WHERE THE VFD STATUS OUTPUT DOES INDICATE THE MOTOR IS RUNNING WHEN THE VFD IS OPERATING IN BYPASS MODE.

ALARMS, INTERLOCKS & SAFETIES:
AN ALARM SHALL BE INDICATED TO THE FMCS OPERATOR WORKSTATION IN THE EVENT A FAULT OR ERROR CONDITION OCCURS AT ANY VFD.

TCC SHALL PROGRAM VFD TO ENSURE MOTOR RPM DOES NOT DROP BELOW MINIMUM REQUIRED BY MOTOR MANUFACTURER.

5 VARIABLE FREQUENCY DRIVE CONTROL

NO SCALE

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

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Project No. MCHS
217050

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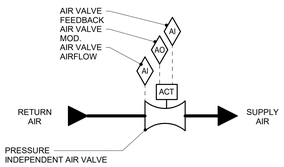
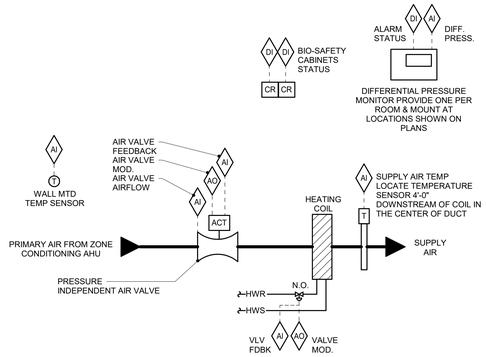


SEQUENCE OF OPERATION:

- PRESSURE INDEPENDENT AIR VALVE POSITION SHALL BE SET BY AIR BALANCER AND NOT BE MODULATED BY FMCS.

1 PRESSURE INDEPENDENT RETURN AIR VALVE CONTROL

NO SCALE



SEQUENCE OF OPERATION:

- PRESSURE INDEPENDENT AIR VALVE CONTROLLER SHALL MODULATE THE HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- PRESSURE INDEPENDENT AIR VALVE SHALL HAVE TWO POSITIONS SET BY AIR BALANCER AND NOT BE MODULATED BY FMCS.
- IF EITHER BIO-SAFETY CABINET STATUS INDICATES THE BIO-SAFETY CABINET IS NOT RUNNING THEN PRESSURE INDEPENDANT VALVE SHALL BE AT LOW FLOW POSITION.
- IF BOTH BIO-SAFETY CABINET'S STATUS INDICATES THE BIO-SAFETY CABINETS ARE BOTH RUNNING THEN THE PRESSURE INDEPENDANT VALVE SHALL BE AT HIGH FLOW POSITION.
- UPON A FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE REACHES THE MAXIMUM TEMPERATURE LISTED IN THE SCHEDULES.
- DAMPER MODULATION SPEED SHALL BE LIMITED TO PREVENT AHU SHUTDOWN DUE TO HIGH DISCHARGE DUCT STATIC PRESSURE.

MONITORING SEQUENCE OF OPERATION:

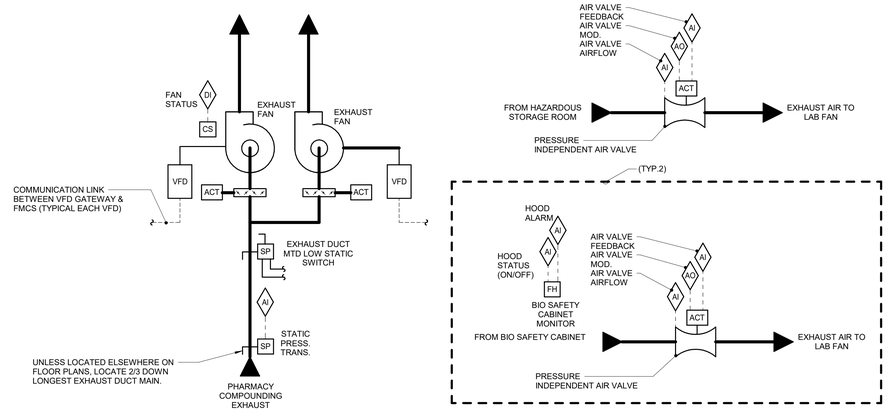
- FMCS SHALL MONITOR EACH ROOM DIFFERENTIAL PRESSURE (DP) AND SHALL DISPLAY THE VALUE ON THE TAB GRAPHICAL SCREEN AT THE OPERATOR WORKSTATION.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- DIFFERENTIAL PRESSURE MONITOR SHALL INDICATE A LOCAL ALARM IN THE EVENT THE ROOM PRESSURE RELATIONSHIP IS GREATER THAN -0.010 OR +0.010 IN. W.G. FROM DESIGN (REFER TO DRAWINGS FOR CORRECT PRESSURE RELATIONSHIP) FOR MORE THAN 30 SECONDS (ADJ.).
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DIFFERENTIAL PRESSURE MONITOR INDICATES AN ALARM CONDITIONS FOR MORE THAN 30 SECONDS (ADJ.)

2 PRESSURE INDEPENDENT AIR VALVE CONTROL W/ HOT WATER REHEAT AND ROOM PRESSURE MONITOR - TWO POSITION

NO SCALE



SEQUENCE OF OPERATION:
EXHAUST FAN SHALL BE INDEXED TO RUN CONTINUOUSLY. THE FMCS SHALL MODULATE OUTPUT TO THE VFD AS REQUIRED TO MAINTAIN -2.5" W.G. (ADJ.) STATIC PRESSURE IN THE EXHAUST DUCTWORK UPSTREAM OF THE FAN.

FMCS SHALL AUTOMATICALLY ALTERNATE BETWEEN FANS ON A WEEKLY BASIS TO EQUALIZE RUN TIME.

ONLY ONE EXHAUST FAN SHALL RUN AT ANY TIME. THE SECOND FAN IS FOR REDUNDANCY PURPOSES.

MECHANICAL CONTRACTOR TO WIRE DAMPER SO WHEN FAN IS ENERGIZED, 2-POSITION DAMPER SHALL FULLY OPEN. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

THE FMCS SHALL POSITION THE EXHAUST AIR VALVE TO MAINTAIN THE BIO SAFETY CABINET MANUFACTURER'S REQUIRED AIR FLOW RATE.

IF THE BIO SAFETY CABINET IS TURNED OFF, THE EXHAUST AIR VALVE SHALL BE MODULATED CLOSED. MODULATION SPEED SHALL BE LIMITED TO PREVENT EXHAUST FAN SHUTDOWN DUE TO LOW DUCT STATIC PRESSURE.

ALARMS, INTERLOCKS AND SAFETIES:

- THE BIO SAFETY CABINET MONITOR SHALL BE CAPABLE OF COMMUNICATING THE FOLLOWING AUDIO (ALL AUDIO ALARMS SHALL BE CAPABLE OF BEING SILENCED) AND VISUAL

ALARMS:
ALARMS, INTERLOCKS AND SAFETIES:
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT OF AN ALARM CONDITION AT ANY VFD.

THE EXHAUST FAN SHALL SHUTDOWN AND INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION IF THE LOW STATIC PRESSURE SWITCH INDICATES EXHAUST DUCT PRESSURE LESS THAN -4.0 INCHES W.G.

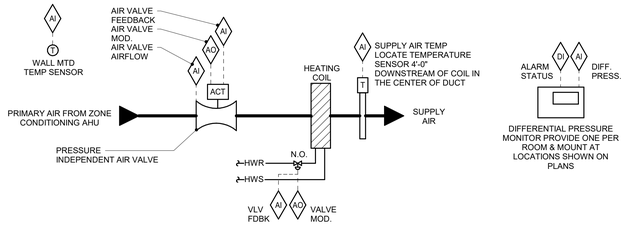
SHOULD THE DDC FMCS COMMAND THE LEAD ISOLATION EXHAUST FAN TO OPERATE AND THE FAN FAIL TO DO SO AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG ISOLATION EXHAUST FAN SHALL AUTOMATICALLY START.

ISOLATION ROOM EXHAUST FAN SHALL NOT BE INTERLOCKED WITH THE FIRE ALARM CONTROL PANEL AND SHALL NOT BE INTERLOCKED WITH ANY AIR HANDLING SYSTEM.
ALARMS, INTERLOCKS AND SAFETIES:

- AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT OF AN ALARM CONDITION AT ANY VFD.
- THE EXHAUST FAN SHALL SHUTDOWN AND INDICATE AN ALARM CONDITION AT THE FMCS WORKSTATION IF THE LOW STATIC PRESSURE SWITCH INDICATES EXHAUST DUCT PRESSURE LESS THAN -5.0 INCHES W.G.
- SHOULD THE DDC FMCS COMMAND THE LEAD EXHAUST FAN TO OPERATE AND THE FAN FAIL TO DO SO AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION AND THE LAG EXHAUST FAN SHALL AUTOMATICALLY START.
- ROOM EXHAUST FAN SHALL NOT BE INTERLOCKED WITH THE FIRE ALARM CONTROL PANEL AND SHALL NOT BE INTERLOCKED WITH ANY AIR HANDLING SYSTEM.
- LOW AIR FLOW
- LOW DIFFERENTIAL STATIC PRESSURE
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DIFFERENTIAL PRESSURE ACROSS THE AIR VALVE DROPS BELOW 0.4" W.C. (ADJ.)

3 BIO SAFETY CABINET EXHAUST AIR VALVE AND EXHAUST FAN CONTROL

NO SCALE



SEQUENCE OF OPERATION:

- PRESSURE INDEPENDENT AIR VALVE CONTROLLER SHALL MODULATE THE HW REHEAT COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE OF 72°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE DDC SETPOINT.
- PRESSURE INDEPENDENT AIR VALVE POSITION SHALL BE SET BY AIR BALANCER AND NOT BE MODULATED BY FMCS.
- UPON A FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE SETPOINT UNTIL THE SUPPLY AIR TEMPERATURE REACHES THE MAXIMUM TEMPERATURE LISTED IN THE SCHEDULES.

MONITORING SEQUENCE OF OPERATION:

- FMCS SHALL MONITOR EACH ROOM DIFFERENTIAL PRESSURE (DP) AND SHALL DISPLAY THE VALUE ON THE TAB GRAPHICAL SCREEN AT THE OPERATOR WORKSTATION.

ALARMS, INTERLOCKS & SAFETIES:

- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE SPACE TEMPERATURE IS MORE THAN 10°F (ADJ.) ABOVE OR BELOW SETPOINT.
- DIFFERENTIAL PRESSURE MONITOR SHALL INDICATE A LOCAL ALARM IN THE EVENT THE ROOM PRESSURE RELATIONSHIP IS GREATER THAN -0.010 OR +0.010 IN. W.G. FROM DESIGN (REFER TO DRAWINGS FOR CORRECT PRESSURE RELATIONSHIP) FOR MORE THAN 30 SECONDS (ADJ.).
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DIFFERENTIAL PRESSURE MONITOR INDICATES AN ALARM CONDITIONS FOR MORE THAN 30 SECONDS (ADJ.)

4 PRESSURE INDEPENDENT AIR VALVE CONTROL W/ HOT WATER REHEAT AND ROOM PRESSURE MONITOR

NO SCALE

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AIR HANDLING SCHEDULE

NOTES:
1.STEAM PRESSURE INDICATED IS THE PRESSURE AVAILABLE DOWNSTREAM OF THE CONTROL VALVE.

		MAX. DIMENSIONS			SUPPLY FAN									RETURN FAN											HEATING COIL - STEAM					COOLING COIL								FILTER								HUMIDIFIER						
											DISCONNECT	CONTROLLER/ STARTER							DISCONNECT	CONTROLLER/ STARTER																	PRE-FILTER			FINAL-FILTER											
TAG NAME	AREA SERVED	LENGTH	WIDTH	HEIGHT	CFM	MIN. CFM	EXT. S.P.	TYPE	RPM (NOTE D)	BHP (NOTE E)	MHP (NOTE E)	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	CFM	MIN. CFM	EXT. S.P.	TYPE	RPM (NOTE D)	BHP (NOTE E)	MHP (NOTE E)	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	MINIMUM OUTSIDE AIR CFM	VOLTAGE	PHASES	EAT °F	LAT °F	STEAM PSIG (NOTE 1)	MBH	MAX. A.P.D. IN. W.C.	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	EWT °F	LWT °F	GPM	TOTAL MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD	TYPE	FACE VELOCITY	PRESSURE DROP DIRTY	PRESSURE DROP CLEAN	TYPE	FACE VELOCITY	PRESSURE DROP DIRTY	PRESSURE DROP CLEAN	TYPE	CFM	STEAM CAPACITY (LBS/HR)	STEAM PSIG	MFR	MFR	MODEL	NOTES
AH-35	PHARMACY AREA	278	58	34	3000	2185	2.5	PLENUM	2270	3.7	6.3	MFR	NF	MFR	ECM	1500	1500	1.5	PLENUM	1830	0.6	2.3	MFR	NF	MFR	ECM	1780	460	3	19.0	67.1	5	153	0.1	82.8	72.5	49.8	49.6	45	56	40.0	215	0.8	10.0	MERV 8	340	1.0	0.2	MERV 14	370	1.5	0.4	DISPERSION	3000	77	5	DRISTEEM	DAIKIN APPLIED	OAH	

FAN SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.

										VIBRATION ISOLATION		ELECTRICAL (NOTE 1)										
																DISCONNECT	CONTROLLER/ STARTER					
TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN CLASS	WHEEL DIA. INCHES	FAN RPM (NOTE F)	DRIVE TYPE	BACKDRAFT DAMPER TYPE	CURB TYPE (NOTE G)	TYPE	DEFL.	BHP	MHP	VOLTAGE	PHASES	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	SCCR	MANUFACTURER	MODEL	NOTES
EF-35-1	PHARMACY HOODS	1780	3.60	II	18	2060	BELT	MOTORIZED	MFR	NA	0.00"	3.24	5	208	3	MFR	NF	MC	VFD/B	0	GREENHECK	VEKTOR-H-18	
EF-35-2	PHARMACY HOODS	1780	3.60	II	18	2060	BELT	MOTORIZED	MFR	NA	0.00"	3.24	5	208	3	MFR	NF	MC	VFD/B	0	GREENHECK	VEKTOR-H-18	

TERMINAL AIR BOX SCHEDULE - SINGLE DUCT REHEAT

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.TOTAL AIR PRESSURE DROP OF TAB AND REHEAT COIL SHALL NOT EXCEED 0.50" WC.
3.SEE SPECIFICATION SECTION 23 09 00 FOR DESCRIPTION OF CONTROL TYPE.
4.SENSOR TYPES: 1 - SENSOR ONLY, 2 - SENSOR WITH ADJUSTMENT, 3 - SENSOR WITH OVERRIDE, 4 - SENSOR WITH ADJUSTMENT AND OVERRIDE.
5.HEATING COIL IS BASED ON HEATING AIR FLOW. WATER PRESSURE DROP OF REHEAT COILS SHALL NOT EXCEED 5'. PROVIDE REHEAT COILS SEPARATE FROM BOXES IF REQUIRED TO MEET WATER PRESSURE DROP REQUIREMENTS.
6.HEATING COIL SELECTION SHALL BE BASED ON A FIXED LEAVING AIR TEMPERATURE AND VARIABLE FLOW (GPM). PROVIDE FINAL MAXIMUM FLOW RATE (GPM) TO TEST & BALANCE TERMPERATURE CONTROLS CONTRACTORS.
7.COOLING ONLY TERMINAL AIR BOX.

		CFM			HEATING COIL (NOTES 5, 6)								
TAG NAME	AREA SERVED	COOLING MAX.	HEATING MAX.	MIN.	EAT °F	LAT °F	EWT °F	MAX. GPM	MIN. INLET SIZE (IN.) DIA.	CONTROL TYPE (NOTE 3)	SENSOR TYPE (NOTE 4)	MANUFACTURER	MODEL	NOTES
TAB LL-134	ELECTRICAL LL-134	400		80	55.0				6"	4/M401	TYPE 2	TITUS	DESV	NOTES 1, 2 & 7
TAB-1	CONFERENCE ROOM LL-91	720	300	145	55.0	85.0	180	0.5	10"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-2	NURSE OFFICE LL-79	590	300	105	55.0	85.0	180	0.5	8"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-3	RECEPTION L-93A & WAITING LL-101A	860	540	540	55.0	85.0	180	0.8	10"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-4	ROOMERS LL-93	720	300	145	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-5	SCHEDULERS L-93B,HALLWAY 00-19, HALLWAY 00-23, HALLWAY 00-22, HALLWAY 00-20 & HALLWAY 00-24	990	500	500	55.0	85.0	180	0.7	10"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-6	CONSULT ROOM LL-96 & CONSULT ROOM LL-99	260	260	75	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-7	EXAM ROOM LL-97 & EXAM ROOM LL-98	240	240	240	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-8	EXAM ROOM LL-133 & EXAM ROOM LL-131	240	240	240	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-9	EXAM ROOM LL-129 & PELVIC EXAM ROOM LL-127	240	240	240	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-10	EXAM ROOM LL-135 & EXAM ROOM LL-149	240	240	240	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-11	EXAM ROOM LL-137 & EXAM ROOM LL-139 & EXAM ROOM LL-141	360	360	360	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-12	EXAM ROOM LL-143 & EXAM ROOM LL-145 & EXAM ROOM LL-147	360	360	360	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-13	EXAM ROOM LL-153 & EXAM ROOM LL-155 & EXAM ROOM LL-157	360	360	360	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-14	EXAM ROOM LL-151	120	120	120	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-15	RESOURCE ROOM LL-101B	675	300	145	55.0	93.0	180	0.7	8"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-16	TREATMENT ROOM LL-103D	230	230	140	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-17	TREATMENT ROOM LL-103C	200	140	140	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-18	TREATMENT ROOM LL-103B	200	140	140	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-19	LAB DRAW LL-103A	160	160	160	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-20	HALLWAY 00-23, HALLWAY 00-24, HALLWAY 00-25, FAST TRACK LL-103V, NURSE STATION LL-103Y	1670	570	450	55.0	85.7	180	1.1	14"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-21	TREATMENT CHAIR LL-103E, TREATMENT CHAIR LL-103F, TREATMENT CHAIR LL-103G, TREATMENT CHAIR LL-103H	800	340	340	55.0	93.0	180	0.7	10"	3/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-22	TREATMENT CHAIR LL-103I, TREATMENT CHAIR LL-103J, TREATMENT CHAIR LL-103K	1385	415	325	55.0	90.0	180	0.8	12"	3/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-23	TREATMENT CHAIR LL-103L, TREATMENT CHAIR LL-103M, TREATMENT CHAIR LL-103N	1110	335	255	55.0	90.0	180	0.7	12"	3/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-24	TREATMENT CHAIR LL-103O, TREATMENT CHAIR LL-103P, TREATMENT CHAIR LL-103Q	1415	425	325	55.0	90.0	180	0.8	12"	3/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-25	TREATMENT CHAIR LL-103R, TREATMENT CHAIR LL-103S, TREATMENT CHAIR LL-103T	560	300	255	55.0	95.0	180	0.5	8"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-26	OFFICE PROVIDER LL-87 & OFFICE PROVIDER LL-89	260	260	75	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-27	OFFICE PROVIDER LL-85 & NURSE OFFICE LL-79	430	300	105	55.0	85.0	180	0.5	8"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-28	OFFICE PROVIDER LL-81, OFFICE PROVIDER LL-83, NURSE OFFICE LL-79	390	300	80	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-29	OFFICE PROVIDER LL-37, CORRIDOR 00-15, OFFICE DIR / SUP LL-36	430	300	105	55.0	85.0	180	0.5	8"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-30	OFFICE-AP LL-35 & OFFICE-AP & CNS LL-33	260	260	75	55.0	85.0	180	0.5	6"	2/M401	TYPE 2	TITUS	DESV	NOTES 1, 2
TAB-31	PHARMACY LL-121	355	355	355	55.0	85.0	180	0.5	6"	1/M401	TYPE 2	TITUS	DESV	NOTES 1, 2

RADIATION SCHEDULE

NOTES:
1.SEE SPECIFICATION SECTION 23 09 00 FOR DESCRIPTION OF CONTROL TYPE/SENSOR.
2.DETAILED MODEL DESCRIPTION:STERLING VERSA-LINE COPPER ALUMINUM STYLE "B" BARE ELEMENT

					ELEMENT											
TAG NAME	AREA SERVED	BTU/LINEAL FT.	MBH	GPM	MAT'L	LENGTH FT.	PIPE SIZE	FIN HEIGHT	FIN WIDTH	NUMBER OF ROWS	FINS PER FOOT	AVERAGE WATER TEMP °F	CONTROL TYPE/SENSOR (NOTE 1)	MANUFACTURER	MODEL	REMARKS
RAD-1	TREATMENT CHAIR L-103H	880	4	0.5	CU-AL	4.5	3/4"	3 5/8"	4 1/4"	1	40	170	4/M401	STERLING	VERSA-LINE	NOTE 1 & 2
RAD-2	TREATMENT CHAIR L-103I	880	4.4	0.5	CU-AL	5	3/4"	3 5/8"	4 1/4"	1	40	170	4/M401	STERLING	VERSA-LINE	NOTE 1 & 2
RAD-3	TREATMENT CHAIR L-103L	880	6.2	0.5	CU-AL	7	3/4"	3 5/8"	4 1/4"	1	40	170	4/M401	STERLING	VERSA-LINE	NOTE 1 & 2
RAD-4	TREATMENT CHAIR L-103P	880	10.6	0.5	CU-AL	12	3/4"	3 5/8"	4 1/4"	1	40	170	4/M401	STERLING	VERSA-LINE	NOTE 1 & 2

LINEAR DIFFUSER SCHEDULE

NOTES:
1.CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING CONSTRUCTION.
2.PROVIDE WITH CONCEALED FASTENERS.
3.DIFFUSERS WITH MULTIPLE SLOTS SHALL HAVE THE INNER MOST SLOT DIRECTED TOWARDS THE INTERIOR OF THE BUILDING, THE REMAINING SHALL BE DIRECTED TOWARDS THE EXTERIOR UNLESS NOTED OTHERWISE.
4.SEE DRAWING FOR LENGTH OF DIFFUSERS.

TAG NAME	MATERIAL	SLOT WIDTH	NO. OF SLOTS	WIDTH	LENGTH	PLENUM REQUIRED	PLENUM INSULATION TYPE	PLENUM INLET SIZE	PATTERN CONTROL REQUIRED	BALANCING DAMPER REQUIRED	FINISH	MANUFACTURER	MODEL	NOTES
LD-1	ALUMINUM	1"	1			Yes	WRAPPED	SEE DWG.	Yes	No	WHITE	TITUS	FTB-10	NOTE 1, 2 & 4
LD-2	ALUMINUM	3/4"	2	3.50"	4'-0"	Yes	WRAPPED	SEE DWG.	Yes	No	WHITE	TITUS	TBD-30	NOTE 1, 2 & 3

GRILLES REGISTERS & DIFFUSERS SCHEDULE

NOTES:
1.CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING CONSTRUCTION.
2.ALL RUN OUT DUCTWORK TO DIFFUSERS SHALL BE NECK SIZE UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL PROVIDE PHARMACY CHALLENGE PORT FOR EACH DIFFUSER, REFER TO DETAIL 1/M301.
4. CONTRACTOR SHALL PROVIDE LAMINAR FLOW DIFFUSER WITH INTEGRAL 70MM THICK HEPA FILTER.

TAG NAME	MATERIAL	CONFIGURATION	MARGIN (NOTE 1)	INLET SIZE (IN.) (NOTE 2)	FACE SIZE (IN.)	VOLUME DAMPER REQUIRED	FINISH	MANUFACTURER	MODEL	NOTES
EG-1	STEEL	PERFORATED FACE	LAY-IN	SEE DWG	24x24	NO	WHITE	TITUS	PAR	
EG-2	STEEL	35 DEGREE DEFLECTION	1 1/4"	SEE DWG	INLET +2	NO	WHITE	TITUS	350R	
RG-1	STEEL	EGG CRATE FACE	LAY-IN	SEE DWG	24x24	NO	WHITE	TITUS	50F	DUCTED RETURN
RG-2	STEEL	EGG CRATE FACE	LAY-IN	SEE DWG	INLET +2	NO	WHITE	TITUS	50F	DUCTED RETURN
RG-3	STEEL	35 DEGREE DEFLECTION	1 1/4"		INLET +2	NO	WHITE	TITUS	350R	
RR-1	STEEL	35 DEGREE DEFLECTION	1 1/4"	SEE DWG	INLET +2	YES	WHITE	TITUS	350R	
SD-1	STEEL	LOUVER FACE	LAY-IN	SEE DWG	24x24	NO	WHITE	TITUS	TMS	STAMPED LOUVER DROP FACE, MINIMUM OF TWO STEPDOWN DIFFUSION CONES
SD-2	STEEL	PERFORATED FACE	LAY-IN	SEE DWG	24x24	YES	WHITE	CAMFIL	PHARMASEAL	NOTES 3 & 4
SD-3	STEEL	PERFORATED FACE	LAY-IN	SEE DWG	48x24	YES	WHITE	CAMFIL	PHARMASEAL	NOTES 3 & 4
SD-4	STEEL	PERFORATED FACE	LAY-IN	SEE DWG	48x24	YES	WHITE	CAMFIL	PHARMASEAL	NOTES 3 & 4
SG-1	STEEL	DOUBLE DEFLECTION	1 1/4"		INLET +2	NO	WHITE	TITUS	300R	FRONT BLADES VERTICAL UNLESS NOTED OTHERWISE
TG-1	STEEL	EGG CRATE FACE	LAY-IN	SEE DWG	24x24	NO	WHITE	TITUS	50F	DUCTED RETURN

COIL SCHEDULE - WATER

TAG NAME	AREA SERVED	SIZE			EAT	LAT	TOTAL	A.P.D. IN.	EWT	LWT		W.P.D. FT.			
		L	H	CFM	DB °F	DB °F	MBH	W.C.	°F	°F	GPM	HEAD	MANUFACTURER	MODEL	NOTES
HC-1	BUFFER ROOM LL-121E	12	8	280	55.0	90.0	11	0.00	180	150	0.7	5.0			
HC-2	ANTE ROOM LL-121C	12	12	300	55.0	90.0	30	0.00	180	150	0.7	5.0			
HC-3	HD BUFFER ROOM LL-121D	20	12	1440	55.0	80.0	54	0.00	180	150	2.6	5.0			

VENTURI AIR VALVE SCHEDULE - SUPPLY

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.SEE REFERENCED DETAIL FOR DESCRIPTION OF CONTROL TYPE.

		CFM		MIN. INLET	CONTROL			
TAG NAME	AREA SERVED	MAX.	MIN.	SIZE (IN.) DIA.	TYPE (NOTE 3)	MANUFACTURER	MODEL	NOTES
TAB-1S	BUFFER ROOM LL-121E	280	280	8"	4/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-2S	ANTE ROOM LL-121C	300	300	8"	4/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-3S	HD BUFFER ROOM LL-121D	1440	720	14"	2/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2

VENTURI AIR VALVE SCHEDULE - RETURN AND EXHAUST

NOTES:
1.NEITHER RADIATED NOR DISCHARGE SOUND LEVELS SHALL EXCEED NC 35 AT 1.5" INLET STATIC PRESSURE WHEN TESTED PER AHRI STANDARD 885-2008 USING 5/8" 20-LB DENSITY MINERAL FIBER CEILING TILE.
2.SEE REFERENCED DETAIL FOR DESCRIPTION OF CONTROL TYPE.

		CFM		MIN. INLET	CONTROL			
TAG NAME	AREA SERVED	MAX.	MIN.	SIZE (IN.) DIA.	TYPE (NOTE 2)	MANUFACTURER	MODEL	NOTES
TAB-1R	BUFFER ROOM LL-121E	230	230	8"	1/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-2R	ANTE ROOM LL-121C	250	250	8"	1/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-3.1E	HD BUFFER ROOM LL-121D	815	0	12"	3/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-3.2E	HD BUFFER ROOM LL-121D	815	0	12"	3/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2
TAB-31E	HD CHEM. STORAGE LL-121B	150	150	8"	1/M402	PHOENIX CONTROLS	EXV	NOTES 1, 2

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

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REFERENCE SCALE IN INCHES
0 1 2 3

Revisions

Date	Description

CONSTRUCTION DOCUMENTS

Drawing Date
07/10/2018

MAYO CLINIC HEALTH SYSTEM CENTER FOR ADVANCED MEDICINE & SURGERY BUILDING ADDITION AND ALTERATIONS

700 West Avenue South, La Crosse, WI 54601

Project No. MCHS
217050

Sheet Title
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7/10/2018 11:11:17 AM