CANNONDESIGN

Architect's Supplemental Instructions

Architect's Project No: 04561.01

Architect's ASI No: 043

Project:
Webster University
Interdisciplinary Science
Building

Date Issued: 12/20/2016

Contract Date:

Reason Code: 05 A/E Scope

Discipline Code: 09 HVAC

Owner:
Webster University

Architect:
Cannon Design
1100 Clark Avenue
St. Louis, MO 63102

Contractor:
Paric Construction

Contract For: General Construction

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Indicate your acceptance of these instructions for minor change to the Work as consistent with the Contract Documents and return a copy to the Architect within fourteen (14) business days of the date of issuance of these instructions. If you feel a change in Contract Sum or Contract Time is warranted, please submit an itemized quotation for the changes for approval within fourteen (14) business days of the date of issuance of these instructions prior to proceeding on the Work. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change.

St. Louis
Baltimore
Boston
Buffalo
Calgary
Chicago
Houston
Los Angeles
Mumbai
New York
Phoenix
San Francisco
Shanghai
Toronto
Vancouver
Victoria
Washington DC

Attachments:

Drawings:
M0101.A - LEVEL 01 AREA A FLOOR PLAN - MECHANICAL
M0101.B - LEVEL 01 AREA B FLOOR PLAN - MECHANICAL
M0102.A - LEVEL 02 AREA A FLOOR PLAN - MECHANICAL
M0102.B - LEVEL 02 AREA B FLOOR PLAN - MECHANICAL
M0103.A - LEVEL 03 AREA A FLOOR PLAN - MECHANICAL
M0103.B - LEVEL 03 AREA B FLOOR PLAN - MECHANICAL
M0104.A - LEVEL 04 AREA A FLOOR PLAN - MECHANICAL
M0104.B - LEVEL 04 AREA B FLOOR PLAN - MECHANICAL
M0502 - DETAILS - MECHANICAL
M0602 - SCHEDULES - MECHANICAL
M0603 - SCHEDULES - MECHANICAL

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63102
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Reason Codes:
#1. Jurisdictional Agency
#2. Constructor Driven
#3. Document Inconsistency
#4. Fast Track Driven
#5. A/E Scope
#6. Owners Scope
#7. Unforeseeable Conditions
#8. Other

Discipline Codes
#1. Demo-demolition
#2. Div1-Division 1 items on the spec book (this item is not used)
#3. Electrical
#4. Elevator
#5. Equipment (Changes in equipment, Owner Purchased)
#6. Fire Protection

Discipline Codes
#7. General Construction (Architectural)
#8. General Conditions (Div. 1)
#9. HVAC
#10. Other
#11. Plumbing
#12. Site Work/Landscaping
#13. Structural

CANNONDESIGN

Architect's Supplemental Instructions

Description:

Please submit an itemized proposal for changes in contract Sum and Contract Time for proposed modifications to the Contract Documents described herein:

SHEETS:

M0101.A - LEVEL 01 AREA A FLOOR PLAN - MECHANICAL
M0101.B - LEVEL 01 AREA B FLOOR PLAN - MECHANICAL
M0102.A - LEVEL 02 AREA A FLOOR PLAN - MECHANICAL
M0102.B - LEVEL 02 AREA B FLOOR PLAN - MECHANICAL
M0103.A - LEVEL 03 AREA A FLOOR PLAN - MECHANICAL
M0103.B - LEVEL 03 AREA B FLOOR PLAN - MECHANICAL
M0104.A - LEVEL 04 AREA A FLOOR PLAN - MECHANICAL
M0104.B - LEVEL 04 AREA B FLOOR PLAN - MECHANICAL

For the above referenced drawings:

- Delete expensive heating hot water bypass valve and associated bypass piping from plan for cost savings.
- Delete Keyed Note M51: "1" HEATING HOT WATER BYPASS WITH BACKPRESSURE CONTROL VALVE (5 GPM)."

SHEET M0502 - DETAILS - MECHANICAL

- Add H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL

SHEET M0602 - SCHEDULES - MECHANICAL

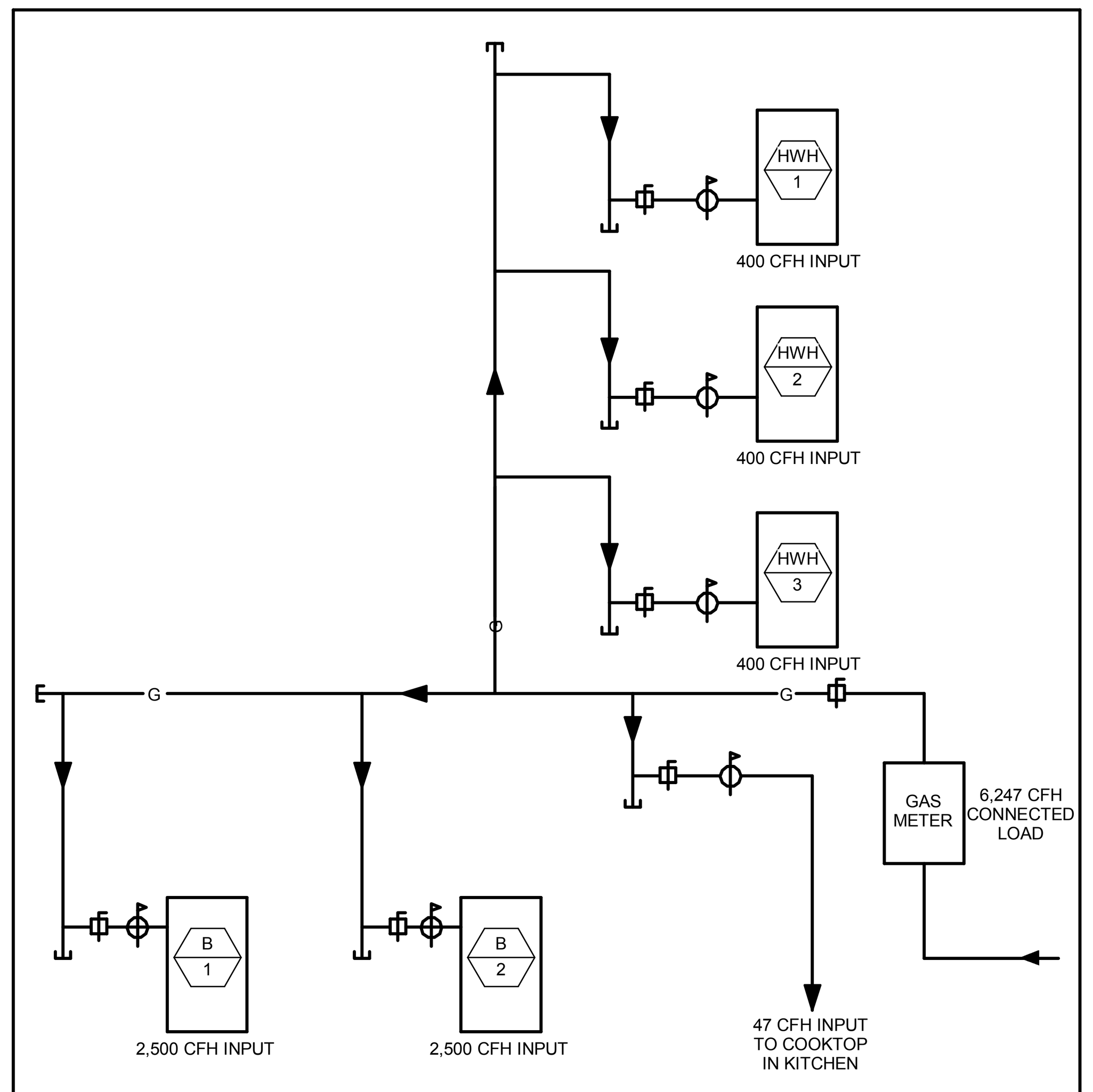
- Add note #9 to SUPPLY AIR VALVE WITH HOT WATER (SAV) SCHEDULE: "9. PROVIDE WITH 3-WAY CONTROL VALVE. REFER TO H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL ON SHEET M0502."
- Add note #9 to SAV-212

SHEET M0603 - SCHEDULES - MECHANICAL

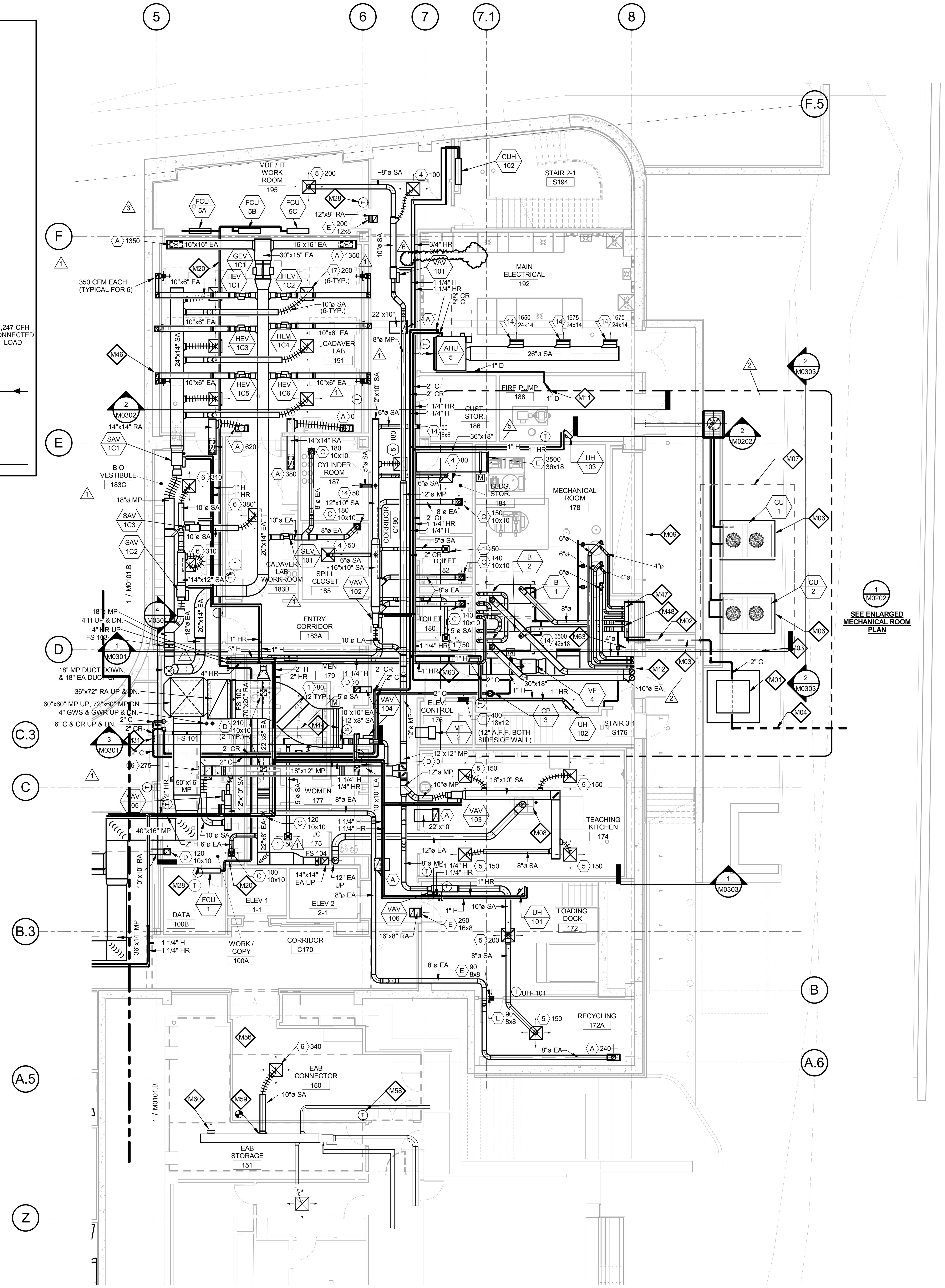
- Add note #5 to SUPPLY AIR VALVE WITH HOT WATER (SAV) SCHEDULE: "9. PROVIDE WITH 3-WAY CONTROL VALVE. REFER TO H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL ON SHEET M0502."
- Add note #5 to the following terminal units: VAV-101, VAV-114, VAV-201, VAV-301, VAV-311, VAV-401, and VAV-409.

Issued by Architect: Mike Nolte, William Tao & Associates, Inc.

Accepted by Contractor:



NATURAL GAS PIPING DIAGRAM



1 LEVEL 01 - AREA A - MECHANICAL PLAN

1/8" = 1'-0"

GENERAL NOTES:

A. Because of the limited space available to install all of the mechanical work, coordination between the various trades is of the utmost importance. This contractor shall coordinate with all other trades prior to the fabrication and installation of any work.
B. Refer to the reflected ceiling plans for ceiling construction, ceiling grid layout, ceiling mounted devices, and coordinate exact location and mounting type of all air devices.
C. All ductwork upstream of terminal units shall be Medium Pressure (MP). All ductwork downstream of terminal units shall be Low Pressure (LP). Refer to specifications.
D. All ductwork dimensions indicated on plans are sheet metal sizes. All medium pressure ductwork shall be unlined, externally insulated. All low pressure ductwork shall be lined. See specifications.
E. All mitered 90° rectangular elbows shall be furnished with turning vanes having maximum c = 0.12. All smooth radius rectangular elbows shall have a throat radius greater than one half the duct width, unless furnished with splitter vanes. Under no circumstances shall the throat radius be less than one third the duct width. Unless otherwise noted or specified.
F. Contractor shall furnish and install volume dampers for each duct take-off unless otherwise noted. See detail.
G. Maximum length of Low Pressure (LP) flexible ductwork shall be 8'-0". Round LP duct of lengths greater than 8'-0" shall be rigid round. Flexible duct sizes on plans shall be neck size of diffusers or as indicated. See specifications.
H. Maximum length of Medium Pressure (MP) flexible ductwork shall be 2'-0". Round MP duct of lengths greater than 2'-0" shall be rigid round. Flexible duct sizes on plans shall be air Terminal Unit inlet size or as indicated. See specifications.
I. All ductwork runouts to Air Terminal Units and diffusers shall be the connection size unless otherwise noted.
J. Piping runouts to terminal units shall be 3/4" unless otherwise noted. Refer to reheat box schedule.
K. Verify exact location of thermostats, humidistats, BAS sensors, and other exposed control sensors with architectural elevations and drawings before installation.
L. Schedule systems or equipment shut downs required for new construction with owner two weeks in advance. Some preminuim time work may be required.
M. Refer to piping details for final connections to equipment.
N. Provide service shut-off valves in major piping branch lines. All connections to risers and each building wing; A & B.

KEYED NOTES

M01 PROPOSED GAS METER LOCATION: COORDINATE WITH LOCAL NATURAL GAS UTILITY COMPANY FOR METER SET SIZED FOR A TOTAL CONNECTED LOAD OF 6,247-CFH WITH A DELIVERY PRESSURE OF 2-PSIG. PROVIDE CONCRETE METER PAD PER THE LOCAL GAS COMPANY'S REQUIREMENTS AND SIZE.

M02 2-INCH MAIN BUILDING NATURAL GAS LINE ABOVE GRADE WITH SHUT-OFF VALVE.

2 **M03** 2-INCH NATURAL GAS LINE IN OPEN TRENCH WITH STEEL GRATING, SEE CIVIL DRAWINGS. SUPPORT PIPING WITH STAINLESS STEEL UNTISTRUT FRAMING, MINIMUM 2-INCHES ABOVE TRENCH FLOOR.

M04 NATURAL GAS MAIN EXTENSION BELOW GRADE BY LOCAL GAS COMPANY.

M06 CONCRETE BASE FOR MECHANICAL EQUIPMENT, SEE CIVIL DRAWINGS. VERIFY SIZE WITH APPROVED SHOP DRAWINGS.

M07 DASHED LINES INDICATE RECOMMENDED SERVICE, COIL PULLING SPACE, FILTER REMOVAL SPACE, AND/OR AIRFLOW CLEARANCES.

M08 3/4-INCH NATURAL GAS LINE BELOW SLAB WITHIN VENTED SLEEVE. SEE LOWER LEVEL FLOOR PLAN FOR CONTINUATION. PROVIDE GAS SHUT-OFF VALVE AND FLEXIBLE HOSE ADAPTER. FINAL CONNECTION TO COOK TOP BY KITCHEN EQUIPMENT INSTALLER.

M09 OUTSIDE AIR INTAKE LOUVER, SEE ARCHITECTURAL DRAWINGS.

M11 TERMINATE COOLING COIL DRAIN LINE OVER NEAREST FLOOR DRAIN OR INDIRECT WASTE. PROVIDE TRAP AS INDICATED ON PIPING DETAIL.

M12 BOILER AND DOMESTIC WATER HEATER FLUES UP THROUGH ROOF. 5

M20 REFRIGERANT LIQUID AND SUCTION PIPING BETWEEN DX COOLING COILS AND CONDENSING UNITS. COORDINATE PIPE SIZES WITH MANUFACTURER. PROVIDE 3/4" DRAIN LINE, ROUTE WITH REFRIGERANT PIPING, AND TERMINATE DRAINS FROM FCU-1, 2, 5A, 5B, AND 5C OVER FLOOR DRAIN IN LOWER LEVEL MECHANICAL ROOM. TERMINATE DRAINS FROM FCU-3 AND 4 OVER SERVICE SINK IN JANITORS CLOSET 375.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M31 3-WAY CONTROL VALVE, SEE CHILLED WATER PIPING DIAGRAM.

M44 AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.

M46 EXHAUST DUCT DOWN THROUGH CHASE FOR DOWNDRAFT TABLE. VERIFY DUCT CONNECTION SIZE AND LOCATION. PROVIDE MANUAL DAMPER AND CONNECTION ADAPTER TO TABLE.

M47 DOMESTIC WATER HEATER COMBUSTION AIR DUCT THROUGH EXTERIOR WALL ABOVE LOUVER. PROVIDE VENT/RAIN CAP OR ELBOW WITH BIRDSCREEN.

M48 HEATING HOT WATER BOILER COMBUSTION AIR DUCT. PROVIDE VENT/RAIN CAP OR ELBOW WITH BIRDSCREEN.

6 **M56** MODIFY EXISTING LOW PRESSURE SUPPLY DUCTWORK IN THIS AREA FOR NEW WALLS. REMOVE EXISTING DUCT MOUNTED AIR DEVICES AND PATCH DUCTWORK AIR-TIGHT. INSTALL NEW CEILING DIFFUSERS AND RETURN AIR GRILLE AS SHOWN AND AS REQUIRED FOR NEW CEILINGS.

M57 REMOVE EXISTING DUCT MOUNTED AIR DEVICE AND CAP WITH SHEETMETAL, SEAL AIR-TIGHT.

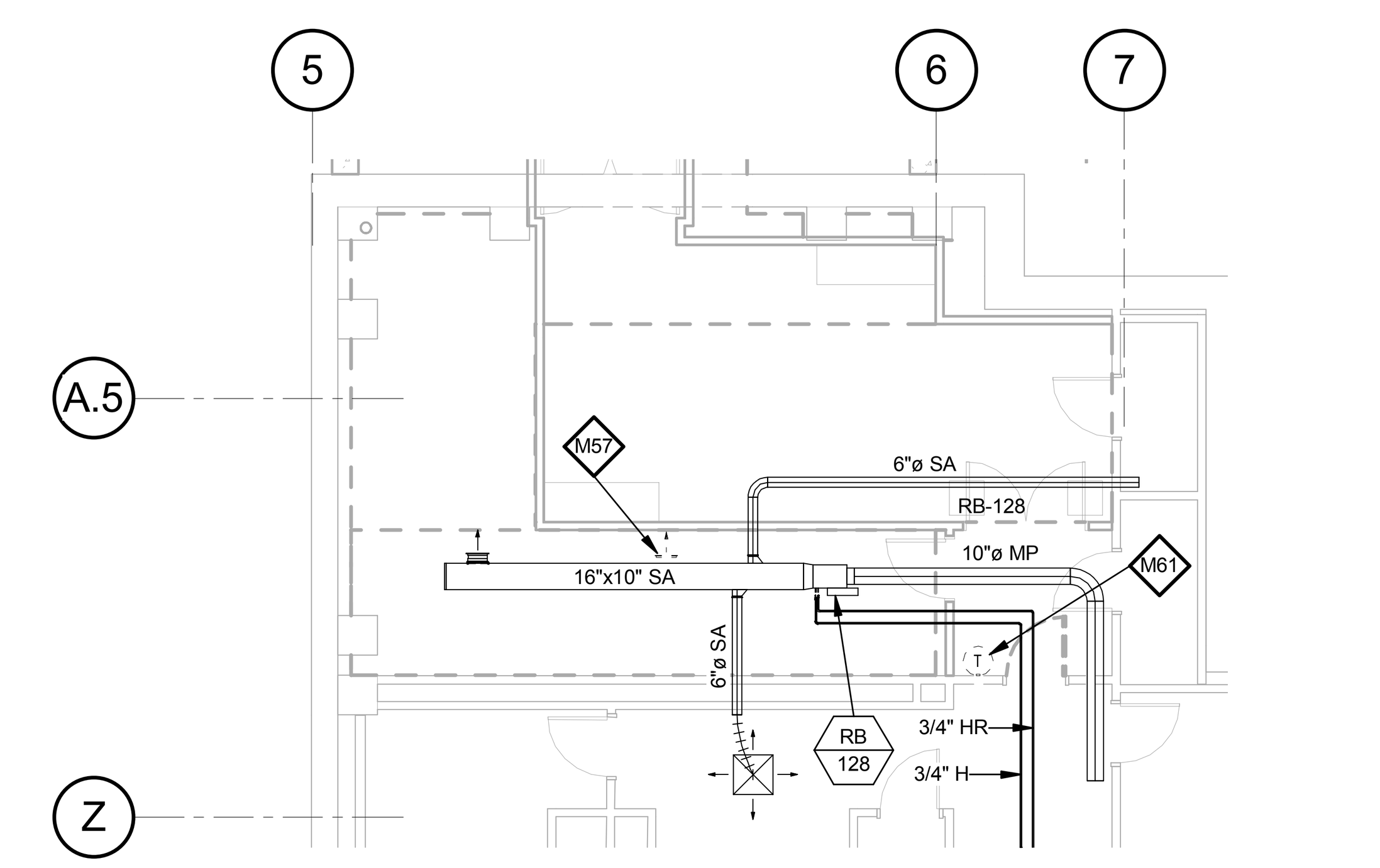
M58 NEW LOCATION FOR EXISTING TEMPERATURE SENSOR.

M59 NEW CONNECTION TO EXISTING DUCTWORK.

M60 EXISTING AIR DEVICE TO REMAIN. BALANCE TO 60-CFM.

M61 RELOCATION EXISTING TEMPERATURE SENSOR.

M63 INSTALL BOILER SAFETY SWITCH AND SIGN. COORDINATE LOCATION WITH OWNER, ARCHITECT, AND ALL OTHER TRADES.



3 PARTIAL LEVEL 01 - EAB CONNECTOR DEMOLITION

1/8" = 1'-0"

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SWT Design
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314.644.5700

Webb Engineering Services, Inc.
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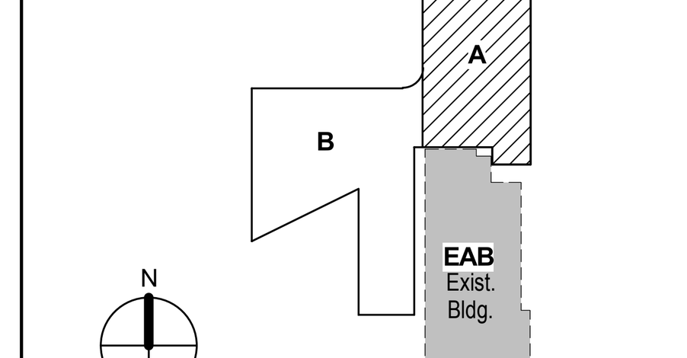
1400 S. 3rd Street, Suite 201
St. Louis, MO 63104
314.588.0600

No.	Description	Date
6	ASI-043	20 DEC 2016
5	ASI-034	04 NOV 2016
4	ASI-032	18 OCT 2016
3	ADDENDUM 2-4	24 MAY 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016



KEY PLAN

Drawing Title:

LEVEL 01 AREA A FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0101.A

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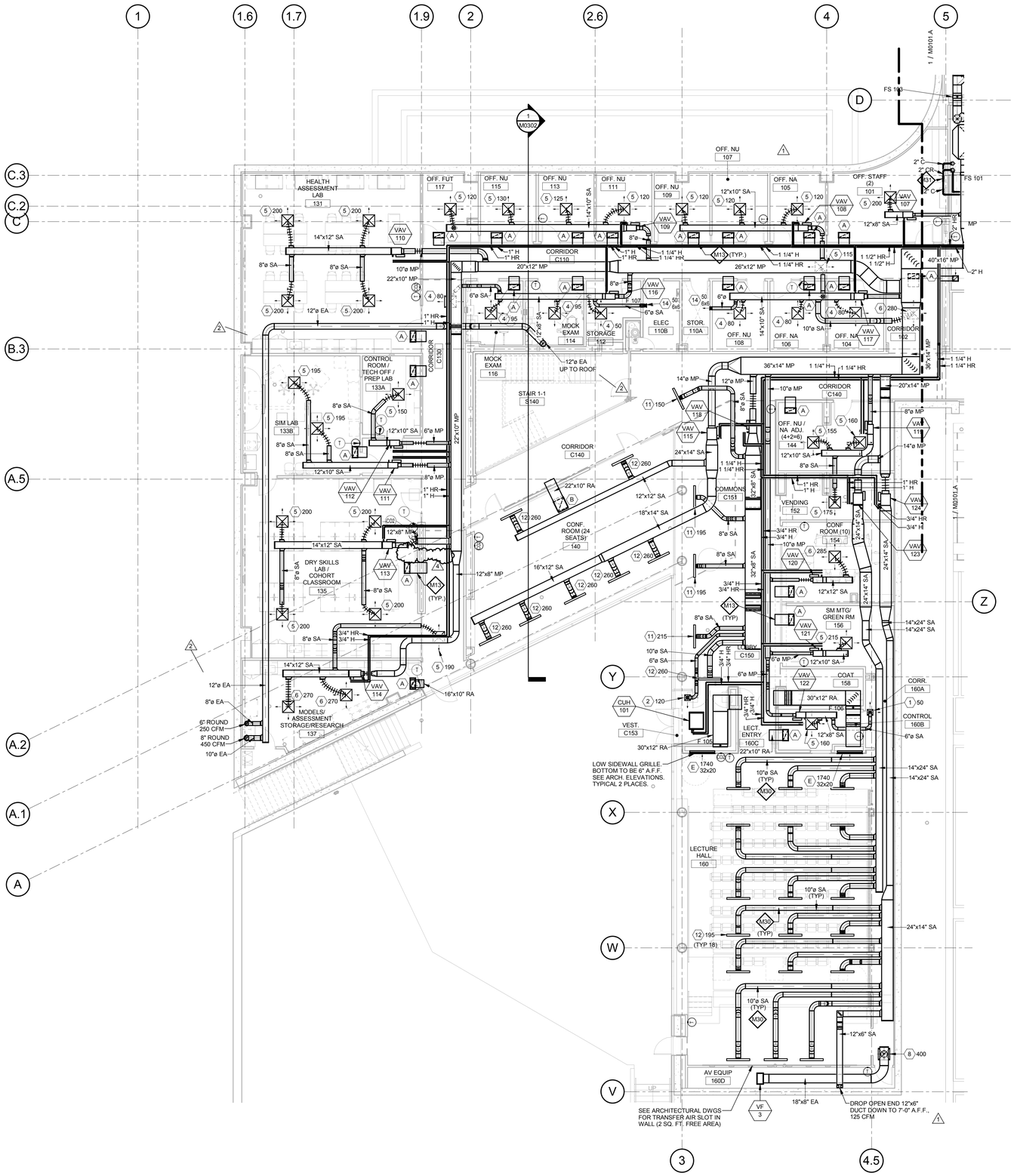

1 LEVEL 01 - AREA B - MECHANICAL PLAN

1/8" = 1'-0"

GENERAL NOTES:

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K. Verify exact location of thermostats, humidistats, BAS sensors, and other exposed control sensors with architectural elevations and drawings before installation.
L. Schedule systems or equipment shut downs required for new construction with owner two weeks in advance. Some premium time work may be required.
M. Refer to piping details for final connections to equipment.
N. Provide service shut-off valves in major piping branch lines. All connections to risers and each building wing; A & B.

KEYED NOTES

M13 LINED RETURN AIR TRANSFER DUCT, 22x10 TYPICAL UNLESS NOTED OTHERWISE.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M30 10-INCH BRANCH ROUND DUCTS TO AIR DEVICES IN AUDITORIUM SHALL HAVE 1/2" LINER.

M31 3-WAY CONTROL VALVE, SEE CHILLED WATER PIPING DIAGRAM.

Webster UNIVERSITY

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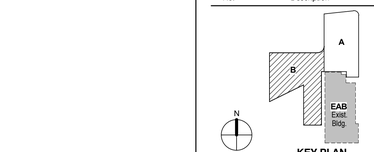
4	ASI-043	20 DEC 2016
3	ASI-032	18 OCT 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016



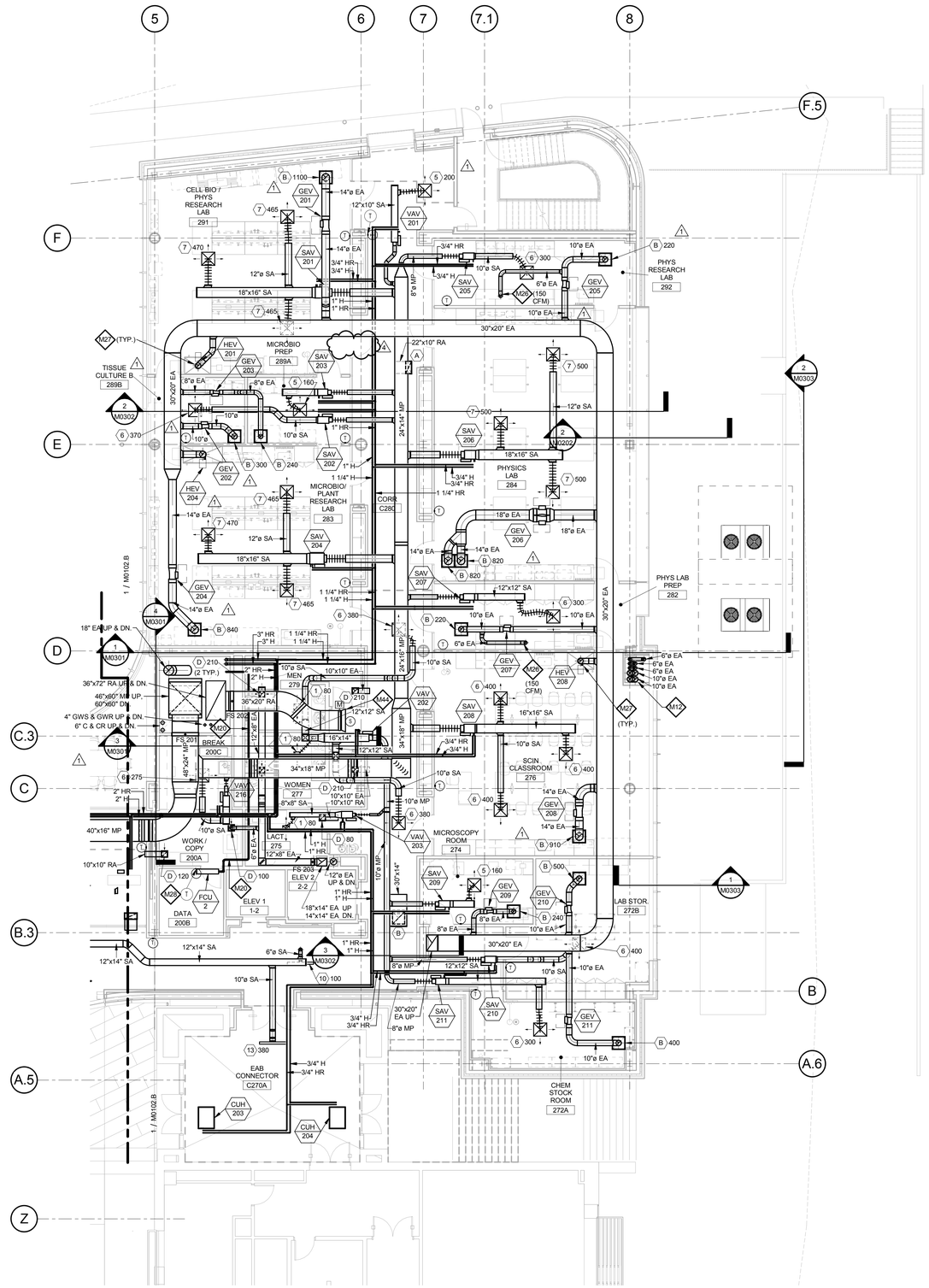
KEY PLAN

Drawing Title:

LEVEL 01 AREA B FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0101.B



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F. Contractor shall furnish and install volume dampers for each duct take-off unless otherwise noted. See detail.
G. Maximum length of Low Pressure (LP) flexible ductwork shall be 8'-0". Round LP duct of lengths greater than 8'-0" shall be rigid round. Flexible duct sizes on plans shall be neck size of diffusers or as indicated. See specifications.
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I. All ductwork runouts to Air Terminal Units and diffusers shall be the connection size unless otherwise noted.
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K. Verify exact location of thermostats, humidistats, BAS sensors, and other exposed control sensors with architectural elevations and drawings before installation.
L. Schedule systems or equipment shut downs required for new construction with owner two weeks in advance. Some preminuim time work may be required.
M. Refer to piping details for final connections to equipment.
N. Provide service shut-off valves in major piping branch lines. All connections to risers and each building wing; A & B.

KEYED NOTES

M12 BOILER AND DOMESTIC WATER HEATER FLUES UP THROUGH ROOF.

M20 REFRIGERANT LIQUID AND SUCTION PIPING BETWEEN DX COOLING COILS AND CONDENSING UNITS. COORDINATE PIPE SIZES WITH MANUFACTURER. PROVIDE 3/4" DRAIN LINE, ROUTE WITH REFRIGERANT PIPING, AND TERMINATE DRAINS FROM FCU-1, 2, 5A, 5B, AND 5C OVER FLOOR DRAIN IN LOWER LEVEL MECHANICAL ROOM. TERMINATE DRAINS FROM FCU-3 AND 4 OVER SERVICE SINK IN JANITORS CLOSET 375.

M26 6-INCH ROUND EXHAUST DUCT FOR SNORKEL EXHAUST. COORDINATE FINAL CONNECTION TO SNORKEL WITH ARCHITECTURAL DRAWINGS.

M27 INSTALL HOOD EXHAUST VALVE IN VERTICAL POSITION NEAR HOOD. ELBOWS SHALL HAVE 1.5 DIAMETER RADIUS, USE 1.0 DIAMETER RADIUS ELBOWS ONLY WHERE NECESSARY.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M44 AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.

1 **LEVEL 02 - AREA A - MECHANICAL PLAN**
1/8" = 1'-0"

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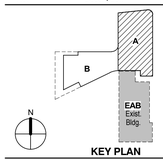
3	ASI-034	04 NOV 2016
2	ASI-032	18 OCT 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016



KEY PLAN

Drawing Title:

LEVEL 02 AREA A FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0102.A

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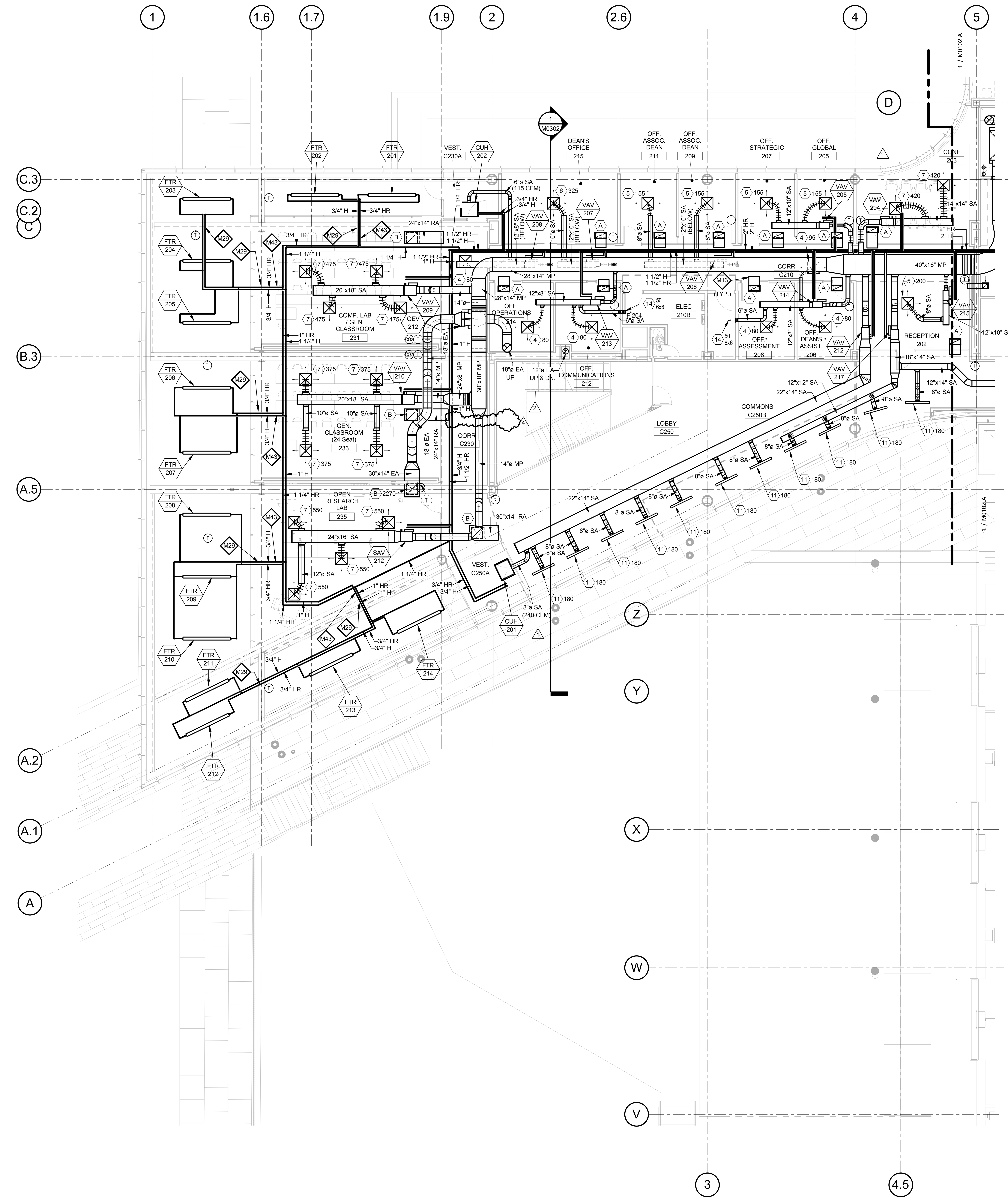

LEVEL 02 - AREA B - MECHANICAL PLAN

1/8" = 1'-0"

GENERAL NOTES:

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I. All ductwork runouts to Air Terminal Units and diffusers shall be the connection size unless otherwise noted.
J. Piping runouts to terminal units shall be 3/4" unless otherwise noted. Refer to reheat box schedule.
K. Verify exact location of thermostats, humidistats, BAS sensors, and other exposed control sensors with architectural elevations and drawings before installation.
L. Schedule systems or equipment shut downs required for new construction with owner two weeks in advance. Some preminuim time work may be required.
M. Refer to piping details for final connections to equipment.
N. Provide service shut-off valves in major piping branch lines. All connections to risers and each building wing; A & B.

KEYED NOTES

M13 LINED RETURN AIR TRANSFER DUCT, 22x10 TYPICAL UNLESS NOTED OTHERWISE.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M29 PIPING THROUGH HOLE IN BEAM. COORDINATE WITH STRUCTURAL DRAWINGS.

M43 INSTALL CONTROL VALVES AND SERVICE SHUT-OFF VALVES ABOVE ACCESSIBLE CEILING. PROVIDE FLOW MEASURING AND BALANCING VALVE AT EACH FTR ELEMENT. BALANCE WATER FLOW BEFORE OVERHANG ENCLOSURE IS INSTALLED.

4

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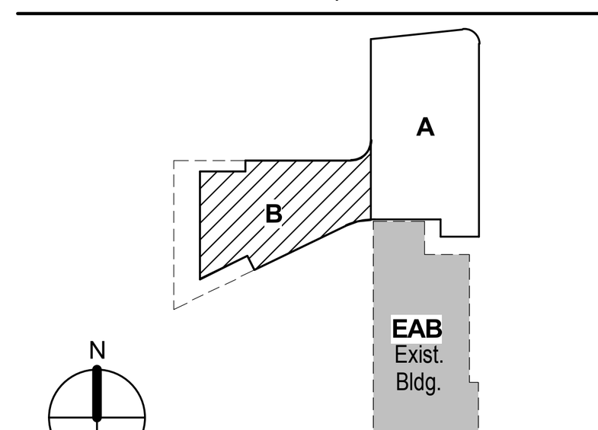


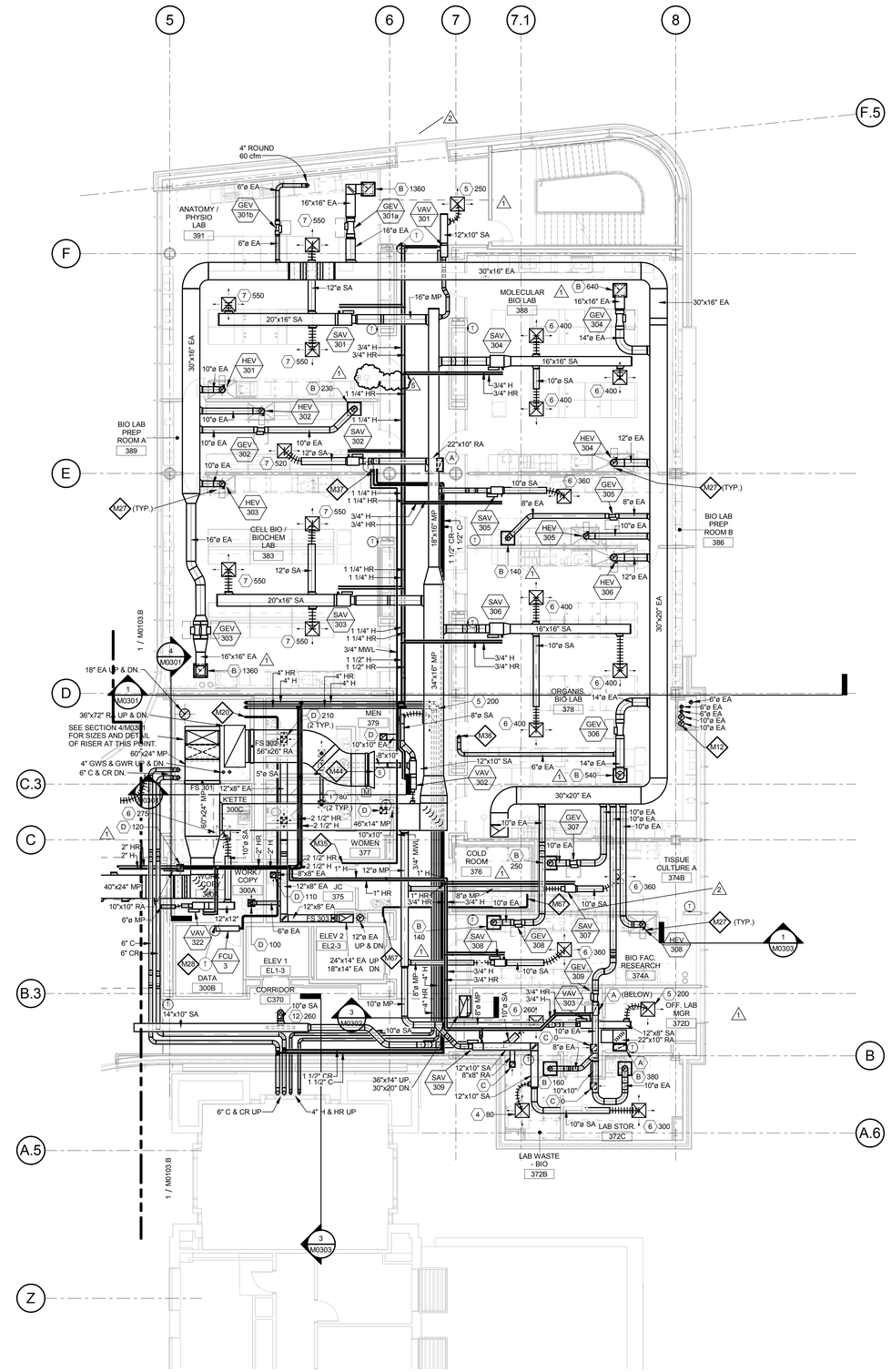
KEY PLAN

Drawing Title:

LEVEL 02 AREA B FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0102.B



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M27 INSTALL HOOD EXHAUST VALVE IN VERTICAL POSITION NEAR HOOD. ELBOWS SHALL HAVE 1.5 DIAMETER RADIUS, USE 1.0 DIAMETER RADIUS ELBOWS ONLY WHERE NECESSARY.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M35 3/4" MWL CONNECTED TO BACKFLOW DEVICE IN JANITOR'S CLOSET. SEE PLUMBING DRAWINGS. ROUTE TO LEVEL 04 FOR PROCESS COOLING SYSTEM.

M36 6" ROUND DUCT FOR AQUARIUM SPACE. BALANCE AIRFLOW TO 100 CFM. TERMINATE OPEN END AS HIGH AS POSSIBLE.

M37 1-1/2" C & CR, AND 3/4" MWL UP TO LEVEL 04.

M44 AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.

M67 LOCATION FOR REFRIGERANT PIPING FOR COOLER, SEE ARCHITECTURAL SPECIFICATIONS AND DRAWINGS. PIPING SHALL BE INSTALLED PER COOLER SUPPLIERS REQUIREMENTS.

1 LEVEL 03 - AREA A - MECHANICAL PLAN

1/8" = 1'-0"

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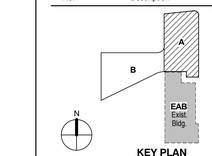

KEY PLAN

Drawing Title:

LEVEL 03 AREA A FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0103.A

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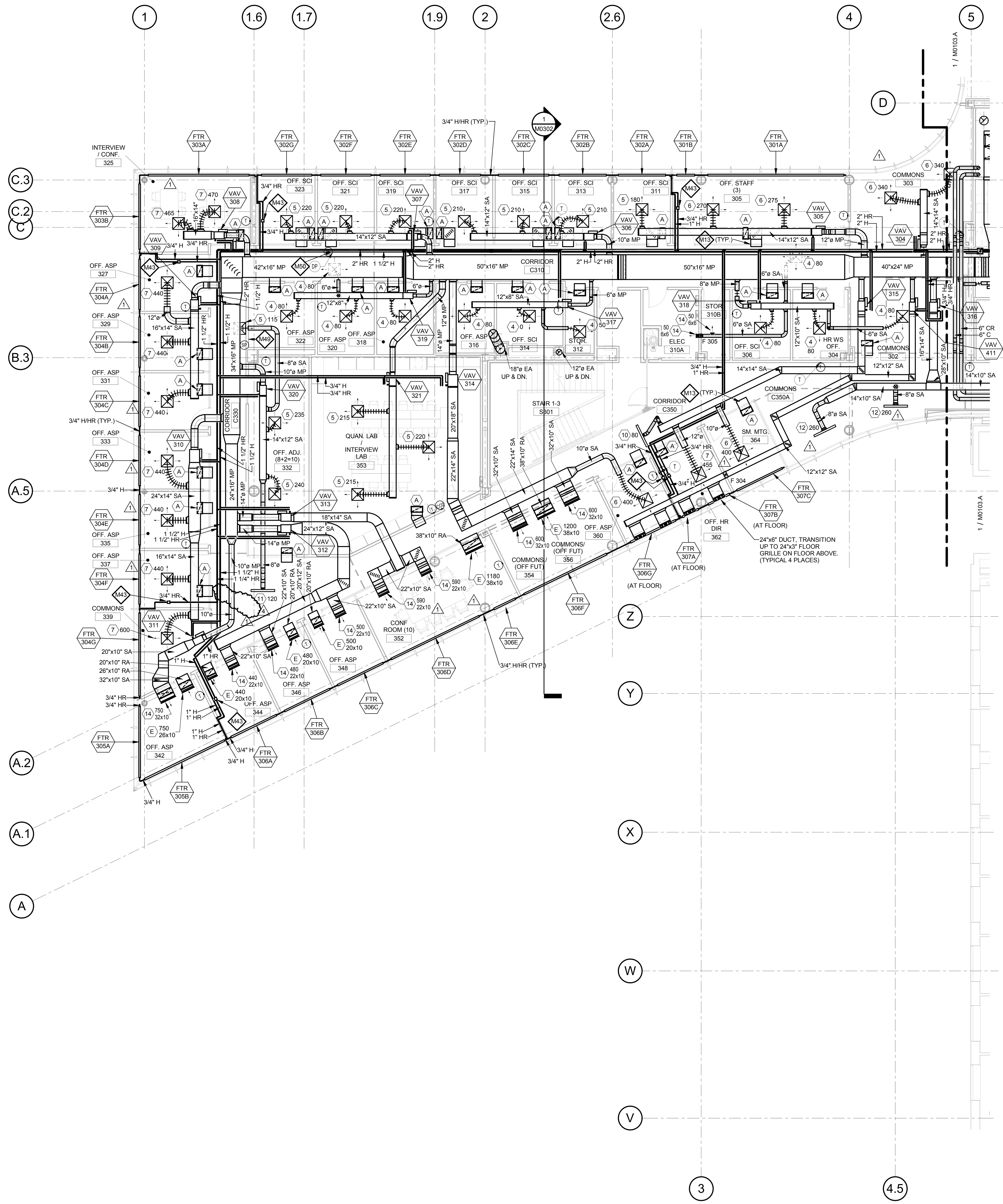

1 LEVEL 03 - AREA B - MECHANICAL PLAN
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M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

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M49 DUCT STATIC PRESSURE SENSOR.

M50 PIPING DIFFERENTIAL PRESSURE SENSOR

4

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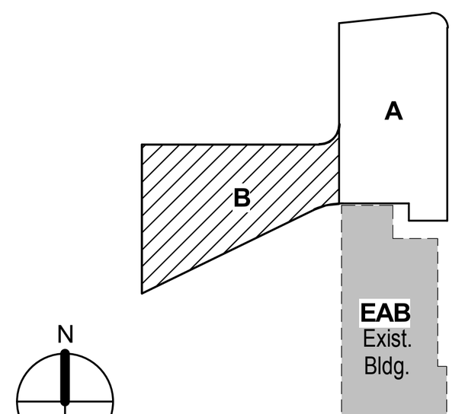

KEY PLAN

Drawing Title:

LEVEL 03 AREA B FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0103.B

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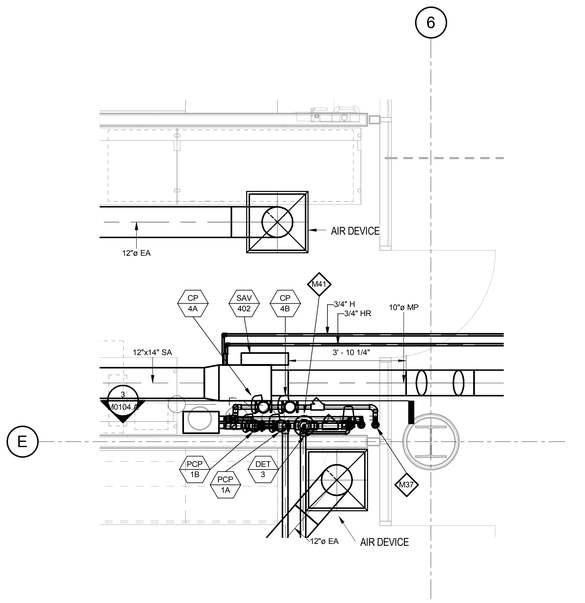
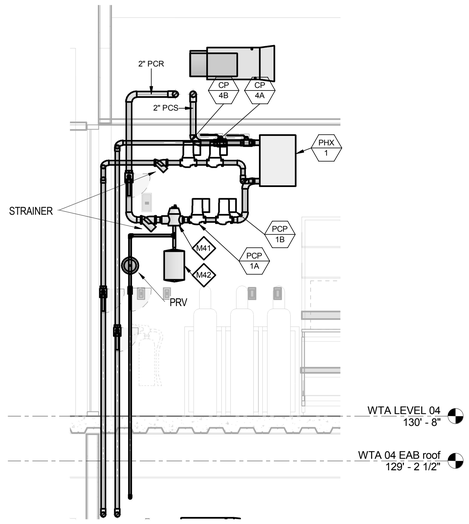


2 PARTIAL LEVEL 04 - PROCESS CHILLED WATER PLAN

1/2" = 1'-0"



3 L04 - SECTION AT PROCESS CHILLED WATER SYSTEM

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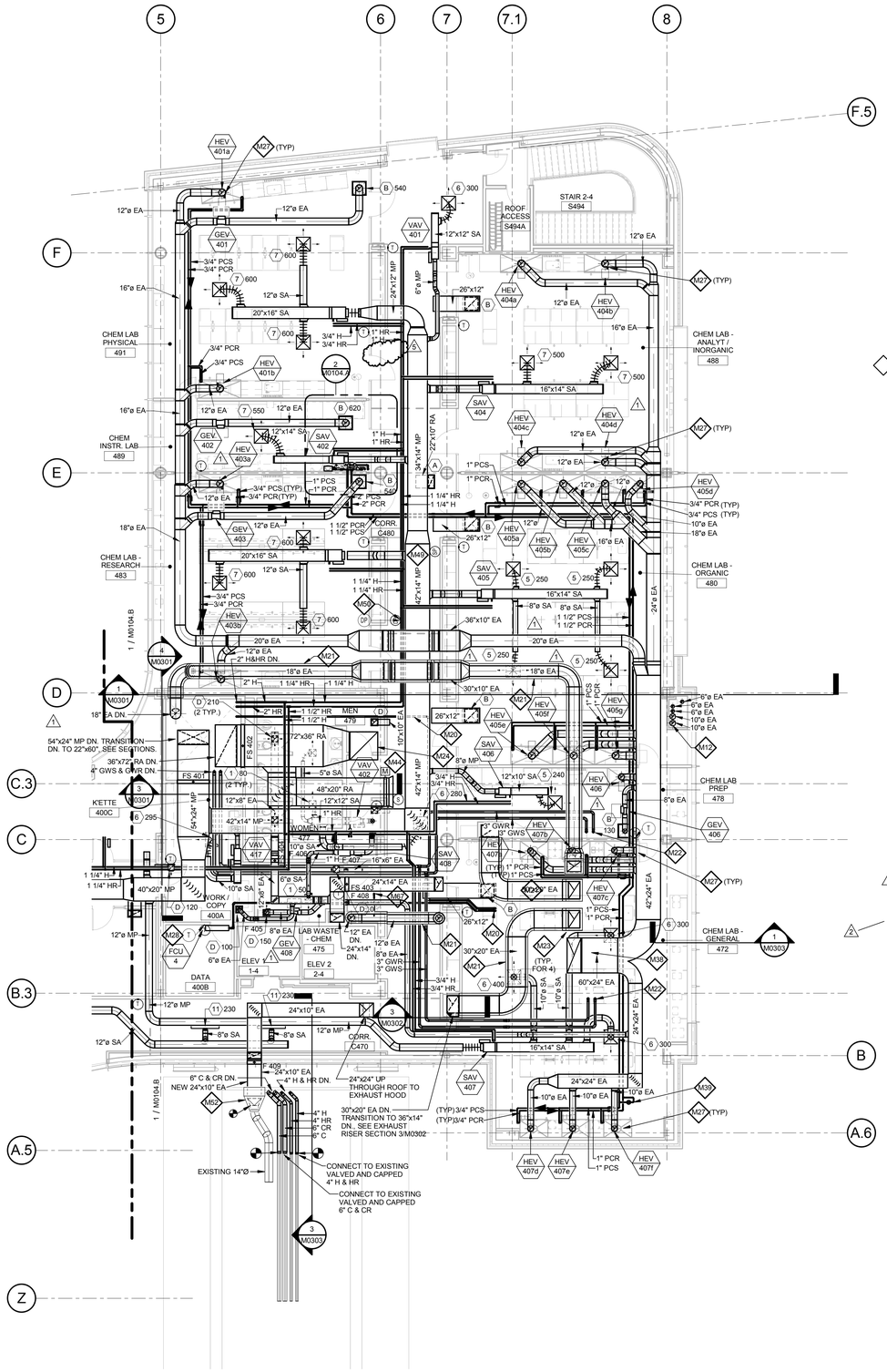

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M21 PROVIDE FIRE WRAP AROUND LAB EXHAUST DUCTWORK FROM RATED CHASE PENETRATION TO ROOF.

M22 GLYCOL WATER SUPPLY & RETURN PIPING UP THROUGH ROOF TO HEAT RECOVERY COILS. PROVIDE ROOF PENETRATION CURB/SEAL.

M23 EXHAUST DUCT UP THROUGH ROOF.

M24 RELIEF AIR DUCT UP THRU ROOF TO RELIEF AIR FAN.

M27 INSTALL HOOD EXHAUST VALVE IN VERTICAL POSITION NEAR HOOD. ELBOWS SHALL HAVE 1.5 DIAMETER RADIUS, USE 1.0 DIAMETER RADIUS ELBOWS ONLY WHERE NECESSARY.

M28 BAS TEMPERATURE SENSOR TO MONITOR IT/TCOM SPACES. FCU CONTROLLED BY UNIT MOUNTED THERMOSTAT.

M37 1-1/2" C & CR, AND 3/4" MWL UP TO LEVEL 04.

M38 PROVIDE ELBOW SOUND ATTENUATOR, KINETICS MODEL 24KCES-P/5.5 - 60x24x60-6/30, 60" WIDE BY 24" HIGH BY 60" LONG, ELBOW CONFIGURATION, 20,000-CFM AT 0.48" PD, DYNAMIC INSERTION LOSS (Hz/dB): 63/4, 125/7, 250/11, 500/19, 1000/18, 2000/18, 4000/20, 8000/16 .

M39 1" BACKPRESSURE REGULATING VALVE (5 GPM) FOR PROCESS CHILLED WATER MINIMUM PUMP FLOW.

M41 2-INCH AIR SEPARATOR, SEE PIPING DIAGRAM.

M42 DIAPHRAGM EXPANSION TANK, SEE PIPING DIAGRAM AND SCHEDULE.

M44 AIRFLOW MEASURING STATION, KELE MODEL KOAMS FURNISHED WITH INLET BELL FOR PLENUM APPLICATIONS LOCATED IN MINIMUM OA DUCT OR RETURN AIR INLET ON EACH FLOOR.

M49 DUCT STATIC PRESSURE SENSOR.

M50 PIPING DIFFERENTIAL PRESSURE SENSOR.

M52 REMOVE EXISTING RELIEF LOUVER AND PORTION OF EXISTING DUCT. ROUTE NEW DUCT THROUGH EXISTING OPENING.

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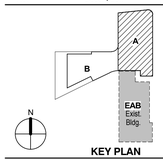


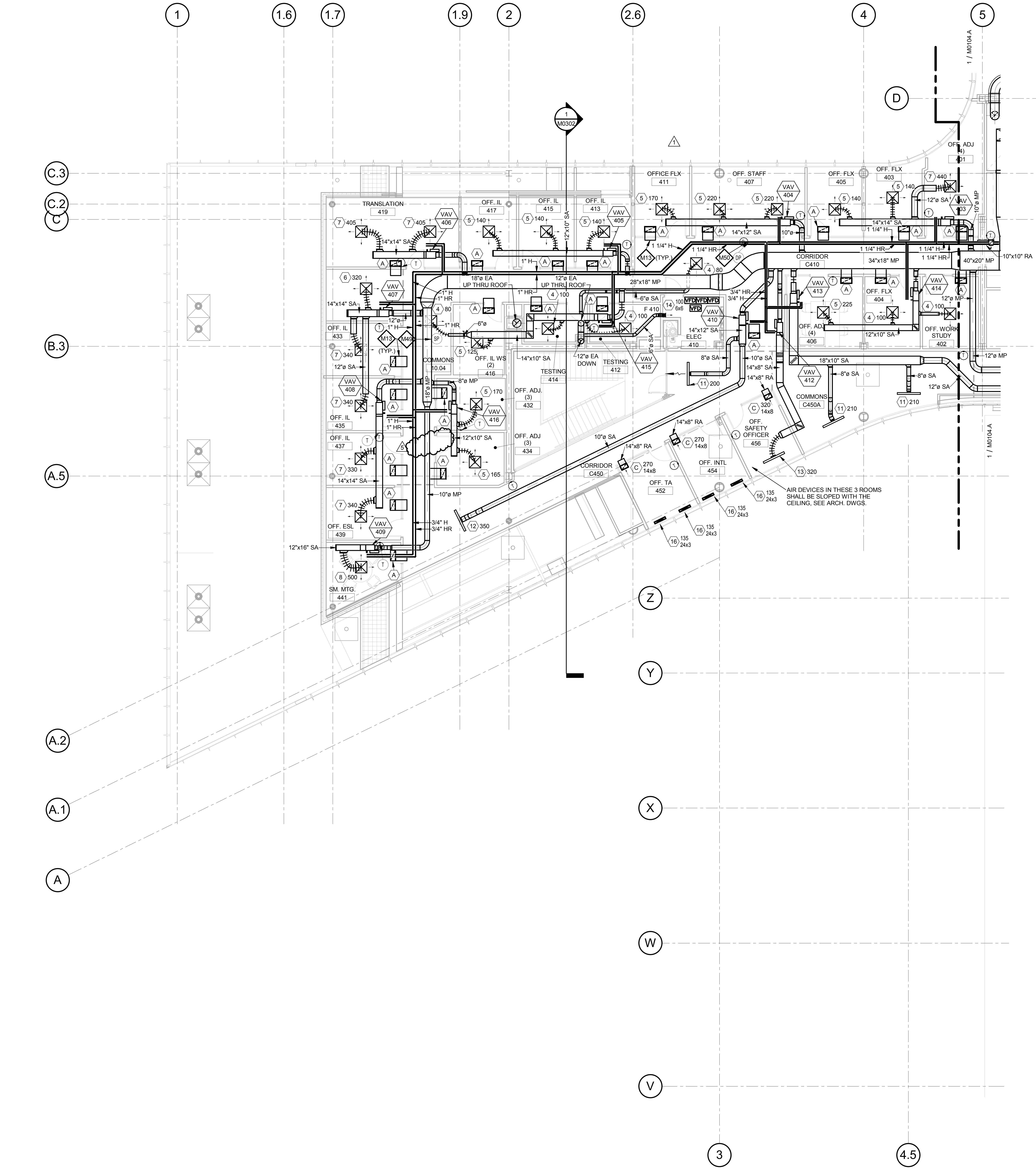
KEY PLAN

Drawing Title:

LEVEL 04 AREA A FLOOR PLAN - MECHANICAL

Project No.: 04561.01 Checked by:

M0104.A



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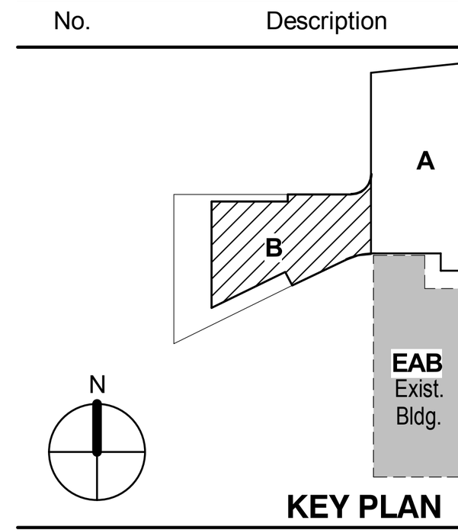
No.	Description	Date
5	ASI-043	20 DEC 2016
4	ASI-032	18 OCT 2016
3	ASI-009	01 AUG 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016



KEY PLAN

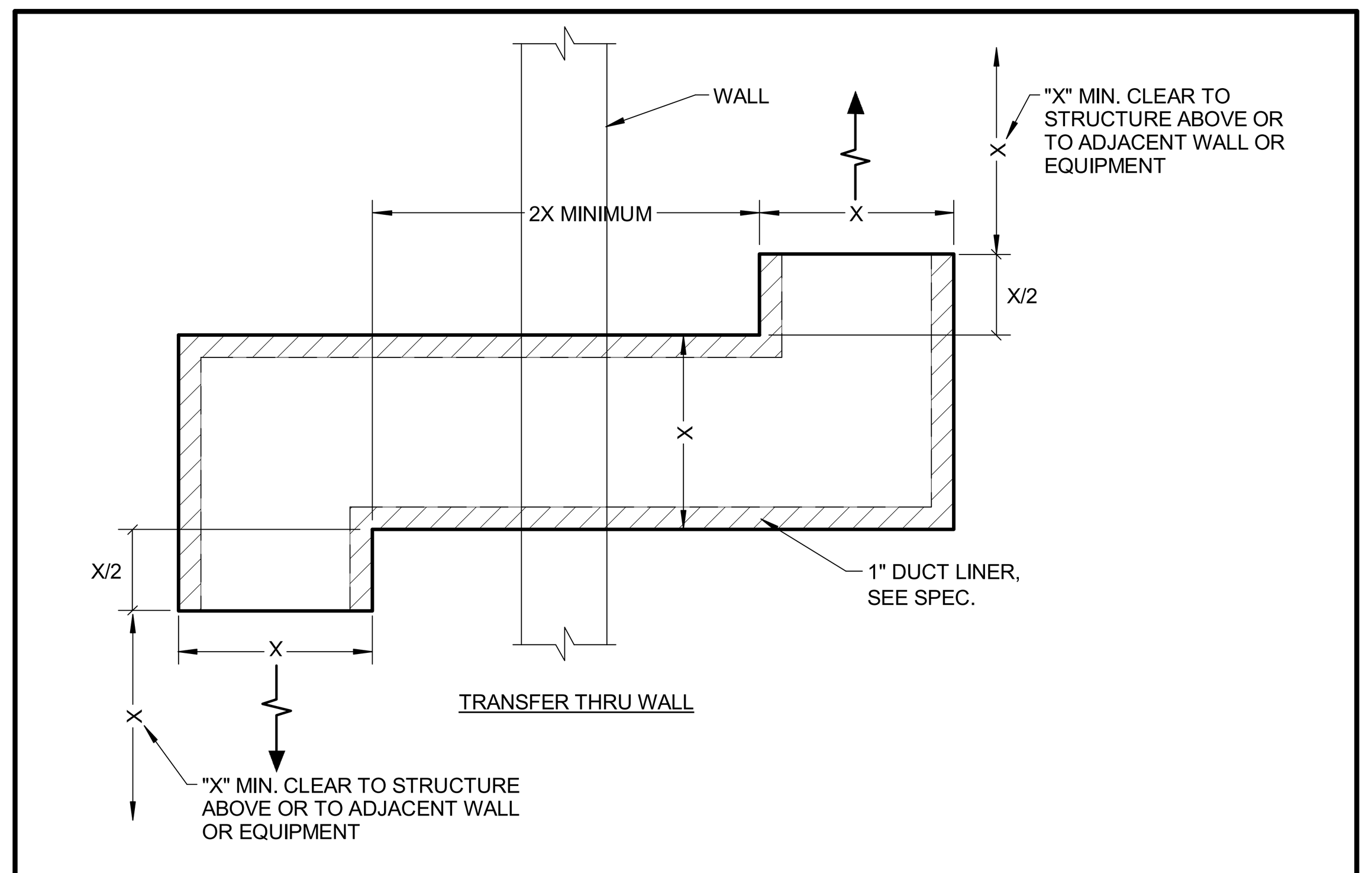
Drawing Title:

LEVEL 04 AREA B FLOOR PLAN - MECHANICAL

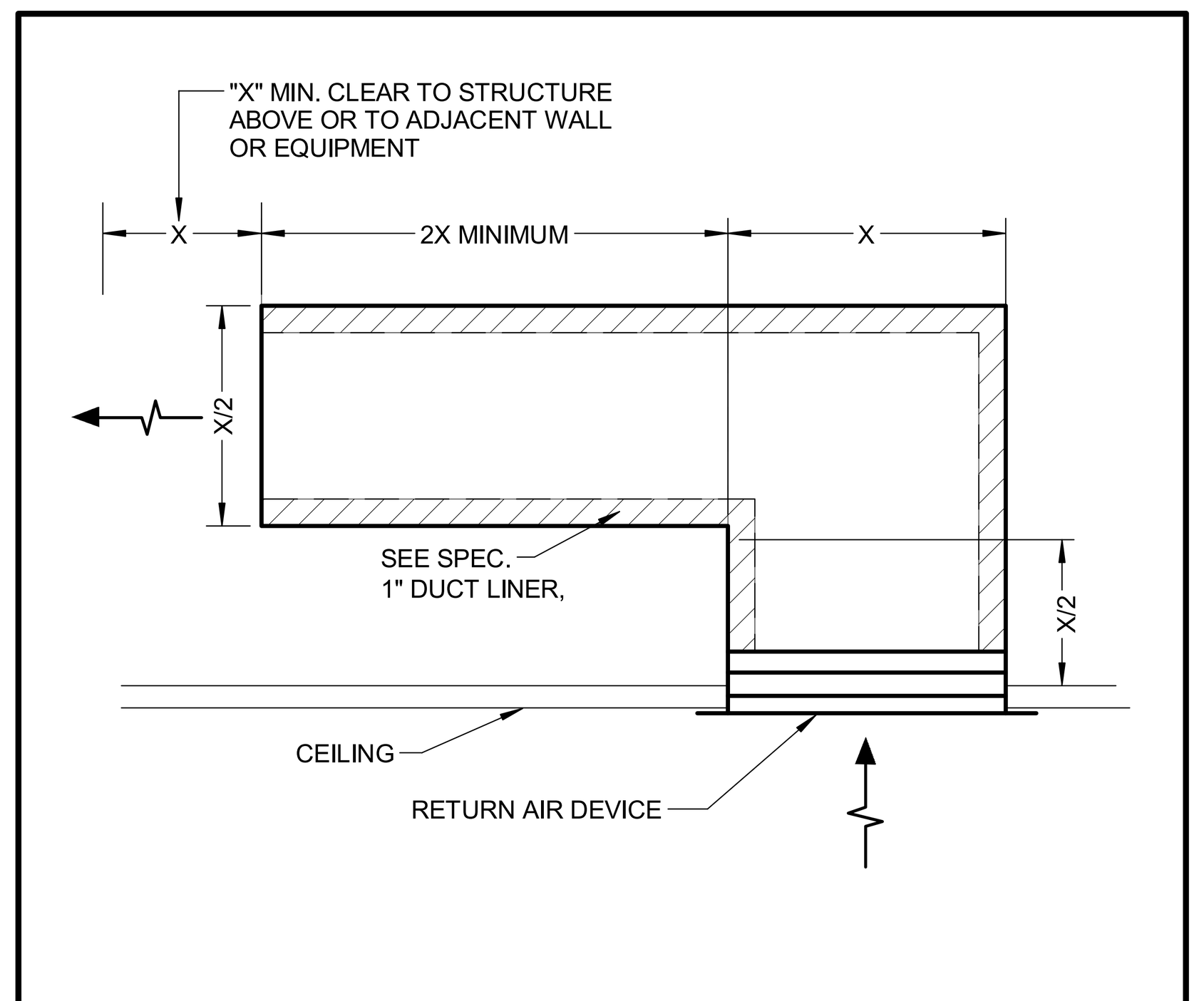
Project No.: 04561.01 Checked by:

M0104.B

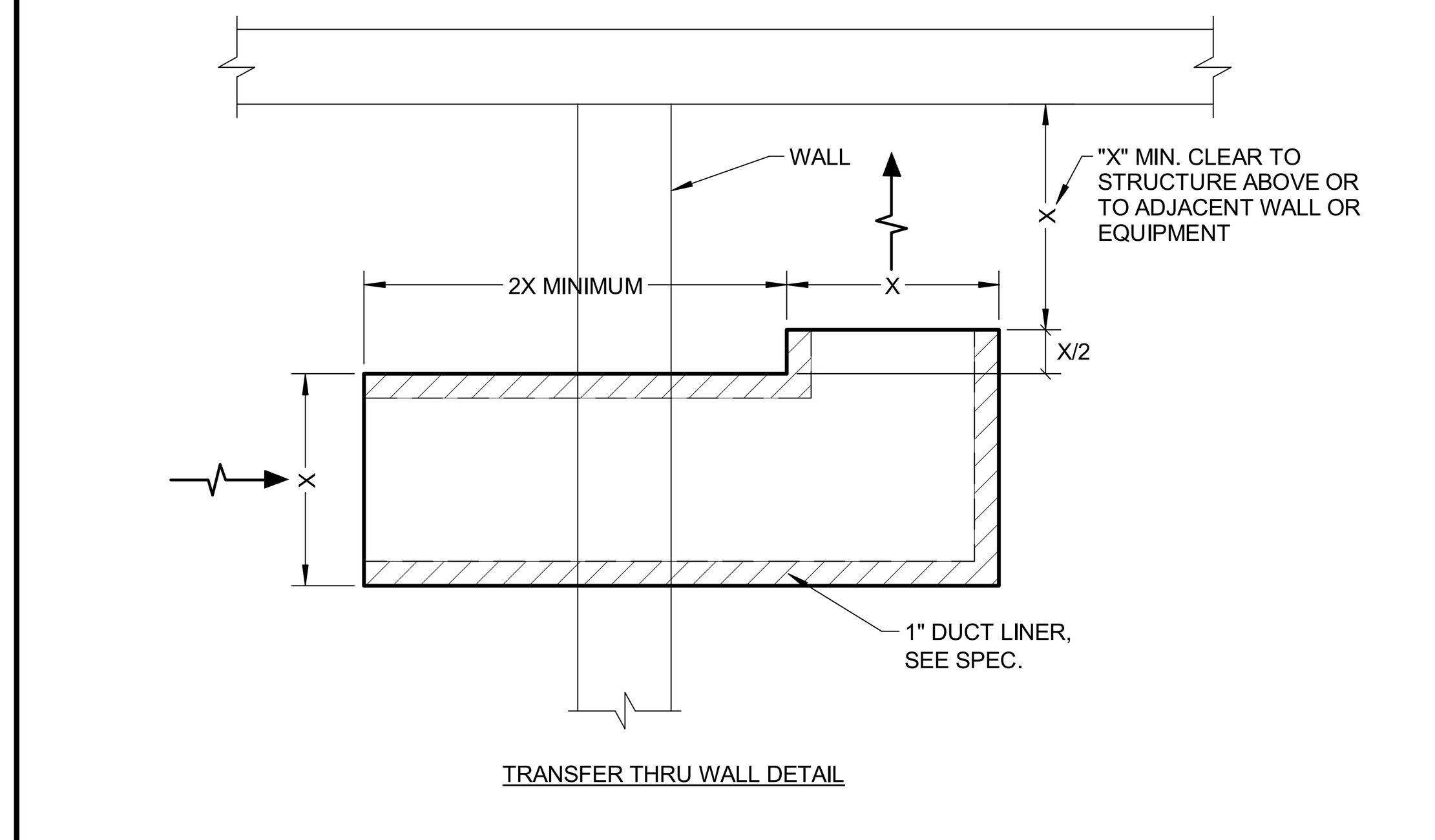
12/19/2016 6:08:17 PM



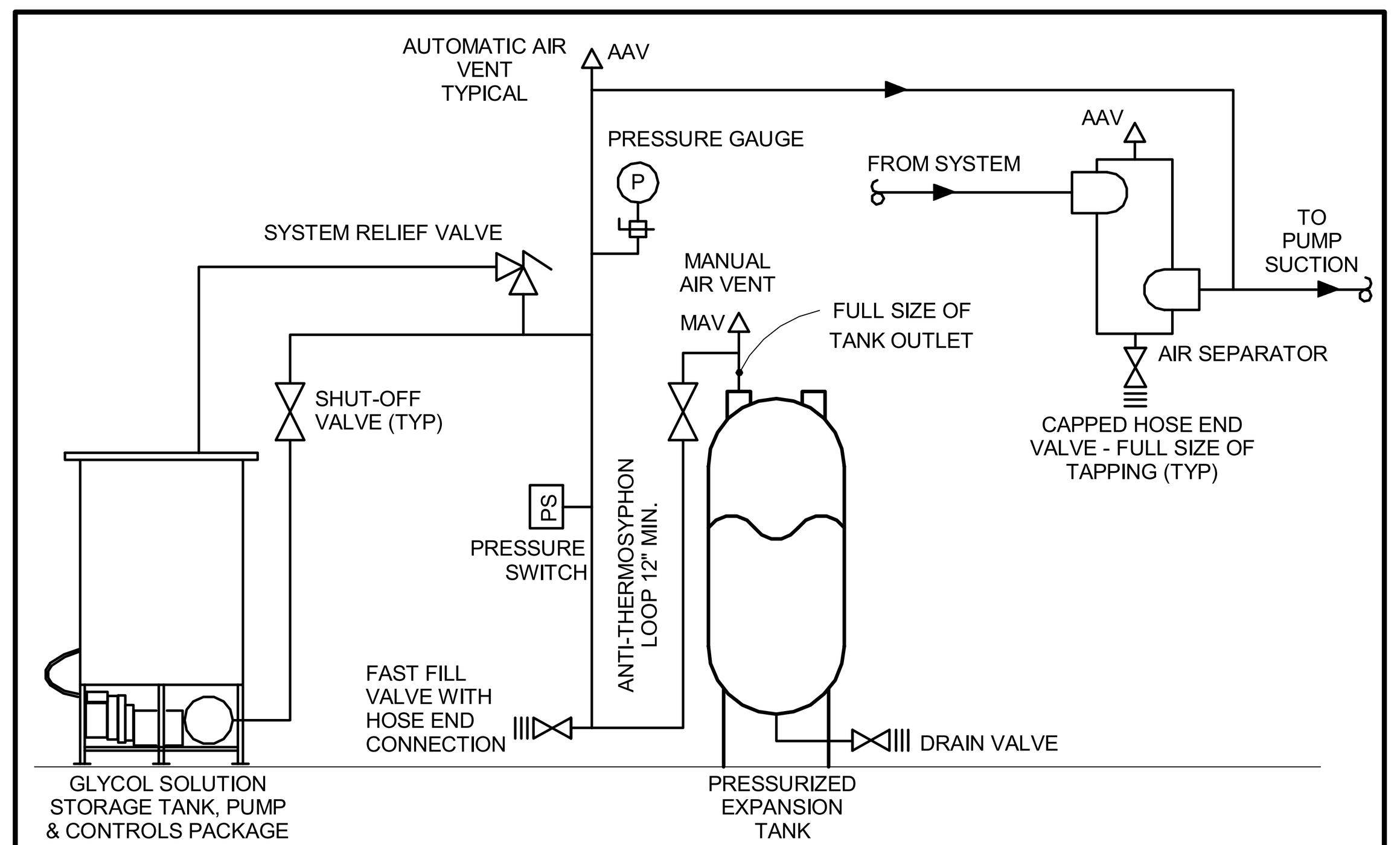
Z-SHAPED LINED TRANSFER DETAIL
NO SCALE



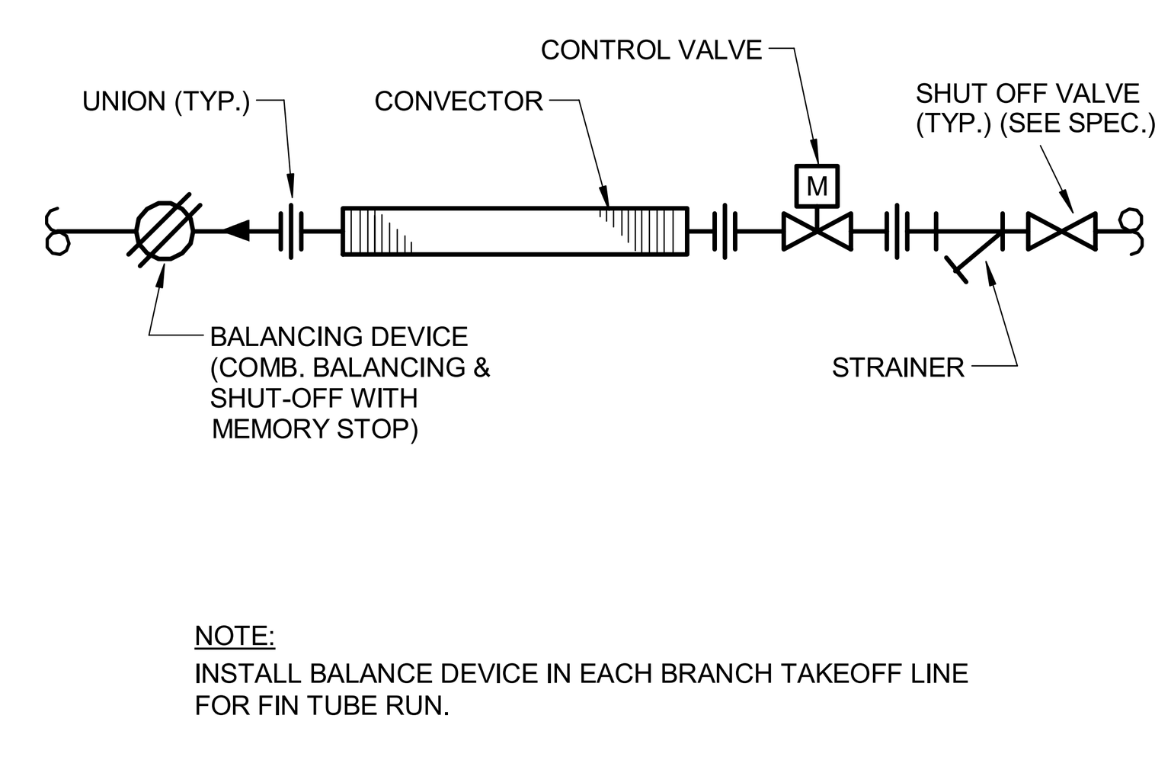
LINED RETURN GRILLE BOOT DETAIL
NO SCALE



L-SHAPED LINED TRANSFER DETAIL
NO SCALE

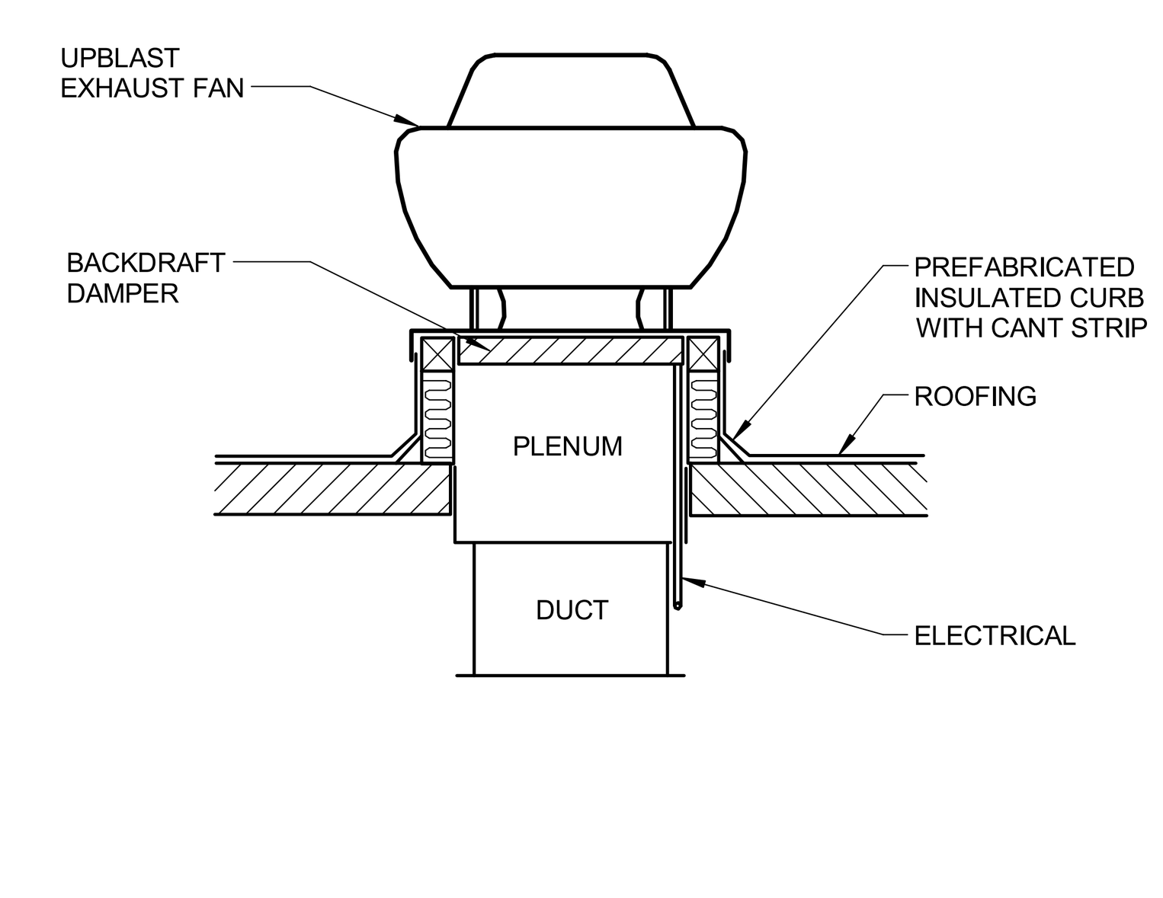

AUTOMATIC AIR VENT TYPICAL
AAV
PRESSURE GAUGE
P
FROM SYSTEM
AAV
TO PUMP SUCTION
SYSTEM RELIEF VALVE
MANUAL AIR VENT
MAV
FULL SIZE OF TANK OUTLET
AIR SEPARATOR
SHUT-OFF VALVE (TYP)
CAPPED HOSE END VALVE - FULL SIZE OF TAPPING (TYP)
PS
PRESSURE SWITCH
ANTI-THERMOSYPHON LOOP 12" MIN.
FAST FILL VALVE WITH HOSE END CONNECTION
DRAIN VALVE
GLYCOL SOLUTION STORAGE TANK, PUMP & CONTROLS PACKAGE
PRESSURIZED EXPANSION TANK

GLYCOL SOLUTION MAKE-UP SYSTEM-DIAPHRAGM EXPANSION TANK-AIR SEPARATOR PIPING DETAIL
NO SCALE

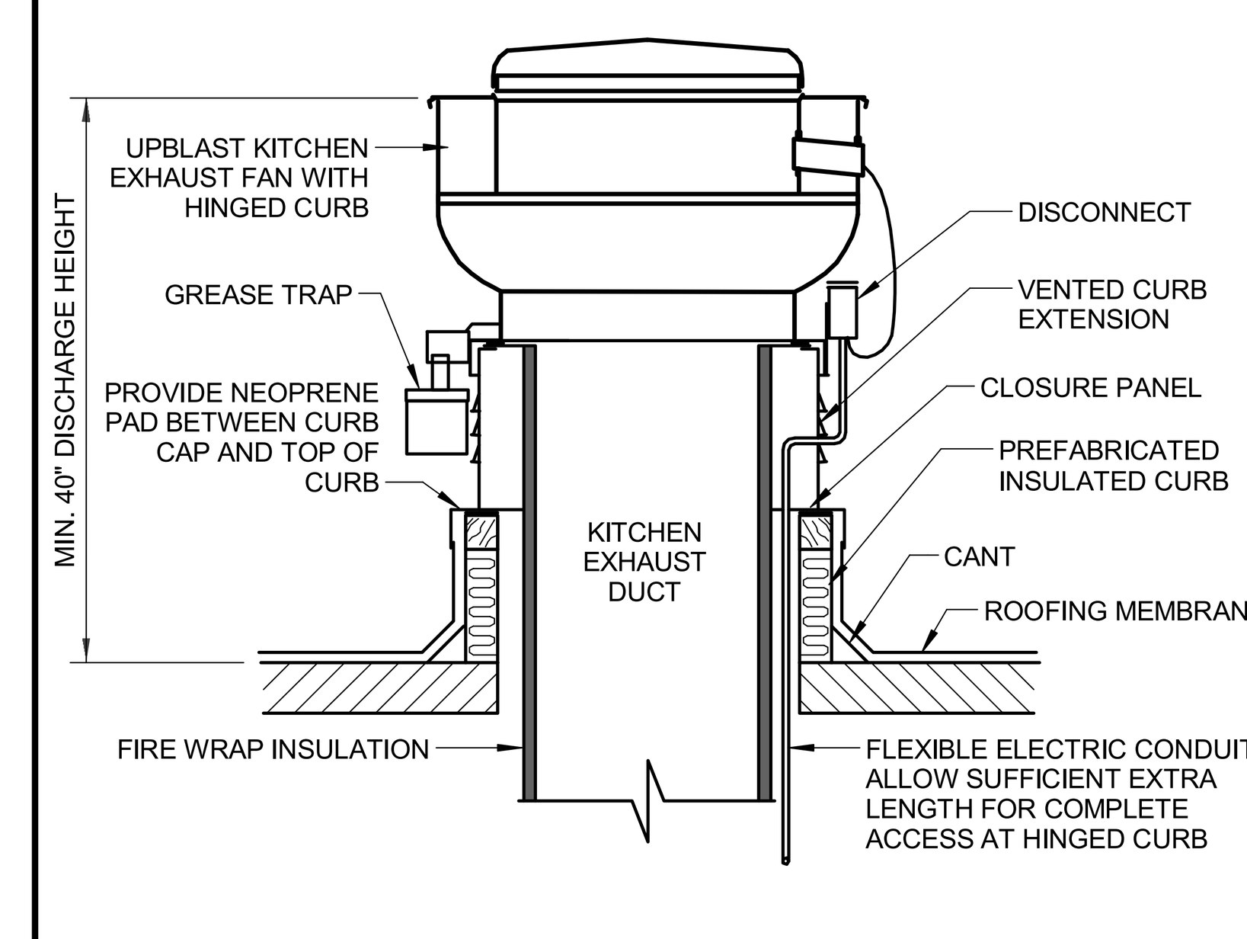


NOTE:
INSTALL BALANCE DEVICE IN EACH BRANCH TAKEOFF LINE FOR FIN TUBE RUN.

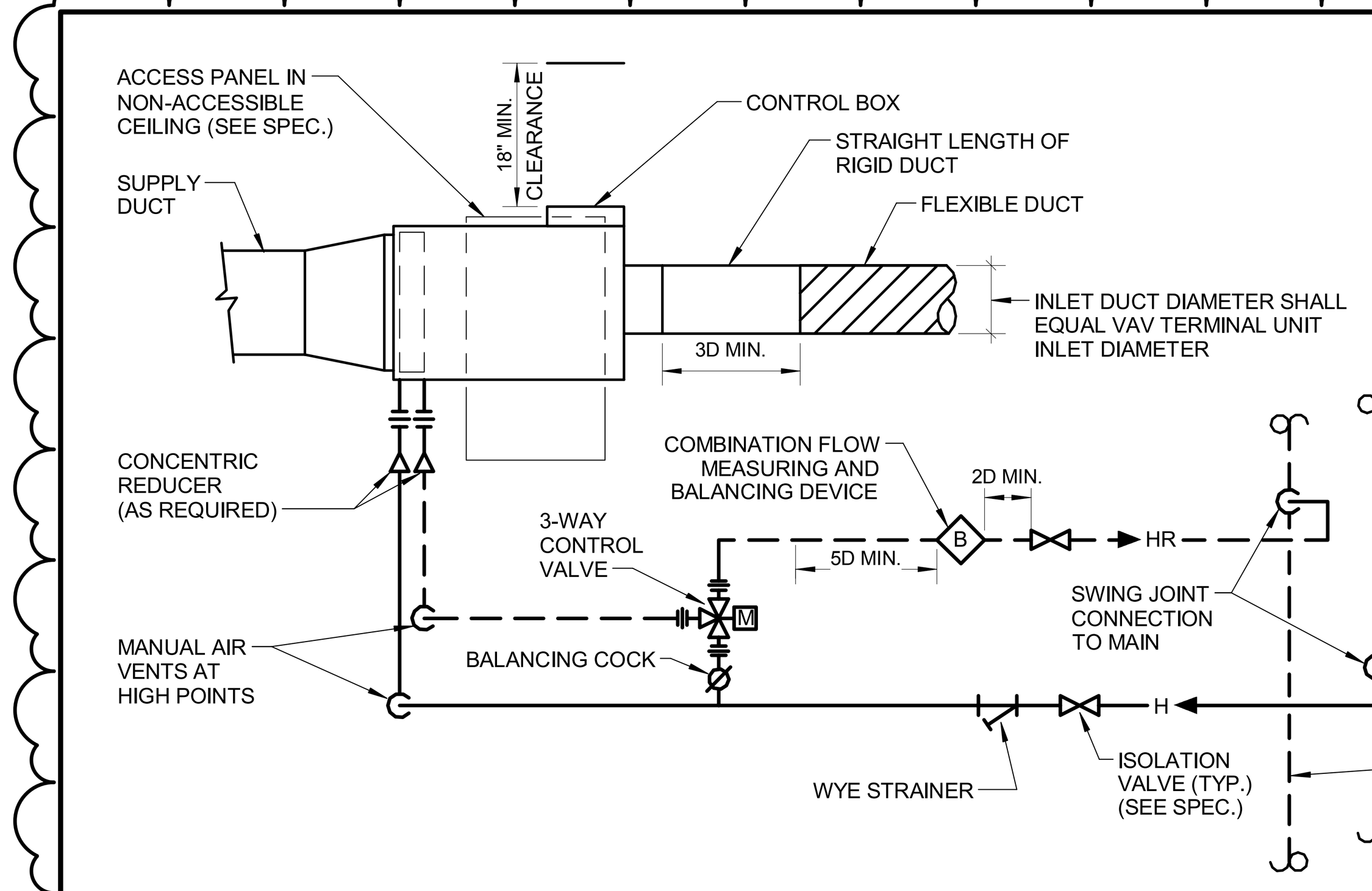
HOT WATER FINNED TUBE RADIATION PIPING DETAIL
NO SCALE



ROOF TOP UPBLAST EXHAUST FAN MOUNTING DETAIL
NO SCALE


MIN. 40" DISCHARGE HEIGHT
UPBLAST KITCHEN EXHAUST FAN WITH HINGED CURB
DISCONNECT
GREASE TRAP
VENTED CURB EXTENSION
PROVIDE NEOPRENE PAD BETWEEN CURB CAP AND TOP OF CURB
CLOSURE PANEL
PREFABRICATED INSULATED CURB
KITCHEN EXHAUST DUCT
CANT
ROOFING MEMBRANE
FIRE WRAP INSULATION
FLEXIBLE ELECTRIC CONDUIT. ALLOW SUFFICIENT EXTRA LENGTH FOR COMPLETE ACCESS AT HINGED CURB

KITCHEN EXHAUST FAN MOUNTING DETAIL
NO SCALE


ACCESS PANEL IN NON-ACCESSIBLE CEILING (SEE SPEC.)
18" MIN. CLEARANCE
CONTROL BOX
STRAIGHT LENGTH OF RIGID DUCT
FLEXIBLE DUCT
SUPPLY DUCT
INLET DUCT DIAMETER SHALL EQUAL VAV TERMINAL UNIT INLET DIAMETER
3D MIN.
CONCENTRIC REDUCER (AS REQUIRED)
COMBINATION FLOW MEASURING AND BALANCING DEVICE
2D MIN.
3-WAY CONTROL VALVE
B
HR
5D MIN.
SWING JOINT CONNECTION TO MAIN
M
MANUAL AIR VENTS AT HIGH POINTS
BALANCING COCK
H
WYE STRAINER
ISOLATION VALVE (TYP.) (SEE SPEC.)
MAINS

NOTES:

1. PROVIDE HEATING COIL, PIPING, AND PIPING ACCESSORIES FOR ALL UNITS SCHEDULED WITH HEATING COILS ON THE VAV TERMINAL SCHEDULE.
2. PROVIDE ACCESS PANEL(S) WHEN TERMINAL UNIT IS INSTALLED ABOVE NON-ACCESSIBLE CEILING. COORDINATE LOCATION WITH ARCHITECT.
3. PIPING RUNOUT SIZES SHALL BE (UNLESS OTHERWISE NOTED):
   3/4" 0<GPM≤3.4
   1" 3.4<GPM≤6.7
   SEE PLANS 6.7<GPM

H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL
NO SCALE

1

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No.	Description	Date
1	ASI-043	20 DEC 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016

Drawing Title:

DETAILS - MECHANICAL

Project No.: 04561.01 Checked by:

M0502

12/19/2016 6:08:24 PM

SUPPLY AIR VALVE WITH HOT WATER (SAV) SCHEDULE

TAG ID	TAG NO	MANUFACTURER & MODEL NO.	INLET SIZE (INCHES)	COOLING CFM MIN	COOLING CFM MAX	MAX NC	HEATING COIL CFM	AIR TEMP. (F°) EAT	AIR TEMP. (F°) LAT	GPM	WATER TEMP. (F°) EWT	WATER TEMP. (F°) LWT	MAX WATER PD (FT)	COIL CAPACITY (MBH)	MAX AIR PD (IN W.G.)	NOTES
SAV	1C1	PHOENIX MAV	24x12	540 CFM	1800 CFM	30	1800 CFM	50	78.5	4.5	140	100	2	55.7	0.35	1 to 8
SAV	1C2	PHOENIX MAV	12"	190 CFM	620 CFM	25	620 CFM	50	87.8	2.0	140	100	2	25.8	0.35	1 to 8
SAV	1C3	PHOENIX MAV	8"	115 CFM	380 CFM	25	380 CFM	50	86.9	1.5	140	100	2	15.2	0.35	1 to 8
WTA LEVEL 01: 3				845 CFM	2800 CFM		2800 CFM									
SAV	201	PHOENIX MAV	14"	420 CFM	1400 CFM	25	1400 CFM	55	79.8	2.9	140	100	2	38.2	0.35	1 to 7
SAV	202	PHOENIX MAV	8"	115 CFM	370 CFM	25	370 CFM	55	79.5	0.8	140	100	2	10.0	0.35	1 to 7
SAV	203	PHOENIX MAV	8"	65 CFM	160 CFM	25	160 CFM	50	72.0	0.5	140	100	2	3.0	0.35	1 to 7
SAV	204	PHOENIX MAV	14"	420 CFM	1400 CFM	25	1400 CFM	55	78.8	2.8	140	100	2	36.6	0.35	1 to 7
SAV	205	PHOENIX MAV	8"	95 CFM	300 CFM	25	300 CFM	55	79.0	0.6	140	100	2	7.9	0.35	1 to 7
SAV	206	PHOENIX MAV	12"	605 CFM	1500 CFM	25	1500 CFM	50	78.5	2.9	140	100	2	38.7	0.35	1 to 7
SAV	207	PHOENIX MAV	8"	120 CFM	300 CFM	25	300 CFM	55	77.9	0.6	140	100	2	7.6	0.35	1 to 7
SAV	208	PHOENIX MAV	12"	600 CFM	1200 CFM	25	1200 CFM	50	77.5	2.2	140	100	2	29.8	0.35	1 to 7
SAV	209	PHOENIX MAV	8"	65 CFM	160 CFM	25	160 CFM	55	72.0	0.5	140	100	2	3.0	0.35	1 to 7
SAV	210	PHOENIX MAV	8"	120 CFM	400 CFM	25	400 CFM	55	82.2	0.9	140	100	2	12.0	0.35	1 to 7
SAV	211	PHOENIX MAV	8"	90 CFM	300 CFM	25	300 CFM	50	84.2	0.7	140	100	2	9.7	0.35	1 to 7
SAV	212	PHOENIX MAV	24x12	660 CFM	2200 CFM	30	2200 CFM	50	86.9	6.1	140	100	2	76.1	0.35	1 to 7 9
WTA LEVEL 02: 12				3375 CFM	9690 CFM		9690 CFM									
SAV	301	PHOENIX MAV	24x12	495 CFM	1650 CFM	30	1650 CFM	50	79.3	3.3	140	100	2	44.1	0.35	1 to 7
SAV	302	PHOENIX MAV	10"	160 CFM	520 CFM	25	520 CFM	55	78.7	1.0	140	100	2	13.6	0.35	1 to 7
SAV	303	PHOENIX MAV	24x12	495 CFM	1650 CFM	30	1650 CFM	50	78.2	3.15	140	100	2	42.2	0.35	1 to 7
SAV	304	PHOENIX MAV	14"	480 CFM	1200 CFM	25	1200 CFM	55	77.8	2.25	140	100	2	30.1	0.35	1 to 7
SAV	305	PHOENIX MAV	8"	110 CFM	360 CFM	25	360 CFM	55	78.7	0.7	140	100	2	9.4	0.35	1 to 7
SAV	306	PHOENIX MAV	14"	610 CFM	1200 CFM	25	1200 CFM	55	79.2	2.4	140	100	2	31.9	0.35	1 to 7
SAV	307	PHOENIX MAV	8"	110 CFM	360 CFM	25	360 CFM	50	78.0	0.7	140	100	2	9.1	0.35	1 to 7
SAV	308	PHOENIX MAV	8"	110 CFM	360 CFM	25	360 CFM	50	78.6	0.7	140	100	2	9.4	0.35	1 to 7
SAV	309	PHOENIX MAV	8"	100 CFM	380 CFM	25	380 CFM	50	86.9	1.0	140	100	2	13.2	0.35	1 to 7
WTA LEVEL 03: 9				2670 CFM	7680 CFM		7680 CFM									
SAV	401	PHOENIX MAV	24x12	540 CFM	1800 CFM	30	1800 CFM	55	79.7	3.7	140	100	2	49.0	0.35	1 to 7
SAV	402	PHOENIX MAV	10"	165 CFM	550 CFM	25	550 CFM	55	79.4	1.1	140	100	2	14.7	0.35	1 to 7
SAV	403	PHOENIX MAV	24x12	540 CFM	1800 CFM	30	1800 CFM	55	78.6	3.5	140	100	2	46.8	0.35	1 to 7
SAV	404	PHOENIX MAV	12"	500 CFM	1000 CFM	25	1000 CFM	55	78.8	2.0	140	100	2	26.2	0.35	1 to 7
SAV	405	PHOENIX MAV	12"	600 CFM	1000 CFM	25	1000 CFM	50	80.0	2.1	140	100	2	27.5	0.35	1 to 7
SAV	406	PHOENIX MAV	8"	120 CFM	240 CFM	25	240 CFM	55	80.9	0.5	140	100	2	6.8	0.35	1 to 7
SAV	407	PHOENIX MAV	12"	700 CFM	1000 CFM	25	1000 CFM	55	82.0	2.2	140	100	2	29.7	0.35	1 to 7
SAV	408	PHOENIX MAV	8"	45 CFM	50 CFM	25	50 CFM	55	78.8	0.5	140	100	2	1.1	0.35	1 to 7
WTA LEVEL 04: 8				3210 CFM	7440 CFM		7440 CFM									
Grand total: 32				10100 CFM	27610 CFM		27610 CFM									

PLAN DESIGNATION:

SAV — TAG ID
101 — FLOOR/TAG NUMBER

NOTES:
1. HEATING COIL SIZES SHALL INCLUDE 25% ADDITIONAL CAPACITY GREATER THAN LISTED IN ABOVE VALUES AT AIRFLOW AND WATER FLOWS LISTED.
2. PROVIDE AND INSTALL DUCT MOUNTED HEATING COIL. REHEAT COIL SHALL BE 2 ROW MINIMUM.
3. H & HR RUNOUTS TO REHEAT COILS SHALL BE 3/4" UNLESS OTHERWISE NOTED.
4. BOX AIR PRESSURE DROP (APD) INCLUDES COIL APD AT SCHEDULED MAXIMUM AIR FLOW RATE.
5. SUPPLY VALVES SHALL TRACK WITH THE EXHAUST AND HOOD VALVES TO CONTROL SPACE PRESSURE.
6. PROVIDE DISCHARGE SOUND ATTENUATOR.
7. VALVES SHALL BE LOW PRESSURE TYPE WITH OPERATING PRESSURES BETWEEN 0.3" AND 3.0" W.C.
8. ENTERING AIR TEMPERATURE IS 50 DEG. F.
9. PROVIDE WITH 3-WAY CONTROL VALVE. REFER TO H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL ON SHEET M0502.

LABORATORY FUME HOOD / SPACE PRESSURIZATION SYSTEM SCHEDULE

ROOM NO.	HOOD EXHAUST VALVE (HEV) MARK	HEV AIRFLOW (CFM) UNOCCUPIED MIN.	HEV AIRFLOW (CFM) OCCUPIED MIN.	HEV AIRFLOW (CFM) MAX.	SUPPLY AIR VALVE (SAV) MARK	SAV AIRFLOW (CFM) UNOCCUPIED MIN.	SAV AIRFLOW (CFM) OCCUPIED MIN.	SAV AIRFLOW (CFM) MAX.	GENERAL EXHAUST VALVE (GEV) MARK	GEV AIRFLOW (CFM) UNOCCUPIED MIN.	GEV AIRFLOW (CFM) OCCUPIED MIN.	GEV AIRFLOW (CFM) MAX.	ROOM OFFSET (CFM)	ROOM PRESSURE
191	-	0	0	0	SAV-1C1	540	900	1500	GEV-1C1	945	1430	2700	0	-
191	HEV-1C1	0	0	450									0	-
191	HEV-1C2	0	0	450									0	-
191	HEV-1C3	0	0	450									0	-
191	HEV-1C4	0	0	450									0	-
191	HEV-1C5	0	0	450									0	-
191	HEV-1C6	0	0	450									0	-
183C	-	0	0	0	SAV-1C2	190	280	620					0	Transfer
183B	-	0	0	0	SAV-1C3	115	150	380					0	Transfer
SUBTOTAL		0	0	2700		845	1330	2500		1045	1530	2700	200	-
291	HEV-201	0	200	430	SAV-201	200	420	1400	GEV-201	340	360	1110	140	-
289B	-	0	0	0	SAV-202	240	240	370	GEV-202	130	130	300	110	+
289A	-	0	0	0	SAV-203	40	65	160	GEV-203	110	135	240	70	-
283	HEV-204	0	250	700	SAV-204	200	420	1400	GEV-204	340	310	840	140	-
292	-	0	0	0	SAV-205	60	95	300	GEV-205	130	165	370	70	-
284	-	0	0	0	SAV-206	240	605	1500	GEV-206	380	745	1640	140	-
282	-	0	0	0	SAV-207	60	120	300	GEV-207	130	190	370	70	-
276	HEV-208	0	200	430	SAV-208	200	600	1200	GEV-208	340	540	910	140	-
274	-	0	0	0	SAV-209	40	65	160	GEV-209	110	135	240	70	-
272B	-	0	0	0	SAV-210	60	120	400	GEV-210	130	190	500	70	-
272A	-	0	0	0	SAV-211	100	100	300	GEV-211	200	200	400	100	-
235	-	0	0	0	SAV-212	660	660	2200	GEV-212	730	730	2270	70	-
	HEV-301	0	200	430	SAV-301	200	600	1650	GEV-301a	280	480	1300		
391	-	0	0	0					GEV-301b	60	60	60		
SUBTOTAL		0	200	430		200	600	1650		340	540	1360	140	-
389	HEV-302	0	200	430	SAV-302	60	160	520	GEV-302	130	30	230	70	-
383	HEV-303	0	200	430	SAV-303	200	495	1650	GEV-303	340	435	1360	140	-
388	HEV-304	0	250	700	SAV-304	80	480	1200	GEV-304	220	370	640	140	-
386	HEV-305	0	200	430	SAV-305	60	270	360	GEV-305	130	140	0	70	-
378	HEV-306	0	250	700	SAV-306	240	610	1200	GEV-306	380	500	640	140	-
374B	-	0	0	0	SAV-307	240	240	360	GEV-307	130	130	250	110	+
374A	HEV-308	0	200	430	SAV-308	60	270	360	GEV-308	130	140	0	70	-
372B/C	-	0	0	0	SAV-309	100	100	380	GEV-309	260	260	540	160	-
	HEV-401a	0	250	700	SAV-401	200	540	1800	GEV-401	340	180	540		
491	HEV-401b	0	250	700										
SUBTOTAL		0	500	1400		200	540	1800		340	180	540	140	-
489	-	0	0	0	SAV-402	60	165	550	GEV-402	130	235	620	70	-
	HEV-403a	0	250	700	SAV-403	200	540	1800	GEV-403	340	180	540		
483	HEV-403b	0	250	700										
SUBTOTAL		0	500	1400		200	540	1800		340	180	540	140	-
	HEV-404a	0	250	700	SAV-404	200	800	1000		0	0	0		
	HEV-404b	0	250	700										
	HEV-404c	0	250	700										
488	HEV-404d	0	250	700										
SUBTOTAL		0	1000	2800		200	800	1000		0	0	0	140	-
	HEV-405a	0	250	700	SAV-405	200	600	1000						
	HEV-405b	0	250	700										
	HEV-405c	0	250	700										
	HEV-405d	0	200	430										
	HEV-405e	0	250	700										
	HEV-405f	0	250	700										
480	HEV-405g	0	250	700										
SUBTOTAL		0	1700	4630		200	600	1000		0	0	0	140	-
478	HEV-406	0	200	430	SAV-406	60	240	240	GEV-406	130	110	0	70	-
	HEV-407a	0	200	430	SAV-407		700	1000						
	HEV-407b	0	200	430										
	HEV-407c	0	200	430										
	HEV-407d	0	200	430										
	HEV-407e	0	200	430										
472	HEV-407f	0	200	430										
SUBTOTAL		0	1400	3010		200	700	1000		0	0	0	140	-
475	-	0	0	0	SAV-408	50	50	50	GEV-408	150	150	150	100	-

HOOD AND GENERAL EXHAUST VALVE (HEV) (GEV) SCHEDULE

TAG ID	TAG NO	MANUFACTURER & MODEL NO.	INLET SP "WC	INLET SIZE (INCHES)	AIRFLOW CFM MIN	AIRFLOW CFM MAX	NOTES
GEV	1C1	PHOENIX EXV	0.3"	30x15	1430 CFM	2700 CFM	2 to 6
GEV	101	PHOENIX EXV	0.3"	8"	360 CFM	360 CFM	1 to 3
HEV	1C1	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
HEV	1C2	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
HEV	1C3	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
HEV	1C4	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
HEV	1C5	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
HEV	1C6	PHOENIX EXV	0.3"	8"	0 CFM	450 CFM	2 to 6
WTA LEVEL 01: 8					1790 CFM	5760 CFM	
GEV	201	PHOENIX EXV	0.3"	14"	360 CFM	1110 CFM	1 to 3
GEV	202	PHOENIX EXV	0.3"	10"	130 CFM	300 CFM	1 to 3
GEV	203	PHOENIX EXV	0.3"	8"	135 CFM	240 CFM	1 to 3
GEV	204	PHOENIX EXV	0.3"	14"	310 CFM	840 CFM	1 to 3
GEV	205	PHOENIX EXV	0.3"	10"	165 CFM	370 CFM	1 to 3
GEV	206	PHOENIX EXV	0.3"	24x12	745 CFM	1640 CFM	1 to 3
GEV	207	PHOENIX EXV	0.3"	10"	190 CFM	370 CFM	1 to 3
GEV	208	PHOENIX EXV	0.3"	14"	540 CFM	910 CFM	1 to 3
GEV	209	PHOENIX EXV	0.3"	8"	135 CFM	240 CFM	1 to 3
GEV	210	PHOENIX EXV	0.3"	10"	190 CFM	500 CFM	1 to 3
GEV	211	PHOENIX EXV	0.3"	10"	200 CFM	400 CFM	1 to 3
GEV	212	PHOENIX EXV	0.3"	30x15	730 CFM	2270 CFM	1 to 3
HEV	201	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	204	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	208	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
WTA LEVEL 02: 15					4480 CFM	10750 CFM	
GEV	301a	PHOENIX EXV	0.3"	14"	0 CFM	1250 CFM	1 to 3
GEV	301b	PHOENIX EXV	0.3"	8"	540 CFM	540 CFM	1 to 3
GEV	302	PHOENIX EXV	0.3"	10"	30 CFM	230 CFM	1 to 3
GEV	303	PHOENIX EXV	0.3"	24x12	435 CFM	1360 CFM	1 to 3
GEV	304	PHOENIX EXV	0.3"	14"	370 CFM	640 CFM	1 to 3
GEV	305	PHOENIX EXV	0.3"	8"	0 CFM	140 CFM	1 to 4
GEV	306	PHOENIX EXV	0.3"	14"	500 CFM	640 CFM	1 to 3
GEV	307	PHOENIX EXV	0.3"	10"	130 CFM	250 CFM	1 to 3
GEV	308	PHOENIX EXV	0.3"	10"	0 CFM	140 CFM	1 to 4
GEV	309	PHOENIX EXV	0.3"	10"	300 CFM	540 CFM	1 to 3
HEV	301	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	302	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	303	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	304	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	305	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	306	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	308	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
WTA LEVEL 03: 17					3805 CFM	9280 CFM	
GEV	401	PHOENIX EXV	0.3"	12"	180 CFM	540 CFM	1 to 3
GEV	402	PHOENIX EXV	0.3"	12"	235 CFM	620 CFM	1 to 3
GEV	403	PHOENIX EXV	0.3"	12"	180 CFM	540 CFM	1 to 3
GEV	406	PHOENIX EXV	0.3"	8"	0 CFM	130 CFM	1 to 4
GEV	408	PHOENIX EXV	0.3"	8"	150 CFM	150 CFM	1 to 3
HEV	401a	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	401b	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	403a	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	403b	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	404a	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	404b	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	404c	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	404d	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405a	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405b	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405c	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405d	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	405e	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405f	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	405g	PHOENIX EXV	0.3"	12"	250 CFM	700 CFM	1, 3, 4
HEV	406	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407a	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407b	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407c	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407d	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407e	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
HEV	407f	PHOENIX EXV	0.3"	10"	200 CFM	430 CFM	1, 3, 4
WTA LEVEL 04: 27					5845 CFM	15220 CFM	
Grand total: 67					15920 CFM	41010 CFM	

PLAN DESIGNATION:

EAV — TAG ID
M101 — BLDG/FLOOR/TAG NUMBER

NOTES:
1. EXHAUST VALVE SHALL TRACK WITH THE SUPPLY VALVE TO CONTROL SPACE PRESSURE PER OWNER SELECTION SWITCH (POSITIVE/NEGATIVE).
2. PROVIDE INLET SOUND ATTENUATOR FOR SPACE NC=30.
3. VALVES SHALL BE LOW PRESSURE TYPE WITH OPERATING PRESSURES BETWEEN 0.3" AND 3.0" W.C.
4. VALVES SHALL BE FULL SHUT-OFF TYPE FOR ZERO AIRFLOW DURING UNOCCUPIED PERIODS.
5. PROVIDE MANUAL, USER OPERATED, SWITCH MOUNTED ON WALL NEAR ASSOCIATED DOWNDRAFT TABLE TO OPEN OR CLOSE VALVE.
6. GENERAL AND HOOD (DOWNDRAFT TABLE) EXHAUST VALVES SHALL TRACK WITH THE SUPPLY VALVES IN CADAVER SUITE TO CONTROL SPACE PRESSURE. ADDITIONAL MAKEUP AIR FOR CADAVER ROOM SHALL TRANSFER FROM BIO VESTIBULE 183C AND CADAVER LAB WORKROOM 183B.

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No.	Description	Date
4	ASI-043	20 DEC 2016
3	ADDENDUM 2-4	24 MAY 2016
2	ADDENDUM 2-2	19 APRIL 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016

Drawing Title:

SCHEDULES - MECHANICAL

Project No.: 04561.01 Checked by:

M0602

VARIABLE AIR VOLUME BOX WITH HOT WATER (VAV) SCHEDULE

rl	TAG NO	MANUFACTURER & MODEL NO.	INLET SIZE (INCHES)	COOLING CFM MIN	COOLING CFM MAX	DISCH. MAX NC	HEATING COIL CFM	AIR TEMP. (F°) EAT	AIR TEMP. (F°) LAT	GPM	WATER TEMP. (F°) EWT	WATER TEMP. (F°) LWT	MAX WATER PD (FT)	COIL CAPACITY (MBH)	MAX AIR PD (IN W.G.)	NOTES
VAV	101	PRICE SDV	6"	90 CFM	300 CFM	25	135 CFM	55	86.9	0.5	140	100	2	4.8	0.35	1, 2, 3, 4, 5
VAV	102	PRICE SDV	8"	230 CFM	460 CFM	25	280 CFM	55	77.0	0.5	140	100	2	6.8	0.35	1, 3, 4
VAV	103	PRICE SDV	9"	180 CFM	600 CFM	25	280 CFM	55	86.9	0.8	140	100	2	9.8	0.35	1, 2, 3, 4
VAV	104	PRICE SDV	6"	65 CFM	210 CFM	25	105 CFM	55	75.0	0.5	140	100	2	2.3	0.35	1, 3, 4
VAV	105	PRICE SDV	6"	70 CFM	275 CFM	25	95 CFM	55	74.0	0.5	140	100	2	1.9	0.35	1, 3, 4
VAV	106	PRICE SDV	7"	105 CFM	350 CFM	25	350 CFM	55	93.0	1.1	140	100	2	14.6	0.35	1, 2, 3, 4
VAV	107	PRICE SDV	6"	65 CFM	200 CFM	25	170 CFM	55	86.9	0.5	140	100	2	6.0	0.35	1, 2, 3, 4
VAV	108	PRICE SDV	7"	110 CFM	360 CFM	25	360 CFM	55	95.0	1.4	140	100	2	18.7	0.35	1, 2, 3, 4
VAV	109	PRICE SDV	8"	170 CFM	495 CFM	25	490 CFM	55	95.0	2.0	140	100	2	26.6	0.35	1, 2, 3, 4
VAV	110	PRICE SDV	10"	480 CFM	800 CFM	25	600 CFM	55	83.2	1.4	140	100	2	18.6	0.35	1, 2, 3, 4
VAV	111	PRICE SDV	7"	120 CFM	390 CFM	25	230 CFM	55	86.9	0.6	140	100	2	8.1	0.35	1, 2, 3, 4
VAV	112	PRICE SDV	6"	50 CFM	150 CFM	25	75 CFM	55	73.5	0.5	140	100	2	1.2	0.35	1, 3, 4
VAV	113	PRICE SDV	10"	480 CFM	800 CFM	25	500 CFM	55	86.9	1.3	140	100	2	17.6	0.35	1, 2, 3, 4
VAV	114	PRICE SDV	9"	190 CFM	730 CFM	25	730 CFM	55	86.9	2.0	140	100	2	26.0	0.35	1, 2, 3, 4, 5
VAV	115	PRICE SDV	14"	600 CFM	1820 CFM	25	1130 CFM	55	86.9	2.9	140	100	2	39.8	0.35	1, 2, 3, 4
VAV	116	PRICE SDV	7"	125 CFM	370 CFM	25	280 CFM	55	77.0	0.5	140	100	2	6.7	0.35	1, 3, 4
VAV	117	PRICE SDV	9"	225 CFM	685 CFM	25	550 CFM	55	76.5	0.9	140	100	2	12.8	0.35	1, 2, 3, 4
VAV	118	PRICE SDV	12"	270 CFM	1135 CFM	25	1135 CFM	50	89.0	3.2	140	100	2	42.4	0.35	1, 2, 3, 4
VAV	119	PRICE SDV	8"	175 CFM	490 CFM	25	320 CFM	55	86.9	0.9	140	100	2	11.2	0.35	1, 2, 3, 4
VAV	120	PRICE SDV	6"	100 CFM	285 CFM	25	225 CFM	55	86.9	0.6	140	100	2	7.9	0.35	1, 2, 3, 4
VAV	121	PRICE SDV	6"	60 CFM	215 CFM	25	185 CFM	55	86.9	0.5	140	100	2	6.5	0.35	1, 2, 3, 4
VAV	122	PRICE SDV	6"	60 CFM	210 CFM	25	160 CFM	55	86.9	0.5	140	100	2	5.6	0.35	1, 2, 3, 4
VAV	123	PRICE SDV	14"	700 CFM	1955 CFM	25	1085 CFM	55	86.9	2.9	140	100	2	38.2	0.35	1, 2, 3, 4
VAV	124	PRICE SDV	14"	700 CFM	1955 CFM	25	1085 CFM	55	86.9	2.9	140	100	2	38.2	0.35	1, 2, 3, 4
WTA LEVEL 01: 24				5420 CFM	15240 CFM		10555 CFM									
VAV	201	PRICE SDV	6"	65 CFM	200 CFM	25	200 CFM	55	93.4	0.7	140	100	2	8.4	0.35	1, 2, 3, 4, 5
VAV	202	PRICE SDV	10"	280 CFM	920 CFM	25	555 CFM	55	75.5	1.0	140	100	2	12.4	0.35	1, 2, 3, 4
VAV	203	PRICE SDV	4"	45 CFM	80 CFM	25	80 CFM	55	86.9	0.5	140	100	2	1.6	0.35	1, 3, 4
VAV	204	PRICE SDV	10"	180 CFM	840 CFM	25	505 CFM	55	84.0	1.2	140	100	2	16.0	0.35	1, 2, 3, 4
VAV	205	PRICE SDV	6"	85 CFM	310 CFM	25	310 CFM	55	86.9	0.8	140	100	2	10.8	0.35	1, 2, 3, 4
VAV	206	PRICE SDV	6"	85 CFM	310 CFM	25	310 CFM	55	86.9	0.8	140	100	2	10.7	0.35	1, 2, 3, 4
VAV	207	PRICE SDV	7"	85 CFM	325 CFM	25	325 CFM	55	86.9	0.9	140	100	2	11.2	0.35	1, 2, 3, 4
VAV	208	PRICE SDV	6"	195 CFM	195 CFM	25	195 CFM	55	86.9	0.5	140	100	2	6.8	0.35	1, 2, 3, 4
VAV	209	PRICE SDV	14"	480 CFM	1900 CFM	25	990 CFM	55	86.9	2.6	140	100	2	34.7	0.35	1, 2, 3, 4
VAV	210	PRICE SDV	14"	420 CFM	1500 CFM	25	600 CFM	55	84.0	1.5	140	100	2	19.1	0.35	1, 2, 3, 4
VAV	212	PRICE SDV	12"	450 CFM	1500 CFM	25	1470 CFM	55	86.9	3.9	140	100	2	51.8	0.35	1, 2, 3, 4
VAV	213	PRICE SDV	6"	50 CFM	210 CFM	25	140 CFM	55	75.5	0.5	140	100	2	3.1	0.35	1, 3, 4
VAV	214	PRICE SDV	7"	105 CFM	305 CFM	25	155 CFM	55	75.5	0.5	140	100	2	3.5	0.35	1, 3, 4
VAV	215	PRICE SDV	5"	65 CFM	200 CFM	25	120 CFM	55	75.5	0.5	140	100	2	2.4	0.35	1, 3, 4
VAV	216	PRICE SDV	6"	70 CFM	275 CFM	25	95 CFM	55	75.5	0.5	140	100	2	1.9	0.35	1, 3, 4
VAV	217	PRICE SDV	12"	360 CFM	1200 CFM	25	640 CFM	50	86.9	1.8	140	100	2	23.8	0.35	1, 2, 3, 4
WTA LEVEL 02: 16				3020 CFM	10270 CFM		6690 CFM									
VAV	301	PRICE SDV	6"	65 CFM	250 CFM	25	250 CFM	55	89.6	0.7	140	100	2	9.5	0.35	1, 2, 3, 4, 5
VAV	302	PRICE SDV	6"	110 CFM	360 CFM	25	270 CFM	55	82.0	0.6	140	100	2	8.0	0.35	1, 2, 3, 4
VAV	303	PRICE SDV	6"	65 CFM	200 CFM	25	110 CFM	55	86.9	0.5	140	100	2	3.9	0.35	1, 2, 3, 4
VAV	304	PRICE SDV	10"	260 CFM	680 CFM	25	475 CFM	55	86.9	1.3	140	100	2	16.6	0.35	1, 2, 3, 4
VAV	305	PRICE SDV	10"	200 CFM	735 CFM	25	80 CFM	55	95.5	1.6	140	100	2	21.4	0.35	1, 2, 3, 4
VAV	306	PRICE SDV	9"	165 CFM	630 CFM	25	540 CFM	55	90.5	1.6	140	100	2	21.2	0.35	1, 2, 3, 4
VAV	307	PRICE SDV	10"	165 CFM	660 CFM	25	0 CFM	55	93.0	1.7	140	100	2	22.6	0.35	1, 2, 3, 4
VAV	308	PRICE SDV	10"	240 CFM	935 CFM	25	690 CFM	55	86.9	1.8	140	100	2	24.3	0.35	1, 2, 3, 4
VAV	309	PRICE SDV	12"	360 CFM	1320 CFM	25	660 CFM	55	86.9	1.8	140	100	2	23.2	0.35	1, 2, 3, 4
VAV	310	PRICE SDV	14"	540 CFM	1920 CFM	25	975 CFM	55	86.9	2.6	140	100	2	34.3	0.35	1, 2, 3, 4
VAV	311	PRICE SDV	10"	225 CFM	750 CFM	25	600 CFM	55	86.9	1.6	140	100	2	21.1	0.35	1, 2, 3, 4, 5
VAV	312	PRICE SDV	12"	430 CFM	1420 CFM	25	810 CFM	50	86.9	2.1	140	100	2	28.4	0.35	1, 2, 3, 4
VAV	313	PRICE SDV	12"	300 CFM	1180 CFM	25	540 CFM	55	86.9	1.4	140	100	2	18.9	0.35	1, 2, 3, 4
VAV	314	PRICE SDV	14"	480 CFM	1600 CFM	25	1040 CFM	55	86.3	2.7	140	100	2	36.4	0.35	1, 2, 3, 4
VAV	315	PRICE SDV	10"	265 CFM	935 CFM	25	795 CFM	55	85.3	2.3	140	100	2	30.8	0.35	1, 2, 3, 4
VAV	316	PRICE SDV	12"	265 CFM	1040 CFM	25	680 CFM	55	90.0	1.8	140	100	2	23.9	0.35	1, 2, 3, 4
VAV	317	PRICE SDV	6"	65 CFM	210 CFM	25	205 CFM	55	86.9	0.5	140	100	2	4.1	0.35	1, 3, 4
VAV	318	PRICE SDV	7"	110 CFM	390 CFM	25	295 CFM	55	75.0	0.5	140	100	2	6.3	0.35	1, 3, 4
VAV	319	PRICE SDV	6"	75 CFM	320 CFM	25	180 CFM	55	75.0	0.5	140	100	2	6.3	0.35	1, 3, 4
VAV	320	PRICE SDV	10"	120 CFM	710 CFM	25	215 CFM	55	86.9	0.5	140	100	2	7.6	0.35	1, 2, 3, 4
VAV	321	PRICE SDV	9"	455 CFM	650 CFM	25	455 CFM	55	86.9	0.6	140	100	2	9.1	0.35	1, 3, 4
VAV	322	PRICE SDV	6"	70 CFM	275 CFM	25	70 CFM	55	74.0	0.7	140	100	2	1.4	0.35	1, 3, 4
VAV	411	PRICE SDV	8"	165 CFM	540 CFM	25	325 CFM	50	86.9	0.9	140	100	2	11.3	0.35	1, 2, 3, 4
WTA LEVEL 03: 23				5195 CFM	17710 CFM		10260 CFM									
VAV	401	PRICE SDV	6"	90 CFM	300 CFM	25	240 CFM	55	86.9	0.8	140	100	2	8.4	0.35	1, 2, 3, 4, 5
VAV	402	PRICE SDV	7"	135 CFM	440 CFM	25	440 CFM	55	89.0	1.2	140	100	2	16.4	0.35	1, 2, 3, 4
VAV	403	PRICE SDV	10"	215 CFM	720 CFM	25	665 CFM	55	86.9	1.8	140	100	2	23.4	0.35	1, 2, 3, 4
VAV	404	PRICE SDV	9"	180 CFM	610 CFM	25	545 CFM	55	86.9	1.5	140	100	2	19.2	0.35	1, 2, 3, 4
VAV	405	PRICE SDV	8"	130 CFM	420 CFM	25	355 CFM	55	86.9	1.0	140	100	2	12.5	0.35	1, 2, 3, 4
VAV	406	PRICE SDV	10"	255 CFM	850 CFM	25	510 CFM	55	86.9	1.4	140	100	2	18.0	0.35	1, 2, 3, 4
VAV	407	PRICE SDV	10"	300 CFM	1000 CFM	25	480 CFM	55	86.9	1.3	140	100	2	16.9	0.35	1, 2, 3, 4
VAV	408	PRICE SDV	10"	200 CFM	670 CFM	25	325 CFM	55	86.9	0.9	140	100	2	11.3	0.35	1, 2, 3, 4
VAV	409	PRICE SDV	8"	150 CFM	500 CFM	25	385 CFM	50	86.9	1.0	140	100	2	13.5	0.35	1, 2, 3, 4, 5
VAV	410	PRICE SDV	9"	165 CFM	550 CFM	25	440 CFM	55	86.8	1.2	140	100	2	15.4	0.35	1, 2, 3, 4
VAV	412	PRICE SDV	7"	100 CFM	320 CFM	25	145 CFM	55	86.8	0.5	140	100	2	5.1	0.35	1, 2, 3, 4
VAV	413	PRICE SDV	10"	270 CFM	900 CFM	25	565 CFM	55	86.9	1.5	140	100	2	19.8	0.35	1, 2, 3, 4
VAV	414	PRICE SDV	8"	130 CFM	425 CFM	25	255 CFM	55	77.0	1.5	140	100	2	6.2	0.35	1, 3, 4
VAV	415	PRICE SDV	10"	175 CFM	585 CFM	25	355 CFM	55	81.5	0.8	140	100	2	10.2	0.35	1, 2, 3, 4
VAV	416	PRICE SDV	7"	100 CFM	335 CFM	25	170 CFM	55	76.0	0.5	140	100	2	3.8	0.35	1, 2, 3, 4
VAV	417	PRICE SDV	6"	90 CFM	295 CFM	25	100 CFM	55	78.0	0.5	140	100	2	2.5	0.35	1, 2, 3, 4
WTA LEVEL 04: 16				2685 CFM	8920 CFM		5975 CFM									
Grand total: 79				16320 CFM	52140 CFM		33480 CFM									

PLAN DESIGNATION:
VAV — TAG ID
101 — FLOOR/TAG NUMBER

NOTES:
1. HEATING COIL SIZES SHALL INCLUDE 25% ADDITIONAL CAPACITY GREATER THAN LISTED IN ABOVE VALUES AT AIRFLOW AND WATER FLOWS LISTED.
2. PROVIDE TERMINAL BOX WITH 2 ROW REHEAT COIL MINIMUM.
3. H & HR RUNOUTS TO REHEAT COILS SHALL BE 3/4" UNLESS OTHERWISE NOTED.
4. ~~BOX AIR PRESSURE DROP (APD) INCLUDES COIL AND AT SCHEDULED MAXIMUM AIR FLOW RATE.~~
5. PROVIDE WITH 3-WAY CONTROL VALVE. REFER TO H.W. TERMINAL BOX REHEAT PIPING (WITH 3-WAY VALVE) DETAIL ON SHEET M0502.

DIAPHRAGM EXPANSION TANK (DET) SCHEDULE

TAG ID	TAG NUMBER	MANUFACTURER & MODEL NO.	SERVICE	TYPE	SIZE (GAL.)	CAPACITY (GAL.)	INITIAL PRESSURE (PSI)	WORKING PRESSURE (PSI)	NOTES
DET	1	B&G D-120	HEATING WATER	VERTICAL	68	34	36.5	60	2
DET	2	B&G D-40	HEAT RECOVERY (GLYCOL)	VERTICAL	21.7	11.3	36.5	60	1, 2
DET	3	B&G HFT-15	PROCESS CHILLED WATER	VERTICAL	2	1.0	12.7	20	2

PLAN DESIGNATION:
DET — TAG ID
1 — TAG NUMBER

NOTES:
1. PROVIDE IMHIBITED PROPYLENE GLYCOL FOR HEAT RECOVERY LOOP SYSTEM. FILL SYSTEM TO 30% PG SOLUTION.
2. PRESSURE REDUCING VALVE TO BE FIELD ADJUSTED

UNIT HEATER (UH) SCHEDULE

TAG ID	TAG NUMBER	MANUFACTURER & MODEL NO.	TYPE	AIRFLOW CFM	CAPACITY MBH	WATER FLOW GPM	EWT	WATER P.D. (FT)	NOTES
UH	001	STERLING HS-18	HORIZONTAL	395	7.45	1.3	140 °F	0.01	1, 2, 3, 4, 5, 6, 8
UH	002	STERLING HS-18	HORIZONTAL	395	7.45	1.3	140 °F	0.01	1, 2, 3, 4, 5, 6, 8
UH	101	STERLING HS-84	HORIZONTAL	1100	33.3	3.6	140 °F	0.24	1, 2, 3, 4, 5, 6, 8
UH	102	STERLING HS-72	HORIZONTAL	950	27.8	3.1	140 °F	0.23	1, 2, 3, 4, 5, 6, 8
UH	103	STERLING HS-48	HORIZONTAL	630	19.2	2.1	140 °F	0.1	1, 2, 3, 4, 5, 6, 8
Grand total: 5						11.4			

PLAN DESIGNATION:
UH — TAG ID
1 — TAG NUMBER

NOTES:
1. MAXIMUM MOUNTING HEIGHT IS APPROX. 9 FT.
2. PROVIDE 2-WAY VALVE PIPING CONFIGURATION.
3. PROVIDE UNIT WITH MANUFACTURER SPEED CONTROLLER KIT.
4. CAPACITY IS AS CORRECTED FOR SCHEDULED ENT. AIR & WATER TEMP.
5. PROVIDE UNIT WITH FACTORY MOUNTED DISCONNECT SWITCH.
6. VALVE ACTUATORS BY T.C.C.
7. PROVIDE HIGH STATIC ECM MOTOR, FAN SELECTED ON MEDIUM SPEED.
8. PROVIDE REMOTE MOUNTED THERMOSTAT, SUMMER FAN SWITCH, AND MOUNTING BRACKET.

CABINET UNIT HEATER (CUH) SCHEDULE

TAG ID	TAG NUMBER	MANUFACTURER & MODEL NO.	SUPPLY AIRFLOW	CAPACITY MBH	GPM	EWT	WATER P.D. (FT)	TYPE	NOTES
CUH	101	TRANE FFEB0201	220 CFM	14	1.4 GPM	140 °F	3.5	HORIZONTAL RECESSED	1, 2, 3
CUH	102	TRANE FFJB0601	480 CFM	29.4	3.1 GPM	140 °F	4.1	VERTICAL SLOPE-TOP	1, 2, 3
CUH	201	TRANE FFEB0201	220 CFM	14	1.4 GPM	140 °F	3.5	HORIZONTAL RECESSED	1, 2, 3, 4
CUH	202	TRANE FFEB0201	220 CFM	14	1.4 GPM	140 °F	3.5	HORIZONTAL RECESSED	1, 2, 3, 4
CUH	203	TRANE FFEB0401	340 CFM	16.1	2.1 GPM	140 °F	8.0	HORIZONTAL RECESSED	1, 2, 3
CUH	204	TRANE FFEB0401	340 CFM	16.1	2.1 GPM	140 °F	8.0	HORIZONTAL RECESSED	1, 2, 3
Grand total: 6					11.5 GPM				

PLAN DESIGNATION:
CUH — TAG ID
1 — TAG NUMBER

NOTES:
1. PROVIDE UNIT WITH FACTORY MOUNTED DISCONNECT SWITCH.
2. VALVE ACTUATORS BY T.C.C.
3. PROVIDE HIGH STATIC ECM MOTOR, FAN SELECTED ON MEDIUM SPEED.
4. PROVIDE UNIT WITH OA DUCT/SA DUCT CONNECTION & BALANCE FOR CFM INDICATED ON PLAN.

FIRE-SMOKE DAMPER SCHEDULE

DAMPER TYPE	TAG NUMBER	DUCT WIDTH	DUCT HEIGHT	System Type
FS	001	72"	36"	Return Air
FS	002	84"	48"	Supply Air MP
FS	003	18"	18"	Supply Air MP
FS	101	50"	16"	Supply Air MP
FS	102	70"	20"	Return Air
FS	103	18"	18"	Supply Air MP
FS	104	14"	14"	Exhaust Air
F	105	30"	12"	Return Air
F	106	30"	12"	Return Air
F	107	6"	6"	Supply Air LP
FS	201	48"	24"	Supply Air MP
FS	202	36"	20"	Return Air
FS	203	12"	8"	Exhaust Air
F	204	6"	6"	Supply Air LP
FS	301	60"	24"	Supply Air MP
FS	302	56"	26"	Return Air
FS	303	12"	8"	Exhaust Air
F	304	12"	12"	Supply Air LP
F	305	6"	6"	Supply Air LP
FS	401	54"	24"	Supply Air MP
FS	402	72"	36"	Return Air
FS	403	24"	14"	Exhaust Air
FS	404	12"	8"	Exhaust Air
F	405	6"	6"	Exhaust Air
F	406	6"	6"	Supply Air LP
F	407	16"	6"	Exhaust Air
F	408	8"	8"	Exhaust Air
F	409	24"	10"	Exhaust Air
F	410	6"	6"	Supply Air LP

NOTES:
1. F = FIRE DAMPER
2. FS = COMBINATION FIRE AND SMOKE DAMPER
3. REFER TO SHEETS G0202 AND G0203 FOR WALL RATINGS.
4. COORDINATE WITH FIRE ALARM CONTRACTOR FOR CONNECTIONS AND OPERATIONS OF SMOKE DAMPERS IN RESPONSE TO DUCT SMOKE DETECTION.
5. VERIFY DAMPER SIZES WITH SHEET METAL FABRICATION DRAWINGS.

FIN TUBE RADIATION (FTR) SCHEDULE

TAG ID	TAG NUMBER	MANUFACTURER & MODEL NO.	TUBE MATERIAL	TUBE DIAMETER	FIN SIZE	FIN SPACING	NO OF TIERS	MINIMUM REQUIRED HEAT OUTPUT BTUH/FT.	EAT	AVERAGE WATER TEMP. (AWT)	LEMENT LENGTH	FLOW (GPM)	FLOW (GPM/LF)	ENCLOSURE TYPE	PIPING CONFIGURATION	NOTES
FTR	201	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	202	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	203	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	204	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	205	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	206	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	207	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	208	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	209	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	210	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	211	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	212	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	213	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
FTR	214	STERLING VERSA-LINE C3/4-34	COPPER	3/4"	3-1/4" SQ.	40 FIN PER FT.	1	421	65 °F	138°F	8' - 0"	1.00 GPM	0.125	BARE ELEMENT	SINGLE PASS	1
: 14											112' - 0"					
FTR	301A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	23' - 0"	1.40 GPM	0.05	PANEL RADIATOR	SAME END	2, 3, 4
FTR	301B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	3' - 0"	1.40 GPM	0.05	PANEL RADIATOR	SAME END	2, 3, 4
301: 2											26' - 0"					
FTR	302A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 0"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 0"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302C	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 0"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302D	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	7' - 0"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302E	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 6"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302F	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 6"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	302G	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 6"	3.00 GPM	0.05	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
302: 7											56' - 6"					
FTR	303A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	17' - 0"	1.50 GPM	0.05	PANEL RADIATOR	SAME END	2, 3, 4
FTR	303B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	11' - 0"	1.50 GPM	0.05	PANEL RADIATOR	SAME END	2, 3, 4
303: 2											28' - 0"					
FTR	304A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304C	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304D	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304E	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304F	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	8' - 6"	2.50 GPM	0.04	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	304G	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	386	65 °F	130	14' - 0"	2.50 GPM	0.04	PANEL RADIATOR	SAME END	2, 3, 4
304: 7											65' - 0"					
FTR	305A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	12' - 0"	1.50 GPM	0.06	PANEL RADIATOR	SAME END	2, 3, 4
FTR	305B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	15' - 0"	1.50 GPM	0.06	PANEL RADIATOR	SAME END	2, 3, 4
305: 2											27' - 0"					
FTR	306A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	8' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	8' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306C	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	8' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306D	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	16' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306E	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	4' - 0"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306F	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	15' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
FTR	306G	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	421	65 °F	130	8' - 6"	3.00 GPM	0.06	PANEL RADIATOR	OPPOSITE ENDS	2, 3, 4
306: 7											70' - 0"					
FTR	307A	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	3' - 0"	0.85 GPM	0.06	PANEL RADIATOR	SAME END	2, 3, 4
FTR	307B	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	4' - 0"	0.85 GPM	0.06	PANEL RADIATOR	SAME END	2, 3, 4
FTR	307C	RUNTAL - R2F-2	COPPER	3/4"	N/A	32 FIN PER FT.	1	531	65 °F	130	8' - 6"	0.85 GPM	0.06	PANEL RADIATOR	SAME END	2, 3, 4
307: 3											15' - 6"					

PLAN DESIGNATION:
FTR — TAG ID
1 — TAG NUMBER

NOTES:
1. GPM SHOWN PER INDIVIDUAL UNIT
2. GPM SHOWN PER ZONE OF MULTIPLE UNITS IN SERIES
3. COORDINATE LENGTHS AND MOUNTINGHEIGHTS WITH ARCHITECTURAL DRAWINGS AND DETAILS
4. PROVIDE ALL PANEL RADIATORS WITH FACTORY 3/4" PIPING CONNECTION.

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No.	Description	Date
3	ASI-043	20 DEC 2016
2	ASI-032	18 OCT 2016
1	ADDENDUM 2-1	17 MAR 2016
-	ISSUED FOR CONSTRUCTION (BP2)	01 MAR 2016

Drawing Title:

SCHEDULES - MECHANICAL

Project No.: 04561.01 Checked by:

M0603