Replace HVAC System, Third Floor

MoDOT Millbottom Building
Jefferson City, Missouri

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DESIGNER: PWArchitects
2120 Forum Blvd. Suite 101
Columbia, MO 65203

PROJECT NUMBER: O2330-01

SITE NUMBER: 1001 - CAPITOL COMPLEX
ASSET NUMBER: 3101001058

SHEET NUMBER:
G-001
04/05/2024
1 OF 14 SHEETS

GENERAL SCOPE OF WORK AND PHASING NOTES:

1. Coordinate all work of this project with project O2225-01.
2. Interior HVAC work needs to be completed first so that interior renovation project O2225-01 can proceed under separate contract.
3. Coordinate Location of thermostats and ceiling mounted supply and return diffusers with project O2225-01.

PROJECT LOCATION

A1 LOCATION MAP
NOT-TO-SCALE

SHEET INDEX

SYMBOLS LEGEND

DRAWING BULLET WITH NORTH ARROW
GRID REFERENCE
?? DRAWING TITLE
SCALE: X/X" = 1'-0"
ARCH. SCALE

DRAWING BULLET WITHOUT NORTH ARROW
GRID REFERENCE
A1 A2 A100 DRAWING TITLE
SCALE: X/X" = 1'-0"
ARCH. SCALE
PAGE FIRST REFERENCED (IF APPLICABLE)

ELEVATION BULLETS
A0 A000
GRID REFERENCE
SHEET NUMBER
ONE ELEVATION

PLAN / ELEVATION DETAIL BULLET
A1 A100
GRID REFERENCE
SHEET NUMBER

SCOPE OF WORK BULLET
1

DOOR MARK BULLET
000A

SECTION BULLET
A1 A100
GRID REFERENCE ALWAYS ON TOP
SHEET NUMBER

WINDOW MARK BULLET
9

NORTH ARROW

REVISION NOTE BULLET
1

GENERAL NOTE BULLET
1

COLUMN LINE BULLETS
1
A

BENCHMARK BULLET
000.00'
***** FLOOR

SPOT ELEV. BULLETS
TC 99.99 TG 99.99
NEW EXISTING
TC - TOP OF CURB TG - TOP OF GRADE TW - TOP OF WALL TP - TOP OF PAVING

WALL PARTITION (TYPE) FLAG
A

STATE OF MISSOURI
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM, 3rd FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # 02330-01
SITE # 1001
ASSET # 3101001058

REVISION:
DATE:
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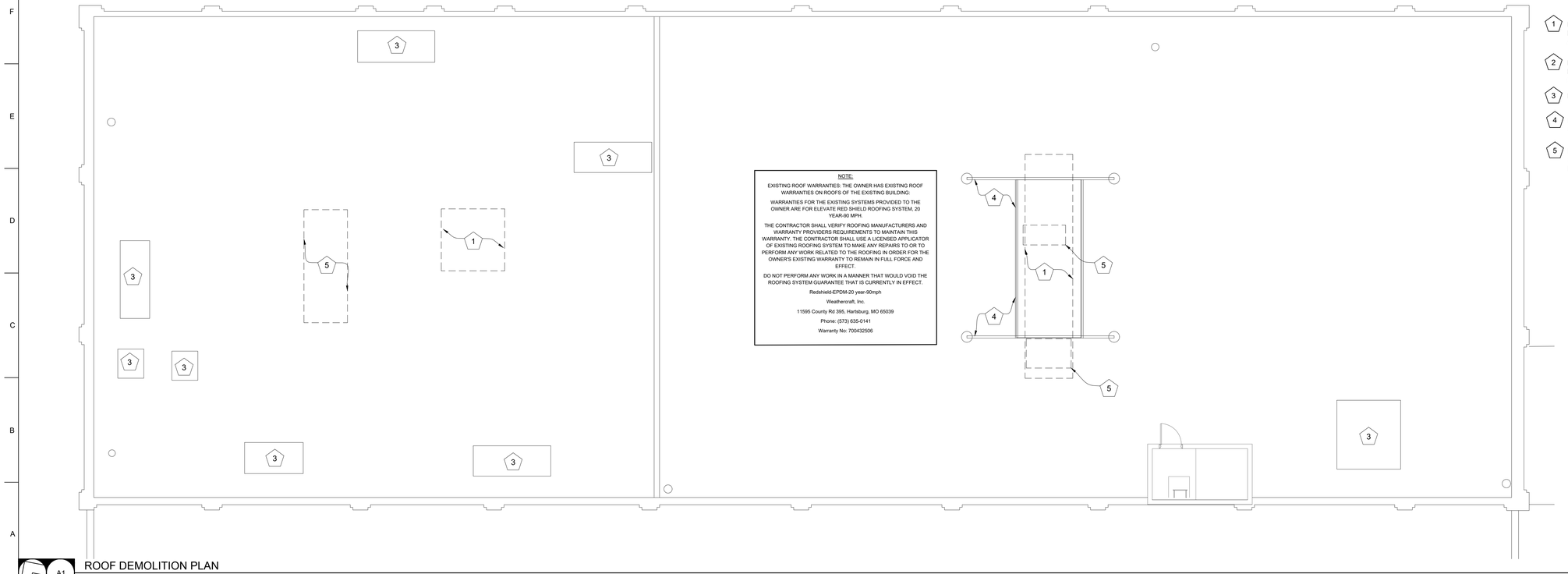
DATE:
ISSUE DATE: 04/05/2024

CAD DWG FILE:
DRAWN BY: LC / MM / GM
CHECKED BY: EM
DESIGNED BY: EM

SHEET TITLE:
SHEET INDEX, SYMBOL LEGEND & LOCATION MAP

SHEET NUMBER:
G-002

04/05/2024
2 OF 14 SHEETS



DEMOLITION ROOF PLAN SCOPE NOTES

1. DEMO AND REMOVE EXISTING ROOF TOP HVAC UNITS, CONDENSERS, CONDUITS AND PIPING. SEE MEP
2. DEMO AND REMOVE EXISTING ROOF AS REQUIRED FOR NEW ROOF TOP UNITS. SEE MEP
3. EXISTING HVAC EQUIPMENT TO REMAIN
4. EXISTING STEEL HVAC EQUIPMENT SUPPORTS TO REMAIN
5. DEMO EXISTING ROOFING, INSULATION, STEEL DECKING AS REQUIRED FOR NEW HVAC EQUIPMENT INSTALLATION.

A1 ROOF DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
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OFFICE OF ADMINISTRATION
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REPLACE HVAC SYSTEM, 3rd FLOOR MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # O2330-01
SITE # 1001
ASSET # 3101001058

REVISION:
DATE:
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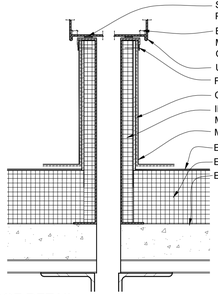
DATE:
REVISION:
DATE:
ISSUE DATE: 04/05/2024

CAD DWG FILE: D-101
DRAWN BY: LC / MM / GM
CHECKED BY: EM
DESIGNED BY: EM

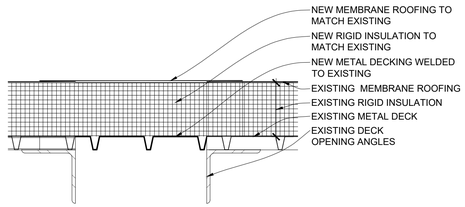
SHEET TITLE:
ROOF DEMOLITION PLAN

SHEET NUMBER:
D-101

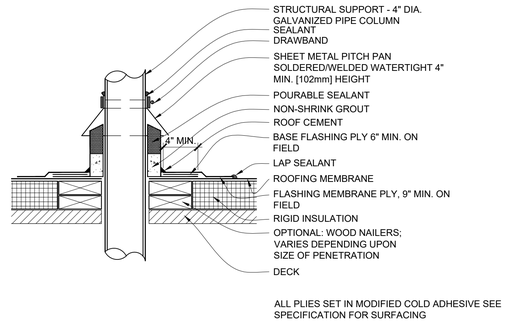
04/05/2024
3 OF 14 SHEETS



J1 D3 A101 ROOF DETAIL
SCALE: 1-1/2" = 1'-0"



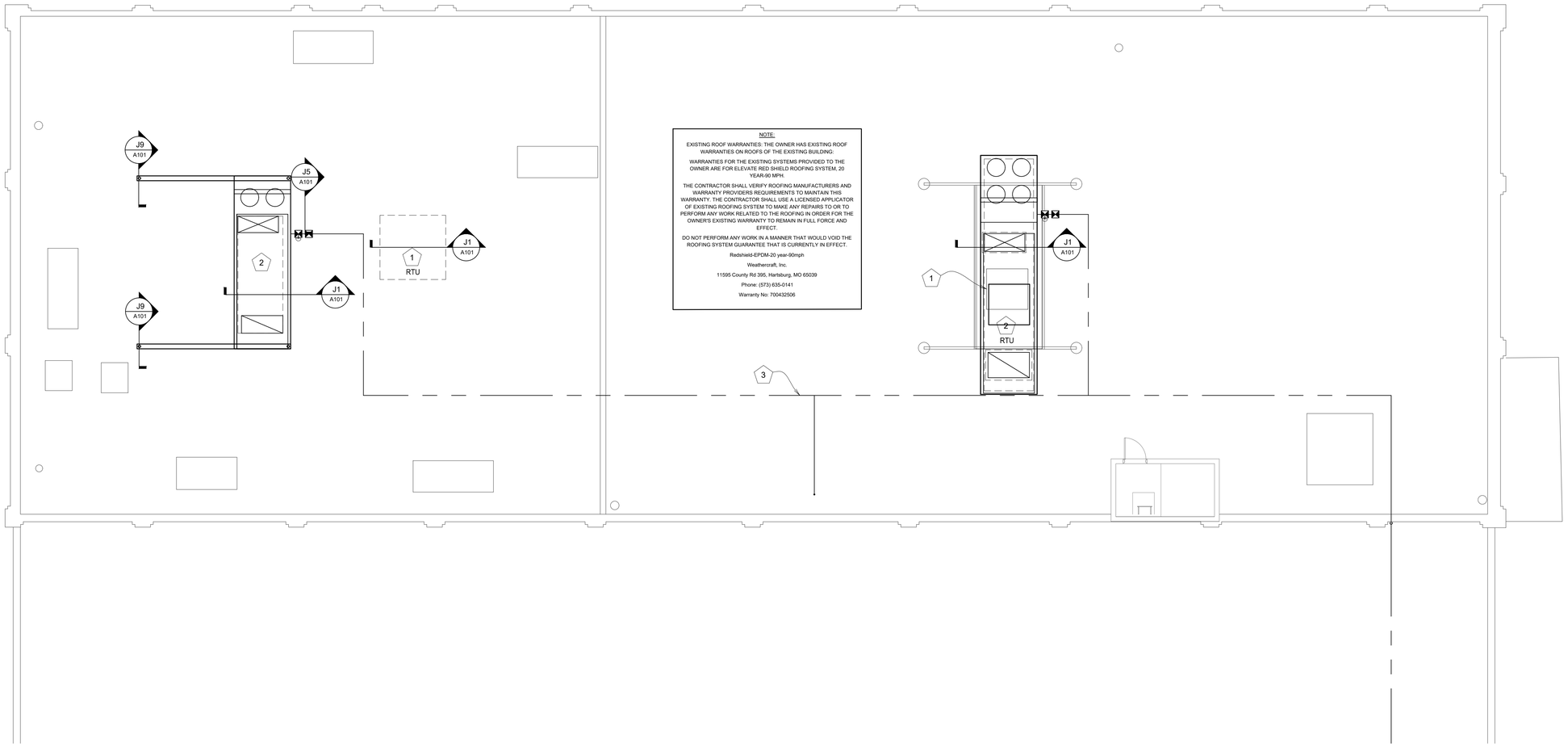
J5 C3 A101 ROOF DETAIL
SCALE: 1-1/2" = 1'-0"



J9 E3 A101 ROOF DETAIL
SCALE: 1-1/2" = 1'-0"

SCOPE OF WORK KEY NOTES

1. PATCH AND REPAIR EXISTING EPDM ROOFING WHERE EQUIPMENT WAS REMOVED
2. NEW ROOFTOP MECHANICAL UNIT
3. NEW GAS PIPING, SEE MEP



A1 ROOF PLAN
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

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PWArchitects.com | 573.449.2683
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REPLACE HVAC SYSTEM, 3rd FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # 02330-01
SITE # 1001
ASSET # 3101001058

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CAD DWG FILE: A-101
DRAWN BY: LC / MM / GM
CHECKED BY: EM
DESIGNED BY: EM

SHEET TITLE:
ROOF PLAN

SHEET NUMBER:
A-101

04/05/2024
4 OF 14 SHEETS

GENERAL NOTES

ELEVATION DATUM
SEE ARCHITECTURAL DRAWINGS OR SITE PLAN FOR FINISH FLOOR ELEVATIONS

DESIGN SPECIFICATIONS
2018 INTERNATIONAL BUILDING CODE
ANY WORK BELOW THE ROOF DECK NEEDS TO BE COORDINATED WITH PROJECT 02225-01

STRUCTURAL STEEL

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES AND CURRENT OSHA STANDARDS.
2. WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992. STRUCTURAL TUBES SHALL CONFORM TO ASTM A500 GRADE B. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM A36.
3. BOLTS, UNLESS OTHERWISE SHOWN, SHALL CONFORM TO ASTM A325-N, SIZE AS PER PLAN.
4. ANCHOR BOLTS, UNLESS OTHERWISE SHOWN, SHALL CONFORM TO ASTM F1554 GRADE 36.
5. SPLICING OF STRUCTURAL STEEL IS PROHIBITED EXCEPT AS DETAILED.
6. ALL STRUCTURAL AND MISCELLANEOUS STEEL ITEMS SHALL RECEIVE ONE COAT OF "IRONCLAD RETARDO RUST INHIBITIVE PAINT 163" (BENJAMIN MOORE) OR APPROVED EQUAL UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS. ALL STEEL SURFACES EMBEDDED IN CONCRETE SHALL NOT BE PAINTED. PREPARATION OF STEEL SURFACES SHALL MEET THE REQUIREMENTS OF THE STEEL STRUCTURES PAINTING COUNCIL (SSPC-SP1) AND THE REMOVAL OF GREASE AND OIL BY SOLVENT CLEANING (SSPC-SP1) AND THE REMOVAL OF MILL SCALE, RUST, WELD FLUX AND SLAG BY HAND TOOL CLEANING (SSPC-SP2). PRIMER SHALL BE APPLIED AT THE MANUFACTURER'S RECOMMENDED RATE BUT NOT LESS THAN ONE GALLON PER 400 SQ.FT. THEREBY DEPOSITING A DRY FILM THICKNESS OF NOT LESS THAN 1.5 MILS. ANY SCARRED AREAS SHALL BE TOUCHED UP WITH THE SAME PAINT AFTER ERECTION.
7. ALL WELDING SHALL BE DONE BY QUALIFIED WELDERS IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS STRUCTURAL WELDING CODE. WELDING ELECTRODES SHALL BE E70XX.

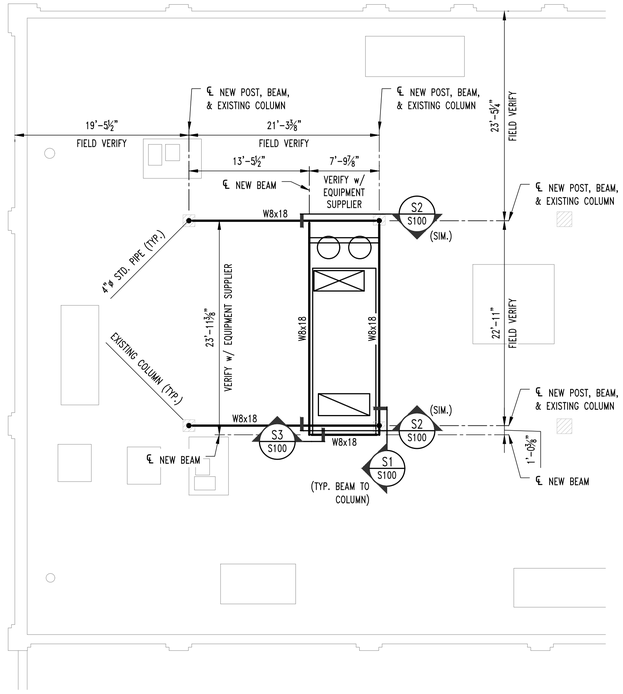
SPECIAL INSPECTIONS

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE.

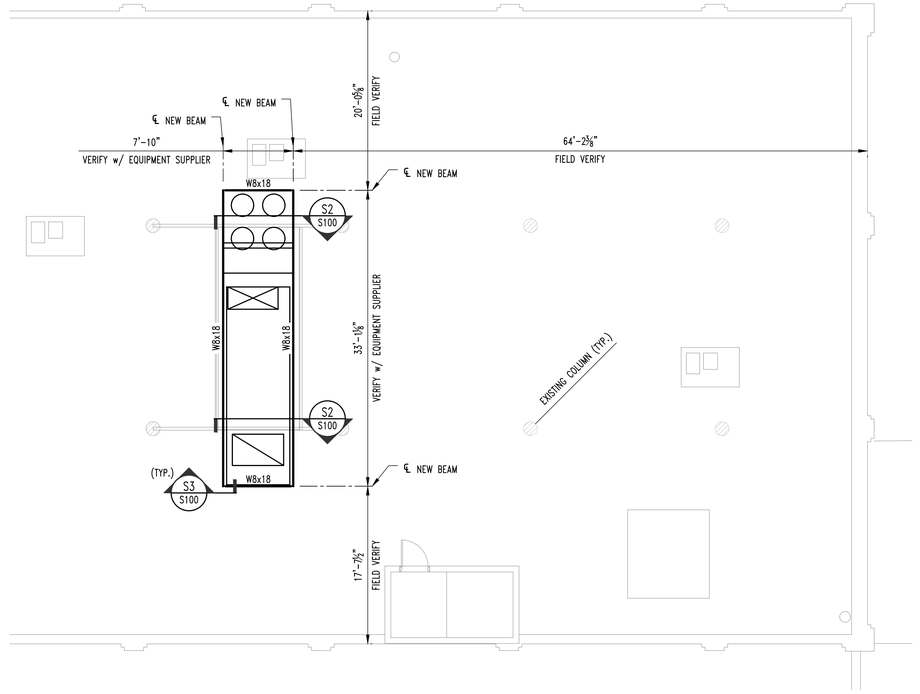
a. STRUCTURAL STEEL FABRICATIONS (UNLESS AISC APPROVED) (PERIODIC)

b. STRUCTURAL STEEL BOLTING & WELDING (PERIODIC)

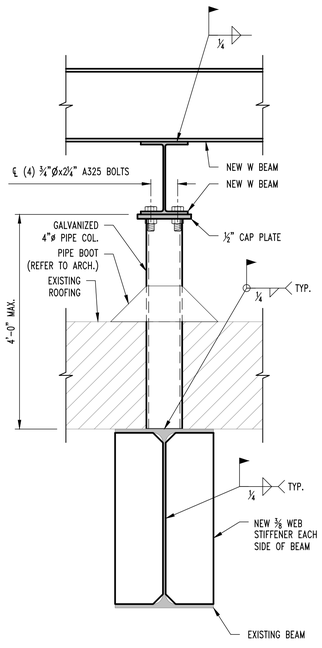
THE CONTRACTOR SHALL REQUEST SPECIAL INSPECTION OF THE ITEMS LISTED ABOVE PRIOR TO THOSE ITEMS BECOMING INACCESSIBLE AND UNOBSERVABLE DUE TO PROGRESSION OF THE WORK.



1 S100 **RTU #1 ROOF PLAN**
SCALE: ⅜" = 1'-0"

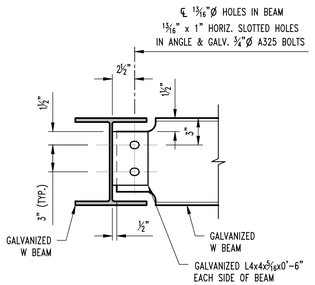


2 S100 **RTU #2 ROOF PLAN**
SCALE: ⅜" = 1'-0"

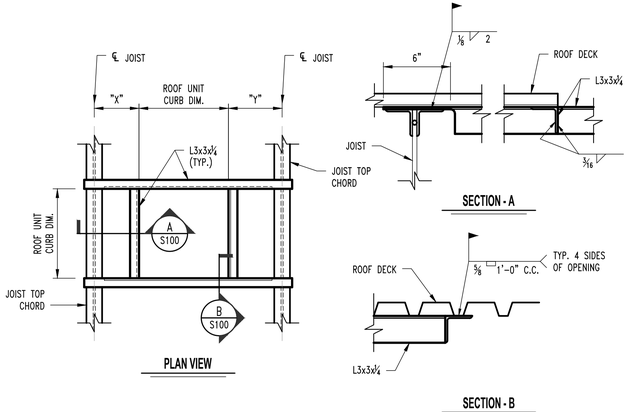


S1 S100 **POST TO BEAM SECTION**
SCALE: 1½" = 1'-0"

S2 S100 **NEW BEAM TO EXISTING BEAM SECTION**
SCALE: 1½" = 1'-0"



S3 S100 **TYP. BEAM TO BEAM CONNECTION**
SCALE: 1½" = 1'-0"



TYP. ROOF OPENING SUPPORT DETAIL

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
JARED W. VESLUES
NUMBER PE-2017000337
PROFESSIONAL ENGINEER
04/05/2024

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
Missouri State Certificate of Authority No. 000244

CROCKETT ENGINEERING CONSULTANTS
1000 W. Nifong Blvd., Bldg. 1
Columbia, Missouri 65203
(573) 447-0292
www.crockettengineering.com
Crockett Engineering Consultants, LLC
Missouri Certificate of Authority
#2000151301

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM, 3rd FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # 02330-01
SITE # 1001
ASSET # 3101001058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 04/05/2024

CAD DWG FILE:
DRAWN BY: RCA
CHECKED BY: JWV
DESIGNED BY: JWV

SHEET TITLE:
STRUCTURAL HVAC ROOF PLAN & DETAILS

SHEET NUMBER:
S100

5 OF 14 SHEETS
04/05/2024

HVAC PLAN SYMBOL LEGEND

- EQUIPMENT TYPE (REFER TO EQUIPMENT SCHEDULE)
- EQUIPMENT REFERENCE NUMBER
- DIFFUSER/GRILLE TYPE (REFER TO SCHEDULE)
- CUBIC FEET PER MINUTE (CFM) / FACE SIZE
- SUPPLY DUCTWORK
- RETURN DUCTWORK
- EXHAUST DUCTWORK
- OUTSIDE AIR DUCTWORK
- FLEX DUCT
- VENT / COMBUSTION AIR
- TIE INTO EXISTING
- SUPPLY DIFFUSER (HATCH INDICATES "NO FLOW ZONE")
- RETURN DIFFUSER
- BALANCE DAMPER
- FIRE RATED DAMPER
- THERMOSTAT

HVAC PLAN GENERAL NOTES:

1. SEE SHEET M501 FOR ADDITIONAL HVAC NOTES, DETAIL, AND SCHEDULES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING VAV BOXES & DETERMINING ORIENTATION (LEFT HAND vs RIGHT HAND) TO ALLOW ACCESS / CLEARANCE TO CONTROL CABINET ON BOX.
3. INTERIOR HVAC WORK NEEDS TO BE COMPLETED FIRST SO THAT INTERIOR RENOVATION PROJECT O2225-01 CAN PROCEED UNDER SEPARATE PROJECT

HVAC PLAN KEY NOTES:

(1) STUB FULL SIZE RETURN DUCT DOWN INTO PLENUM SPACE.

GENERAL MEP SPECIFICATIONS

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND UNDERSTAND ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENTS. EACH CONTRACTOR IS RESPONSIBLE FOR ALL WORK ASSOCIATED WITH HIS TRADE REGARDLESS OF WHERE THE WORK IS DEPICTED IN THE DRAWINGS OR SPECIFICATIONS.
2. THE LAYOUT OF SYSTEMS SHOWN ON PLANS ARE APPROXIMATE AND WILL NEED TO BE COORDINATED IN FIELD. THE CONTRACTOR SHALL INCLUDE THIS COORDINATION IN HIS SCOPE AND INCLUDE ALL COSTS OF MODIFYING THE LAYOUT AS REQUIRED IN HIS BID.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PARTS AND LABOR TO PRODUCE A COMPLETE AND FULLY OPERATIONAL SYSTEM UNLESS STATED OTHERWISE ON PLANS.
4. ALL MATERIALS TO BE NEW, FIRST CLASS, AND INSTALLED PER MANUFACTURE'S PUBLISHED INSTRUCTIONS.
5. ALL WORK SHALL BE PERFORMED IN COMPLIANCE WITH LOCALLY ADOPTED CODES AND ORDINANCES.
6. CONTRACTOR IS RESPONSIBLE FOR COORDINATING EQUIPMENT LOCATIONS AND SYSTEM ROUTING WITH OTHER TRADES PRIOR TO INSTALLATION.
7. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE THE PROJECT IS TURN OVER TO THE OWNER, UNLESS NOTED OTHERWISE.
8. CONTRACTOR IS TO INCLUDE IN THEIR SCOPE THE COST OF ALL PERMITS, INSPECTIONS, METERING, AND TAPS ASSOCIATED WITH THEIR WORK.
9. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, CUTTING, CORING, PATCHING, AND BACKFILL REQUIRED TO COMPLETE THEIR WORK, UNLESS NOTED OTHERWISE.
10. THESE PLANS ARE NOT TO BE SCALED. SEE ARCHITECTURAL PLANS FOR DIMENSIONS. WHERE THERE IS A CONFLICT BETWEEN ARCHITECTURAL DIMENSIONS AND MEP DIMENSION, ARCHITECTURAL SHALL GOVERN.
11. SEE DISCIPLINE SHEETS FOR ADDITIONAL DISCIPLINE SPECIFIC SPECIFICATIONS.

REFERENCED CODES IN EFFECT

2018 INTERNATIONAL MECHANICAL CODE

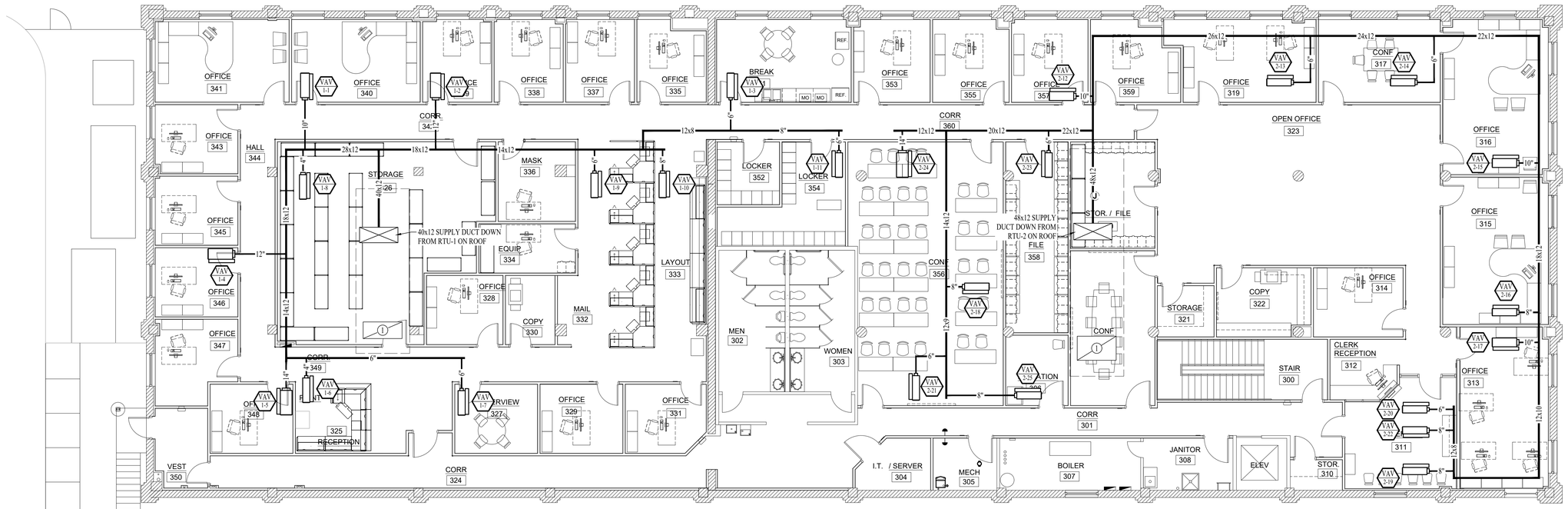
2018 INTERNATIONAL PLUMBING CODE

2018 INTERNATIONAL FUEL GAS CODE

2018 INTERNATIONAL FIRE CODE

2017 NATIONAL ELECTRIC CODE

2018 INTERNATIONAL ENERGY CONSERVATION CODE



THIRD FLOOR VAV DUCTWORK PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
JAMES P. WATSON
NUMBER PE-2015017071
PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
PE-2015017071
MO Certificate of Authority # 2018029680

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
Missouri State Certificate of Authority No. 000244

J-SQUARED ENGINEERING

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM
THIRD FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # O2330-01
SITE # 1001
ASSET # 3101001058

REVISION:
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REVISION:
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ISSUE DATE: 04/05/2024

CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

THIRD FLOOR VAV DUCTWORK PLAN

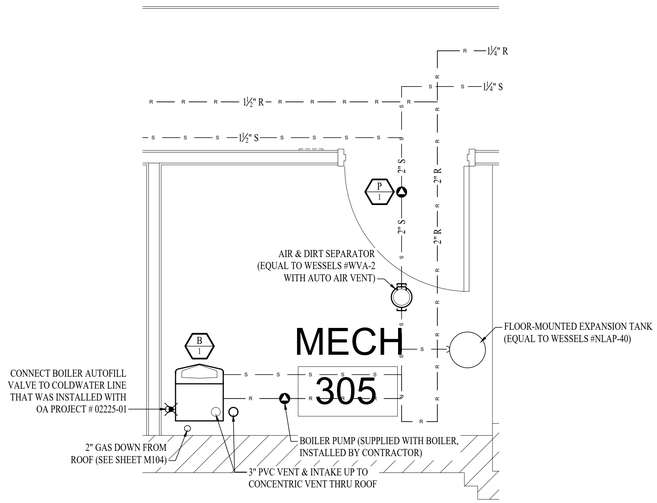
SHEET NUMBER:

M101

04/05/2024
6 OF 14 SHEETS

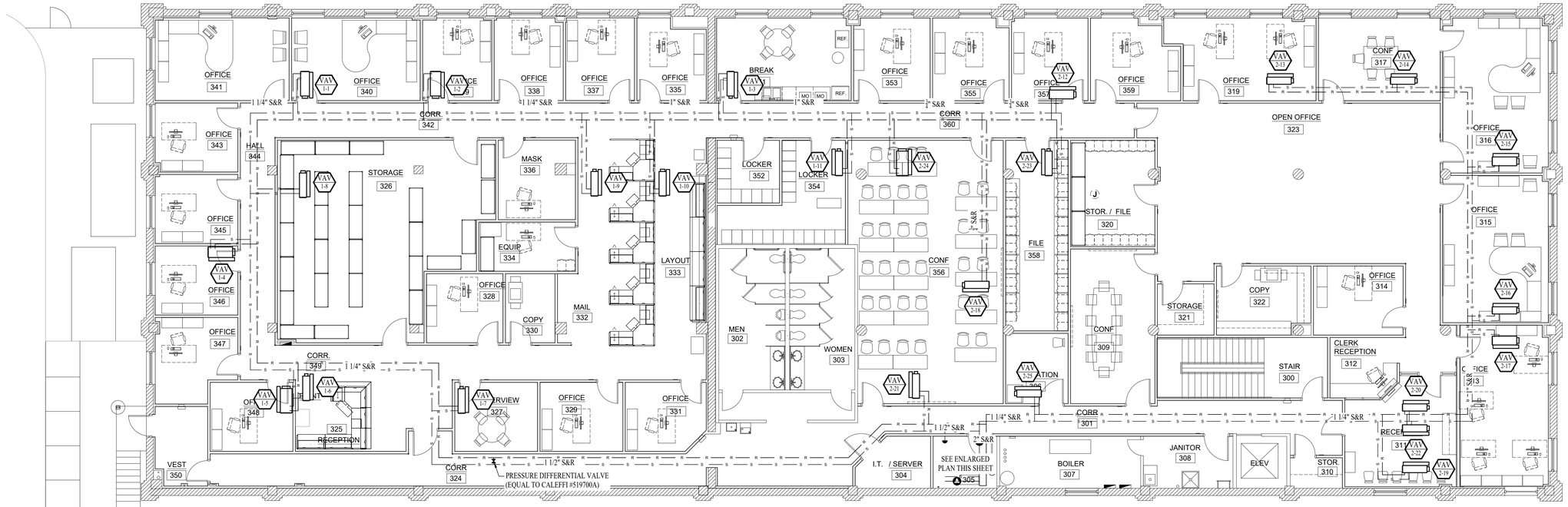
HVAC PLAN GENERAL NOTES:

1. SEE SHEET M501 FOR ADDITIONAL HVAC NOTES, DETAIL, AND SCHEDULES.
2. ALL HYDRONIC PIPING SHALL BE COPPER. REFER TO SPECIFICATIONS.



ENLARGED HYDRONIC PIPING PLAN - MECH 305

SCALE: 1/2" = 1'-0"



THIRD FLOOR HYDRONIC PIPING PLAN

SCALE: 1/8" = 1'-0"

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CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

THIRD FLOOR HYDRONIC PIPING PLAN

SHEET NUMBER:

M102

04/05/2024
7 OF 14 SHEETS

HVAC PLAN GENERAL NOTES:

1. SEE SHEET M501 FOR ADDITIONAL HVAC NOTES, DETAIL, AND SCHEDULES.
2. HVAC CONTRACTOR SHALL PROVIDE OPENING WITH FREE AREA OF 144 SQ. IN. ABOVE CEILING IN WALL TO CORRIDOR OF EACH ROOM FOR RETURN AIR PATH UNLESS OTHERWISE NOTED. OPENING INTO CORRIDOR SHALL BE PROTECTED BY FIRE DAMPER.
3. HVAC CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR ON OA PROJECT #O2225-01 FOR ROUGH-IN OF THERMOSTATS.

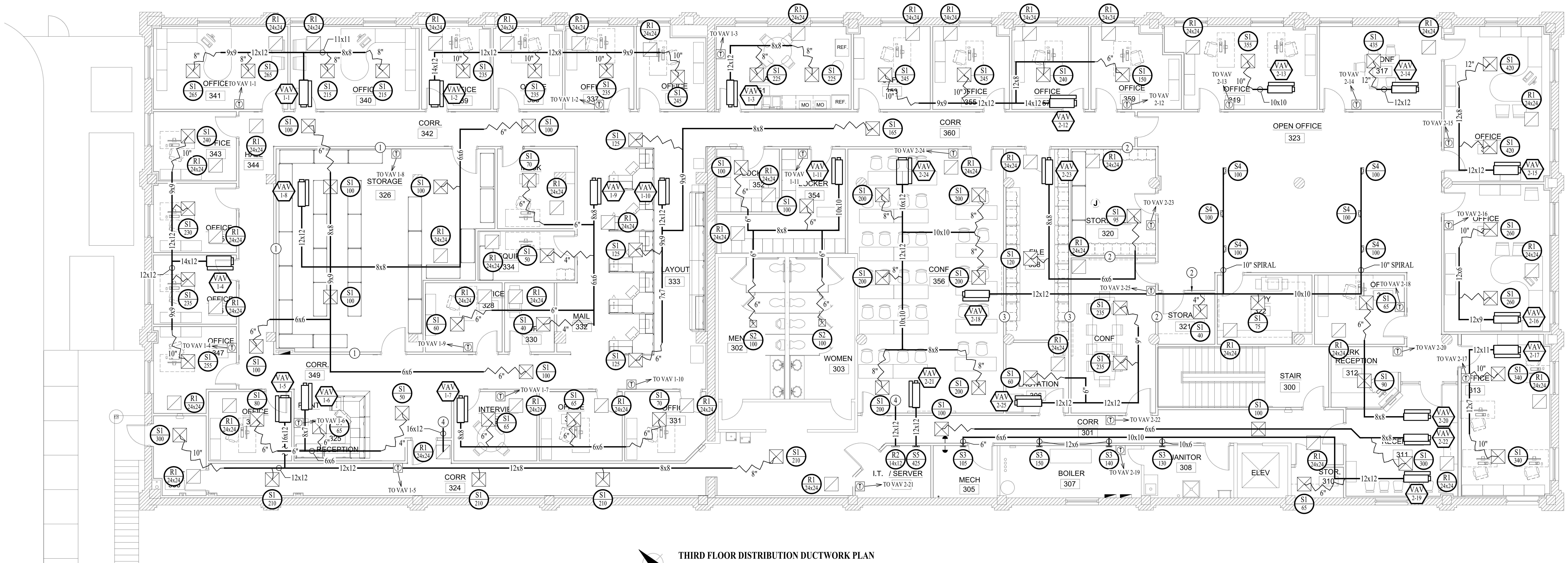
HVAC PLAN KEY NOTES:

(1) PROVIDE OPENING WITH FREE AREA OF 300 SQ. IN. ABOVE CEILING.

(2) PROVIDE OPENING WITH FREE AREA OF 350 SQ. IN. ABOVE CEILING.

(3) PROVIDE OPENING WITH FREE AREA OF 200 SQ. IN. ABOVE CEILING.

(4) OPEN-ENDED TRANSFER DUCT UP ABOVE CEILING.



THIRD FLOOR DISTRIBUTION DUCTWORK PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — JAMES P. WATSON — NUMBER PE-2015017071 — PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
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CAD DWG FILE: J20606
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DESIGNED BY: JAP

SHEET TITLE:

THIRD FLOOR DISTRIBUTION DUCTWORK PLAN

SHEET NUMBER:

M103

04/05/2024
8 OF 14 SHEETS

HVAC PLAN GENERAL NOTES:

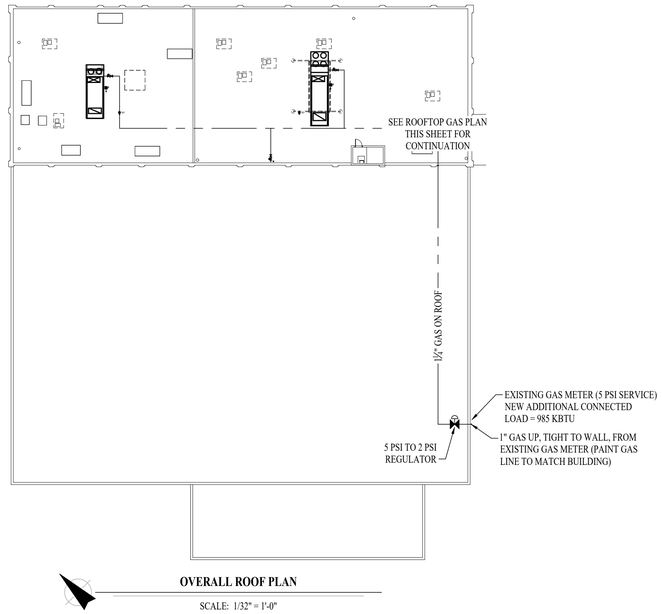
1. SEE SHEETS M501 & M502 FOR ADDITIONAL HVAC NOTES, DETAIL, AND SCHEDULES.

HVAC PLAN KEY NOTES:

(1) CONTRACTOR TO ROUTE CONDENSATE TO NEAREST ROOF DRAIN.

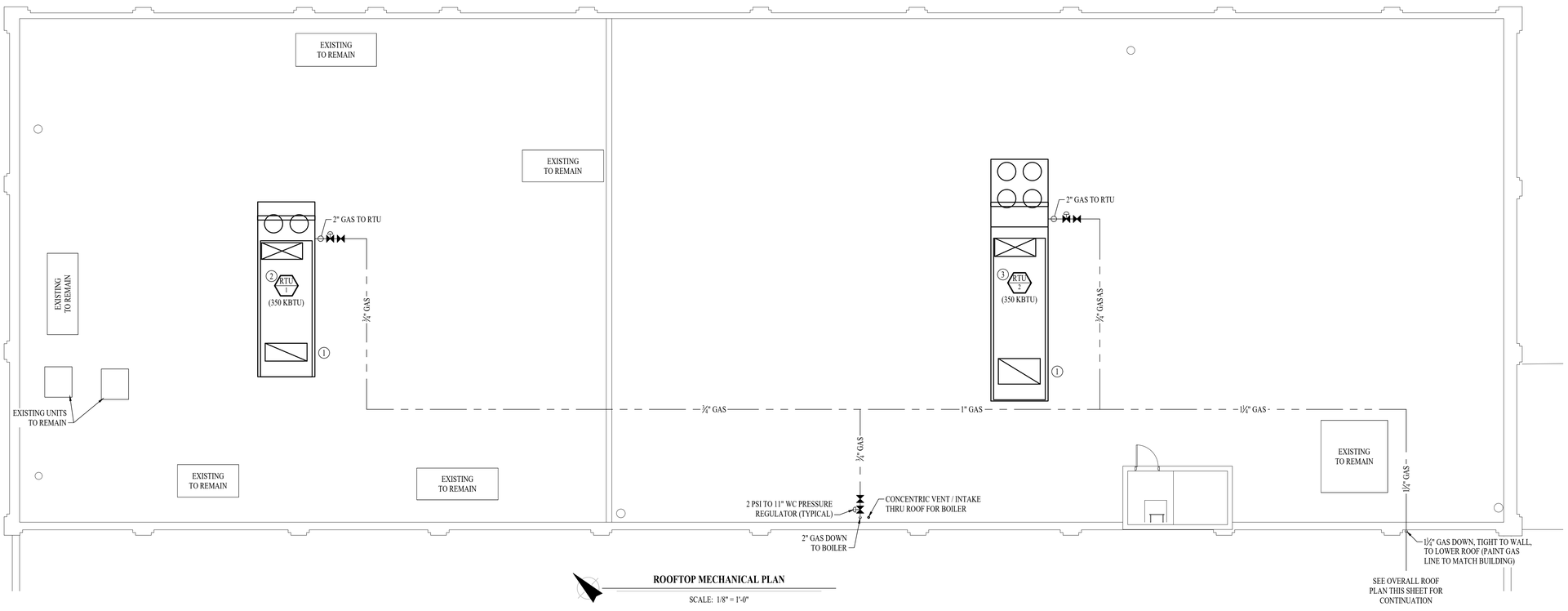
(2) MOUNT NEW ROOFTOP UNIT ON 20" CURB.

(3) NEW ROOFTOP UNIT WITH CURB ON STEEL FRAMED STRUCTURE. PROVIDE CURB FOR DUCTWORK PENETRATIONS THROUGH ROOF. SEE ARCHITECTURAL PLANS FOR DETAILS.



OVERALL ROOF PLAN

SCALE: 1/32" = 1'-0"



ROOFTOP MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
JAMES P. WATSON
NUMBER PE-2015017071
PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
PE-2015017071
MO Certificate of Authority # 2018029680

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
Missouri State Certificate of Authority No. 000244

J-SQUARED ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM
THIRD FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX -
MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT #	O2330-01
SITE #	1001
ASSET #	3101001058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 04/05/2024

CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

ROOFTOP MECHANICAL PLAN

SHEET NUMBER:

M104

04/05/2024
9 OF 14 SHEETS

HVAC SPECIFICATIONS

1. GENERAL

1.1. REFER TO GENERAL MEP SPECIFICATIONS SECTION FOR ADDITIONAL REQUIREMENTS.

2. WORKMANSHIP

2.1. COORDINATE WITH ALL OTHER TRADES SO THAT HVAC EQUIPMENT AND DUCT WORK DOES NOT BLOCK REQUIRED ACCESS OR CLEARANCE TO ANY EQUIPMENT, ACCESS PANELS, ELECTRICAL JUNCTION BOXES, ELECTRICAL PANELS, ETC.

2.2. ALL HVAC EQUIPMENT IS TO BE INSTALLED PER MANUFACTURER'S PUBLISHED RECOMMENDATIONS AND/OR INSTALLATION INSTRUCTIONS.

2.3. ALL EQUIPMENT TO BE INSTALLED LEVEL AND PLUMB, PARALLEL OR PERPENDICULAR TO BUILDING ORIENTATION WHERE POSSIBLE.

2.4. GRADE MOUNTED RTUS, CONDENSING UNITS, AND HEAT PUMPS TO BE INSTALLED ON 4" REINFORCED CONCRETE PAD EXTENDING 4" BEYOND EACH EDGE OF THE EQUIPMENT, OR A MANUFACTURER APPROVED PRE-MANUFACTURED BASE.

2.5. APPROPRIATE ATTENTION SHALL BE GIVEN TO INDOOR AIR QUALITY THROUGHOUT CONSTRUCTION; PROTECT INSIDE OF NEW DUCTWORK & AIR-HANDLING EQUIPMENT FROM DUST, DIRT, DEBRIS, PAINT, MOISTURE, ETC. INSULATION SHALL BE REPLACED IF EXPOSED TO MOISTURE. AN INDEPENDENT, PROFESSIONAL DUCT CLEANING COMPANY SHALL CLEAN ALL NEW DUCTWORK IF EQUIPMENT WAS USED DURING CONSTRUCTION, AND EQUIPMENT/COILS SHALL ALSO BE THOROUGHLY CLEANED.

2.6. FIELD COORDINATE LOCATIONS OF ALL DIFFUSERS, GRILLES, REGISTERS, ETC. WITH LIGHT FIXTURE LOCATIONS AND ADJUST AS NECESSARY.

3. EQUIPMENT

3.1. ALL EQUIPMENT SHOWN ON MECHANICAL PLANS SHALL BE PROVIDED & INSTALLED BY MECHANICAL CONTRACTOR UNLESS NOTED OTHERWISE.

3.2. ALL EQUIPMENT MUST PROVIDE PERFORMANCE AS SPECIFIED ON PLANS. WHERE SPECIFIC MANUFACTURERS AND/OR MODELS ARE INDICATED ON PLANS, CONTRACTOR TO PROVIDE MODEL INDICATED OR APPROVED EQUAL. VERIFY SUBSTITUTION APPROVAL PRIOR TO PURCHASE OR INSTALLATION OF EQUIPMENT.

3.3. CONTRACTOR TO SUPPLY SUBMITTALS FOR ALL EQUIPMENT FOR REVIEW BY ARCHITECT AND ENGINEER. FORMAL APPROVAL SHALL BE RECEIVED BY CONTRACTOR PRIOR TO EQUIPMENT PURCHASE.

3.4. CONTRACTOR TO SHARE APPROVED EQUIPMENT SUBMITTALS WITH ANY PERTINENT ELECTRICAL OR PLUMBING REQUIREMENTS WITH RESPECTIVE CONTRACTORS WITHIN TWO WEEKS OF RECIEVING APPROVED SUBMITTALS FROM ARCHITECT/ENGINEER.

3.5. ALL EQUIPMENT SHOWN ON PLANS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS WITH ADEQUATE ACCESS AND CLEARANCE FOR SERVICING OR REPLACEMENT.

3.6. ALL EXTERIOR REFRIGERANT COILS TO BE PROTECTED BY FACTORY EQUIPPED HAIL GUARDS.

3.7. REFRIGERANT PIPING TO BE ACR COPPER OR TYPE L COPPER.

3.8. ALL AIR HANDLING EQUIPMENT SHALL BE EQUIPPED WITH MERV-8 FILTRATION AT RETURN OPENING UNLESS OTHERWISE NOTED.

3.9. ALL AIR FILTERS SHALL BE SIZED FOR A MAXIMUM FACE VELOCITY OF 500FPM.

3.10. PROVIDE & INSTALL ALL EQUIPMENT FLUES/VENTS PER MANUFACTURER'S SPECIFICATIONS. TERMINATIONS SHALL BE AT LEAST 10' FROM ANY FRESH AIR INTAKE.

3.11. PROVIDE NEW AIR FILTERS IN ALL EQUIPMENT PRIOR TO TESTING & BALANCING AND BEFORE TURNING OVER SYSTEM(S) TO OWNERSHIP.

4. DUCTWORK

4.1. DUCTWORK TO BE GALVANIZED STEEL, SEAL CLASS B, CONSTRUCTED PER SMACNA STANDARDS.

4.2. DUCTWORK THICKNESS:

4.2.1. 26 GA. MINIMUM UP TO 16" DUCT

4.2.2. 24 GA. UP TO 20"

4.2.3. 22 GA. UP TO 24"

4.2.4. 20 GA. UP TO 28"

4.2.5. 18 GA. UP TO 36"

4.3. TURNING VANES SHALL BE PROVIDED AND INSTALLED AT ALL 90° BENDS AND TEES.

4.4. ALL DUCT DIMENSIONS LISTED ARE TO INTERIOR OF DUCT LINER UNLESS NOTED OTHERWISE ON PLANS.

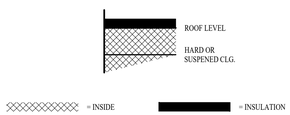
4.5. BALANCE DAMPERS MUST BE PROVIDED TO ALLOW ADJUSTMENT AT EACH AIR TERMINAL.

4.5.1. WHERE BRANCH TAKEOFF IS ACCESSIBLE (ABOVE LAY-IN CEILING OR EXPOSED DUCT), BALANCE DAMPER IS TO BE INSTALLED AT TAKEOFF.

4.5.2. WHERE TAKEOFF IS INACCESSIBLE (IN ATTIC OR SOFFIT), BALANCE DAMPER IS TO BE LOCATED SUCH THAT IT IS ACCESSIBLE FROM FACE OF AIR DEVICE.

4.6. HVAC CONTRACTOR RESPONSIBLE FOR ALL DUCTWORK TRANSITIONS AND FITTINGS AS REQUIRED FOR FINAL CONNECTIONS TO HVAC EQUIPMENT.

4.7. UNLESS NOTED OTHERWISE ON PLANS, FLEXIBLE DUCT CONNECTIONS MAY USED FROM BRANCH DUCTS TO FINAL AIR DEVICES, BUT SHALL NOT EXCEED 8'-0" IN LENGTH. FLEXIBLE DUCT CONNECTORS MUST BE SUPPORTED PER PLAN DETAILS.



DUCT INSIDE THERMAL ENVELOPE INSULATION REQUIREMENTS

RECTANGULAR & ROUND
- SUPPLY = 1" WRAP
- RETURN = 1" WRAP
- EXHAUST = NONE

ROUND
- SUPPLY = 1½" WRAP
- RETURN = NONE
- EXHAUST = NONE
- OUTSIDE AIR = 2" WRAP

SPIRAL
- SUPPLY = NONE
- RETURN = NONE
- EXHAUST = NONE
- OUTSIDE AIR = 2" WRAP

TYPICAL BUILDING INTERIOR DUCT INSULATION DIAGRAM

VAV BOXES WITH ELECTRIC REHEAT SEQUENCE OF OPERATION:

VAV BOXES ARE EQUIPPED WITH THE FOLLOWING ITEMS

1. ROOM THERMOSTAT WITH INTEGRAL TEMPERATURE SENSOR, ADJUSTABLE SETPOINT, AND OCCUPANCY OVERRIDE.
2. INTERLOCK TO DISABLE HEAT WHEN ASSOCIATED RTU IS OFF.
3. SUPPLY AIR TEMPERATURE SENSOR DOWNSTREAM OF THE HEATING COIL FOR USE IN MONITORING OVERALL VAV BOX PERFORMANCE.
4. OCCUPIED MODE SHALL BE DETERMINED BY [SCHEDULE OR LOCAL OCCUPANCY SENSOR].
5. INTEGRAL BOX FLOW STATION TO DETERMINE BOX CFM.

OCCUPIED MODE

ASSOCIATED RTU RUNS CONTINUOUSLY.

1. THE VOLUME CONTROLLER SHALL CONTINUE TO MONITOR ROOM TEMPERATURE REPORTED FROM ROOM THERMOSTAT AND RESET THE CFM SETPOINT UP OR DOWN IN RESPONSE TO COOLING/HEATING DEMAND
2. ON A RISE IN ROOM TEMPERATURE, MODULATE THE AIR DAMPER TOWARDS ITS MAXIMUM CFM SETPOINT UNTIL OCCUPIED COOLING SETPOINT HAS BEEN ACHIEVED.
3. WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM OCCUPIED AIRFLOW (ADJ.). HOT WATER HEAT IS DISABLED.
4. ON A CONTINUED FALL IN ROOM TEMPERATURE, CONTINUE DELIVERING THE SCHEDULED MINIMUM AIR FLOW, AND INCREASE THE HOT WATER COIL OUTPUT PROPORTIONALLY UNTIL THE OCCUPIED HEATING SETPOINT HAS BEEN ACHIEVED.

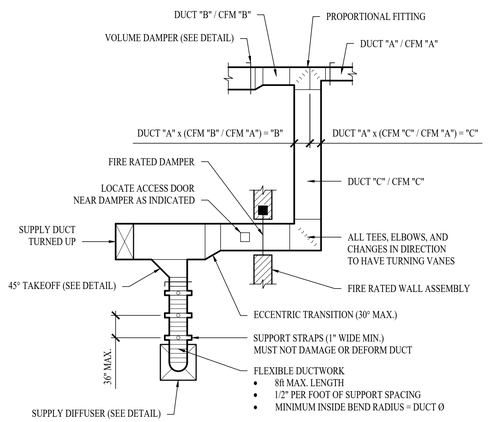
UNOCCUPIED MODE

ASSOCIATED RTU RUNS UNTIL A CALL FOR HEATING OR COOLING..

1. UPON A RISE IN ROOM TEMPERATURE, MODULATE THE AIR DAMPER TOWARD ITS MAXIMUM CFM SETPOINT UNTIL THE UNOCCUPIED COOLING SETPOINT HAS BEEN ACHIEVED.
2. VAV BOXES SHALL CLOSE TO 0%.
3. ON A FALL IN ROOM TEMPERATURE MODULATE THE AIR TOWARDS ITS OCCUPIED MINIMUM CFM SETPOINT & ENGAGE REHEAT UNTIL SPACE TEMPERATURE HAS BEEN MET.
4. OCCUPIED/ UNOCCUPIED HEATING AND COOLING SETPOINTS ARE TO BE AS FOLLOWS:
   - OCCUPIED COOLING SETPOINT 72 F (ADJUSTABLE)
   - OCCUPIED HEATING SETPOINT 70 F (ADJUSTABLE)
   - UNOCCUPIED COOLING SETPOINT 78 F (ADJUSTABLE)
   - UNOCCUPIED HEATING SETPOINT 68 F (ADJUSTABLE)

VAV RTU SEQUENCE OF OPERATION

1. ROOFTOP UNIT TO OPERATE CONTINUOUSLY DURING OCCUPIED HOURS & MODULATE TO KEEP SPACE TEMPERATURE DURING UNOCCUPIED HOURS.
2. ROOFTOP UNIT TO INTERCHANGE BETWEEN ENTHALPY CONTROLLED ECONOMIZER, MODULATING DX COOLING, AND MODULATING NATURAL GAS HEAT IN ORDER TO MAINTAIN 55°F SUPPLY AIR TEMPERATURE (OR ENTHALPY LESS THE 23.2 BTU PER POUND OF DRY AIR).
3. ROOFTOP TO BE BALANCED SO THAT, WITH ALL ASSOCIATED VAV BOXES AT MINIMUM FLOW, OUTSIDE AIR DAMPER MINIMUM POSITION TO BE ADJUSTED TO MAINTAIN MINIMUM REQUIRED OUTSIDE AIRFLOW (FIXED PERCENTAGE).
4. AS RTU FLOW INCREASES, OUTSIDE AIR DAMPER WILL MODULATE TO MAINTAIN SAME PERCENTAGE OF OUTSIDE AIR AS IT IS IN FULL FLOW.
5. ROOFTOP UNIT TO MODULATE SUPPLY FAN SPEED TO MAINTAIN DUCT STATIC PRESSURE.
   a. DUCT STATIC PRESSURE TO BE FIELD VERIFIED AT TIME OF AIR BALANCE.
   b. ALL VAV BOXES TO BE SET A MAXIMUM AIRFLOW, DUCT STATIC PRESSURE TO BE RECORDED AT THIS CONDITION. DUCT STATIC PRESSURE RECORDED, TO BE PROGRAMMED DUCT STATIC PRESSURE.
6. IF ALL BOXES ARE CALLING FOR HEAT, RTU SHALL RESET SET DISCHARGE AIR TEMPERATURE TO 65°F UNTIL ANY BOX IS CALLING FOR COOLING; UPON CALL FOR COOLING, UNIT SHALL RESET DISCHARGE TEMPERATURE TO 55°F.

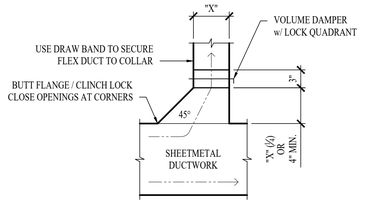


TYPICAL DUCTWORK DETAIL

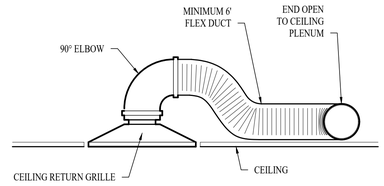
REQUIRED VAV BOX POINTS
- HOT WATER ENTERING TEMPERATURE - (°F)
- HOT WATER VALVE PERCENTAGE - (%)
- LEAVING VAV AIR TEMPERATURE - (°F)
- VAV BOX AIRFLOW - (CFM)
- VAV BOX DAMPER POSITION - (%)
- ZONE TEMPERATURE - (°F)
- ZONE TEMPERATURE SETPOINT - (°F)

REQUIRED BOILER POINTS
- STATUS (READ)
- HOT WATER SUPPLY TEMPERATURE (READ)
- HOT WATER RETURN TEMPERATURE (READ)
- SETPOINT (READ / WRITE)
- BOILER PUMP STATUS (READ)
- BOILER PUMP SPEED (READ)
- CIRCULATION PUMP STATUS (READ)
- CIRCULATION PUMP SPEED (READ)

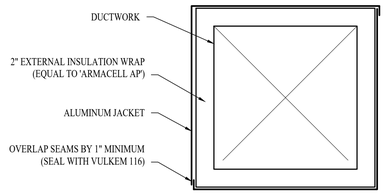
REQUIRED RTU POINTS
- STATUS (READ)
- MODE (READ / WRITE)
- FAN STATUS (READ / WRITE)
- MIXED AIR TEMPERATURE (READ)
- DISCHARGE AIR TEMPERATURE (READ)
- ALARMS (READ)
- DUCT STATIC PRESSURE (READ)
- EXHAUST FAN STATUS (READ / WRITE)
- DISCHARGE AIR SETPOINT (WRITE)
- OUTSIDE AIR TEMPERATURE (READ)
- OUTSIDE AIR DAMPER PERCENTAGE (READ / WRITE)
- HEATING STATUS (READ)
- HEATING CAPACITY (READ)
- COOLING STATUS (READ)
- COOLING CAPACITY (READ)
- OCCUPIED / UNOCCUPIED (READ / WRITE)



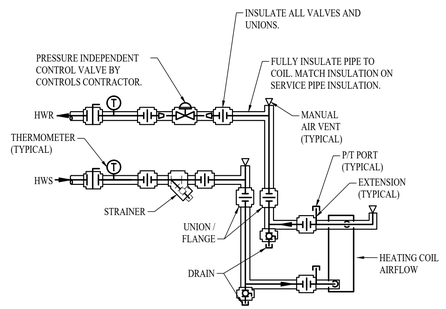
TYPICAL 45° TAKEOFF DETAIL



TYP. CEILING PLENUM RETURN DUCT

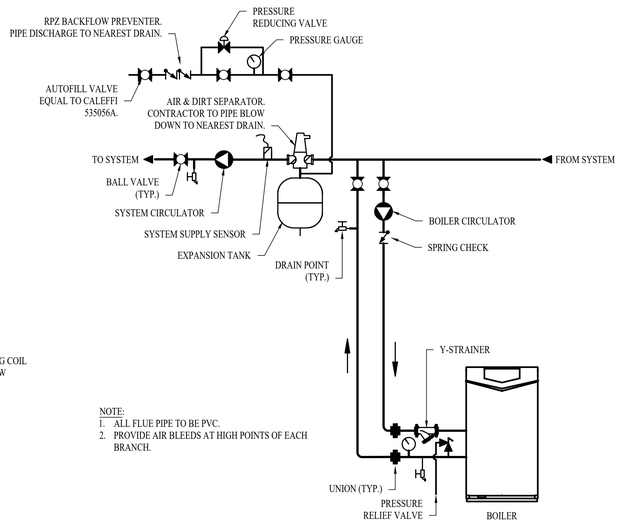


BUILDING EXTERIOR DUCT SECTION DETAIL



VAV HOT WATER HEATING COIL PIPING

1. FOR P/T PORT, USE PRESSURE TAP PROVIDED BY MANUFACTURER AT COIL IF AVAILABLE.
2. INSTALL EXTENSION AT PRESSURE TAP SO P/T PORT IS AT LEVEL OF INSULATION.
3. ¾" THREADED HOSE CONNECTION AND CAP.
4. PROVIDE MANUAL AIR VENTS AT AN HIGH POINT IN SUPPLY AND RETURN BETWEEN COIL AND MAIN.
5. LOCATE SHUT OFF VALVE, UNIONS AND FLANGES TO ALLOW CLEAR SPACE FOR REMOVAL OF COIL.



NOTE:
1. ALL FLUE PIPE TO BE PVC.
2. PROVIDE AIR BLEEDS AT HIGH POINTS OF EACH BRANCH.

BOILER PIPING DIAGRAM

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI · JAMES P. WATSON · NUMBER PE-2015017071 · PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
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Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
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J-SQUARED ENGINEERING

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM
THIRD FLOOR
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PROJECT # O2330-01
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CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

HVAC DETAILS

SHEET NUMBER:

M501

04/05/2024
10 OF 14 SHEETS

AIR DEVICE SCHEDULE

TAG	SERVICE	MANUFACTURER (OR EQUAL)	MODEL (OR EQUAL)	SIZE	COLOR / FINISH	NOTES
S1	SUPPLY	PRICE	SPD	24x24	WHITE	
S2	SUPPLY	PRICE	SPD	12x12	WHITE	WITH DRYWALL KIT
S3	SUPPLY	PRICE	520	10x5	WHITE	
S4	SUPPLY	PRICE	520	8x4	WHITE	
S5	SUPPLY	PRICE	520	12x8	WHITE	
R1	RETURN	PRICE	80	24x24	WHITE	
R2	RETURN	PRICE	530	14x12	WHITE	

NOTES:
1. VERIFY AIR DEVICE FINISHES WITH OWNER/ARCHITECT PRIOR TO INSTALLATION
2. MANUFACTURER LISTED IS BASIS OF DESIGN, ADDITIONAL MANUFACTURERS LISTED IN SPECIFICATIONS

ROOFTOP UNIT (RTU) SCHEDULE

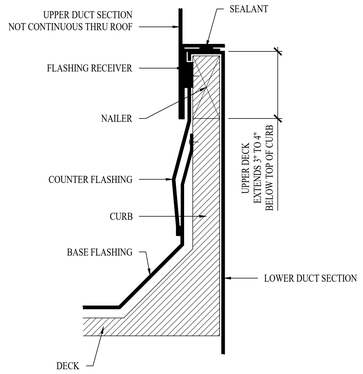
TAG	EQUIPMENT DESCRIPTION	SIZE (TONS)	ORIENTATION	TOTAL AIRFLOW (CFM)	E.S.P. (in. H20)	OA AIRFLOW AT MINIMUM AIR FLOW (CFM)	GAS HEATING		COOLING (IA: 80 DB/67 WB, OA: 100 DB)			ELECTRICAL			NOTES
							INPUT (kBTU)	OUTPUT (kBTU)	SENSIBLE (KBTU)	TOTAL (KBTU)	MIN. EFFICIENCY	VOLTS / PHASE	MCA	OCP	
RTU#1	VAV ROOFTOP UNIT	30	VERTICAL SUPPLY & RETURN	6555	3.4	555	350	283.5	188.8	292.1	10.5 EER & 14.8 IEER	208/3	171	200-3	1 THRU 7
RTU#2	VAV ROOFTOP UNIT	40	VERTICAL SUPPLY & RETURN	8000	3	800	350	283.5	257.09	391.74	14.6 EER & 10.2 IEER	208/3	219	250-3	1 THRU 7

NOTES:
1. SHALL BE WIRED INTO EXISTING HONEYWELL BAS SYSTEM. SEE SPECIFICATIONS FOR CONTACT INFO.
2. WITH FACTORY HAIL GUARD.
3. WITH FACTORY INSTALLED DISCONNECT.
4. ECONOMIZER (WITH EITHER BAROMETRIC RELIEF SIZED AT 100% OF FLOW AT 1/10" RETURN DUCT STATIC PRESSURE, OR POWERED EXHAUST); CONTROL TO BE ADJUSTABLE FIXED POINT SET AT 65°F. ECONOMIZER TO BE IECC COMPLIANT WITH FAULT DETECTION AND NOTIFICATION.
5. FACTORY INSTALLED BACNET CARD.
6. WITH SMOKE DETECTOR IN RETURN AIR DUCT TO SHUT DOWN UNIT AND SEND SIGNAL TO BUILDING FIRE ALARM SYSTEM UPON DETECTION OF SMOKE. SMOKE DETECTOR PROVIDED BY FIRE ALARM CONTRACTOR INSTALLED MECH CONTRACTOR.
7. PROVIDE WITH HINGED DOORS & GREASE POINTS EXTENDED TO EXTERIOR CABINET.

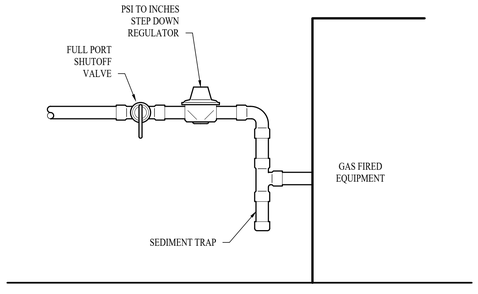
HYDRONIC PUMP SCHEDULE

TAG	DESCRIPTION	MANUFACTURER (OR EQUAL)	MODEL (OR EQUAL)	FLOWRATE (GPM)	DUTY HEAD (FEET)	ELECTRICAL			NOTES
						VOLT/PH	HP	MOCP	
P-1	CIRCULATOR PUMP	TACO	VR15M	28	32	120	0.6	20-1	1

NOTES:
1. INTERGRATE INTO EXISTING HONEYWELL BAS SYSTEM



DUCT ROOF PENETRATION DETAIL



GAS EQUIPMENT SUPPLY DETAIL W/ REGULATOR

VAV EQUIPMENT SCHEDULE

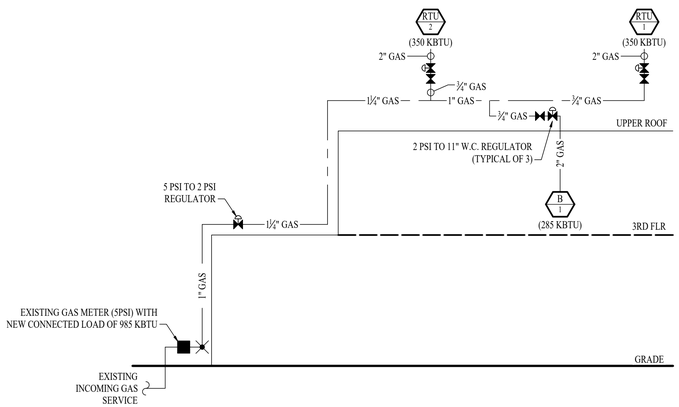
TAG	MANUFACTURER (OR EQUAL)	MODEL NUMBER (OR EQUAL)	EQUIPMENT DESCRIPTION	INLET SIZE	AIRFLOW					WATER					NOTES
					PRIMARY AIR FLOW MAX (CFM)	PRIMARY AIR FLOW MINIMUM (CFM)	HEATING AIR FLOW (CFM)	ENTERING DB (°F)	LEAVING DB (°F)	EWT (°F)	MBH	COIL ROWS	GPM	FLUID PD (ft wg)	
VAV-1-1	TRANE	VCWF	VAV BOX - SINGLE DUCT	10	960	260	260	55	111.5	140	15.9	3	1	0.26	1,2,3,4,5
VAV-1-2	TRANE	VCWF	VAV BOX - SINGLE DUCT	12	950	285	285	55	105.2	140	15.6	3	1	0.09	1,2,3,4,5
VAV-1-3	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	450	135	135	55	108.3	140	7.81	2	1	0.61	1,2,3,4,5
VAV-1-4	TRANE	VCWF	VAV BOX - SINGLE DUCT	12	960	290	290	55	109.5	140	17.1	2	2	0.24	1,2,3,4,5
VAV-1-5	TRANE	VCWF	VAV BOX - SINGLE DUCT	14	1140	345	345	55	109.2	140	20.2	2	2	0.19	1,2,3,4,5
VAV-1-6	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	195	100	100	55	111.6	140	6.1	2	0.75	0.37	1,2,3,4,5
VAV-1-7	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	200	100	100	55	111.6	140	6.1	2	0.75	0.37	1,2,3,4,5
VAV-1-8	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	700	210	210	55	107.4	140	11.9	3	1	0.11	1,2,3,4,5
VAV-1-9	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	220	100	100	55	111.6	140	6.15	2	0.75	0.37	1,2,3,4,5
VAV-1-10	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	540	165	165	55	110.6	140	9.9	2	2	0.32	1,2,3,4,5
VAV-1-11	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	400	105	105	55	110	140	6.3	2	0.75	0.37	1,2,3,4,5
VAV-2-12	TRANE	VCWF	VAV BOX - SINGLE DUCT	10	880	265	265	55	109.4	140	15.6	2	2	0.66	1,2,3,4,5
VAV-2-13	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	355	110	110	55	109.7	140	6.5	2	0.75	0.37	1,2,3,4,5
VAV-2-14	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	435	130	130	55	109.1	140	7.63	2	1	0.61	1,2,3,4,5
VAV-2-15	TRANE	VCWF	VAV BOX - SINGLE DUCT	10	840	255	255	55	110.2	140	15.2	2	2	0.65	1,2,3,4,5
VAV-2-16	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	520	155	155	55	109	140	9	2	1.5	0.19	1,2,3,4,5
VAV-2-17	TRANE	VCWF	VAV BOX - SINGLE DUCT	10	680	205	205	55	111.7	140	12.6	3	0.75	0.16	1,2,3,4,5
VAV-2-18	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	715	190	190	55	109.9	140	11.3	3	1	0.11	1,2,3,4,5
VAV-2-19	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	590	180	180	55	110.6	140	10.8	2	2.5	0.48	1,2,3,4,5
VAV-2-20	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	155	100	100	55	111.6	140	6.1	2	0.75	0.37	1,2,3,4,5
VAV-2-21	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	425	130	130	55	109.1	140	7.63	2	1	0.61	1,2,3,4,5
VAV-2-22	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	500	160	160	55	111.2	140	9.7	2	2	0.32	1,2,3,4,5
VAV-2-23	TRANE	VCWF	VAV BOX - SINGLE DUCT	6	215	100	100	55	111.6	140	6.1	2	0.75	0.37	1,2,3,4,5
VAV-2-24	TRANE	VCWF	VAV BOX - SINGLE DUCT	14	1200	375	375	55	112	140	23.2	3	1.5	0.14	1,2,3,4,5
VAV-2-25	TRANE	VCWF	VAV BOX - SINGLE DUCT	8	530	160	160	55	108.3	140	9.2	2	1.5	0.19	1,2,3,4,5

NOTES:
1. WITH 120.1PH/24V TRANSFORMER.
2. WITH FACTORY DISCONNECT SWITCH.
3. WITH FIELD INSTALLED HONEYWELL CONTROLS. SEE SPECIFICATIONS FOR CONTROLS CONTRACTOR.
4. CONTROLS CONTRACTOR TO PROVIDE AND INSTALL THERMOSTAT COMPATIBLE WITH VAV BOX CONTROLS .
5. WITH FLOW SENSORS
6. WITH 3/4" DUAL DENSITY INSULATION

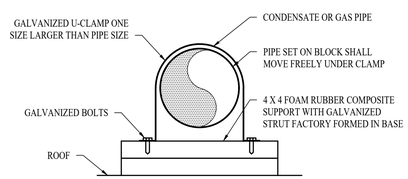
BOILER SCHEDULE

TAG	DESCRIPTION	MANUFACTURER (OR EQUAL)	MODEL (OR EQUAL)	GAS BURNER				WATER SIDE		GAS CONNECTION	WATER CONNECTION	AIR INLET SIZE	VENT SIZE	THERMAL EFF	ELECTRICAL		NOTES
				INPUT MBH		OUTPUT (MBH)	THERMAL EFFICIENCY	TEMPERATURE							VOLT/PH	MOCP	
				MAX BTUHR	MIN BTUHR			EWT	LWT								
B-1	BOILER	LOCHINVAR	KHB285N	285,000	28,500	264	95%	130	150	1/2"	1-1/4"	3" PVC	3" PVC	95%	120	20-1	1 thru 8

NOTES:
1. PROVIDE CONDENSATE NEUTRALIZATION KIT
2. BOILER SHALL BE WIRED INTO EXISTING HONEYWELL BAS SYSTEM. SEE SPECIFICATIONS FOR CONTACT INFO.
3. SYSTEM IS 100% WATER
4. BOILER SHALL BE PROVIDED WITH BOILER LOOP PUMP (EQUAL TO LOCHINVAR GRUNFOS #UPMXX25-124
5. WITH BACNET CARD
6. CONCENTRIC VENT KIT
7. WITH OUTDOOR RESET CONTROL & OUTDOOR SENSOR
8. LOW WATER CUT-OFF SWITCH



GAS RISER



STEEL PIPE NOMINAL SIZE OF PIPE (IN.)	SPACING OF SUPPORTS (FT.)
½"	6
¾" OR 1"	8
1 ¼" OR LARGER (HORIZONTAL)	10

NOTE:
INSTALL SUPPORTS ACCORDING TO INTERNATIONAL FUEL GAS CODE (LATEST EDITION)

PIPE SUPPORT DETAIL

DIFFUSER NECK SIZING SCHEDULE

AIRFLOW (CFM)	NECK SIZE (in)
0 - 120	6"
120 - 210	8"
210 - 325	10"
325 - 470	12"
470 - 640	14"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI JAMES P. WATSON NUMBER PE-2015017071 PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
PE-2015017071
MO Certificate of Authority # 2018029680

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
Peckham & Wright Architects an Architectural Corporation
Missouri State Certificate of Authority No. 000244

J-SQUARED ENGINEERING

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

REPLACE HVAC SYSTEM
THIRD FLOOR
MoDOT MILLBOTTOM BUILDING

CAPITOL COMPLEX - MoDOT MILLBOTTOM
601 WEST MAIN STREET
JEFFERSON CITY, MO

PROJECT # O2330-01
SITE # 1001
ASSET # 3101001058

REVISION:
DATE:
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DATE:

ISSUE DATE: 04/05/2024

CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

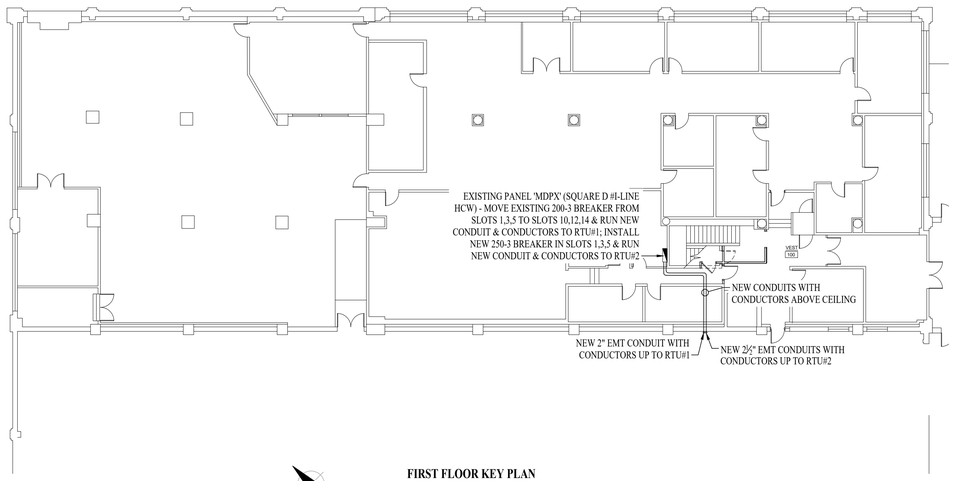
SHEET TITLE:

HVAC DETAILS & SCHEDULES

SHEET NUMBER:

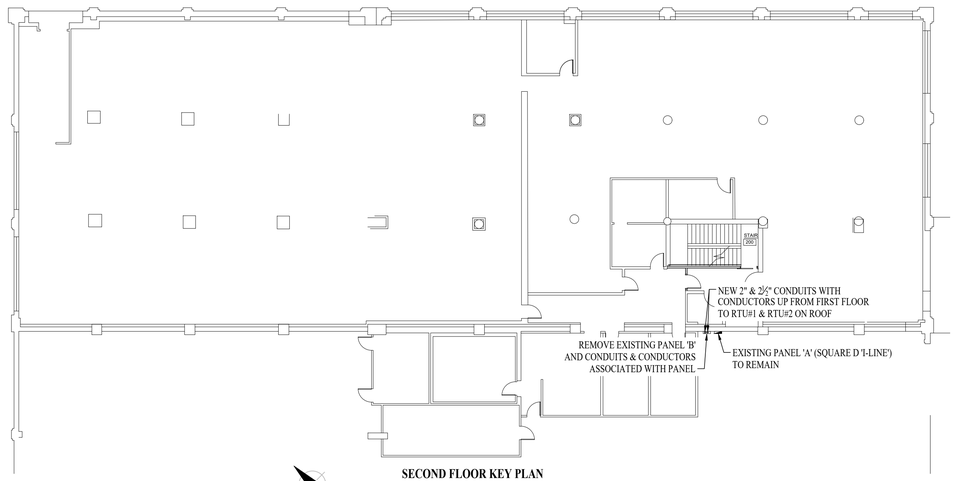
M502

04/05/2024
11 OF 14 SHEETS



FIRST FLOOR KEY PLAN

SCALE: 1/16" = 1'-0"



SECOND FLOOR KEY PLAN

SCALE: 1/16" = 1'-0"

POWER PLAN GENERAL NOTES:

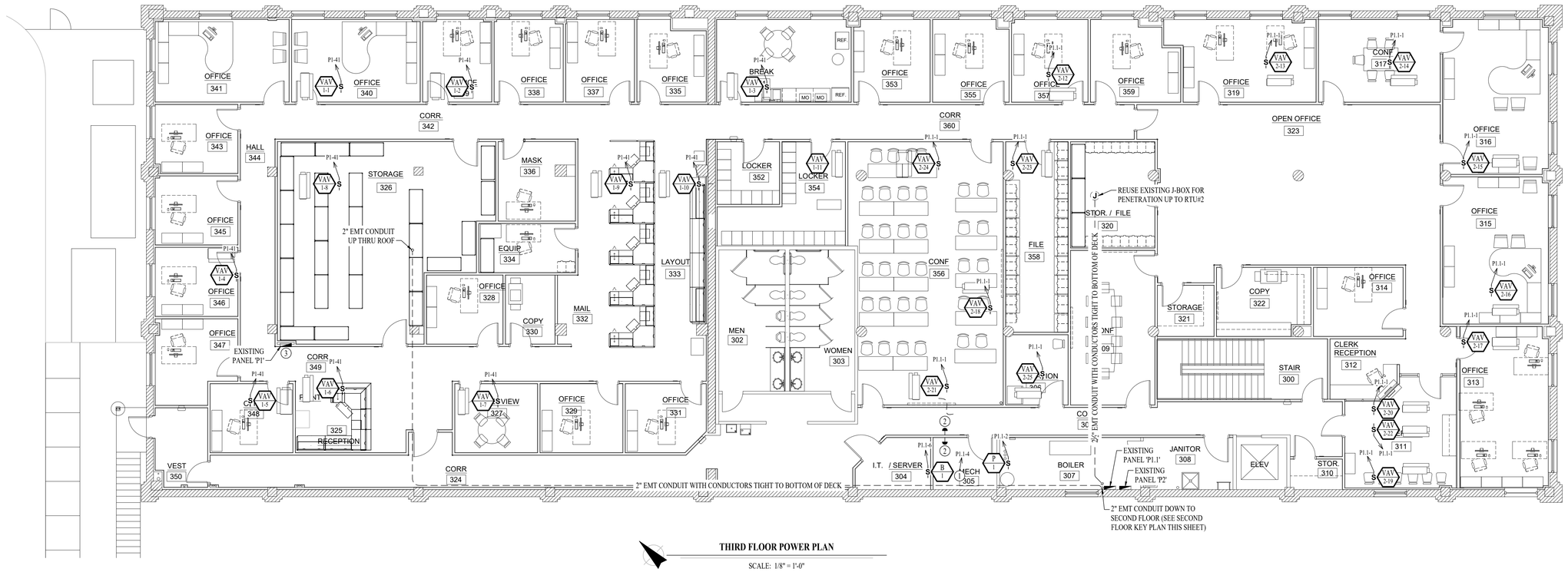
1. SEE SHEET E601 FOR ADDITIONAL ELECTRICAL NOTES, DETAILS, & SCHEDULES.

POWER PLAN KEY NOTES:

(1) POWER FOR BOILER PUMP.

(2) EMERGENCY PUSH BUTTON TO SHUT DOWN BOILER.

(3) PANEL RELOCATED HERE AS PART OF OA PROJECT #O2225-01.



THIRD FLOOR POWER PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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JAMES P. WATSON
NUMBER PE-2015017071
PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
PE-2015017071
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PWArchitects, Inc.
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PWArchitects.com | 573.449.2683
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CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

THIRD FLOOR POWER PLAN

SHEET NUMBER:

E101

04/05/2024
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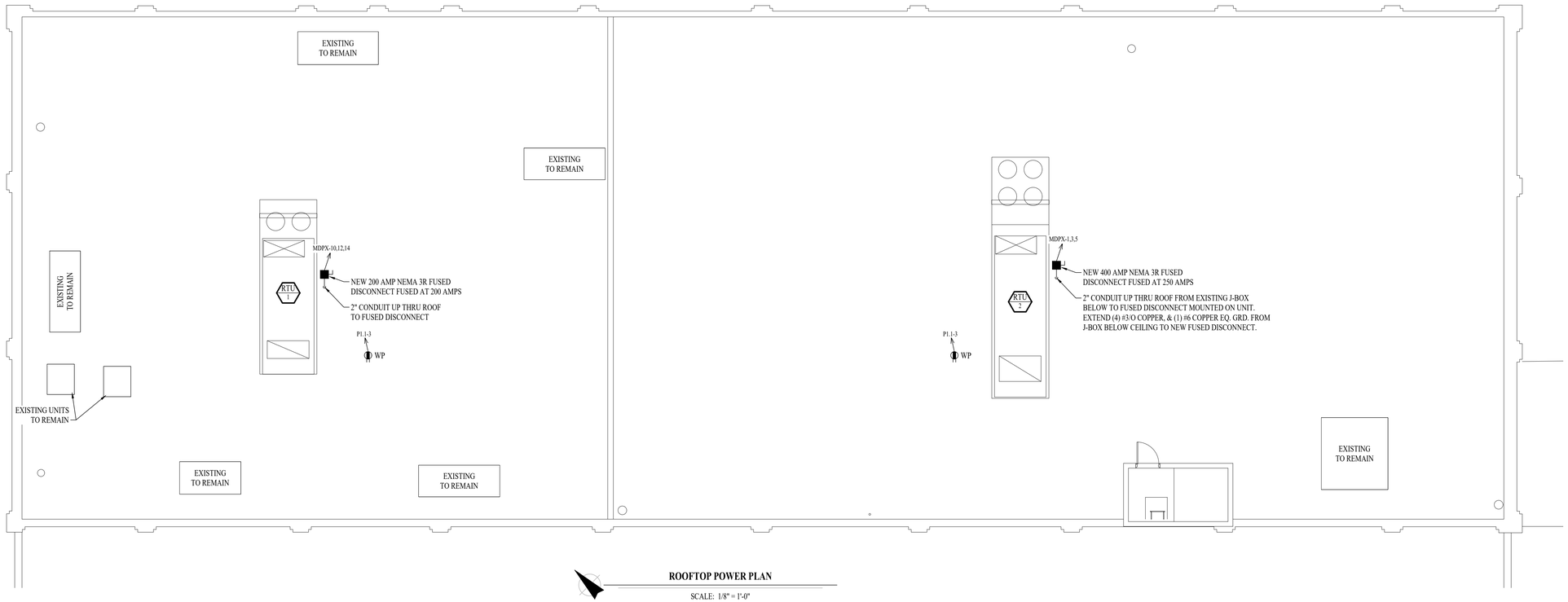
POWER PLAN GENERAL NOTES:

1. SEE SHEET E601 FOR ADDITIONAL ELECTRICAL NOTES, DETAILS, & SCHEDULES.



ROOFTOP POWER PLAN

SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
JAMES P. WATSON
NUMBER PE-2015017071
PROFESSIONAL ENGINEER

James Watson, P.E. April 5, 2024
PE-2015017071
MO Certificate of Authority # 2018029680

Peckham & Wright Architects, Inc., d.b.a.
PWArchitects, Inc.
2120 Forum Blvd., Ste. 101
Columbia, Missouri 65203
PWArchitects.com | 573.449.2683
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ISSUE DATE: 04/05/2024

CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
DESIGNED BY: JAP

SHEET TITLE:

ROOFTOP POWER PLAN

SHEET NUMBER:

E102

04/05/2024
13 OF 14 SHEETS

ELECTRICAL SPECIFICATIONS

1. GENERAL
   - 1.1. THE ENTIRE ELECTRICAL SYSTEM SHALL BE CONTINUOUSLY GROUNDED. EVERY BRANCH CONDUIT SHALL INCLUDE A GREEN GROUND CONDUCTOR SIZED PER NEC.
   - 1.2. ARC-FAULT CIRCUITS SHALL BE RUN WITH A DEDICATED NEUTRAL AS REQUIRED BY MANUFACTURER.
   - 1.3. PROVIDE PERMANENT ARC-FLASH LABEL AFFIXED TO EVERY DISCONNECT AND PANEL.
   - 1.4. PROVIDE TYPE WRITTEN PANEL SCHEDULE FOR EACH PANEL.
2. MATERIALS
   - 2.1. CONDUIT & CONDUCTORS
     - 2.1.1. ALL CONDUCTORS SIZES INDICATED ON PLANS ARE COPPER UNLESS NOTED OTHERWISE.
     - 2.1.2. ABOVE GRADE CONDUCTORS SHALL BE THHN COPPER. BELOW GRADE CONDUCTORS SHALL BE XHHW-2.
     - 2.1.3. MINIMUM CONDUCTOR SIZE SHALL BE #12 UNLESS NOTED OTHERWISE. 120V, 20 AMP CIRCUITS WITH CONDUCTOR LENGTH GREATER THAN 100' SHALL BE MINIMUM #10. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR MEASURING ACTUAL CONDUCTOR LENGTH AND INCREASING CONDUCTOR SIZE TO COMPENSATE FOR VOLTAGE DROP AS REQUIRED BY NEC.
     - 2.1.4. RIGID GALVANIZED OR SCHEDULE 40 PVC CONDUIT SHALL BE USED FOR SERVICE WIRING, BELOW GRADE INSTALLATIONS, OR WHERE EXPOSED TO WEATHER.
     - 2.1.5. IN APPLICATIONS OTHER THAN THOSE LISTED IN 2.1.4, EMT OR MC CABLE IS ACCEPTABLE. WHERE CONDUCTORS ARE PROTECTED FROM DAMAGE, ENCLOSED IN BUILDING MATERIALS, AND CONSTRUCTION IS OF A PERMITTED TYPE, NM CABLE MAY BE USED.
   - 2.2. DEVICES
     - 2.2.1. CONTRACTOR TO PROVIDE J-BOXES, COVER PLATES, AND ANY ACCESSORIES REQUIRED TO PROVIDE A COMPLETE SYSTEM. SEE ARCHITECTURAL PLANS FOR DEVICE COLORS.
     - 2.2.1. DUPLEX RECEPTACLES SHALL BE TAMPER RESISTANT, 20 AMP, EQUAL TO LEVITON CR20.
     - 2.2.2. TOGGLE WALL SWITCHES SHALL BE EQUAL TO LEVITON CS120-2
     - 2.2.3. DIMMER SWITCHES SHALL BE TESTED WITH FIXTURES AND LAMPS FOR COMPATIBILITY.
3. EMERGENCY LIGHTING
   - 3.1. THE BRANCH CIRCUIT FEEDING THE EMERGENCY FIXTURE SHALL BE THE SAME BRANCH CIRCUIT AS THAT SERVING THE NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY LOCAL SWITCHES.

EXISTING PANEL 'P1' SCHEDULE

VOLTAGE		PANEL SIZE		MOUNTING		AIC RATING		
120/208V		200A MLO		SURFACE		22,000	PHASE "A" LOAD	106
							PHASE "B" LOAD	119.5
NEMA RATING: 1							PHASE "C" LOAD	117
CIRCUIT NUMBER	**DESCRIPTION**	**BREAKER SIZE**	**AMPS**	**PHASE**	**AMPS**	**BREAKER SIZE**	**DESCRIPTION**	**CIRCUIT NUMBER**
1	JANITOR 308 RECEPT.	20-1	1.5	A	3	20-1	LACTATION 305 RECEPTS	2
3	LACTATION 305 REFRIGERATOR	20-1	8	B	3	20-1	IT / SERVER 304 RECEPT.	4
5	IT / SERVER 304 RECEPT.	20-1	3	C	12	20-1	CONFERENCE 309 / INTERVIEW 306 RECEPTS.	6
7	CONFERENCE 356 RECEPTS.	20-1	9	A	6	20-1	CONFERENCE 356 RECEPTS.	8
9	CONFERENCE 356 RECEPTS.	20-1	10.5	B	12	20-1	OFFICE 357 & 359 RECEPTS.	10
11	OFFICE 353 & 355 RECEPTS.	20-1	12	C	7	20-1	BREAK 351 REFRIGERATOR	12
13	BREAK 351 REFRIGERATOR	20-1	7	A	8	20-1	BREAK 351 MICROWAVE	14
15	BREAK 351 RECEPTS.	20-1	4.5	B	8	20-1	BREAK 351 MICROWAVE / DISPOSAL	16
17	LEXMARK PRINTER	20-1	5	C	6	20-1	LAYOUT 333 WALL RECEPTS.	18
19	MAIL 332 / COPY 330 / OFFICE 328 RECEPTS.	20-1	12	A	12	20-1	LAYOUT 333 CUBICLES	20
21	LEXMARK PRINTER	20-1	5	B	12	20-1	LAYOUT 333 CUBICLES	22
23	COPY 330 PRINTER	20-1	5	C	12	20-1	LAYOUT 333 CUBICLES	24
25	STORAGE 326 RECEPTS.	20-1	9	A	7.5	20-1	EQUIP 334 / MASK 336 RECEPTS.	26
27	OFFICE 329 & 331 RECEPTS.	20-1	12	B	7.5	20-1	INTERVIEW 327 RECEPTS.	28
29	RECEPTION 325 RECEPTS.	20-1	7.5	C	10.5	20-1	OFFICE 347 & 348 RECEPTS.	30
31	OFFICE 346 RECEPTS.	20-1	6	A	12	20-1	OFFICE 343 & 345 RECEPTS.	32
33	OFFICE 340 & 341 RECEPTS.	20-1	12	B	12	20-1	OFFICE 338 & 339 RECEPTS.	34
35	OFFICE 335 & 337 RECEPTS.	20-1	12	C	13	20-1	LIGHTING	36
37	CARD READERS	20-1	1	A	12	20-1	LIGHTING	38
39	CARD READERS	20-1	1	B	12	20-1	LIGHTING	40
41	**VAV BOXES (1-1 thru 1-12)**	**20-1**	**12**	C		20-1	SPARE	42

NOTES:

A: EXISTING SQUARE D MODEL "QO" PANEL.

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

D: **BOLD UNDERLINE** INDICATES NEW CIRCUIT THIS PROJECT.

EXISTING PANEL 'P1.1' SCHEDULE

VOLTAGE		PANEL SIZE		MOUNTING		AIC RATING		
120/208V		200A MLO		SURFACE		22,000	PHASE "A" LOAD	16.4
							PHASE "B" LOAD	6
NEMA RATING: 1							PHASE "C" LOAD	5
CIRCUIT NUMBER	**DESCRIPTION**	**BREAKER SIZE**	**AMPS**	**PHASE**	**AMPS**	**BREAKER SIZE**	**DESCRIPTION**	**CIRCUIT NUMBER**
1	**VAV BOXES (2-12 thru 2-25)**	**20-1**	**12**	A	**4.4**	**20-1**	**PUMP (P1)**	2
3	**ROOFTOP RECEPTS.**	**20-1**	**3**	B	**3**	**20-1**	**BOILER**	4
5	**SPARE**	**20-1**		C	**5**	**20-1**	**BOILER PUMP**	6
7	**SPARE**	**20-1**		A			SPACE	8
9	**SPARE**	**20-1**		B			SPACE	10
11	**SPARE**	**20-1**		C			SPACE	12
13	**SPARE**	**20-1**		A			SPACE	14
15	**SPARE**	**20-1**		B			SPACE	16
17	**SPARE**	**20-1**		C			SPACE	18
19	**SPARE**	**20-1**		A				20
21				B				22
23				C				24
25				A				26
27				B				28
29				C				30
31				A				32
33				B				34
35				C				36
37				A				38
39				B				40
41				C				42

NOTES:

A: PROVIDE NEW BREAKERS AS SHOWN.

B: ELECTRICIAN SHALL VERIFY BREAKER WITH EQUIPMENT PRIOR TO PURCHASE & INSTALL.

C: AFTER COMPLETION OF WORK, ELECTRICAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.

D: **BOLD UNDERLINE** INDICATES NEW BREAKER & CIRCUIT THIS PROJECT.

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CAD DWG FILE: J20606
DRAWN BY: DET
CHECKED BY: JPW
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SHEET TITLE:

ELECTRICAL SCHEDULES

SHEET NUMBER:

E601

04/05/2024
14 OF 14 SHEETS