MECHANICAL DEMO PLAN NOTES:

1. REMOVE EXISTING EXHAUST FAN EF-3 & EF-4 AND ALL ASSOCIATED DUCT. COORDINATE WITH ELECTRICAL TO DISCONNECT ELECTRICAL CIRCUIT
2. REMOVED EXISTING INTAKE LOUVERS, ASSOCIATED DUCTWORK AND COMPONENTS. COORDINATE WITH GC TO FILL IN EXISTING OPENING.
3. REMOVED EXISTING EXHAUST LOUVERS, ASSOCIATED DUCTWORK AND COMPONENTS. COORDINATE WITH GC TO FILL IN EXISTING OPENING.
4. REMOVE DUCT AS SHOWN ON PLAN. CAP & SEAL DUCT OPENINGS AS REQUIRED BASED ON NEW MECHANICAL HVAC PLAN ON SHEET M4.0. CAP AND FIRE CAULK ANY FIREWALL DUCT PENETRATIONS, REFER TO ARCHITECTURAL SHEETS FOR FIREWALL LOCATIONS.
5. REMOVE EXISTING GAS FIRED UNIT HEATER UH-2 & UH-3 & SUPPORTS. REMOVE GAS PIPE BRANCH TO EACH UNIT HEATER, CUT AND CAP AT GAS MAIN. REMOVE COMBUSTION AIR INTAKE AND EXHAUST VENT PIPING. COORDINATE WITH GC TO FILL IN EXISTING OPENINGS/PENETRATIONS. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT ELECTRICAL CIRCUIT.
6. REMOVE AND MODIFY SUPPLY DUCT AS REQUIRED TO INSTALL NEW VAV TERMINAL UNITS. REFER TO NEW HVAC PLAN ON SHEET M3.0 FOR LOCATIONS.
7. REMOVE EXISTING ELECTRIC WALL HEATER IN THIS LOCATION. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT FROM ELECTRICAL CIRCUIT.
8. REMOVE EXISTING ELECTRIC UNIT HEATER IN THIS LOCATION. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT FROM ELECTRICAL CIRCUIT.
9. REMOVE AND REINSTALL ALL SUPPLY DIFFUSERS, RETURN GRILLES, AND ANY SUPPLY OR RETURN DUCT REQUIRED TO INSTALL CEILING AT NEW HEIGHT BY THE GENERAL CONTRACTOR IN THIS ROOM. MODIFY ANY DUCT AS REQUIRED TO ACCOMMODATE NEW CEILING HEIGHT.

GENERAL MECHANICAL DEMO NOTES:

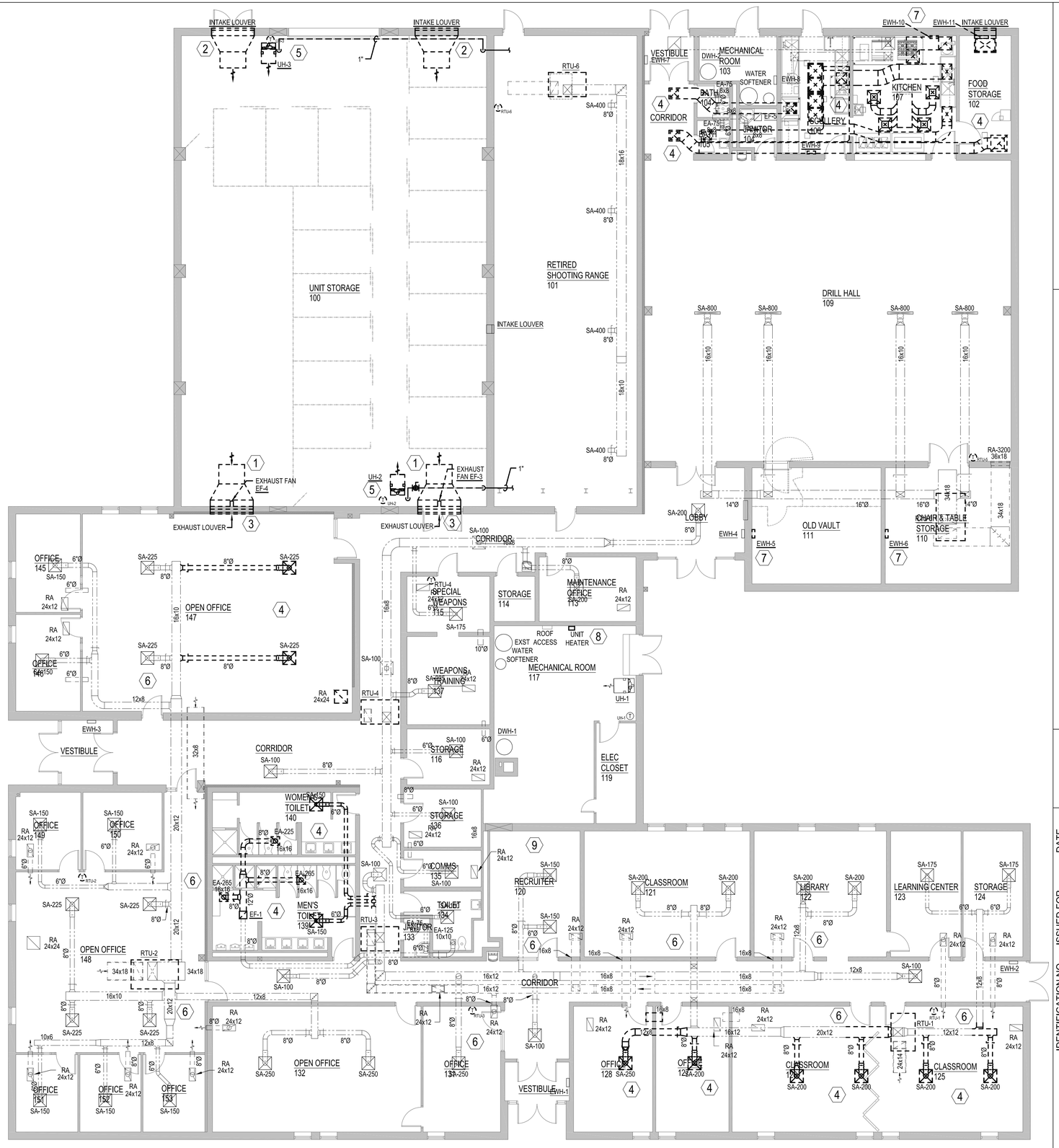
1. CONTRACTOR TO PROVIDE PROPER DUST CONTROL MEASURES PER SPECIFICATIONS.
2. CONTRACTOR TO MAINTAIN A CLEAN WORKSPACE AT THE END OF EACH DAY PER SPECIFICATIONS.
3. DURING DEMOLITION, KEEP ALL ROOF AND EXTERIOR WALL PENETRATIONS SEALED OFF FROM EXTERIOR.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. ANY DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR TO VERIFY CONDITION OF EXISTING CONSTRUCTION. DOCUMENT ANY EXISTING CONDITION THAT COULD BE MISCONSTRUED AS DAMAGED DURING NEW CONSTRUCTION. NOTIFY THE GOVERNMENT OF EXISTING CONDITIONS IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.
3. WHERE NEW CONSTRUCTION ABUTS EXISTING CONSTRUCTION AND APPEARS TO ALIGN FLUSH WITH EXISTING CONSTRUCTION, THE NEW CONSTRUCTION SHALL ALIGN AND BE FLUSH WITH NO VISIBLE JOINT, UNLESS THE MATERIALS OR SUBSTRATES DIFFER; THEN, AN EXPANSION JOINT SHALL BE INSTALLED.
4. DRAWINGS ARE NOT TO BE SCALED FOR ANY DIMENSIONS.
5. ALL WORK MUST COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, ANY REVISIONS REQUIRED DUE TO FIELD CONDITIONS MUST BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
6. COORDINATE NEW AND RELOCATE ANY EXISTING CONDUITS, ETC. TO ACCOMMODATE LIGHT FIXTURES, HVAC ACCESSORIES AND VARIOUS DEVICES.
7. PROVIDE ADDITIONAL WIRING, CONDUIT AND ACCESSORIES FOR DEVICES TO BE RELOCATED. AT NO ADDITIONAL COST.
8. ALL WALL MOUNTED DEVICES SHALL BE FULLY CONCEALED UNLESS NOTED OTHERWISE.
9. BIDS FOR CONSTRUCTION OF ALL WORK SHOWN ON THE PLANS ARE SOLICITED ON A LUMP SUM BASIS. NO SEPARATE PAYMENT OR ADJUSTMENTS TO THE LUMP SUM BID WILL BE MADE UNLESS SPECIFICALLY INDICATED ON THE PLANS AND IN THE PROPOSAL OR WHEN ADDITIONAL WORK IS AUTHORIZED IN WRITING BY THE ENGINEER.
10. THE CONTRACTOR SHALL HAVE A KNOWLEDGEABLE REPRESENTATIVE ON SITE AT ALL TIMES DURING WORK UNDER THIS CONTRACT. THIS REPRESENTATIVE SHALL HAVE ON SITE, HIS OWN COPY OF THE CONTRACT SPECIFICATIONS, DRAWINGS AND DMVA APPROVED SHOP DRAWINGS.
11. CONTRACTOR TO SCHEDULE AND COORDINATE ALL SHUT-DOWNS WITH ARMORY PERSONNEL.
12. CONTRACTOR TO FOLLOW SPECIFICATION FOR RECYCLING PROCEDURES.
13. ALL PUMPS LOCATED IN THE BOILER/MECHANICAL ROOM MUST BE ACCESSIBLE FROM THE GROUND WITHOUT THE USE OF A LADDER.

LEGEND

- MECHANICAL DEMO
- EXISTING SUPPLY DUCT
- EXISTING RETURN DUCT
- EXISTING EXHAUST DUCT
- NEW SUPPLY DUCT
- NEW RETURN DUCT
- NEW EXHAUST DUCT
- NEW HOT WATER HEATING SUPPLY
- NEW HOT WATER HEATING RETURN
- EXISTING HOT WATER HEATING SUPPLY
- EXISTING HOT WATER HEATING RETURN
- EXST GAS PIPE
- GAS PIPE DEMO
- NEW GAS PIPE
- EXST DDC COMMUNICATION WIRE
- R1 800 / — EXST/NEW RETURN AIR GRILLE
- S1 800 / — EXST/NEW SUPPLY AIR DIFFUSER
- E1 800 / — EXST/NEW EXHAUST AIR DIFFUSER
- / — EXST/NEW BALANCE DAMPER



1 M1.0 ARMORY MECHANICAL HVAC DEMO PLAN
SCALE: 1/8" = 1'-0"

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RENOVATE ARMORY - WATERFORD

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DESIGNED	BOK
DRAWN	BOK
CHECKED	KMM
APPROVED	BAB

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IDENTIFICATION NO.
PROJECT 269002303
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SHEET
MECHANICAL DEMO PLAN
M1.0

ROOF MECHANICAL DEMO PLAN NOTES:

1. DISCONNECT & REMOVE EXISTING GAS PIPING TO EXISTING ROOF TOP UNITS RTU-1,2,3,4,5, & 6 AS REQUIRED TO CONNECT TO NEW ROOF TOP UNITS.
2. REMOVE EXISTING ROOF TOP UNITS RTU-1,2,3,4,5, & 6 AND ALL CORRESPONDING COMPONENTS. DISCONNECT SUPPLY AND RETURN DUCT AS REQUIRED TO EXTEND TO NEW ROOF TOP UNITS. COORDINATE WITH NEW RTU MANUFACTURER TO PREPARE FOR NEW CURB OR CONVERSION CURB AS REQUIRED. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT ALL ELECTRICAL CONNECTIONS TO EXISTING ROOF TOP UNIT.
3. REMOVE RTU-1,2,3,4,5, & 6 ROOF CURBS. MODIFY EXISTING ROOF OPENING AS REQUIRED TO INSTALL NEW RTU-1,2,3,4,5, & 6 ROOF CURBS. REMOVE EXISTING SUPPORT STEEL AS REQUIRED TO INSTALL NEW SUPPORT STEEL PER DETAIL ON SHEET M6.0. COORDINATE WITH RTU & CURB MANUFACTURER'S AS REQUIRED.
4. REMOVE EXISTING DDC CONTROLS, THERMOSTATS AND CONTROL WIRING AS REQUIRED ON ALL EQUIPMENT BEING REMOVED.
5. REMOVE EXISTING EXISTING EXHAUST FAN EF-1. COORDINATE WITH ELECTRICAL TO DISCONNECT FROM ELECTRICAL CIRCUIT.
6. REMOVE EXISTING EXISTING EXHAUST FAN EF-2. COORDINATE WITH ELECTRICAL TO DISCONNECT FROM ELECTRICAL CIRCUIT.
7. DISCONNECT & REMOVE EXISTING GAS PIPING TO EXISTING MAKE-UP AIR UNITS MAU-2 & 3. REMOVE GAS PIPE BRANCH TO EACH UNIT, CUT AND CAP AT GAS MAIN.
8. DISCONNECT EXISTING GAS PIPING TO EXISTING MAKE-UP AIR UNIT MAU-4. RELOCATE GAS PIPE AS REQUIRED TO CONNECT TO NEW ROOF TOP UNIT RTU-7.
9. REMOVED EXISTING MAKE-UP AIR UNIT MAU-2,3 & 4 AND ALL CORRESPONDING COMPONENTS. DISCONNECT AND REMOVED SUPPLY AND RETURN DUCT AS SHOWN ON PLANS. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT ALL ELECTRICAL CONNECTIONS TO EXISTING ROOF TOP UNIT.
10. REMOVE EXISTING KITCHEN EXHAUST FAN KEF-2,3,4 & 5 AND ASSOCIATED ROOF CURB. COORDINATE WITH ELECTRICAL TO DISCONNECT FROM ELECTRICAL CIRCUIT. PATCH ROOF OPENING AS REQUIRED, REFER TO DETAIL ON SHEET M6.0.
11. REMOVE GAS PIPING FEEDING REMOVED UNIT HEATERS IN THIS LOCATION, CAP @ MAIN.

LEGEND

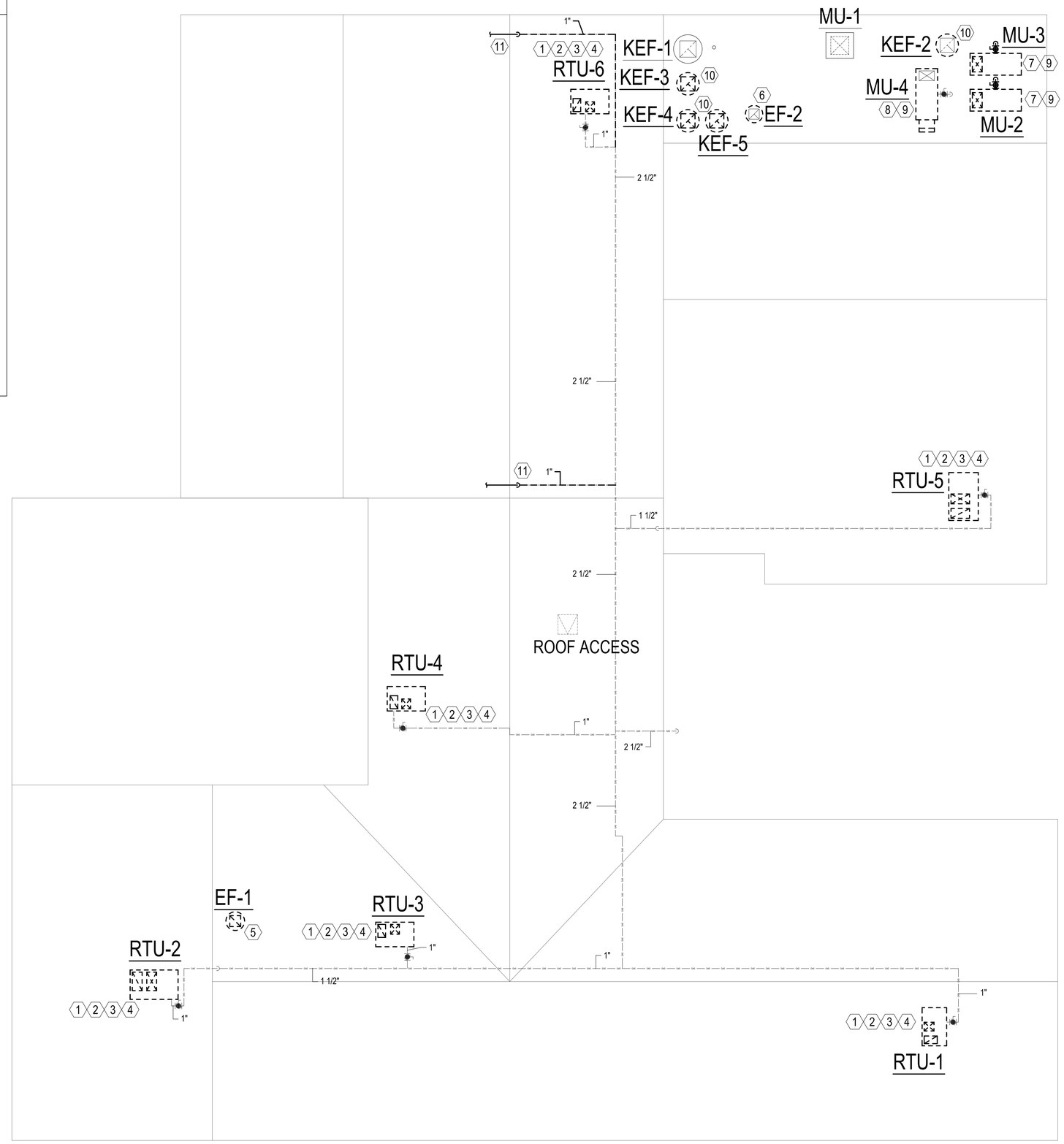
- MECHANICAL DEMO
- EXISTING SUPPLY DUCT
- EXISTING RETURN DUCT
- EXISTING EXHAUST DUCT
- NEW SUPPLY DUCT
- NEW RETURN DUCT
- NEW EXHAUST DUCT
- NEW HOT WATER HEATING SUPPLY
- NEW HOT WATER HEATING RETURN
- EXISTING HOT WATER HEATING SUPPLY
- EXISTING HOT WATER HEATING RETURN
- EXST GAS PIPE
- GAS PIPE DEMO
- NEW GAS PIPE
- EXST DDC COMMUNICATION WIRE
- R1 800 / — EXST/NEW RETURN AIR GRILLE
- S1 800 / — EXST/NEW SUPPLY AIR DIFFUSER
- E1 800 / — EXST/NEW EXHAUST AIR DIFFUSER
- / — EXST/NEW BALANCE DAMPER

GENERAL MECHANICAL DEMO NOTES:

1. CONTRACTOR TO PROVIDE PROPER DUST CONTROL MEASURES PER SPECIFICATIONS.
2. CONTRACTOR TO MAINTAIN A CLEAN WORKSPACE AT THE END OF EACH DAY PER SPECIFICATIONS.
3. DURING DEMOLITION, KEEP ALL ROOF AND EXTERIOR WALL PENETRATIONS SEALED OFF FROM EXTERIOR.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. ANY DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR TO VERIFY CONDITION OF EXISTING CONSTRUCTION. DOCUMENT ANY EXISTING CONDITION THAT COULD BE MISCONSTRUED AS DAMAGED DURING NEW CONSTRUCTION. NOTIFY THE GOVERNMENT OF EXISTING CONDITIONS IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.
3. WHERE NEW CONSTRUCTION ABUTS EXISTING CONSTRUCTION AND APPEARS TO ALIGN FLUSH WITH EXISTING CONSTRUCTION, THE NEW CONSTRUCTION SHALL ALIGN AND BE FLUSH WITH NO VISIBLE JOINT, UNLESS THE MATERIALS OR SUBSTRATES DIFFER; THEN, AN EXPANSION JOINT SHALL BE INSTALLED.
4. DRAWINGS ARE NOT TO BE SCALED FOR ANY DIMENSIONS.
5. ALL WORK MUST COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, ANY REVISIONS REQUIRED DUE TO FIELD CONDITIONS MUST BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
6. COORDINATE NEW AND RELOCATE ANY EXISTING CONDUITS, ETC. TO ACCOMMODATE LIGHT FIXTURES, HVAC ACCESSORIES AND VARIOUS DEVICES.
7. PROVIDE ADDITIONAL WIRING, CONDUIT AND ACCESSORIES FOR DEVICES TO BE RELOCATED, AT NO ADDITIONAL COST.
8. ALL WALL MOUNTED DEVICES SHALL BE FULLY CONCEALED UNLESS NOTED OTHERWISE.
9. BIDS FOR CONSTRUCTION OF ALL WORK SHOWN ON THE PLANS ARE SOLICITED ON A LUMP SUM BASIS. NO SEPARATE PAYMENT OR ADJUSTMENTS TO THE LUMP SUM BID WILL BE MADE UNLESS SPECIFICALLY INDICATED ON THE PLANS AND IN THE PROPOSAL OR WHEN ADDITIONAL WORK IS AUTHORIZED IN WRITING BY THE ENGINEER.
10. THE CONTRACTOR SHALL HAVE A KNOWLEDGEABLE REPRESENTATIVE ON SITE AT ALL TIMES DURING WORK UNDER THIS CONTRACT. THIS REPRESENTATIVE SHALL HAVE ON SITE, HIS OWN COPY OF THE CONTRACT SPECIFICATIONS, DRAWINGS AND DMVA APPROVED SHOP DRAWINGS.
11. CONTRACTOR TO SCHEDULE AND COORDINATE ALL SHUT-DOWNS WITH ARMORY PERSONNEL.
12. CONTRACTOR TO FOLLOW SPECIFICATION FOR RECYCLING PROCEDURES.
13. ALL PUMPS LOCATED IN THE BOILER/MECHANICAL ROOM MUST BE ACCESSIBLE FROM THE GROUND WITHOUT THE USE OF A LADDER.



1 M2.0 ROOF MECHANICAL HVAC DEMO PLAN
SCALE: 1/8" = 1'-0"

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PROJECT 2690023043
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SHEET
MECHANICAL ROOF DEMO PLAN
M2.0

MVSB MECHANICAL DEMO PLAN NOTES:

1. REMOVE EXISTING GAS FIRED UNIT HEATER UH-4, UH-5 & UH-6 & SUPPORTS. REMOVE GAS PIPE BRANCH TO EACH UNIT HEATER, CUT AND CAP AT GAS MAIN. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT ELECTRICAL CIRCUIT.
2. REMOVE EXISTING COMBUSTION AIR INTAKE AND EXHAUST VENT PIPING FOR UNIT HEATERS UH-4, UH-5 & UH-6. COORDINATE WITH GC TO FILL IN EXISTING OPENINGS/PENETRATIONS.

LEGEND

- MECHANICAL DEMO
- EXISTING SUPPLY DUCT
- EXISTING RETURN DUCT
- EXISTING EXHAUST DUCT
- NEW SUPPLY DUCT
- NEW RETURN DUCT
- NEW EXHAUST DUCT
- NEW HOT WATER HEATING SUPPLY
- NEW HOT WATER HEATING RETURN
- EXISTING HOT WATER HEATING SUPPLY
- EXISTING HOT WATER HEATING RETURN
- EXST GAS PIPE
- GAS PIPE DEMO
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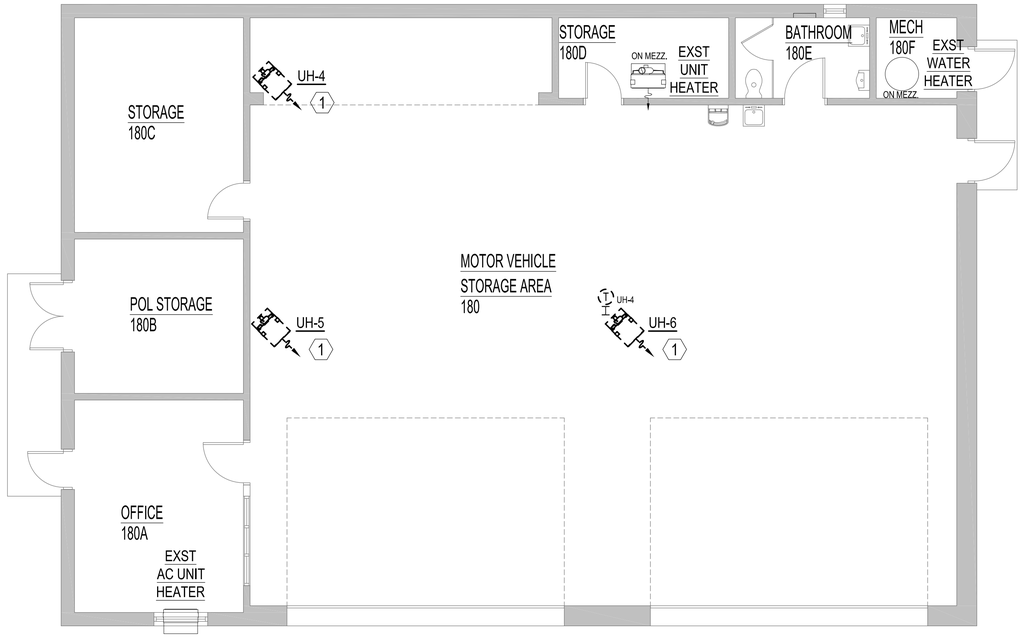

1 / M3.0 MVSB MECHANICAL HVAC DEMO PLAN
SCALE: 3/16" = 1'-0"

2 / M3.0 MVSB ROOF MECHANICAL HVAC DEMO PLAN
SCALE: 3/16" = 1'-0"

GENERAL MECHANICAL DEMO NOTES:

1. CONTRACTOR TO PROVIDE PROPER DUST CONTROL MEASURES PER SPECIFICATIONS.
2. CONTRACTOR TO MAINTAIN A CLEAN WORKSPACE AT THE END OF EACH DAY PER SPECIFICATIONS.
3. DURING DEMOLITION, KEEP ALL ROOF AND EXTERIOR WALL PENETRATIONS SEALED OFF FROM EXTERIOR.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. ANY DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR TO VERIFY CONDITION OF EXISTING CONSTRUCTION. DOCUMENT ANY EXISTING CONDITION THAT COULD BE MISCONSTRUED AS DAMAGED DURING NEW CONSTRUCTION. NOTIFY THE GOVERNMENT OF EXISTING CONDITIONS IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.
3. WHERE NEW CONSTRUCTION ABUTS EXISTING CONSTRUCTION AND APPEARS TO ALIGN FLUSH WITH EXISTING CONSTRUCTION, THE NEW CONSTRUCTION SHALL ALIGN AND BE FLUSH WITH NO VISIBLE JOINT, UNLESS THE MATERIALS OR SUBSTRATES DIFFER; THEN, AN EXPANSION JOINT SHALL BE INSTALLED.
4. DRAWINGS ARE NOT TO BE SCALED FOR ANY DIMENSIONS.
5. ALL WORK MUST COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, ANY REVISIONS REQUIRED DUE TO FIELD CONDITIONS MUST BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
6. COORDINATE NEW AND RELOCATE ANY EXISTING CONDUITS, ETC. TO ACCOMMODATE LIGHT FIXTURES, HVAC ACCESSORIES AND VARIOUS DEVICES.
7. PROVIDE ADDITIONAL WIRING, CONDUIT AND ACCESSORIES FOR DEVICES TO BE RELOCATED, AT NO ADDITIONAL COST.
8. ALL WALL MOUNTED DEVICES SHALL BE FULLY CONCEALED UNLESS NOTED OTHERWISE.
9. BIDS FOR CONSTRUCTION OF ALL WORK SHOWN ON THE PLANS ARE SOLICITED ON A LUMP SUM BASIS. NO SEPARATE PAYMENT OR ADJUSTMENTS TO THE LUMP SUM BID WILL BE MADE UNLESS SPECIFICALLY INDICATED ON THE PLANS AND IN THE PROPOSAL OR WHEN ADDITIONAL WORK IS AUTHORIZED IN WRITING BY THE ENGINEER.
10. THE CONTRACTOR SHALL HAVE A KNOWLEDGEABLE REPRESENTATIVE ON SITE AT ALL TIMES DURING WORK UNDER THIS CONTRACT. THIS REPRESENTATIVE SHALL HAVE ON SITE, HIS OWN COPY OF THE CONTRACT SPECIFICATIONS, DRAWINGS AND DMVA APPROVED SHOP DRAWINGS.
11. CONTRACTOR TO SCHEDULE AND COORDINATE ALL SHUT-DOWNS WITH ARMORY PERSONNEL.
12. CONTRACTOR TO FOLLOW SPECIFICATION FOR RECYCLING PROCEDURES.
13. ALL PUMPS LOCATED IN THE BOILER/MECHANICAL ROOM MUST BE ACCESSIBLE FROM THE GROUND WITHOUT THE USE OF A LADDER.

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PROJECT 2690023043
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SHEET
MVSB MECHANICAL DEMO PLAN

M3.0

MECHANICAL HVAC PLAN NOTES:

1. INSTALL NEW EXHAUST FANS EF-1, EF-2, EF-3, EF-4 & EF-5 THRU NEW ROOF PENETRATION PER MANUFACTURER'S RECOMMENDATIONS, SEE SCHEDULE ON SHEET M7.0. INSTALL NEW EXHAUST DUCT UP AND CONNECT TO NEW 24" TALL INSULATED ROOF CURB. COORDINATE WITH ROOFING CONTRACTOR TO INSTALL NEW CURB. COORDINATE WITH ELECTRICAL AND DDC CONTRACTOR TO RUN NEW WIRES THRU CURB. PROVIDE STARTUP SHEET WITH CLOSEOUT DOCUMENTS.
2. INSTALL NEW SUPPLY & RETURN DUCT TRANSITIONS TO NEW SUPPLY & RETURN DUCT AS SHOWN. ALL DUCT TO BE HARD, NO FLEXIBLE DUCT ALLOWED. INSTALL BALANCE DAMPERS ON EACH BRANCH. COORDINATE WITH CAGING CONTRACTOR FOR FINAL DUCT LOCATION TO AVOID ANY CAGING INTERFERENCE.
3. COORDINATE WITH GC TO INSTALL NEW 6"OD SUPPLY & RETURN AIR DUCT INTO NEW VAULT.
4. INSTALL NEW DEHUMIDIFICATION UNIT DHU-1 IN SUPPLY ROOM VAULTS PER MANUFACTURER'S RECOMMENDATIONS. UNITS TO BE SUSPENDED FROM VAULT CEILING ~12". INSTALL WITH PROPERLY SIZED DRAIN PAN. ROUTE CONDENSATE DRAIN TO NEW CONDENSATE PUMP, SECURE TO WALL. INSTALL DRAIN LINE FROM DRAIN PAN AND CONNECT TO UNIT CONDENSATE LINE.
5. INSTALL NEW CONDENSATE PUMP P-1 FOR NEW DEHUMIDIFICATION UNIT IN VAULT. MOUNT TO NEW SS SHELF. ROUTE NEW COPPER CONDENSATE PIPING THRU VAULT WALL ABOVE CEILING IN CORRIDOR E TO JANITOR'S CLOSET RM 135 PER PLANS. COORDINATE WITH ELECTRICAL TO CONNECT TO NEW ELECTRICAL CIRCUIT.
6. EXTEND & MODIFY EXISTING SUPPLY, RETURN & EXHAUST DUCT AS REQUIRED PER PLAN.
7. EXTEND & MODIFY EXISTING SUPPLY & RETURN DUCT TO CONNECT TO NEW ROOF TOP UNIT IN THIS LOCATION.
8. INSTALL NEW TERMINAL UNITS AS SHOWN, SEE SCHEDULE ON SHEET M7.0. EXTEND & MODIFY DUCT AS REQUIRED TO CONNECT TO NEW VAV BOX. COORDINATE WITH DDC CONTRACTOR TO BALANCE NEW VAV SYSTEM.
9. INSTALL NEW RETURN GRILLES & SUPPLY DUCT IN THIS LOCATION. COORDINATE WITH GC TO REMOVE BLOCK WALL AS REQUIRED TO INSTALL NEW DUCT.

GENERAL MECHANICAL NOTES:

1. FIRE CAULK ALL PENETRATIONS THRU MECHANICAL ROOM AND CORRIDOR WALLS.
2. PERFORM TEST AND BALANCE PER SPECIFICATIONS.
3. CONTRACTOR TO COORDINATE ALL NEW EQUIPMENT STARTUP AND TESTING.
4. PROVIDE ALL TRAINING PER SPECIFICATIONS.
5. ALL SUPPLY & RETURN PIPING TO BE INSULATED, SEE SPECIFICATIONS.
6. PROVIDE ACCESS TO ALL REQUIRED PIPING EQUIPMENT. INSTALL ACCESS PANELS AS REQUIRED.
7. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. ANY DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR TO VERIFY CONDITION OF EXISTING CONSTRUCTION. DOCUMENT ANY EXISTING CONDITION THAT COULD BE MISCONSTRUED AS DAMAGED DURING NEW CONSTRUCTION. NOTIFY THE GOVERNMENT OF EXISTING CONDITIONS IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.
3. WHERE NEW CONSTRUCTION ABUTS EXISTING CONSTRUCTION AND APPEARS TO ALIGN FLUSH WITH EXISTING CONSTRUCTION, THE NEW CONSTRUCTION SHALL ALIGN AND BE FLUSH WITH NO VISIBLE JOINT, UNLESS THE MATERIALS OR SUBSTRATES DIFFER; THEN, AN EXPANSION JOINT SHALL BE INSTALLED.
4. DRAWINGS ARE NOT TO BE SCALED FOR ANY DIMENSIONS.
5. ALL WORK MUST COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, ANY REVISIONS REQUIRED DUE TO FIELD CONDITIONS MUST BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
6. COORDINATE NEW AND RELOCATE ANY EXISTING CONDUITS, ETC. TO ACCOMMODATE LIGHT FIXTURES, HVAC ACCESSORIES AND VARIOUS DEVICES.
7. PROVIDE ADDITIONAL WIRING, CONDUIT AND ACCESSORIES FOR DEVICES TO BE RELOCATED. AT NO ADDITIONAL COST.
8. ALL WALL MOUNTED DEVICES SHALL BE FULLY CONCEALED UNLESS NOTED OTHERWISE.
9. BIDS FOR CONSTRUCTION OF ALL WORK SHOWN ON THE PLANS ARE SOLICITED ON A LUMP SUM BASIS. NO SEPARATE PAYMENT OR ADJUSTMENTS TO THE LUMP SUM BID WILL BE MADE UNLESS SPECIFICALLY INDICATED ON THE PLANS AND IN THE PROPOSAL OR WHEN ADDITIONAL WORK IS AUTHORIZED IN WRITING BY THE ENGINEER.
10. THE CONTRACTOR SHALL HAVE A KNOWLEDGEABLE REPRESENTATIVE ON SITE AT ALL TIMES DURING WORK UNDER THIS CONTRACT. THIS REPRESENTATIVE SHALL HAVE ON SITE, HIS OWN COPY OF THE CONTRACT SPECIFICATIONS, DRAWINGS AND DMVA APPROVED SHOP DRAWINGS.
11. CONTRACTOR TO SCHEDULE AND COORDINATE ALL SHUT-DOWNS WITH ARMORY PERSONNEL.
12. CONTRACTOR TO FOLLOW SPECIFICATION FOR RECYCLING PROCEDURES.
13. ALL PUMPS LOCATED IN THE BOILER/MECHANICAL ROOM MUST BE ACCESSIBLE FROM THE GROUND WITHOUT THE USE OF A LADDER.

LEGEND

- MECHANICAL DEMO
- EXISTING SUPPLY DUCT
- EXISTING RETURN DUCT
- EXISTING EXHAUST DUCT
- NEW SUPPLY DUCT
- NEW RETURN DUCT
- NEW EXHAUST DUCT
- NEW HOT WATER HEATING SUPPLY
- NEW HOT WATER HEATING RETURN
- EXISTING HOT WATER HEATING SUPPLY
- EXISTING HOT WATER HEATING RETURN
- EXST GAS PIPE
- GAS PIPE DEMO
- NEW GAS PIPE
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- R1 800 / — EXST/NEW RETURN AIR GRILLE
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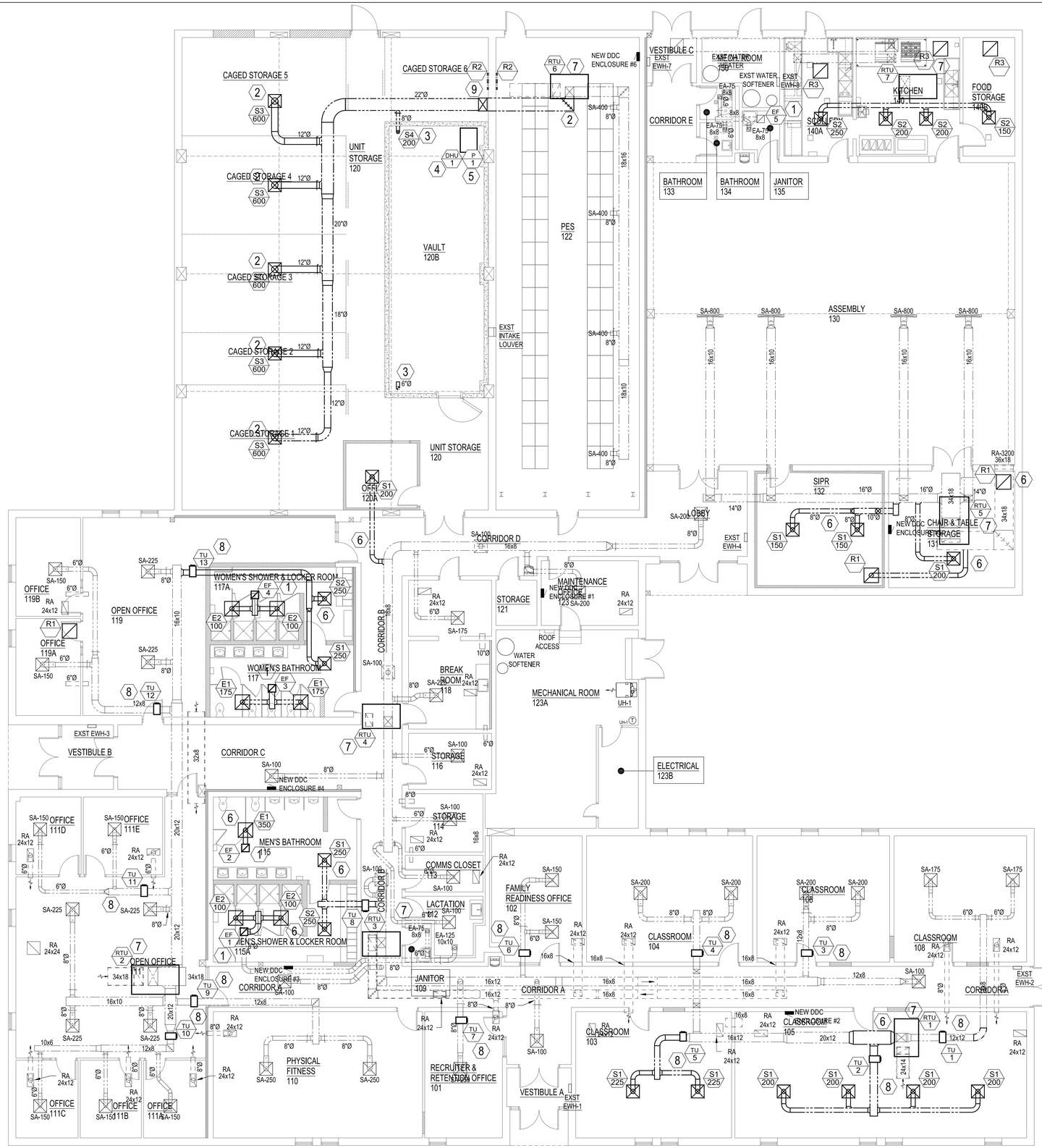
- / — EXST/NEW BALANCE DAMPER



1 M4.0 ARMORY MECHANICAL HVAC PLAN
SCALE: 1/8" = 1'-0"

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SHEET
MECHANICAL HVAC PLAN
M4.0

ROOF MECHANICAL HVAC PLAN NOTES:

1. INSTALL NEW ROOF TOP UNIT RTU-1,2,3,4,5,6 & 7 PER MANUFACTURER'S RECOMMENDATIONS, SEE SCHEDULE ON SHEET M7.0. INSTALL NEW 18" ROOF CURB W/ 1-1/2" INSULATION. INSTALL NEW RTU SUPPORT STEEL, SEE DETAIL ON SHEET M6.0. COORDINATE WITH ELECTRICAL & DDC CONTRACTORS TO ROUTE ALL NEW RTU CONDUIT THRU NEW ROOF CURB AND NOT IN SUPPLY OR RETURN AIR PLENUM. CONTRACTOR IS RESPONSIBLE TO COORDINATE RTU STARTUP, TEST AND CHECK WITH MANUFACTURER AND DMVA ENGINEERING. PROVIDE ON-SITE RTU OPERATION AND MAINTENANCE TRAINING FOR MAINTENANCE STAFF.
2. INSTALL NEW GAS PIPE FROM EXISTING GAS PIPE BRANCH TO NEW RTU-1,2,3,4,5,6 & 7 AS REQUIRED. INSTALL NEW GAS SHUTOFF VALVE, REGULATOR, UNION, AND 6" DIRT LEG. REFER TO DETAIL ON SHEET M6.0. PAINT ALL NEW & EXISTING GAS PIPING SAFETY YELLOW. INSTALL GAS PIPING PER NATIONAL FUEL GAS CODE. REROUTE GAS PIPING AS REQUIRED FOR FULL ACCESS TO ALL RTU SERVICE DOORS.
3. INSTALL NEW SUPPLY & RETURN DUCT TRANSITIONS TO SUPPLY & RETURN DUCT. MODIFY AND EXTEND DUCT AS REQUIRED.

LEGEND

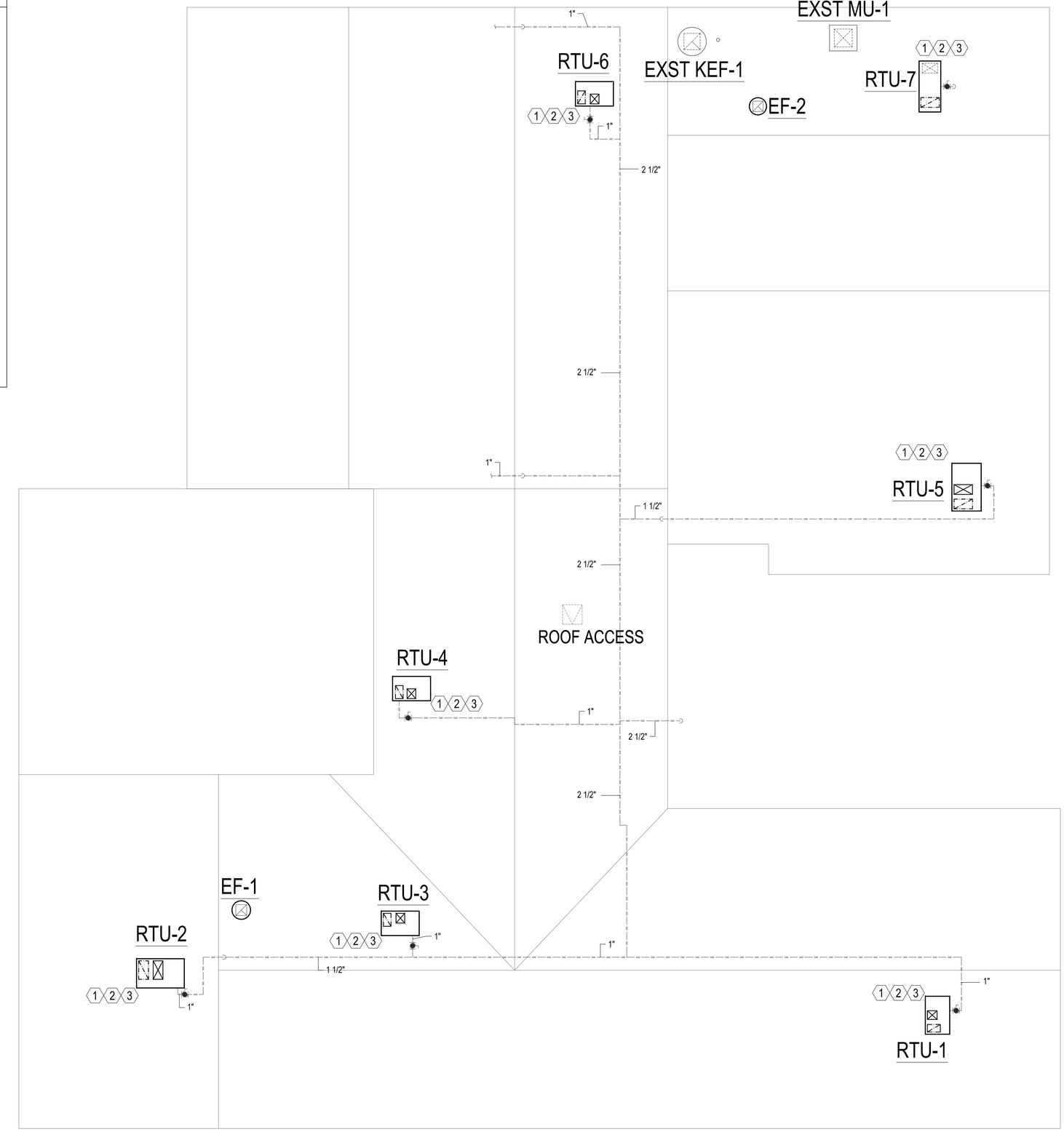
- MECHANICAL DEMO
- EXISTING SUPPLY DUCT
- EXISTING RETURN DUCT
- EXISTING EXHAUST DUCT
- NEW SUPPLY DUCT
- NEW RETURN DUCT
- NEW EXHAUST DUCT
- NEW HOT WATER HEATING SUPPLY
- NEW HOT WATER HEATING RETURN
- EXISTING HOT WATER HEATING SUPPLY
- EXISTING HOT WATER HEATING RETURN
- EXST GAS PIPE
- GAS PIPE DEMO
- NEW GAS PIPE
- EXST DDC COMMUNICATION WIRE
- R1 / 800 — EXST/NEW RETURN AIR GRILLE
- S1 / 800 — EXST/NEW SUPPLY AIR DIFFUSER
- E1 / 800 — EXST/NEW EXHAUST AIR DIFFUSER
- EXST/NEW BALANCE DAMPER

GENERAL MECHANICAL NOTES:

1. FIRE CAULK ALL PENETRATIONS THRU MECHANICAL ROOM AND CORRIDOR WALLS.
2. PERFORM TEST AND BALANCE PER SPECIFICATIONS.
3. CONTRACTOR TO COORDINATE ALL NEW EQUIPMENT STARTUP AND TESTING.
4. PROVIDE ALL TRAINING PER SPECIFICATIONS.
5. ALL SUPPLY & RETURN PIPING TO BE INSULATED, SEE SPECIFICATIONS.
6. PROVIDE ACCESS TO ALL REQUIRED PIPING EQUIPMENT. INSTALL ACCESS PANELS AS REQUIRED.
7. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS. ANY DISCREPANCIES BROUGHT TO THE OWNER'S ATTENTION.
2. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR TO VERIFY CONDITION OF EXISTING CONSTRUCTION. DOCUMENT ANY EXISTING CONDITION THAT COULD BE MISCONSTRUED AS DAMAGED DURING NEW CONSTRUCTION. NOTIFY THE GOVERNMENT OF EXISTING CONDITIONS IN WRITING PRIOR TO THE COMMENCEMENT OF WORK.
3. WHERE NEW CONSTRUCTION ABUTS EXISTING CONSTRUCTION AND APPEARS TO ALIGN FLUSH WITH EXISTING CONSTRUCTION, THE NEW CONSTRUCTION SHALL ALIGN AND BE FLUSH WITH NO VISIBLE JOINT, UNLESS THE MATERIALS OR SUBSTRATES DIFFER; THEN, AN EXPANSION JOINT SHALL BE INSTALLED.
4. DRAWINGS ARE NOT TO BE SCALED FOR ANY DIMENSIONS.
5. ALL WORK MUST COMPLY WITH THE DRAWINGS AND SPECIFICATIONS, ANY REVISIONS REQUIRED DUE TO FIELD CONDITIONS MUST BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
6. COORDINATE NEW AND RELOCATE ANY EXISTING CONDUITS, ETC. TO ACCOMMODATE LIGHT FIXTURES, HVAC ACCESSORIES AND VARIOUS DEVICES.
7. PROVIDE ADDITIONAL WIRING, CONDUIT AND ACCESSORIES FOR DEVICES TO BE RELOCATED. AT NO ADDITIONAL COST.
8. ALL WALL MOUNTED DEVICES SHALL BE FULLY CONCEALED UNLESS NOTED OTHERWISE.
9. BIDS FOR CONSTRUCTION OF ALL WORK SHOWN ON THE PLANS ARE SOLICITED ON A LUMP SUM BASIS. NO SEPARATE PAYMENT OR ADJUSTMENTS TO THE LUMP SUM BID WILL BE MADE UNLESS SPECIFICALLY INDICATED ON THE PLANS AND IN THE PROPOSAL OR WHEN ADDITIONAL WORK IS AUTHORIZED IN WRITING BY THE ENGINEER.
10. THE CONTRACTOR SHALL HAVE A KNOWLEDGEABLE REPRESENTATIVE ON SITE AT ALL TIMES DURING WORK UNDER THIS CONTRACT. THIS REPRESENTATIVE SHALL HAVE ON SITE, HIS OWN COPY OF THE CONTRACT SPECIFICATIONS, DRAWINGS AND DMVA APPROVED SHOP DRAWINGS.
11. CONTRACTOR TO SCHEDULE AND COORDINATE ALL SHUT-DOWNS WITH ARMORY PERSONNEL.
12. CONTRACTOR TO FOLLOW SPECIFICATION FOR RECYCLING PROCEDURES.
13. ALL PUMPS LOCATED IN THE BOILER/MECHANICAL ROOM MUST BE ACCESSIBLE FROM THE GROUND WITHOUT THE USE OF A LADDER.



1 M5.0 ROOF MECHANICAL HVAC PLAN
SCALE: 1/8" = 1'-0"

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DESIGN AND CONSTRUCTION DIVISION
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RENOVATE ARMORY - WATERFORD

DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
2650 WATKINS LAKE RD., WATERFORD TWP, MI 48328

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DRAWN	BOK
CHECKED	KMM
APPROVED	BAB

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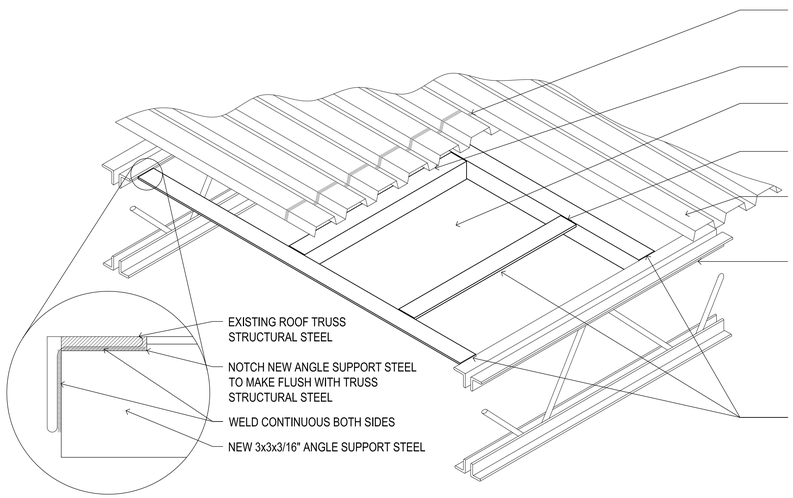
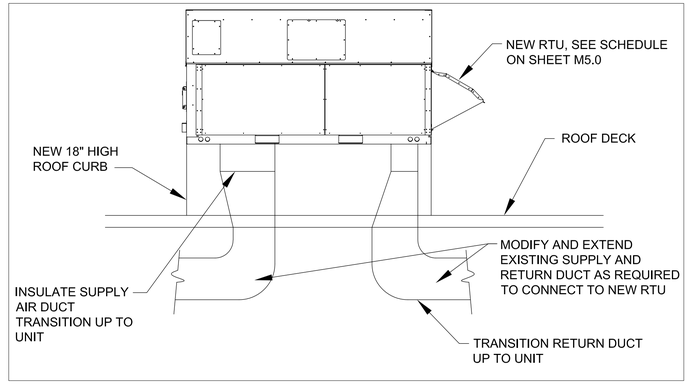
SHEET
MECHANICAL ROOF DEMO PLAN

M5.0



1 M6.0 RTU SUPPORT STEEL DETAIL
SCALE: N.T.S.



2 M6.0 RTU ELEVATION DETAIL
SCALE: NO SCALE

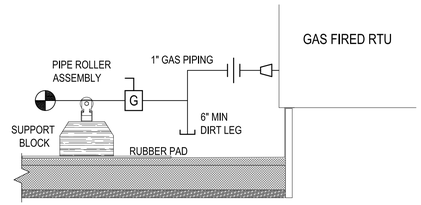
1. COORDINATE WITH RTU MANUFACTURER AND ROOFING CONTRACTOR TO INSTALL NEW CURB AS REQUIRED.
2. COORDINATE WITH ELECTRICAL & CURB MANUFACTURER TO ALLOW SPACE FOR NEW ELECTRICAL CIRCUIT AND DDC CONTROL CONDUIT UP TO UNIT. ALL CONDUITS TO BE INSIDE CURB. NO EXTERIOR PENETRATIONS ALLOWED.
3. INSTALL NEW DUCT TRANSITIONS TO EACH NEW UNIT AS REQUIRED. MODIFY EXISTING DUCT AS REQUIRED TO INSTALL NEW TRANSITIONS.

RTU GAS PIPING DETAIL NOTES:

1. DELETE REDUCERS AT UNIT IF UNIT CONNECTION IS SAME AS PIPE SIZE.
2. INSTALL MINIMUM 6" DIRT LEG PIPED PER DETAIL.
3. INSTALL GAS PIPE SUPPORT W/ PIPE ROLLER ASSEMBLY. INSTALL ROD RISER AS REQUIRED.
4. INSTALL RUBBER PAD UNDER EACH PIPE SUPPORT BLOCK.
5. PAINT ALL NEW GAS PIPE SAFETY YELLOW.

LEGEND

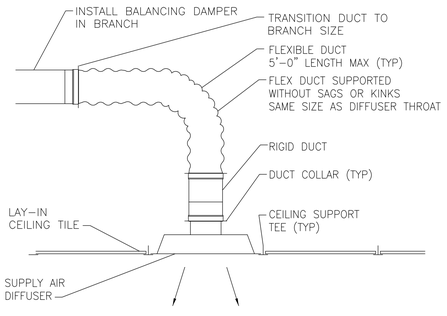
- NEUTRALIZING KIT
- SHUTOFF VALVE
- UNION
- REDUCER AS REQUIRED
- PUMP
- PRESSURE GAUGE
- PRESSURE RELIEF/SAFETY VALVE
- MANUAL AIR VENT @ HIGH POINT
- TEMPERATURE GAUGE
- TEMP SENSOR BY DDC CONTRACTOR
- CALIBRATED BALANCING VALVE
- GAS VALVE
- END CAP
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- ACTUATOR BY DDC CONTRACTOR
- DRAIN VALVE W/ CAP
- CHECK VALVE
- STRAINER w/ BLOW OFF VALVE
- POINT OF NEW CONNECTION
- EXISTING EQPM & PIPING
- NEW PIPING
- NEW EQUIPMENT



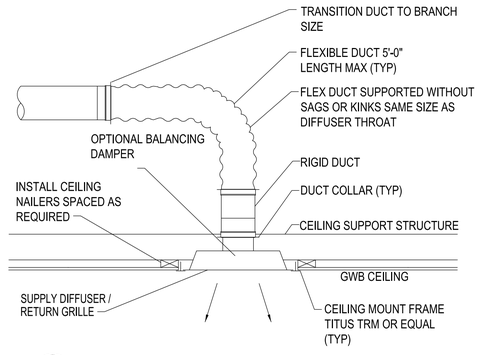
3 M6.0 RTU GAS PIPING DETAIL
SCALE: NO SCALE

7 M6.0 RTU-6 ELEVATION DETAIL
SCALE: NO SCALE

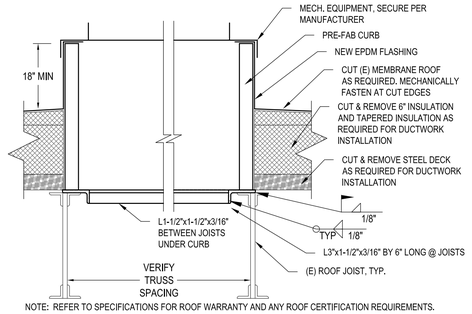
1. COORDINATE WITH RTU MANUFACTURER AND ROOFING CONTRACTOR TO INSTALL NEW CURB AS REQUIRED.
2. COORDINATE WITH ELECTRICAL & CURB MANUFACTURER TO ALLOW SPACE FOR NEW ELECTRICAL CIRCUIT AND DDC CONTROL CONDUIT UP TO UNIT. ALL CONDUITS TO BE INSIDE CURB. NO EXTERIOR PENETRATIONS ALLOWED.
3. INSTALL NEW DUCT TRANSITIONS TO EACH NEW UNIT AS REQUIRED. MODIFY EXISTING DUCT AS REQUIRED TO INSTALL NEW TRANSITIONS.



4 M6.0 SUPPLY DIFFUSER S1 DETAIL
SCALE: NO SCALE



5 M6.0 SUPPLY DIFFUSER S2 / RETURN GRILLE R2 DETAIL
SCALE: NO SCALE



NOTE: REFER TO SPECIFICATIONS FOR ROOF WARRANTY AND ANY ROOF CERTIFICATION REQUIREMENTS.

6 M6.0 EXHAUST FAN ROOF CURB DETAIL
SCALE: NO SCALE

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SHEET
MECHANICAL DETAILS
M6.0

ROOF TOP UNIT SCHEDULE

MARK	BASIS OF DESIGN	E.S.P.	T.S.P.	FAN CFM	FAN OA CFM	VOLTAGE	MCA	MOP	COMPRESSOR QTY	COMPRESSOR TYPE	COMPRESSOR VOLTAGE	COOLING COIL TYPE	EAT DB (F)	EAT WB (F)	LAT DB (F)	LAT WB (F)	FACE VEL.	FACE AREA	MAX FIN/IN	MBH	HEATING CAPACITY EDB(F)	LDB(F)	TOTAL MBH (OUTPUT)	GAS TYPE	STAGES	TURN-DOWN	REMARKS
RTU-1	AAON RNA-008	1.25"	2.05"	2000	1070	208/3/60	47	70	1	D. SCROLL	208V-3Ø	DX	82.5	68.2	55.2	53.5	235.1 fpm	8.5 FT2	14	91.0	32.6	88.5	121.5	NAT.	4	4.3:1	SEE NOTES BELOW, **SS HEAT EXCHANGER**
RTU-2	AAON RNA-009	1.50"	2.43"	3350	410	208/3/60	49	60	2	D. SCROLL	208V-3Ø	DX	76.7	63.5	57.2	54.1	229.7 fpm	14.6 FT2	14	96.0	61.4	104.8	158.0	NAT.	4	4.3:1	SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER
RTU-3	AAON RQA-005	1.25"	2.49"	1975	298	208/3/60	33	50	1	D. SCROLL	208V-3Ø	DX	77.1	63.8	55.9	53.9	376.2 fpm	5.3 FT2	14	60.7	59.4	97.1	81.0	NAT.	4	4.3:1	SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER
RTU-4	AAON RQA-005	1.00"	2.06"	1700	228	208/3/60	33	50	1	D. SCROLL	208V-3Ø	DX	76.9	63.6	53.6	52.0	323.8 fpm	5.3 FT2	14	59.0	60.6	104.4	81.0	NAT.	4	4.3:1	SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER
RTU-5	AAON RNA-011	1.50"	2.58"	3700	870	208/3/60	52	70	2	D. SCROLL	208V-3Ø	DX	78.3	64.8	56.0	54.0	253.7 fpm	14.6 FT2	14	123.5	53.5	112.4	236.9	NAT.	4	4.3:1	SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER
RTU-6	AAON RNA-009	1.50"	2.70"	4800	562	208/3/60	32	50	HEATING ONLY												61.8	107.2	236.9	NAT.	4	4.3:1	24" CURB, SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER
RTU-7	AAON RQA-002	1.25"	1.88"	800	152	208/3/60	15	20	1	TWO STEP	208V-3Ø	DX	77.7	64.3	56.9	54.4	152.4 fpm	5.3 FT2	14	24.6	56.7	112.5	48.6	NAT.	4	4.3:1	SEE NOTES BELOW, ALUMINIZED HEAT EXCHANGER

NOTES:
1. RTU TO BE DDC READY
2. RTU CONTROLLER TO BE INSTALLED BY DDC CONTRACTOR
3. RTU TO INCLUDE FACTORY INSTALLED DUCT SMOKE DETECTOR.
4. RTU TO INCLUDE FACTORY MOUNTED GFCI CONVIENENCE RECEPTACLE
5. PROVIDE NEW 18" ROOF CURB WHERE SHOWN. PROVIDE DUCT DROPS AND/OR PARTITIONS WHERE NEEDED
6. PROVIDE 2" 30% EFFICIENT FILTERS
7. PROVIDE INSULATED SIDE WALLS FOR ALL UNITS
8. PROVIDE R-454B REFRIGERANT FOR UNITS WITH COOLING
9. PROVIDE PREMIUM EFFICIENCY MOTORS
10. PROVIDE DIGITAL SCROLL COMPRESSOR
11. PROVIDE ECONOMIZER
12. PROVIDE FACTORY MOUNTED VFD DRIVE
13. UNIT TO HAVE HINGE DOORS & TWIST HANDLE ENTRY
14. FACTORY INSTALLED NON-FUSED DISCONNECT

EXHAUST FAN SCHEDULE

MARK	LOCATION	SERVING	SELECTION BASED ON 0.375 SP MFR	MODEL	CFM	RPM	MOTOR PHASE	VOLTAGE	HERTZ	HP	CURB SIZE	ROOF OPENING	NOTES
EF-1	ROOF	MENS LATRINE	GREENHECK	G-090	350	1300	1	120	60	1/25	17 x 17	13.5 x 13.5	DIRECT DRIVE, NOTES 1,2,3,4,5
EF-2	ROOF	MENS SHOWER ROOM	GREENHECK	G-090	400	1550	1	120	60	1/15	17 x 17	13.5 x 13.5	DIRECT DRIVE, NOTES 1,2,3,4,5
EF-3	ROOF	WOMENS LATRINE	GREENHECK	G-090	350	1300	1	120	60	1/25	17 x 17	13.5 x 13.5	DIRECT DRIVE, NOTES 1,2,3,4,5
EF-4	ROOF	WOMENS SHOWER ROOM	GREENHECK	G-080	200	1550	1	120	60	1/20	17 x 17	13.5 x 13.5	DIRECT DRIVE, NOTES 1,2,3,4,5
EF-5	ROOF	KITCHEN AREA LATRINES	GREENHECK	G-080	190	1550	1	120	60	1/20	17 x 17	13.5 x 13.5	DIRECT DRIVE, NOTES 1,2,3,4,5

NOTES: 1. NEW 24" TALL ROOF CURB
2. VARI-SPEED FAN CONTROLLER
3. NEW BACKDRAFT DAMPER
4. NEMA RATED DISCONNECT SWITCH
5. BIRD SCREEN

PUMP SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	GPH	HEAD FT	HP	ELECTRICAL VOLTS	PH	HZ	NOTES
P-1	LITTLE GIANT - VCMA-20ULST	DEHUMIDIFIER CONDESATE	48	10	1/30	115	1	60	

TERMINAL UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	UNIT SIZE	MAX (PRIMARY CFM)	MIN (PRIMARY CFM)	INLET SP (IN. WG)	DOWNSTREAM SP (IN. WG)	MIN OPER PD (IN.WG)	NOTES
TU-1	PRICE	SDV	6	350	140	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-2	PRICE	SDV	10	800	320	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-3	PRICE	SDV	8	400	160	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-4	PRICE	SDV	8	400	160	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-5	PRICE	SDV	8	450	180	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-6	PRICE	SDV	5	150	60	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-7	PRICE	SDV	6	250	100	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-8	PRICE	SDV	8	500	200	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-9	PRICE	SDV	8	500	200	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-10	PRICE	SDV	8	450	180	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-11	PRICE	SDV	6	300	120	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-12	PRICE	SDV	6	300	120	0.52	0.25	0.44	SEE NOTES 1 & 2
TU-13	PRICE	SDV	8	500	200	0.52	0.25	0.44	SEE NOTES 1 & 2

NOTES: 1. VAV CONTROLLER/ACTUATOR PROVIDED BY DDC CONTRACTOR.
2. TRANSITION DUCT AS REQUIRED TO CONNECT TO NEW TERMINAL UNIT.

DEHUMIDIFIER SCHEDULE

MARK	SERVING	MFR	MODEL	CFM	WATER REMOVAL	ELECTRICAL DATA WATTS	AMPS	VOLTAGE	PH	HZ	NOTES
DHU-1	SUPPLY VAULT	QUEST	MODEL 70	150	70 Pints/Day	680	5.1A	115V	1	60	PROVIDE W/ OPTIONAL MERV 13 FILTER & HANG KIT

GRILLES, REGISTERS, DIFFUSERS, HOODS & DAMPERS

Mark No.	Type	Unit Size	Connection Size	Design CFM	Mounting	Pattern	Throw @ 50 fpm	P.D.	Material	Finish	Remarks
S1	SUPPLY DIFFUSER	24"x24"	SEE PLANS	SEE PLANS	LAY-IN	4-WAY	10'	.03	STEEL	WHITE	TITUS TMS, DAMPER IN BRANCH
S2	SUPPLY DIFFUSER	12"x12"	SEE PLANS	SEE PLANS	DRYWALL W/TRIM FRAME	4-WAY	10'	.03	ALUM.	WHITE	TITUS TMS, W/ OPTIONAL DAMPER & TRM FRAME
S3	SUPPLY DIFFUSER	22" OD	12"	SEE PLANS	DUCT MOUNTED	ROUND	16'	.03	STEEL	WHITE	TITUS TMR, DAMPER IN BRANCH, HARD DUCT - NO FLEX
S4	SUPPLY DIFFUSER	11" OD	6"	SEE PLANS	DUCT MOUNTED	ROUND	16'	.03	STEEL	WHITE	TITUS TMR, DAMPER IN BRANCH, HARD DUCT - NO FLEX
R1	CEILING RETURN	24"x24"	SEE PLANS	SEE PLANS	LAY-IN	-------	-------	-------	ALUM.	WHITE	TITUS 50F W/ SQUARE TO ROUND ADAPTER
R2	RETURN GRILLE	16"x32"	-	SEE PLANS	CMU MOUNTED	-------	-------	-------	ALUM.	WHITE	TITUS 350RL
R3	CEILING RETURN	12"x12"	SEE PLANS	SEE PLANS	DRYWALL W/TRIM FRAME	-------	-------	-------	ALUM.	WHITE	TITUS 50F W/ SQUARE TO ROUND ADAPTER, TRM FRAME & OPTIONAL DAMPER
E1	CEILING EXHAUST	24"x24"	SEE PLANS	SEE PLANS	LAY-IN	-------	-------	-------	ALUM.	WHITE	TITUS 50F W/ ADAPTER & DAMPER TITUS AG-15-AA
E2	CEILING EXHAUST	12"x12"	SEE PLANS	SEE PLANS	DRYWALL W/TRIM FRAME	-------	-------	-------	ALUM.	WHITE	TITUS 50F W/ SQUARE TO ROUND ADAPTER, TRM FRAME & DAMPER TITUS AG-15-AA

NOTE: INSTALL ADAPTERS ON ALL GRILLES, DIFFUSER & DAMPERS AS REQUIRED TO CONNECT TO DUCT

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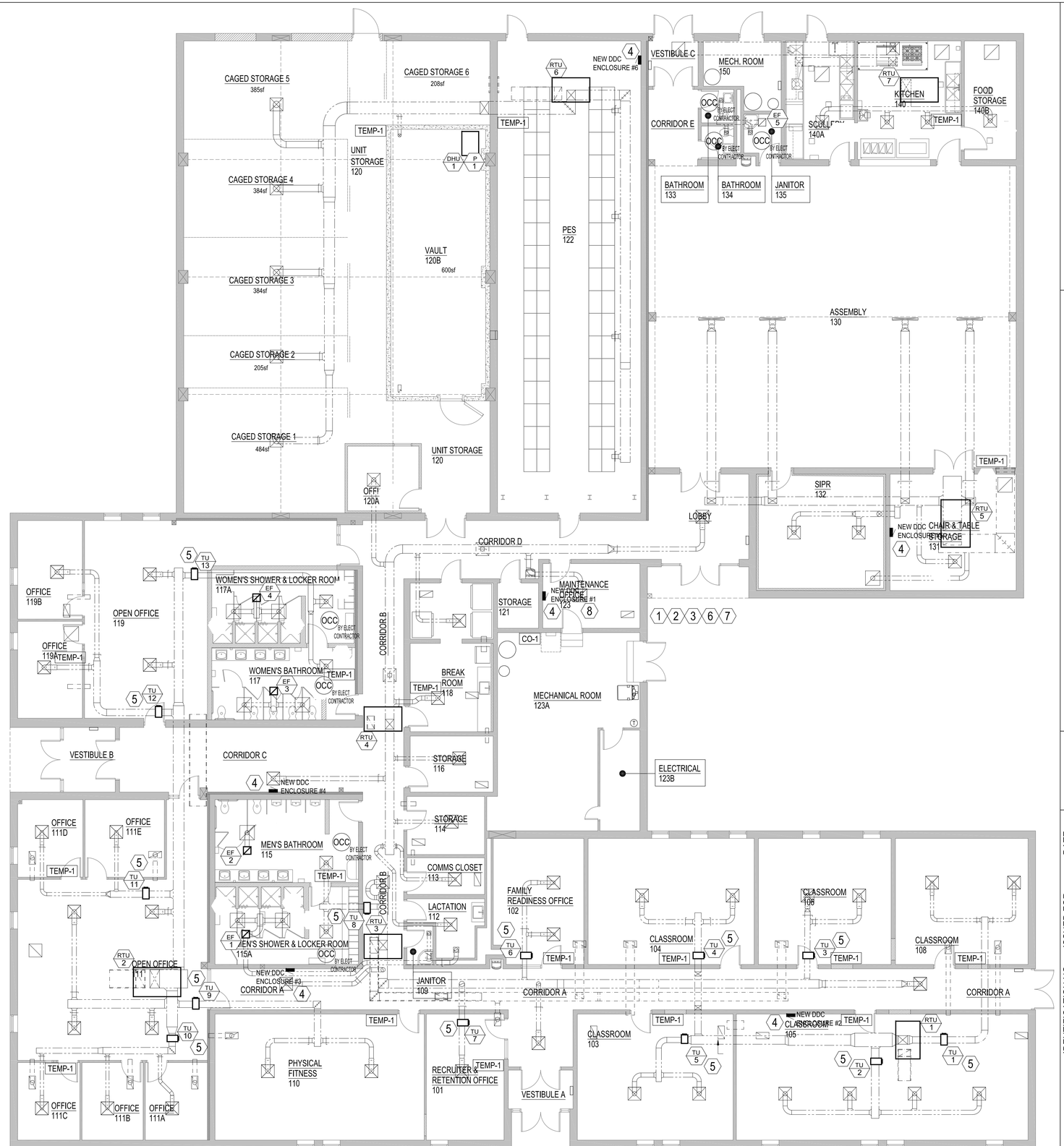
SHEET
MECHANICAL SCHEDULES
M7.0

ENERGY MANAGEMENT PLAN NOTES:

1. DDC CONTRACTOR TO REMOVE ALL DDC EQUIPMENT NO LONGER UTILIZED WITH NEW EQUIPMENT ON THIS CONTRACT. PULL OUT ALL SENSORS, SENSOR WIRES, CONTROL WIRE AND ANY ABANDONED DDC EQUIPMENT.
2. CONTRACTOR TO PROVIDE NEW DDC LONWORKS BUILDING MANAGEMENT SYSTEM WHICH WILL INCLUDE ALL NEW MECHANICAL EQUIPMENT ON THIS PROJECT. PROVIDE NEW FRONT END INTERFACE & GRAPHICS ON A NEW DDC WORKSTATION(LAPTOP). REFER TO SPECIFICATIONS FOR ALL SOFTWARE & HARDWARE REQUIREMENTS.
3. REFER DDC SCHEMATIC ON SHEET M9.0 FOR ADDITIONAL DDC POINTS & EQUIPMENT. REFER TO SHEET M4.0 & M5.0 FOR ALL MECHANICAL ROOM EQUIPMENT LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR ON FOR FINAL EQUIPMENT LOCATIONS. COORDINATE WITH ELECTRICAL CONTRACTOR TO INSTALL MECHANICAL EQUIPMENT RELAYS & SENSORS AS REQUIRED. ALL DDC POINTS TO BE LOCATED ON AS-BUILT CONTROL DRAWINGS. SUBMIT WITH FINAL CLOSEOUT DOCUMENTS. INCLUDE A COPY IN DDC ENCLOSURE.
4. INSTALL NEW DDC ENCLOSURE IN THIS LOCATION, SIZE APPROPRIATELY. REFER TO DDC EQUIPMENT ELEVATION DETAIL ON ENERGY MANAGEMENT SHEET M9.0.
5. INSTALL NEW VAV CONTROLLERS VAV-1 THRU VAV-13 AS SHOWN ON PLANS. COORDINATE WITH MECHANICAL CONTRACTOR ON FINAL TERMINAL UNIT LOCATIONS.
6. CONTRACTOR TO DAISY CHAIN IN SERIES ALL DDC PROGRAMMABLE CONTROLLERS INCLUDING ALL DDC-1 AND VAV-1 CONTROLLERS WITH LONBUS COMMUNICATION WIRE . SEE SPECIFICATIONS FOR CORRECT WIRE TYPE.
7. INSTALL NEW TEMP SENSORS AS SHOWN. CONTRACTOR MAY USE EXISTING SURFACE MOUNTED BOX & CONDUIT FOR NEW TEMP SENSORS.
8. INSTALL CO MONITOR STROBE AND SIREN ON THIS DDC ENCLOSURE ONLY.

GENERAL ENERGY MANAGEMENT NOTES:

1. PRIOR TO ANY INSTALLATION OF DDC EQUIPMENT OR DDC WIRING, CONTRACTOR SHALL REQUEST A DDC PRECONSTRUCTION MEETING WITH DMVA ENGINEERING TO DISCUSS CONSTRUCTION SCHEDULING, PRECISE DDC EQUIPMENT LOCATIONS, STARTUPS, LABELING PROCEDURES, AND COMMISSIONING.
2. ALL DDC PROGRAMMING / SOURCE CODE INCLUDING ANY CUSTOM USER DEFINED DEVICES OR UDD ALONG WITH ANY SOFTWARE NECESSARY TO RUN THE SYSTEM TO BE TURNED OVER TO DMVA DDC TECHNICIAN UPON PROJECT COMPLETION.
3. DDC CONTRACTOR TO INCLUDE 8 HOURS OF DDC COMMISSIONING WITH IN-HOUSE DDC / MECHANICAL TECHNICIAN.
4. ROUTE ALL DDC CONTROL WIRES PER SCHEDULE AND SPECIFICATIONS.
5. REFER TO DDC SCHEMATIC THIS SHEET FOR ADDITIONAL END DEVICES NOT SHOWN ON PLANS.
6. CONTRACTOR TO INSTALL A MINIMUM 3/4" RIGID METAL CONDUIT FOR ALL DDC WIRING. INSTALL MINIMUM 1/2" FLEXIBLE METAL CONDUIT TO ALL VIBRATING EQUIPMENT, 6' MAX LENGTH. CONTRACTOR IS ALLOWED TO INSTALL J-HOOKS 4' O.C. FOR DDC CONTROL WIRING ONLY IN AREAS ABOVE A SUSPENDED CEILING. ALL CONDUIT IN WALLS TO BE STUBBED INTO CEILING SPACE.
7. CONTRACTOR SHALL PULL ALL DDC WIRING AS SHOWN ON DDC FLOOR PLAN AND DDC EQUIPMENT SCHEDULE. ALL WIRES SHALL BE LABELED WITH A LABEL MAKER APPROVED BY DMVA ENGINEERING. NO HAND WRITTEN LABELS WILL BE ALLOWED. ALL LABELS LOCATED IN ENCLOSURE ENC-1 & 2 MUST BE PLACED 6" DOWN ON WIRE ONCE INSIDE THE ENCLOSURE, DO NOT LOCATE LABEL AT THE END OF WIRE.
8. ALL INPUT/OUTPUT CONTROL WIRES TO BE LON RATED, SEE SPECIFICATIONS.
9. DDC SEQUENCE AND PROGRAMMING WILL BE COMPLETED BY A DMVA APPROVED SUBCONTRACTOR, SEE SPECIFICATIONS.
10. INSTALL TEMPERATURE SENSORS, TEMP-1, 60" AFF.
11. INSTALL OCCUPANCY SENSORS, OCC-1, 10" FROM CEILING.
12. INSTALL ALL OAT-1 ON NORTH FACING EXTERIOR WALL, MAKE WEATHERTIGHT
13. LABEL ALL DDC EQUIPMENT TO CORRESPOND TO DDC SCHEMATIC PER SPECIFICATIONS
14. PROVIDE AND INSTALL ALL END DEVICES SHOWN ON PLANS, DDC SCHEMATIC AND DETAILS.
15. COORDINATE WITH ELECTRICAL TO INSTALL NEW RELAYS. ELECTRICAL CONTRACTOR WILL INSTALL J-BOX FOR NEW RELAYS TO MOUNT ON.
16. RELAYS FOR EXHAUST FANS O BE LOCATED IN ELECTRICAL CLOSET. COORDINATE WITH ELECTRICAL.



1 M8.0 ARMORY ENERGY MANAGEMENT PLAN
SCALE: 1/8" = 1'-0"

STATE OF MICHIGAN
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PROCUREMENT AND REAL ESTATE SERVICES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
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DESIGNED	BOK
DRAWN	BOK
CHECKED	KMM
APPROVED	BAB

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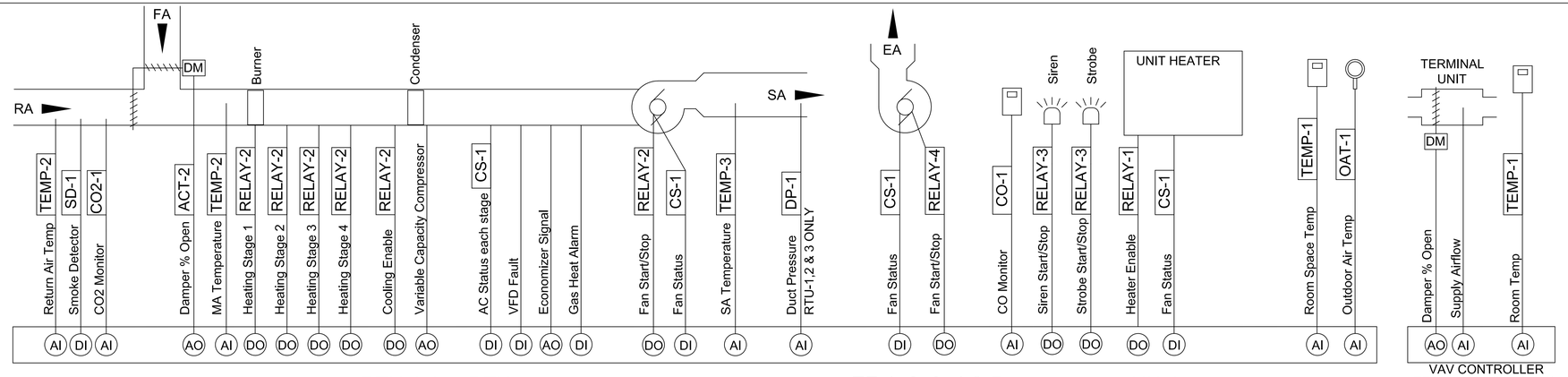
SHEET
MECHANICAL DDC PLAN
M8.0

DDC SCHEMATIC NOTES:

1. INSTALL ADDITIONAL PROGRAMMABLE CONTROLLERS & TRANSFORMERS AS REQUIRED FOR ALL MECHANICAL EQUIPMENT. PROVIDE PRELIMINARY AS-BUILT CONTROL DRAWINGS PRIOR TO CONSTRUCTION.
2. REFER TO ENERGY MANAGEMENT PLAN FOR ALL DDC SENSOR AND EQUIPMENT LOCATIONS.
3. REFER TO ENERGY MANAGEMENT SHEETS FOR ADDITIONAL BMS SEQUENCE OF OPERATIONS.
4. GAS FIRED ROOF TOP UNITS ARE THE SAME CONTROLS AS WATER COIL ROOF TOP UNITS EXCEPT FOR BURNER CONTROLS IN LIEU OF HOT WATER HEATING COIL ACTUATOR, SEE SCHEMATIC.
5. INDIVIDUAL CURRENT STATUS RELAY NOT REQUIRED IF CONTROL RELAY PROVIDES CURRENT STATUS.
6. LOCAL OCCUPANCY SWITCHES NOT CONNECTED TO BMS WILL NOT REQUIRE CURRENT STATUS SENSOR FOR EQUIPMENT IT CONTROLS.
7. ALL EQUIPMENT RUN OFF OCCUPANCY SWITCHES CONNECTED TO BMS WILL REQUIRE CURRENT STATUS SENSOR FOR EQUIPMENT IT CONTROLS.
8. INSTALL ADDITIONAL CONTROL RELAYS, CURRENT SENORS OR OTHER DDC EQUIPMENT AS REQUIRED FOR MULTI STAGE EQUIPMENT REFER TO MECHANICAL SHEETS FOR MORE DETAIL.



1 / M9.0 DDC SCHEMATIC
SCALE: NO SCALE

DDC EQUIPMENT SCHEDULE

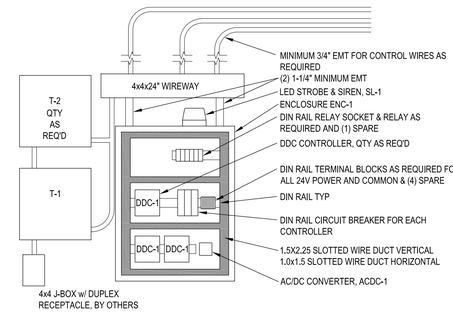
MARK	LABEL	DESCRIPTION	BASIS OF DESIGN	SERVICE	LOCATION	QTY / WIRE SIZE TO EQUIPMENT	NOTES
ENC-1	ENC-1	DDC ENCLOSURE	KELE - RET2620 or RET3626	DDC EQUIPMENT ENCLOSURE	VARIES	-	NO SUBSTITUTIONS, STANDARD BROWN
DDC-1	DDC-1	PROGRAMMABLE CONTROLLER	CIRCON - UHC-400 or SCC-410 w/ UIO-184 MODULE	DDC	DDC ENCLOSURE	-	NO SUBSTITUTIONS, NOT IN MECHANICAL EQUIPMENT
DDC-2	CATNET	CATNET INTERFACE W/ LON CARD	CATNET - CLI-FT	ENC-1	ONE PER BUILDING, ENC-1	-	NO SUBSTITUTIONS
DDC-3	WEBSERVER	CATNET WEBSERVER	CATNET - HMI CH-2	ENC-1	ONE PER BUILDING, ENC-1	-	NO SUBSTITUTIONS
DDC-4	MODBUS	INTERFACE MODBUS	CATNET - CMI-485	ENC-1	DDC ENCLOSURE	-	NO SUBSTITUTIONS
T-1	T-1-ENC#	TRANSFORMER	RIB - PSH500A-LVC or PSH300A-LVC	CONTROLLERS / END DEVICES	NEXT TO DDC ENCLOSURE ENC-1	2 CONDUCTOR / 18 GA,	100VA FOR EACH SCC-410 or UIO-184 CONTROLLER,
T-2	T-2-ENC#	VAV TRANSFORMER	RIB - PSH500A-LVC or PSH300A-LVC	VAV CONTROLLERS	VARIES	2 CONDUCTOR / 18 GA,	5 OR LESS VAV CONTROLLERS PER 100VA CIRCUIT
TEMP-1	TEMP-1-AREA	ROOM TEMPERATURE SENSOR	ACI - A/AN-R2	ROOM TEMP	SEE LAYOUT, WALL MOUNTED 60" AFF	2 CONDUCTOR / 18 GA, SHIELDED	18 INCHES, TEMP, AVERAGING
TEMP-2	TEMP-2-AHU# or RTU#	DUCT TEMPERATURE SENSOR	ACI - A/AN-D-12"-GD	DUCT AIR TEMP	SUPPLY & RETURN DUCT	2 CONDUCTOR / 18 GA, SHIELDED	18 INCHES, TEMP, AVERAGING
TEMP-3	TEMP-3-AHU# or RTU#	PIPE TEMPERATURE SENSOR	SAP - SAP-10K-3-S	BOILER WATER TEMP	BOILER PIPING	2 CONDUCTOR / 18 GA, SHIELDED	
TEMP-4	TEMP-3-AHU# or RTU#	PIPE TEMPERATURE SENSOR	ACI - A/AN-IM-##-GD, MATCH THERMOWELL LENGTH	BOILER WATER TEMP	BOILER PIPING THERMOWELL	2 CONDUCTOR / 18 GA, SHILEDED	INCLUDE ACI - A/M1", M2.5" or M4" BASED ON PIPE SIZE
HD-1	HD-1-AHU# or RTU#	DUCT HUMIDITY SENSOR	VERIS - HD2XVSX w/ (1) SPARE SENSOR HS2xxx	HUMIDITY	RETURN DUCT BEFORE FRESH AIR	2 CONDUCTOR / 18 GA, SHIELDED, 2 CONDUCTOR / 18 GA, DC PWR, USE 16 GA, ON RUNS OVER 150FT	
OAT-1	OAT-1	OUTDOOR AIR TEMP SENSOR	ACI - A/AN-O-EH	OAT	NORTH FACING BLDG EXTERIOR	2 CONDUCTOR / 18 GA, SHIELDED	
FR-1	FR-1	FREEZESTAT	ACI - FS-4 / ACI - FS-6, SEE SPECS	RTU/AHU	DUCT AFTER HEATING COIL	2 CONDUCTOR / 18 GA,	MANUAL RESET
CS-1	CS-1-(DEVICE NAME)	CURRENT SENSOR	ACI - A/MSCS	AHU/PUMPS/EXHAUST FANS	VARIES	2 CONDUCTOR / 18 GA,	
CO2-1	CO2-1-AHU# OR RTU#	DUCT CO2 SENSOR	ACI - A/CO2-DUCT	CO2	RETURN DUCT	4 CONDUCTOR / 18 GA, SHIELDED	
SD-1	SD-1	SMOKE DETECTOR	AIR PRODUCTS & CONTROLS - SL-2000-P	AHU/RTU	RETURN DUCT BEFORE FRESH AIR	2 CONDUCTOR / 18 GA, & 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
DIN RAIL	-	DIN RAIL	KELI - BAM-1000	MECHANICAL EQUIP	DDC ENCLOSURE / RTU	-	
WIRE DUCT	-	SLOTTED WIRE DUCT	IBOCO - T1E-1522W & T1E-1015W	MECHANICAL EQUIP	DDC ENCLOSURE	-	
RELAY-1	(VARIES ON DEVICE)	RELAY	RIB - RIBU1S or RIBU1C	MECHANICAL EQUIP	VARIES	2 CONDUCTOR / 18 GA,	RIBU1C FOR STATUS ONLY
RELAY-2	(VARIES ON DEVICE)	DIN RAIL RELAY SPDT	VERIS - VMD1B-F24A w/ RELAY SOCKET VERIS - VBD1B-F	COMMAND RELAYS	VARIES	2 CONDUCTOR / 18 GA,	-
RELAY-3	(VARIES ON DEVICE)	DIN RAIL RELAY SPDT	VERIS - VMD4B-C w/ RELAY SOCKET VERIS - VBD4B-C	SAFETY RELAYS & FREEZESTAT	DDC ENCLOSURE	2 CONDUCTOR / 18 GA,	-
RELAY-4	(VARIES ON DEVICE)	RELAY	RIB - RIBX24SBA	24V INPUT, 120V OUTPUT MECH EQIP	VARIES	-	HAND, OFF, AUTO
VAV-#	VAV-#-RM#	VAV UNIT CONTROLLER	CIRCON - VAV-350-IMV	VAV UNIT	VARIES	LONBUS COMM / 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
DP-1	DP-1-AHU# or RTU#	DUCT PRESSURE SENSOR	ACI - A/DP-010-W-U-N-A-3	AHU/RTU VFD	2/3 DOWN MAIN SUPPLY DUCT	2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
TBLCK	-	TERMINAL BLOCK	KELE - CDU4N	MECHANICAL EQUIP	DDC ENCLOSURE / RTU		
BRKR-1	-	CIRCUIT BREAKER FOR VAV CONTROLLER	CBI ELECTRIC - QL-1	VAV PROGRAMMABLE CONTROLLER	DDC ENCLOSURE / RTU		
BRKR-2	-	CIRCUIT BREAKER FOR SCC CONTROLLER	CBI ELECTRIC - QL-2	PROGRAMMABLE CONTROLLER	DDC ENCLOSURE / RTU		
ACT-1	ACT-1-(DEVICE NAME)	DAMPER ACTUATOR	KMC CONTROLS - MEP-4501 or MEP-4901	CONTROL DAMPERS	VARIES	2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
ACT-2	ACT-2-(DEVICE NAME)	1/2" & 3/4" VALVE ACTUATOR	KMC CONTROLS - MEP-4252V	CONTROL VALVES	VARIES	2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
ACT-3	ACT-3-(DEVICE NAME)	1" - 3" VALVE ACTUATOR	KMC CONTROLS - MEP-4552V	CONTROL VALVES	VARIES	2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR / 18 GA, PWR, USE 16 GA, ON RUNS OVER 150FT	
OCC-1	OCC-1-RM#	OCCUPANY SENSOR	WATTSTOPPER - CX100	ROOM OCCUPACNY	SEE LAYOUT, WALL MOUNTED 6" FROM CEILING	2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR / 18 GA, DC PWR, USE 16 GA, ON RUNS OVER 150FT	
ACDC-1	ACDC-1	AC TO DC VOLTAGE CONVERTER	IDEC - PS5R-VA24	OCCUPACNY & HUMIDITY SENSORS	DDC ENCLOSURE		

NOTES:
1. CONTRACTOR TO FURNISH AND INSTALL MATERIALS IN SCHEDULE. WIRE SHOWN TO BE PULLED INTO ENCLOSURES / MECHANICAL EQUIPMENT AND LABELED AT EACH END.
2. SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY DMVA ENGINEERING PRIOR TO INSTALLATION.

GAS MONITORING EQUIPMENT SCHEDULE

MARK	DESCRIPTION	BASIS OF DESIGN	MOUNTING LOCATION	NOTES
CO-1	CO SENSOR & BASE	VERIS - AG01 CO SENSOR	48" AFF	WALL MOUNT, SEE NOTES 1 & 2
SL-1	LED STROBE LIGHT W/ SIREN	SECO-LARM - SL-1301-SAQ (RED)	ENCLOSURE	MOUNT ON TOP OF GAS MONITORING SYSTEM ENCLOSURE

NOTES: 1. INCLUDE (2) ADDITIONAL CO SENSORS
2. INSTALL 2 CONDUCTOR / 18 GA, SHIELD, 2 CONDUCTOR TO EACH BASE SENSOR UNIT FROM GAS CONTROLLER



2 / M9.0 DDC EQUIPMENT ENCLOSURE DETAIL
SCALE: 1" = 1'-0"

SEQUENCE OF OPERATION FOR EQUIPMENT

GENERAL

OCCUPIED MODE WILL BE INITIATED THRU THE BUILDINGS OCCUPANCY SCHEDULE, AS SET THRU THE WEB SERVER USER INTERFACE.

HEATING MODE WILL BE ALLOWED WHENEVER THE SPACE TEMPERATURE FALLS BELOW THE .

MECHANICAL COOLING AND OUTDOOR AIR DAMPERS WILL NOT BE UTILIZED WITHOUT PROOF OF SUPPLY FAN OPERATION THRU THEIR RESPECTIVE CURRENT SENSING SWITCHES.

ALL FRESH AIR INTAKE DAMPERS TO REMAIN CLOSED DURING UNOCCUPIED AND OCCUPIED MODES AND WHEN CO2 LEVELS ARE BELOW AN ACCEPTABLE SET POINT (800PPM, ADJUSTABLE) EXCEPT DURING ECONOMIZER CYCLE.

SHOULD THE DUCT MOUNT SMOKE DETECTOR SENSE PRODUCTS OF COMBUSTION, THE SUPPLY FAN WILL BE DE-ENERGIZED AND ALL DAMPERS AND VALVES WILL GO TO THEIR RESPECTIVE FAIL-SAFE POSITION.

ROOF TOP UNITS (RTU-1 thru RTU-7)

OCCUPIED HEATING MODE

DURING THIS MODE, THE SUPPLY FAN WILL RUN CONTINUOUSLY AND THE OUTDOOR AIR DAMPER WILL REMAIN CLOSED UNTIL THE RETURN AIR CARBON DIOXIDE LEVEL INCREASES TO A MAXIMUM LEVEL OF 800PPM (ADJUSTABLE) THEN MODULATING THE OUTDOOR AIR DAMPERS BETWEEN THE MINIMUM POSITION SET POINT AND 50% OPEN TO DECREASE CO2 LEVELS TO 700PPM (ADJUSTABLE).

DURING HEATING MODE THE GAS HEATING SECTION WILL BE STAGED TO MAINTAIN THE OCCUPIED HEATING SET POINT.

UNOCCUPIED HEATING MODE

DURING THIS MODE THE OUTDOOR AIR DAMPER WILL REMAIN CLOSED, THE RETURN AIR DAMPER WILL REMAIN OPEN AND THE SUPPLY FAN CYCLED AS NECESSARY.

A CALL FOR HEATING WILL CAUSE THE GAS HEATING SECTION WILL BE STAGED AND THE SUPPLY FAN TO BE ENERGIZED UNTIL THE SPACE TEMPERATURE RISES THREE (3.0) DEGREES F (ADJUSTABLE) ABOVE THE UNOCCUPIED HEATING SET POINT.

OCCUPIED COOLING MODE

DURING THIS MODE, THE SUPPLY FAN WILL RUN CONTINUOUSLY AND THE OUTDOOR AIR DAMPER WILL REMAIN CLOSED UNTIL THE RETURN AIR CARBON DIOXIDE LEVEL INCREASES TO A MAXIMUM LEVEL OF 800PPM (ADJUSTABLE) THEN MODULATING THE OUTDOOR AIR DAMPERS BETWEEN THE MINIMUM POSITION SET POINT AND 50% OPEN TO DECREASE CO2 LEVELS TO 700PPM (ADJUSTABLE).

WHEN OUTDOOR AIR CONDITIONS ARE APPROPRIATE AN ECONOMIZER CYCLE WILL BE UTILIZED FOR FREE COOLING. THE OUTDOOR AIR AND RETURN AIR DAMPERS WILL BE MODULATED UNTIL THE SPACE TEMPERATURE FALLS THREE (3.0) DEGREES F BELOW THE UNOCCUPIED COOLING SET POINT. DURING THIS MODE THE SUPPLY AIR WILL NOT BE ALLOWED TO FALL BELOW A LOW LIMIT OF 55.0 F.

WHEN OUTDOOR AIR CONDITIONS ARE NOT APPROPRIATE FOR AN ECONOMIZER CYCLE, A CALL FOR COOLING WILL CAUSE THE MECHANICAL COOLING AND SUPPLY FAN TO BE ENERGIZED UNTIL THE SPACE TEMPERATURE REACHES THE UNOCCUPIED COOLING SET POINT WITH MINIMUM ON AND OFF TIMES. THE SUPPLY FAN WILL CONTINUE TO RUN FOR A PERIOD OF THREE (3.0) MINUTES AFTER THE MECHANICAL COOLING IS DE-ENERGIZED.

UNOCCUPIED COOLING MODE

DURING THIS MODE THE OUTDOOR AIR DAMPER WILL REMAIN CLOSED, THE RETURN AIR DAMPER WILL REMAIN OPEN AND THE SUPPLY FAN CYCLED AS NECESSARY.

WHEN OUTDOOR AIR CONDITIONS ARE APPROPRIATE AN ECONOMIZER CYCLE WILL BE UTILIZED FOR FREE COOLING. THE OUTDOOR AIR AND RETURN AIR DAMPERS WILL BE MODULATED UNTIL THE SPACE TEMPERATURE FALLS THREE (3.0) DEGREES F BELOW THE UNOCCUPIED COOLING SET POINT. DURING THIS MODE THE SUPPLY AIR WILL NOT BE ALLOWED TO FALL BELOW A LOW LIMIT OF 55.0 F.

WHEN OUTDOOR AIR CONDITIONS ARE NOT APPROPRIATE FOR AN ECONOMIZER CYCLE, A CALL FOR COOLING WILL CAUSE THE MECHANICAL COOLING AND SUPPLY FAN TO BE ENERGIZED UNTIL THE SPACE TEMPERATURE FALLS THREE (3.0) DEGREES F BELOW THE UNOCCUPIED COOLING SET POINT WITH MINIMUM ON AND OFF TIMES. THE SUPPLY FAN WILL CONTINUE TO RUN FOR A PERIOD OF THREE (3.0) MINUTES AFTER THE MECHANICAL COOLING IS DE-ENERGIZED.

UNIT HEATER (UH-1)

SPACE TEMPERATURE WILL BE DIRECTLY CONTROLLED BY THE ASSOCIATED UNIT HEATER.
THE UNIT HEATER WILL ENERGIZE UNTIL THE SPACE TEMPERATURE REACHES THE HEATING SET POINT.

ZONES

EACH (13) ZONE VAV CONTROLLER WILL MODULATE ITS ASSOCIATED SUPPLY AIR DAMPER BETWEEN ITS PROGRAMMABLE MINIMUM AND MAXIMUM CFM SET POINTS TO MEET THE NEEDS OF THE SERVED SPACE.

THE ZONE VAV CONTROLLERS WILL REVERSE OPERATION BASED UPON THE AIR TEMPERATURE BEING DELIVERED BY THE RTU AND THEIR NEED TO FURNISH HEATING OR COOLING TO THEIR RESPECTIVE SPACES.

THE CORRESPONDING RTU FAN SPEED SHALL MODULATE BASED ON DUCT PRESSURE.

EXHAUST FANS (EF-1, EF-2, EF-3, EF-4 & EF-5)

EXHAUST FAN WILL BE ENABLED THRU NETWORK COMMUNICATION CONTROLLED RELAY WHENEVER THE LOCAL OCCUPANCY SENSOR IS ACTIVATED. THE EXHAUST FAN WILL CONTINUE TO RUN FOR A PERIOD OF 15 MINUTES (ADJUSTABLE) AFTER THE LOCAL OCCUPANCY SENSOR IS DE-ACTIVATED.

GAS DETECTION / EXHAUST

THE MECH ROOM IS EQUIPPED WITH ONE CARBON MONOXIDE GAS MONITOR. CO GAS LEVELS WILL BE MONITORED AT ALL TIMES. SHOULD THE CO LEVEL RISE ABOVE THE CO LEVEL ALARM SET POINT (25 PPM, ADJUSTABLE) THE RESPECTIVE AUDIO/VISUAL ALARM RELAY(S) WILL BE ENERGIZED ON THE DDC ENCLOSURE.

SPACE TEMPERATURE SET POINTS (ADJUSTABLE)

OCCUPIED COOLING: 74.0 F
OCCUPIED HEATING: 70.0 F
UNOCCUPIED COOLING: 80.0 F
UNOCCUPIED HEATING: 62.0 F

ALARMS

AN ALARM CONDITION WILL BE REPORTED TO THE WEB SERVER USER INTERFACE FOR THE FOLLOWING; ALL EQUIPMENT TYPES ARE LISTED BELOW, INCLUDE ALL EQUIPMENT LISTED ON PLANS FOR EXACT QUANTITY.

LOW SPACE TEMPERATURE (@ EACH NEW SENSOR LOCATION)
HIGH SPACE TEMPERTAURE (@ EACH NEW SENSOR LOCATION)
ROOF TOP UNIT SUPPLY FAN FAILURE
ROOF TOP UNIT FREEZE-STAT TRIPPED
ROOF TOP UNIT SMOKE DETECTOR TRIPPED
ROOF TOP UNIT LOW SUPPLY AIR TEMP
ROOF TOP UNIT COOLING FAILURE
ROOF TOP UNIT VFD FAULT
ROOF TOP UNIT GAS HEAT FAILURE
EXHAUST FAN FAILURE (@ EACH LOCATION)
UNIT HEATER UH-1 FAN FAILURE
MECH ROOM CARBON MONOXIDE HIGH LEVEL

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