LIVONIA PUBLIC SCHOOLS - HOLMES
2023 WOODSHOP/ART ROOM AC REPLACEMENTS

LOCATION MAP

PROJECT ADDRESS
HOLMES MIDDLE SCHOOL
16200 NEWBURGH RD.
LIVONIA, MI 48154

OWNER NAME AND ADDRESS
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

MECHANICAL DRAWING INDEX

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<tr>
<td>M0.00</td>
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<td>DETAILS, SCHEDULES, AND TEMPERATURE CONTROLS</td>
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ELECTRICAL DRAWING INDEX

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CONSTRUCTION: 10/16/2023
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**APPPLICABLE CODES AND REGULATIONS**

- NFPA 101 WITH BFS AMENDMENTS
- MICHIGAN BUILDING CODE
- MICHIGAN UNIFORM ENERGY CODE
- UNIFIED BUILDING SYSTEMS

**MECHANICAL GENERAL INFORMATION**

**DRAWING INDEX**

- DRAWING NOTATION

**DRAWING**

- NEW OR MODIFIED DEVICES OR EQUIPMENT
- MECHANICAL DEMOLITION AND NEW WORK PLANS
- MECHANICAL GENERAL INFORMATION

**PIPING LEGEND**

- COMPRESSOR AIR PIPING
- CONDENSER WATER PIPING
- BRASS TUBING
- FRESH WATER SUPPLY PIPING
- FIRE HYDRANT PIPING
- GALE PIPING
- existing
domestic water heater

**MECHANICAL SYMBOLS**

- VIA: VENTILATION AND AIR CONDITIONING
- FIH: FIRE HOSE REEL
- DPI: DRAINAGE PIPING
- EPC: ELECTRICAL PIPING
- CPC: CABLE PIPING
- IFC: INDUSTRIAL PIPING
- PVC: PLASTIC PIPING
- HPC: HEATING PIPING
- LAC: LIFE SAFETY PIPING
- BPC: BUILDING PIPING
- OAC: OPERATIONAL PIPING

**MECHANICAL PIPING SYMBOLS**

- NEW OR MODIFIED DEVICES OR EQUIPMENT
- MECHANICAL DEMOLITION AND NEW WORK PLANS
- MECHANICAL GENERAL INFORMATION

**MECHANICAL SYMBOLS**

- COMPRESSOR AIR PIPING
- CONDENSER WATER PIPING
- BRASS TUBING
- FRESH WATER SUPPLY PIPING

**MECHANICAL PIPING SYMBOLS**

- NEW OR MODIFIED DEVICES OR EQUIPMENT
- MECHANICAL DEMOLITION AND NEW WORK PLANS
- MECHANICAL GENERAL INFORMATION
DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD NOTIFICATION OF ANY INTERFERENCES OR DISCREPANCIES. BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND RECORD ALL EXISTING RELOCATED AND CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTS. WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE VERIFICATION. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER OWNER PROVIDED EQUIPMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND WORK. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER ENGINEER'S SPECIFICATION, AND LOCAL APPLICABLE CODES INCLUDING EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT, TRADES TO ENSURE THAT INSTALLATION IS MADE IN ACCORDANCE WITH THE ARCHITECT, AND OWNER FROM AND AGAINST ANY LIABILITY, LOSS, DAMAGE, OR FAILURE ON THE PART OF THE CONTRACTOR, SUBCONTRACTORS, AND THEIR AGENTS/EMPLOYEES PROPERLY TO DISCHARGE THE OBLIGATIONS ASSUMED BY HIS/HER SCOPE OF WORK. REPORT ANY DISCREPANCIES TO THE CONSTRUCTION CONTRACTOR AND EACH SUBCONTRACTOR COVENANTS AND AGREES TO HIS/HER IN THE PERFORMANCE OF THE WORK, INCLUDING ANY ACT OR DAMAGE, OR IMPROPER CONSTRUCTION PROTOCOL.
1. MODULATING GAS HEAT.
2. DUAL INPUT ENTHALPY CONTROL ECONOMIZER.
3. EXISTING CURBS
4. 2 LAYERS WATER RESIST.
5. DISCONNECT SWITCH.
6. 115V SERVICE RECEPTACLE
7. REFRIGERATION COMPRESSORS SHALL BE VARIABLE SPEED OR DIGITAL.
8. ALL FANS SHALL BE ECM.
9. PROVIDE WITH REFRIGERATION CONTROLS ONLY. UNIT DDC CONTROLLER TO BE AUTOMATED LOGIC DDC FIELD INSTALLED BY TCC.

UNIT ID (IN WG) 11520
COORDINATE W/ ARCH 2000
COORDINATE W/ ARCH 2250
CURB. 2500
2 LAYERS WATER RESIST.
ACOUSTICALLY INSULATED
SWSI TYPE
SUPPLY FAN
2" RIGID INSUL., DIRECT DRIVE TYPE
RECTANGULAR SHEET-METAL ELBOWS
BHP (IN WG) 3.06
AIRFOIL TYPE
HP 4.0
ESP
EXHAUST FAN
SWSI TYPE
SMOKE DETECTOR
DIRECT DRIVE 3.06
BHP

-10.0
EDB (°F)
OUTSIDE AIR
80.9
LDB (°F)
ENTHALPY WHEEL - SUMMER
75.0
LWB (°F)
75.0
EDB (°F)
OUTSIDE AIR
34.8
LDB (°F)
EXHAUST AIR
80.9
RH
FILTERS
CAPACITY (MBH) 201.8
CAPACITY (MBH) 144.0
EDB
OUTSIDE AIR
80.9
LDB (°F)
EXTERNAL DUCT AIR COOLED UNIT (BY TYPE)
0.28
APD
REFRIGERANT PIPING EFFICIENCY MIN.
10.8
REFRIGERANT R-410A
ALARM
STATUS
INPUT RTU-1 UNIT CONTROLLER
PRESSURE DIFFERENTIAL FILTERS
CAPACITY (MBH) 600.0
CAPACITY (MBH) 480.0
GAS HEAT MODULATING NO. STAGES 70
EXISTING TO EXISTING WORK 47.5
STATION 41.8

ENERGY RECOVERY UNIT WITH COOLING, GAS HEAT AND HOT GAS REHEAT SEQUENCE OF NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATION.

1. HEATING TEMPERATURE CONTROL: WHEN THE ROOM TEMPERATURE FALLS BELOW ITS SETPOINT THE DDC CONTROLLER SHALL MODULATE THE GAS BURNER TO MAINTAIN THE ROOM TEMPERATURE, RETURN AIR HUMIDITY, DISCHARGE AIR TEMPERATURE, FILTER PRESSURE DIFFERENTIAL, SUPPLY FAN STATUS, EXHAUST FAN STATUS, REFRIGERATION CIRCUIT STATUS, DX REHEAT STATUS, GAS VALVE POSITION, HEAT RECOVERY WHEEL PRESSURE DIFFERENTIAL, THE SUPPLY AND EXHAUST FAN'S HAND/OFF/AUTO SWITCHES IN THE "AUTO" POSITION, THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED WITH THE OCCUPIED OCCUPANCY SCHEDULE.
2. COOLING TEMPERATURE CONTROL: WHEN THE ROOM TEMPERATURE RISES ABOVE ITS SETPOINT THE DDC CONTROLLER SHALL ACTIVATE STAGES OF DX COOLING TO MAINTAIN THE ROOM TEMPERATURE, ENTERING AIR TEMPERATURE, EXHAUST AIR TEMPERATURE, RETURN AIR TEMPERATURE, ROOM TEMPERATURE AND HUMIDITY SENSORS TO DETERMINE CONTROL SETPOINT.
3. ENERGY RECOVERY WHEEL DEFROST: THE ENERGY RECOVERY WHEEL VFD MODULATED TO MAX SPEED.
4. ENERGY RECOVERY WHEEL ENERGY RECOVERY: WHEN THE DEFROST AND ECONOMIZER PERIODS THE FANS SHALL NOT OPERATE.
5. ENERGY RECOVERY WHEEL ENERGY RECOVERY UNIT (REFRIGERATED) THE DESIGN AIR TEMPERATURE IS ADJUSTABLE WITH THE SUPPLY AND EXHAUST FAN'S HAND/OFF/AUTO SWITCHES IN THE "AUTO" POSITION, THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED WITH THE OCCUPIED OCCUPANCY SCHEDULE.

PACKAGED ROOFTOP ENERGY RECOVERY UNIT SCHEDULE - NATURAL GAS/DX

UNIT ID 10
CAPACITY (MBH) 600.0
INPUT RTU-1 UNIT CONTROLLER
CAPACITY (MBH) 480.0
GAS HEAT MODULATING NO. STAGES 70
EXISTING TO EXISTING WORK 47.5
STATION 41.8

ENERGY RECOVERY WITH GAS HEAT AND HOT WATER REHEAT CONTROL DIAGRAM

M8.00
GENERAL DEMOLITION NOTES

A. Field work shall be removed from the drawings. The remaining work of the field shall be completed as follows:

1. Field work shall be removed at the time specified by the architect.

B. Demolition shall be completed in a manner that will not damage the remaining structures.

C. The remaining work shall be completed in a way that will not interfere with other construction work.

D. Field work shall be removed in a way that will not damage the remaining structures.

E. The remaining work shall be completed in a way that will not interfere with other construction work.

F. Field work shall be removed in a way that will not damage the remaining structures.

G. The remaining work shall be completed in a way that will not interfere with other construction work.

H. Field work shall be removed in a way that will not damage the remaining structures.

DEMOLITION KEYED NOTES

1. RTU BEING REMOVED BY MECHANICAL TRADES. EC. TO DISCONNECT AND MAKE SAFE. REMOVE DISCONNECT SWITCH, CONDUIT AND WIRING BACK TO SOURCE. UPDATE SWITCH PLACARD ON SWITCHBOARD TO READ AS "SPARE". REMOVE SMOKE DETECTOR AND CONDUIT BACK TO SOURCE.

POWER GENERAL NOTES


B. EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD. IN ACCORDANCE WITH ALTERNATES OF OPTIONS AS STATED HEREINAFTER, ALL WORK MUST BE IN FULL ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SYSTEMS ARE TO BE COMPLETE, EFFICIENT, AND SATISFACTORY OPERATION WHEN PROJECT IS DELIVERED TO THE OWNER.

C. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM GOVERNING AUTHORITIES AND FILE NECESSARY FORMS, PAY ALL INSPECTION FEES.

D. ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.

E. ELECTRICAL EQUIPMENT AND WIRING SHALL BE NEW AND SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.

F. WIRING SHALL BE IN CONDUIT. CONDUIT SHALL BE 3/4" CONDUIT MINIMUM. CONDUITS IN FINISHED AREAS SHALL BE CONCEALED.

G. NEW WIRES SHALL BE TYPE THHN. MINIMUM SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO EQUIPMENT, FURNISHED AND INSTALLED BY OTHERS, SHALL BE PROVIDED BY THIS CONTRACTOR.
4 WIRE WITH GROUND

3 WIRE WITH GROUND

FEEDER SIZE
COND.

1 "C, 4#6 & 1#8 GRD.
1 "C, 3#6 & 1#8 GRD.

NEW WORK KEYED NOTES

PROJECT:
HOLMES ELEMENTARY
WOODSHOP AC REPLACEMENT

UNIFIED BUILDING SYSTEMS
ENGINEERING
75 N. MAIN ST., SUITE 221
MT. CLEMENS, MI  48043

CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI  48154

APPROVED: FAA
DRAWN: RDL
ISSUANCE:
10/16/2023

ELECTRICAL DETAILS, SCHEDULES, AND DIAGRAMS

E5.00
1. The design of the steel structure shall be in accordance with the latest edition of the American Institute of Steel Construction Manual and Specification for Structural Steel Buildings.
2. The contractor shall submit shop drawings to the engineer for review. Two copies will be returned to the contractor for use in the fabrication process.
3. The structure is designed to be self-supporting and stable after it is fully completed. It is the contractor's sole responsibility to ensure that all components are in place and complete.
4. The contractor shall submit a schedule for the erection of the structure.
5. The contractor shall provide temporary supports to the structure at the site prior to construction and fabrication.
7. The steel shall be galvanized where specified.
8. The engineer shall have the right to modify the temporary supports if necessary.
9. The contractor shall be responsible for the erection process and ensuring the safety of the structure and its components during the construction process.