

PIPE HANGER SCHEDULE											
PIPE SIZE (INCHES)	MAXIMUM HORIZONTAL SPACING (FEET)			SINGLE STEEL ROD HANGER SIZE (INCHES)		HANGER TYPE STEEL	MAXIMUM VERTICAL SPACING (FEET)				
	COPPER TUBE	CAST IRON	STEEL PIPE	CPVC PIPE	TUBING	PIPING	COPPER TUBE	CAST IRON	STEEL PIPE	CPVC PIPE	
½"	6	5	8 (5)	3	¼"	⅜"	BAND	10	15	15	10
¾"	6	5	8 (5)	3	¼"	⅜"	BAND	10	15	15	10
1"	6	5	8 (5)	3	¼"	⅜"	BAND	10	15	15	10
1¼"	6	5	9 (5)	4	¼"	⅜"	CLEVIS	10	15	15	10
1½"	6	5	9 (5)	4	¼"	⅜"	CLEVIS	10	15	15	10
2"	10	5	10 (5)	4	¼"	⅜"	CLEVIS	10	15	15	10
2½"	10	5	12 (5)	4	⅜"	½"	CLEVIS	10	15	15	10
3"	10	5	12 (5)	4	⅜"	½"	CLEVIS	10	15	15	10
4"	10	5	12 (5)	4	½"	⅝"	CLEVIS	10	15	15	10
5"	10	5	12 (5)	4	½"	⅝"	CLEVIS	10	15	15	10
6"	10	5	12 (5)	4	½"	⅝"	CLEVIS	10	15	15	10
8"	10	5	12 (5)	4	⅝"	⅞"	CLEVIS	10	15	15	10
10"	10	5	12 (5)	4	⅝"	⅞"	CLEVIS	10	15	15	10
12"	10	5	12 (5)	4	⅝"	⅞"	CLEVIS	10	15	15	10
NOTES:											
1. MAXIMUM HORIZONTAL SPACING OF CAST-IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10 FOOT LENGTHS OF PIPE ARE INSTALLED.											
2. INSTALL HANGER OR SUPPORT CLOSE TO THE POINT OF CHANGE OF DIRECTION IN ALL PIPE RUNS.											
3. INSTALL ADDITIONAL HANGERS ON SUPPORTS AT CONCENTRATED LOADS.											
4. SUPPORT ALL BRANCH PIPING OVER 5'-0" IN LENGTH.											
5. ½" GAS PIPING SHALL BE SUPPORTED EVERY 6'-0". ¾" AND 1" GAS PIPING SHALL BE SUPPORTED EVERY 8'-0". 1¼" AND LARGER GAS PIPING SHALL BE SUPPORTED EVERY 10'-0".											
6. SUPPORT VERTICAL PIPING AT EVERY FLOOR.											

HEATING AND COOLING MINIMUM PIPE INSULATION* COMMERCIAL (THICKNESS IN INCHES)				
FLUID	NOMINAL PIPE DIAMETER			
	< 1.5"	1.5" < 4.0"	4.0" to < 8.0"	≥ 8.0"
HOT WATER (141 – 200 °F)	1.5	2.0	2.0	2.0
CHILLED WATER OR REFRIGERANT	1.5	1.5	1.5	1.5
CONDENSATE	1.0	1.0	1.0	1.5
FOR SI: 1 INCH = 25.4mm, BTU PER INCH/H x Ft² x °F = W PER 25mm/K x M²				
* BASED IN INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/H x Ft² X °F				

PLUMBING PIPE INSULATION SCHEDULE		
SERVICE	INSULATION THICKNESS (INCHES)	
	PIPE SIZE (INCHES)	
	BELOW 1½"	1½" AND OVER
COLD WATER	½"	½"
HOT WATER	1"	1½"
HOT WATER RECIRCULATION	1"	1½"
HORIZONTAL / VERTICAL STORM PIPING	1"	1"
NOTES:		
1. PIPE COVERING SHALL BE FIBERGLASS PIPE INSULATION WITH: FIRE RETARDANT VAPOR BARRIER JACKET, 0.23 K-FACTOR AT 75°F MEAN TEMPERATURE, FLAME SPREAD = 25, SMOKE DEVELOPED = 50.		
2. FITTINGS AND VALVES SHALL BE PROVIDED WITH PREMOLDED FITTING COVERS WITH PVC JACKETING OVAL IN THICKNESS AND MATERIAL TO ADJOINING PIPE INSULATION.		

MINIMUM HANGER SIZES FOR ROUND DUCT				
DIAMETER	MAXIMUM SPACING	WIRE DIAMETER	ROD	STRAP
10" DN.	12'	—	¼"	1" x 22ga.
11" – 18"	12'	—	¼"	1" x 22ga.
19" – 24"	12'	—	¼"	1" x 22ga.
25" – 36"	12'	—	⅜"	1" x 22ga.
37" – 50"	12'	—	TWO ⅜"	TWO 1" x 20ga.
51" – 60"	12'	—	TWO ⅜"	TWO 1" x 18ga.
61" – 84"	12'	—	TWO ⅜"	TWO 1" x 16GA.
NOTES:				
1. STRAPS AND RODS ARE GALVANIZED STEEL.				
2. TABLE ALLOWS FOR CONVENTIONAL WALL THICKNESS, AND JOINT SYSTEMS PLUS ONE LB/SF OF INSULATION WEIGHT. IF HEAVIER DUCTS ARE TO BE INSTALLED, ADJUST HANGER SIZES.				

BOILER SCHEDULE		
DESIGNATION	B-1	B-2
LOCATION	BOILER ROOM	BOILER ROOM
SERVICE	HOT WATER	HOT WATER
MANUFACTURER	HARSCO P-K SONIC	HARSCO P-K SONIC
MODEL NUMBER	SC-1000	SC-1000
OPERATING WEIGHT (LBS)	810	810
WATER CONTENT	10.0 GAL	10.0 GAL
GROSS OUTPUT (MBH)	923	923
FUEL SOURCE	NATURAL GAS	NATURAL GAS
INPUT (MBH)	1000	1000
BOILER HP	28	28
MIN./MAX. INLET GAS PRESSURE (IN W.C.)	3.5/14	3.5/14
LWT/EWT (°F)	180/160	180/160
FLOW RATE (GPM)	80	80
WATER P.D. (FT.)	22.0	22.0
COMBUSTION EFFICIENCY	92.3%	92.3%
BOILER DESIGN PRESSURE (PSI)	80	80
ELECTRICAL REQUIREMENTS		
VOLTAGE/ Ø / Hz.	120 / 1 / 60	120 / 1 / 60
TOTAL OPERATING AMPS	10 AMPS	10 AMPS
NOTES:		
1. ASME CODE, SECTION IV, MAX PRESSURE= 125 PSIG, MAX TEMP 220°F.		
2. ASME CSD-1 BOILER CONTROLS.		
3. FULL INDEPENDENT CAST SECTIONAL HEAT EXCHANGER.		
4. FULL MODULATION, 5:1 TURNDOWN WITH EXCESS AIR NO HIGHER THAN 30% ACROSS THE FIRING RANGE.		
5. VARIABLE SPEED COMBUSTION AIR BLOWER.		
6. COMBUSTION EFFICIENCY TO BE CSA CERTIFIED BASED ON OPERATING CONDITIONS FOR TESTING UNDER ANSI Z21.13/CSA4.9.		
7. PROVIDE NURO TOUCH SCREEN CONTROL SYSTEM FOR EACH BOILER.		
8. PROVIDE MODBUS OR BACNET MSTP (MASTER SLAVE TOKEN PASSING) GATEWAY/INTERFACE AND FULL INTEGRATION OF ALL BOILER CONTROL AND ALARM POINTS TO THE BUILDING MANAGEMENT SYSTEM.		
9. PROVIDE CONDENSATE TRAP AND ACID NEUTRALIZATION SYSTEM.		
10. BOILERS FURNISHED FOR NATURAL GAS. ALL GAS TRAINS AND CONTROLS FURNISHED WITH BOILERS ARE TO BE VENTLESS.		
11. BOILERS SHALL BE FURNISHED WITH ADAPTORS FOR CPVC VENTING.		
12. ASME LABELED		

MECHANICAL EQUIPMENT SCHEDULE			
SYMBOL	MANUFACTURER	CATALOG #	DESCRIPTION
— CD —	—	—	CONDENSATE DRAIN PIPING. SCHEDULE 40 PVC
— HWS — — HWR —	—	—	HYDRONIC PIPING, COPPER TYPE "L" UP TO 2". ABOVE 2" USE SCHEDULE 40 STEEL WITH SCREWED JOINTS. BOILER HEADER SHALL BE PIPED WITH SCHEDULE 40 STEEL. INSULATE WITH FIBERGLASS PIPE INSULATION WITH VAPOR PROOF JACKET AND PVC FITTING COVERS. TAPE ALL JOINTS FOR VAPOR TIGHT SEAL. EXPOSED PIPING SHALL BE COVERED WITH PVC PIPE COVER AND PAINTED. SEE THIS DRAWING FOR INSULATION THICKNESS SCHEDULE.
— C —	—	—	DOMESTIC COLD WATER PIPING, COPPER TYPE "L" WITH LEAD FREE SOLDER JOINTS. INSULATE PIPE WITH ½" THICK FIBERGLASS INSULATION WITH VAPOR PROOF JACKET AND PVC FITTING COVERS. TAPE ALL JOINTS FOR VAPOR TIGHT SEAL.
— G —	—	—	NATURAL GAS PIPING, SCHEDULE 40 STEEL WITH SCREWED JOINTS UP TO 3" DIAMETER. WELDED JOINTS ON ALL PIPE SIZES ABOVE 3" DIAMETER.
--- FO ---	—	—	FUEL OIL PIPING SCHEDULED FOR REMOVAL
— D —	—	—	GAS VALVE FULL PORT, AGA APPROVED.
— B —	NIBCO	—	BALL VALVE, BRONZE BODY, FULL PORT.
— T —	NIBCO	—	CHECK VALVE, BRONZE BODY SWING.
— P —	—	—	GAS VALVE FULL PORT, AGA APPROVED.
P-1, 2	GRUNDFOS	UPS 40-160/2	INLINE VERSAFLO 1-1/2 BOOSTER PUMP, IRON BODY, THREE SPEED MOTOR, MAX. WORKING PRESSURE 145 PSI, MAX. OPERATING TEMPERATURE 230°F, SET MOTOR SPEED ON (3)-THREE. 80 GPM @ 22 FT. HEAD, .75 HP, RPM, MOTOR STARTER H-0-A W/OVERLOADS - 120V/1
ET-1	AMTROL	400-L-ASME	EXTROL BLADDER TYPE EXPANSION TANK, TANK VOLUME 106 GALLON, ASME

GENERAL MECHANICAL NOTES

- ALL MECHANICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH 2020 MECHANICAL CODE, FIRE CODE, PLUMBING CODE, FUEL GAS CODE, BUILDING CODE, AND ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE, ALL LOCAL CODES AND GENERALLY ACCEPTED STANDARDS.
- MECHANICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, PIPING, VALVES, ACCESS DOORS, HANGERS, FITTINGS AND MISCELLANEOUS COMPONENTS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE MECHANICAL SYSTEMS COMPLETE, OPERABLE, AND IN ACCORDANCE WITH APPLICABLE CODES AND GENERALLY ACCEPTED INDUSTRY STANDARDS.
- MECHANICAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT TO ENGINEER FOR APPROVAL.
- MECHANICAL CONTRACTOR SHALL SEAL AROUND ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS WITH HILTI INTUMESCENT FIRE STOP MATERIALS TO MAINTAIN FIRE AND SMOKE RATINGS. DUCTS PENETRATING FIRE RATED WALLS, FLOORS AND CEILINGS SHALL BE INSTALLED WITH FIRE DAMPER AND ACCESS DOORS WHETHER SPECIFICALLY SHOWN ON THE DRAWINGS OR NOT.
- MECHANICAL CONTRACTOR SHALL NOT DRILL OR CUT ANY STRUCTURAL MEMBERS WITHOUT PERMISSION OF ENGINEER.
- ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
- MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL WIRING (24V) FOR SYSTEMS SHOWN ON MECHANICAL DRAWINGS AND DESCRIBED IN MECHANICAL SPECIFICATIONS, INCLUDING ALL RELAYS, TRANSFORMERS, CONDUIT, JUNCTION BOXES, CONDUCTORS, THERMOSTATS, APPURTENANCES AND ALL NECESSARY EQUIPMENT TO MAKE SYSTEMS COMPLETE AND OPERABLE.
- ALL PERMITS AND INSPECTION FEES REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION WILL BE WAIVED BY CITY OF NEWBURGH.
- MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL CUTTING, PATCHING, AND PAINTING ASSOCIATED WITH MECHANICAL WORK. ALL FLOORS AND WALLS WHERE A PIPE HAS BEEN REMOVED AND NOT REPLACED SHALL BE PATCHED BY THE MECHANICAL CONTRACTOR.
- ALL CONTROL WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (N.E.C.) AND ALL LOCAL CODES. ALL CONDUCTORS SHALL BE COPPER WITH THHN INSULATION IN EMT CONDUIT. 120V/1 - MINIMUM CONDUCTOR SIZE #12. 24V - MINIMUM CONDUCTOR SIZE #18. MINIMUM CONDUIT SIZE SHALL BE ¾". CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED.
- MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOORS FOR ALL VALVES AND DUCT ACCESSORIES CONCEALED IN WALLS/CEILINGS. ACCESS DOORS SHALL HAVE APPROPRIATE FIRE RATING TO MAINTAIN INTEGRITY OF WALL/CEILING.
- MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL VALVE TAGS, PIPE LABELS, DUCT LABELS AND EQUIPMENT LABELS. LOG ALL TAGS AND LABELS IN A 3-RING BINDER WITH LOCATION, DESCRIPTION AND FUNCTION. SEE SPECIFICATIONS FOR MORE INFORMATION.
- MECHANICAL CONTRACTOR SHALL PROVIDE ALL HYDRONIC BALANCING FOR ALL NEW MECHANICAL SYSTEMS. SEE SPECIFICATIONS FOR BALANCE PROCEDURES AND ADDITIONAL REQUIREMENTS. SUBMIT BALANCE REPORT TO ENGINEER. SEE MECHANICAL SPECIFICATIONS BALANCE REPORT REQUIREMENTS.
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUPPLEMENTAL STRUCTURAL STEEL SUPPORT ASSOCIATED WITH NEW MECHANICAL EQUIPMENT HUNG OR SUPPORTED FROM OR ON THE BUILDING STRUCTURE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO STEEL FABRICATION AND INSTALLATION OF EQUIPMENT.
- MECHANICAL CONTRACTOR SHALL SUBMIT PIPING AND DUCTWORK FULLY COORDINATED SHOP DRAWINGS FOR ENGINEERS REVIEW. SEE GENERAL CONDITIONS FOR NUMBER OF SHOP DRAWINGS.
- MECHANICAL CONTRACTOR SHALL INSTRUCT BUILDING OWNER AND CITY OF NEWBURGH KEY PERSONNEL ON OPERATION OF ALL MECHANICAL SYSTEMS. SET ALL BOILER CONTROLS, SENSORS, OPERATING TEMPERATURES AND SCHEDULES AS DIRECTED BY BUILDING OWNER OR KEY PERSONNEL.
- MECHANICAL CONTRACTOR SHALL INCLUDE IN BID ALL MATERIALS, RIGGING AND LABOR REQUIRED FOR THE COMPLETE AND PROPER INSTALLATION OF THE MECHANICAL SYSTEM.
- MECHANICAL CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO THE BEGINNING OF WORK, AND COORDINATE WORK ALL OTHER TRADES.
- PROVIDE ALL PIPE OPENINGS THROUGH WALLS WITH PIPE SLEEVES.
- ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR MECHANICAL EQUIPMENT SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR. DISCONNECT SWITCHES FURNISHED BY THE MECHANICAL CONTRACTOR FOR MECHANICAL EQUIPMENT SHALL BE HEAVY DUTY TYPE AND SHALL BE NEMA 3R WHEN LOCATED OUTSIDE.
- MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIAL INSTALLED UNDER THIS CONTRACT FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION AND ACCEPTANCE BY THE OWNER AND AGREES TO REPLACE DEFECTIVE WORK (INCLUDING ALL REQUIRED LABOR AND MATERIAL) AT NO ADDITIONAL COST TO OWNER DURING THE GUARANTEE PERIOD.
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING START-UP OF ALL NEW EQUIPMENT, CONTROLS, AND ETC. TO ENSURE CORRECT OPERATION OF INSTALLED DEVICES.
- MECHANICAL CONTRACTOR SHALL PROVIDE OWNER WITH CATALOG DATA, OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, AND RECORD (AS-BUILT) DRAWINGS OF ALL COMPLETED WORK.
- ALL NEW HOLES IN WALLS AND FLOORS SHALL BE CORE DRILLED BY MECHANICAL CONTRACTOR. PRIOR TO CORE DRILLING FLOORS, RADAR SCAN FLOOR SLABS. USE CAUTION WHEN CORE DRILLING TO AVOID DAMAGE TO EQUIPMENT, SYSTEMS, STRUCTURE AND ETC. ANY ITEMS DAMAGED AS A RESULT OF CORE DRILLING SHALL BE REPAIRED BY MECHANICAL CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
- HEALTH, SAFETY AND CRITICAL OPERATING EQUIPMENT SHALL NOT BE COMPROMISED WITHOUT CITY OF NEWBURGH NOTIFICATION AND SCHEDULED SHUTDOWN DURING OFF HOURS AS TEMPORARY OPERATIONAL PLAN IS IMPLEMENTED AND MAINTAINED.
- ALL PIPING SUPPORTS AND HANGERS EXPOSED TO OUTDOOR ELEMENTS SHALL BE GALVANIZED STEEL.
- NEWBURGH HISTORIC COURTHOUSE SHALL REMAIN IN OPERATION THROUGHOUT THE CONSTRUCTION PERIOD. ANY INTERRUPTIONS IN BUILDING SERVICES SHALL BE APPROVED BY THE CITY OF NEWBURGH PRIOR TO INTERRUPTING SERVICES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH APPROVED INTERRUPTION TIMES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINING AND REFILLING EXISTING HYDRONIC AND DOMESTIC WATER SYSTEMS AS REQUIRED FOR COMPLETION OF WORK.

DESCRIPTION					
DATE					
REVISION					

SEAL	
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GERARD ASSOCIATES

CONSULTING ENGINEERS P.C.

225 N.W. 11th Ave., Suite 1000
Fort Lauderdale, FL 33311
TEL: (954) 291-1272
info@gerardassociates.com www.gerardassociates.com

MECHANICAL: EQUIPMENT SCHEDULES & NOTES

BOILER REPLACEMENT PROJECT FOR:
NEWBURGH HISTORIC COURTHOUSE
CITY OF NEWBURGH, NY
123-125 GRAND STREET

ISSUE:	BID 6.22
DATE:	MAR 31, 2022
PROJECT NO.:	GA21023
DRAWN BY:	RL/KC
CHECKED BY:	JT

SHEET NO:

M-5

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