

DESIGN / BID / BUILD HVAC CRITERIA

MECHANICAL CRITERIA-BASIC MATERIALS & METHODS

- GENERAL- Provide a complete Mechanical/HVAC system, left in proper working order. Provide herein means installed completely, including labor & materials.
- INCLUSION- The Mechanical work is portion of the overall project requirements and as such shall comply with the conditions and the requirements of the General Conditions, Supplementary Conditions and all applicable requirements of the overall project.
- CODES, UTILITIES, REGULATIONS- Secure & Pay for all fees, licenses, permits, inspections. Coordinate with power & communication utilities. Meet & comply with all Federal, State, County & City codes. Provide complete submittals & shop drawings on all items.
- CONTRACTORS REQUIREMENTS- The installing contractor providing for this work shall be a firm licensed for this type work and shall provide copies of licenses, business licenses, bonding limits, and insurance coverage. The contractor's field personnel shall be under the direct supervision of a licensed contractor at all times.
- COORDINATION- This contractor is responsible for coordinating with all other trades for the proper installation of this work, maintaining required clearances. Confirm & coordinate, in writing with electrical trade electrical trade the electrical characteristics and power requirement of item requiring power, prior to finalizing equipment order.
- SUBMITTALS- Provide complete submittals on Contractors qualifications, all items, equipment, products, etc. For review, prior to finalizing equipment order.
- PROVISIONS TO BE INCLUDED- Labor, supplies and materials, tools, equipment etc.; installation of all Mechanical equipment & connections; coordination with other trades; material shipping, delivery, receiving, storage, & protection; excavation, backfilling to 95% compaction.
- MATERIALS- All materials shall be new, currently manufactured, UL Labeled, and meet all industry standards. Label all equipment. Provide 3000 PSI class concrete for bases and backfill. Provide 3/4" thick A/D fire retardant grade backboards. Provide all support hardware. Paint all material exposed to view as directed by architect.
- FIRE & SMOKE SEALS- Provide fire/smoke seal of each penetration of any rated barrier.
- MOTOR & CONTROLS- All equipment shall be factory pre-wired complete, and provided with equipment disconnect, starters, over-load relays, etc. including all controls and low-voltage wiring. All equipment motors shall meet current energy efficiency requirements. Provide all control and interlock wiring.
- EQUIPMENT SUPPORT, CLEARANCES & ACCESS- Equipment shall be properly supported as instructed by the manufacturer. Provide vibration isolation devices for each item. Equipment shall be located to maintain proper clearances and required access. Verify and coordinate prior to installation.
- SEISMIC REQUIREMENTS- Support all items in accordance with the seismic zoning requirement.
- STRUCTURAL COORDINANCE- Review & coordinate with the structural conditions prior to the start of any work. Any attachments, welding and/or cutting of the building structure must first be approved, in writing, by the building structure engineer. Locate slab penetrations to avoid conflict & damage. Sleeve & seal each penetration.
- ROOF PENETRATIONS- Any roof modifications shall be by the building owner's designated roofing installer/supplier to maintain the roofing warranty. Provide all necessary components (curbs, pitch pockets, etc.) and pay all related cost for a complete penetration.
- CLOSE OUT/INSPECTIONS- This contractor shall assist with an on-site review of this work. At completion of the project, demonstrate in the presence of the Owner/Tenant, Architect & Engineer to proper operation of all components, systems, devices, etc.
- WARRANTY- This contractor shall warrant all materials, labor & installation for one full year from date of Certificate of Occupancy. Any extended product warranties shall be passed onto the owner.

END OF MECHANICAL BASIC MATERIALS & METHODS

MECHANICAL CRITERIA-AIR DISTRIBUTION

- DIAGRAMMATIC DRAWINGS- Drawings are diagrammatic to indicate the intended requirements for the HVAC system. Every fitting & detail is not necessarily indicated. The contractor shall provide for and install for a complete and properly functioning system(s) in a professional manner. All work shall be installed so that working components are accessible for service.
- DUCTWORK STANDARDS- All duct work, fittings, support, etc. shall comply with the latest SMACNA standards, and be in conformance with NFPA and UL requirements.
- ACCESS PANELS- Provide flush mounted hinged cover access panels for access to any concealed devices requiring maintenance or adjustment, etc.
- FIRE DAMPERS- The contractor shall review the architectural & structural drawings and provide UL listed fire-dampers which fire rated barrier, in accordance with its labeling, to match the barrier rating (at minimum) and where required by the AHJ. Provide access to any concealed unit.
- GENERAL DUCTWORK- All duct work is to be concealed unless otherwise indicated. Contractor shall coordinate and field verify exact duct routes and clearances prior to duct fabrication. Provide for duct modifications to adjust to field conditions and maintain proper air flow & pressures.
- DUCT SIZES & SHAPES- Duct sizes are shown for clear inside dimensions, increase duct size to maintain clear dimensions where interior duct restrictions occur. Duct shape may be changed, however the equivalent air carrying capacity, area and pressure drops are to be maintained.
- LOW PRESSURE DUCT DESIGN BASIS- The low pressure duct layout & design is based on sheet metal duct system, Class 2, 0.08 to 0.10 Inch WG friction rate.
- DUCT-TO-EQUIPMENT ISOLATION- Connections between ductwork and equipment shall be UL labeled heavy glass fiber fabric duct connection, at least four inches long with metal collar on each side. The gap between the equipment & metal duct work shall be a minimum of two inches to avoid transmission of vibrations.
- DUCTWRAP INSULATION- All supply, return, exhaust, outside and make-up-air ducts shall insulate. Utilize aluminum foil vapor barrier, fiber-glass insulation secure insulation to duct with annealed stainless steel wire at spacing not to exceed Two Foot on-centers. Seal all joints and penetrations with fire-racked tape. John Mansville LinaTex or equal. Duct linear shall be 1 Inch thick, 1.5 PCF densities.
- SHEET METAL DUCTWORK- Sheet metal ductwork shall be Class 2, galvanized steel of gauge and construction per SMACNA, with sheet connections, joints, elbows, Bends shall utilize turning vanes or be long radius elbows per SMACNA.
- TAKE OFF- Low pressure take-offs from truck duct to air devices shall be scoop type with adjustable damper.
- FLEX DUCT RUN-OUTS- Flexible run-outs to individual supply diffusers are allowed, full size, insulated with interior support spring, U.L. listed for use in environmental air plenums. Each end shall be taped & banded. Flex lengths shall not exceed 7 feet. U.L. 181 listed, NFPA 90A & 90B compliant. Thermaflex M-KE or equal. Provide elbow/bend supports to maintain radius bends.
- FILTERS, DIFFUSERS, GRILLS, ETC.- Refer to schedule for items & criteria

END OF MECHANICAL CRITERIA-AIR DISTRIBUTION

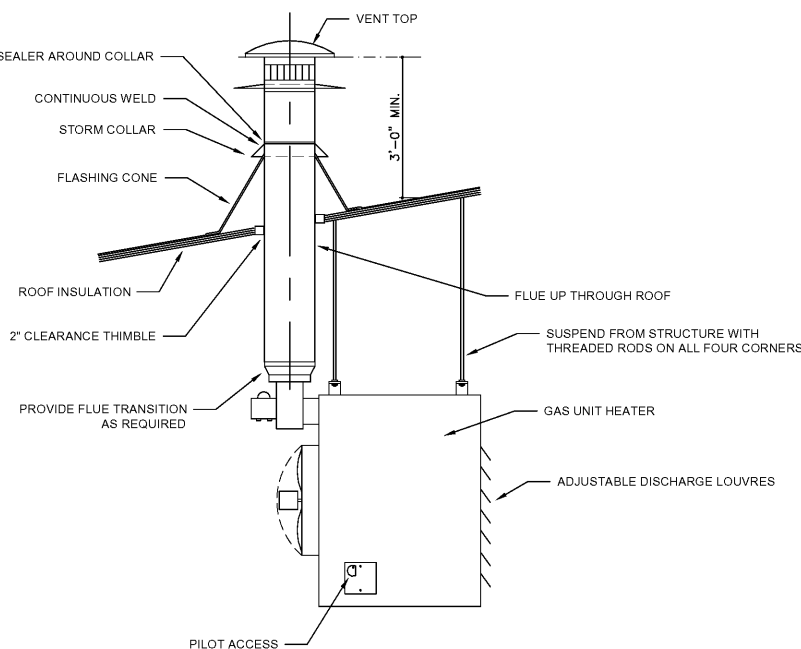
MECHANICAL CRITERIA-TEST & BALANCE/CLOSEOUT

- TEST & BALANCE CERTIFICATION- Provide a complete test & balance report, prepared by an independent NEBB or AABC certified company.
- START UP & ADJUSTMENTS- Contractor shall provide for the final lubrication of all equipment, adjustments, and setting of dampers, registers and air distribution devices for proper air distribution.
- DUCT TESTING- Test the duct system for leaks and problems, correct any deficiencies.
- TEST-REPORT- Provide a fully documented test report, including tester, testing equipment data, all air quantities, and operating points of the HVAC equipment. Provide three copies, minimum.
- ADJUSTMENTS & CORRECTIONS- Should the test fail, the tester shall provide written recommendations for the correction, to the contractor for corrective action. Restart the system after corrections.
- REVIEWS & INSPECTIONS- The contractor shall make a complete review of the work-in-progress and final working review with the AHJ, owner and owner's designated representatives at each stage of work, before items are covered up. Provide all necessary labor & tools for review & inspections.
- SYSTEM DEMONSTRATION- At project completion provide a complete working demonstration of each system, all components and proper interface with other trades.
- FILTERS & CLEANING- Replace all filters, clean all equipment & ductwork, check coils for obstructions.
- PROGRAMMING & SETPOINTS- Review and program complete system operation, temperature set-points, timing & sequence of operation as directed by owner.
- INSTRUCTION & TRAINING- Instruct & train the owner's designated personnel in the proper programming, operation, & maintenance of each system. Provide a follow-up on-site session at 30, 90 & 180 days after C.O.
- MANUALS & FIELD DOCUMENTS- Provide two complete sets of 3-ring bound manuals to include equipment submittals & data, operation & maintenance data, all permits & approvals, warranty certificates & contract information. Provide two sets of field record "as-built" documents that reflect the actual installed layouts & related information. Also provide same in a scanned PDF format on CD, s.

END OF MECHANICAL CRITERIA-TEST & BALANCE/CLOSEOUT

GAS FIRED UNIT HEATERS							
SYMBOL	HEATER TYPE	INPUT BTUH	OUTPUT BTUH	A/FUE	FLUE D	FAN HP	MODEL
GUH-1	GAS FIRED UNIT HEATER	100,000	80,000	80%	4"	1/10	REZNOR FE-100 (OR EQUAL)

FANS										
MARK	HEATER TYPE	TYPE	CFM	ESP IN INCH	MAX. RPM	MAX. HP	DRIVE	MAX. SONES	CONTROLLED BY	MODEL
F-1	TOILET EXHAUST	CEILING FAN	150	0.15	300	1/10	DIRECT	3.2	LIGHT SWITCH	COOK GC-320 (OR EQUAL)
F-2	VENTILATION	WALL PROP	3000	25	650	1/3	BELT	12.8	WALL SWITCH	COOK 30XMW (OR EQUAL)



1 M-1 GAS UNIT HEATER DETAIL  
SCALE: NONE

HVAC ABBREVIATIONS

- AC AIR CONDITIONING
- AHU AIR HANDLING UNIT
- AUTO AUTOMATIC
- AFC ABOVE FINISHED CEILING
- AFF ABOVE FINISHED FLOOR
- AP ACCESS PANEL
- BC BALANCE COCK
- BFC BELOW FINISHED CEILING
- BLDG BUILDING
- BV BALL VALVE
- CONN CONNECT
- CLG CEILING
- CTR CENTER
- CV CHECK VALVE
- CW COLD WATER
- DFU DRAINAGE FROM UNIT
- DISTE DISTRIBUTION
- DIAME DIAMETER
- DOWN DOWN
- DP DROP
- DS DOWN SPOUT
- DWGS DRAWINGS
- EDH ELECTRIC DUCT HEATER
- EMG EMERGENCY
- EXIST EXISTING
- FA FRESH AIR
- FCO FLOOR CLEAN OUT
- FCU FAN COIL UNIT OR AHU
- FD FLOOR DRAIN
- FH FIRE HYDRANT
- FIXT FIXTURE
- FS FLOOR SINK
- FT FOOT/FEET
- G GAS
- GC GAS COCK
- GH GROUND HYDRANT
- GRND GROUND
- GV GATE VALVE
- HD HUB DRAIN
- HP HORSE POWER
- HTR HEATER
- HW HOT WATER
- HWR HOT WATER RETURN
- HPU HEAT PUMP UNIT
- INV INVERT ELEVATION
- KVA KILO-VOLT-AMPERES
- KW KILOWATTS
- LT LIQUID-TIGHT
- MANUF MANUFACTURER
- MH MAN HOLE
- MIN MINIMUM
- MTD MOUNTED
- NFHB NONFREEZE HOSE BIB
- NIC NOT IN CONTRACT
- PNL PANEL
- PRV PRESSURE REDUCING VALVE
- P&T PRESSURE & TEMPERATURE
- QTY QUANTITY
- RD ROOF DRAIN
- RW RAIN WATER
- S STACK/SANITY
- SA SHOCK ABSORBER
- SCHD SCHEDULE
- THRU THROUGH
- TYP TYPICAL
- UG UNDER-GROUND
- V VENT
- VTR VENT THROUGH ROOF
- W WASTE
- WCO WALL CLEAN OUT
- WG WATER GAUGE
- WH WALL HYDRANT
- WHA WATER HAMMER ARRESTOR
- W&V WASTE & VENT



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REVISIONS	
DATE	DESCRIPTION

PROJECT:  
**VERNON ROAD FIRE STATION**  
VERNON ROAD  
LAGRANGE GEORGIA

TITLE:  
**MECHANICAL SPECS**

MODIFIED DATE:	JOB NO: <b>1731</b>
ISSUED DATE: FOR BID AND PERMIT 07 MAY 2018	SHEET: <b>M-1</b>