Guilford Town Hall Boiler Replacement

Addendum #1

DTC Project No. 12 441

FRIDAY, JUNE 14, 2013

Diversified Technology Consultants
Hamden, CT Andover, MA

Dwg. M101

1. New HVAC work keynote 1:
    a. Contractor shall modify the existing pad if required for new boilers installation
2. Boiler room new HVAC work plan:
    a. Vent and combustion air pipe shall be 5"ϕ in lieu of 6"ϕ pipe indicated on the drawing. Coordinate with boiler manufacturer.
    b. Vent piping to penetrate through the exterior wall next to the stairs than once outside offset to the right side of the window and run up to a minimum of 12" above the window before terminating in a gooseneck.
    c. Gas pipe shall be connected to each boiler. Provide gas pressure regulator assembly at each boiler.
    d. For connection of chemical feeder to heating loop see piping diagram Dwg. M201.

Dwg. M201

1. Boiler room piping diagram:
    a. Each boiler connected to 3"ϕ primary loop manifold with 3"ϕ pipe branch in lieu of 2-1/2"ϕ pipe indicated on the drawing.
    b. Design temperature for primary and secondary heating loops shall be 180^{o}F - 160^{o}F in lieu of 180^{o}F - 150^{o}F indicated on the drawing.

Dwg. M301

1. Expansion tank Schedule:
    a. Expansion tank ET-1 shall be equal to Ametrol Model SX110V, Volume 62 Gal, acceptance 34 gal in lieu of TACO Model CBX84 indicated on the drawing.
    b. Water pumps schedule:
        (1) Pumps P-1, 2 shall be equal to TACO Model IL138, in line, 53 gpm @ 35ft., 1750 rpm, 208/1/60, 1 hp in lieu of pump 2400-20 indicated on the drawing.
        (2) Pumps P-3, 4 shall be equal to TACO Model IL138, inline, 60 gpm @ 30 ft., 1750 rpm, 208/3/60, 1 hp, VFD Drive in lieu of pump VR-20 indicated on the drawing.
        (3) No suction diffuser required for inline pump.
        (4) Provide boilers with outside air temperature reset control.

Additional Scope

1. Existing fuel oil tank to be removed. Contractor to provide crane to lift the tank and place it on the town owned flatbed. The town will remove the tank from site.
2. Contractor to be responsible for removal from site and disposal of existing boilers.

3. Town of Guilford is to be made aware if any asbestos is found and the town is responsible for any remediation required.

4. Contractor is responsible to review and include in their bid the additional scope shown on attached electrical drawings.

SECTION 230993 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

Sequence of operation for:

Boiler Control and primary heating loop pumps P-1, P-2, Pumps P-3, P-4 secondary heating loop with VFD drive

Each boiler consists of one manufacturer installed control and shall be monitored by central DDC control boiler. The boiler(s) shall be enabled whenever the outdoor air temperature is below 65 degrees. The control shall manage sequencing, water temperature and reset for all boilers. The boilers shall operate subject to the manufacturer supplied operating and safety controls. Should a boiler be commanded on by the control system, and fail to start, an alarm shall be sent to the head end computer and another boiler will be sequenced on. Boilers shall be rotated on a monthly basis to equalize run time. The primary loop water temperature reset schedule shall be as follows:

The primary hot water loop will have its leaving water temperature reset inversely proportional to outdoor air temperature as follows:

30 deg. OA temp = 180 deg. water
65 deg. OA temp = 170 deg water

When the lead boiler is started the second boiler will begin a timing sequence for twenty minutes (adjustable). When that time has passed if the lead boiler has not reached setpoint the second boiler will then be started. When the setpoint of the second boiler is reached it will cycle on its own setpoint. .

If the setpoint of the boilers is reached, boilers will shut down. When the lead boiler starts back up the timing sequence begins again. All setpoints are adjustable. All sequences and timings are adjustable. The boiler control will be wired “fail safe”. The DDC system will be equipped with manual override switches should emergency operation ever be required. Provide manually operated remote shutdown switches to disable boiler burners in case of emergency. The Hot Water Supply temperatures for each boiler and Hot Water Return temperature will be monitored through the DDC system and used to maintain the hot water reset schedule. If primary loop return water temperature drops below 150 deg. F DDC control system will modulate the boilers to maintain required setpoint.

Heating Pumps 1, 2 (Primary loop):

The boiler control system will start each pump whenever its particular boiler is called on for heat, and will run continuously. Boilers shall not start until flow is proven.
Should a pump fail to start as sensed by a current switch or pressure differential switch, the control system will automatically start another Pump/Boiler combination and issue an alarm at the head end computer.

Variable Speed Heating Pumps 4 & 5 (secondary loop):

The lead pump VFD will be enabled by the DDC system whenever the outdoor air temperature is below 68 degrees (adj) and will run continuously.

The pump(s) will be scheduled to provide alternating duty monthly. The VFD status switch will indicate pump failure. Should the lead pump fail the idle pump will automatically start and an alarm will be issued through the DDC system to the host PC.

Once started the VFD for the lead pump will receive a signal from the pressure transmitters located on the main supply and return piping. Whenever room radiation valves, or VAV reheat valves close, and the pressure differential from supply to return rises, the VFD will slow the pump speed. When the valves open the reverse will occur. The pressure transmitters will be located at least 100' from the pumps. Each pump will have its own VFD. The VFD's will have manual override switches should manual control ever be required.

Points List:

Boiler S/S	DO (x2)
Boiler Status	DI (x2)
Boiler Reset	AO (x2)
Boiler Supply Temperature	AI (x2)
Common Boiler Supply Temperature	AI (x1)
Common Boiler Return Temperature	AI (x1)
Boiler Pri. Pump S/S	DO (x2)
Boiler Pri. Pump Status	DI (x2)
Outside Air Temp.	AI (x1)
Secondary H.W. Pump S/S	DO (x2)
Secondary H.W. Pump Status	DI (x2)
Secondary H.W. Pump Speed	AO (x2)
Secondary H.W. Sup./Ret. Pressure	AI (x1)
Common Fire Alarm/System Shutdown	DI (x1)
Boiler Gas	DO (x2)