



1901 Inc.
2801 Syene Rd
Madison, WI 53713-3203
www.1901inc.com
Office: 608.308.1901 Fax: 608.273.9654

INVOICE NO. 22-5408

BILL TO COLUMBUS WASTE WATER TREATMENT
537 RIVER ROAD
COLUMBUS, WI 53925

JOB AS222232
COLUMBUS WWTP AS222232*WWTP
NO HEAT IN MAIN BUILDING
KATIE 920-350-2631
537 RIVER ROAD
COLUMBUS, WI 53925

ACCOUNT	INVOICE DATE	PO NUMBER	DUE DATE	JOB NUMBER	PAGE
COLUMWWT	12/21/2022		1/20/2023	AS222232	1

ATTN: KATIE (920) 350-2631

WORK REQUESTED: NO HEAT IN MAIN BUILDING

WORK COMPLETED: 12/06/2022 - Arrived on site and met with the maintenance staff to review the HVAC concerns that they had regarding their hot water heating system. Upon arrival, the main boiler was not operating. Troubleshooting the boiler found that the 15 amp fuse within the burner controls compartment had opened/blown. An initial inspection of the wiring within the controls cabinet did not indicate a cause of the blown fuse and the proper incoming voltage was present. Installed a new 15amp fuse and restarted the boiler to check the operation. Before the boiler started, the flue box and burner tubes were examined and it was found that there was a lot of debris build up in the flue box and burner tubes. Cleaned out the flue box of debris and informed the client about the burner tubes being fouled. Restarted the burner/boiler and tested the boiler in high and low fire. Combustion analysis showed that the fouled tubes were elevating the CO levels within the combustion gas; recommend a thorough cleaning of the burner tubes in the spring or before next heating season. Found that the boiler control flow switch is bad and stuck in the open or 'flow' position. After getting the boiler restarted, there was still no hot water flowing through the baseboard heaters and unit heaters within the facility, the cause of which was found to be 4 gate valves were closed and one triple duty valve was closed within the boiler mechanical room. Opened all of the closed valves and found that there was minimal flow through the heating system; the cause of the low flow was hot water system pump #1 was running backwards. Swapped two incoming voltage wires going to pump #1 to get the pump rotating in the proper direction. After establishing flow through the hot water system, the system pressure would not get above 5 psig, even with the make-up water valve completely open. The cause of the low system pressure was found to be a failed hot water coil in a unit heater for one of the chemical water treatment rooms. The coil ruptured due to a lack of water flow through the coil from a ball valve being closed on the supply water side of the coil. The leak caused all of the system water to drain below the level of the broken tube(s), which allowed a substantial amount of air to get trapped in approx. 1/2 of the total hot water piping, all of which resides above the level of the water leak. Valved off the leaking coil properly and went to several air bleeds at the highest point in the system to bleed a significant amount of air from the system. The hot water system began heating properly once the air was removed from the circuit. There are a few zones that are still cool to the touch, but most of those zones are also heated by AHUs. The client was made aware of the zone issues. There is evidence of a possible small hairline crack in the boiler heat exchanger based on the small amount of water coming from the bottom of the boiler and the overall deterioration of the boiler shroud housing at the base of the unit. The maintenance staff also had concerns regarding a secondary building that had make-up air units that were not operating properly. The make-up air units (labeled 30-AHU-01 and 30-AHU-02) both had their freeze protection switches tripped which was preventing the fan from operating. The make-up air units have heating only hot water coils that are constant flow with bypass dampers installed that divert air around the coils when no heat is required. The reason for the tripped freeze stats was found to be improperly programmed Honeywell system unit controllers on each of the units; the hot water coil air dampers were programmed as 'cooling' coils rather than heating coils, which would cause the air bypass dampers to close with a call for heat and open the air bypass dampers with a call for cooling. The controls were reprogrammed and the air bypass dampers

Amounts over 30 days subject to 1-1/2% service charge per month	AMOUNT DUE:	1,360.45
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FIRE PROTECTION

HVAC

PLUMBING



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stroked properly for heat application. The pillow bearings and motor bearings in 30-AHU-02 are all bad and need replacing; the maintenance staff is aware of the bad bearings and are working on replacing the bearings in the near future. Returned the make-up air units to normal operation. Lochinvar boiler #2, which serves the hot water coils in the make-up air units, was in alarm for low gas pressure. The initial inlet gas pressure to the boiler was measured at 2.4"wc, which is well below the minimum inlet gas pressure rating of 4.0" wc. To verify the inlet gas pressure at the outlet of the gas regulator, the gas valve was closed just upstream of the boiler inlet piping. The gas line was bleed for a few seconds and the inlet gas pressure was retested and measured 10.6"wc. The gas valve was then opened and the inlet gas pressure at the boiler measured the same 10.6"wc as the outlet of the gas regulator. The boiler was restarted and returned to normal operation. The cause of the low gas pressure could be a gas regulator that might be failing or the spring is getting weak or stuck within the regulator. The client was informed of all the issues that were found during the site visit before leaving the site. All units were returned to normal operation besides the unit heater that has a ruptured hot water coil. The client will be contacting 1901 inc regarding boiler replacement.

ITEM QTY.	DESCRIPTION OF ITEM	ITEM PRICE	ITEM TOTAL
8	HVAC SERVICE TECH LABOR	150.00	1,200.00*
1	2 - TIME DELAY FUSES COMBUSTION ANALYSIS TEST FEE FUEL SURCHARGE	160.45	160.45*

FINAL BILLING

TOTAL AMOUNT: 1,360.45

* means item is non-taxable

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