



Owner City of Naples

Police Station / Fire Department



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Executive Summary Report

A property inspection was performed on May 14-15, 2013 at Police Station and Fire Department. We met with James Ingraham and discussed an overview of some of the property systems and then proceeded with the inspection of the property.

This property serves both the Police Department and the Fire Department & EMS.

The original 1-story building (named in the reports as Bldg " B" – Fire Department) had a 2-story addition constructed in 1998 (named in the reports as Bldg " A" – Police Department).

This report will review each building separately. The connecting stairway structure is included in the 2-story review (Bldg " A").

GENERAL APPEARANCE

The buildings(s) appeared to be in fair condition. The 2-story police dept. (designated " A" in this report) is a 15 year old addition to the much older 1-story building (Building " B" - Fire Department & EMS), joined by a common stair enclosure structure. The 2-story building is a split face colored load bearing CMU shell with hollow core precast floor and a wood truss roof with a standing seam painted metal roof. The 1-story building (designated " B" in this report) is an approximately 30 year old CMU and Stucco clad shell with steel joist/girders and metal deck supporting a recent single play membrane flat roof system.

INSPECTION

Authorization to perform this report was given by: Jed Secory, Purchasing Manager
City of Naples

Site

The surrounding site was in reasonably good condition. Some stormwater erosion of the walkway pavers at the entrance is evident. Surface aging on parking pavement is apparent and will need to have work performed in a few years. The break area lawn on the north side appears to flood into the exit steel doorways and should be addressed as noted in the checklist. Landscaping is healthy. Utilities are functioning adequately.

FIXED SYSTEMS

Building Envelope

The 2-story "A" envelope appears to be unsealed CMU and has window air infiltration conditions as noted. The 1-story "B" envelope has the same condition and base of wall moisture being retained in the mulch beds at slab level. Addressing these items will be necessary.

Building Interior

Interior finishes are aged and some require replacement. The acoustical ceiling systems of both buildings are designed to perform as air return plenums and cannot be a sealed passage due to age, openings, cracked tiles, lack of hold down clips and lack of sealant at the edge moldings which are standard practice for this type of system. The common corridor lighting in the 2-story is dark and not adequate.

The flooring is maintained but worn and needs replacement as an aesthetic judgment.

Building Roof

The 2-story metal roofing exhibits corrosion where the substrate is holding water due to movement as noted in the checklist. The 1-story flat roof is in very good condition with only one roof drain pipe appearing obstructed.

OPERATING SYSTEMS

Building HVAC

In the 2-story " A" the building HVAC utilizes underground water from shallow geothermal wells as medium for heat exchange. Fresh-air intake is provided by a rooftop package DX FAHU air-conditioning system. Multiple heat pump/AHU units are independently located in various zones within the building. The majority of the units are suspended over each floor's central corridor, serving localized spaces through rigid main duct and flexible branch ducts. All units are fairly new. Many sections of previously installed chilled water or geothermal copper piping are cut and abandoned in place, and substituted by PVC. The building's air distribution appears to be out of balance and neither effective nor efficient. Areas of negative air pressure are observed on the first floor which displays signs of moisture intrusion around window openings and exterior door frame rusting from frequent condensation. The buildings overall HVAC system appears to be working less than satisfactory due its lack of capacity to bring down relative humidity to an optimum level.

In the 1-story "B" building, as was observed in the 2-story Police Dept. building, the geothermal HVAC system is not performing effectively in our observation. There appears to be a significant negative air pressure condition throughout most of the interior spaces. We recorded very high humidity levels in the building perimeter interior offices. Temperatures also were not consistent when randomly observed throughout the days we were onsite. Users communicated the interior air temperatures were unstable. These are indications that the HVAC System is not being controlled to match the loads in the building. This negative pressure condition is the probable cause of most biogrowth issues in our opinion. As is the case in the Police Dept. "A" Building, the ceiling return air plenums cannot perform as designed with acoustical ceiling tiles out of place or not fitting due to damage or age (shape) and should be considered for ceiling system replacement. We recommend an independent HVAC Engineer's commissioning study of the geothermal, building management controls and air distribution system to determine the following:

- 1. Can the geothermal system be made functional without significant expense?
- 2. Are the controls are working as designed and per ASHRAE?
- 3. Is the sizing and condition of all HVAC acceptable for the loads imposed on the facility?

Building Plumbing

All plumbing systems are in good working order.

Building Electric

The 2-story "A" building appears to have adequate capacity and performance. The 1-story "B" building requires significant work on low voltage systems and power circuit capacity as noted in the checklist. Employees are modifying the receptacles to increase plug in capacity and are creating hazards which should be addressed.

Building Fire & Life Safety

The building has both a fire sprinkler system and a fire alarm system. The Fire Alarm inspection certificate is current.



HVAC System "A"

The City of Naples / Police and Fire Department

	HVAC System	Status		Comments	
		No Issues	Issues		
		Air I	Distributio	on System	
1	Air Handler Supply/Return Duct Connection	X		Overall the system appears to be generally in good condition, but ineffective and inefficient. Possible negative air pressure exists in some areas.	
2	Condition of Filters	Х			
3	Condition of Coils	X			
	Condition of Drain & overflows	Х			
5	Condition of Drain Pans	Х			
	General Description of Air Handler Condition	x		Overall the system appears to be generally in good condition, but ineffective and inefficient.	
		Č	Cooling Sy		
	General condition of heat pumps/AHU units.	×		Overall the system appears to be generally in good condition, but ineffective and inefficient.	
	General condition of outdoor/rooftop condenser units.	x		Only one unit over the West building rooftop behind Weswall.	
	Confirm Maintenance & Daily logs			None	
		C	ontrol Sys	stems	
	General Condition of Control System	X	and the second second		

General Description:

The building HVAC utilizes underground water from shallow geothermal wells as medium for heat exchange. Fresh-air intake is provided by a rooftop package DX FAHU air-conditioning system. Multiple heat pump/AHU units are independently located in various zones within the building. The majority of the units are suspended over each floor's central corridor, serving localized spaces through rigid main duct and flexible branch ducts. All units are fairly new. Many sections of previously installed chilled water or geothermal copper piping are cut and abandoned in place, and substituted by PVC. The building's air distribution appears to be out of balance and neither effective nor efficient. Areas of negative air pressure are observed on the first floor which displays signs of moisture intrusion around window openings and exterior door frame rusting from frequent condensation.

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Photo State State

Descriptions/Comments

Description:

View one of the geothermal (supply or recharge well?) Northwest of the West building.



Description:

View one of the geothermal (supply or recharge well?) Northeast of the East building.

Descriptions/Comments



Description:

All the geothermal systems and appurtenance are being housed in the enclosure at the North end of the West building.



Description:

View of the building pumps that circulate the geothermal water into and out of the various heat-pump units within both buildings.

Descriptions/Comments



Description:

View of the geothermal well pumps (left) and the plate heat-exchanger (right), within the geothermal compound.



Description:

View of the machine plate on the plate heatexchanger.

Descriptions/Comments



Description:

View of a conventional DX condenser unit at the rear of the East building part of a fresh air handling unit (FAHU) air-conditioning system in the building's attic mezzanine.

The cut-off and abandoned copper pipes coming out of the wall might have been previously supplying geothermal water to a now-removed RTU serving one of the spaces in the West building below.



Description:

View of the abandoned copper pipes.

Descriptions/Comments



Description:

View of the outside-air intake grille on the North side of the rear stairwell.

The door to the left is the storage room where the emergency generator fuel tank is located. The door on the right is the emergency exit for the West building. The geothermal entrance riser is located behind this door on the right hand side.



Description:

View of the geothermal entrance riser at the corner of the North emergency exit door.

Note the supply/return piping going to East building to the right, and going to West building to the left.

Descriptions/Comments



Description:

View of the East building HVAC fresh-air intake and return-air ductwork going through a fan coil dehumidifier on the right before entering the FAHU air-conditioning in the attic mezzanine.



Description:

View inside the East building storage room. Note the fuel storage tank with the vent stack on the left.

Descriptions/Comments



Description:

View of the fresh-air duct from the dehumidifier in the rear storage room below entering the FAHU.



Description:

View of the DX FAHU air-conditioning in the East building's attic mezzanine.

Note the supply distribution ductwork on the end of the unit.

Descriptions/Comments



Description:

View of a geothermal heat pump/AHU in the same attic mezzanine.

Note the unit's air intake terminal and grille in the foreground. The supply distribution outlet is through the floor.



Description:

View of the mechanical piping for the geothermal and the DX FAHU within the mezzanine.

Photo Descriptions/Comments Description: View of a heat pump/AHU serving the garage. Note the substituted PVC and the abandoned copper supply/return piping. Description: View of the abandoned geothermal and active domestic water copper piping on the first floor.

Descriptions/Comments



Description:

Typical view of the geothermal heat pump/AHU mounting inside mechanical rooms.

Note the abandoned copper supply/return piping.

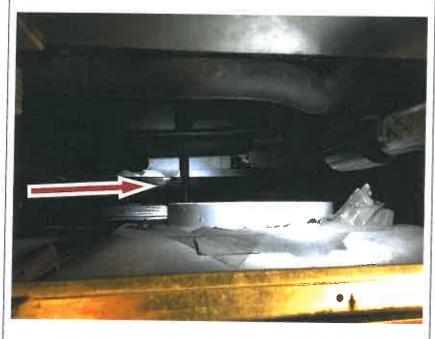


Description:

The remaining of the building's heat pump/AHU's are hung within the attic space above the North/South first and second floor central corridors, such as this one.

Photo	Descriptions/Comments
	Description: The bottom of the condensate pan is just a few inches above the ceiling tile. Note the diffuser seen here is not for supply air distribution as it is not connected to duct.
	Description: The return air is directed from the hallway up through the un-ducted diffuser up to the ceiling return air plenum above and subsequently drawn into the AHU air intake.

Descriptions/Comments



Description:

View of the attic plenum space.

Note the un-ducted diffuser used as return air passage.

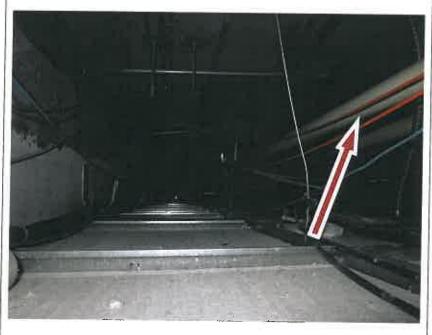


Description:

Typical view of the heat pump geothermal supply and return piping within the attic space/return air plenum.

Note flexible supply branch ductwork. On the left.

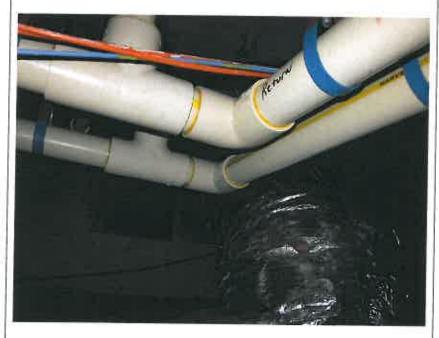
Descriptions/Comments



Description:

General view of the ceiling plenum.

Note the geothermal water supply and return piping on the right.



Description:

View of the geothermal water supply/return piping, and flexible ductwork within the ceiling plenum.

Descriptions/Comments

Description:

View of the abandoned copper piping alongside the substituted PVC geothermal piping.



Description:

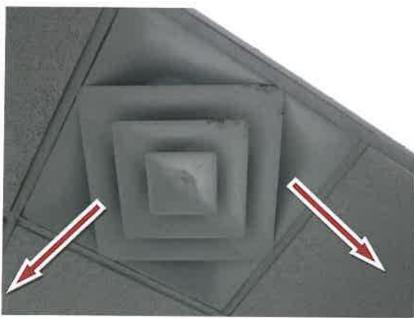
View of the bottom of a condensate pan below a heat pump/AHU.

Note the extensive use of flexible ductwork in the tight plenum space.

Descriptions/Comments

Description:

This diffuser is also being used as a passage for return air from the central corridor judging from the dust stain on the surrounding ceiling tiles' edges.



Description:

A real air diffuser has a slight feature variation.



HVAC "B"

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		·		
	HVAC System	Status		Comments
		No Issues	Issues	Somments
				on System
1	Air Handler Supply/Return Duct Connection	×		
2	Condition of Filters	Х		
3	Condition of Coils	Х		
4	Condition of Drain & overflows	x		
5	Condition of Drain Pans	Х		
6	General Description of Air Handler Condition	x		
L		C	Cooling S	ystem
1	General condition of Roof mounted condensing units.	x		The state of the s
2	Confirm Maintenance & Daily logs			None
3				
X		C	ontrol Sy	stems
1	General Condition of Control System	x	· · · · · · · · · · · · · · · · · · ·	

General Description:

The building HVAC utilizes underground water form shallow geothermal wells as medium for heat exchange. AHU units are located in the South, middle, and North mechanical room. A rooftop package unit is serving as a fresh-air handling unit (FAHU) air-conditioning supplying fresh air through the building's ceiling plenum to various mechanical rooms where the AHUs are located. All units are fairly new. Many sections of previously installed geothermal copper piping are cut and abandoned, and substituted by PVC. The building's overall HVAC system appears to be working less than satisfactory due its lack of capacity to bring down relative humidity to an optimum level.

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Descriptions/Comments



Description:

View one of the geothermal (supply or recharge well?) Northwest of the West building.



Description:

View one of the geothermal (supply or recharge well?) Northeast of the East building.

Descriptions/Comments



Description:

All the geothermal systems and appurtenance are being housed in the enclosure at the North end of the West building.



Description:

View of the building pumps that circulate the geothermal water into and out of the various heat-pump units within both buildings.

Descriptions/Comments



Description:

View of the geothermal well pumps (left) and the plate heat-exchanger (right), within the geothermal compound.



Description:

View of the machine plate on the plate heatexchanger.

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Descriptions/Comments



Description:

View of the rooftop horizontal fresh-air handling unit (FAHU) air conditioning West of the Police Dept. building West wall providing outside air for the Fire Dept. building.



Description:

View of the equipment plate.

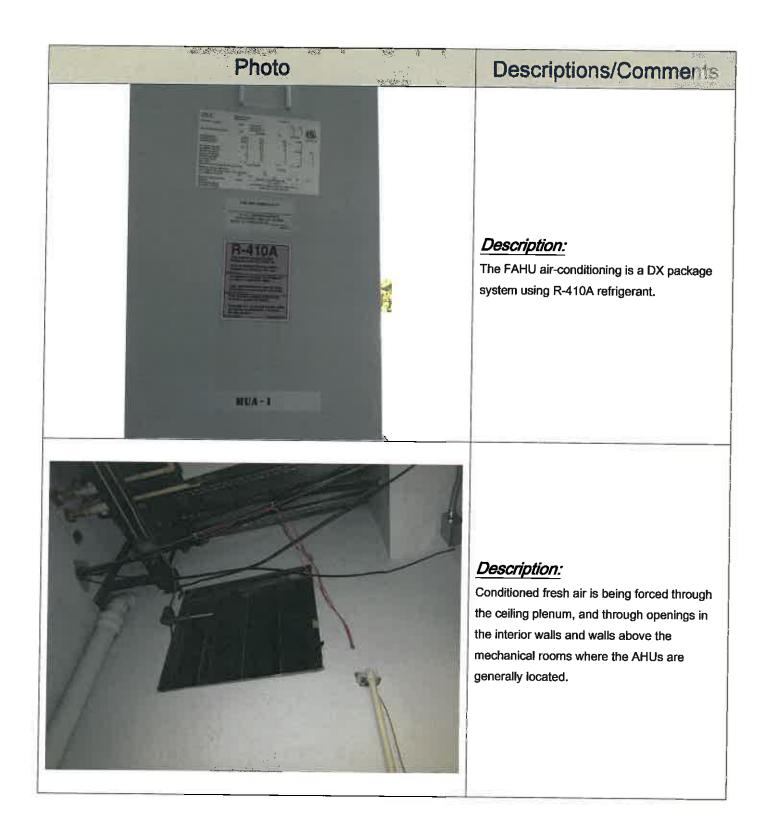


Photo L Descriptions/Comments Description: Typical opening in the mechanical room wall for fresh-air distribution. Description: Typical opening through interior wall for freshair distribution.

Descriptions/Comments



Description:

Return air sometimes is seen ducted in a round ductwork and dropped into the air intake grille of the AHU in the mechanical room below.



Description:

View of a typical return-air duct over a mechanical room where HP-2 is located. Note the pre-cooled outside air opening on the left.

Photo Descriptions/Comments | Description: View of a return-air duct being brought down from the ceiling onto the return-air intake grille of HP-2 mechanical room. Description: View of a similar configuration in for HP-6 mechanical room.

Descriptions/Comments Photo · Description: View of an efflorescence buildup around the domestic water copper pipe union joint as a result of the chemical reaction of the pipe with various salts in water. Description: View of the geothermal water entrance riser at the West/East building joint North emergency exit corridor.

Descriptions/Comments

Description:

The riser feed the West building to the left, and the east building to the right.

Note the return line is running parallel to the supply.

Note the North emergency exit door at the North building joint corridor.



Description:

View of the geothermal supply/return piping turning West through the west building wall.

Photo Descriptions/Comments; Description: View of the geothermal supply/return water connection inside the South end mechanical room, serving HP 3, 4 and 5. Description: View inside the South mechanical room. 157 14/2013

Photo :

Descriptions/Comments



Description:

View of the refrigerant lines once serving the previous DX systems in the South mechanical room.



Description:

View of the geothermal water supply/return connection inside the middle mechanical room.

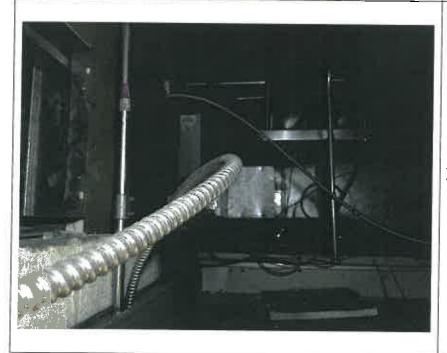
Photo	Descriptions/Comments
	<i>Description:</i> View of HP-6.
Water Control of the	<i>Description:</i> View of HP-2.

34

Descriptions/Comments

Description:

View of the North end mechanical room where HP-1 is located.



Description:

Typical view inside the ceiling plenum.