

INTRODUCTION: Responsibilities During Repair and About My Internship

While working at Cleveland State's Facilities Department these past 10 months (7/13/2022 – Present) my main tasks were to procure building drawings and schematics for internal department and external engineering firm use and create HVAC zone maps for buildings on campus. The biggest project I worked on is a repair project for a chilled water leak on E24th Street between Chester and Euclid Boulevards.

Beginning

In late August 2022, the building technicians noticed that the chilled water plant was losing hundreds of gallons of water each day. It was also noticed that the top floors of Rhodes Tower were much warmer than usual.

Evidence

- Top floors of Rhodes Tower being way above normal temperatures.
- The cooling units on top of Rhodes Tower overheating.
- The chilled water plant losing hundreds of gallons of water. (Initial piece of evidence)
- Chilled water line having less pressure than normal.
- Acrid fumes and steam spewing from a manhole cover by the entrance to Fenn Hall



Figure 1. The location between the Law and Music Buildings being investigated.



Figure 2. Steam spewing out of the manhole cover on E24th

Possible locations of the leak

- Underneath the walkway between the music building and the law building
- Fenn Tower mechanical room
- Under the front Washkewicz stairs
- E24th Street between Chester and Euclid Blvd.



Figure 3. Chilled water pipe in question

Locating

Internal technicians were initially used to find the leak in visible areas of the chilled water system; this was not useful in finding it. A leak detection company would be called out to investigate other possible locations that would end up being red herrings. The location of the leak would be discovered when mephtic steam started spewing from a manhole cover, upon further inspection by Cleveland Thermal the fumes were the mistakable smell of chilled water flashing off; the chilled water line was found to be leaking onto the nearby steam vault.



Figure 4. The hole in the pipe responsible for the leak

Resolution

To pinpoint the location of the chilled water line original building plans were found for the surrounding buildings. Upon inspection of the various building plans, it was discovered that the chilled water line ran closer than previously known to the steam vault and that the drawings were not to scale. To compensate for this a vacuum truck would be called out to bore down and find the physical pipe. Once the pipe had been found Relmec would be called out to repair the damaged pipe.

Future Work

Future work to prevent leaks like this or catch them quicker would entail installing isolation valves in key areas of the chilled water system, and the installation of flow and pressure sensors in other areas of importance to the system; the combination of these features would allow future leaks to caught and isolated before major damage occurs.

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