MECHANICAL TRADE
FLOODED NEW BUILDING

PROJECT OVERVIEW

A mechanical piping contractor was contracted to install piping and connect it to the main water pipe in the mechanical room to provide the heating and cooling water supply to the air handling units of a high-rise building.

FLOODED NEW BUILDING ISSUES

The building was in the final stages of piping installation, and several floors were completed.

- The air handlers were located on the top floor.
- The 6-inch main water piping was carbon steel with groove lock-style fittings and couplings.
- When the new piping connection to the main water pipe was tested, it passed all test requirements and was determined to be ready for filling and pump operation.
- During the final finishing filling and pump operation, the piping attached to the 6-inch main separated and dumped water into the mechanical space.

The resulting water flow overcame the water prevention system seals and curbs built into the concrete slab.

- The overflowing water rained down through mechanical shafts and into slab penetrations.
- Water flowed down to several floors.
- Damage was extensive to walls, floors, and many types of building components.

LESSONS LEARNED

When connecting the 6-inch main water pipe to the newly installed piping, there was a misalignment from the fitting to the main water pipe end.

- The miss alignment was an approximately 1/2-inch, face-to-face fitting to the main water pipe.
  This resulted in the coupling incompletely setting in the groove.

The coupling and gasket did not leak during testing but succumbed to leaking due to the pump flow and possible fan vibration when filled.

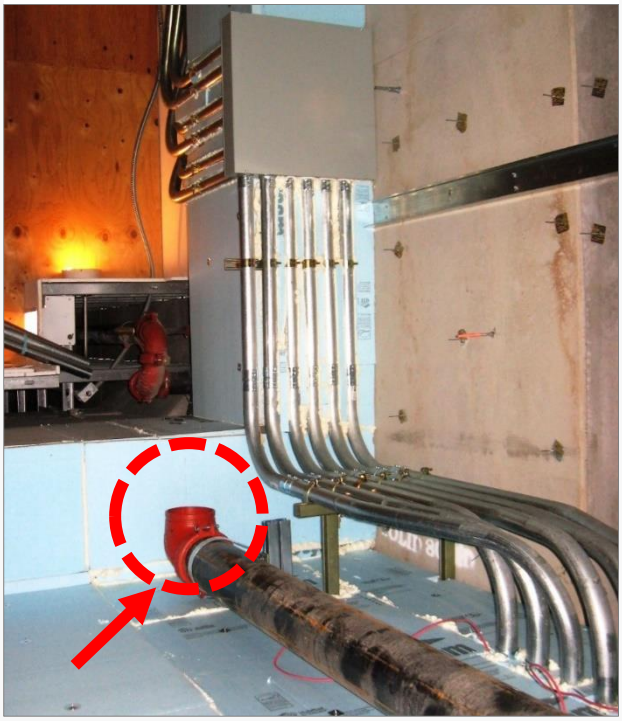
- It was determined the piping contractor had used electric-driven impact guns to tighten the coupling and gasket fittings.
  The power provided by this tool allowed it to tighten not in the groove but next to it.

Electric tools are a great way to increase production and make some tasks easier on a worker's body.

- When these tools are used, extra attention must be focused on always following proper installation procedures to make correct connections per piping industry guidelines and best-known methods.

Actual Loss: Undetermined amount of loss with a large Insurance claim

Main Water Pipe 6-Inch Inlet



DISCUSSION QUESTIONS

1. What are the pipe fitting requirements for this project?
2. What are the pipe fitting installation procedures for this project?
3. Will we use electrical tools to tighten fittings or tighten them by hand?

MECHANICAL TRADE
LOCKOUT/TAGOUT
SAFETY TOOLBOX TALK

OVERVIEW

Lockout and tagout (lockout/tagout) (LO/TO) refer to safeguard methods employers and employees use to protect workers from hazardous machinery energy releases. LO/TO are safety practices or procedures to disable machinery or equipment from being energized or activated to prevent unaware employees and the public from harming themselves or others.

LEARN AND APPLY THE FOLLOWING

Any trade must deal with equipment or machinery that is potentially dangerous, especially shut-down equipment. Many accidents happen when a worker turns on a machine that others are repairing.

- LO/TO procedures are one way to ensure these types of accidents do not happen by ensuring power cannot reach the machinery while workers are near it or repairing it.
- LO/TO methods are only effective if workers are intentional and consistent with LO/TO methods. Simply turning off a machine is not an acceptable practice.

Lockout: LO means a lock or other device is placed that prevents the release of energy.

- LO examples are electric circuit breakers, line valves, disconnect switches, or blocks.

Tagout: TO means attaching a tag on the shutoff device or switch that warns other employees and the public not to touch or start up the equipment.

- TO must be used in addition to LO to maximize effectiveness unless LO of the equipment is not possible.

Training: The effectiveness of lockout or tagout is entirely up to the employee.

- Ask to see and become familiar with your company's LO/TO procedures for the equipment you will work near or with.
- Make sure you are adequately trained in LO/TO procedures.

Figure 1 Valve LOTO

Figure 2 Comm Valve LOTO

Mechanical Trade: Lockout/Tagout Procedures

Regarding mechanical work such as vehicle and assembly line machinery maintenance, LO/TO procedures can absolutely protect workers against accidents caused by releasing hazardous energy.

A. For mechanical workers, hazardous energy may refer to mechanical motion, potential energy due to pressure, gravity, springs, battery-generated energy, thermal and chemical energy, etc.

B. Any machinery or equipment being worked on must be isolated from any energy sources that will allow it to activate and cause injury.

C. During pipe installation or repair, use the Double Block and Bleed procedure. This is the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking a drain or vent valve in the line between the two closed valves.

D. During maintenance, vehicle maintenance workers complete LO/TO truck lock procedures to keep others from operating the vehicles.
- A way you can do this for machinery with battery sources is to cut all connection of energy from the battery.
- Another common method is to run a cable around the steering wheel and the brake pedal, secured with a padlock.

Meeting Date: **Supervisor:** **Employee Name:**

DISCUSSION QUESTIONS

1. What are lockout and tagout safety devices?
2. How do lockout and tagout safety practices or procedures improve safety on site?
3. Are there General Contractor or Building Owner specific rules that apply to Mechanical Work that are above OSHA Lockout/Tagout standards?