4. Plumbing

Overview
Plumbing site visits were performed from February 9 through February 12, 2009 on typical floors 10, 15, 21; restricted floors 2, 3, 5, 17, 19; floor 1, penthouse, floor 12 and the parking garage. The plumbing team visually assessed these floors for potential upgrades, repairs, building code issues and access compliance requirements per the 2007 California Plumbing Code (CPC). The plumbing team also noted evidence of corrosion and service life issues.

Building engineering staff accompanied the plumbing team, provided access and also pointed out known deficiencies regarding the plumbing systems.

The plumbing systems consist of a natural gas distribution system, domestic cold water system, domestic hot water system, building sewer, storm drainage and plumbing fixtures.

The following items are considered a major concern with the plumbing systems:

1. Install a seismic shut-off valve downstream of the gas meter for life safety.
2. Upgrade ware washing pot sink to add emergency eye wash station per code.
3. Upgrade press room emergency eye wash drench shower with tepid water.
4. Upgrade chemical treatment/storage by adding emergency eye wash station per code.
5. At the elevator relief vent, upgrade and remove steel grate and drain and install a roof curb and pre-fabricated relief vent on the roof to prevent water intrusion.

A. Natural Gas System

The natural gas system is medium pressure (3 psi) with the main meter located at the corner of 4th and N Streets. The total gas demand is 19,500 MBH, which serves the heating boilers B-1 and B-2 in the mechanical penthouse, boiler B-3 (water source heat pump system) on the third level garage mechanical room, domestic water heater DWH-1 also on the third level garage mechanical room, and the kitchen gas demands. The main gas distribution piping at the meter is 4 inches.

It is recommended to install a 4-inch seismic shut-off valve downstream of the gas meter.

B. Domestic Cold Water System

The domestic cold water enters the building off of 4th Street into a ground floor mechanical room. A 6-inch reduced pressure backflow preventer protects the City water system from back syphonage contamination. The domestic water distribution piping then splits off with a 3-inch pipe to serve the first and second floors off of City pressure and a 5-inch pipe to the domestic water pressure booster pump system (CBP-1) to serve the upper floors of the building. Pressure regulating valves control pressure due to the static

head of the building. In the event of pressure regulating valve failure automatic water shut down valves were installed to prevent system overpressure and a flooding condition.

The following is recommended for repair and upgrade of the domestic water system:

1. Overhaul and clean scale build-up in the 6-inch reduced pressure backflow preventer to reduce overall pressure loss.
2. Add variable speed drives to the three booster pumps to reduce energy costs and improve delivery pressure performance.

C. Domestic Hot Water System

The domestic hot water system is a combination of electric water heaters and a gas-fired water heater. There are four 36KW, 120 gal. electrical water heaters, EWH-1, 2, 3, 4, and one 400 MBH, 225 gal. gas-fired water heater, DWH-1. The water heating systems appear to be in good service condition although gas water heaters are more energy efficient than electric.

The following recommendations apply to the domestic hot water system.

1. Replace the existing gas-fired water heater with a high efficiency gas water heater.
2. Replace four electric water heaters with high efficiency gas water heaters.
3. Add mixing valves to hot water heaters and store water at a minimum of 140°F to avoid risk of Legionella.
4. Add secondary drain pans to EWH-1, 2, 3, and 4.

D. Plumbing Fixtures

The plumbing fixtures consist of stainless steel sinks and faucets for daycare and break room areas. The kitchen area has stainless steel pot, prep, and hand wash sinks. The daycare area has kid-height sinks and tank type toilets. The core toilet rooms have standard flow fixtures including flush valve type water closets and urinals, countertop lavatories with metering faucets and hose bibs. The core janitor rooms have service sinks with integral vacuum breaker faucets. The core water coolers are accessible type set in alcoves.

Mechanical and utility spaces have floor sinks and floor drains for discharge drains from various mechanical and plumbing equipment.

Emergency wash down equipment consist of emergency eye wash stations and combination emergency eye wash and drench showers.

The following is recommended to upgrade or repair the plumbing fixtures:

1. Upgrade break room sinks and accessible faucets.
2. Upgrade ware washing pot sink to add emergency eye wash station.
3. Upgrade and add accessible hand wash sink in kitchen area.

4. Upgrade and add accessible hand sinks in daycare area.
5. Upgrade by replacing kid-height tank type toilets with water conserving kid-height tank type toilets.
6. Upgrade staff toilet with dual flush valves and insulate hot water piping under lavatories.
7. Upgrade core urinals with ultra-low flow flush valves.
8. Upgrade core toilets with dual flush valves.
9. Upgrade core hose bibs by adding vacuum breakers.
10. Upgrade press room emergency eye wash drench shower with tepid water.
11. Upgrade chemical treatment/storage area by adding emergency eye wash station.

E. Garage Drainage

Garage drainage consists of floor drains with heavy duty traffic grates.

The following recommendation applies:

1. Replace heavy duty traffic grates.

F. Elevator Shaft Relief Vent

The elevator relief vent is a steel grate on the roof with a drain pipe connected to the sheet metal plenum. The inlet grate is a source for water intrusion.

The following recommendation is advised:

1. Upgrade and remove steel grate and drain and install roof curb and pre-fab relief vent.