

FLOOD PROOFING – STATE OWNED BUILDINGS

FIELD DATA SUMMARY SHEET

Building No.: 06014 (Old No. 5009)
109 State Street – Pavilion Building
Location: Montpelier Complex

100-Year Flood Elev. 525.4

Total No. of Floors: 5
Floors including basement - 6
Gross Floor Area: 124,188 sq ft
Rentable Area: 110,475 sq ft
Lowest Level Floor Elev. 516.7
First Floor Level Elev. 529.7

Type of Structure: Masonry brick structure with basement walls and floors constructed of concrete. This building is connected to 111 State Street via the tunnel at lower unknown elevation.

Primary Area Usage:

Office space, and Library area are the primary usage of all floors except the basement. The basement is used for utilities, Auditorium, mail room, Vault area which is now used for storage of office furniture (no longer houses historical documents), and the Library Server (computer room). Note at the time of site visit, June 2006, the Vault room was being used as temporary storage for Civil War materials.

Small kitchen area with sink near library area.

Primary Flood Damage:

There are a number of Mechanical rooms located in the basement:

- Three elevators provide service to the basement floor with operating system located on the basement floor. (hydraulic units on the floor and electric panels mounted on wall +/- 48 inches above the floor.
- Cooling equipment +/- 10 to +/- 40 inches above the floor.
- Sidewalk heating system with control panels +/- 36 inches above the floor.
- Summer auxiliary boiler unit mounted on the floor.
- Circulation pumps and condensate pumps on floor.
- Large electrical panel mounted on wall +/- 24 inches above the floor.
- Sprinkler system control located in basement.
- Chiller unit 10-inches above the floor.
- Large electrical distribution panel, main transformer panels on 4 inches pad, and a transfer switch 36 inches above the floor (need to confirm if this transfer switch is for the emergency generator on first floor).
- Fire alarm panels mounted on the wall near floor.
- Large communication panel mounted on wall.
- A/C unit and circulation pumps for chilled water.
- Condensate pumps located on floor.
- Hot water tank located on floor.

- Library server computer room on basement floor.

Plumbing, for kitchen sink located in basement. This building has two sewer lift station to pump waste from the building to the City's sewer mains. (Typically sewer lift station protect a building from floodwaters entering a building through the sewer lines.)

Based on the reports of the 1992 flood event (ice jam flooding) the floodwaters first entered this building, from the area known as the Vault room. Floodwaters also entered the building through the steam tunnel, and other wall penetrations. The floodwaters also entered the Auditorium. The Pavilion Building (109 State Street) is connected underground via a tunnel to the Building at 111 State Street. Floodwaters can move through tunnel into the Pavilion Bldg. Power to the Pavilion Bldg had to be cut due to the depth of floodwaters in the building.

Potential Methods for Damage Reduction:

Electrical distribution panels, switch panels, service connections, wall penetrations below the 100-year flood elevation protect from water infiltration or elevate above 100-year flood elevation.

HVAC equipment below the 100-year flood elevation protect from water infiltration or elevate above 100-year flood elevation.

Plumbing wall penetrations, water heaters, toilets, sinks, floor drains, and shower drains below 100-year flood elevation protect from water infiltration or elevate above 100-year flood elevation. Typically toilets, sinks and floor drains below the 100-year flood elevation require back-flow valve installations. If back-flow prevention not practical, all restrooms, sinks, toilets and showers could be relocated to the first floor above the 100-year elevation. This building has sewer lift stations that prevent floodwaters from entering this building through the sewer system, however the building at 111 State Street which is contacted to 109 State Street via a tunnel does not have a sewer lift station, flood waters can enter the building at 111 State Street via the sewer system and then flow to 109 State Street. This flooding sequence occurred during the 1992 flood event.

Based on the 1992 flood event, dry floodproofing this building is not practical. Dry floodproofing this building would not be practical based on the potential of flood depths to reach a depth of 8.7 feet, the difference between the 100-year flood elevation 525.4 and the lowest floor elevation of 516.7. Wet floodproofing by elevating equipment above the 100-year flood elevation will reduce flood damages but has limited applicability.

A possible method for reducing flood damages at this building is to seal the building as much as possible, reduce areas where large amounts of water can enter the building, then design the interior basement floor and walls to be flood-resistant materials, install a number of sump pumps at low points to remove water from the building (discharging to appropriate locations) reducing the water level depths in the building which in turn reduces flood damages. The power supply to the sump pumps would need to be elevated above the 100-year flood elevation.



Montpelier Complex – 109 State Street (Date: June 2006)