



Memorandum

Date: July 26, 2019

To: Newburyport Manager, LLC

From: Stephen Glowacki

Regarding: Waterfront West
Newburyport, MA
Flood Mitigation Study and Action Plan

This memorandum details flood mitigation Best Management Practices (BMPs) to be implemented and an action plan for potential shelter in place by residents and relocation of parked cars during heavy flooding and/or storm surge events in satisfaction of amended Section XXIV-F(2)(q).

1. Flood Mitigation Study

a. Site Conditions

The redevelopment project has been designed to minimize potential damage, cost, and inconvenience associated with potential future flooding by implementing Best Management Practices (BMPs) for waterfront design. During a flood event, the proposed site grading will provide relief to the stormwater system by directing stormwater overland to the Merrimack River.

The Project site is located in both AE and VE flood zones according to Federal Emergency Management Agency (FEMA) FIRM panel 25009C0128F. These zones contain height restrictions which require proposed building elevations be located above the base flood elevation (BFE). The proposed buildings are comprised of first floor commercial space and ground level parking, and the upper floors are residential space. The commercial space is designed to have a finished floor elevation a minimum of one foot above the VE and AE flood zones. All residential units are located above the first floor and a minimum of twelve feet above the base flood elevation. The Project utilizes best management planning practices such as “sacrificial” ground-level parking, commercial space located above the base flood elevation, and residential space located over twelve feet above the base flood elevation.

The site grading and building design also provide temporary flood storage volume for floodwaters in non-essential areas such as designated ground floor parking areas where it can be stored until the flood dissipates.

Landscaped areas will be used to divert runoff away from essential areas such as residential and commercial buildings. Additional flood control methods will be used to maintain emergency access throughout the site during a flood event.

b. Utilities

Water-tight sewer system components will be used to eliminate the potential for stormwater contamination during a flood event and to minimize infiltration and inflow of stormwater and groundwater into the sanitary system. Additionally, all pump station controls will be installed above base flood elevation to prevent damage and maintain operation. All mechanical/HVAC units and associated equipment will be located on the roof to eliminate flooding concerns. Electrical transformers will be pole-mounted rather than located on the ground.

c. Stormwater

The proposed drainage system has been designed to collect and convey stormwater runoff during the design storm event. The subsurface closed pipe system provides some underground storage for floodwater. Tidal check valves will be utilized to limit the back flow of sea water into the stormwater system. High-density polyethylene (HDPE) pipe will be used as it is corrosion resistant and will provide greater longevity compared to corrugated metal (CMP) pipe and concrete pipe, which are more susceptible to corrosion from saltwater.

d. Building/Architecture

Site Resiliency is achieved through the following design considerations:

- Locating all commercial spaces above the base flood elevation
- Locating all residential spaces one story above the base flood elevation
- Locating all building, electrical, and mechanical systems above the base flood elevation
- Designing building ground floor parking area and facades with “breakaway” openings in flood surge event
- Reducing surface parking lots and impervious surfaces by locating parking along 75% of ground floor uses within buildings

2. Action Plan

The site has been designed to accommodate the type of flood events that are typical given the site’s location within FEMA flood zones AE and VE. In those instances, we do not anticipate the need to relocate cars or residents. However, we will identify an action plan to relocate parked cars and/or residents in the event of a forecasted extreme weather event.