Section 10 - Flood Elevation Requirements

A. Introduction - Localities in Hampton Roads have adopted flood elevation freeboard design criteria that exceed FEMA flood elevations. The required freeboard affects finished floor elevation in these localities, including those on HRSD projects. To comply with the Locality requirements and to consider Sea Level Rise, this standard will cover the process to determine the finished floor elevation for HRSD projects.

B. Definitions
- Freeboard - the calculated difference between the finished floor elevation and the FEMA Base Flood Elevation for the 100-year storm
- BFE - Base Flood Elevation
- EWL (100yr) - Extreme Water Level for the 100-year storm event

Flood Zone definitions can be found on the FEMA website, https://www.fema.gov under "Flood Zones"

C. Locality Code Requirements

The freeboard and finished floor elevation requirements should be verified with the locality in question for each project when initiated. Localized drainage conditions should also be considered for each project when setting the elevation for new buildings or structures.

The following example is for freeboard construction requirement in the City of Hampton at the HRSD Bridge St. PS Location. Note that it may not represent the current construction standards for the example Locality.

Hampton Freeboard, Zone AE: FEMA Base Flood + 3'

D. Steps for Determining Asset Protection Elevation

The following procedure shall be used to determine the asset protection elevation:

1. Using Table 1 below, plot the following:
    i. Sea Level Rise, Intermediate
    ii. Sea Level Rise with an Extreme Water Level for the 100-year storm event
    iii. FEMA Base Flood Elevation (https://msc.fema.gov)
    iv. Locality Freeboard Requirement

Table 1 – NOAA 2017 Sea Level Rise

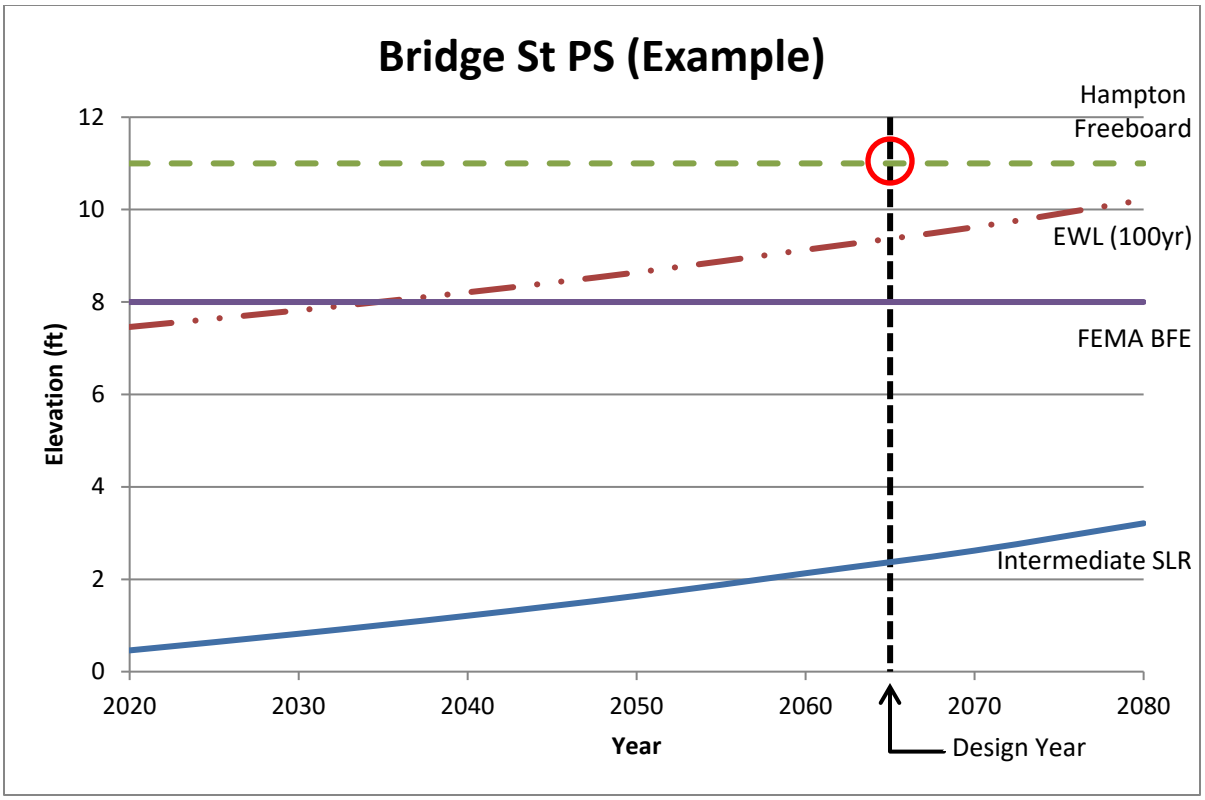
Year	Intermediate	EWL (100yr)
2020	0.46	7.46
2030	0.82	7.82
2040	1.21	8.21
2050	1.64	8.64
2060	2.13	9.13
2070	2.62	9.62
2080	3.21	10.21
2090	3.77	10.77
2100	4.39	11.39

2. The design life for all new HRSD buildings is 50 years.
3. Calculate the elevation design year by adding 50 years to the year of site plan approval. Read the graph vertically from the elevation design year. The highest intersecting elevation line is the design asset protection elevation. See example below.

E. Asset Protection Elevation Requirement Example - The following example is based upon HRSD's Bridge Street Pump Station project located in Hampton.

FEMA Base Flood Elevation: 8'
Hampton Freeboard, FEMA BFE + 3': 11'
Year of Site Plan Approval: 2015
Design Year: 2065

From the graph, read Asset Protection Elevation of 11', as indicated by the circled point. Because this is the Hampton finished floor requirement; the pump station will not require provisions for flood mitigation measures.



F. HRSD is developing further climate change guidance. Please contact Engineering Planning and Analysis Division for additional interpretation of the flood elevations by sending in a request to the **ModelingRequest@hrsd.com** email with a project description and location map.

End of Section