### **B.1 VEGETATED BERM BARRIER**

Refer to Climate Resilient Design Standards and Guidelines for notes and guidance.

**DOWNLOADABLE FILES:** 

Standard PWD Details for reference and download can be found here

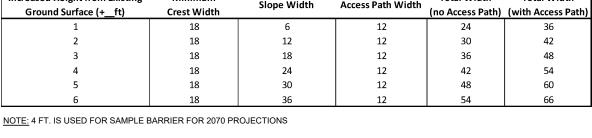
**SAMPLE** 

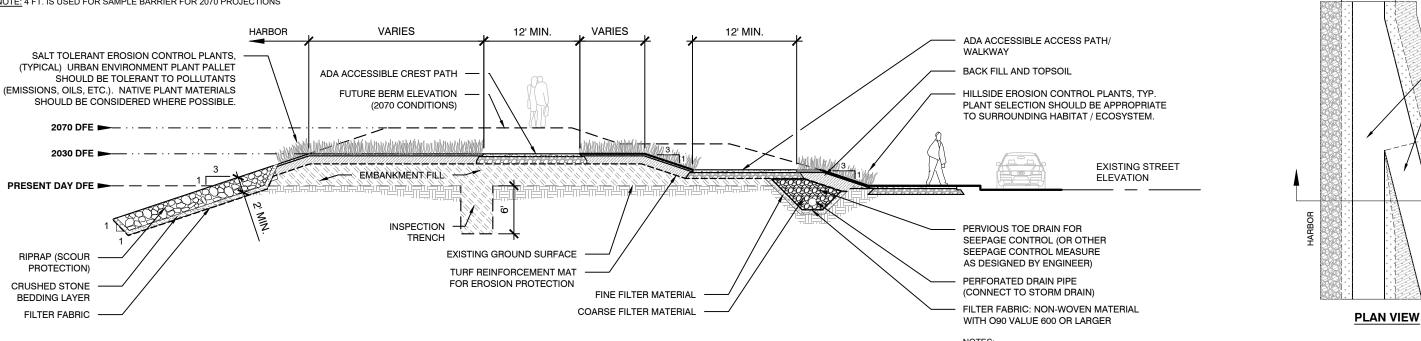
#### **B.1. SAMPLE VEGETATED BERM BARRIER**

**CAD** 

**PDF** 

SAMPLE VEGETATED BERM CROSS SECTION WIDTHS (Crest, slope, and possible access path)								
Increased Height from Existing	Minimum	Slope Width	Access Path Width	Total Width	Total Width			
Ground Surface (+ft)	Crest Width	Stope Width	Access Fath With	(no Access Path)	(with Access Path)			
1	18	6	12	24	36			
2	18	12	12	30	42			
3	18	18	12	36	48			
4	18	24	12	42	54			
5	18	30	12	48	60			
6	18	36	12	54	66			





**FUTURE BERM ELEVATION** 

SALT TOLERANT EROSION

PRESENT DAY DFE

CRUSHED STONE BEDDING LAYER

RIPRAP SCOUR PROTECTION ... TURF REINFORCEMENT MAT SUITABLE EMBANKMENT FILL

(2070 CONDITIONS)

CONTROL PLANTING

**INCREMENTAL APPROACH** (SHOWN AS 2030 AS-BUILT)

**SAMPLE - NOT TO SCALE** 

FEASIBILITY LIMITED BY SPACE BETWEEN HARBOR AND EXISTING BUILDINGS

- EMBANKMENTS SHALL BE CONSIDERED A LEVEE AND MEET ALL UNITED STATES ARMY CORPS OF ENGINEERS (USACoE) GUIDANCE ON LEVEE DESIGN
- LOCATION IN RELATION TO CURRENT HARBOR EDGE MAY VARY
- FREEBOARD SHOULD BE 12"-24" BASED ON SETTLEMENT ESTIMATE AND CRITICALITY
- DIMENSIONS ARE BASED OFF ASSUMED SLOPES OF 3H:1V (HORIZONTAL:VERTICAL)
- FOR ADDITIONAL CONSIDERATIONS SEE GUIDELINES DOCUMENT DFE - DESIGN FLOOD ELEVATION (FREEBOARD INCLUDED)
- 2070 DFE: THE DESIGN FLOOD ELEVATION FOR THE 1% ANNUAL FLOOD EVENT WITH 40 INCHES OF SEA LEVEL
- RISE. DESIGN FLOOD ELEVATION (DFE) INCLUDES FREEBOARD ON TOP OF THE BASE FLOOD ELEVATION

1 CITY HALL SQUARE **ROOM 714** BOSTON. MA 02201-2024 PUBLIC WORKS DEPARTMENT (T): 617 635 4900 (E): publicworks@boston.gov

SLOPE

CREST SLOPE

**ADA ACCESSIBLE** 

ADA ACCESS PATH

· HILLSIDE EROSION CONTROL PLANTING

> ·EXISTING GRADE

CREST PATH

ACCESS PATH

FROM INLAND

ADJACENT TO

CREST

CREST PATH

TOE DRAIN

### **B.2 HARBORWALK AS FLOOD BARRIER (RAISED SEAWALL)**

Refer to Climate Resilient Design Standards and Guidelines for notes and guidance.

#### **DOWNLOADABLE FILES:**

Standard PWD Details for reference and download can be found here

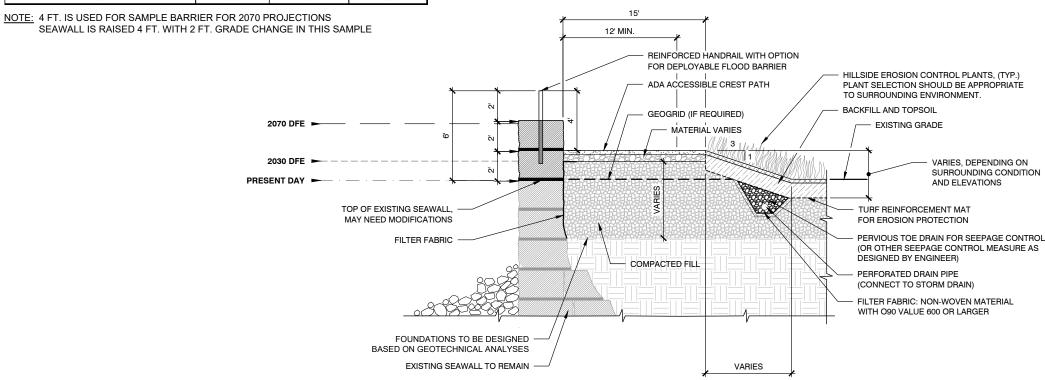
B.2 SAMPLE HARBORWALK AS FLOOD BARRIER (RAISED SEAWALL)

CAD

PDF



CAAAOU F WADDODWAW CDOSS SEST	TON IMPERIO	Mallana etda e	4
Increased Height from Existing Ground Surface (+ft)	Minimum Crest Width	Slope Width	Total Width
1	15	3	18
2	15	6	21



### **SAMPLE - NOT TO SCALE**

#### NOTES:

REINFORCED HANDRAIL WITH OPTION

FILTER FABRIC

EXISTING SEAWALL TO REMAIN (MODIFICATION MAY BE REQUIRED)

RAISED SEAWALL

FOR DEPLOYABLE FLOOD BARRIER

2070 DFE -

2030 DFE - - - - - - - - - PRESENT DAY DFE -----

- HANDRAIL DESIGN FOR ASCE 7 LOADS
- STRUCTURAL DESIGN OF ANCHORAGE IS REQUIRED
- PERFORM WALL STABILITY CALCULATIONS FOR PROPOSED CONDITION (BEARING/SLIDING/OVERTURNING/GLOBAL)
- DIMENSIONS ARE BASED OFF ASSUMED SLOPED OF 3H:1V (HORIZONTAL:VERTICAL)
- FOR ADDITIONAL CONSIDERATIONS SEE GUIDELINES DOCUMENT
- DFE DESIGN FLOOD ELEVATION (FREEBOARD INCLUDED)
- 2070 DFE: THE DESIGN FLOOD ELEVATION FOR THE 1% ANNUAL FLOOD EVENT WITH 40 INCHES OF SEA LEVEL RISE. DESIGN FLOOD ELEVATION (DFE) INCLUDES FREEBOARD ON TOP OF THE BASE FLOOD ELEVATION

1 CITY HALL SQUARE ROOM 714 BOSTON, MA 02201-2024 PUBLIC WORKS DEPARTMENT (T): 617 635 4900 (E): publicworks@boston.gov

ADA ACCESSIBLE CREST

BACKFILL AND TOPSOIL

REINFORCEMENT

**EXISTING GRADE** 

COMPACTED

TOE DRAIN

GEOGRID (IF REQUIRED)

HILLSIDE EROSION

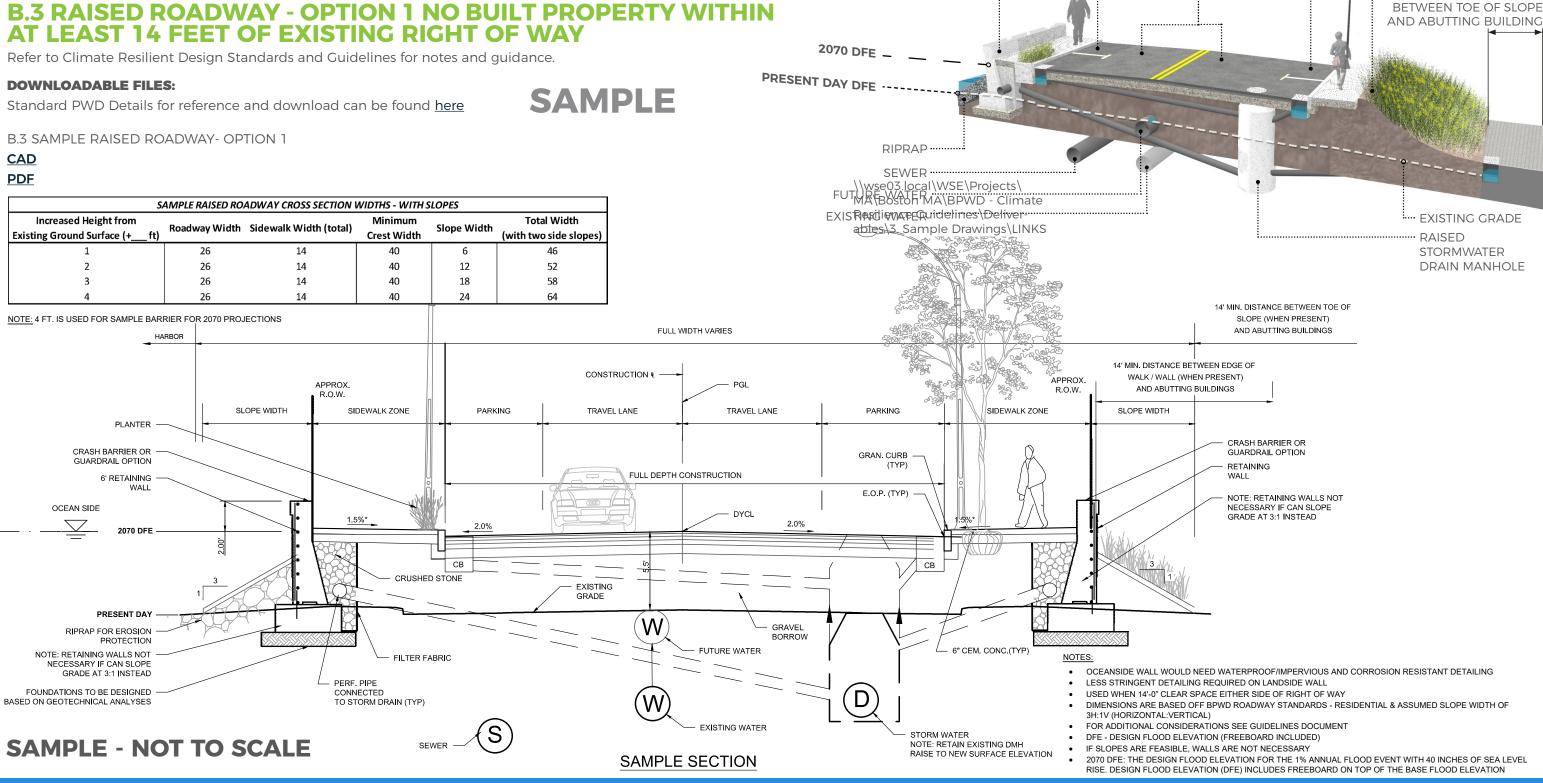
CONTROL PLANTING

TURF

MAT

FILL

PATH



RETAINING WALL --GUARDRAIL/CRASH

**BARRIERS** 

PARKING

TRAVEL LANES

1 CITY HALL SQUARE **ROOM 714** BOSTON. MA 02201-2024 PUBLIC WORKS DEPARTMENT (T): 617 635 4900 (E): publicworks@boston.gov

CRASH BARRIER OR

14' MIN. DISTANCE

GUARDRAIL

PARKING 4

**B.4 RAISED ROADWAY - OPTION 2 RAISED ROADWAY & SIDEWALKS WITH NEW DEVELOPMENT** 

Refer to Climate Resilient Design Standards and Guidelines for notes and guidance.

#### **DOWNLOADABLE FILES:**

Standard PWD Details for reference and download can be found here

**SAMPLE** 

**NEW BUILDING** 

**RETAINING WALL** 

PRESENT DAY DFE

2070 DFE

**FUTURE WATER** 

**EXISTING WATER** 

**SEWER** 

B.4 SAMPLE RAISED ROADWAY- OPTION 2

#### CAD

<u>PDF</u>

SAMPLE RAISED ROADWAY CROSS SECTION WIDTHS - NO SLOPES								
Increased Height from Existing Ground Surface (+ft)	Roadway Width	Sidewalk Width (total)	Minimum Crest Width	Total Width				
1	26	14	40	40				
2	26	14	40	40				
3	26	14	40	40				
4	26	14	40	40				

NOTE: 4 FT. IS USED FOR SAMPLE BARRIER FOR 2070 PROJECTIONS FULL WIDTH VARIES APPROX CONSTRUCTION ₹ R.O.W. PGI SIDEWALK ZONE PARKING TRAVEL LANE TRAVEL LANE PARKING SIDEWALK ZONE POSSIBLE NEW BUILDING (WATERPROOF) RETAINING WALL TO CARRY FULL DEPTH CONSTRUCTION LATERAL EARTH PRESSURE AND RESIST WATER GRAN, CURB OCEAN SIDE E.O.P. (TYP) 1.5%\* PERF. PIPE TO STORM DRAIN (TYP) CRUSHED STONE **EXISTING** PRESENT DAY W GRAVEL FUTURE WATER FOUNDATIONS TO BE DESIGNED BASED ON GEOTECHNICAL ANALYSES STORM WATER NOTE: RETAIN EXISTING DMH RAISE TO NEW SURFACE ELEVATION

RECOMMENDED FOR NEW DEVELOPMENT ONLY

**PARKING** 

EXISTING STRUCTURES MAY NOT BE DESIGNED FOR INCREASED LOADS ASSOCIATED WITH GRADE CHANGE OR BE ACCESSIBLE TO VEHICLES AND/OR PEDESTRIANS

#### OCEANSIDE WALL WOULD NEED WATERPROOF/IMPERVIOUS AND CORROSION RESISTANT DETAILING

- USED ONLY WITH NEW DEVELOPMENT BUILDINGS AT BACK OF SIDEWALK DESIGNED FOR RAISED ROADWAY
- DIMENSIONS ARE BASED OFF BPWD ROADWAY STANDARDS RESIDENTIAL
- FOR ADDITIONAL CONSIDERATIONS SEE GUIDELINES DOCUMENT
- DFE DESIGN FLOOD ELEVATION (FREEBOARD INCLUDED)

PARKING TRAVEL LANES

NEW BUILDING
6" CEM. CONC.(TYP)

NOTES:

- RECOMMENDED FOR NEW DEVELOPMENT ONLY EXISTING STRUCTURE MAY NOT BE DESIGNED FOR INCREASED LOADS ASSOCIATED WITH GRADE CHANGE OR BE ACCESSIBLE TO VEHICULAR AND/OR PEDESTRIANS
- 2070 DFE: THE DESIGN FLOOD ELEVATION FOR THE 1% ANNUAL FLOOD EVENT WITH 40 INCHES OF SEA LEVEL RISE. DESIGN FLOOD ELEVATION (DFE) INCLUDES FREEBOARD ON TOP OF THE BASE FLOOD ELEVATION

**SAMPLE - NOT TO SCALE** 

SAMPLE SECTION

1 CITY HALL SQUARE ROOM 714 BOSTON, MA 02201-2024 PUBLIC WORKS DEPARTMENT (T): 617 635 4900 (E): publicworks@boston.gov

**NEW BUILDING** 

SACRIFICED SPACE

·EXISTING GRADE ·STRUCTURAL FILL

DRAIN MANHOLE

RAISED STORMWATER