

CLIMATE RESILIENT DESIGN STANDARDS AND GUIDELINES FOR PROTECTION OF PUBLIC RIGHTS-OF-WAY

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](#)

B.1. SAMPLE VEGETATED BERM BARRIER

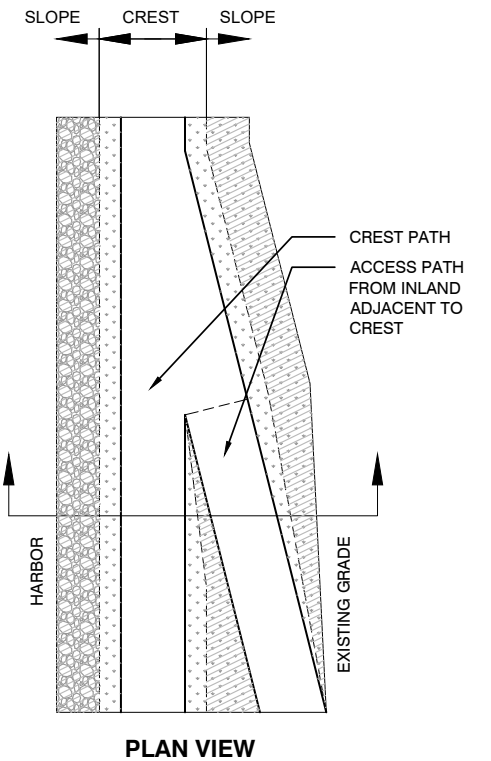
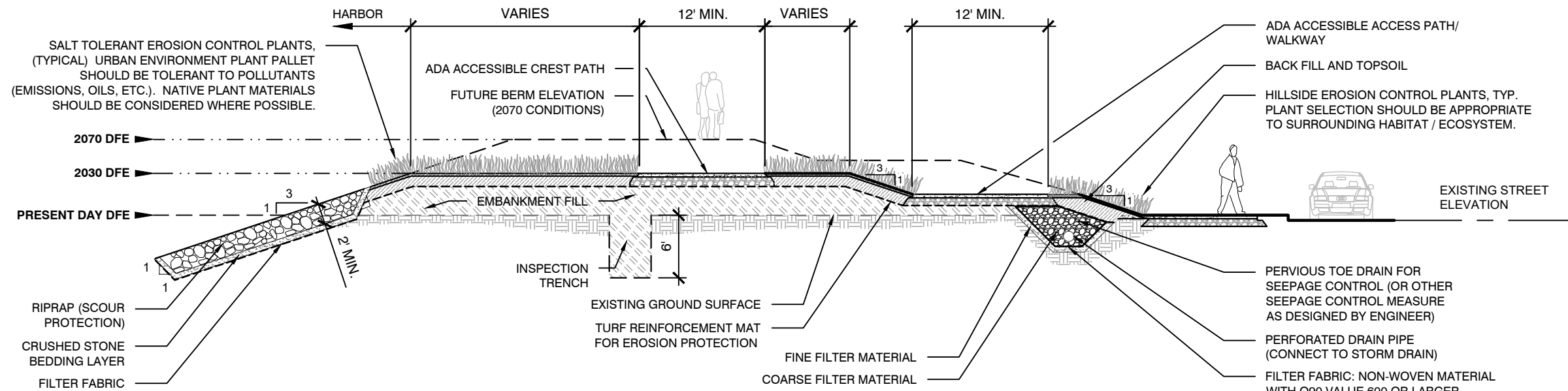
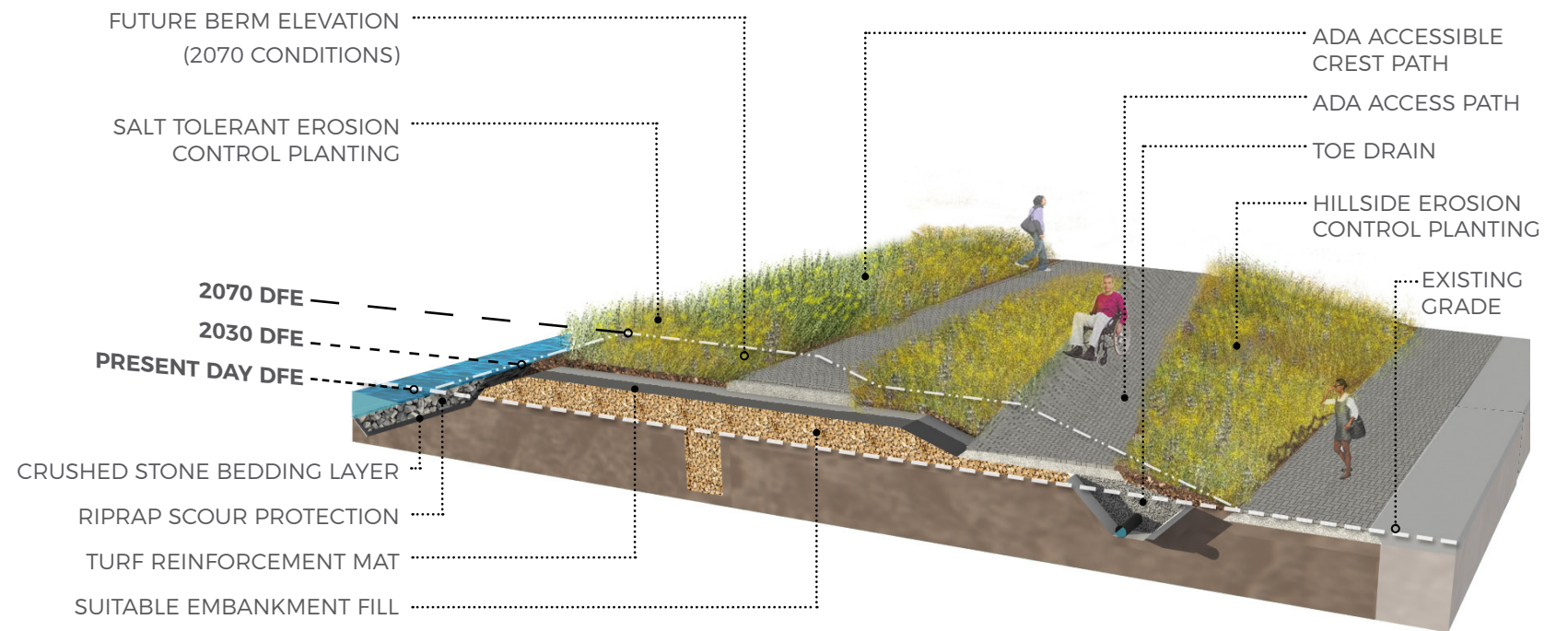
[CAD](#)

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| SAMPLE VEGETATED BERM CROSS SECTION WIDTHS (Crest, slope, and possible access path) | | | | | |
|---|---------------------|-------------|-------------------|------------------------------|--------------------------------|
| Increased Height from Existing Ground Surface (+ ft) | Minimum Crest Width | Slope Width | Access Path Width | Total Width (no Access Path) | Total Width (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 |

NOTE: 4 FT. IS USED FOR SAMPLE BARRIER FOR 2070 PROJECTIONS

SAMPLE



INCREMENTAL APPROACH
(SHOWN AS 2030 AS-BUILT)

NOTES:

- FEASIBILITY LIMITED BY SPACE BETWEEN HARBOR AND EXISTING BUILDINGS
- EMBANKMENTS SHALL BE CONSIDERED A LEVEE AND MEET ALL UNITED STATES ARMY CORPS OF ENGINEERS (USACE) 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

SAMPLE - NOT TO SCALE

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B.2 HARBORWALK AS FLOOD BARRIER (RAISED SEAWALL)

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

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

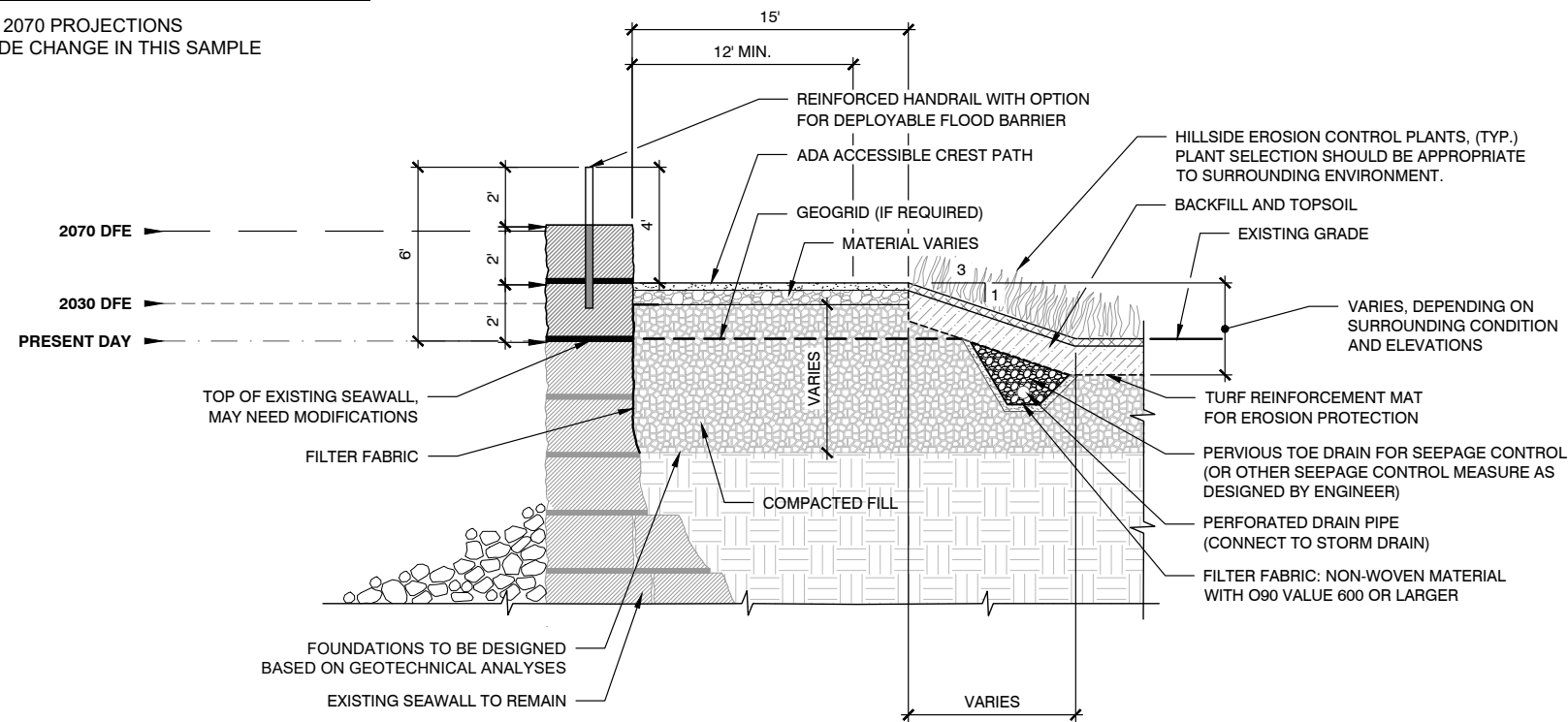
[CAD](#)

[PDF](#)

SAMPLE

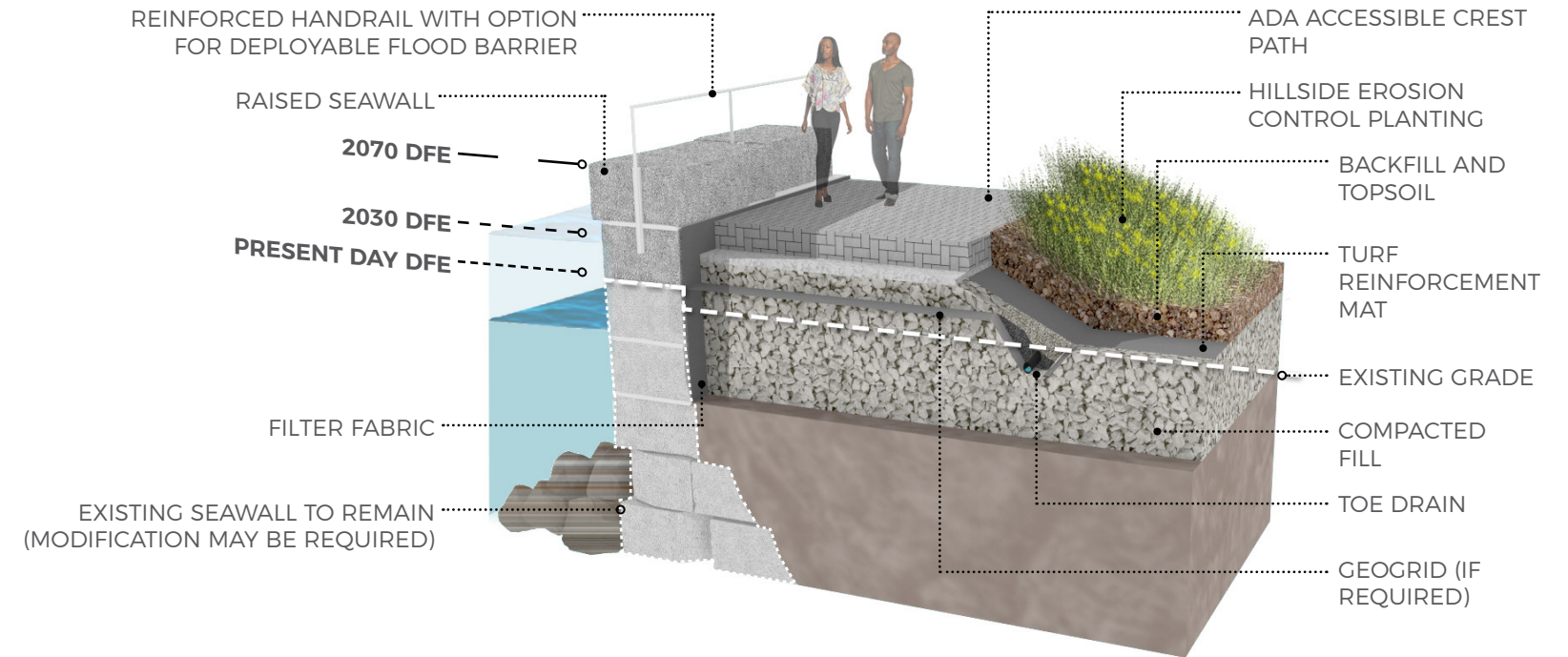
| SAMPLE HARBORWALK CROSS SECTION WIDTHS (Wall one side, slope one side) | | | |
|--|---------------------|-------------|-------------|
| Increased Height from Existing Ground Surface (+ ft) | Minimum Crest Width | Slope Width | Total Width |
| 1 | 15 | 3 | 18 |
| 2 | 15 | 6 | 21 |

NOTE: 4 FT. IS USED FOR SAMPLE BARRIER FOR 2070 PROJECTIONS
SEAWALL IS RAISED 4 FT. WITH 2 FT. GRADE CHANGE IN THIS SAMPLE



NOTES:

- 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



SAMPLE - NOT TO SCALE

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B.3 RAISED ROADWAY - OPTION 1 NO BUILT PROPERTY WITHIN AT LEAST 14 FEET OF EXISTING RIGHT OF WAY

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

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B.3 SAMPLE RAISED ROADWAY- OPTION 1

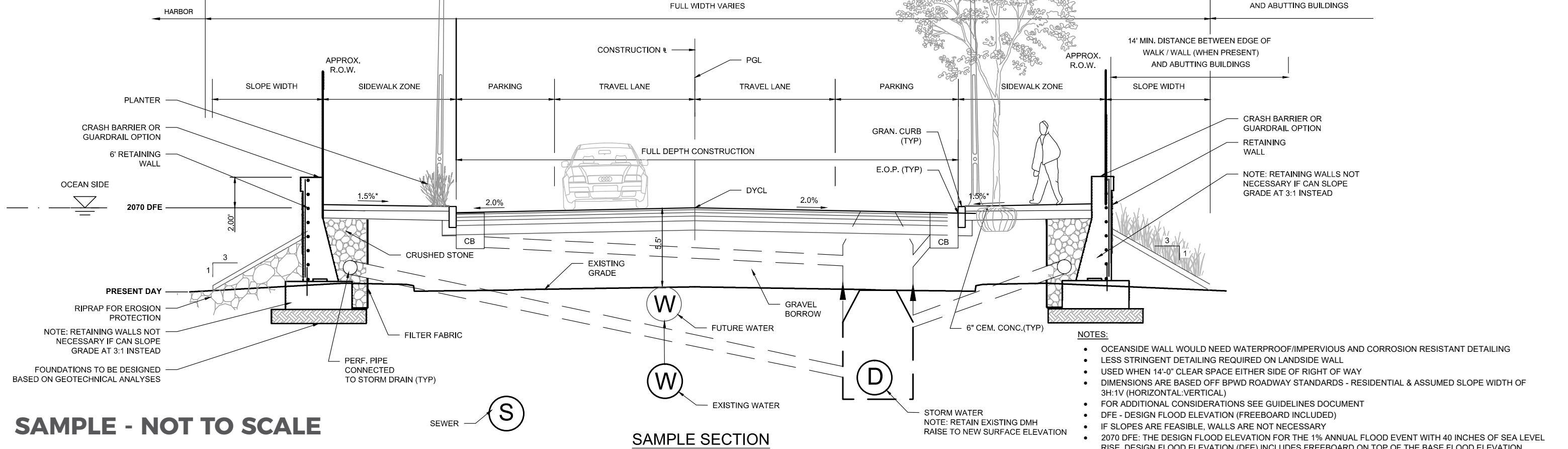
[CAD](#)

[PDF](#)

SAMPLE

| SAMPLE RAISED ROADWAY CROSS SECTION WIDTHS - WITH SLOPES | | | | | |
|--|---------------|------------------------|---------------------|-------------|------------------------------------|
| Increased Height from Existing Ground Surface (+ ft) | Roadway Width | Sidewalk Width (total) | Minimum Crest Width | Slope Width | Total Width (with two side slopes) |
| 1 | 26 | 14 | 40 | 6 | 46 |
| 2 | 26 | 14 | 40 | 12 | 52 |
| 3 | 26 | 14 | 40 | 18 | 58 |
| 4 | 26 | 14 | 40 | 24 | 64 |

NOTE: 4 FT. IS USED FOR SAMPLE BARRIER FOR 2070 PROJECTIONS



SAMPLE - NOT TO SCALE

SAMPLE SECTION

- NOTES:**
- OCEANSIDE WALL WOULD NEED WATERPROOF/IMPERVIOUS AND CORROSION RESISTANT DETAILING
 - LESS STRINGENT DETAILING REQUIRED ON LANDSIDE WALL
 - USED WHEN 14'-0" CLEAR SPACE EITHER SIDE OF RIGHT OF WAY
 - DIMENSIONS ARE BASED OFF BPWD ROADWAY STANDARDS - RESIDENTIAL & ASSUMED SLOPE WIDTH OF 3H:1V (HORIZONTAL:VERTICAL)
 - FOR ADDITIONAL CONSIDERATIONS SEE GUIDELINES DOCUMENT
 - DFE - DESIGN FLOOD ELEVATION (FREEBOARD INCLUDED)
 - IF SLOPES ARE FEASIBLE, WALLS ARE NOT NECESSARY
 - 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

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

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

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B.4 SAMPLE RAISED ROADWAY- OPTION 2

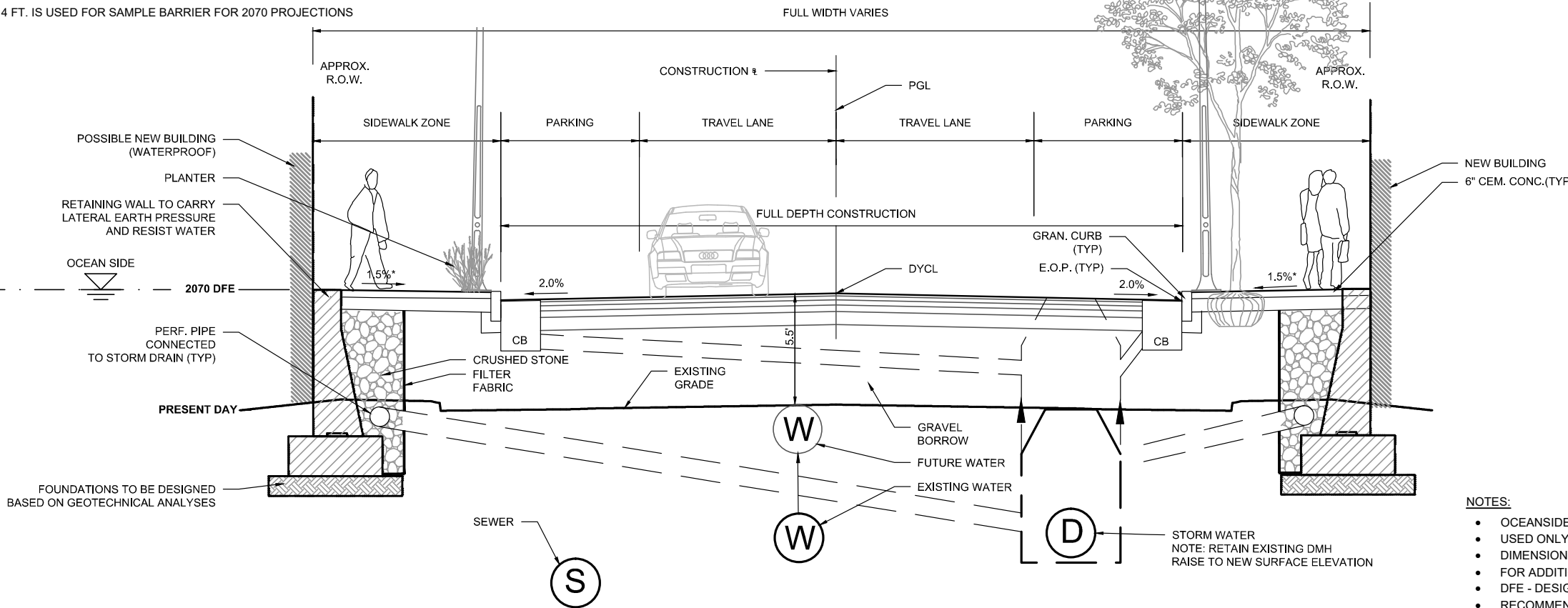
[CAD](#)

[PDF](#)

SAMPLE

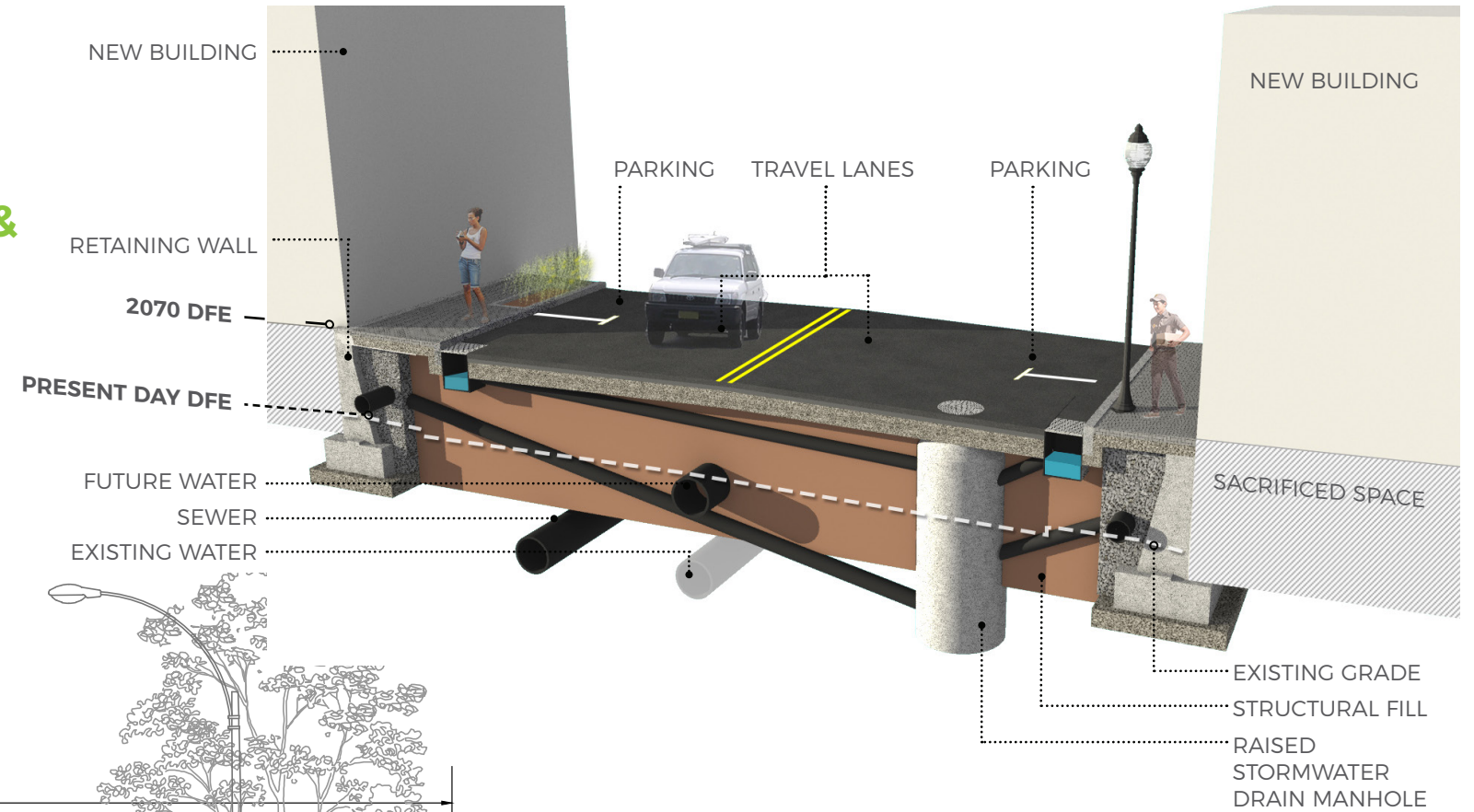
| SAMPLE RAISED ROADWAY CROSS SECTION WIDTHS - NO SLOPES | | | | |
|--|---------------|------------------------|---------------------|-------------|
| Increased Height from Existing Ground Surface (+ ft) | Roadway Width | Sidewalk Width (total) | Minimum Crest Width | Total Width |
| 1 | 26 | 14 | 40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



SAMPLE - NOT TO SCALE

SAMPLE SECTION



RECOMMENDED FOR NEW DEVELOPMENT ONLY

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

NOTES:

- 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)
- 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