FORT DERUSSY
SAND BACKPASSING

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Honolulu District

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SAND BACKPASSING CONCEPT

Sand backpassing is a process that reverses the direction of the natural drift, by re-circulating sand from an accreting downdrift shoreline to the updrift beach where the sand originated. The beach on the west side of the Ft. DeRussy shoreline is extensively wide and is accreting. Sand would be taken from this area and placed back on the updrift shoreline as shown in the following slides. This process maximizes the use of existing sand resources and eliminates the need to inject costly new sand into the system.

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Fort DeRussy Shoreline Inventory
O'ahu, Hawai'i

Map
1 of 1

Legend

- Photograph Location
- 19-20 Photograph Number
- Sidewalk
- Breakwater
- Groin
- Outfall
- Pier
- Sea Wall
- Shoreline (01 Mar 2010)
- Shoreline (07 Jan 2010)

N E W S

Map produced by USACE, Honolulu District
Map Date: 9 July, 2010
Image Date: 2007
Map File: flderussy_rsm.mxd

0 50 100 200 300 400 Feet

Fort DeRussy Shoreline Inventory
O'ahu, Hawai'i

Map
2 of 2

Legend

- Photograph Location
- 19-20 Photograph Number
- Sidewalk
- Breakwater
- Groin
- Outfall
- Pier
- Sea Wall
- Shoreline (01 Mar 2010)
- Shoreline (07 Jan 2010)

Map produced by USACE, Honolulu District
Map Date: 9 July, 2010
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Map File: ftderussy_rsm.mxd

Feet
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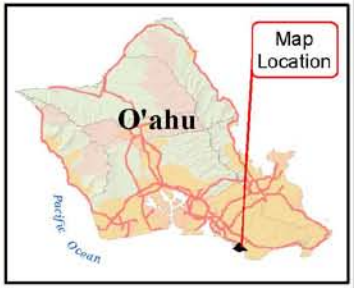

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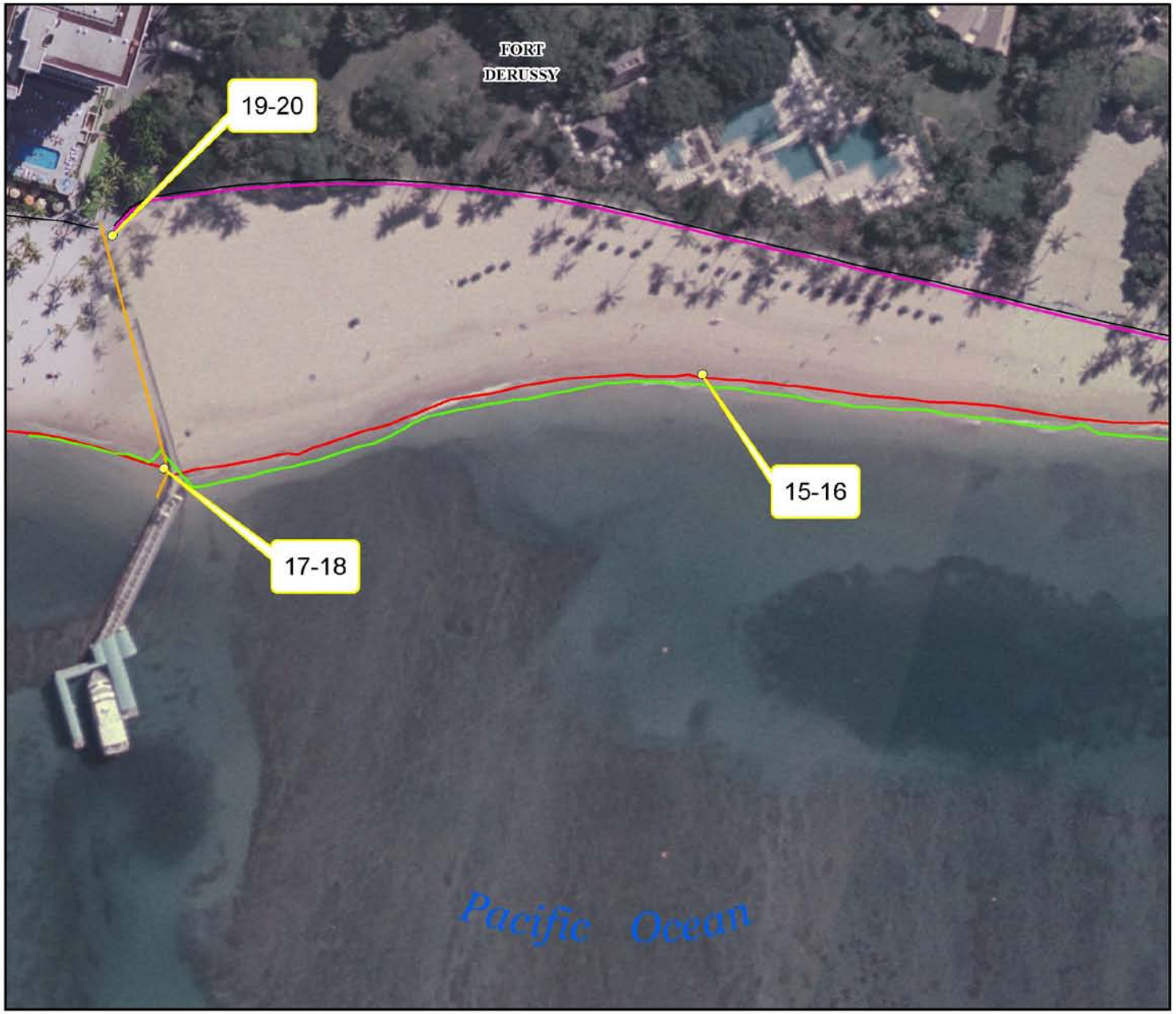
Fort DeRussy Shoreline Inventory
O'ahu, Hawai'i

Map
1 of 2



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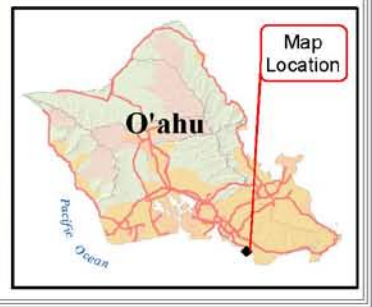


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SAND VOLUME ANALYSIS

Methodology

The beach profiles used to determine the cross sectional areas of the sand cut and fill were developed based on recent bathymetric and topographic surveys of the area. Volumes were determined by multiplying the average cut and fill areas of adjacent beach profiles by their separation distance. The approximate elevation of the existing beach berm and seawall is +6.0 feet referenced to mean sea level (MSL).

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SAND VOLUME ANALYSIS

Fill Specifications

• EASTERN LIMIT	• Outfall/Groin
• LENGTH	• 600 feet
• BERM ELEVATION	• +6.0 feet (MSL)
• TOE ELEVATION	• -2.0 feet (MSL)
• FORESHORE SLOPE	• 1 V on 10 H
• VOLUME	• 6,000 cubic yards

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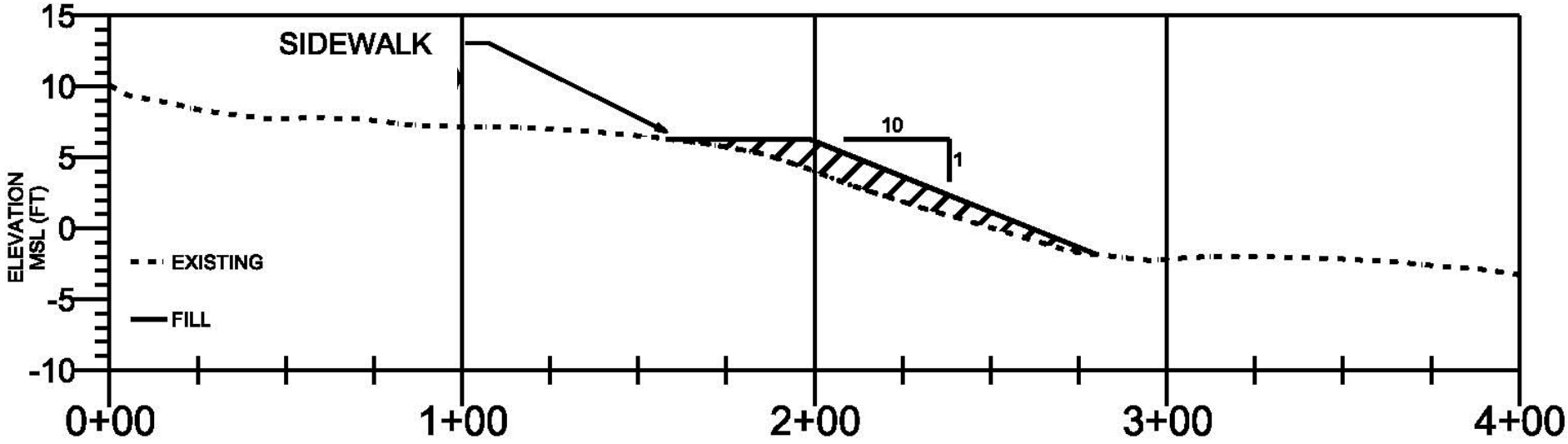
SAND VOLUME ANALYSIS

Typical Fill Section



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SAND VOLUME ANALYSIS

Cut Specifications

• WESTERN LIMIT	• Hilton Boat Dock
• LENGTH	• 800 feet
• BERM ELEVATION	• +6.0 feet (MSL)
• TOE ELEVATION	• +2.0 feet (MSL)
• FORESHORE SLOPE	• 1 V on 10 H
• VOLUME	• 6,000 cubic yards

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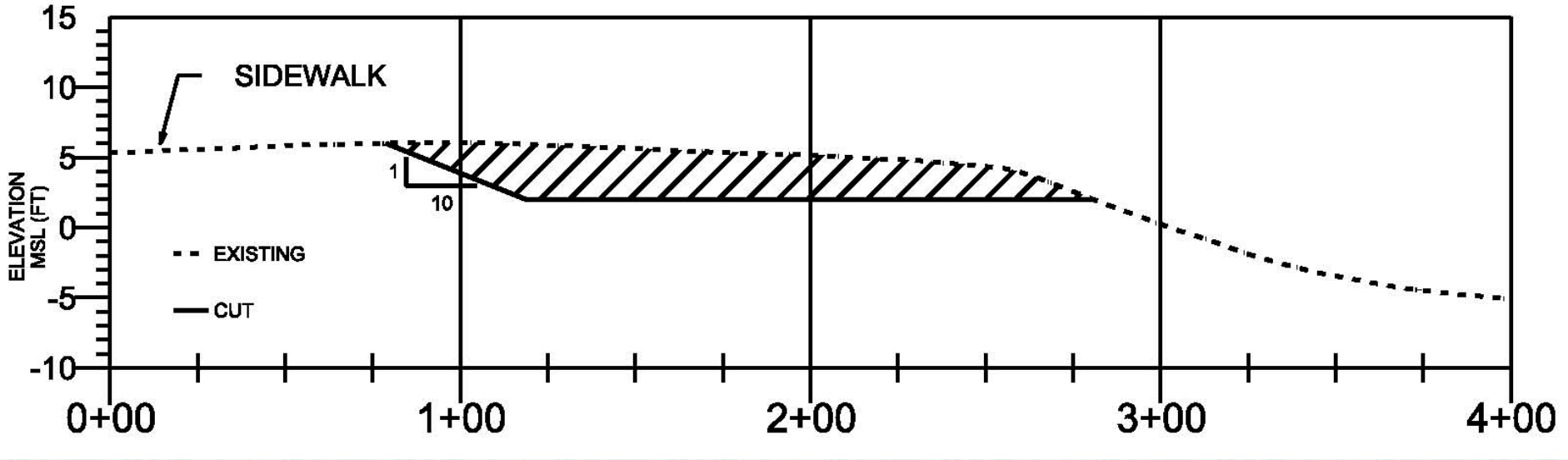
SAND VOLUME ANALYSIS

Typical Cut Section



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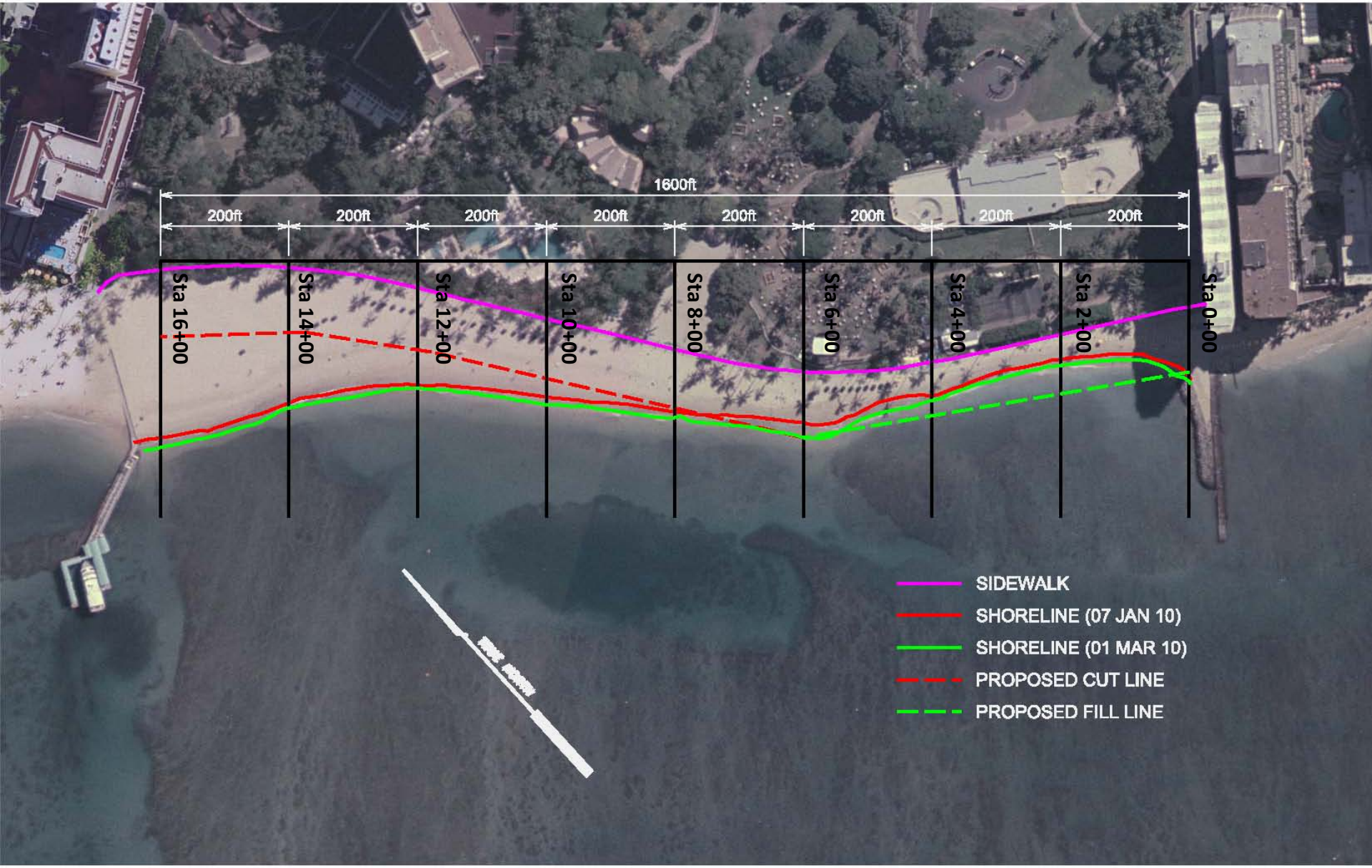
SEO/RSM D2P Region PRP: Fort DeRussy Sand Backpass Plan



CUT AND FILL PROFILES

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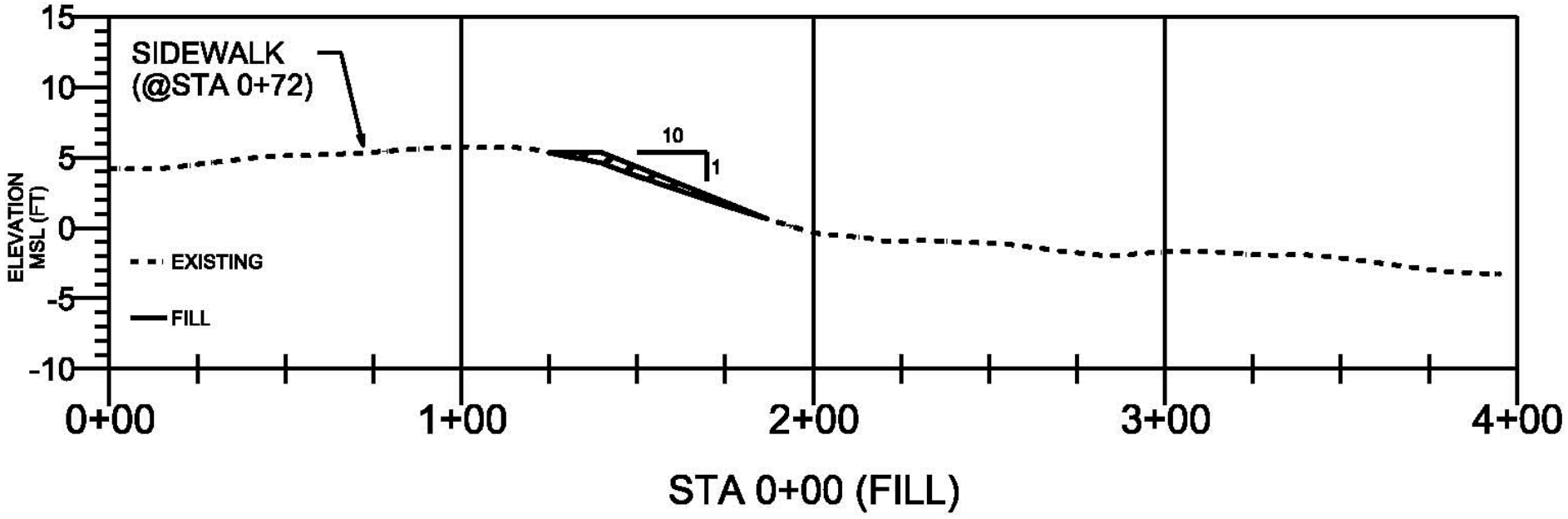

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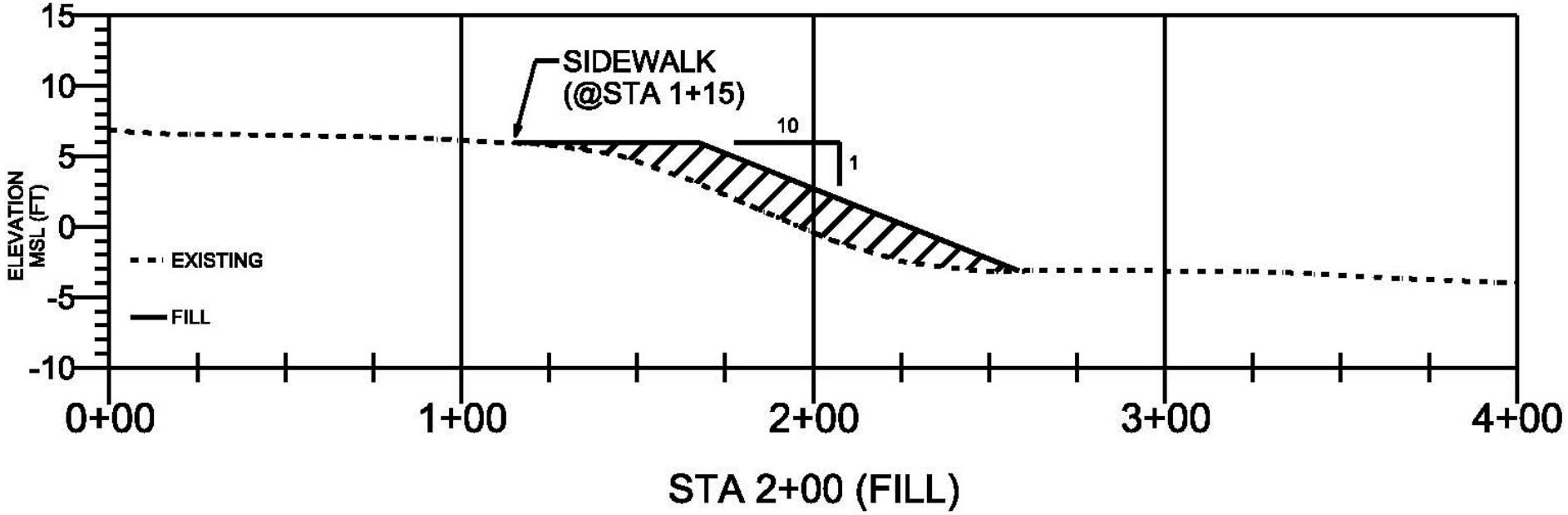

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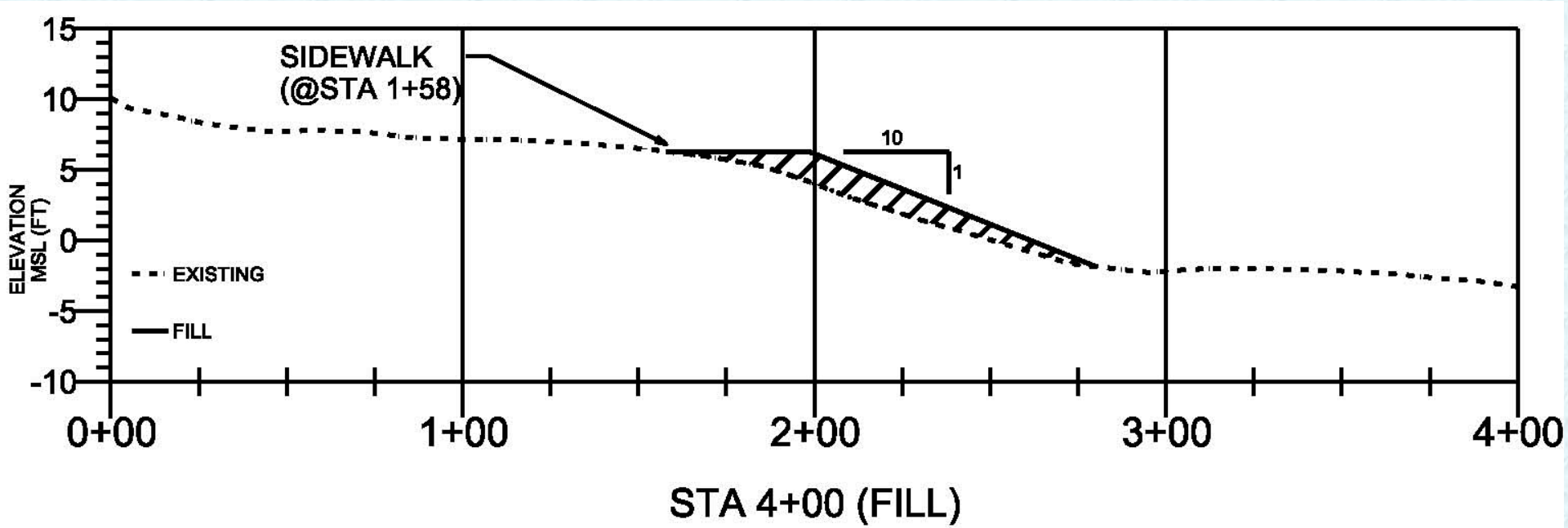

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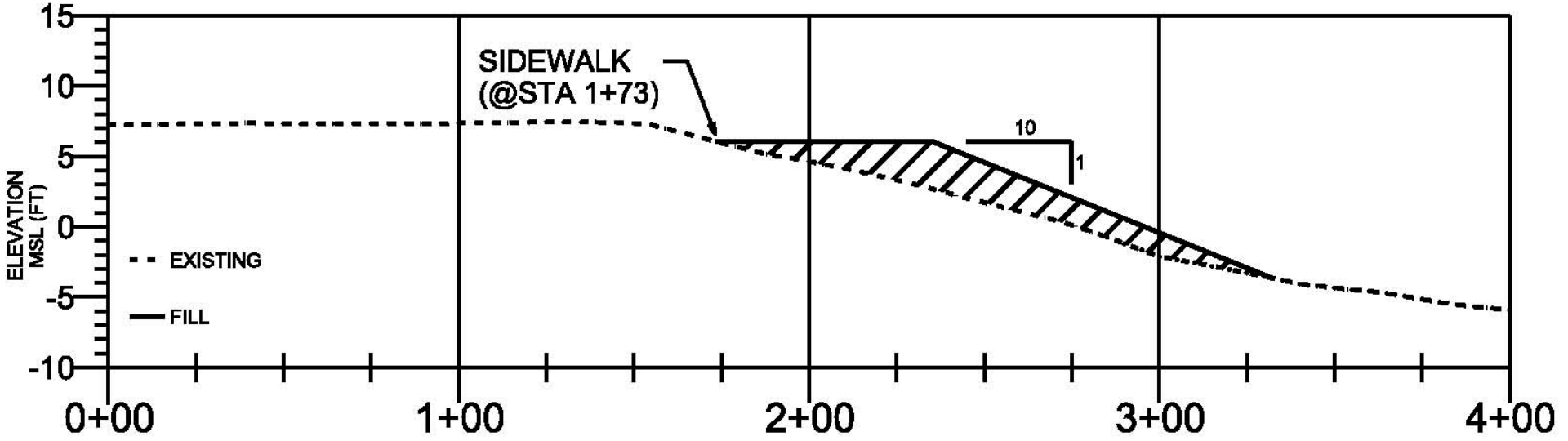

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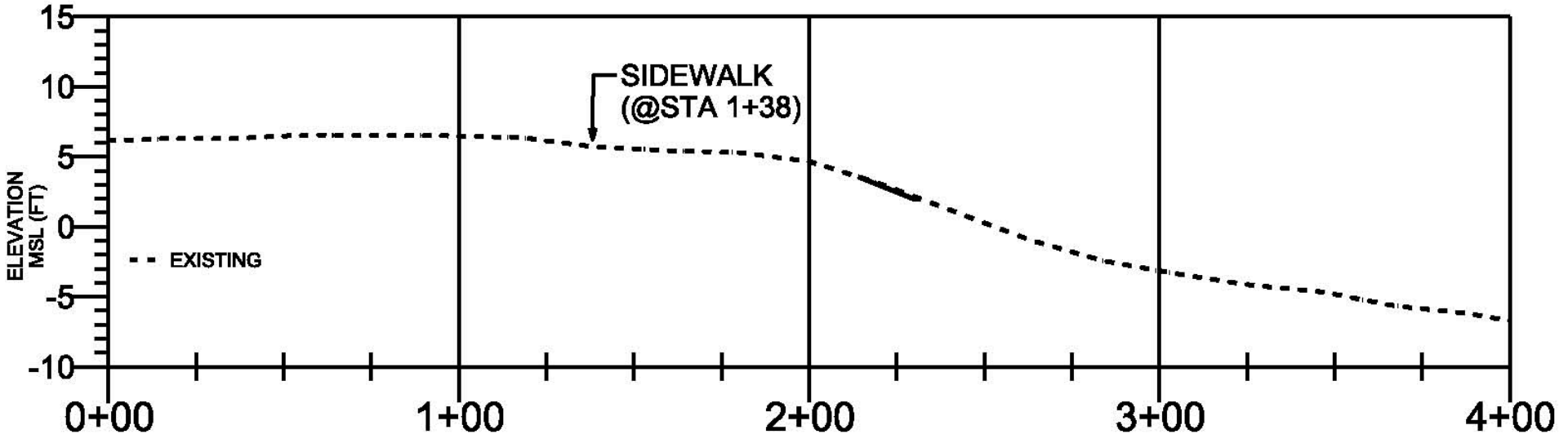

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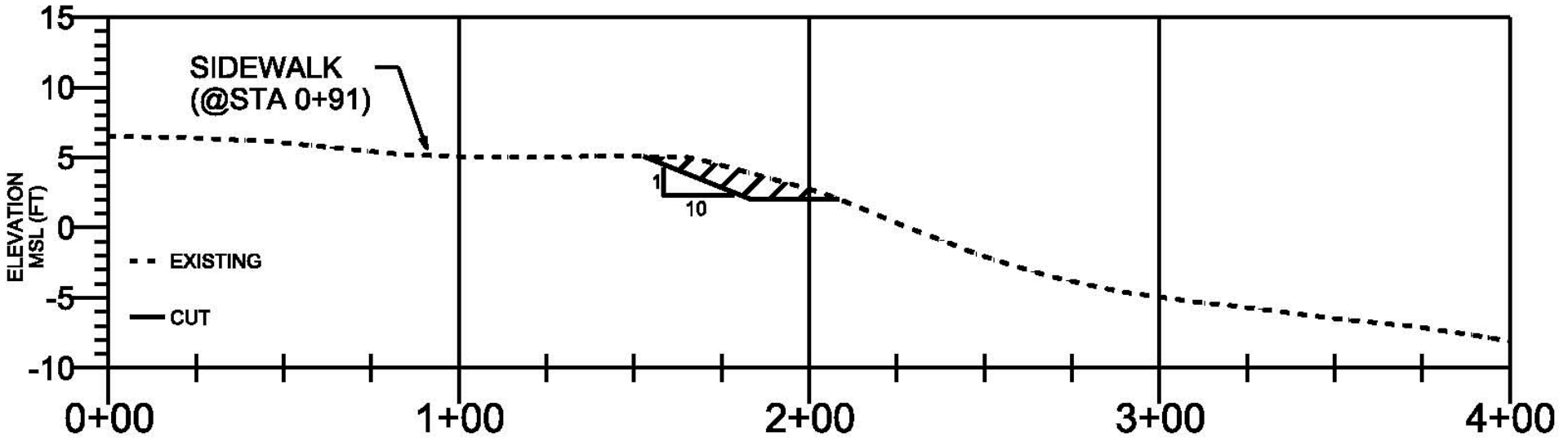

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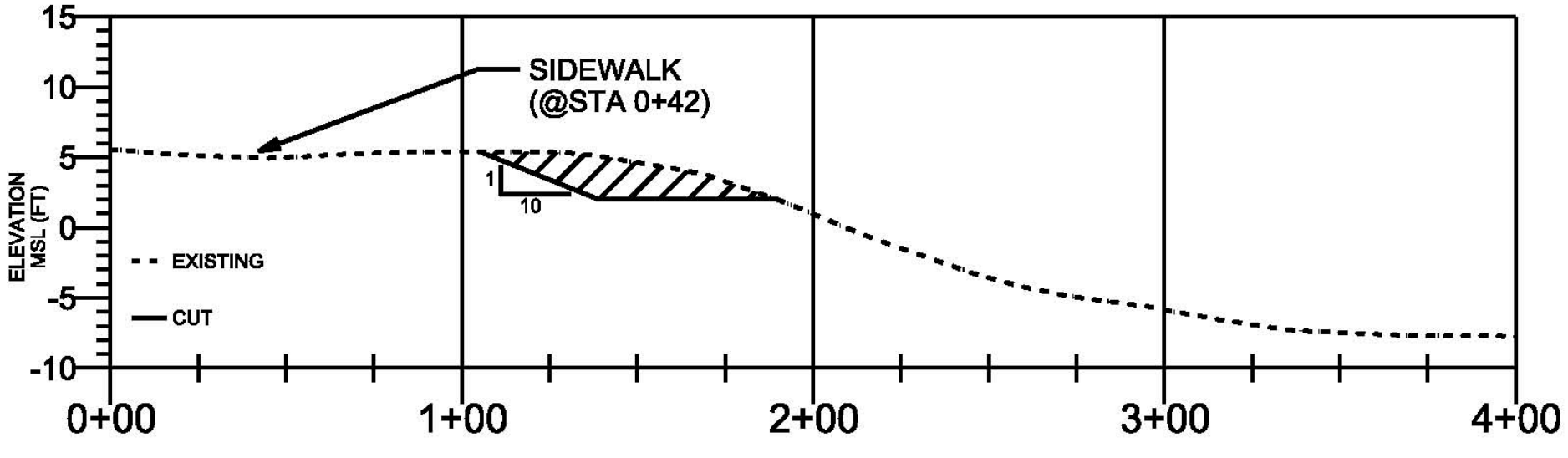

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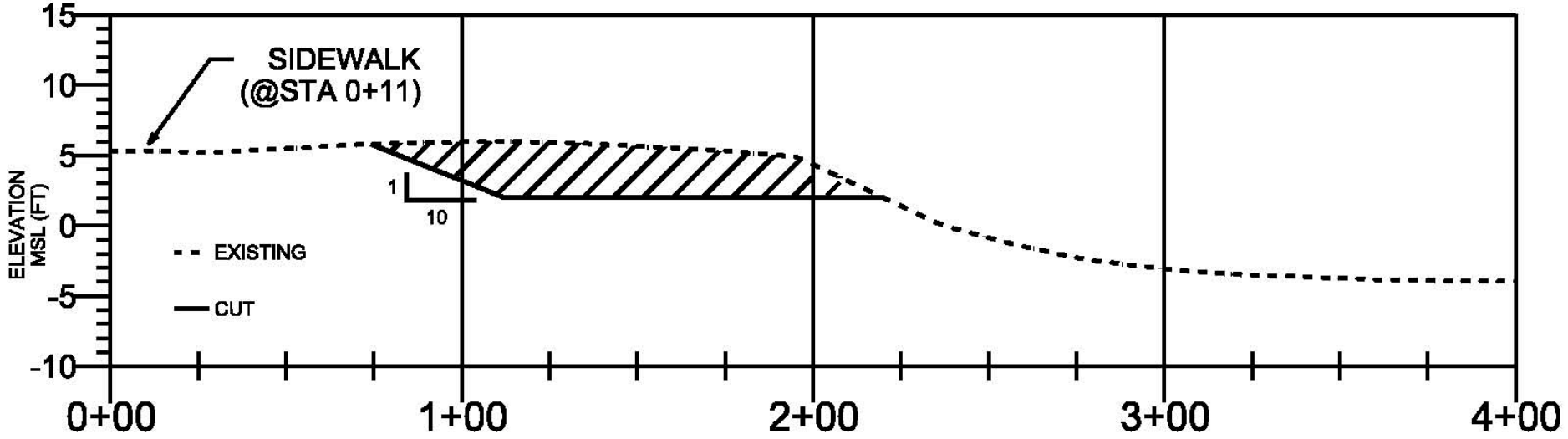

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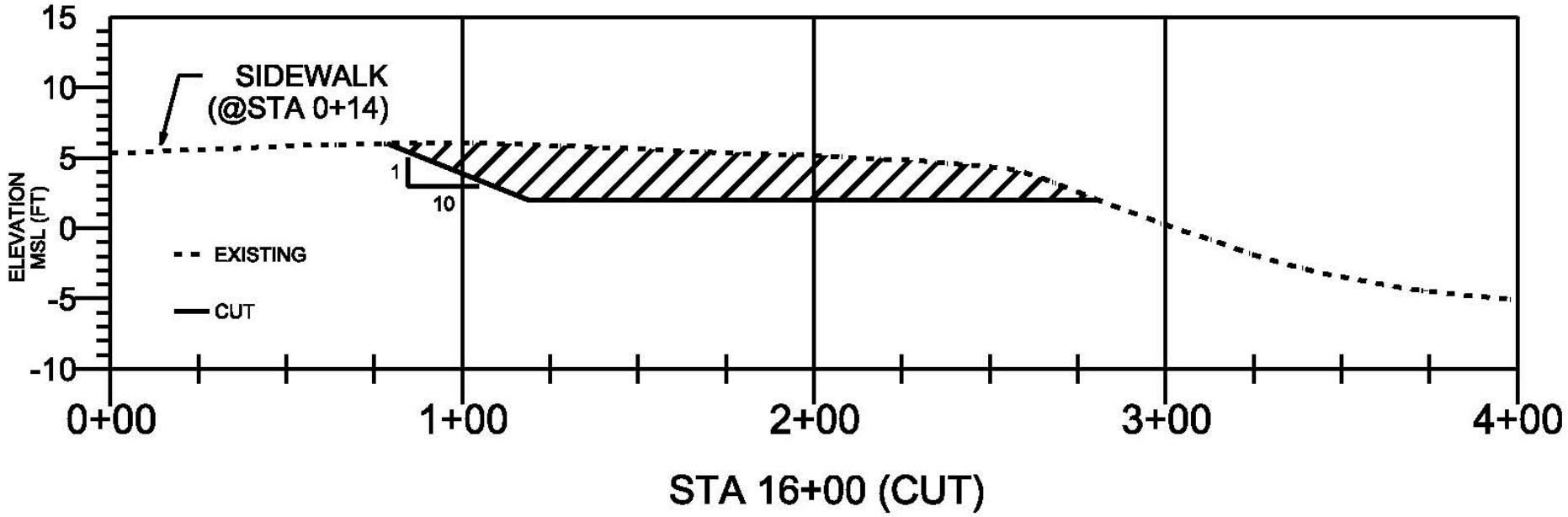

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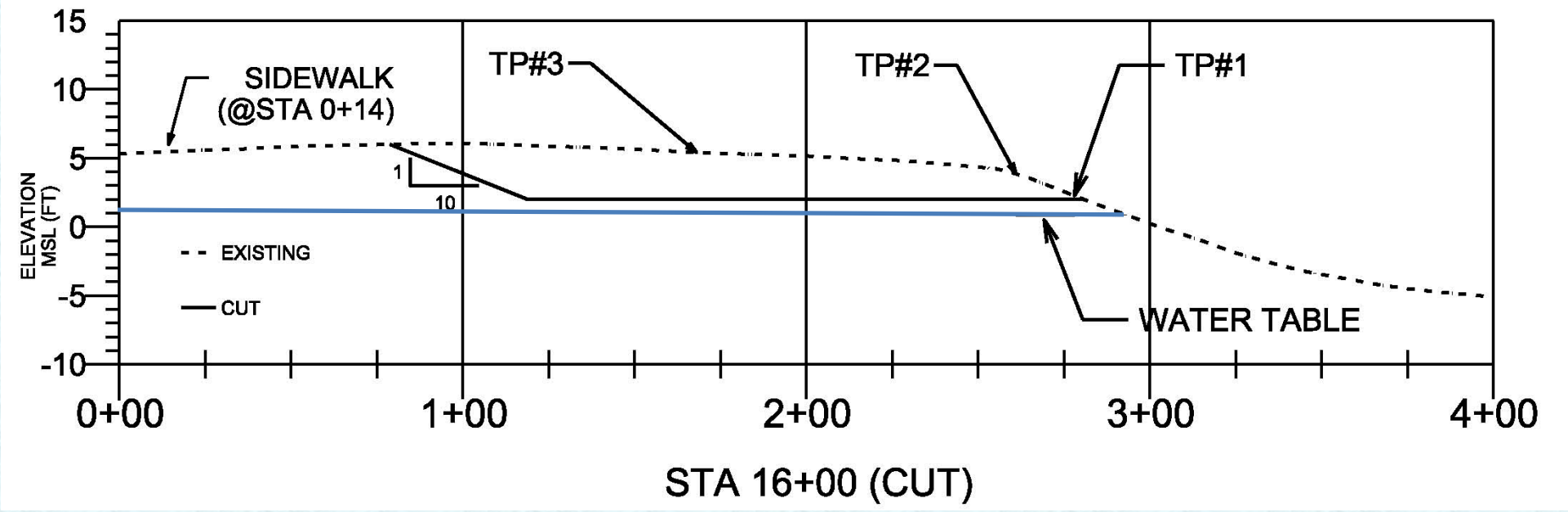
TEST PITS



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TEST PIT #1

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TEST PIT #2

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TEST PIT #3

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TEST PIT #3


TEST PIT #3: SAND SAMPLE

TEST PIT #3: SAND SAMPLE

FORT DERUSSY SAND BACKPASS

Preliminary Findings

- Net Sediment Transport to West
- Eastern Shoreline Eroded to Seawall
- Western Shoreline Over 250’ Wide
- Fine to Coarse Calcium Carbonate
- No Cementation Found
- Up to 12,000 cubic yards of sand available

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THANK YOU

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