

# LOSSAN

Los Angeles  
San Diego  
San Luis Obispo

## Coastal Rail Corridor

San Diego Segment



# Del Mar Bluffs Stabilization Update

Del Mar City Council – July 26, 2021

[KeepSanDiegoMoving.com](https://www.KeepSanDiegoMoving.com)

# Del Mar Bluffs

Project Update - July 2021



## Contents:

- 2021 Emergency Repair - South of 4<sup>th</sup> Street
- Del Mar Bluffs Stabilization Phase 5
- Del Mar Bluffs Stabilization Phase 6



# Del Mar Bluffs

Slide Area South of 4<sup>th</sup> Street





# Del Mar Bluffs

Landslide at MP 245.2 – 2/28/2021





# Del Mar Bluffs

Retaining Wall at MP 245.2 – 2/26 and 2/28/2021

Wall Foundation exposed by recent wave action





# Del Mar Bluffs

AWW 3 Emergency Repair Piling April 2021





# Del Mar Bluffs

## Repair Approach – Plan View





# Del Mar Bluffs

Emergency Repair Buttress Key Installation Completed





# Del Mar Bluffs

## Emergency Repair Schedule



### Planned reconstruction schedule at MP245.2 south of 4<sup>th</sup> Street

- Installation of piles, tiebacks and grade beam
  - (April 9-12, 17-19, 25-25 and May 1-2)
- Reconstruction of fill slope (*May - August*)
- Construction of bluff toe walls (*August - October*)
- Revegetation of slope may take 12 to 18 months



# Del Mar Bluffs



## Del Mar Bluffs Stabilization Phase 5



# Del Mar Bluffs

## Phase 5 Design Approach



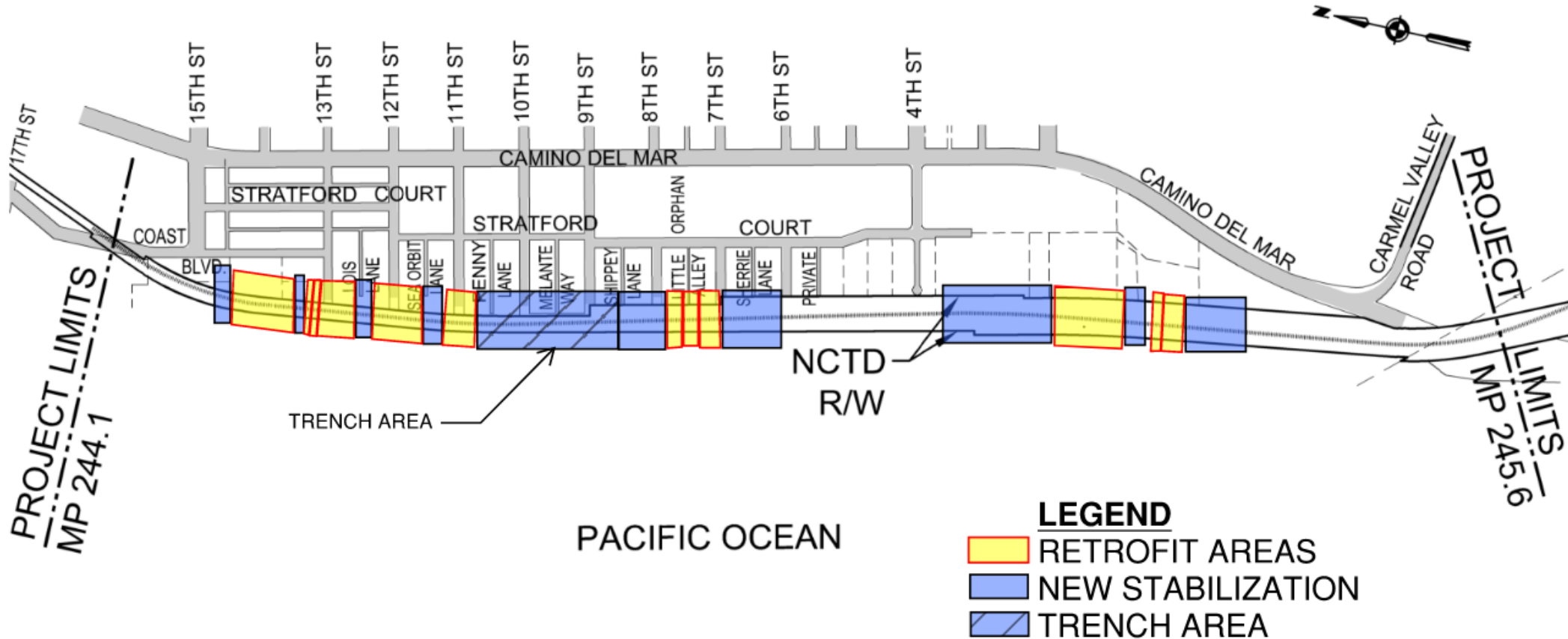
- Bluff Retreat
  - Measured and re-evaluated retreat between 1995 and 2020
- Global Slope Stability
  - Static stability against sliding
  - Seismic stability against sliding
- Drainage
  - Reviewed capacity of all drainage systems.





# Del Mar Bluffs

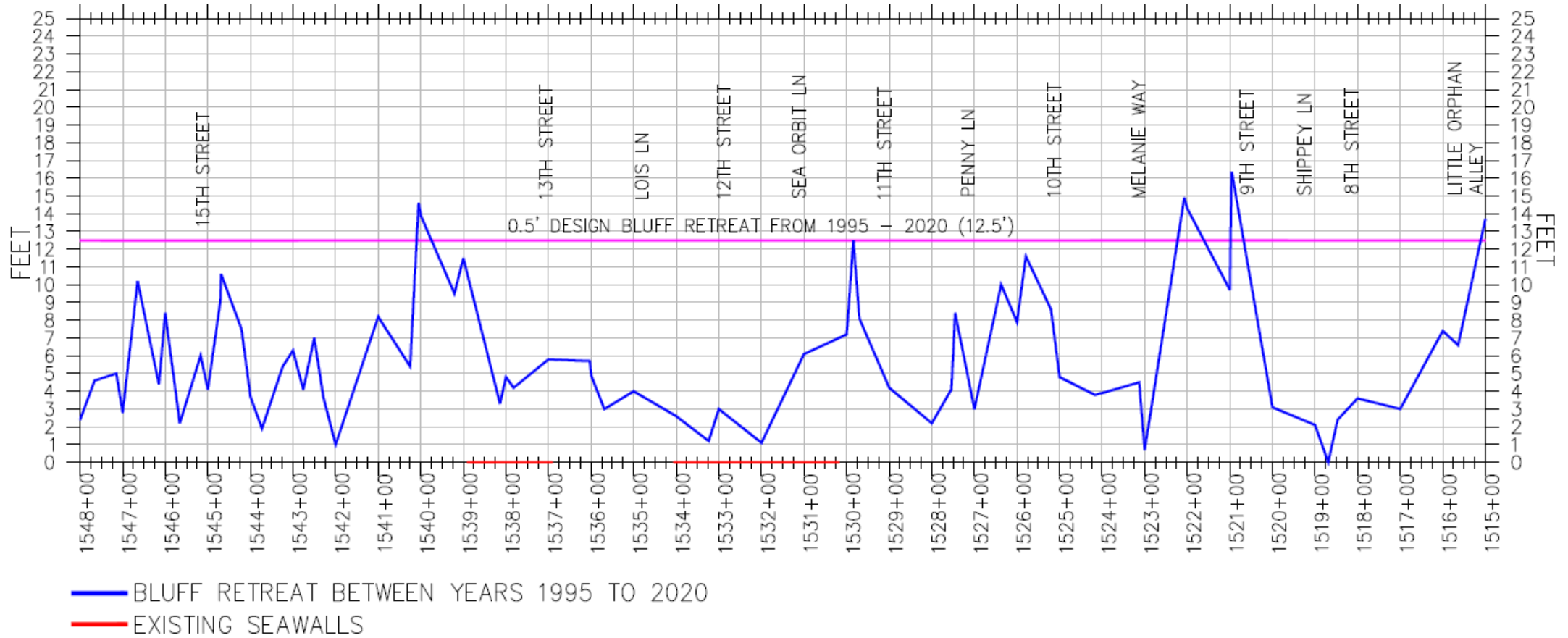
## Phase 5 Stabilization & Retrofit Areas





# Del Mar Bluffs

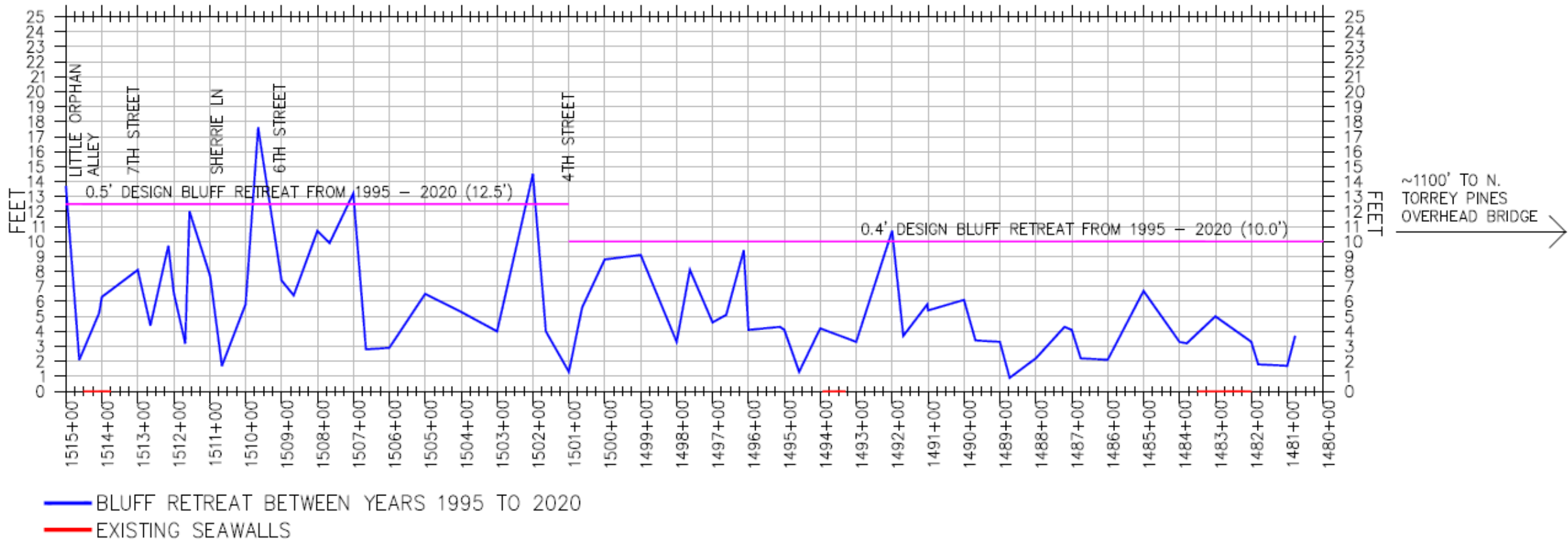
## Bluff Retreat 1995 to 2020 Between 15<sup>th</sup> and 8<sup>th</sup> Street





# Del Mar Bluffs

## Bluff Retreat 1995 to 2020 South of 7th Street





# Del Mar Bluffs

Bluff Retreat near 13<sup>th</sup> Street



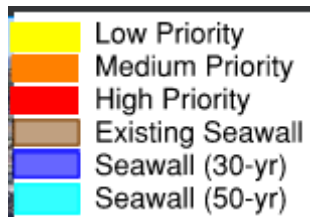


# Del Mar Bluffs

## 15<sup>th</sup> Street to 11<sup>th</sup> Street Prioritization of Improvements

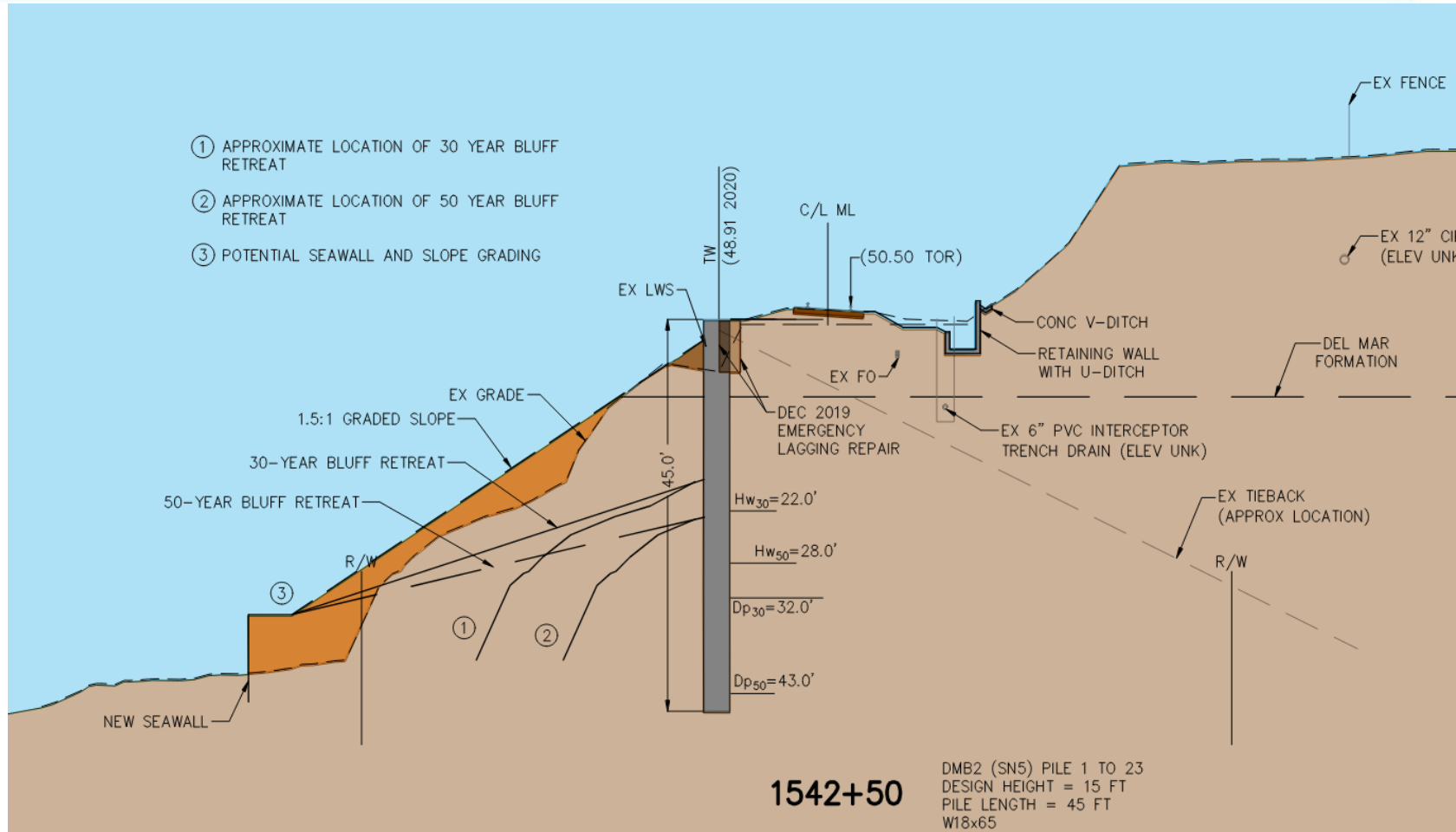


### Prioritization of improvements



# Del Mar Bluffs

## 15<sup>th</sup> Street to 11<sup>th</sup> Street





# Del Mar Bluffs

## Area 1 – 15<sup>th</sup> Street to 11<sup>th</sup> Street



### Alternatives Considered

Option	Baseline	Seawall only	Seawall with Surface Stabilization	Seawall with Inline Piles (with 1 <sup>st</sup> tieback)
30 – year needs	2 <sup>nd</sup> and 3 <sup>rd</sup> tiebacks with 30' lagging	2 <sup>nd</sup> tieback with 15' lagging	5' lagging	15' lagging
50 – year needs	Secondary Wall	2 <sup>nd</sup> and 3 <sup>rd</sup> tiebacks with 30' lagging	Maintenance	Potential 2 <sup>nd</sup> tieback with 30' lagging
Strengths	No work on the beach	No regrading, easier to fill behind seawall than rebuild slope	Vegetated Bluff Safer Beach Maximizes use of existing piles	Does not rely on seawall
Weaknesses	Visible lagging Significant 2 <sup>nd</sup> project in 20 years	Visible lagging Significant 2 <sup>nd</sup> project in 20 years	Visual Change in bluff	Visible lagging Harder to remove

# Del Mar Bluffs

## 11<sup>th</sup> Street to 15<sup>th</sup> Street



Recommended Solution – Stabilizes track, bluff toe and bluff face





# Del Mar Bluffs

11<sup>th</sup> Street to Shippey Lane – Regrade DMB5

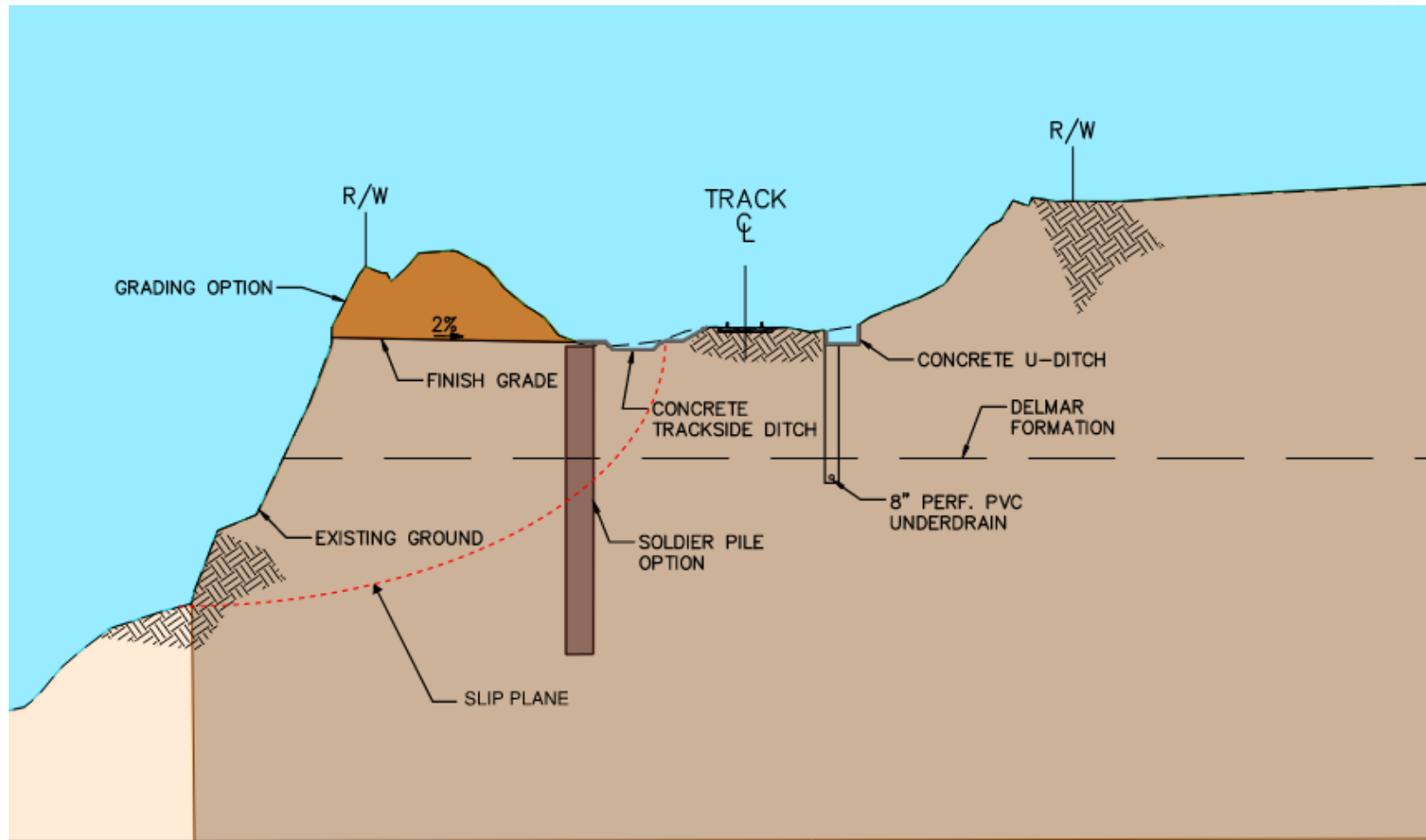


# Del Mar Bluffs

## 11<sup>th</sup> Street to Shippey Lane



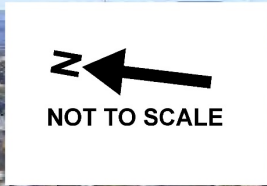
Recommended Solution: Remove Overburden DMB5





# Del Mar Bluffs

## 7th to 8th Street Proposed Stabilization



Cleveland National Forest

Crest Rd

Tewa Ct

Cuchara Dr

El Amigo Rd

Camino Del Mar

Friends of Del Mar Parks

9th St

8th St

7th St

6th St

### LEGEND

- Low Priority
- Medium Priority
- High Priority
- Existing Seawall
- Seawall (30-yr)
- Seawall (50-yr)
- Upper Bluff Walls

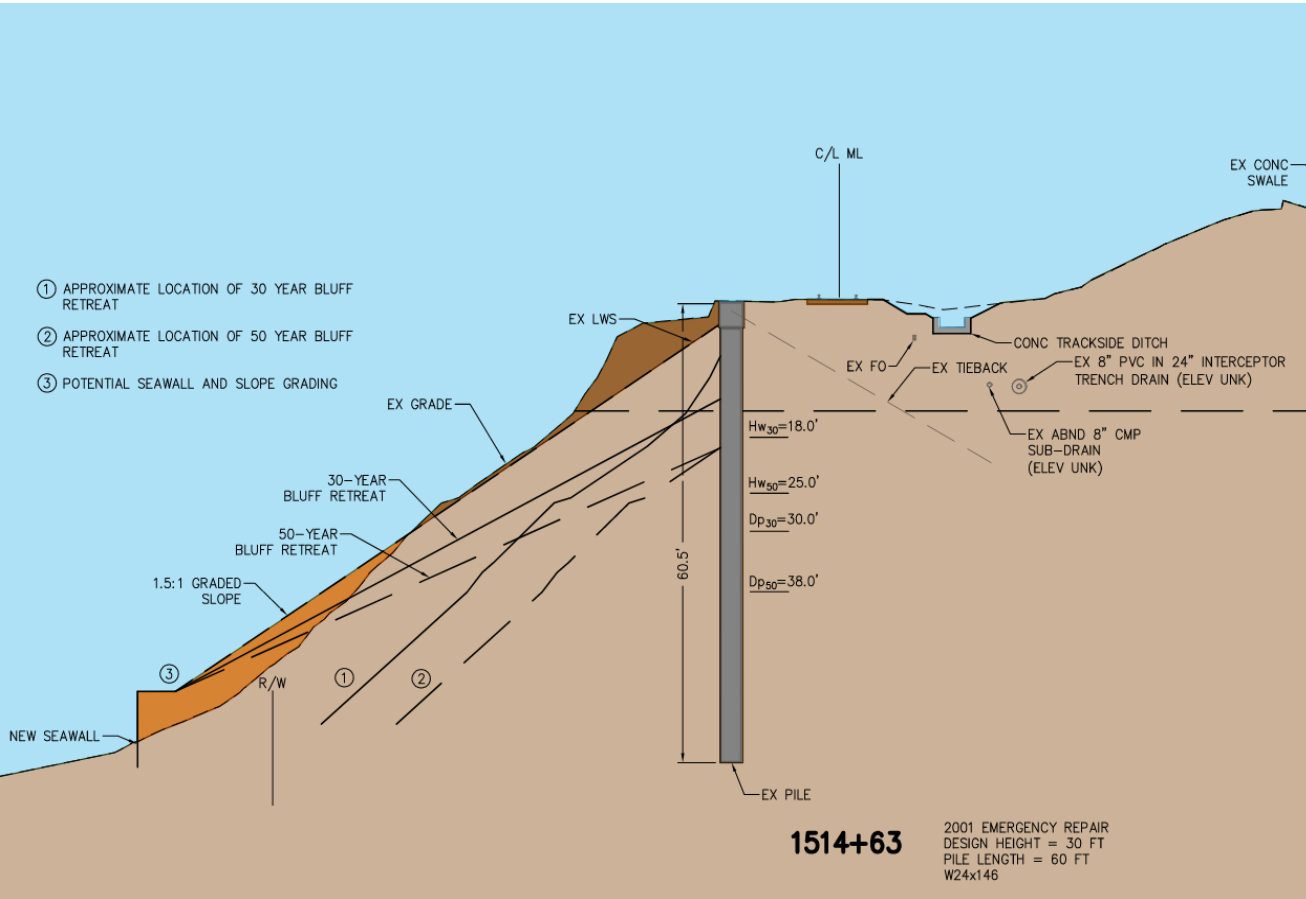
MATCHLINE





# Del Mar Bluffs

## 7<sup>th</sup> to 8<sup>th</sup> Street Propose Extending Seawall





# Del Mar Bluffs

## Proposed Stabilization North of Anderson Canyon





# Del Mar Bluffs

## Proposed Stabilization Anderson Canyon and South



NOT TO SCALE

### LEGEND

- Low Priority
- Medium Priority
- High Priority
- Existing Seawall
- Seawall (30-yr)
- Seawall (50-yr)
- Upper Bluff Walls



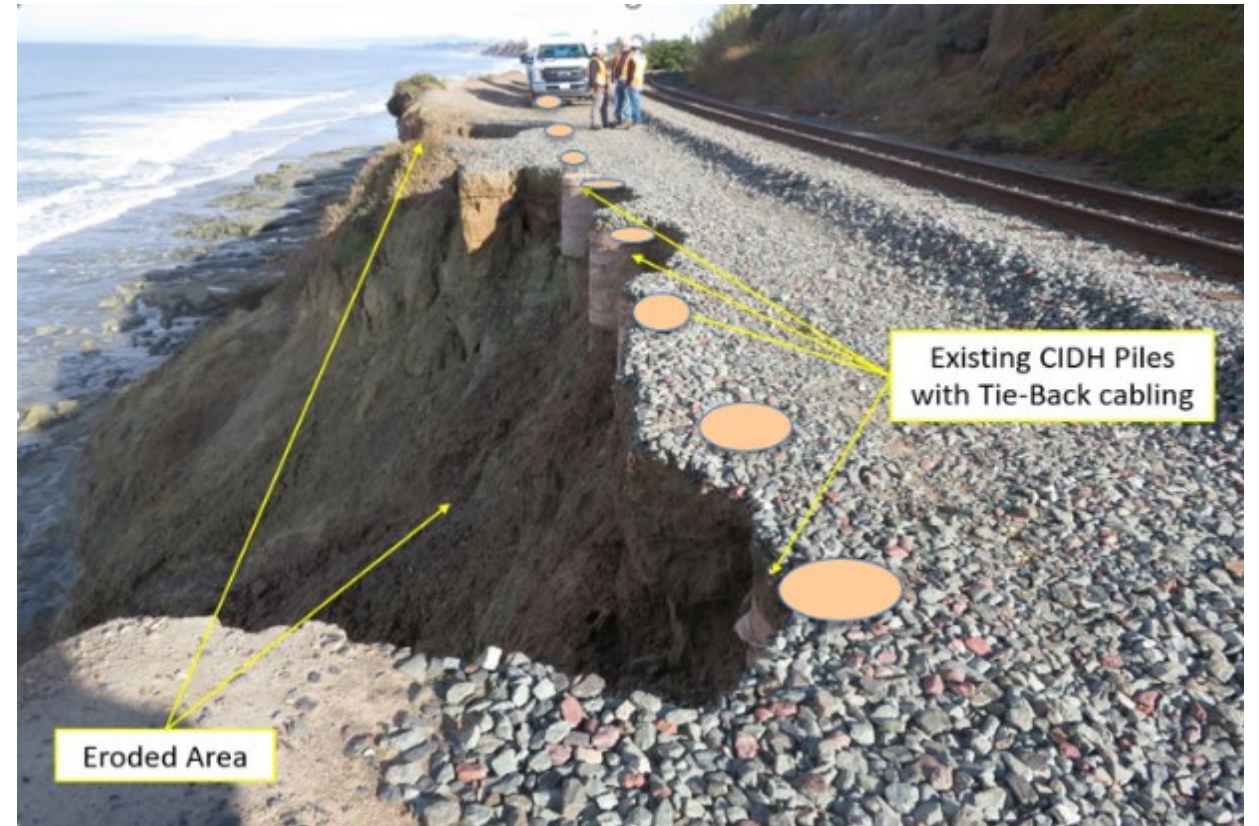


# Del Mar Bluffs

## DMB5 Drainage Study



- Drainage
  - Re-evaluated Capacity
  - Determined Needs:
    - New Outlets
    - Improve Inlets
    - Larger Trackside Ditches
    - Underdrains
    - Slope Stabilization East of Track





# Del Mar Bluffs

## Drainage Patterns: Coast Blvd to Lois Lane





# Del Mar Bluffs

## Existing Culvert Capacities

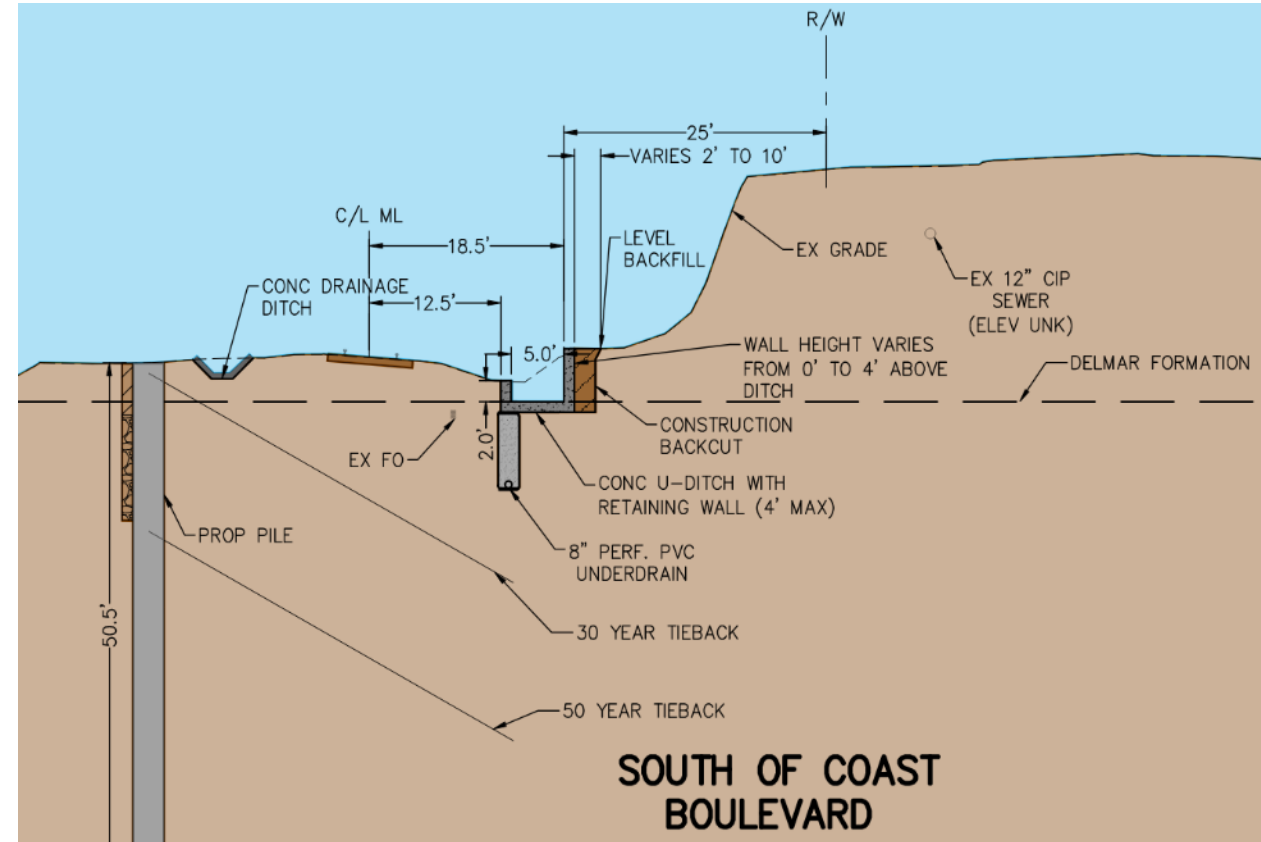


Location (MP)	Existing Conditions		Current Flood Flows			Notes
	Existing Pipe Size	Existing Pipe Capacity	Q100 CFS	Q50 CFS	Q25 CFS	
<b>Coast Blvd - 244.12</b>	30-inch	74 CFS	132	108	93	Inadequate – 20 Year Storm
<b>14<sup>th</sup> St - 244.3<sup>1</sup></b>	24-inch	28 CFS	39	32	29	Inadequate – 25 Year Storm
<b>12<sup>th</sup> St - 244.4</b>	48-inch	140 CFS	68	65	62	Replace
<b>11<sup>th</sup> St - 244.45</b>	42-inch	110 CFS	115	97	85	Adequate
<b>8<sup>th</sup> St - 244.7</b>	36-inch 42-inch	174 CFS	171	157	148	Adequate
<b>Anderson Canyon - 245.4</b>	72-inch	735 CFS	195	176	163	Adequate

1. Inlet conditions modified to increase capacity to 50 CFS

# Del Mar Bluffs

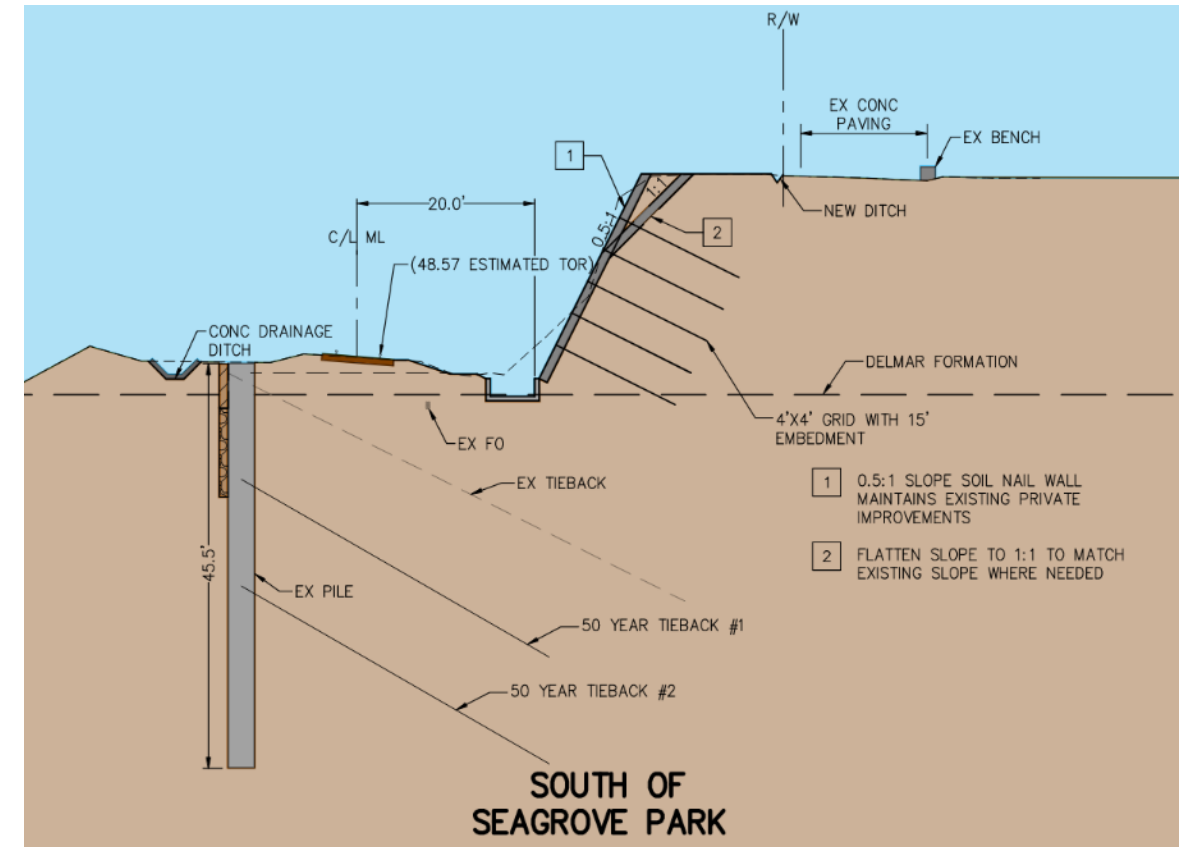
## Drainage – South of Coast Boulevard





# Del Mar Bluffs

## New Trackside Drain – 15<sup>th</sup> Street





# Del Mar Bluffs

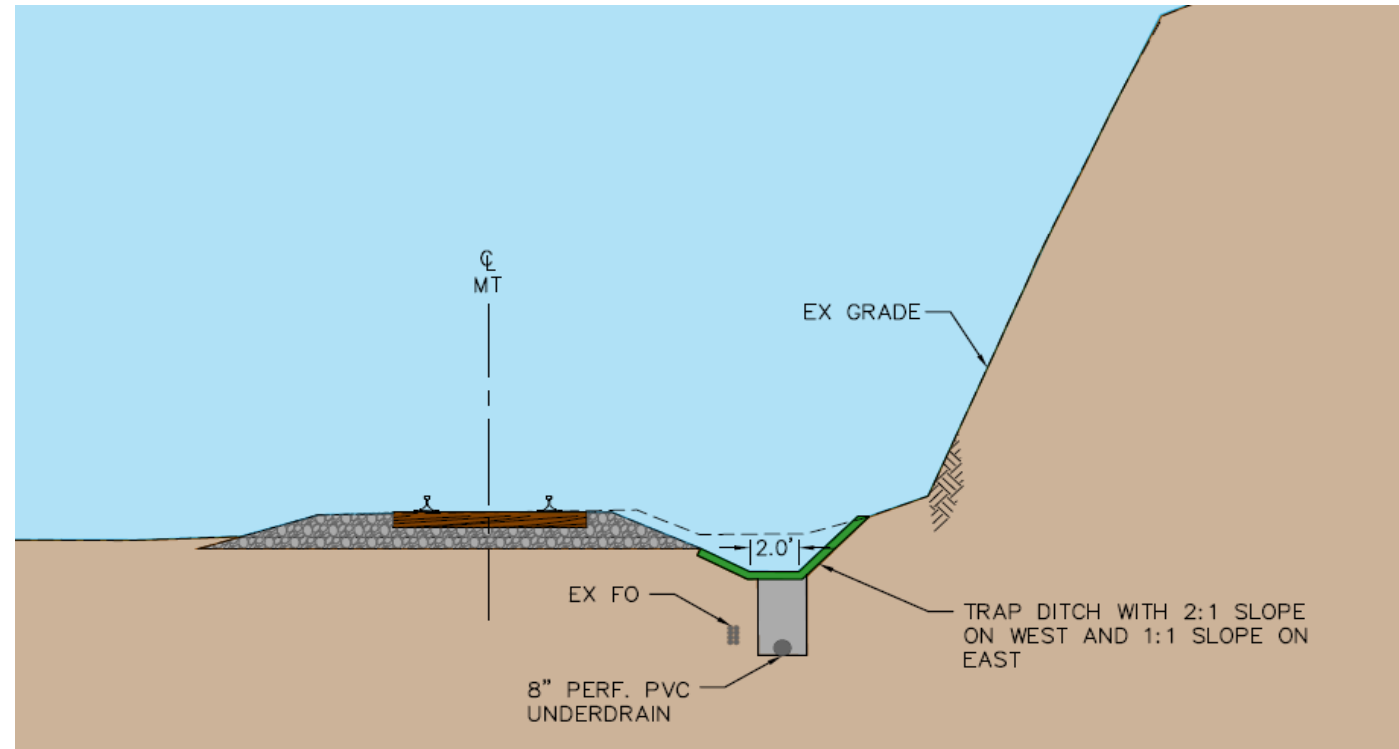
## Drainage – South of Anderson Canyon





# Del Mar Bluffs

## South of Anderson Canyon – Drainage Concept



New subdrain and ditch



# Del Mar Bluffs

## Phase 5 Schedule



Phase	Timeline
Preliminary Engineering & Env Clearance	Completed June 02, 2021
<b>60% Design</b>	<b>Late Summer 2021</b>
<b>Coastal Consistency Certification</b>	<b>Fall – Winter 2021</b>
<b>Public Workshop</b>	<b>Fall – Winter 2021</b>
Environmental Permits	Spring 2022
Final Design	Spring –Summer 2022
Bidding	Late Summer – Fall 2022
Construction	2023 –2024



# Del Mar Bluffs

## Phase 5 and 6



- DMB5 will construct the high priority stabilization areas and most of the medium priority areas
- DMB6 will construct the remaining medium and low priority areas
- DMB6 is planned for 2025 - 2030 after DMB5 has been completed





# Del Mar Bluffs

## Coastal Access Study



- Coastal Access study has been funded
- WSP has been selected as lead consultant
- Joint effort by City, SANDAG, and NCTD

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# Del Mar Bluffs

## Community Outreach



### Objectives

- Raise awareness of bluff stabilization efforts and overall corridor use and safety.
- Communicate early and often to surrounding residents and rail corridor commuters.
- Educate the continued need for stabilization efforts, while communicating the necessity of the on-going work.

### Tactics

- Stakeholder Briefings
- Public workshops
- Fact Sheets
- Door-to-Door Outreach
- Media Outreach
- Email Blasts
- Social Media
- 3rd Party Coordination
- Farmers' Markets
- City Council Meetings
- Project Website
- Signage



# Del Mar Bluffs

## Questions and Contacts



## Project Contacts:

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## Connect with Us:

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