



# City of Del Mar Agenda Report

TO: Honorable Mayor and City Council Members

FROM: Clem Brown, Assistant City Manager  
Via Ashley Jones, City Manager

DATE: December 5, 2022

SUBJECT: Presentation of the Draft Coastal Connections Conceptual Planning Study  
Initial Concepts

**REQUESTED ACTION/RECOMMENDATION:**

Receive a presentation (Attachment A) from SANDAG and lead consultant WSP on the initial concepts for the Draft Coastal Connections Conceptual Planning Study (Attachment B) and provide feedback.

**BACKGROUND**

In January 2021, the City Council executed a Memorandum of Understanding (MOU) with the San Diego Association of Governments (SANDAG) and North County Transit District (NCTD) to implement a feasibility study of potential pedestrian access improvements in the coastal railroad corridor along the Del Mar Bluffs.

The Draft Coastal Connections Conceptual Planning Study (Planning Study) began in June 2021, led by SANDAG and lead consultant WSP in close coordination with the City of Del Mar, NCTD and the California Coastal Commission (Coastal Commission). The purpose of the study is to assess the opportunities and constraints of potential pedestrian access improvements between Coast Boulevard and Torrey Pines State Beach, a 1.6-mile section of the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor situated among the coastal bluffs.

Historically, and presently, people enter railroad property in this area to cross the tracks and/or to walk along the bluffs, which creates safety concerns and risks affecting passenger and freight rail services. Additional safety measures, such as corridor fencing, are planned for installation by NCTD, which necessitates a study of potential pedestrian access improvements to accommodate both lateral and east/west coastal access in a safe and legal manner.

The Draft Planning Study objectively evaluates the opportunities and constraints of a range of potential pedestrian access improvements including lateral trails, rail crossings,

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**City Council Action:**

and beach access points at several possible locations. As the study is in draft form, the project team is not recommending any one solution as the preferred option, but rather presents many concepts to the public for consideration and feedback, including the expected benefits, costs, and potential tradeoffs of each.

## DISCUSSION/ANALYSIS:

### **Study Overview**

The Planning Study (Attachment B) follows a three-phase process and includes: 1) literature review and assessment of existing conditions, 2) initial identification and screening of potential improvements, and 3) development and further evaluation of selected design concepts. The report is organized into five sections:

|                  |  |
|------------------|--|
| <b>Section 1</b> | Summarizes the study's purpose, background, study area, and stakeholder engagement activities.   |
| <b>Section 2</b> | Reviews the study area's existing conditions and context.  |
| <b>Section 3</b> | Establishes evaluation criteria and screens a wide range of potential access improvements.   |
| <b>Section 4</b> | Describes and evaluates seven (7) selected design concepts including a north-south trail and railroad crossings, with draft conceptual plans and summaries of expected benefits, costs, and potential tradeoffs of each concept. |
| <b>Section 5</b> | Discusses implementation considerations and next steps.  |

### **Stakeholder Engagement**

To date, stakeholder engagement has mainly focused on interagency coordination between SANDAG, City of Del Mar, NCTD, and the Coastal Commission to gather information, conduct research, seek clarification on regulatory approvals, and work through the technical aspects of the proposed concept designs. External stakeholder outreach also took place with the City of San Diego, California Public Utilities Commission (CPUC), California State Parks, and the Los Penasquitos Lagoon Foundation to get early input and feedback on potential mobility needs and the initial design concepts.

The project team last briefed the Del Mar City Council about the study on October 4, 2021, and will return on December 5, 2022, to present the initial draft concepts for feedback. On December 7, 2022, the project team will host a community open house from 6:00 – 8:00 PM at the Del Mar Town Hall to receive comments from the public. The Draft Planning Study will also be available on the SANDAG and City of Del Mar websites for a four (4)-week written comment period beginning on December 5, 2022. Finally, the project team is planning to present the initial concepts to SANDAG's Social Services Transportation Advisory Council (SSTAC) in January 2023 to receive input on the accessibility features of the potential pedestrian access improvements.

### **Mitigation Requirements**

To move forward with the Del Mar Bluffs Stabilization Project 5, the fifth and current project in a series of efforts to stabilize the Del Mar bluffs, SANDAG was required to submit a consistency certification to the Coastal Commission for approval. On June 8, 2022, the Coastal Commission approved the consistency certification with conditions. One of the conditions was a requirement for SANDAG to develop and implement a capital improvement project to complete the planning, design, environmental review, and construction of three projects to provide and improve safe public coastal access and recreation in the project area.

The three projects include: 1) enhancement of the north-south trail system east of the rail track on the top of the bluff between Seagrove Park and 4<sup>th</sup> Street; 2) construction of a CPUC-approved pedestrian rail crossing near 7<sup>th</sup> Street or 11<sup>th</sup> Street; and 3) construction of a beach accessway at or between 7<sup>th</sup> Street and 11<sup>th</sup> Streets that does not involve significant grade or alternation of the bluff beyond the work that is to be performed as part of the Del Mar Bluffs Stabilization Project 5. The design of these three coastal access improvement projects will be informed by the Planning Study and stakeholder/public feedback. SANDAG is required to complete the three projects within three years of the beginning of construction on the Del Mar Bluffs Stabilization Project 5 unless an extension is granted.

### **Relocation of the Railroad**

SANDAG is concurrently working on the San Diego Regional Rail Alignment Study, a feasibility study for the long-term relocation of the LOSSAN rail corridor. The study will be completed in 2023 and is evaluating alternative railroad alignments east of the coastal bluffs in Del Mar. Relocation of the railroad is included in SANDAG's Regional Plan for completion by 2035, and the State of California recently authorized \$300 million in funding for the project. SANDAG expects to use the funding to complete the preliminary planning and design and environmental review.

If the pedestrian access improvements proposed in the Planning Study are constructed as mitigation for the Del Mar Bluffs Stabilization Project 5 (as described above) and the railroad is relocated off the bluffs, stakeholder agencies will evaluate the physical conditions of the bluff at that time. This is anticipated to include future decisions about what infrastructure on the bluff may need to be removed in the interest of public health and safety and to return the open space bluffs to a more natural state.

### **Review of Initial Concepts**

As discussed in detail in the Planning Study, the project team screened a wide range of potential pedestrian access improvement concepts across multiple evaluation criteria to determine which concepts to advance to initial design. Those criteria include engineering feasibility, pedestrian connectivity, consistency with existing movement patterns, parking impacts, regulatory feasibility, visual impacts, noise impacts, and cost. The evaluation

criteria represent a starting point for evaluating the tradeoffs between the proposed concepts and are by no means exhaustive.

In collaboration with the stakeholder agencies included in the project team, the following seven candidate concepts were advanced to conceptual design based on the criteria described above:

1. North-South Trail (east of railroad)
2. At-Grade Crossing at 11<sup>th</sup> Street with Ramps and Stairs to Beach
3. At-Grade Crossing at 11<sup>th</sup> Street with Stairs to Beach
4. At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Street with Ramps to Beach
5. At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Street with Stairs to Beach
6. Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Street with Ramps to Beach
7. Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Street with Stairs to Beach

Representatives from SANDAG and lead consultant WSP will provide a detailed briefing on the Planning Study and each of these seven concepts at the December 5, 2022, City Council meeting, and will document any input from the Council or the public. The presentation slides summarizing the Planning Study and initial concept designs are included as Attachment A.

FISCAL IMPACT:

There is no fiscal impact or action to be taken by the City Council related to this agenda item.

ENVIRONMENTAL IMPACT:

The proposed City Council action does not constitute a “project” under the definition set forth in California Environmental Quality Act (CEQA) Guidelines Section 15378 because it will not have a potential to result in a direct or indirect physical change in the environment and is, therefore, not subject to CEQA. No further action under CEQA is required.

NEXUS TO CITY COUNCIL GOALS AND PRIORITIES:

This item is a Tier 1 special project on the City Council’s list of goals and priorities for Fiscal Year 2022-2023.

ATTACHMENTS:

Attachment A – PowerPoint Presentation

Attachment B – Draft Coastal Connections Conceptual Planning Study



# Coastal Connections Conceptual Planning Study

## Del Mar City Council & Community Open House

December 5, 2022

# Agenda

- Study purpose & overview
- Initial screening of potential concepts
- Design concepts
- Implementation considerations
- Next steps *(in this study & for future project development)*

# Study Purpose & Overview

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- Goal: Evaluate opportunities & constraints of potential pedestrian access improvements in the Del Mar coastal rail corridor
- Collaborative study with MOU between SANDAG, Del Mar & NCTD
- Funded by Caltrans planning grant
- Approx. 20 months: June 2021 – January 2023
- Concepts identified as mitigation in CCC Del Mar Bluffs Stabilization Phase 5 approval
- ***Conceptual planning only:*** Selection of specific design elements will depend on a variety of factors to be resolved collaboratively moving forward – including regulatory agency input & public feedback

# Study Area

- Coast Boulevard to North Torrey Pines Road/  
Torrey Pines State Beach
- 1.6 miles single-tracked

Attachment A

Southern Boundary  
North Torrey Pines Road/  
Torrey Pines State Beach  
(MP 245.7)

Northern Boundary  
Coast Boulevard (MP 244.1)

# Project Development Team (PDT)

- SANDAG
- City of Del Mar
- NCTD
- California Coastal Commission (CCC)
- Additional meetings with California Public Utilities Commission (CPUC)
- Initiated conversations for regulatory issues including CCC & CPUC

**Jul 2021 – Dec 2021**

Existing Conditions &  
Feasibility Assessments



**Jan 2022 – Jun 2022**

Identification &  
Screening of Potential  
Improvements



**Jul 2022 – Jan 2023**

Selection of 7 Draft  
Concepts for  
Development &  
Evaluation

# Initial Screening of Potential Concepts

# Findings from Initial Screening

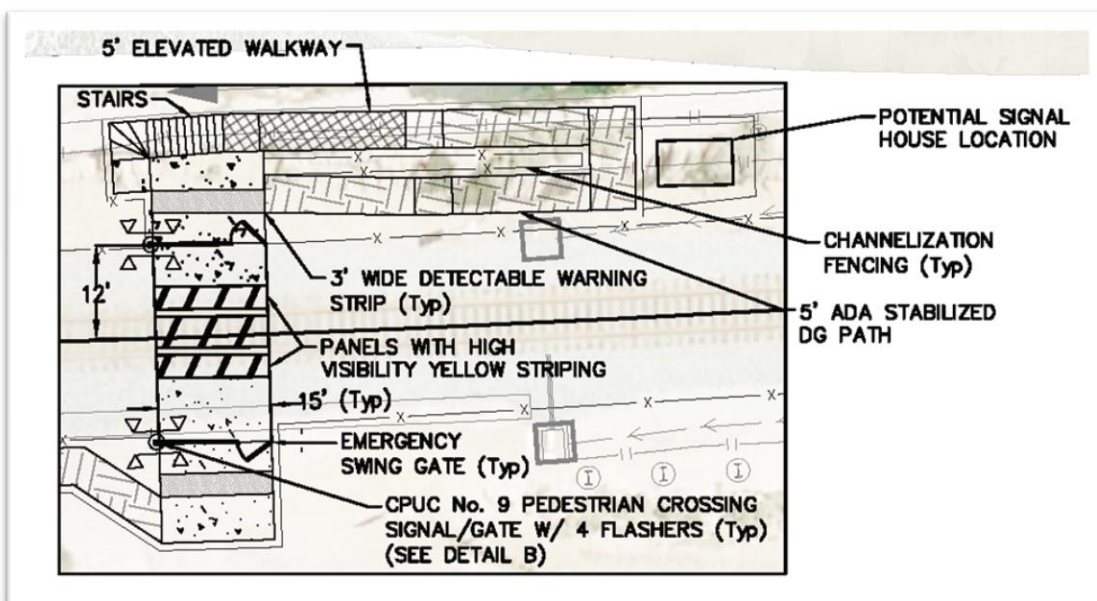
- Initial evaluation of entire corridor
- North–South trails:
  - *West Side*: Continuous facility infeasible
  - *East Side*: Seagrove Park to 4<sup>th</sup> Street
- Most feasible beach access locations:
  - 11<sup>th</sup> Street/Sea Orbit Lane
  - 6<sup>th</sup>/7<sup>th</sup>/8<sup>th</sup> Streets
  - Torrey Pines State Beach area
- Good alignment among several criteria, including engineering, existing movements & consistency with earlier findings including *TRAC* study

# Screening of Railroad Crossing Types

- At-grade crossings
- Undercrossings
- Overcrossings

# Screening of Crossing Types: At-Grade Crossings

- Requires discretionary approval by CPUC
- Noise impacts from audible warning systems & train horns
- Safety fencing & signal house
- *Advanced for further concept development*



# Screening of Crossing Types: Undercrossings

- Feasible from engineering perspective
- More development, walls & grading than other crossing types
- Reduces noise impacts vs. at-grade crossings
- Least impact is 10' x 8' undercrossing
- *Advanced for further concept development*



# Screening of Crossing Types: Overcrossings

- Substantial visual impacts (>30ft above railroad plus >60ft bluff height)
- Larger structural elements than other crossings
- *Eliminated in initial screening due to visual impacts. Focus instead on at-grade & undercrossings*



# Design Concepts

# Design Concepts Selected for Advancement



## 11<sup>th</sup> Street:

- *Concept 2:* At-grade crossing, ramps & stairs to beach
- *Concept 3:* At-grade crossing, stairs to beach

## Seagrove Park to 4<sup>th</sup> Street:

- *Concept 1:* North–south trail (0.8 miles)

## 7<sup>th</sup>–8<sup>th</sup> Streets:

- *Concept 4:* At-grade crossing, ramps to beach
- *Concept 5:* At-grade crossing, stairs to beach
- *Concept 6:* Undercrossing, ramps to beach
- *Concept 7:* Undercrossing, stairs to beach

# Notable Concept Features


- Fully accessible connections to street ends
- Natural stairs: Graded with timber or rock; follow existing paths of travel
- Stabilized decomposed granite: Accessibility-compliant surfaces for ramps & paths



# Universal Benefits Provided by All Design Concepts

- All concepts reviewed to ensure benefits over existing conditions:
  - Pedestrian connectivity & coastal access
  - New fully accessible paths & view overlooks
  - Consistency with existing movement patterns
  - Consistency with prior facilities, studies & recommendations
  - Safety of railroad & bluffs
- Railroad crossings integrated with SANDAG planned seawalls
- All footprints within public right-of-way (NCTD & City of Del Mar)
- **Conceptual planning only:** Selection of specific design elements will depend on a variety of factors to be resolved collaboratively moving forward – including regulatory agency input & public feedback

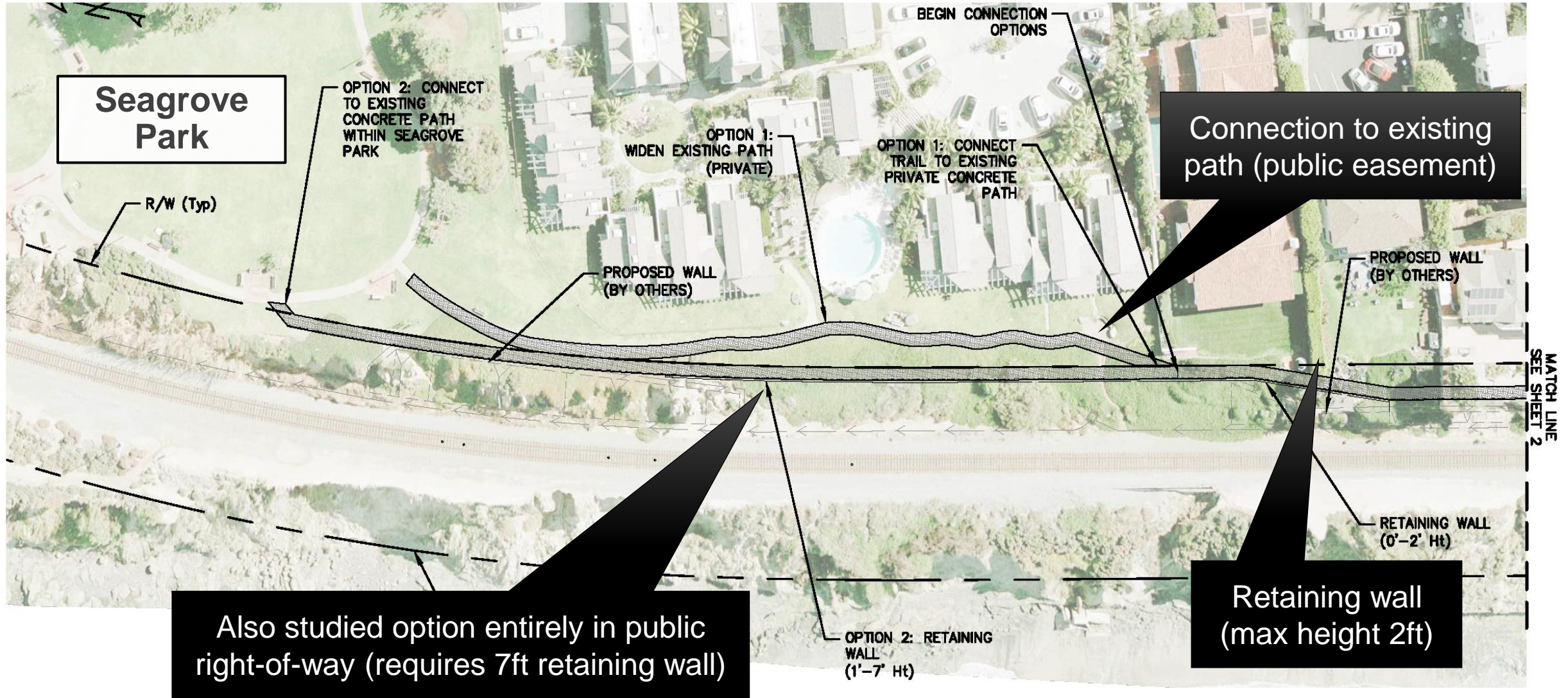
# Concept 1: North–South Trail



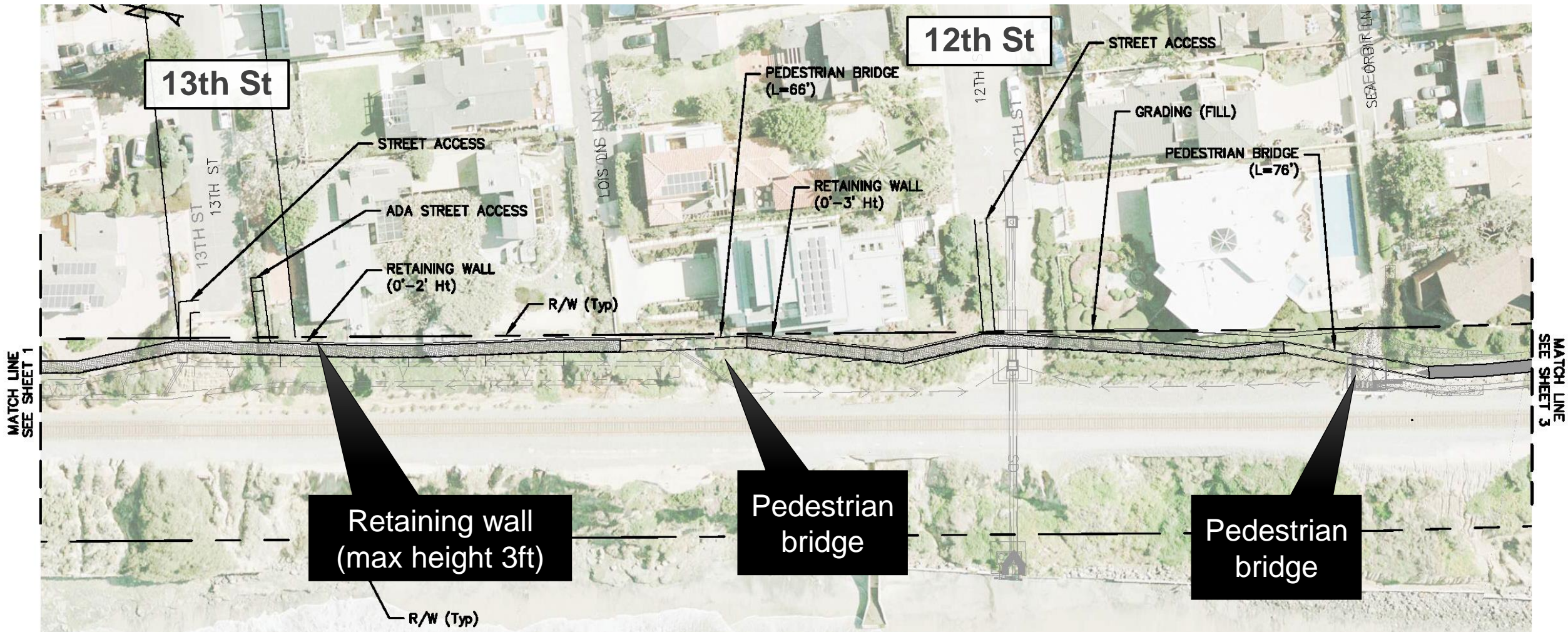
*Concept 1: North–south trail*

- Seagrove Park to 4<sup>th</sup> St (0.8 miles)
- Fully accessible
- Connections to every street end (no alleys)

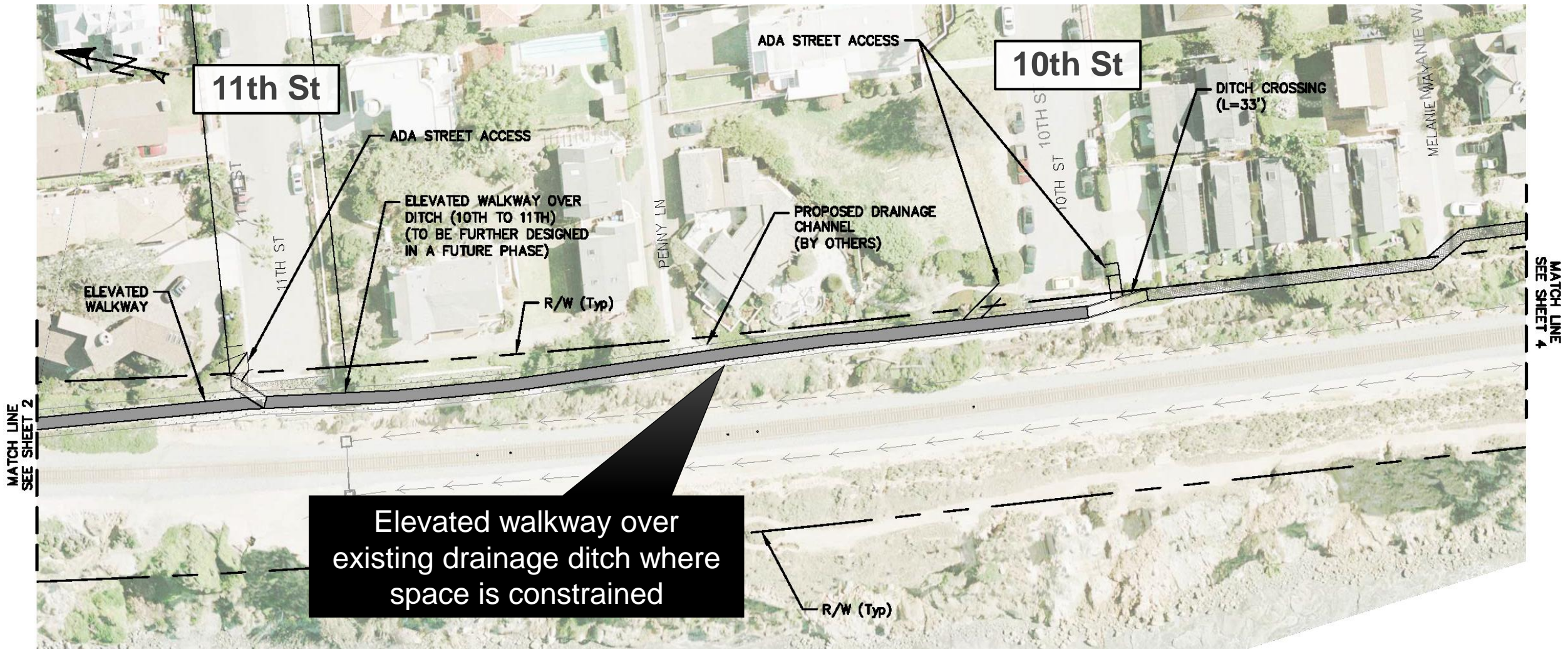
# Concept 1: North-South Trail



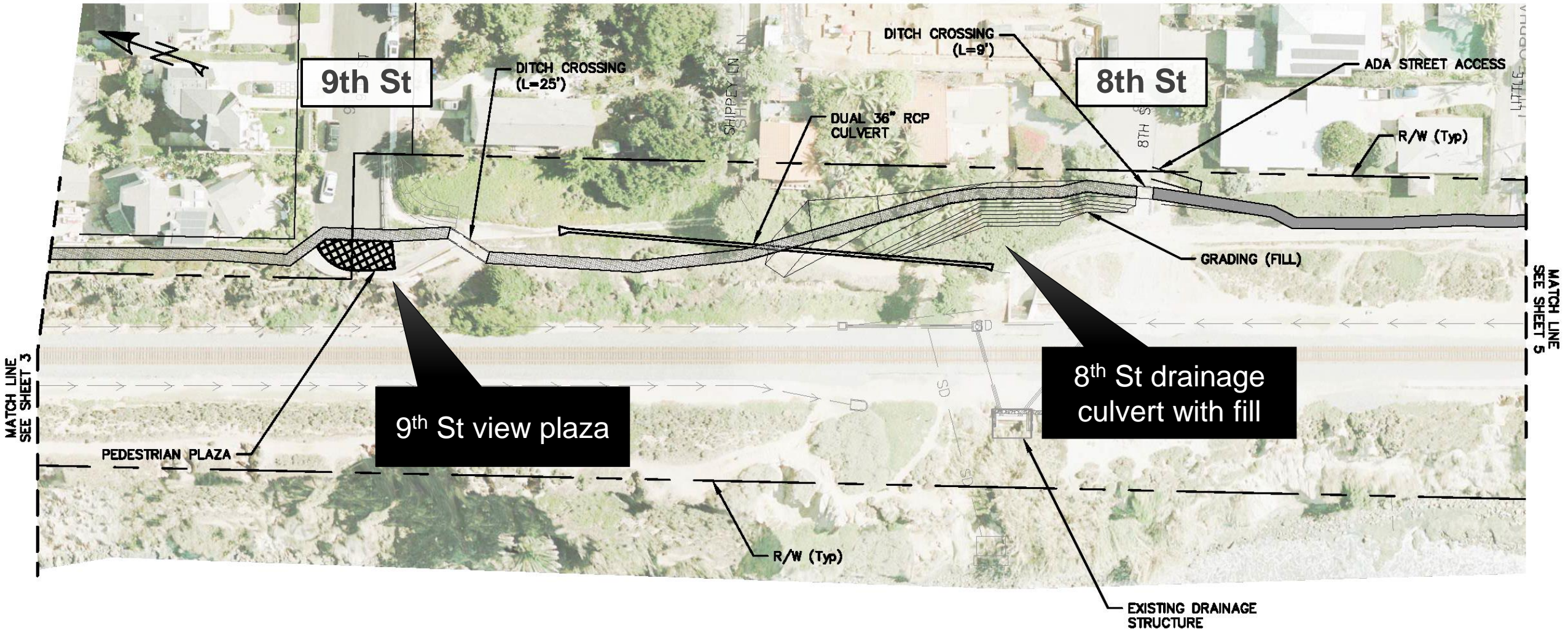
# Concept 1: North-South Trail



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# Concept 1: North-South Trail



# Concept 1: North-South Trail

## 9<sup>th</sup> Street View Plaza

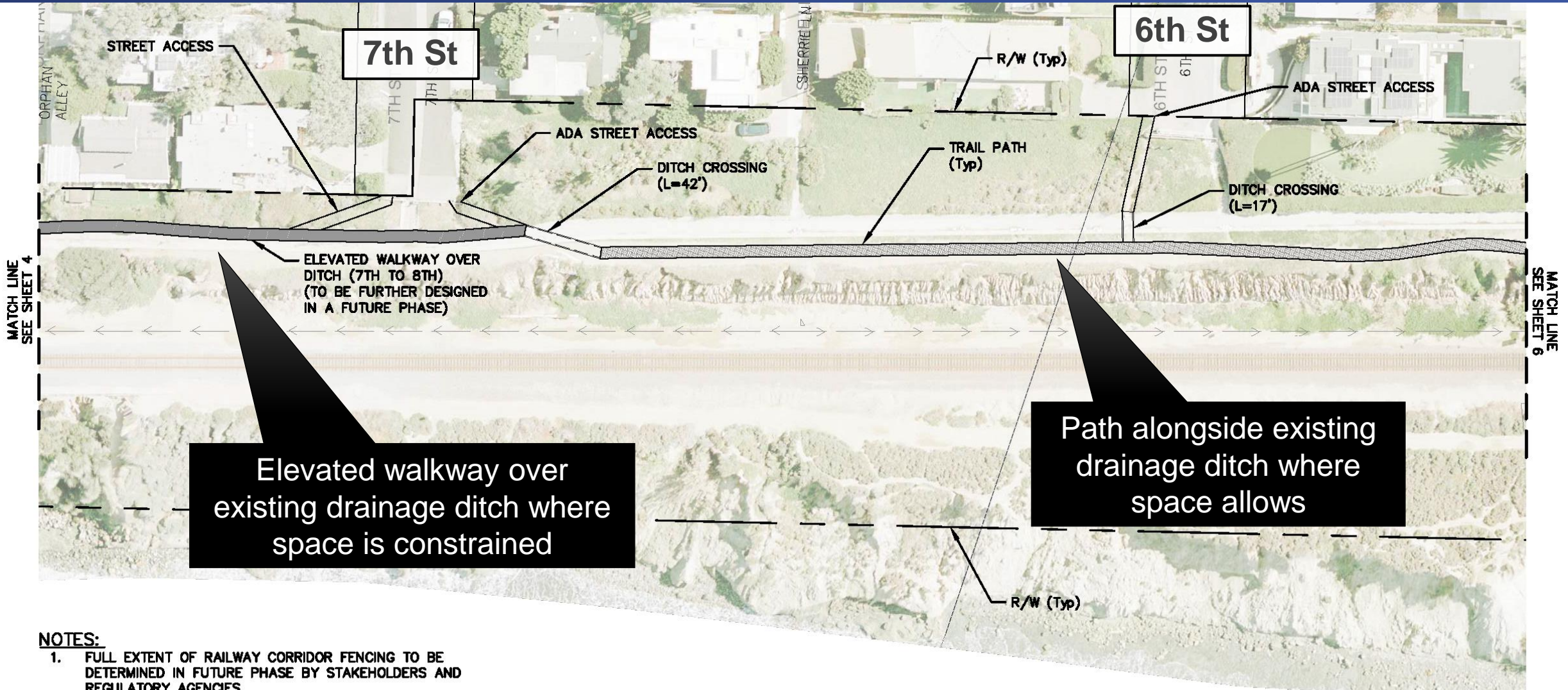


# Concept 1: North–South Trail

## 8th Street Drainage Culvert with Fill



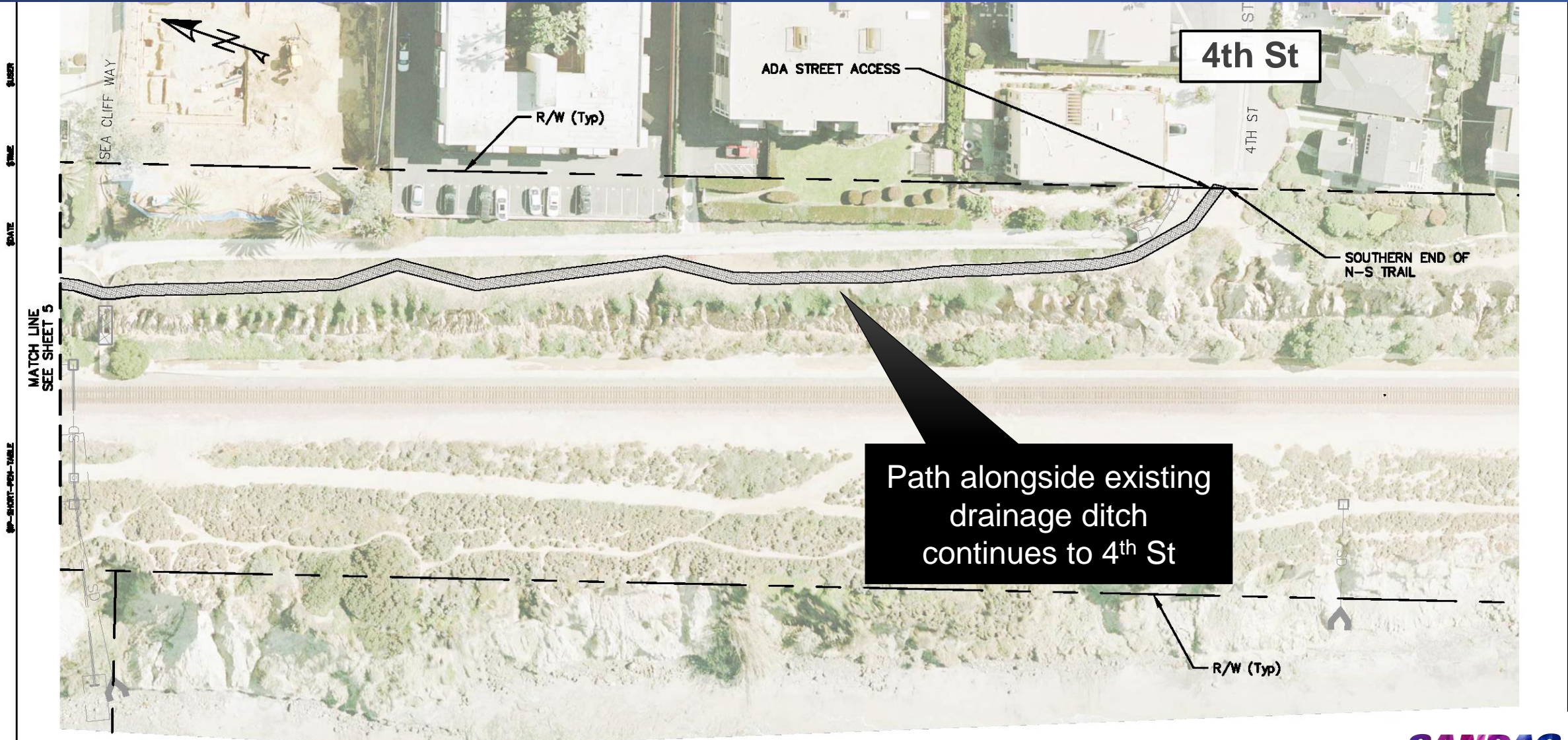
# Concept 1: North-South Trail



**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.

# Concept 1: North-South Trail

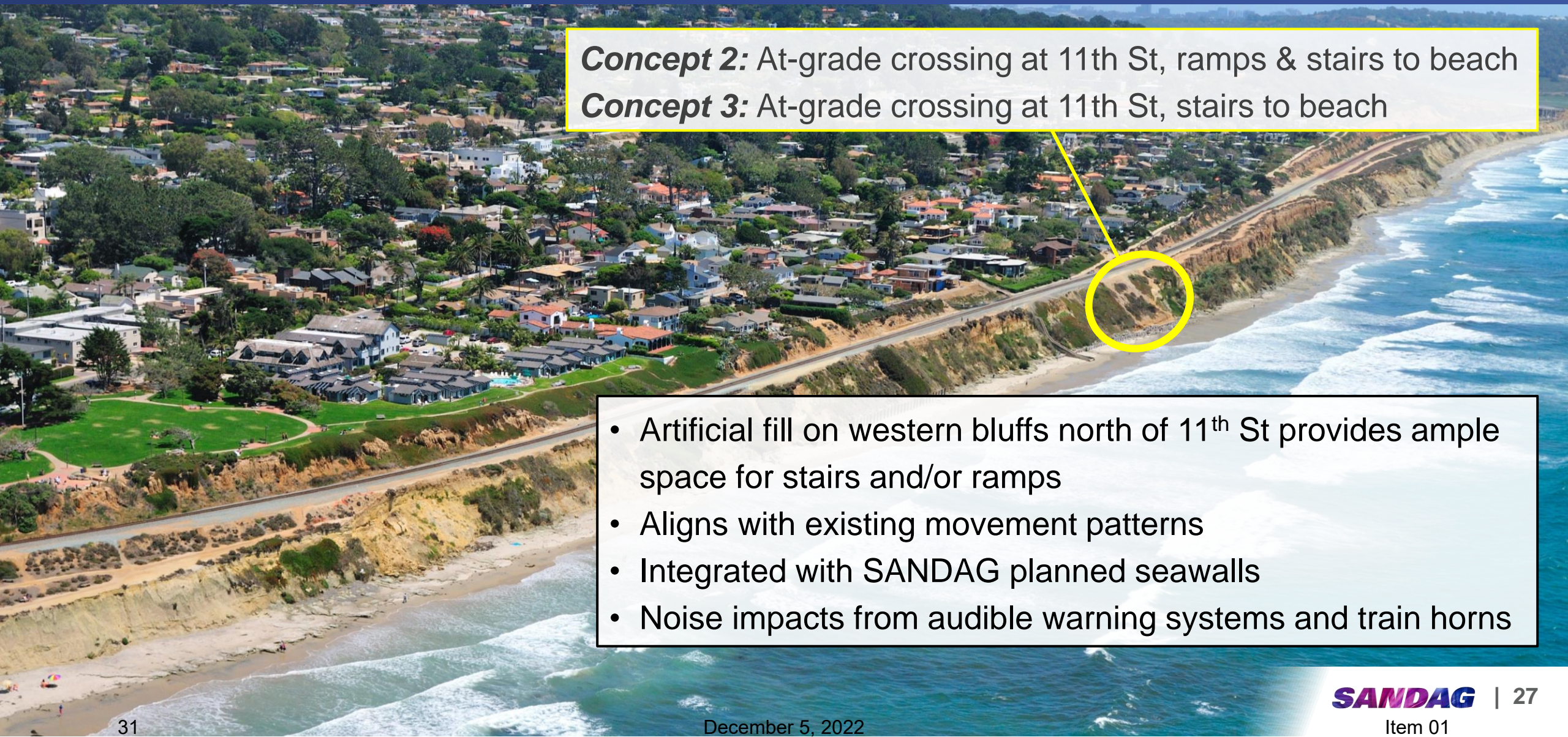


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE

December 5, 2022

# Concepts 2 & 3: At-Grade Crossings at 11th Street



**Concept 2:** At-grade crossing at 11th St, ramps & stairs to beach  
**Concept 3:** At-grade crossing at 11th St, stairs to beach

- Artificial fill on western bluffs north of 11<sup>th</sup> St provides ample space for stairs and/or ramps
- Aligns with existing movement patterns
- Integrated with SANDAG planned seawalls
- Noise impacts from audible warning systems and train horns

# Concept 3: At-Grade Crossing at 11<sup>th</sup> Street, Stairs to Beach

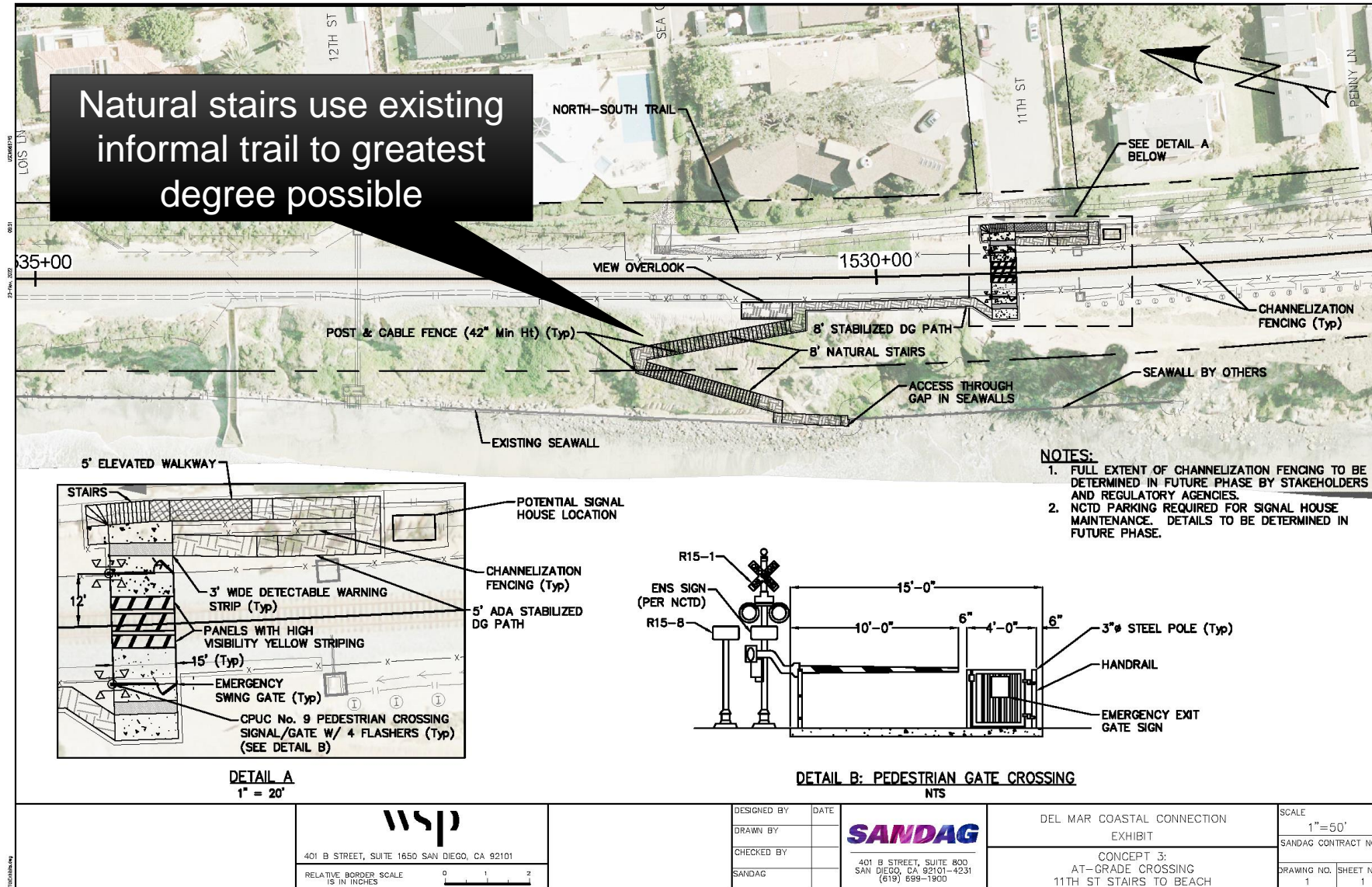


Sea Orbit Ln

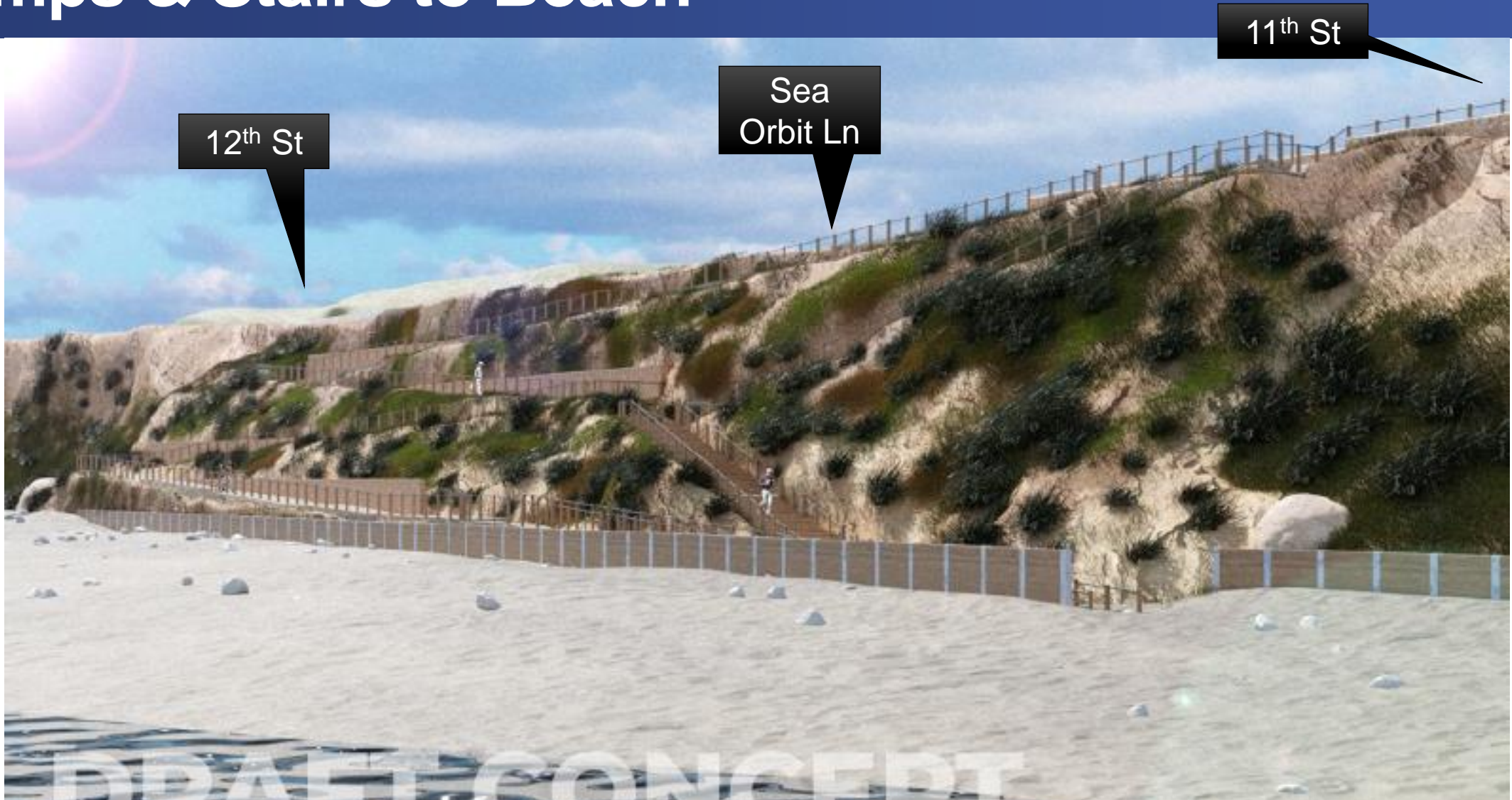
11<sup>th</sup> St

DRAFT CONCEPT

# Concept 3: At-Grade Crossing at 11th Street, Stairs to Beach



# Concept 2: At-Grade Crossing at 11<sup>th</sup> Street, Ramps & Stairs to Beach



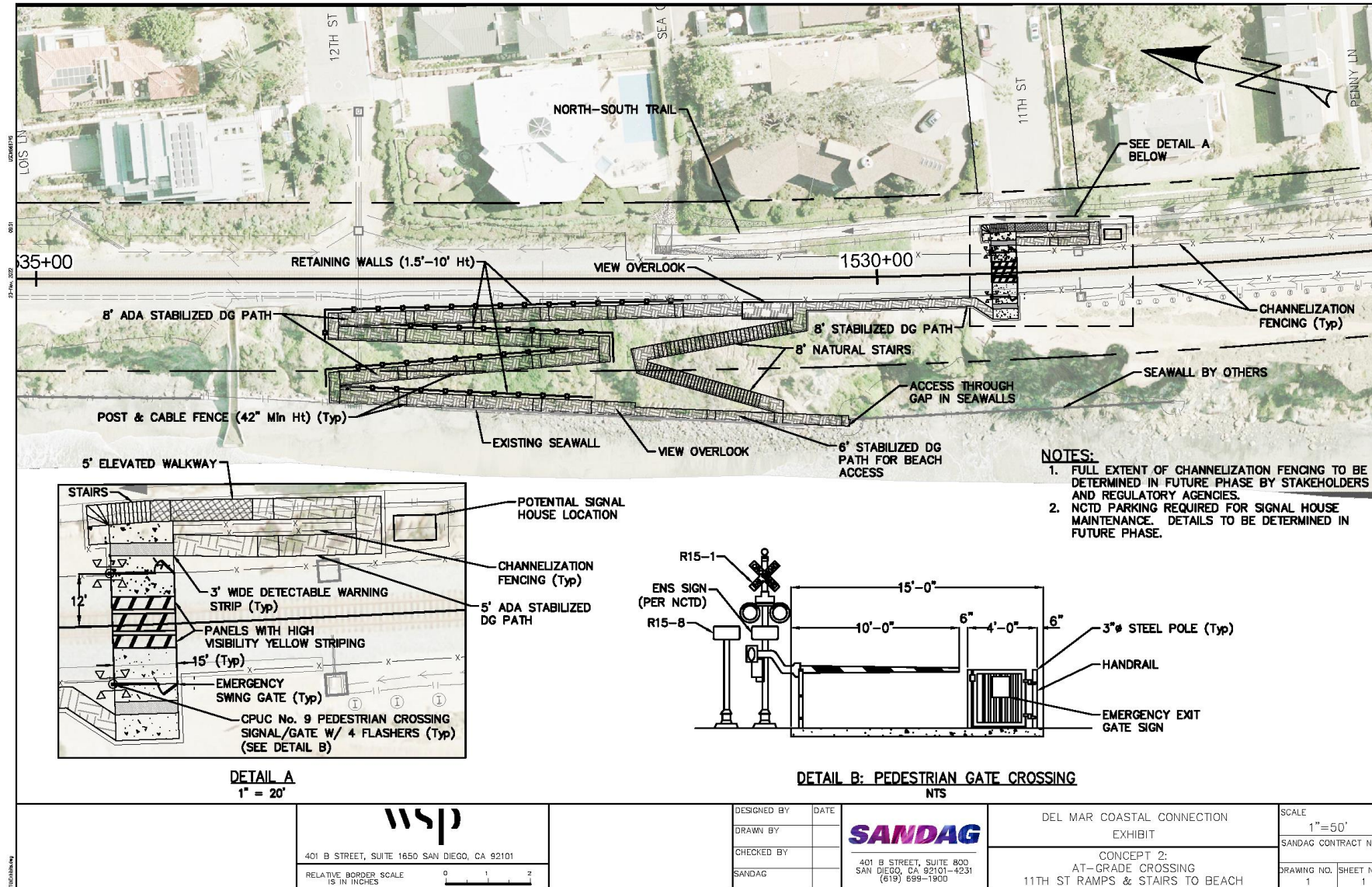
12<sup>th</sup> St

Sea Orbit Ln

11<sup>th</sup> St

DRAFT CONCEPT

# Concept 2: At-Grade Crossing at 11th Street, Ramps & Stairs to Beach



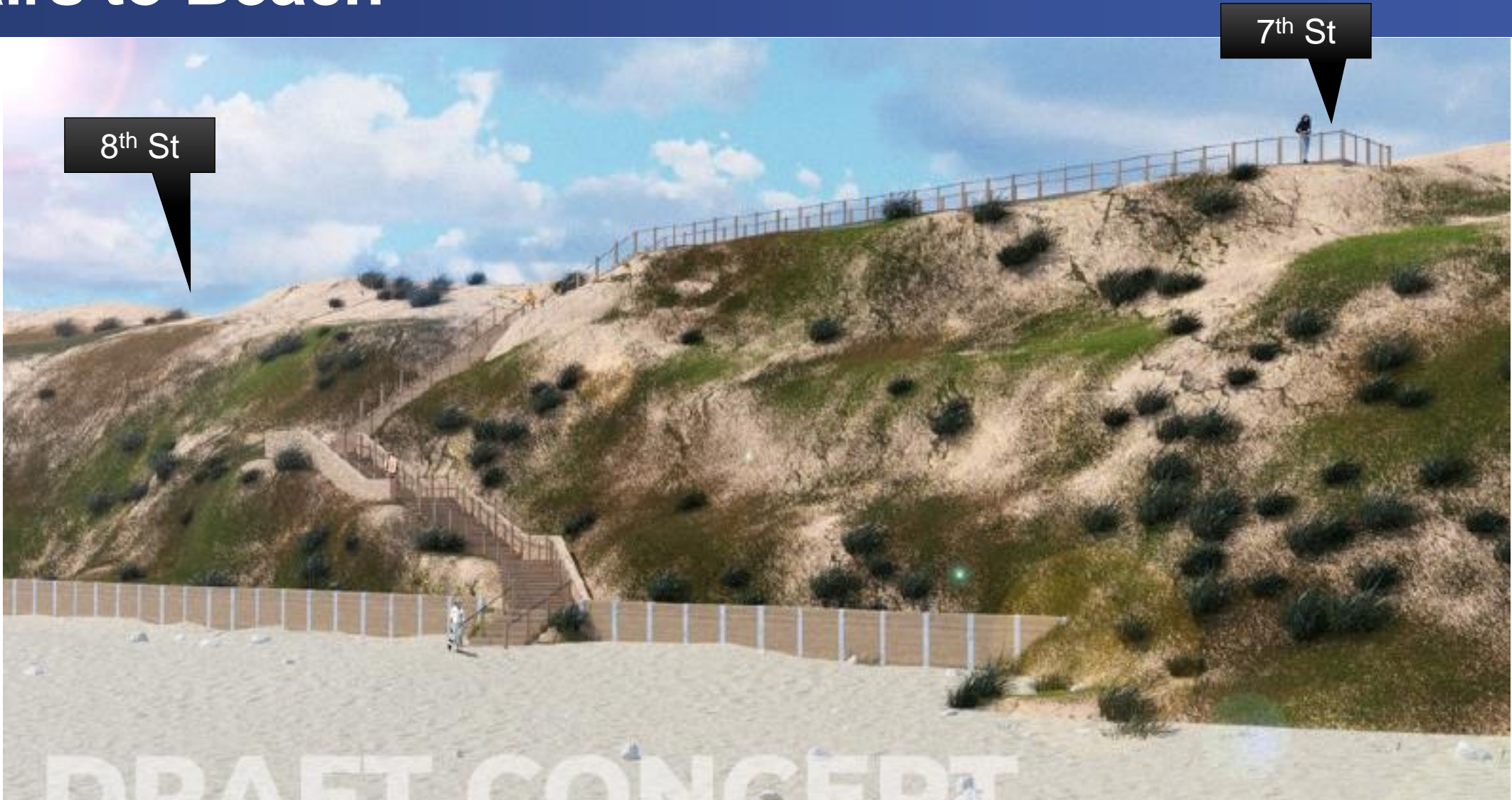
# Concepts 4 & 5: At-Grade Crossings at 7<sup>th</sup>–8<sup>th</sup> Streets

- Constrained space on western bluffs between 7<sup>th</sup> & 8<sup>th</sup> St
- Aligns with existing movement patterns
- Integrated with SANDAG planned seawalls
- Noise impacts from audible warning systems and train horns

**Concept 4:** At-grade crossing at 7<sup>th</sup>-8<sup>th</sup> St, ramps to beach  
**Concept 5:** At-grade crossing at 7<sup>th</sup>-8<sup>th</sup> St, stairs to beach

# Concept 5: At-Grade Crossing at 7<sup>th</sup>–8<sup>th</sup> Streets, Stairs to Beach

Attachment A

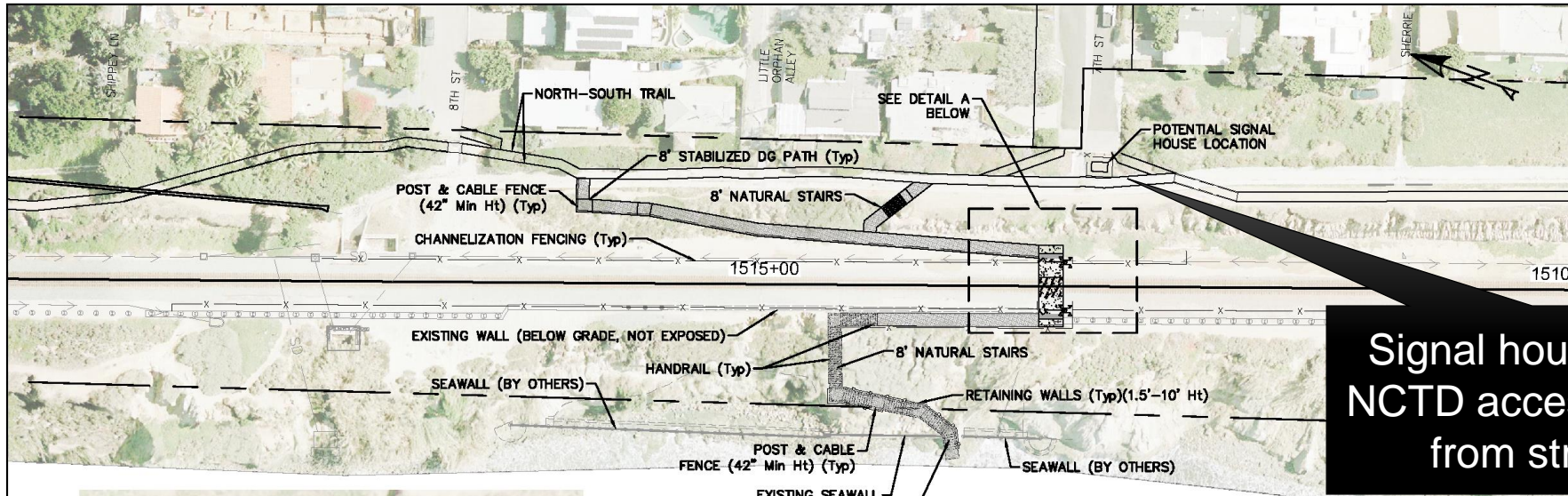


8<sup>th</sup> St

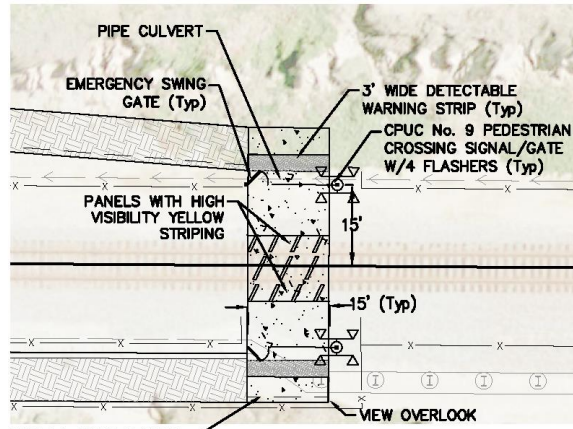
7<sup>th</sup> St

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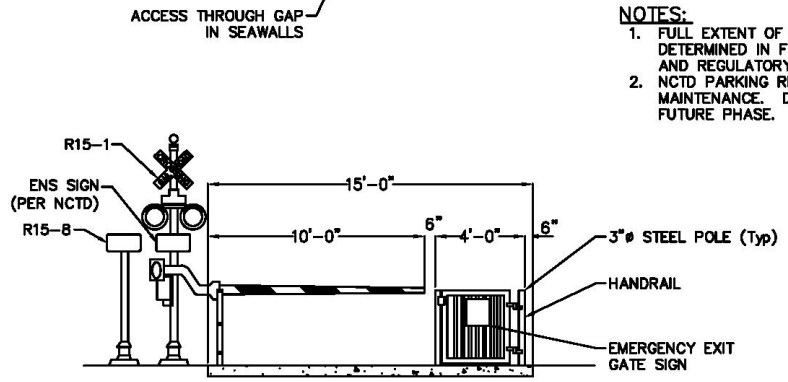
# Concept 5: At-Grade Crossing at 7<sup>th</sup>–8<sup>th</sup> Streets, Attachment A Stairs to Beach



Signal house requires NCTD access & parking from street end



DETAIL A  
1" = 20"



DETAIL B: PEDESTRIAN GATE CROSSING  
NTS

- NOTES:**
1. FULL EXTENT OF CHANNELIZATION FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
  2. NCTD PARKING REQUIRED FOR SIGNAL HOUSE MAINTENANCE. DETAILS TO BE DETERMINED IN FUTURE PHASE.

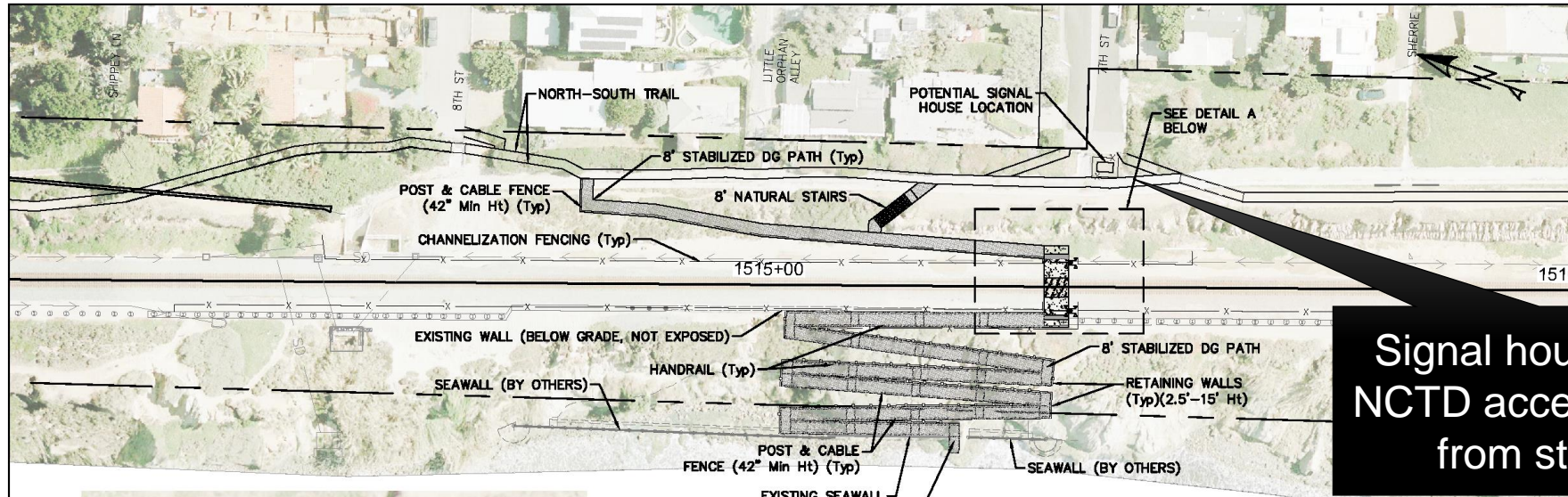
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|---|---|---|--|--|
| <br>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101<br>RELATIVE BORDER SCALE<br>1" = 10' | DESIGNED BY<br>DRAWN BY<br>CHECKED BY<br>SANDAG | DATE<br><br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 699-1900 | DEL MAR COASTAL CONNECTION<br>EXHIBIT<br>CONCEPT 5:<br>AT-GRADE CROSSING 7TH AND 8TH ST<br>STAIRS TO BEACH | SCALE<br>1"=60"<br>SANDAG CONTRACT NO.<br>DRAWING NO. SHEET NO.<br>1 1 |
|   | December 5, 2022                                |   |  |  |

# Concept 4: At-Grade Crossing at 7<sup>th</sup>–8<sup>th</sup> Streets, Ramps to Beach

Attachment A

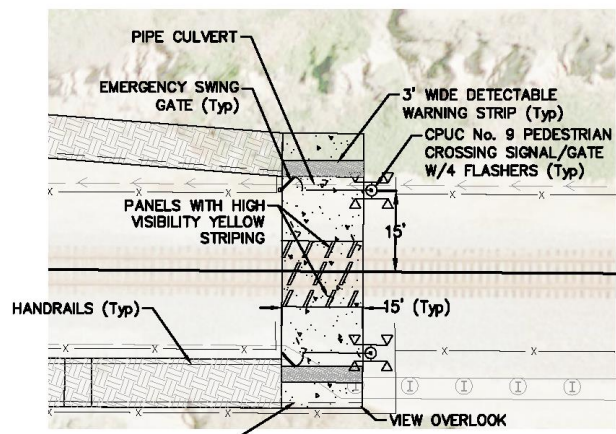


# Concept 5: At-Grade Crossing at 7<sup>th</sup>–8<sup>th</sup> Streets, Attachment A Ramps to Beach

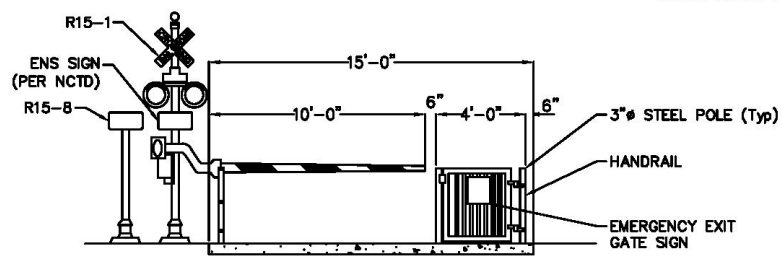


Signal house requires NCTD access & parking from street end

- NOTES:**
1. FULL EXTENT OF CHANNELIZATION FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
  2. NCTD PARKING REQUIRED FOR SIGNAL HOUSE MAINTENANCE. DETAILS TO BE DETERMINED IN FUTURE PHASE.



**DETAIL A**  
1" = 20'



**DETAIL B: PEDESTRIAN GATE CROSSING**  
NTS

|   |             |      |   |  |                       |
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| <br>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101<br>RELATIVE BORDER SCALE<br>15 IN INCHES | DESIGNED BY | DATE | <br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 698-1900 | DEL MAR COASTAL CONNECTION<br>EXHIBIT                            | SCALE<br>1"=60'       |
|   | DRAWN BY    |      |   | CONCEPT 4:<br>AT-GRADE CROSSING 7TH AND 8TH ST<br>RAMPS TO BEACH | SANDAG CONTRACT NO.   |
|   | CHECKED BY  |      |   |  | DRAWING NO. SHEET NO. |
|   | SANDAG      |      |   |  | 1 1                   |

# Leveraging Existing Wall to Minimize Bluff Impacts Attachment A



# Concepts 6 & 7: Undercrossings at 7th-8th Streets

- Feasible from engineering perspective
- More development, walls & grading than other crossing types
- Reduced noise impacts compared to at-grade crossings
- Aligns with existing movement patterns
- Integrated with SANDAG planned seawalls

**Concept 6:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> St, ramps to beach  
**Concept 7:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> St, stairs to beach

# Concept 7: Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach

Attachment A

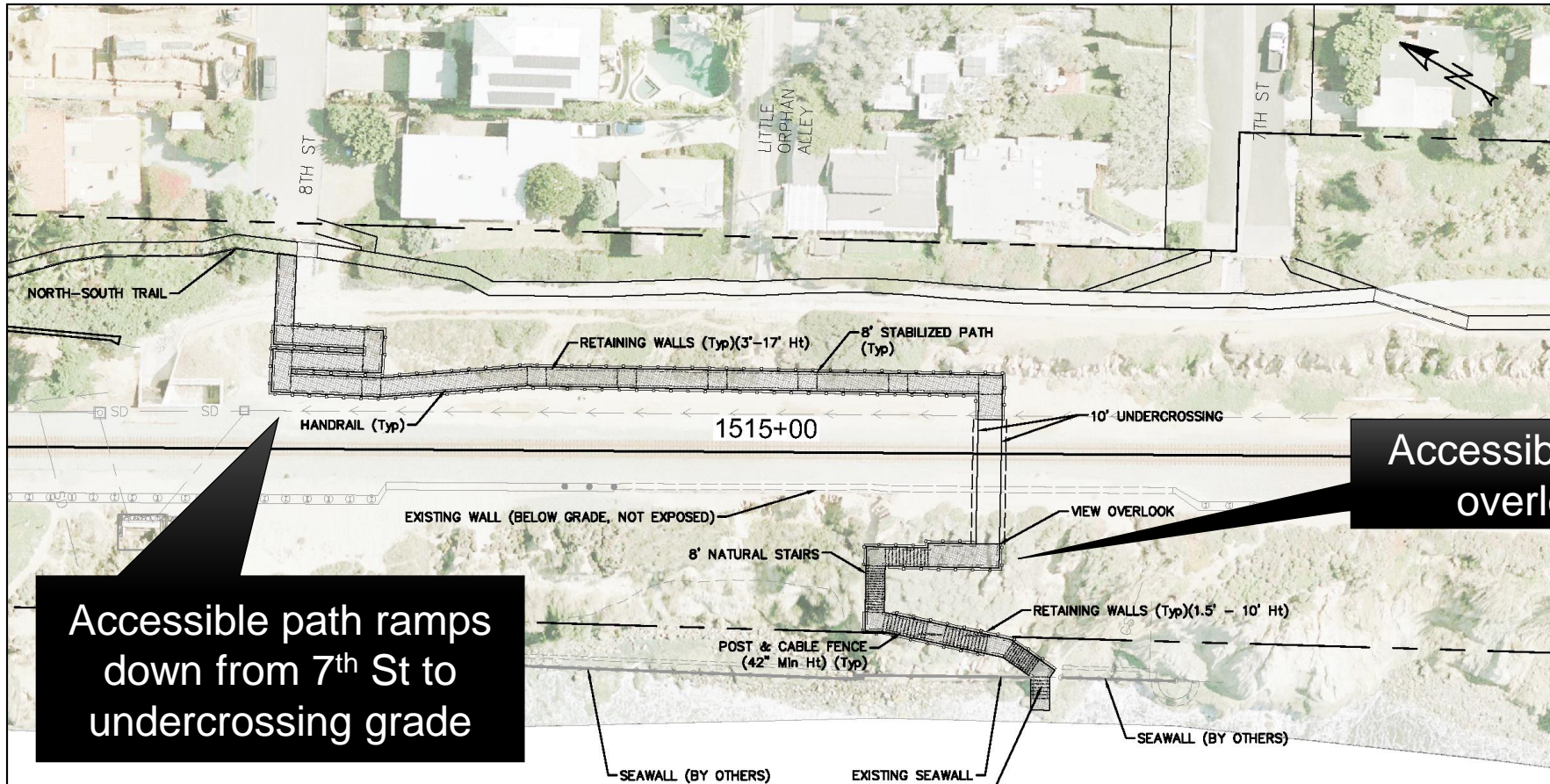
7<sup>th</sup> St

8<sup>th</sup> St



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# Concept 7: Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach



Accessible path ramps down from 7<sup>th</sup> St to undercrossing grade

Accessible view overlook

**NOTES:**  
1. FULL EXTENT OF CHANNELIZATION FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.

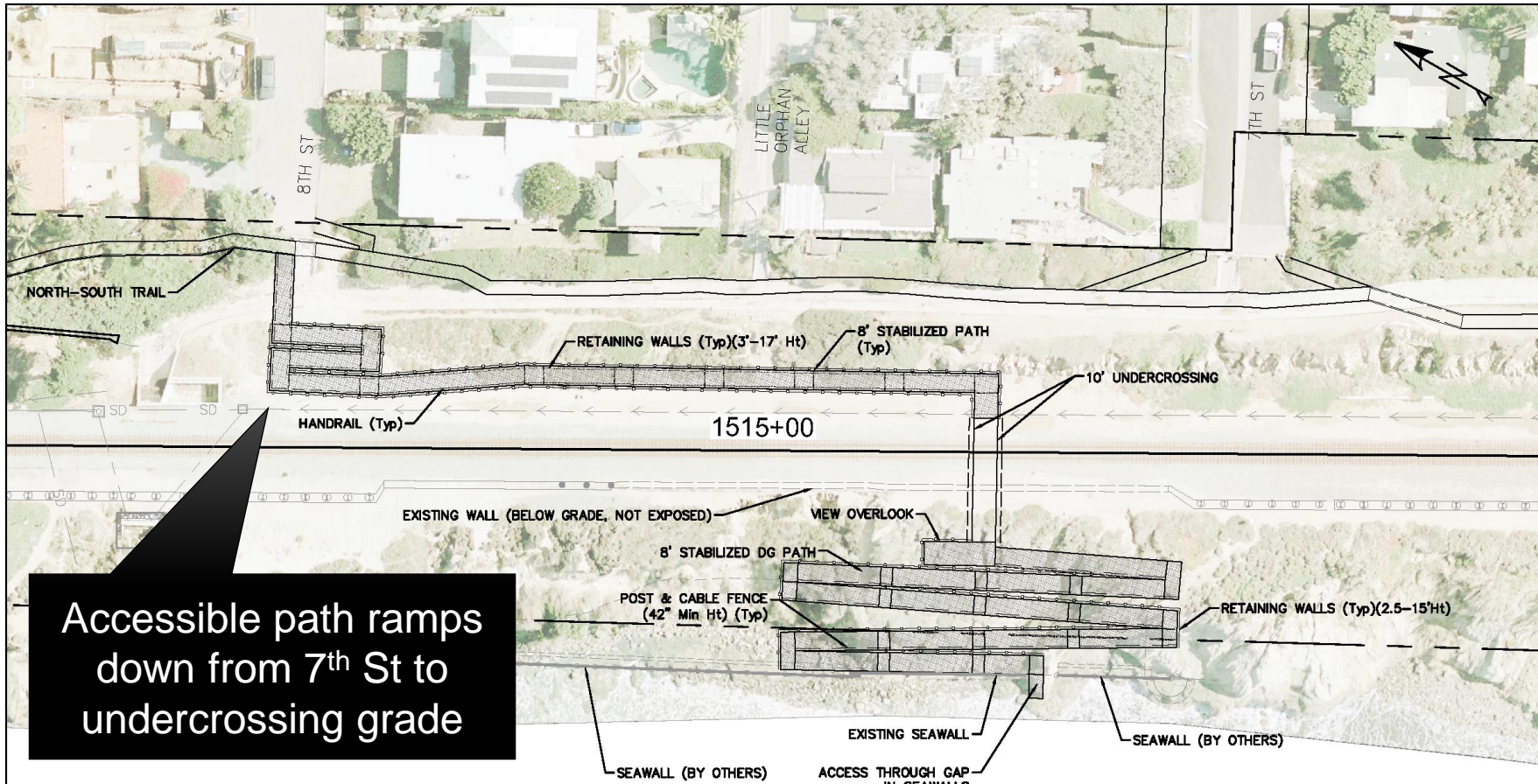
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|--|--|-------------|------|--|---|-----------------------|
| <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> <p>RELATIVE BORDER SCALE 1/8" = 1' IN INCHES</p> |  | DESIGNED BY | DATE | <p>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</p> | DEL MAR COASTAL CONNECTION EXHIBIT                            | SCALE                 |
|  |  | DRAWN BY    |      |  | CONCEPT 7:<br>UNDERCROSSING 7TH AND 8TH ST<br>STAIRS TO BEACH | 1"=40'                |
|  |  | CHECKED BY  |      |  |   | SANDAG CONTRACT NO.   |
|  |  | SANDAG      |      |  |   | DRAWING NO. SHEET NO. |
|  |  |             |      |  |   | 1 1                   |

# Concept 6: Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach



DRAFT CONCEPT

# Concept 6: Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach



Accessible path ramps down from 7<sup>th</sup> St to undercrossing grade

**NOTES:**  
 1. FULL EXTENT OF CHANNELIZATION FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.

|  |  |             |      |   |  |                     |
|--|--|-------------|------|---|--|---------------------|
| <br>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101<br>RELATIVE BORDER SCALE 15 IN INCHES |  | DESIGNED BY | DATE | <br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 599-1900 | DEL MAR COASTAL CONNECTION EXHIBIT                           | SCALE<br>1"=40'     |
|  |  | DRAWN BY    |      |   | CONCEPT 6:<br>UNDERCROSSING 7TH AND 8TH ST<br>RAMPS TO BEACH | SANDAG CONTRACT NO. |
|  |  | CHECKED BY  |      |   | DRAWING NO. 1  | SHEET NO. 1         |
|  |  | SANDAG      |      |   |  |                     |

# Implementation Considerations

# Right-of-Way & Maintenance Considerations

- All concepts require approval from NCTD & City of Del Mar to utilize rights-of-way
- Liability – to be agreed upon by all parties
- Ongoing maintenance – to be agreed upon by all parties

# CPUC Approval Requirements

- New at-grade crossings
  - Generally prohibited by CPUC General Order 75
  - Requires discretionary approval by CPUC
  - Recent approval in Santa Barbara County (Santa Claus Lane) could serve as model for Del Mar. Required grade separation study & concurrence of agencies including CCC & railroad
- Safety fencing
  - Required near at-grade crossings to control access to railroad & direct pedestrians to at-grade crossings
  - Specific extent of fencing to be determined in future phase by stakeholders & regulatory agencies

# Audible Safety Systems for At-Grade Crossings

- At-grade crossings require:
  - Audible warning systems at the crossing (lights & bells)
  - Train horns to be sounded at  $\frac{1}{4}$  mile when approaching
- Quiet zone:
  - Allows wayside horn at crossing instead of routine sounding of train horns – lessens (but does not eliminate) noise impacts
  - Not strictly required for at-grade crossing approval
  - Can be pursued together with at-grade crossing (adds time & complexity to approval) or after implementation



# Accessibility Design Considerations

- All concepts provide substantial benefits over existing conditions:
  - Fully accessible north-south trail
  - Fully accessible connections to street ends
  - Fully accessible view overlooks at western bluff tops in all railroad crossings
- Multiple options for all crossing concepts (e.g. ramps & stairs)
- Balance accessibility with minimization of impacts to sensitive bluffs
- Project team to visit SANDAG Social Services Technical Advisory Council (SSTAC) in January 2023 for additional input
- Multi-agency collaboration to continue moving forward
- Some funding sources may require fully accessible design

# Next Steps

# Next Steps & Ways to Provide Feedback on This Study

|  |  |
|--|--|
| <b>Del Mar City Council</b>  | Monday, December 5, 4:30 p.m.<br><i>Del Mar Civic Center &amp; Online</i>  |
| <b>Community Open House</b>  | Wednesday, December 7, 6:00–8:00 p.m.<br><i>Del Mar Civic Center</i>   |
| <b>Online Comment Period</b>   | December 5, 2022 – January 31, 2023<br><a href="https://www.KeepSanDiegoMoving.com/CoastalConnections">KeepSanDiegoMoving.com/CoastalConnections</a> |
| <b>SANDAG Social Services<br/>Technical Advisory<br/>Council (SSTAC)</b> | Tuesday, January 17, 2023<br><i>SANDAG Board Room &amp; Online</i>   |
| <b>Final Study Report</b>  | February 2023  |

# Next Steps Following Coastal Connections Study

- Allocation of funding & grant applications
- Design:
  - Final concept selection
  - Grade separation study
  - Accessibility decisions
- Environmental review
- CCC approval
- CPUC approval of new crossings
- City & NCTD right-of-way approvals, including maintenance & liability agreements
- Construction

# Connect with Us:

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Hotline: (858) 549-Rail



# Coastal Connections Conceptual Planning Study

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SAN DIEGO ASSOCIATION OF GOVERNMENTS  
CITY OF DEL MAR  
NORTH COUNTY TRANSIT DISTRICT  
CALIFORNIA COASTAL COMMISSION



**DRAFT**

November 30, 2022





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**APPENDIX A:** CCC Staff Reports, Del Mar Bluffs Stabilization Projects 4 & 5

**APPENDIX B:** Study Outreach Plan

**APPENDIX C:** Initial Screening Matrix of Potential Improvements

**APPENDIX D:** Rough Order-of-Magnitude Cost Estimates

**APPENDIX E:** Santa Claus Lane At-Grade Crossing Approval Materials

**APPENDIX F:** Montgomery Ave Noise Study Wayside Horn Demonstration Report



# 1. STUDY PURPOSE & OVERVIEW

This Coastal Connections Conceptual Planning Study assesses the opportunities and constraints of potential pedestrian access improvements for a 1.6-mile section of the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Railroad Corridor in the cities of Del Mar and San Diego.

This study followed the three-phase process shown in Figure 1-1 and described throughout this report, which is organized into five sections:

- Section 1 summarizes the study’s purpose, background, study area, and stakeholder engagement activities.
- Section 2 reviews the study area’s existing conditions and context.
- Section 3 establishes evaluation criteria and screens a wide range of potential access improvements.
- Section 4 describes and evaluates seven selected design concepts including a north-south trail and railroad crossings, with draft conceptual plans and summaries of expected benefits, costs, and potential tradeoffs of each concept.
- Section 5 discusses implementation considerations and next steps.

**Figure 1-1: Study Process**



## BACKGROUND

Developed jointly by the San Diego Association of Governments (SANDAG), the City of Del Mar, the North County Transit District (NCTD), and the California Coastal Commission (CCC), this study identifies potential formal pedestrian connectivity improvements in and around the railroad corridor. It was initiated as a condition of the 2019 CCC approval of SANDAG’s Del Mar Bluffs Stabilization 4 project. CCC then approved the Del Mar Bluffs Stabilization 5 project in 2022 with mitigation measures including a north-south trail and two pedestrian railroad crossings. Appendix A contains both CCC staff reports, which provide additional details on pedestrian access needs.

Currently, many pedestrians enter railroad property in the study area, both to cross the railroad and to walk along the bluffs. This creates safety concerns for pedestrians and risks impacting passenger and freight rail services. This study seeks to improve public safety, minimize potential conflicts between railroad operations and pedestrian access, and minimize impacts to existing coastal resources including coastal bluffs. As described in Section 2, a related SANDAG study is focused on the long-term relocation of the railroad outside the study area, which would create additional opportunities for pedestrian access.



## STUDY AREA

Shown in Figure 1-2 and Figure 1-3, the study area consists of about 1.6 miles of high coastal bluff along the southwestern edge of the City of Del Mar. It is bounded by two existing roadway crossings that provide both vehicular and pedestrian access:

- **Coast Boulevard (Mile Post 244.1):** Roadway at-grade crossing near Seagrove Park and Powerhouse Park. Contains a wayside horn as part of a train quiet zone.
- **North Torrey Pines Road (MP 245.7):** Roadway overcrossing near Torrey Pines State Beach and Los Peñasquitos Lagoon.

**Figure 1-2: Study Area Map**





**Figure 1-3: Study Area Photo**



## STAKEHOLDER ENGAGEMENT

Appendix Bis the study outreach plan, containing key messages and further details on the activities summarized below. It was developed in collaboration with SANDAG's Public Information Office.

### ***Project Development Team (PDT)***

The core project team consisted of SANDAG and consultants WSP and Villa Civil. To help monitor and guide the core project team, the project also included a Project Development Team (PDT) that met, generally monthly, throughout the entire study. The PDT included staff from SANDAG, the City of Del Mar, NCTD, and CCC.

### ***Additional Stakeholders***

The project team also met with the following stakeholder agencies and groups to receive additional input and feedback on potential mobility needs and design concept reviews:

- City of San Diego
- California Public Utilities Commission (CPUC)
- California State Parks
- Los Peñasquitos Lagoon Foundation

### ***Del Mar City Council***

The project team briefed the Del Mar City Council on October 4, 2021 and is planning to return on December 5, 2022 to receive additional input from the City Council and the broader public.



### ***Community Open House & Public Comment Period***

The project team and the City of Del Mar are planning a community open house event on December 7, 2022. An accompanying “virtual” open house will be available online at the SANDAG and City of Del Mar websites for a four-week comment period featuring the same materials presented at the in-person open house.

### ***SANDAG Social Services Transportation Advisory Council (SSTAC)***

The project team is planning to present to the SSTAC on January 17, 2023, to receive feedback on the accessibility features of the potential conceptual designs.



## 2. EXISTING CONDITIONS ASSESSMENT

The existing conditions assessment is organized into the following sections:

- Physical conditions
- Community mobility
- Railroad operations
- Related projects in study area
- Prior recommendations for pedestrian access and bluff preservation

In addition to the maps contained in this report, the project also includes an [online basemap](#) showing the features described in this report and recent aerial imagery.

Table 2-1 on the following page lists the key documents consulted by the project team during the literature review and existing conditions analysis.

**Table 2-1: Literature Review List**

| Author               | Document   | Year      |
|----------------------|--|-----------|
| CCC                  | Staff Report, Del Mar Bluffs Stabilization Project 5 Consistency Certification ( <i>Appendix A</i> ) | 2022      |
| CCC                  | Staff Report, Del Mar Bluffs Stabilization Project 4 Consistency Certification ( <i>Appendix A</i> ) | 2019      |
| City of Del Mar/CCC  | Local Coastal Program Land Use Plan  | 1993-2022 |
| City of Del Mar/CCC  | Local Coastal Program Implementing Ordinances  | 2001-2022 |
| City of Del Mar/TRAC | The Railroad Advisory Committee (TRAC) Study   | 1995      |
| City of Del Mar      | Community Plan (General Plan) incl. 2019 Safety Element addressing bluffs & railroad                 | 1976-2021 |
| City of Del Mar      | Climate Action Plan & 2020 Monitoring Report   | 2016-2020 |
| City of Del Mar      | Sea Level Rise Adaptation Plan   | 2018      |
| City of Del Mar      | Vulnerability & Risk Assessment incl. Addendum   | 2016-2018 |
| City of Del Mar      | Landscape Development Guidelines   | 1988      |
| City of Del Mar      | Parking Master Plan  | 2000      |
| City of Del Mar      | Vision 2020  | 2003      |
| City of Del Mar      | Downtown Parking Management Plan   | 2015      |
| City of Del Mar      | Design Guidelines  | 2017      |
| City of Del Mar      | Complete Streets Policy  | 2017      |
| City of Del Mar      | Public Paths and Trails Map  | 2020      |
| NCTD                 | Trespasser Risk Reduction Study & Conceptual Fencing Plan (WSP)                                      | 2021      |



| Author                              | Document  | Year      |
|-------------------------------------|---|-----------|
| <b>NCTD</b>                         | Geotechnical Review of Proposed Security Fencing – Del Mar Bluffs (Leighton)                              | 2021      |
| <b>NCTD</b>                         | Right-of-Way Fencing at Del Mar Draft Plans   | 2021      |
| <b>NCTD</b>                         | Fence & Signage Layout (KTUA)   | 2021      |
| <b>NCTD</b>                         | Board Policy No. 11: Real Estate  | 2012-2021 |
| <b>NCTD</b>                         | Board Policy No. 18: Railroad Crossing Quiet Zones and Wayside Horn Systems                               | 2021-2022 |
| <b>NCTD/SANDAG</b>                  | Design Criteria for the LOSSAN Corridor in San Diego County   | 2017      |
| <b>SANDAG</b>                       | Del Mar Bluffs Geotechnical Study (Leighton)  | 2001      |
| <b>SANDAG</b>                       | Geotechnical Design Report for DMB4 (Leighton)  | 2018      |
| <b>SANDAG</b>                       | Geotechnical Design Report for DMB5 (Leighton)  | 2020-2021 |
| <b>SANDAG</b>                       | Del Mar Bluffs Stabilization 5 Project Study Report & 100% Plans  | 2020-2022 |
| <b>SANDAG</b>                       | Del Mar Bluffs Stabilization 6 Project Study Report & 30% Plans   | 2020-2022 |
| <b>SANDAG</b>                       | Infrastructure Development Plan for LOSSAN Rail Corridor in SD County                                     | 2018      |
| <b>SANDAG</b>                       | San Diego Forward: The Regional Plan  | 2021      |
| <b>SANDAG/Caltrans</b>              | North Coast Corridor PWP/TREP   | 2014-2016 |
| <b>LOSSAN Working Group</b>         | Final Report from the LOSSAN San Diego Regional Rail Corridor Working Group                               | 2021      |
| <b>U.S. Army Corps of Engineers</b> | Encinitas-Solana Beach Coastal Storm Damage Reduction Project Integrated Feasibility Study                | 2012      |
| <b>City of Encinitas</b>            | Montgomery Avenue Noise Study Wayside Horn Demonstration Acoustic Monitoring Report ( <i>Appendix F</i> ) | 2017      |



## PHYSICAL CONDITIONS

As shown in Figure 2-1, the study area is located primarily in the “South Beach” area of the City of Del Mar characterized by tall bluffs along the coast. The railroad right-of-way is a relatively flat, graded area mid-bluff between the western coastal bluffs and the eastern upper bluffs. The area contains a mix of natural bluff landforms and physical infrastructure of varying ages.

**Figure 2-1: Study Area Context**





## ***Environmental & Geotechnical***

The study area's western coastal bluffs are subject to wave action and experience routine erosion—typically through sudden, episodic events rather than continuously—at an average retreat rate of about 0.4-0.6 feet per year. The surface is underlain by a combination of fill soils and a sequence of sedimentary formational units:

- **Bay Point Formation (Quaternary):** This upper formation is reddish-brown, weakly indurated, highly erodible, soft sandstone and siltstone with moderate permeability.
- **Del Mar Formation (Eocene):** This lower formation is light gray to olive green, slightly fissile, cemented siltstone and claystone with very low permeability.
- **Torrey Sandstone Formation (Eocene):** Limited exposures along the southern portion of the study area.

Figure 2-2 shows a typical bluff face on which both the Bay Point and Del Mar formations are visible. In general, the Bay Point Formation is potentially more erodible than the Del Mar Formation. However, the Del Mar Formation has greater exposure to adverse wave attack and groundwater seepage.

Fronting the lower western bluffs is beach sand covering a wide, wave-cut platform in the Del Mar and Torrey Sandstone formations. The beach sand rises to an elevation of about +10 feet at the bluff toe. However, dynamic coastal shoreline processes greatly influence beach elevation and width on a seasonal basis. The bluff materials also are subject to weathering and erosional processes.

A more comprehensive description of the site surface conditions, geologic materials and groundwater conditions are available in the 2001 and 2018 geotechnical studies published by SANDAG and developed by Leighton (details in Table 2-1).





## ***Landslides & Existing Infrastructure***

The bluffs have been altered by a combination of landslides and built infrastructure. These activities have both exacerbated and controlled ground surface erosion as summarized below.

**Landslides:** Numerous landslides of widely variable sizes are located along the lower bluffs west of the railway tracks. These landslides have mainly been triggered by natural processes, primarily erosional forces from direct high wave attack, precipitation runoff, and groundwater seepage through the bluff face.

**Seawalls:** Several unstable landslide areas or filled zones along the coastal bluff toe have been mitigated with the use of engineered seawalls of various types, heights, and effectiveness. Recent railroad-related stabilization projects (see “Related Projects in Study Area” below) have installed heavy-duty galvanized steel soldier beams with drilled-shaft concrete foundations socketed into the competent Del Mar Formation, with pressure-treated wood lagging between the beams (Figure 2-3). Some older seawalls in the study area use reinforced concrete. The seawalls have been backfilled with both conventional compacted fill soils and soil-cement treated materials, with variable performance in these backfill areas.

**Drainage:** Numerous drilled horizontal drains of varying size and effectiveness have been installed within various landslide masses and just above the horizontally bedded contact of the Bay Point and Del Mar formations. Other relevant site features include networks of surface and subsurface drainage improvements such as stormwater inlets, conveyance pipes, concrete-lined channels, and discharge outlets at beach level.

**Coastal Bluff Stabilization:** As described in “Related Projects in Study Area” below, coastal bluff stabilization features include long intermittent series of deep, narrowly spaced, large diameter reinforced concrete drilled shafts along the west side of the railroad, with and without long tieback anchors. Additional, localized retention systems exist throughout the study area.

***Figure 2-3: Drainage Infrastructure and Newly Installed Soldier Pile Wall***





## COMMUNITY MOBILITY

Outside the railroad right-of-way, the bluffs are designated as an open space location that is used by pedestrians for passive recreation and access to the adjacent beach and coastline. These unique coastal resources are a major attraction for both residents and visitors. Any new coastal access points in the community will attract that demand, drawing from the adjacent coastal access areas shown in Figure 2-1.

This section is organized into the following sub-sections:

- Pedestrian and roadway network
- Bluff usage: north-south movement
- Bluff usage: east-west movement
- Parking

### ***Pedestrian & Roadway Network***

As shown in the maps in Figure 1-2 and Figure 2-1, the study area is characterized by a grid-like roadway network east of the railroad corridor, with local roads carrying relatively low traffic volumes west of Camino Del Mar. Most of these local roads lack sidewalks, with pedestrian traffic typically using the sides of the roadways and sharing with low-speed, low-volume vehicular traffic.

The study area is largely comprised of the “South Beach” section of the Del Mar coast, with the railroad corridor and surrounding bluffs presenting greater challenges to coastal access than other nearby beaches. The adjacent coastal areas—“North Beach” and “Main Beach” in Del Mar, and Torrey Pines State Beach in San Diego—are both characterized by relatively low elevations and ample beach access points.

### ***Bluff Usage: North-South Movement***

North-south informal pedestrian activity in the study area is characterized by several common behaviors, as described below and mapped in Figure 2-5 through Figure 2-8 on the following pages and in the study’s [online basemap](#).

East of the railroad, popular movement patterns include:

- **11<sup>th</sup> Street to 10<sup>th</sup> Street:** Concrete drainage channel
- **10<sup>th</sup> Street to 8<sup>th</sup> Street:** Unimproved trail
- **8<sup>th</sup> Street to 7<sup>th</sup> Street:** Unimproved trail
- **7<sup>th</sup> Street to Sea Cliff Way:** Decomposed granite area alongside concrete drainage channel, used by pedestrians as an informal trail (Figure 2-4)
- **Sea Cliff Way to 4<sup>th</sup> Street:** Unimproved trail alongside concrete drainage channel
- **4<sup>th</sup> Street to ~700 feet South of 4<sup>th</sup> Street:** Unimproved trail extending to southern bluff edge

West of the railroad, popular movement patterns include:

- **Powerhouse Park to ~15<sup>th</sup> Street:** Unimproved trail along bluff edge
- **~15<sup>th</sup> Street to 11<sup>th</sup> Street:** Some pedestrian movement along rail bed
- **11<sup>th</sup> Street to 8<sup>th</sup> Street:** Unimproved trail along bluff edge
- **8<sup>th</sup> Street to 7<sup>th</sup> Street:** Some pedestrian movement along rail bed
- **7<sup>th</sup> Street to North Torrey Pines Road:** Unimproved trail along bluff edge



**Figure 2-4: Decomposed Granite Adjacent to Drainage Facility, South of 7<sup>th</sup> Street**



### ***Bluff Usage: East-West Movement***

East-west pedestrian activity in the study area is characterized by several common behaviors, as described below and mapped in Figure 2-5 through Figure 2-8 on the following pages and in the study's interactive [online basemap](#):

- **East of Railroad:** Numerous streets and alleys end at the railroad right-of-way, providing multiple potential access points for pedestrians attempting to cross the corridor. The most common access points include 11<sup>th</sup> Street and 8<sup>th</sup> Street.
- **West of Railroad:** Steep bluffs prevent much east-west movement west of the railroad. However, over time pedestrians have made informal trails to access the beach near 11<sup>th</sup> Street, 8<sup>th</sup> Street/7<sup>th</sup> Street, and North Torrey Pines Road.

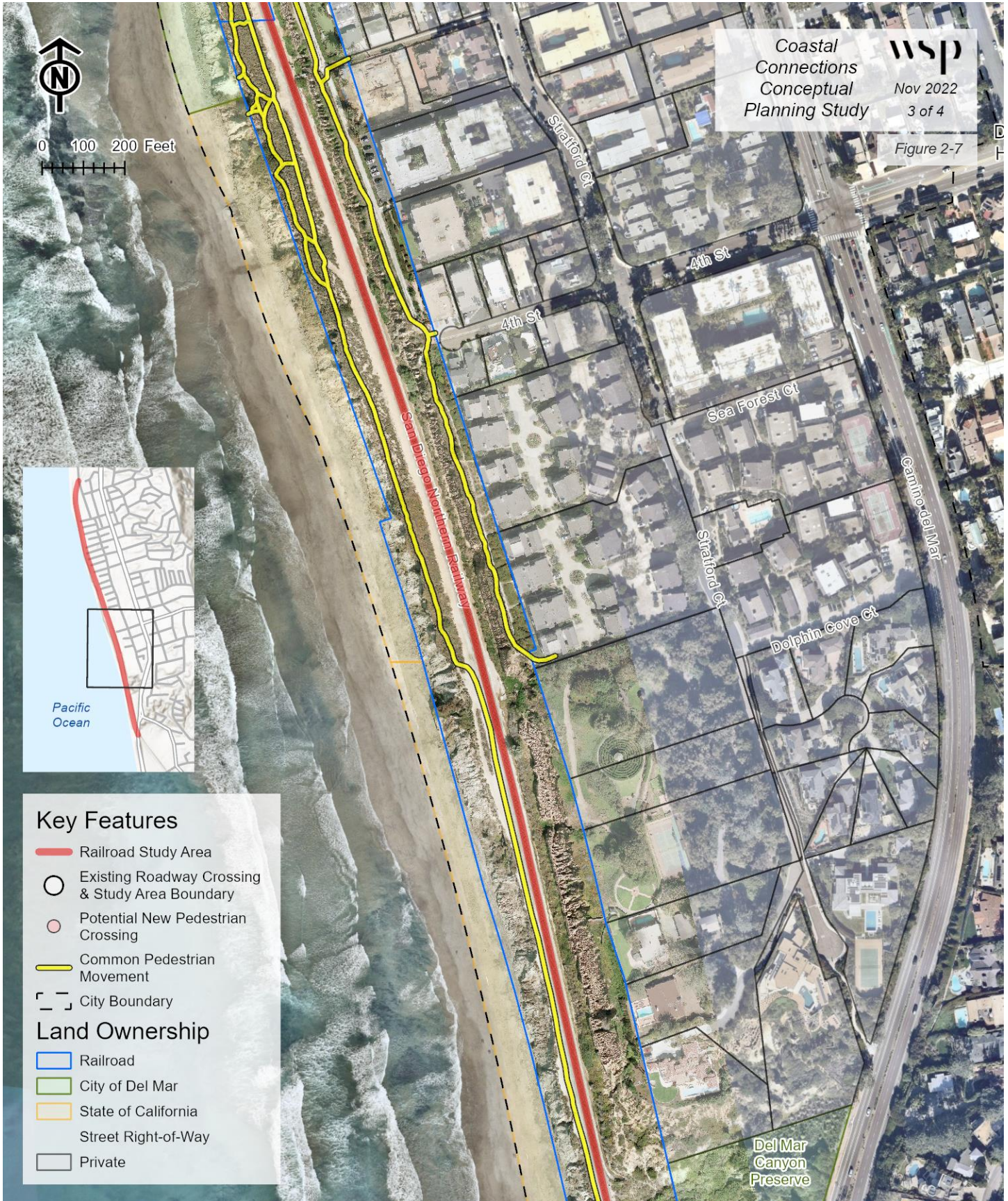
### ***Parking***

The study area contains the following parking resources:

- **On-Street Parking:**
  - On-street parking on most public roadways, including all numbered streets ending at the railroad right-of-way
  - No parking in alleys, which include all studied locations with “Lane” or “Way” suffixes (Sea Orbit Lane, Melanie Way, etc.)
- **Off-Street Parking:** The City of Del Mar has identified existing off-street parking areas available to the public at the following locations, mapped in in Figure 2-5 and Figure 2-6:
  - **Civic Center:** 1-2 blocks from 10<sup>th</sup> Street and 11<sup>th</sup> Street
  - **Del Mar Shores Park:** 1-2 blocks from 7<sup>th</sup> Street and 8<sup>th</sup> Street





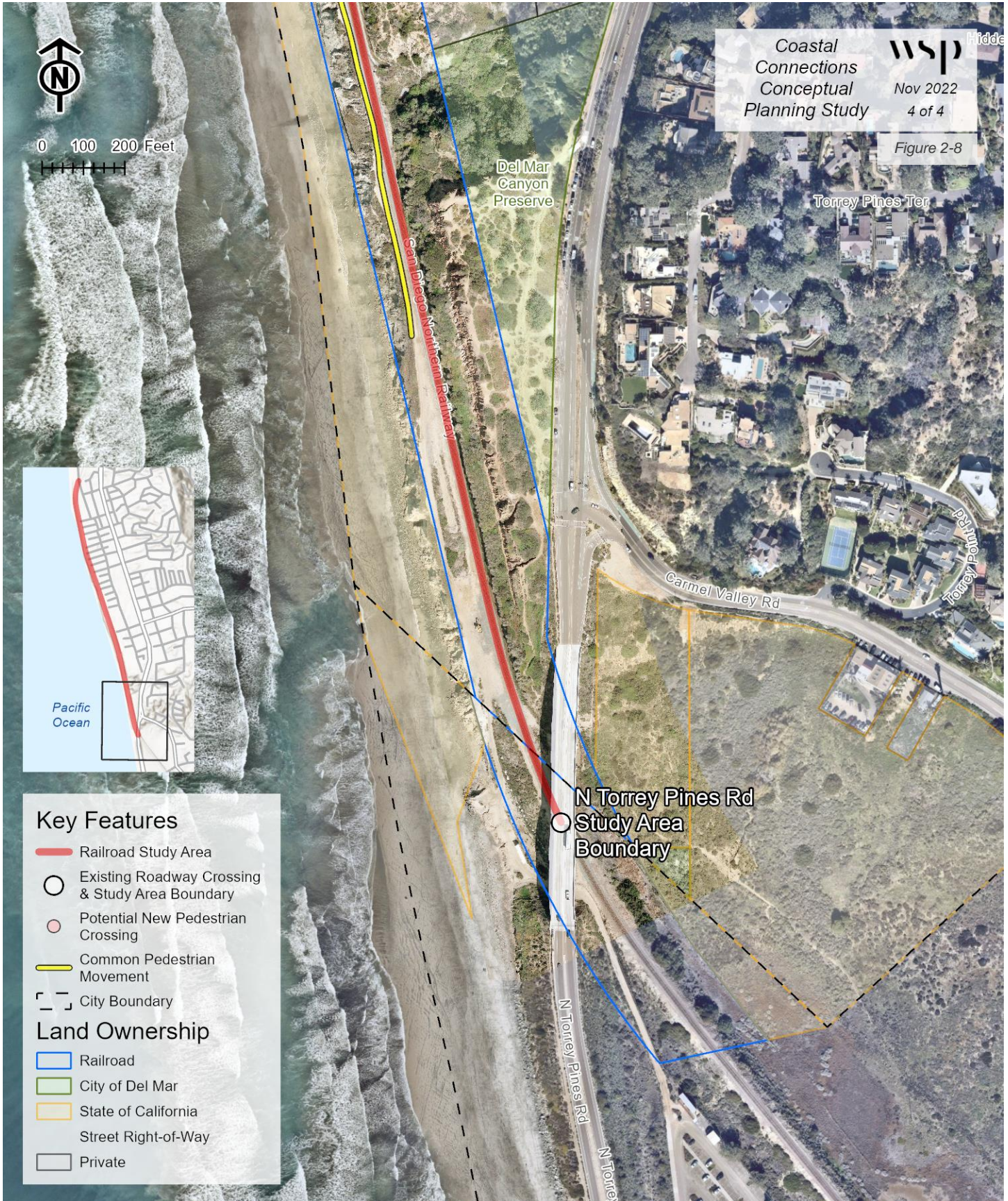


**Key Features**

- Railroad Study Area
- Existing Roadway Crossing & Study Area Boundary
- Potential New Pedestrian Crossing
- Common Pedestrian Movement
- City Boundary

**Land Ownership**

- Railroad
- City of Del Mar
- State of California Street Right-of-Way
- Private





## RAILROAD OPERATIONS

The LOSSAN corridor is the nation's second-busiest intercity passenger railroad corridor and is rapidly growing. The study area's 1.6-mile section is served by the following operators:

- **Intercity Passenger Service:** Amtrak Pacific Surfliner connecting San Luis Obispo, Los Angeles, and San Diego.
- **Commuter Rail Passenger Service:** NCTD COASTER connecting Oceanside and San Diego (Figure 2-9).
- **Freight Service:** BNSF and subcontractor Pacific Sun, mostly operating in the overnight hours when passenger services are not running.

The study area's 1.6-mile section is single-tracked, with maximum authorized speeds of 50 mph (north of MP 244.6) and 80 mph (south of MP 244.6). No double-tracking is planned in this section due to physical constraints. The nearest passenger stations are Solana Beach Station (2.3 miles north) and Sorrento Valley Station (3.5 miles south).

As shown in Table 2-2, the corridor is expected to accommodate a significant increase in passenger trains in the future, with service frequencies improving over time as capacity-enhancing capital projects are completed throughout the corridor.

**Table 2-2: Passenger Service Frequency (Minutes) in Peak (PK) & Off-Peak (OP) Periods**

| Service                   | Existing      | LOSSAN Optimization Study Goals |               |               |
|---------------------------|---------------|---------------------------------|---------------|---------------|
|                           | 2022          | Near Term                       | Mid Term      | Long Term     |
| <b>Intercity (Amtrak)</b> | 60 PK / 60 OP | 60 PK / 60 OP                   | 60 PK / 60 OP | 60 PK / 60 OP |
| <b>Commuter (NCTD)</b>    | 40 PK / 60 OP | 20 PK / 60 OP                   | 20 PK / 20 OP | 15 PK / 20 OP |

Source: SANDAG; LOSSAN Rail Corridor Optimization Study (LOSSAN Rail Corridor Agency, 2021)

**Figure 2-9: COASTER Train Passing Seagrove Park (NCTD)**





## RELATED PROJECTS IN STUDY AREA

The study area is the site of several concurrent multi-agency projects described below:

- SANDAG Del Mar Bluffs (DMB) stabilization projects
- NCTD proposed corridor fencing
- Long-term relocation of railroad

### ***SANDAG Del Mar Bluffs (DMB) Stabilization Projects***

This ongoing [series of projects](#) led by SANDAG seeks to stabilize the bluffs and protect against erosion. DMB Phase 4 was completed in 2020 and this study was initiated as a condition of the project's approval by CCC. Additional emergency stabilization work is currently underway south of 4<sup>th</sup> Street. DMB Phase 5 has been permitted and is expected to begin construction in 2023, and its mitigation measures approved by CCC include a north-south trail and two pedestrian railroad crossings.

SANDAG is planning to include additional bluff stabilization elements in DMB Phase 6 which is currently in the design stage. To minimize potential conflicts with all planned bluff projects, the concepts developed in this study primarily considered the expected ultimate condition that would result following completion of DMB Phase 6.

East of the railroad, the proposed DMB Phases 5-6 contain the following key elements:

- **Seagrove Park to 10<sup>th</sup> Street:** Drainage channel and intermittent walls

West of the railroad, the proposed DMB Phases 5-6 contain the following key elements:

- **Seagrove Park to 11<sup>th</sup> Street:** Soldier pile-anchored seawall below 1.5:1 graded slope
- **8<sup>th</sup> Street to 7<sup>th</sup> Street:** Soldier pile-anchored seawall; some portions of 1.5:1 graded slope
- **4<sup>th</sup> Street to ~900 feet North of North Torrey Pines Road:** Soldier pile-anchored seawall

### ***NCTD Proposed Corridor Fencing***

NCTD is proposing to install right-of-way fencing in this section of the corridor to reduce pedestrian trespassing and associated safety incidents. The current proposed plan, dated October 2021, is available [on NCTD's website](#). The project is currently on hold due to related litigation filed in state court and with the federal Surface Transportation Board.

### ***Long-Term Relocation of Railroad***

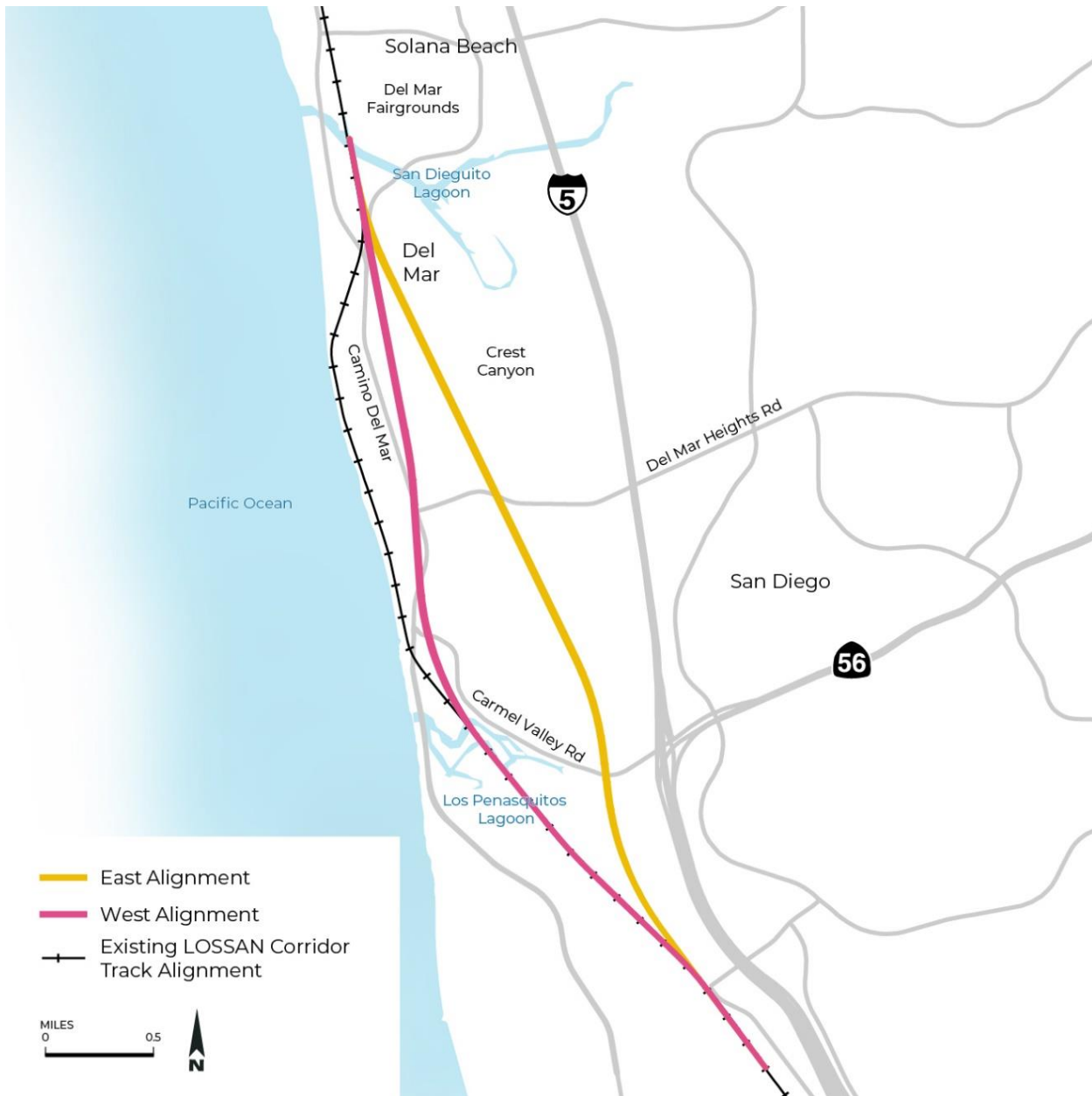
SANDAG is currently preparing the [San Diego Regional Rail Alignment Study](#), a feasibility study for the long-term relocation of the LOSSAN corridor away from the Del Mar Bluffs. The study is expected to be completed in 2022 and is currently studying the two potential alignments shown in Figure 2-10. Additional portal locations for the proposed alignments will be examined further during the environmental phase of the rail realignment project.

The rail realignment project is included in SANDAG's [Regional Plan](#) for implementation by 2035. In the state budget for Fiscal Year 2022-2023, the State of California approved \$300 million in new funding for the project. SANDAG expects to use the funding to complete preliminary planning and design work and then begin environmental review.

Once the railroad is relocated off the bluffs, stakeholder agencies will assess the study area's physical conditions and evaluate whether infrastructure on the bluffs may need to be removed to ensure public safety and return the bluffs to a more natural state.

The City of Del Mar’s analyses of sea level rise, discussed below, recommends participation in regional efforts to relocate and remove railroad operations from the bluffs due to projected effects of sea level rise on the bluffs and existing railroad operations.

**Figure 2-10: Alignment Alternatives, San Diego Regional Rail Alignment Study (SANDAG)**





## POLICIES & PRIOR RECOMMENDATIONS FOR PEDESTRIAN ACCESS & BLUFF PRESERVATION

The study area has been the subject of many prior plans, studies, and projects to improve pedestrian access and preserve the coastal bluffs.

### **City of Del Mar Community Plan (General Plan)**

The City of Del Mar Community Plan, originally adopted in 1976, is the primary policy framework applicable to the study area. The document identifies the “south bluff” and adjacent beach as one of five major open space areas in Del Mar and includes a goal to preserve these features intact wherever possible. The plan also contains a policy to preserve open space areas that are too hazardous to justify permanent construction.

Balancing these goals, the Community Plan also recommends improving pedestrian access to coastal resources, including via new crossings at 11<sup>th</sup> Street and 4<sup>th</sup> Street:

*Bluffs to Beach Access – It is recommended that rights-of-way be obtained and that steps and paved paths be developed down the bluffs to the beach near Seagrove Park, 11<sup>th</sup> Street, Fourth Street, and on both sides of the mouth of the San Dieguito River.*

### **City of Del Mar Local Coastal Program (LCP)**

As mapped in the preceding figures and the study’s [online basemap](#), most of the coastal bluffs are in parcels owned by the City of Del Mar. These areas are covered by Del Mar’s Local Coastal Program (LCP) which has been certified by CCC. The LCP contains policies to preserve and enhance natural resources while also prioritizing increased pedestrian access. Key policies include guidance to:

- Protect and preserve open space areas.
- Conserve the natural character of land, water, vegetative, and wildlife resources by ensuring future development minimizes the disturbance of existing or natural terrain and vegetation.
- Preserve fragile coastal bluffs as a visual resource and avoid risks to life and property associated with bluff failure and shoreline erosion.

Notably, the LCP generally prohibits grading, construction, and shoreline protection activities along coastal bluffs. The shoreline protection currently being constructed along the south bluff was permitted by CCC through a separate federal consistency certification process deemed necessary to protect existing railroad operations along the bluffs. This is discussed further in Section 5.

### **Sea Level Rise Adaptation Planning**

The City of Del Mar’s Sea Level Rise Adaptation Plan (2018) identifies a range of adaptation options to help property owners, including the City, to plan to minimize coastal bluff erosion and associated risks to people, property, and coastal resources. The City’s Coastal Hazards, Vulnerability and Risk Assessment (2016) and Addendum (2018) identified that the south bluff—including existing railroad operations on the bluff—is vulnerable to the effects of projected sea level rise.



### ***The Railroad Advisory Committee (TRAC) Study***

This 1995 study recommended rail corridor crossings at the following locations in the study area, based on a review of multiple criteria including potential environmental impacts, connectivity benefits, historic usage, and the favorability of existing grades:

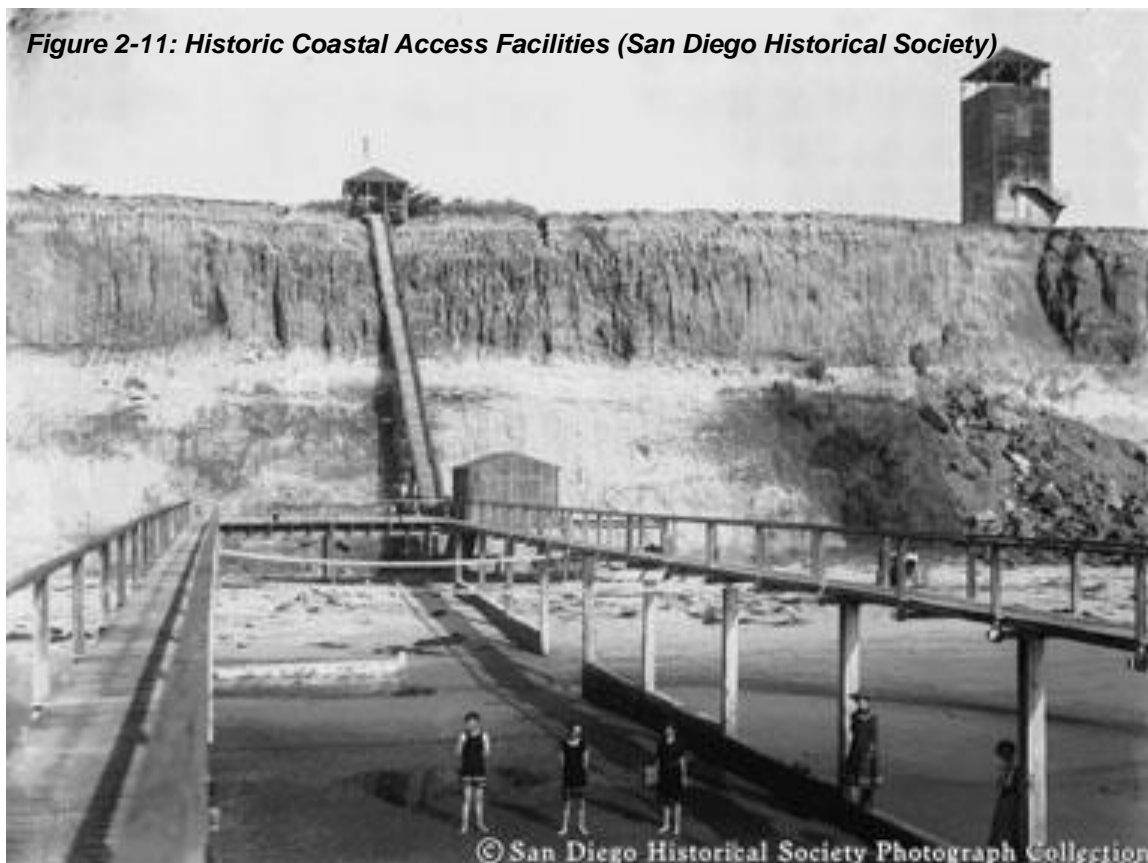
- 11<sup>th</sup> Street
- 8<sup>th</sup> Street (added by City Council)
- Torrey Pines State Beach

#### ***11<sup>th</sup> Street***

City staff noted the existence, in the late 1800s or early 1900s, of a rugged trail to the beach near 11<sup>th</sup> Street that was navigable by horse-drawn buggy.

#### ***10<sup>th</sup> Street***

As shown in Figure 2-12 and Figure 2-13 from the San Diego Historical Society, a variety of pedestrian infrastructure has been constructed along the coastal bluffs for over a century, including a wooden trestle overcrossing at 10<sup>th</sup> Street. Remnants of the trestle crossing are still visible today at the end of 10<sup>th</sup> Street (Figure 2-13).



**Figure 2-12: 10<sup>th</sup> Street Crossing (San Diego Historical Society)**



**Figure 2-13: Existing Remnants of 10<sup>th</sup> Street Crossing**





### 3. IDENTIFICATION & SCREENING OF POTENTIAL CONCEPTS

Following the review of existing conditions, the project team worked with stakeholder agencies to identify and screen potential pedestrian improvements.

#### CANDIDATE CONCEPTS

The project team conducted extensive literature reviews and outreach to stakeholder agencies to identify a wide range of potential improvements in the study area. The proposed improvements fit into three broad categories: north-south trails, railroad crossings, and the Torrey Pines area.

##### ***North-South Trails***

An important initial finding was that pedestrian movement in the study area includes not only east-west beach access, but also substantial north-south travel—in which pedestrians use the railroad corridor and adjacent bluffs as north-south accessways parallel to the beach. This finding led the project team to identify and screen potential concepts for north-south trails on both sides of the railroad.

##### ***Railroad Crossings***

The project team assessed the feasibility of potential east-west railroad crossings at all street ends and alleys in the study area, as well as parts of the southern study area including Anderson Canyon and the vicinity of Torrey Pines State Beach. All potential crossings would include connections from the adjacent street end/alley to the beach.

The assessment of railroad crossings examined potential at-grade crossings, undercrossings, and overcrossings, with key findings summarized below.

- **At-Grade Crossings:** The CPUC generally prohibits new at-grade railroad crossings per [General Order 75-D](#). However, in several meetings with the project team, CPUC staff indicated that new at-grade crossings could receive discretionary approvals from CPUC on a case-by-case basis, as described in Section 5.
- **Undercrossings:** The project team found undercrossings may be feasible from an engineering perspective with prefabricated, rectangular concrete box culverts positioned just below the railroad ballast and bedding, similar to nearby crossings at Oceanside Harbor and San Elijo Lagoon. These generally would be supported by the competent Bay Point Formation atop a bed of leveling gravel, using construction methods summarized in Section 5. This process also would pose greater impacts to the bluffs than other types of railroad crossings, potentially creating conflicts with the City of Del Mar Community Plan, described further in Section 2.
- **Overcrossings:** While the project team found overcrossings may be feasible from an engineering perspective, they would pose substantial visual impacts, with railroad regulations requiring at least 26 feet of vertical clearance. The structural foundations would require heavily reinforced drilled concrete shafts. To minimize the structure height and associated visual impacts, ideal locations for overcrossings would be near 6<sup>th</sup> and 7<sup>th</sup> Streets, where the railroad is approximately 25-30 feet below the eastern bluffs.



## Torrey Pines Area

To ensure a thorough understanding of pedestrian needs south of Del Mar, the project team conducted additional focused meetings with stakeholders representing the southern study area near Torrey Pines State Beach. These meetings included staff from the City of San Diego, California State Parks, and the Los Peñasquitos Lagoon Foundation. Appendix C contains a summary of potential projects in Torrey Pines area.

## EVALUATION CRITERIA

Table 3-1 describes the evaluation criteria used in the screening of candidate concepts.

**Table 3-1: Evaluation Criteria for Initial Screening**

| Criterion   | Description  |
|---|--|
| <b>Engineering Feasibility, Bluffs &amp; Right-of-Way (West Side)</b>   | West of the railroad, preliminary assessment of engineering feasibility; bluff conditions including erosion and sea level rise; potential development impacts from grading, walls, hardscape, and other project features; and the ability of the project footprint to remain within the public right-of-way. |
| <b>Engineering Feasibility, Bluffs &amp; Right-of-Way (East Side)</b>   | East of the railroad, preliminary assessment of engineering feasibility; bluff conditions; potential development impacts from grading, walls, hardscape, and other project features; and the ability of the project footprint to remain within the public right-of-way.                                      |
| <b>Pedestrian Connectivity &amp; Coastal Access</b>                     | The degree to which each concept would create connectivity benefits by creating new links and nodes in the pedestrian network, including neighborhood connectivity as well as coastal access.  |
| <b>Consistency with Existing Movement Patterns</b>                      | Concepts should reflect and enhance existing movement patterns to the greatest degree possible within feasibility constraints, as these existing patterns generally reflect the most desired and direct paths of travel.   |
| <b>Consistency with Prior Facilities, Studies &amp; Recommendations</b> | Concepts should be informed by the prior facilities, studies, and recommendations for pedestrian access that have been developed in the past (see Section 2).  |
| <b>Parking Impacts</b>  | All concepts may draw additional visitors, particularly railroad crossings providing fully accessible routes to the beach. The study area contains on-street and off-street parking areas (see Section 2) which are closer to some concepts than others.   |
| <b>Regulatory Feasibility</b>   | All concepts will require consultation and/or approval from a wide range of regulatory and stakeholder agencies including the City of Del Mar, NCTD, SANDAG, CCC, and CPUC.  |
| <b>Visual Impacts</b>   | Potential visual impacts include pedestrian paths and associated structures, walls, grading, stairways, ramps, handrails, and shoreline protection. At-grade crossings also include fencing, gates, lights, and signal houses.   |



|                            |  |
|----------------------------|--|
| <b>Noise Impacts</b>       | Short-term impacts during construction of all concepts; long-term noise impacts from at-grade crossings, which require audible warning systems at the crossing and are likely to require the routine sounding of train horns (see Section 5); and noise impacts associated with public use of the new accessways |
| <b>Planning-Level Cost</b> | Preliminary, rough-order-of-magnitude cost estimates for each concept in accordance with SANDAG format and assumptions for recent capital projects.  |

## INITIAL SCREENING & SELECTION OF CONCEPTS

The project team screened a wide range of potential concepts across the evaluation criteria described above to determine which concepts to advance to conceptual design. The results of the screening are summarized below. Appendix C contains the full screening matrix.

### ***Advanced to Conceptual Design***

In collaboration with stakeholder agencies, the project team selected seven candidate concepts to advance to conceptual design. These seven design concepts are further described and evaluated in Section 4:

- **Concept 1:** North-South Trail (East Side)
- **Concept 2:** At-Grade Crossing at 11<sup>th</sup> Street, Ramps & Stairs to Beach
- **Concept 3:** At-Grade Crossing at 11<sup>th</sup> Street, Stairs to Beach
- **Concept 4:** At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach
- **Concept 5:** At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach
- **Concept 6:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach
- **Concept 7:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach

### ***Not Advanced to Conceptual Design***

The initial screening found that the types of potential improvements listed below, while providing benefits, fulfilled fewer evaluation criteria than the seven concepts selected for advancement. Appendix C contains the full screening matrix and other information on these candidate concepts that were not advanced to conceptual design:

- **North-South Trail (West Side):** The varying widths and ongoing erosion of the western bluffs prohibit a continuous north-south trail, including some unstable sections that could pose safety concerns.
- **Railroad Overcrossings:** Any overcrossing concept would pose substantial visual impacts, with a required vertical clearance of 27 feet above the railroad, plus another 6-10 feet to the top of the crossing structure. West of the railroad, pedestrians would need to descend approximately 27 feet from the crossing to reach the bluff top, before descending another 60-65 feet to the beach—a total elevation change of approximately 90 feet that would require substantial switchback-style ramps and/or stairs to traverse. Given these impacts, the project team and stakeholder agencies agreed not to advance overcrossing concepts to conceptual design.
- **Railroad Crossings Connecting to Alleys:** Alleys are narrower than street ends and generally intended only to serve adjacent residential properties. As such, the project team determined street ends are the preferred connection points for any new railroad crossings.



- **Torrey Pines Area:** While stakeholder agencies suggested many beneficial concepts near Torrey Pines (summarized in Appendix C), there was broad agreement among stakeholder agencies that the selected concepts should focus on addressing the more critical mobility and safety issues in the northern study area along the Del Mar bluffs.



## 4. DESIGN CONCEPTS

This section describes the development and evaluation of the selected design concepts. It includes a summary of each concept with preliminary plans, cross-sections, cost estimates, and sample 3D renderings.

The design concepts are:

- **Concept 1:** North-South Trail
- **Concept 2:** At-Grade Crossing at 11<sup>th</sup> Street, Ramps & Stairs to Beach
- **Concept 3:** At-Grade Crossing at 11<sup>th</sup> Street, Stairs to Beach
- **Concept 4:** At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach
- **Concept 5:** At-Grade Crossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach
- **Concept 6:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Ramps to Beach
- **Concept 7:** Undercrossing at 7<sup>th</sup>-8<sup>th</sup> Streets, Stairs to Beach

### DEVELOPMENT OF SELECTED DESIGN CONCEPTS

Upon selection of the seven concepts to advance, the development process began with initial conceptual engineering and planning activities to determine each concept's potential footprint and geometric requirements. This was an iterative process, supported by workshop-style design meetings with stakeholder agencies and multiple iterations of each concept. The results of this conceptual process are the preliminary plans and cross-sections shown in the following pages.

Upon completion of the initial plans, the project team developed rough-order-of-magnitude cost estimates for each design concept. These estimates, summarized in the following pages and detailed in Appendix D, use SANDAG's standard template and assumptions from similar capital projects.

The final step in the concept development process was development of sample 3D renderings that show what each design concept could look like if constructed. These 3D renderings focus on the western bluffs and were built from SANDAG's existing 3D model created for the Del Mar Bluffs Stabilization project.

### EVALUATION OF DESIGN CONCEPTS

Following the development of each design concept, the project team evaluated the concepts to understand their relative benefits and costs.

#### ***Universal Benefits Shared by Selected Design Concepts***

The seven design concepts that were advanced to conceptual design have the following common project features—which were evaluated as screening criteria during the initial selection of concepts described in Section 3—that will deliver benefits and improvements to existing conditions:

- **Pedestrian Connectivity & Coastal Access:** All concepts would improve pedestrian connectivity and access to coastal resources compared to existing conditions. As discussed in Section 5, CCC determined that the proposed improvements also would serve as mitigation for the expected impacts of the SANDAG Del Mar Bluffs Stabilization projects.
- **Consistency with Existing Movement Patterns:** All concepts are consistent with existing pedestrian movement patterns, including historic patterns of north-south travel parallel to the



railroad as well as common east-west beach access via unimproved trails near 11<sup>th</sup>, 8<sup>th</sup>, and 7<sup>th</sup> Streets described in Section 2.

- **Consistency with Prior Facilities, Studies & Recommendations:** All concepts are broadly consistent with the prior facilities, studies, and recommendations described in Section 2, including historic crossings, the 1995 TRAC study, and 2022 CCC approvals.
- **Safety:** All concepts would improve safety over existing conditions via the addition of legal crossings, accessways, and channelization fencing. All concepts will be designed to meet applicable safety standards, with the specific details to be determined in future phases by many regulatory and stakeholder agencies, as detailed in the implementation discussion in Section 5.

The project team's evaluation of these additional criteria found no meaningful difference among the seven design concepts:

- **Beach/Sand/Tide Conditions:** All railroad crossing concepts would be bound on the west side by previously approved seawalls and would provide beach access through planned gaps in those seawalls, posing little or no new impacts to beach areas. To the extent that any crossing concepts would pose impacts, the expected impacts would be substantially similar across all crossing concepts. The north-south trail is east of the railroad and would have no impact to beach conditions.
- **Railroad Operations:** No long-term impacts to railroad operations are expected from any proposed concepts. For at-grade crossings, trains would have precedence and trigger the activation of pedestrian gates and warning systems when approaching.

### ***Final Evaluation Criteria***

Table 4-1 on the following page is an evaluation matrix that summarizes the project team's evaluation of all seven design concepts. These final evaluation criteria, which were originally introduced in Section 3 during the initial screening process, capture the meaningful differences, benefits, and tradeoffs of the design concepts relative to each other:

- Development impacts: Western bluffs
- Development impacts: Railroad & east side
- Regulatory feasibility: Consistency with coastal & local policies
- Regulatory feasibility: CPUC requirements
- Regulatory feasibility: Accessibility design
- Parking impacts
- Visual impacts
- Noise impacts
- Planning-level cost
- Community & stakeholder input



# EVALUATION OF DESIGN CONCEPTS

Table 4-1: Evaluation of Design Concepts

| Criterion  | 1: North-South Trail  | 2: At-Grade Crossing at 11 <sup>th</sup> St, Ramps & Stairs  | 3: At-Grade Crossing at 11 <sup>th</sup> St, Stairs  | 4: At-Grade Crossing at 7 <sup>th</sup> -8 <sup>th</sup> St, Ramps   | 5: At-Grade Crossing at 7 <sup>th</sup> -8 <sup>th</sup> St, Stairs  | 6: Undercrossing at 7 <sup>th</sup> -8 <sup>th</sup> St, Ramps   | 7: Undercrossing at 7 <sup>th</sup> -8 <sup>th</sup> St, Stairs   |
|--|---|--|--|--|--|--|---|
| <b>Development Impacts: Western Bluffs</b>                                   | N/A   | Ramps & stairs more impactful together vs. either facility alone.  | Stairs minimize impacts vs. ramps.   | Ramps impactful vs. stairs.  | Stairs minimize impacts vs. ramps.   | Major excavation but shortens beach access trail vs. at-grade. Ramps impactful vs. stairs.                 | Major excavation but shortens beach access trail vs. at-grade. Stairs minimize impacts vs. ramps.                 |
| <b>Development Impacts: Railroad &amp; East Side</b>                         | Minor impacts south of 8 <sup>th</sup> St. More grading & walls north of 8 <sup>th</sup> St.            | At-grade minimizes impacts. Short, direct connection to 11 <sup>th</sup> St.                             | At-grade minimizes impacts. Short, direct connection to 11 <sup>th</sup> St.                                 | At-grade minimizes impacts. Some impacts to connect to 7 <sup>th</sup> -8 <sup>th</sup> St.                        | At-grade minimizes impacts. Some impacts to connect to 7 <sup>th</sup> -8 <sup>th</sup> St.                          | Undercrossing & eastern access ramps pose largest impacts.   | Undercrossing & eastern access ramps pose largest impacts.  |
| <b>Regulatory Feasibility: Consistency with Coastal &amp; Local Policies</b> | Improves community connectivity. Some impacts to eastern bluffs. No impacts to western bluffs.          | Improves coastal access. At-grade crossing minimizes development. Western ramps & stairs impactful.      | Improves coastal access. At-grade crossing & western stairs minimize development.                            | Improves coastal access. At-grade crossing minimizes development. Western ramps impactful.                         | Improves coastal access. At-grade crossing & western stairs minimize development.                                    | Improves coastal access. Substantial development vs. at-grade crossing.                                    | Improves coastal access. Substantial development vs. at-grade. Western stairs minimize impact vs. ramps.          |
| <b>Regulatory Feasibility: CPUC Requirements</b>                             | CPUC coordination required.   | CPUC must approve new at-grade crossings.  | CPUC must approve new at-grade crossings.  | CPUC must approve new at-grade crossings.  | CPUC must approve new at-grade crossings.  | CPUC coordination required.  | CPUC coordination required.   |
| <b>Regulatory Feasibility: Accessibility Design</b>                          | Meets ADA/CBC standards.  | Meets ADA/CBC standards.   | Meets ADA/CBC standards from street end to western bluff top.  | Meets ADA/CBC standards.   | Meets ADA/CBC standards from street end to western bluff top.  | Meets ADA/CBC standards.   | Meets ADA/CBC standards from street end to western bluff top.   |
| <b>Parking Impacts</b>   | Fully accessible path would attract automobile trips, with impacts spread across entire alignment.      | Fully accessible ramps to beach may attract more automobile trips than concepts with stairs only.        | Stairs to beach may attract fewer automobile trips than fully accessible ramps.                              | Fully accessible ramps to beach may attract more automobile trips than concepts with stairs only.                  | Stairs to beach may attract fewer automobile trips than fully accessible ramps.                                      | Fully accessible ramps to beach may attract more automobile trips than concepts with stairs only.          | Stairs to beach may attract fewer automobile trips than fully accessible ramps.                                   |
| <b>Visual Impacts</b>  | Low impacts south of 8 <sup>th</sup> St. Some impacts from grading & walls north of 8 <sup>th</sup> St. | Short connection to 11 <sup>th</sup> St minimizes eastern impacts. Ramps & stairs impact western bluffs. | Short connection to 11 <sup>th</sup> St minimizes eastern impacts. Stairs minimize impact to western bluffs. | Connections to 7 <sup>th</sup> -8 <sup>th</sup> St create eastern impacts. Ramps impact western bluffs vs. stairs. | Connections to 7 <sup>th</sup> -8 <sup>th</sup> St create eastern impacts. Stairs minimize impact to western bluffs. | Undercrossing ramps impact east side. Beach access ramps impact western bluffs, but shorter than at-grade. | Undercrossing ramps impact east side. Stairs minimize impact to western bluffs vs. ramps & shorter than at-grade. |
| <b>Noise Impacts</b>   | Does not require audible warning systems or train horns.  | At-grade crossings require audible warning systems and/or train horns.                                   | At-grade crossings require audible warning systems and/or train horns.                                       | At-grade crossings require audible warning systems and/or train horns.   | At-grade crossings require audible warning systems and/or train horns.   | Grade-separated crossings do not require audible warning systems or train horns.                           | Grade-separated crossings do not require audible warning systems or train horns.                                  |
| <b>Planning-Level Cost</b><br>(See Section 4 & Appendix D)                   | \$9.6 million   | \$10.2 million   | \$5.7 million  | \$9.2 million  | \$5.7 million  | \$12.8 million   | \$7.0 million   |



# CONCEPT 1: NORTH-SOUTH TRAIL

This 0.8-mile trail along the east side of the railroad provides a fully accessible route from Seagrove Park to 4<sup>th</sup> Street. Notable concept features include:

- **Fully Accessible Paths:** All paths are designed to be six feet wide, feature ADA-compliant grades, and can utilize a special form of stabilized decomposed granite for a fully accessible surface. Some areas, especially north 8<sup>th</sup> Street, may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **Accessible Connections to All Street Ends:** Fully accessible connections to Seagrove Park and all numbered streets from 13<sup>th</sup> Street to 4<sup>th</sup> Street. These also may include optional connections to the railroad crossings proposed in Concepts 2-7, if implemented together.
- **8<sup>th</sup> Street Drainage Culvert with Fill:** As shown in the sample rendering in Figure 4-1, a relatively low-impact way to traverse the drainage infrastructure just north of 8<sup>th</sup> Street is to place the trail atop parts of the drainage culvert, supported by a wall that is partially covered by fill and landscaping.
- **9<sup>th</sup> Street Plaza:** This optional feature, shown in the sample rendering in Figure 4-2, could be added to street ends such as 9<sup>th</sup> Street to provide an additional amenity for public views.

Figure 4-3 through Figure 4-8 on the following pages are the full conceptual plans. Table 4-2 summarizes the cost estimate for the full trail, and Table 4-3 breaks the estimate into three segments to account for potential phased implementation. The full planning-level cost estimates are in Appendix D.



Figure 4-1: Sample Rendering, 8<sup>th</sup> Street Drainage Culvert with Fill, Concept 1

Table 4-2: Planning-Level Cost Estimate, Concept 1 Full (Full Estimate in Appendix D)

| Cost Category  | Full Trail:<br>Seagrove Park to 4 <sup>th</sup><br>Street |
|--|---|
| Construction Contract Estimate                                   | \$5.1 million   |
| Design, Environmental & Support Costs                            | \$3.7 million   |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$8.8 million</b>                                      |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.8 million   |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$9.6 million</b>                                      |

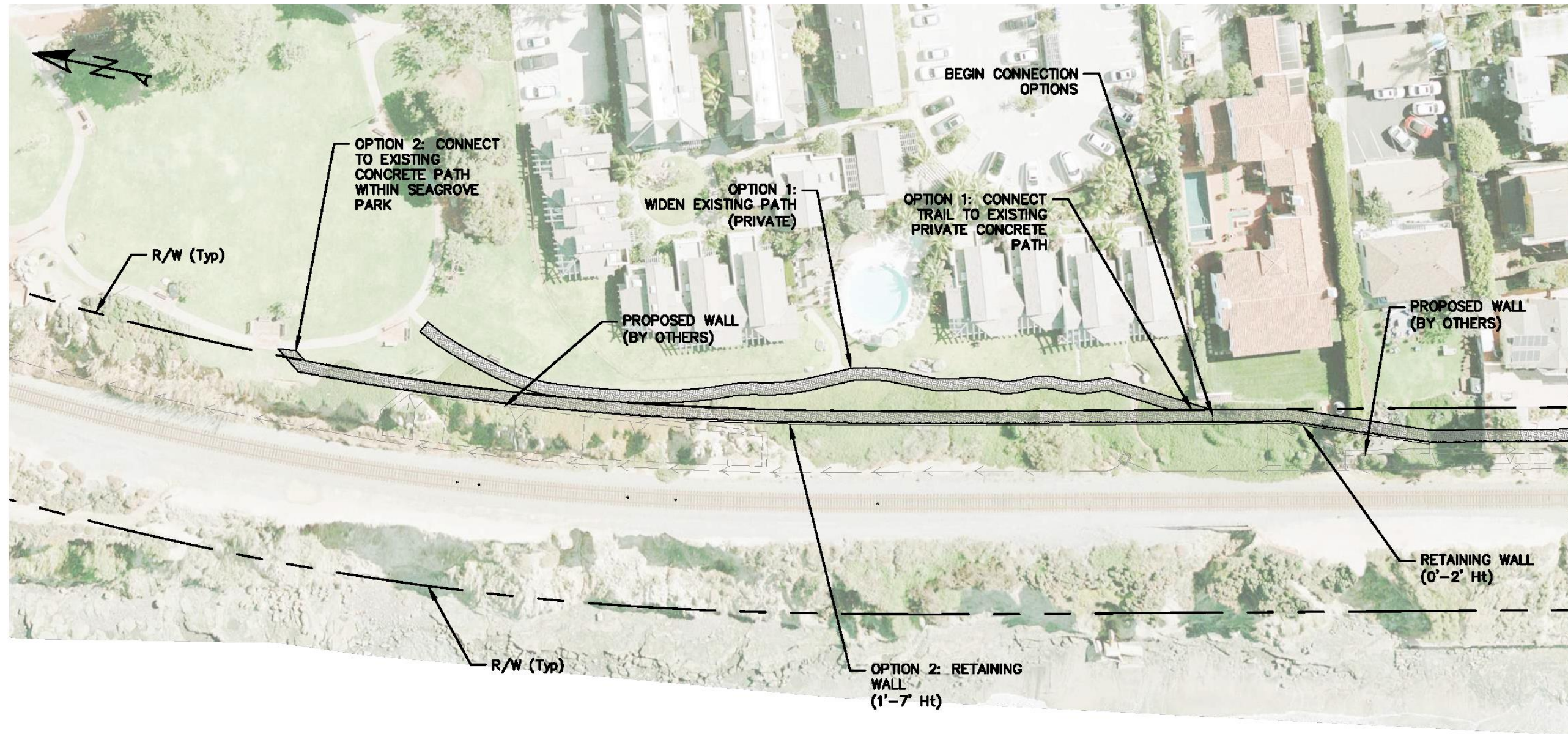
Table 4-3: Planning-Level Cost Estimate, Concept 1 by Segment (Full Estimate in Appendix D)

| Cost Category  | Segment A:<br>Seagrove Park to<br>11 <sup>th</sup> Street | Segment B:<br>11 <sup>th</sup> Street to 8 <sup>th</sup><br>Street | Segment C:<br>8 <sup>th</sup> Street to 4 <sup>th</sup><br>Street |
|--|---|--|---|
| Construction Contract Estimate                                   | \$2.3 million   | \$2.0 million  | \$1.6 million   |
| Design, Environmental & Support Costs                            | \$1.7 million   | \$1.5 million  | \$1.2 million   |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$4.0 million</b>                                      | <b>\$3.5 million</b>   | <b>\$2.8 million</b>  |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.4 million   | \$0.3 million  | \$0.3 million   |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$4.4 million</b>                                      | <b>\$3.9 million</b>   | <b>\$3.1 million</b>  |



Figure 4-2: Sample Rendering, 9<sup>th</sup> Street Plaza, Concept 1

Figure 4-3

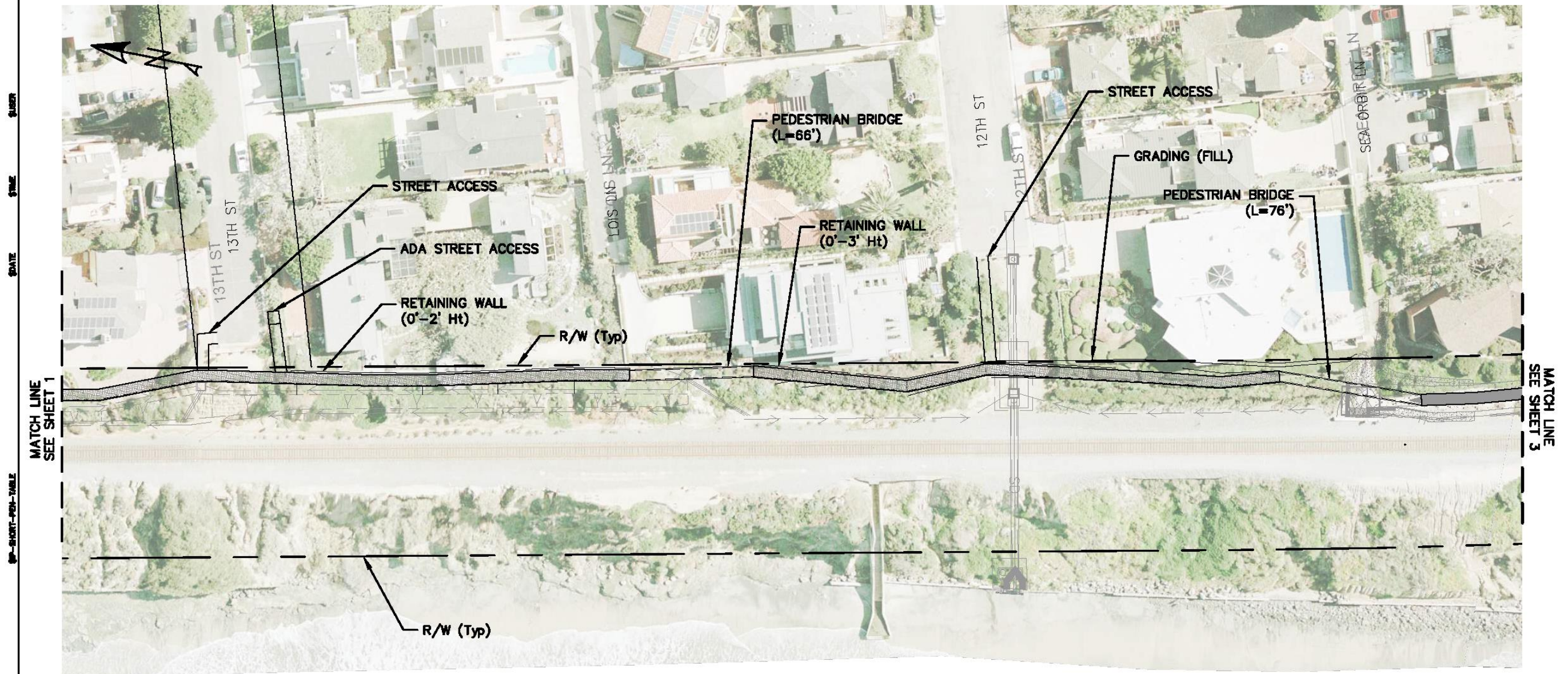


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
3. RETAINING WALL TYPES TO BE DETERMINED IN A FUTURE PHASE.

|   |             |      |   |                                    |  |             |
|---|-------------|------|---|------------------------------------|--|-------------|
| <br>WSP USA Inc.<br>401 B STREET, SUITE 1000<br>SAN DIEGO, CA 92101<br>TEL: +1 619.338.0370<br>FAX: +1 619.338.0123 | DESIGNED BY | DATE | <br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 699-1900 | DEL MAR COASTAL CONNECTION EXHIBIT |  | SCALE       |
|   | DRAWN BY    |      |   | N-S TRAIL SHEET 1 OF 6             |  | 1" = 50'    |
|   | CHECKED BY  |      |   | SANDAG CONTRACT NO.                |  | DRAWING NO. |
|   | SANDAG      |      |   | DRAWING NO.                        |  | SHEET NO.   |

Figure 4-4

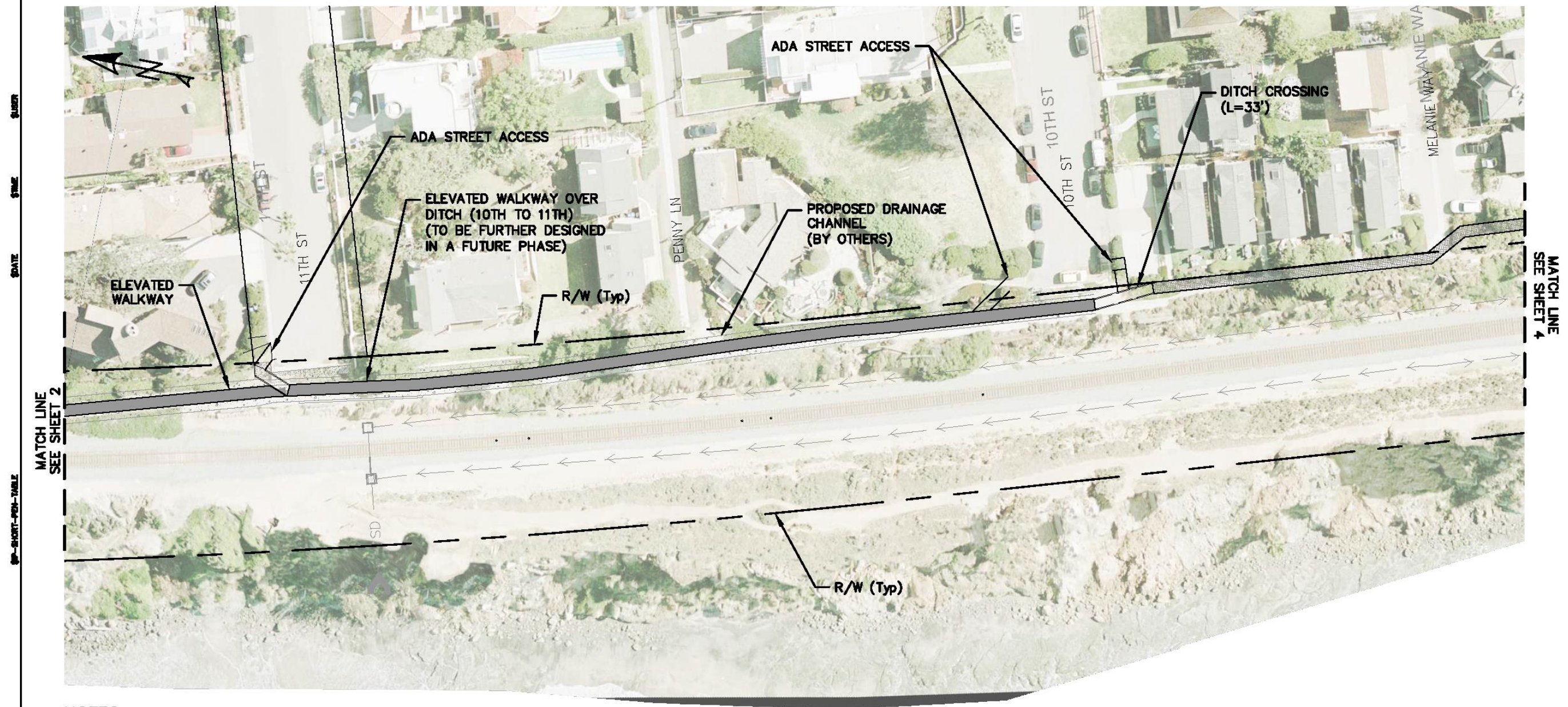


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
3. RETAINING WALL TYPES TO BE DETERMINED IN A FUTURE PHASE.

|  |             |      |  |                                    |  |                       |
|--|-------------|------|--|------------------------------------|--|-----------------------|
| <br><small>WSP USA Inc.<br/>401 B STREET, SUITE 1000<br/>SAN DIEGO, CA 92101<br/>TEL +1 619.338.0370<br/>FAX +1 619.338.0123</small> | DESIGNED BY | DATE | <br><small>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</small> | DEL MAR COASTAL CONNECTION EXHIBIT |  | SCALE                 |
|  | DRAWN BY    |      |  | N-S TRAIL SHEET 2 OF 6             |  | 1" = 50'              |
|  | CHECKED BY  |      |  |                                    |  | SANDAG CONTRACT NO.   |
|  | SANDAG      |      |  |                                    |  | DRAWING NO. SHEET NO. |

Figure 4-5

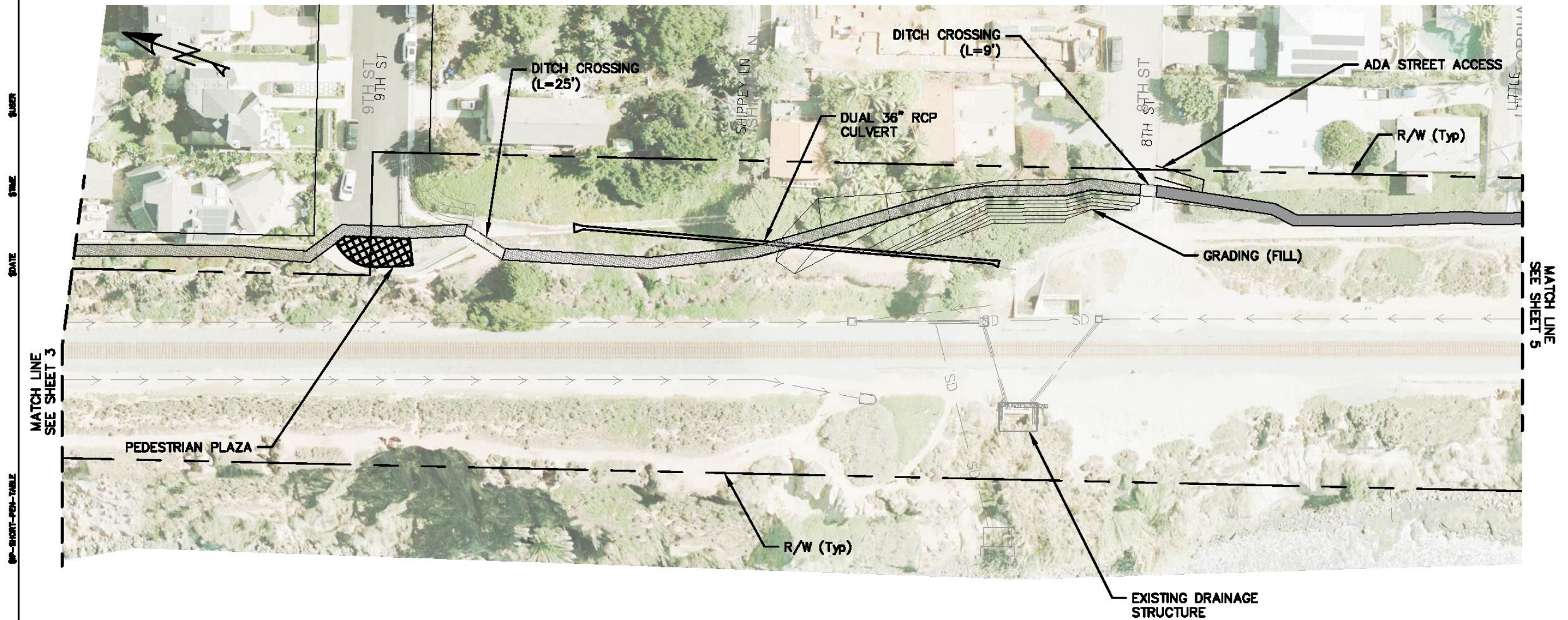


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
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|  |             |      |  |                                    |             |                     |
|--|-------------|------|--|------------------------------------|-------------|---------------------|
| <br><small>WSP USA Inc.<br/>401 B STREET, SUITE 1000<br/>SAN DIEGO, CA 92101<br/>TEL +1 619.338.9370<br/>FAX +1 619.338.0123</small> | DESIGNED BY | DATE | <br><small>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</small> | DEL MAR COASTAL CONNECTION EXHIBIT |             | SCALE<br>1" = 50'   |
|  | DRAWN BY    |      |  | N-S TRAIL SHEET 3 OF 6             |             | SANDAG CONTRACT NO. |
|  | CHECKED BY  |      |  |                                    | DRAWING NO. | SHEET NO.           |
|  | SANDAG      |      |  |                                    |             |                     |

Figure 4-6

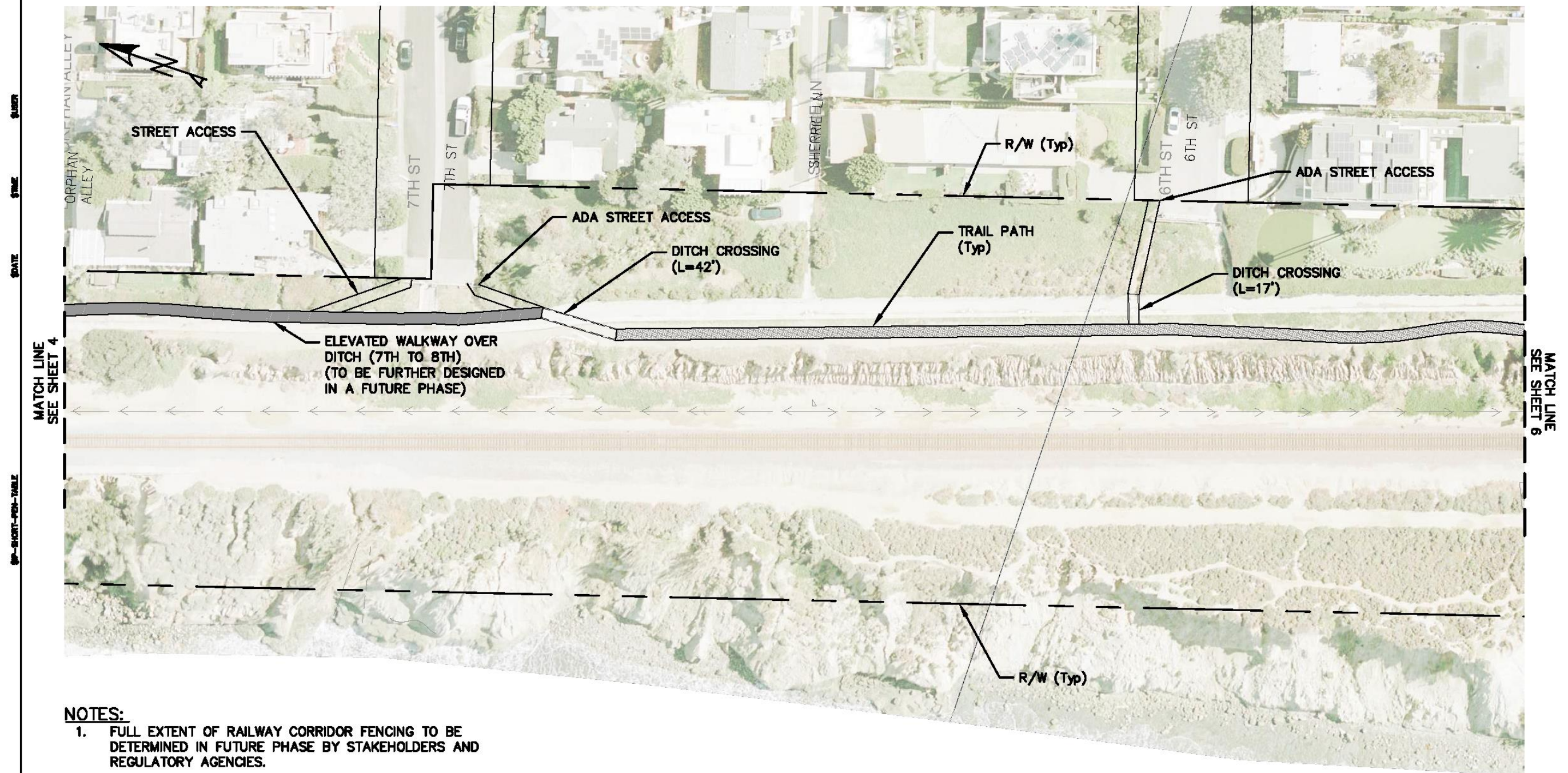


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
3. RETAINING WALL TYPES TO BE DETERMINED IN A FUTURE PHASE.

|  |             |      |  |                                    |             |                     |
|--|-------------|------|--|------------------------------------|-------------|---------------------|
| <br><small>WSP USA Inc.<br/>401 B STREET, SUITE 1000<br/>SAN DIEGO, CA 92101<br/>TEL: +1 619.338.0370<br/>FAX: +1 619.338.0123</small> | DESIGNED BY | DATE | <br><small>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</small> | DEL MAR COASTAL CONNECTION EXHIBIT |             | SCALE<br>1" = 50'   |
|  | DRAWN BY    |      |  | N-S TRAIL SHEET 4 OF 6             |             | SANDAG CONTRACT NO. |
|  | CHECKED BY  |      |  |                                    | DRAWING NO. | SHEET NO.           |
|  | SANDAG      |      |  |                                    |             |                     |

Figure 4-7

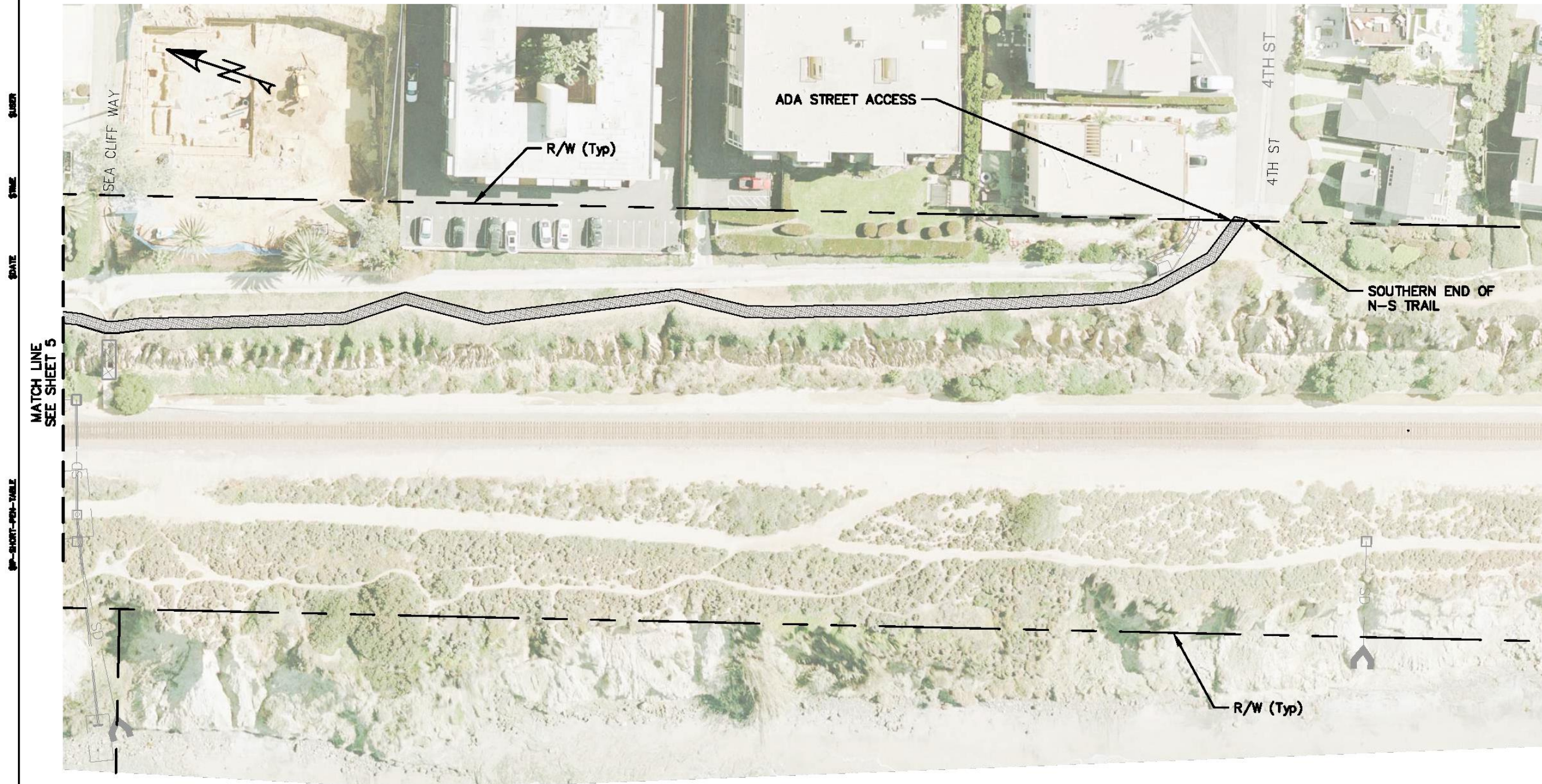


**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
3. RETAINING WALL TYPES TO BE DETERMINED IN A FUTURE PHASE.

|   |             |      |   |                                    |           |          |
|---|-------------|------|---|------------------------------------|-----------|----------|
| <br>WSP USA Inc.<br>401 B STREET, SUITE 1000<br>SAN DIEGO, CA 92101<br>TEL: +1 619.338.0370<br>FAX: +1 619.338.0123 | DESIGNED BY | DATE | <br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 699-1900 | DEL MAR COASTAL CONNECTION EXHIBIT |           | SCALE    |
|   | DRAWN BY    |      |   | N-S TRAIL SHEET 5 OF 6             |           | 1" = 50' |
|   | CHECKED BY  |      |   | SANDAG CONTRACT NO.                |           |          |
|   | SANDAG      |      |   | DRAWING NO.                        | SHEET NO. |          |

Figure 4-8



**NOTES:**

1. FULL EXTENT OF RAILWAY CORRIDOR FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
2. IMPROVEMENTS FOR DRAINAGE AND FOR ELEVATED WALKWAY OVER DRAINAGE CHANNEL TO BE ANALYZED, DESIGNED AND DETAILS DETERMINED IN A FUTURE PHASE.
3. RETAINING WALL TYPES TO BE DETERMINED IN A FUTURE PHASE.

WSP USA Inc.  
401 B STREET, SUITE 1000  
SAN DIEGO, CA 92101  
TEL: +1 619.338.9370  
FAX: +1 619.338.0123

|             |      |
|-------------|------|
| DESIGNED BY | DATE |
| DRAWN BY    |      |
| CHECKED BY  |      |
| SANDAG      |      |

401 B STREET, SUITE 800  
SAN DIEGO, CA 92101-4231  
(619) 699-1900

|                                       |  |
|---------------------------------------|--|
| DEL MAR COASTAL CONNECTION<br>EXHIBIT |  |
| N-S TRAIL<br>SHEET 6 OF 6             |  |

|                     |           |
|---------------------|-----------|
| SCALE               | 1" = 50'  |
| SANDAG CONTRACT NO. |           |
| DRAWING NO.         | SHEET NO. |



# CONCEPT 2: AT-GRADE CROSSING AT 11<sup>TH</sup> STREET, RAMPS & STAIRS TO BEACH

This at-grade railroad crossing takes advantage of existing east-west movement patterns and a large area of artificial fill on the western bluffs north of 11<sup>th</sup> Street. Notable features include:

- **Natural Stairs:** Designed to match the existing informal paths along the bluffs, natural stairs are graded into the terrain using timber or stone, as pictured in the sample photos in Figure 4-11. Steeper portions may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **Fully Accessible Paths & Ramps:** All paths except natural stairs, including the ramps on the western bluffs, feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface.
- **View Overlook:** On the western bluff top, a view overlook is a new amenity that would be fully accessible from 11<sup>th</sup> Street and optionally Concept 1, North-South Trail.
- **At-Grade Railroad Crossing:** Located near the end of 11<sup>th</sup> Street and includes:
  - **Gates, Lights & Bells:** Standard safety features per CPUC requirements.
  - **Safety Fencing:** Full extent to be determined in collaboration with CPUC, CCC, NCTD, and City of Del Mar.
  - **Signal House:** Requires NCTD access and parking from the end of 11<sup>th</sup> Street.
- **Connection to 11<sup>th</sup> Street:** Fully accessible path from 11<sup>th</sup> Street connects to the existing network. This also features an optional connection to Concept 1, North-South Trail.

Figure 4-9 is a sample rendering, Figure 4-10 shows a typical cross-section looking north, and Figure 4-12 on the following page is the full conceptual plan. Table 4-4 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

**Table 4-4: Planning-Level Cost Estimate, Concept 2 (Full Estimate in Appendix D)**

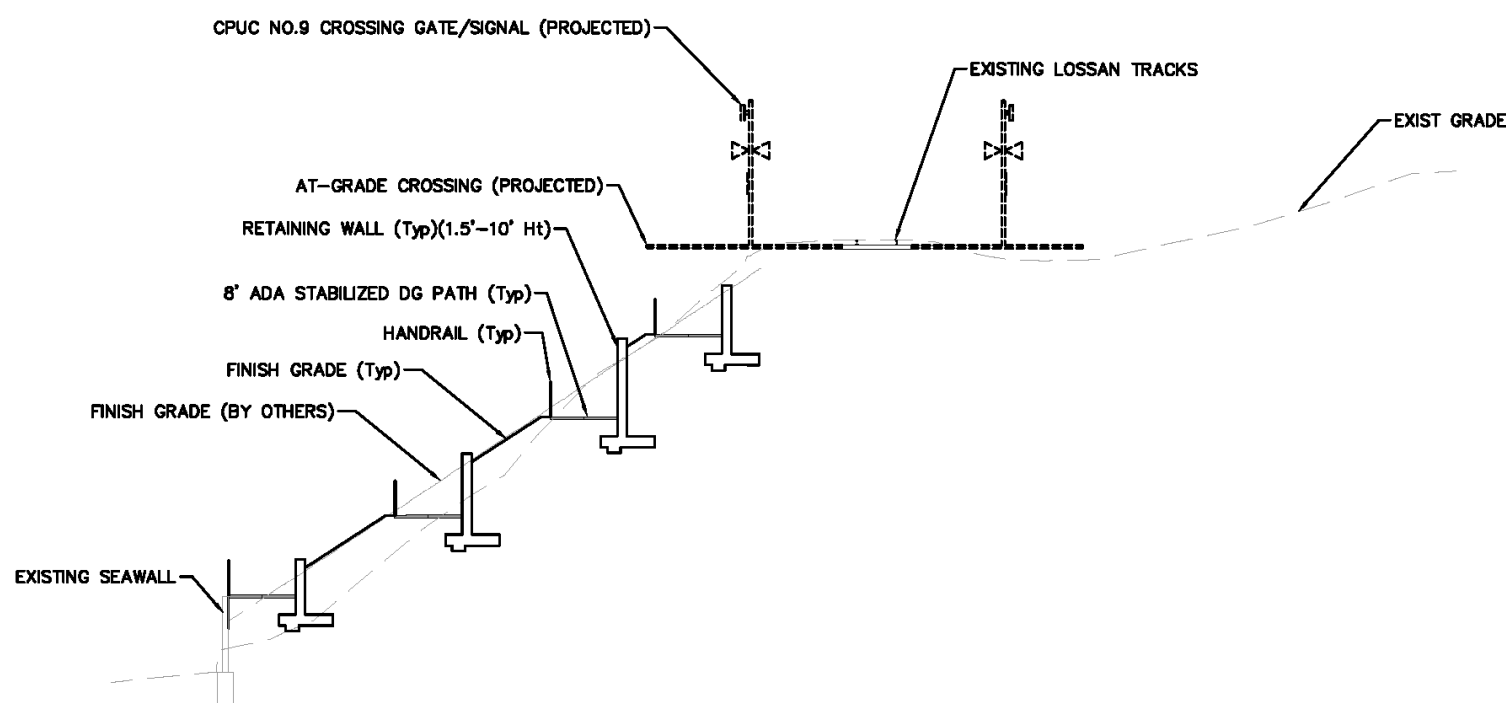
| Category   | Estimated Cost        |
|--|-----------------------|
| Construction Contract Estimate                                   | \$5.4 million         |
| Design, Environmental & Support Costs                            | \$3.9 million         |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$9.3 million</b>  |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.9 million         |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$10.2 million</b> |

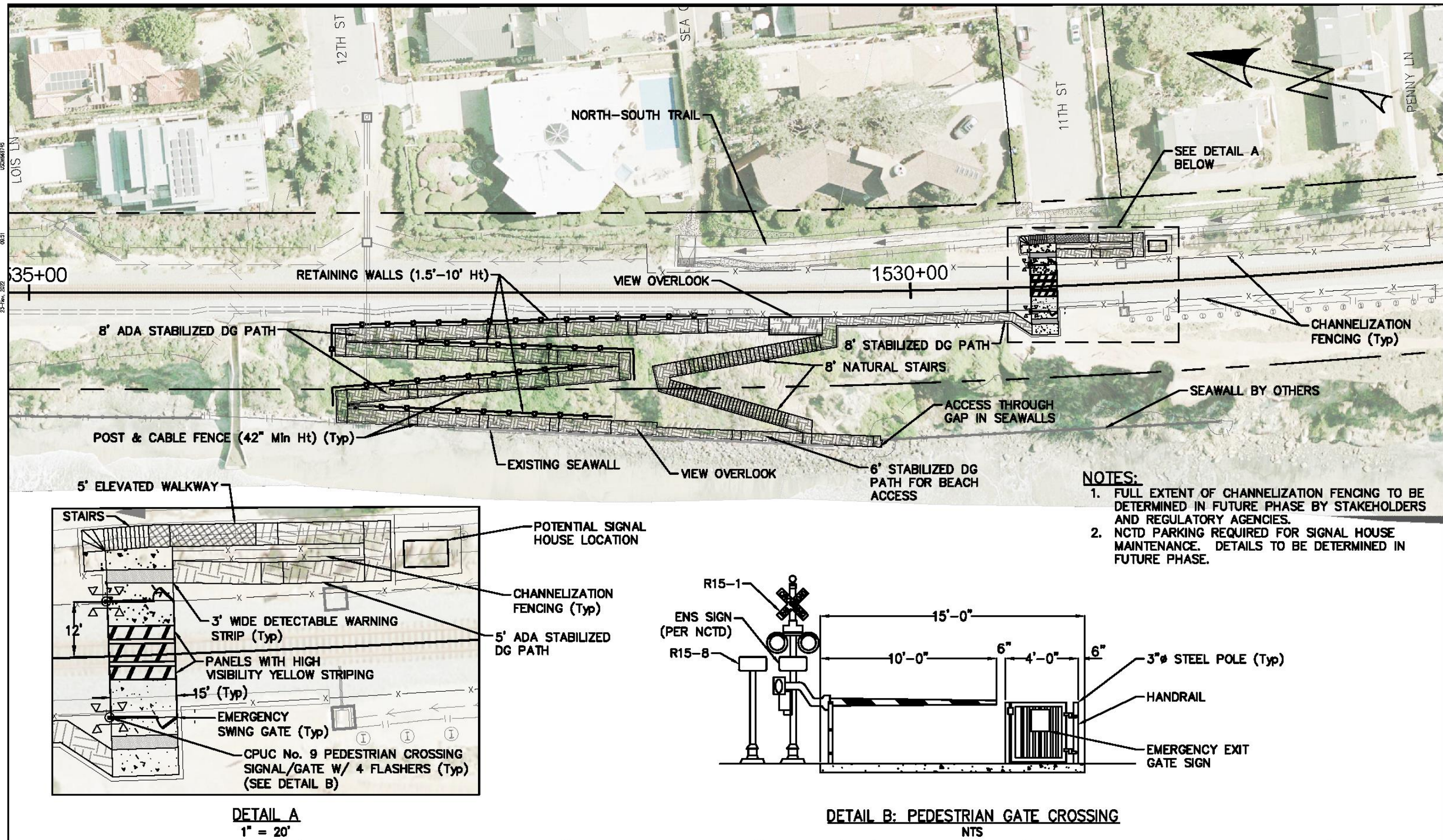
**Figure 4-11: Sample Photos of Natural Stairs**



**Figure 4-9: Sample Rendering, Concept 2**

**Figure 4-10: Typical Cross-Section Looking North, Concept 2**





|                           |   |   |   |  |   |  |
|---------------------------|---|---|---|--|---|--|
| <p><b>Figure 4-12</b></p> | <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> | DESIGNED BY                                   | DATE  | <p>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</p> | DEL MAR COASTAL CONNECTION<br>EXHIBIT   | SCALE<br>1"=50'  |
|                           |   | <p>RELATIVE BORDER SCALE<br/>IS IN INCHES</p> | <p>DRAWN BY</p> <p>CHECKED BY</p> <p>SANDAG</p> |  | <p>CONCEPT 2:<br/>AT-GRADE CROSSING<br/>11TH ST RAMPS &amp; STAIRS TO BEACH</p> | <p>SANDAG CONTRACT NO.</p> <p>DRAWING NO. SHEET NO.</p> <p>1 1</p> |



# CONCEPT 3: AT-GRADE CROSSING AT 11<sup>TH</sup> STREET, STAIRS TO BEACH

This at-grade railroad crossing takes advantage of existing east-west movement patterns and a large area of artificial fill on the western bluffs north of 11<sup>th</sup> Street. Notable features include:

- **Natural Stairs:** Designed to match the existing informal paths along the bluffs, natural stairs are graded into the terrain using timber or stone, as pictured in the sample photos in Figure 4-15. Steeper portions may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **Fully Accessible Paths:** All paths except the natural stairs feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface.
- **View Overlook:** On the western bluff top, a view overlook is a new amenity that would be fully accessible from 11<sup>th</sup> Street and optionally Concept 1, North-South Trail.
- **At-Grade Railroad Crossing:** Located near the end of 11<sup>th</sup> Street and includes:
  - **Gates, Lights & Bells:** Standard safety features per CPUC requirements.
  - **Safety Fencing:** Full extent to be determined in collaboration with CPUC, CCC, NCTD, and City of Del Mar.
  - **Signal House:** Requires NCTD access and parking from the end of 11<sup>th</sup> Street.
- **Connection to 11<sup>th</sup> Street:** Fully accessible path from 11<sup>th</sup> Street connects to the existing network. This also features an optional connection to Concept 1, North-South Trail.

Figure 4-13 is a sample rendering, Figure 4-14 shows a typical cross-section looking north, and Figure 4-16 on the following page is the full conceptual plan. Table 4-5 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

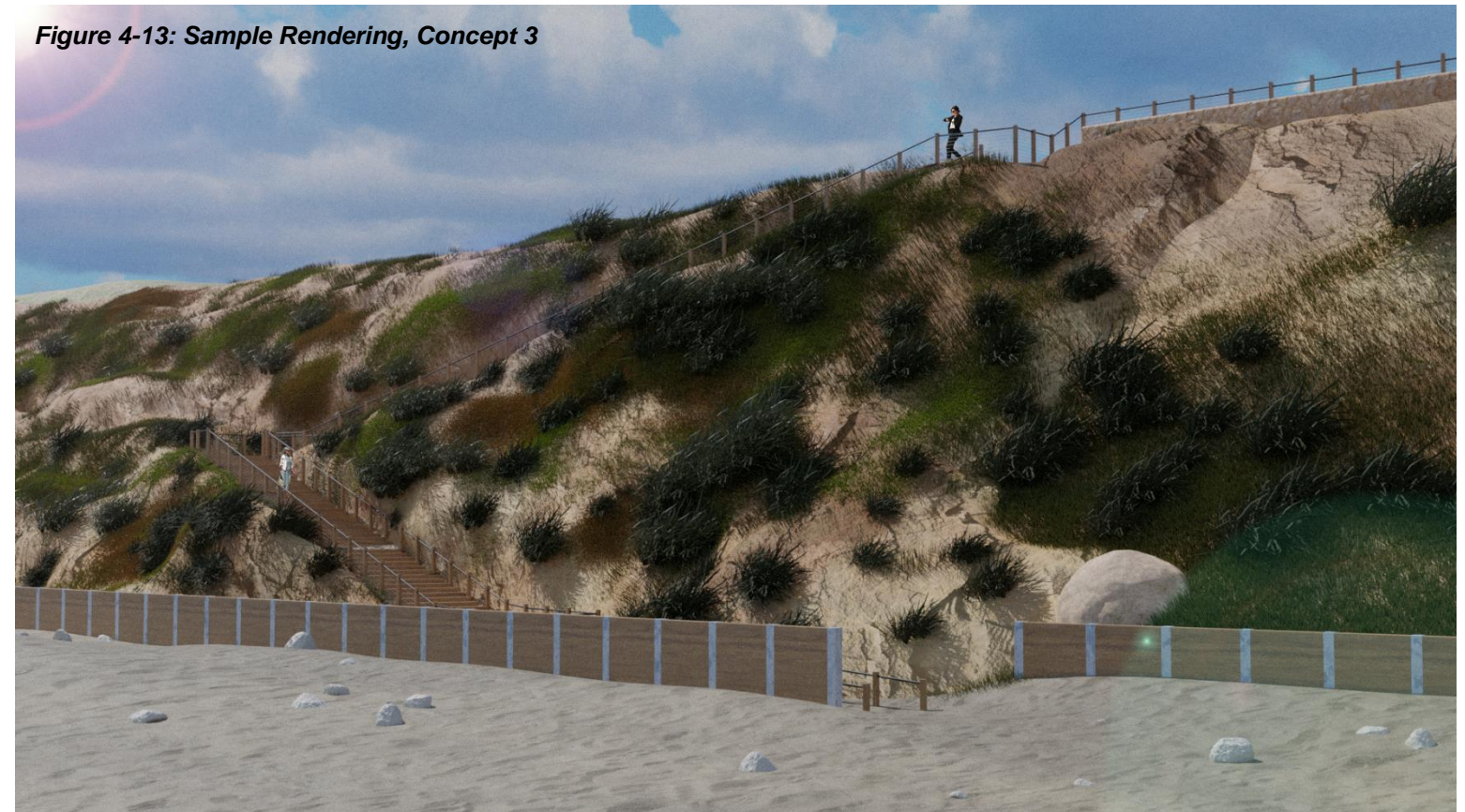
**Table 4-5: Planning-Level Cost Estimate, Concept 3 (Full Estimate in Appendix D)**

| Category   | Estimated Cost       |
|--|----------------------|
| Construction Contract Estimate                                   | \$3.0 million        |
| Design, Environmental & Support Costs                            | \$2.2 million        |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$5.2 million</b> |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.5 million        |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$5.7 million</b> |

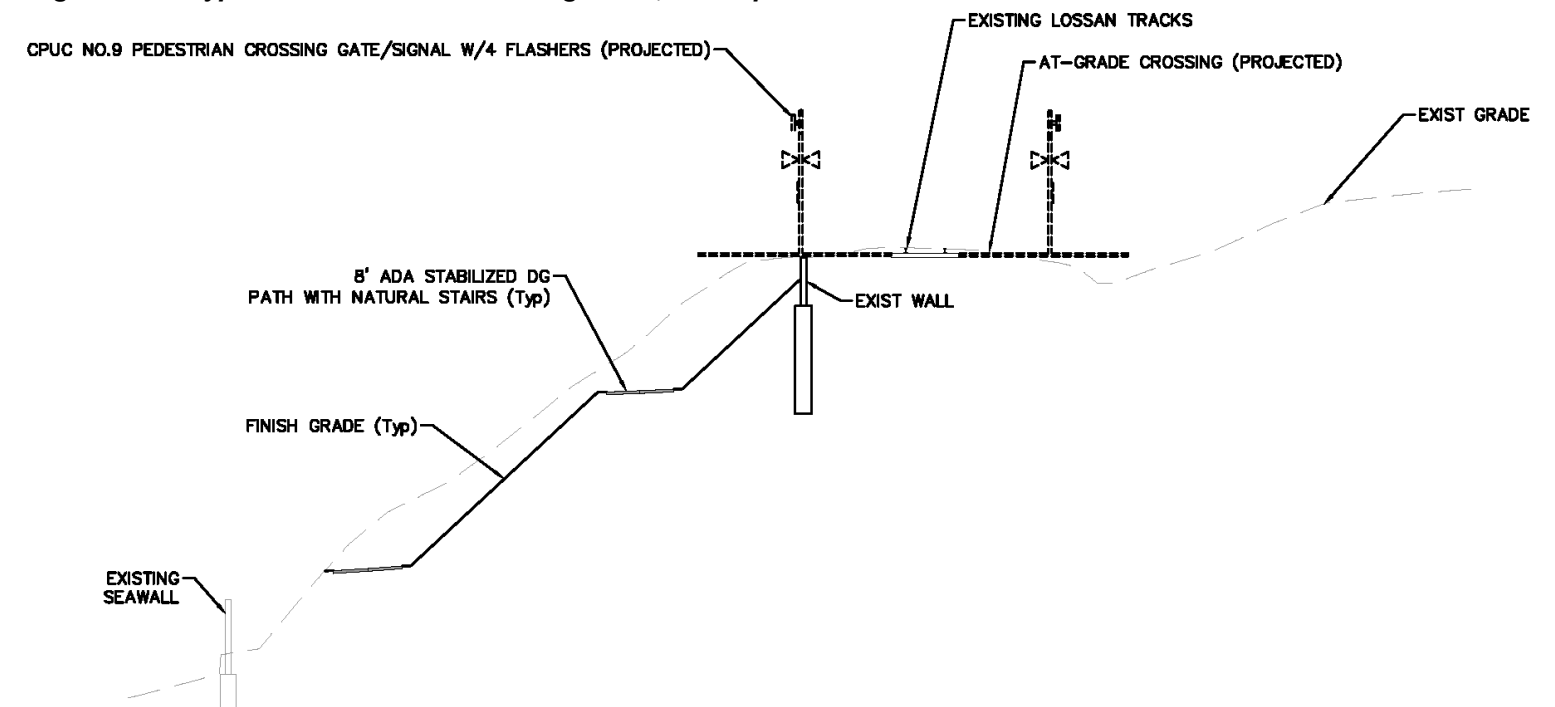
**Figure 4-15: Sample Photos of Natural Stairs**

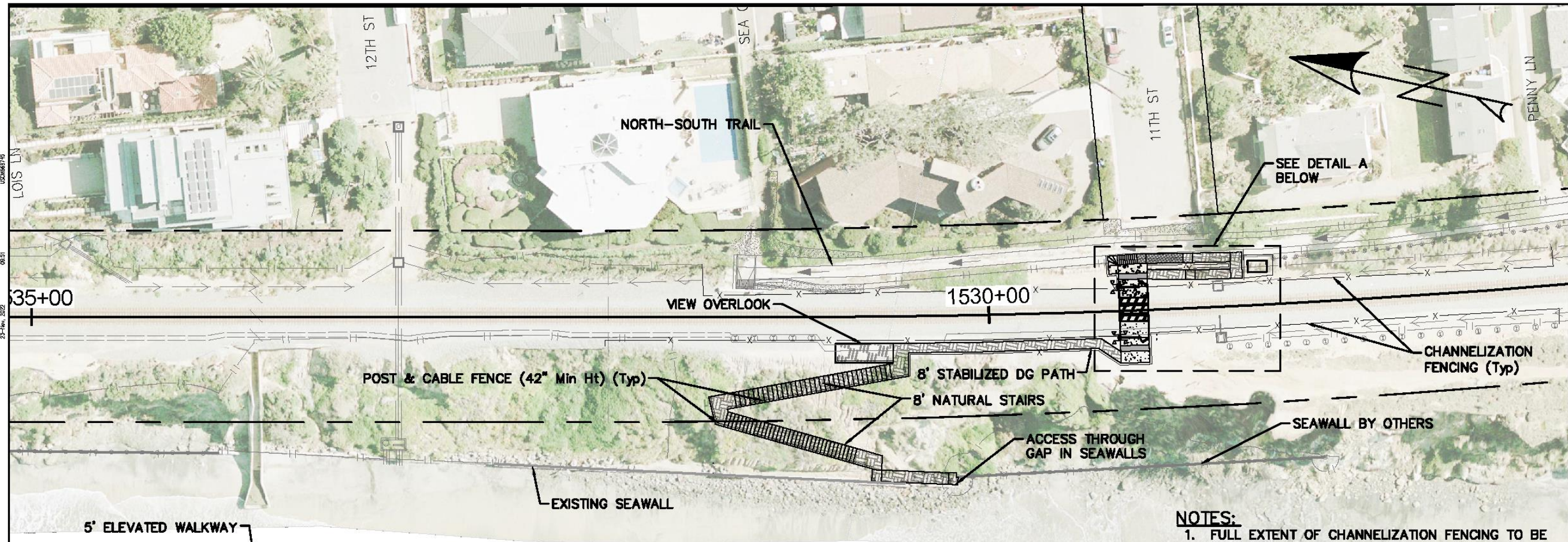


**Figure 4-13: Sample Rendering, Concept 3**

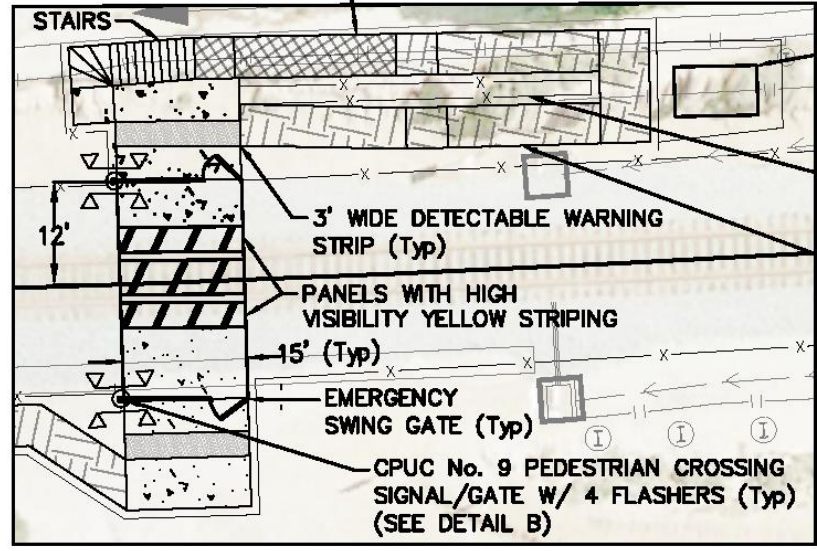


**Figure 4-14: Typical Cross-Section Looking North, Concept 3**

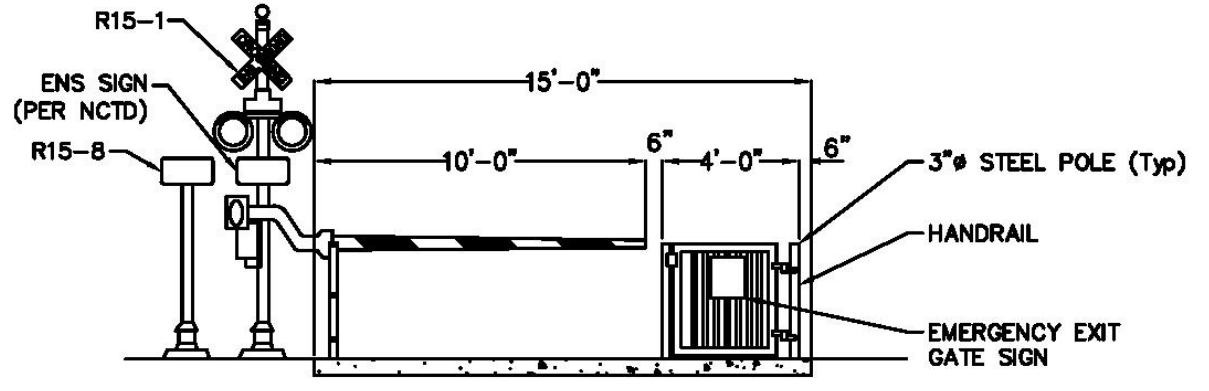




- NOTES:**
1. FULL EXTENT OF CHANNELIZATION FENCING TO BE DETERMINED IN FUTURE PHASE BY STAKEHOLDERS AND REGULATORY AGENCIES.
  2. NCTD PARKING REQUIRED FOR SIGNAL HOUSE MAINTENANCE. DETAILS TO BE DETERMINED IN FUTURE PHASE.



**DETAIL A**  
1" = 20'



**DETAIL B: PEDESTRIAN GATE CROSSING**  
NTS

|                           |   |             |        |  |  |                     |
|---------------------------|---|-------------|--------|--|--|---------------------|
| <p><b>Figure 4-16</b></p> | <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> | DESIGNED BY | DATE   | <p>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</p> | DEL MAR COASTAL CONNECTION<br>EXHIBIT                      | SCALE<br>1"=50'     |
|                           |   | DRAWN BY    |        |  | CONCEPT 3:<br>AT-GRADE CROSSING<br>11TH ST STAIRS TO BEACH | SANDAG CONTRACT NO. |
|                           |   | CHECKED BY  | SANDAG |  | DRAWING NO. SHEET NO.<br>1 1                               |                     |



# CONCEPT 4: AT-GRADE CROSSING AT 7<sup>TH</sup>-8<sup>TH</sup> STREETS, RAMPS TO BEACH

This at-grade railroad crossing takes advantage of existing east-west movement patterns near 7<sup>th</sup> and 8<sup>th</sup> Streets. Notable features include:

- **Fully Accessible Paths & Ramps:** All paths except natural stairs, including the ramps on the western bluffs, feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface. Ramps on the bluffs may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **View Overlook:** On the western bluff top, a view overlook is a new amenity that would be fully accessible from 7<sup>th</sup> Street and optionally Concept 1, North-South Trail).
- **At-Grade Railroad Crossing:** Located near the end of 7<sup>th</sup> Street and includes:
  - **Gates, Lights & Bells:** Standard safety features per CPUC requirements.
  - **Safety Fencing:** Full extent to be determined in collaboration with CPUC, CCC, NCTD, and City of Del Mar.
  - **Signal House:** Requires NCTD access and parking from the end of 7<sup>th</sup> Street.
- **Connections to 7<sup>th</sup> & 8<sup>th</sup> Streets:** Fully accessible path from 8<sup>th</sup> Street and natural stairs near 7<sup>th</sup> Street (sample photos in Figure 4-19) connect to the existing network. These also feature optional connections to Concept 1, North-South Trail.

Figure 4-17 is a sample rendering, Figure 4-18 shows a typical cross-section looking north, and Figure 4-20 on the following page is the full conceptual plan. Table 4-6 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

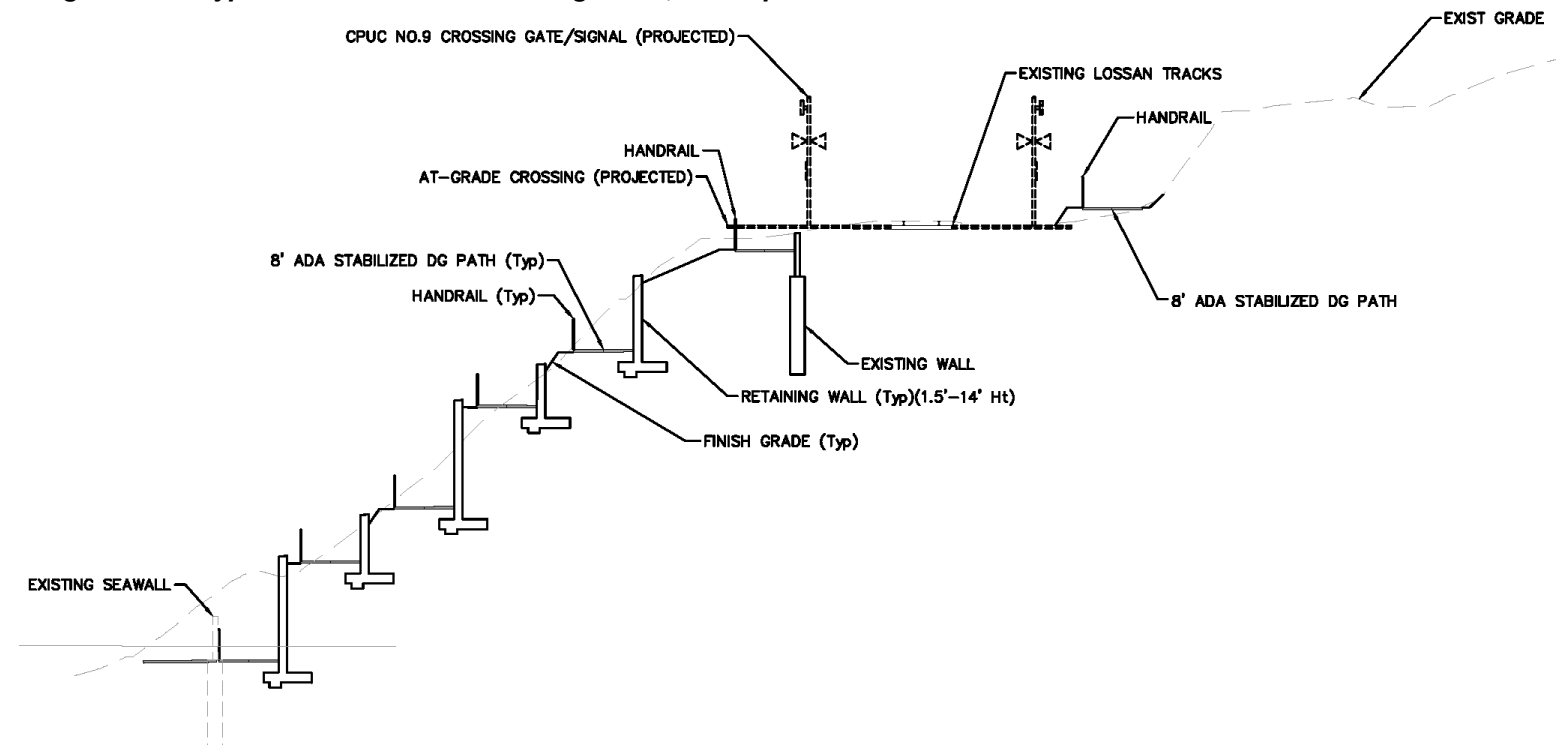
**Table 4-6: Planning-Level Cost Estimate, Concept 4 (Full Estimate in Appendix D)**

| Category   | Estimated Cost       |
|--|----------------------|
| Construction Contract Estimate                                   | \$4.9 million        |
| Design, Environmental & Support Costs                            | \$3.5 million        |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$8.4 million</b> |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.8 million        |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$9.2 million</b> |

**Figure 4-19: Sample Photos of Natural Stairs**



**Figure 4-18: Typical Cross-Section Looking North, Concept 4**



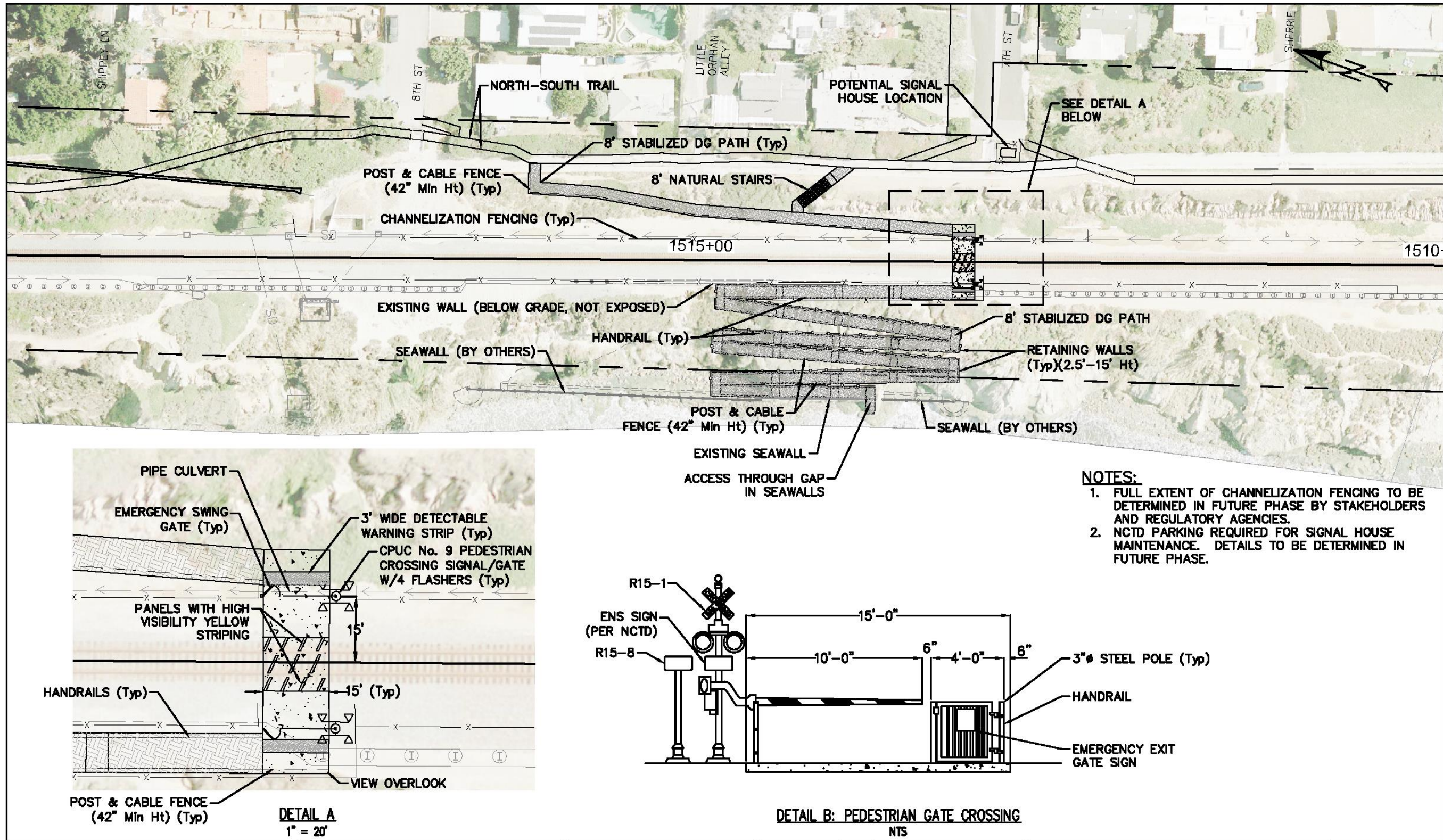


Figure 4-20

|   |   |   |   |  |
|---|---|---|---|--|
| <br>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101<br>RELATIVE BORDER SCALE<br>15 IN INCHES | DESIGNED BY<br>DRAWN BY<br>CHECKED BY<br>SANDAG | DATE<br><br>401 B STREET, SUITE 800<br>SAN DIEGO, CA 92101-4231<br>(619) 699-1900 | DEL MAR COASTAL CONNECTION<br>EXHIBIT<br>CONCEPT 4:<br>AT-GRADE CROSSING 7TH AND 8TH ST<br>RAMPS TO BEACH | SCALE<br>1"=60'<br>SANDAG CONTRACT NO.<br>DRAWING NO. SHEET NO.<br>1 1 |
|   |   |   |   |  |



# CONCEPT 5: AT-GRADE CROSSING AT 7<sup>TH</sup>-8<sup>TH</sup> STREETS, STAIRS TO BEACH

This at-grade railroad crossing takes advantage of existing east-west movement patterns near 7<sup>th</sup> and 8<sup>th</sup> Streets. Notable features include:

- **Natural Stairs:** Designed to match the existing informal paths along the bluffs, natural stairs are graded into the terrain using timber or stone, as pictured in the sample photos in Figure 4-23. Steeper portions may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **Fully Accessible Paths:** All paths except the natural stairs feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface.
- **View Overlook:** On the western bluff top, a view overlook is a new amenity that would be fully accessible from 7<sup>th</sup> Street and optionally Concept 1, North-South Trail.
- **At-Grade Railroad Crossing:** Located near the end of 7<sup>th</sup> Street and includes:
  - **Gates, Lights & Bells:** Standard safety features per CPUC requirements.
  - **Safety Fencing:** Full extent to be determined in collaboration with CPUC, CCC, NCTD, and City of Del Mar.
  - **Signal House:** Requires NCTD access and parking from the end of 7<sup>th</sup> Street.
- **Connections to 7<sup>th</sup> & 8<sup>th</sup> Streets:** Fully accessible path from 8<sup>th</sup> Street and natural stairs near 7<sup>th</sup> Street connect to the existing network. These also feature optional connections to Concept 1, North-South Trail.

Figure 4-21 is a sample rendering, Figure 4-22 shows a typical cross-section looking north, and Figure 4-24 on the following page is the full conceptual plan. Table 4-7 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

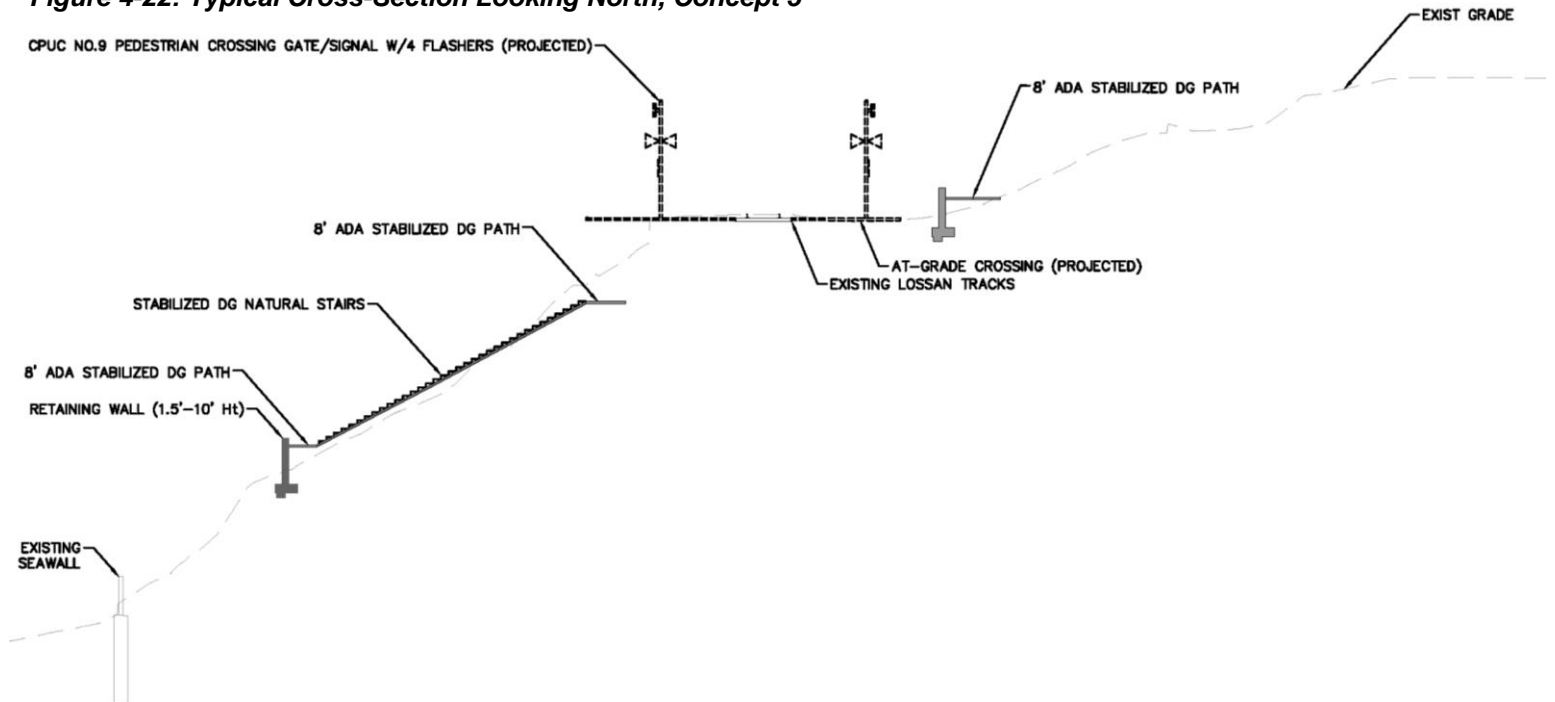
**Table 4-7: Planning-Level Cost Estimate, Concept 5 (Full Estimate in Appendix D)**

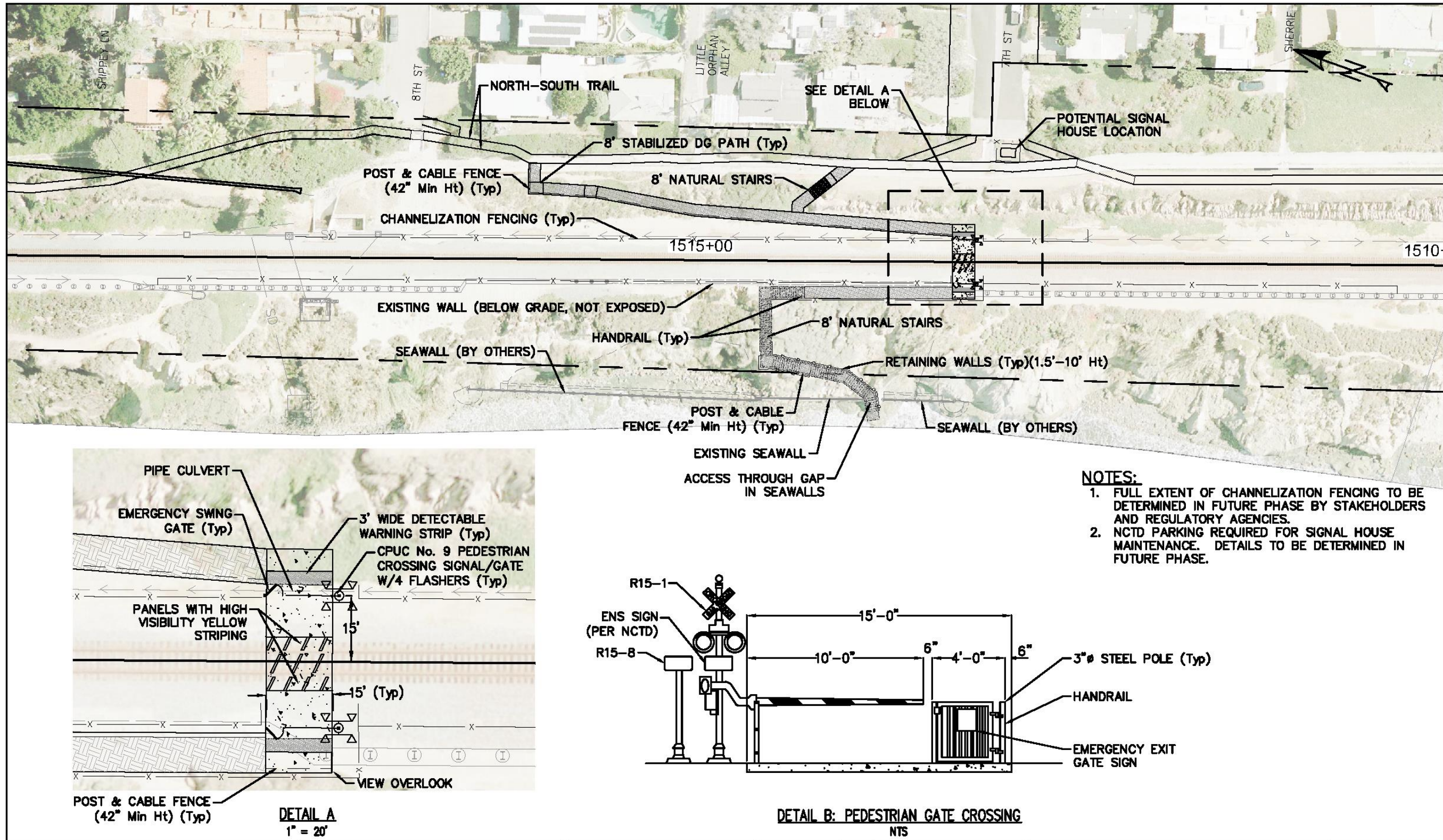
| Category   | Estimated Cost       |
|--|----------------------|
| Construction Contract Estimate                                   | \$3.0 million        |
| Design, Environmental & Support Costs                            | \$2.2 million        |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$5.2 million</b> |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.5 million        |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$5.7 million</b> |

**Figure 4-23: Sample Photos of Natural Stairs**



**Figure 4-22: Typical Cross-Section Looking North, Concept 5**





|                           |   |   |  |  |   |
|---------------------------|---|---|--|--|---|
| <p><b>Figure 4-24</b></p> | <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> <p>RELATIVE BORDER SCALE<br/>15 IN INCHES</p> | <p>DESIGNED BY</p> <p>DATE</p>                  | <p>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</p> | <p>DEL MAR COASTAL CONNECTION<br/>EXHIBIT</p>                              | <p>SCALE<br/>1"=60'</p>   |
|                           |   | <p>DRAWN BY</p> <p>CHECKED BY</p> <p>SANDAG</p> |  | <p>CONCEPT 5:<br/>AT-GRADE CROSSING 7TH AND 8TH ST<br/>STAIRS TO BEACH</p> | <p>SANDAG CONTRACT NO.</p> <p>DRAWING NO. SHEET NO.<br/>1 1</p> |



# CONCEPT 6: UNDERCROSSING AT 7<sup>TH</sup>-8<sup>TH</sup> STREETS, RAMPS TO BEACH

This railroad undercrossing takes advantage of existing east-west movement patterns near 7<sup>th</sup> and 8<sup>th</sup> Streets, while reducing or eliminating some of the most impactful features of at-grade crossings including CPUC special approval, safety fencing, and noise impacts (described in Section 5). Notable features include:

- **Fully Accessible Paths & Ramps:** All paths, including the ramps on the western bluffs, feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface. Ramps on the bluffs may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **View Overlook:** Located at the western end of the undercrossing, a view overlook is a new amenity that would be fully accessible from 7<sup>th</sup> Street and optionally Concept 1, North-South Trail.
- **Railroad Undercrossing:** A prefabricated, 8-foot by 10-foot rectangular concrete tunnel would be positioned just below the railroad ballast and bedding.
- **Connection to 8<sup>th</sup> Street:** Fully accessible path from 8<sup>th</sup> Street connects to the existing network. This also features an optional connection to Concept 1, North-South Trail.

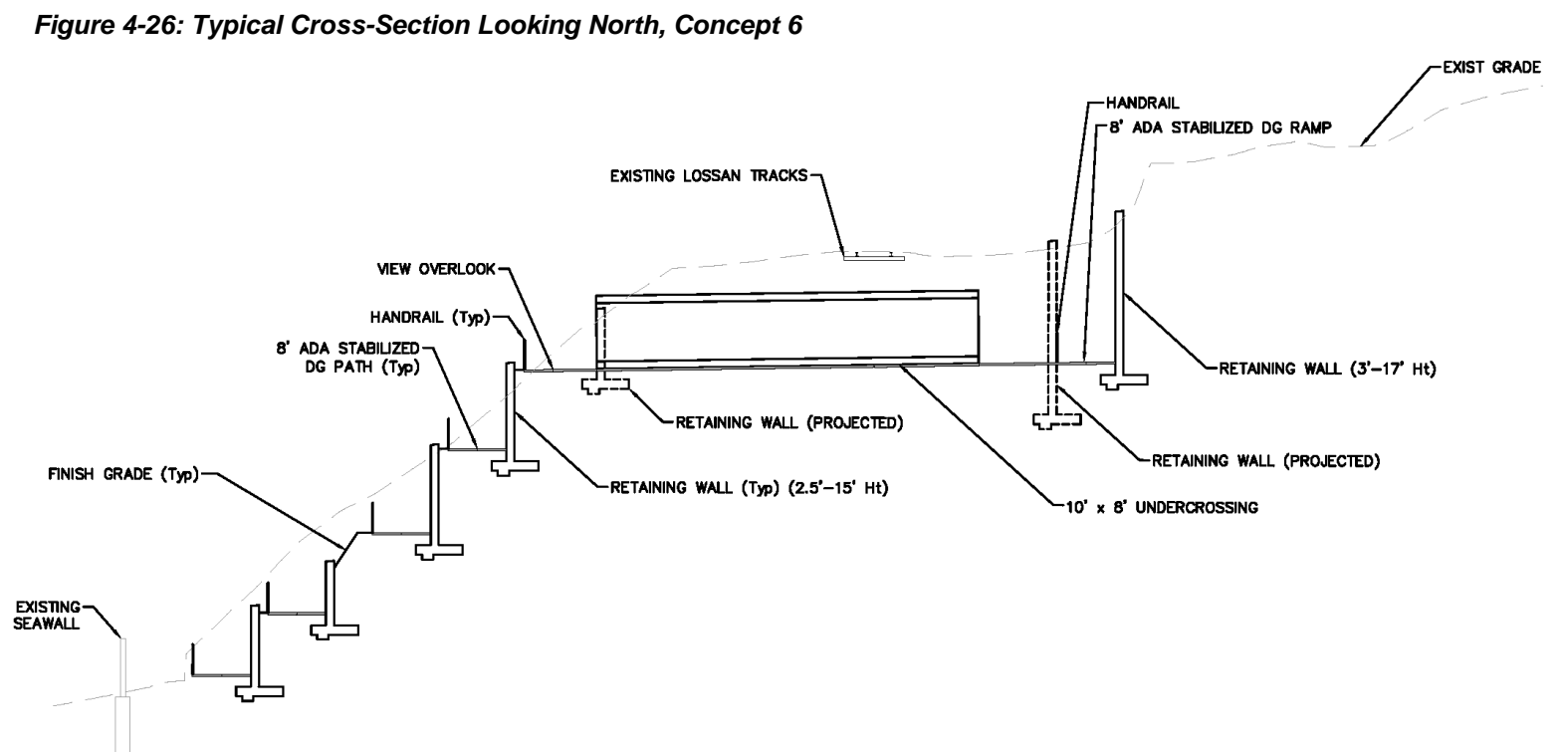
Figure 4-25 is a sample rendering, Figure 4-26 shows a typical cross-section looking north, and Figure 4-27 on the following page is the full conceptual plan. Table 4-8 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

**Table 4-8: Planning-Level Cost Estimate, Concept 6 (Full Estimate in Appendix D)**

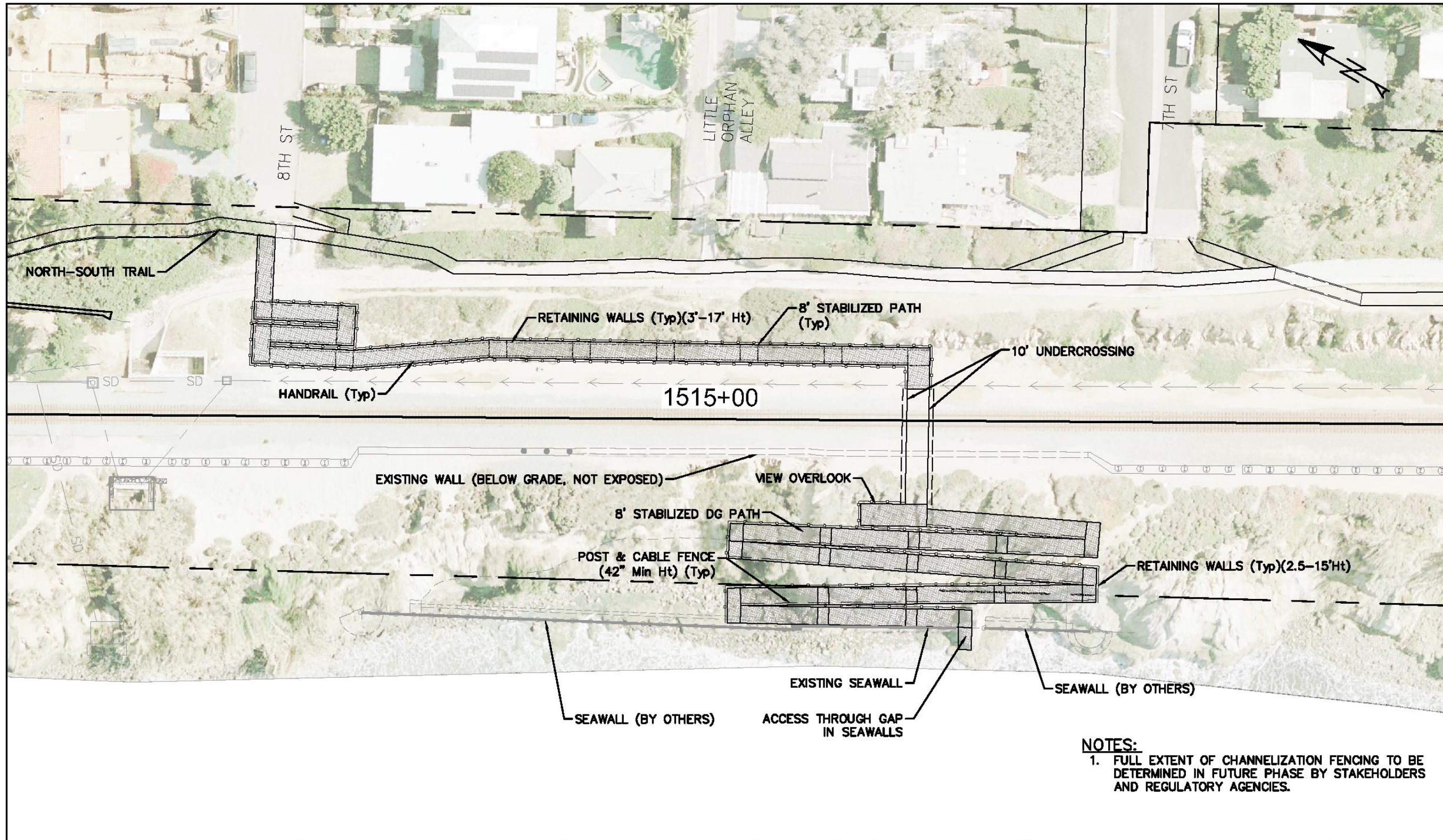
| Category   | Estimated Cost        |
|--|-----------------------|
| Construction Contract Estimate                                   | \$6.8 million         |
| Design, Environmental & Support Costs                            | \$4.9 million         |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$11.7 million</b> |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$1.1 million         |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$12.8 million</b> |



**Figure 4-25: Sample Rendering, Concept 6**



**Figure 4-26: Typical Cross-Section Looking North, Concept 6**



|                           |   |                                  |  |  |   |
|---------------------------|---|----------------------------------|--|--|---|
| <p><b>Figure 4-27</b></p> | <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> <p>RELATIVE BORDER SCALE IS IN INCHES</p> | DESIGNED BY<br>DATE              | <p>401 B STREET, SUITE 800<br/>         SAN DIEGO, CA 92101-4231<br/>         (619) 699-1900</p> | DEL MAR COASTAL CONNECTION<br>EXHIBIT                        | SCALE<br>1" = 40'                                   |
|                           |   | DRAWN BY<br>CHECKED BY<br>SANDAG |  | CONCEPT 6:<br>UNDERCROSSING 7TH AND 8TH ST<br>RAMPS TO BEACH | SANDAG CONTRACT NO.<br>DRAWING NO. SHEET NO.<br>1 1 |



# CONCEPT 7: UNDERCROSSING AT 7<sup>TH</sup>-8<sup>TH</sup> STREETS, STAIRS TO BEACH

This railroad undercrossing takes advantage of existing east-west movement patterns near 7<sup>th</sup> and 8<sup>th</sup> Streets, while reducing or eliminating some of the most impactful features of at-grade crossings including CPUC special approval, safety fencing, and noise impacts (described in Section 5). Notable features include:

- **Natural Stairs:** Designed to match the existing informal paths along the bluffs, natural stairs are graded into the terrain using timber or stone, as pictured in the sample photos in Figure 4-30. Steeper portions may require retaining walls, some of which may be below grade and/or covered with fill and landscaping to reduce visual impacts.
- **Fully Accessible Paths:** All paths except the natural stairs feature ADA-compliant grades and can utilize a special form of stabilized decomposed granite for a fully accessible surface.
- **View Overlook:** Located at the western end of the undercrossing, a view overlook is a new amenity that would be fully accessible from 7<sup>th</sup> Street and optionally Concept 1, North-South Trail.
- **Railroad Undercrossing:** A prefabricated, 8-foot by 10-foot rectangular concrete tunnel would be positioned just below the railroad ballast and bedding.
- **Connection to 8<sup>th</sup> Street:** Fully accessible path from 8<sup>th</sup> Street connects to the existing network. This also features an optional connection to Concept 1, North-South Trail.

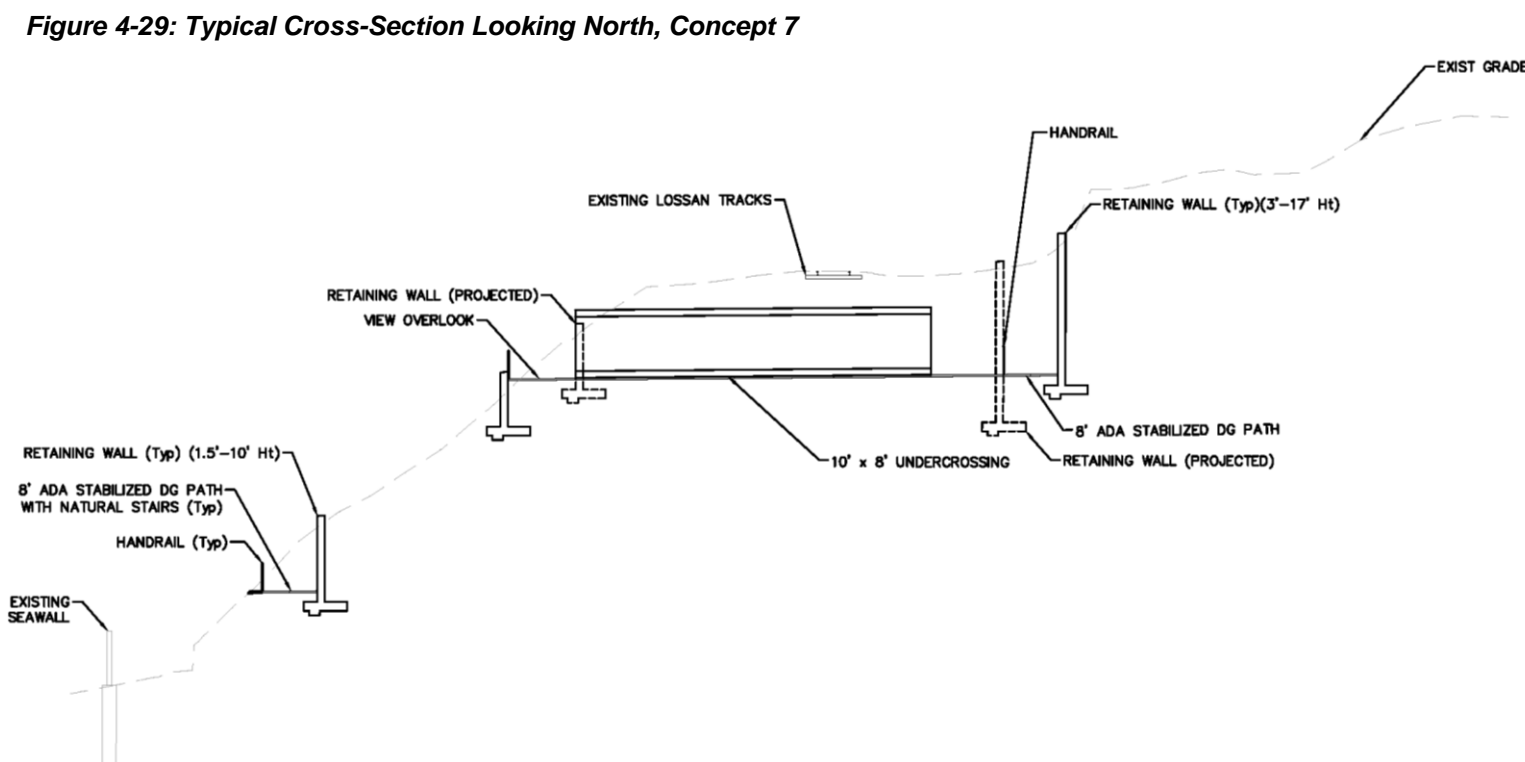
Figure 4-28 is a sample rendering, Figure 4-29 shows a typical cross-section looking north, and Figure 4-31 on the following page is the full conceptual plan. Table 4-9 summarizes the cost estimate, with the full planning-level estimate in Appendix D.

**Table 4-9: Planning-Level Cost Estimate, Concept 7 (Full Estimate in Appendix D)**

| Category   | Estimated Cost       |
|--|----------------------|
| Construction Contract Estimate                                   | \$3.7 million        |
| Design, Environmental & Support Costs                            | \$2.7 million        |
| <b>Total Project Cost Estimate (2022 Dollars)</b>                | <b>\$6.4 million</b> |
| Estimated Cost Escalation to 2023-2027 Years of Expenditure      | \$0.6 million        |
| <b>Total Project Cost Estimate (Year of Expenditure Dollars)</b> | <b>\$7.0 million</b> |



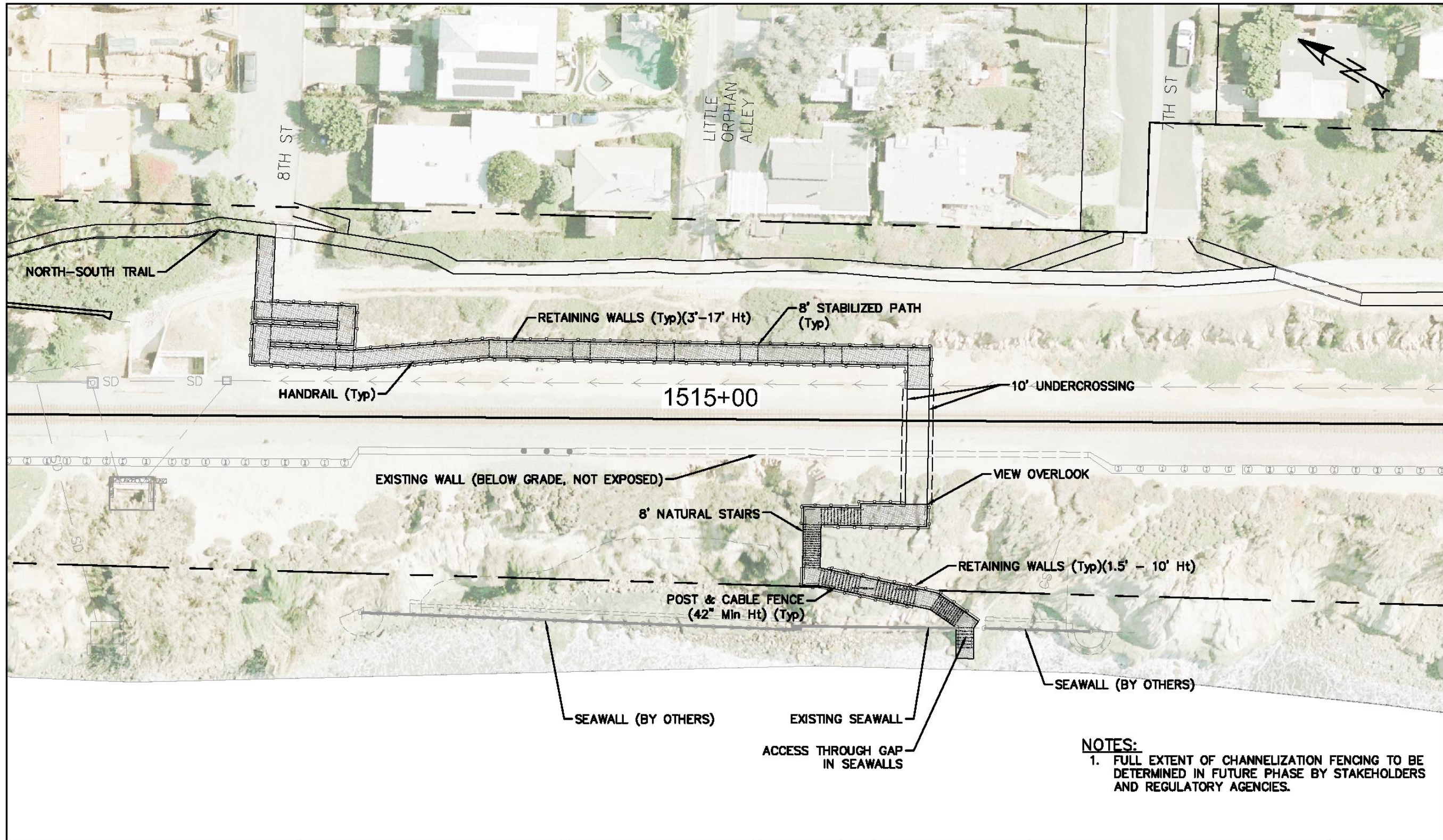
**Figure 4-28: Sample Rendering, Concept 7**



**Figure 4-29: Typical Cross-Section Looking North, Concept 7**

**Figure 4-30: Sample Photos of Natural Stairs**





|                           |   |                                  |  |   |   |
|---------------------------|---|----------------------------------|--|---|---|
| <p><b>Figure 4-31</b></p> | <p>401 B STREET, SUITE 1650 SAN DIEGO, CA 92101</p> <p>RELATIVE BORDER SCALE<br/>IS IN INCHES</p> | DESIGNED BY<br>DATE              | <p>401 B STREET, SUITE 800<br/>SAN DIEGO, CA 92101-4231<br/>(619) 699-1900</p> | DEL MAR COASTAL CONNECTION<br>EXHIBIT                         | SCALE<br>1"=40'                                     |
|                           |   | DRAWN BY<br>CHECKED BY<br>SANDAG |  | CONCEPT 7:<br>UNDERCROSSING 7TH AND 8TH ST<br>STAIRS TO BEACH | SANDAG CONTRACT NO.<br>DRAWING NO. SHEET NO.<br>1 1 |



## 5. IMPLEMENTATION STRATEGY

This section discusses a wide range of implementation considerations for the design concepts developed in this study. It is organized into the following categories:

- Right-of-way, NCTD approval, maintenance, and liability
- California Coastal Commission (CCC) approval
- California Public Utilities Commission (CPUC) approval
- Environmental reviews
- Audible safety systems for at-grade crossings
- Accessibility design
- Constructability and railroad access
- Funding

### RIGHT-OF-WAY, NCTD APPROVAL, MAINTENANCE & LIABILITY

The seven design concepts recommended for advancement are mostly located within public rights-of-way and do not require the use of any private property. The northern terminus of the north-south trail reaches Seagrove Park through a public access easement located on private property.

As mapped in Figure 2-5 through Figure 2-8 and in the study's [online basemap](#), the public parcels in the study area are divided among several agency owners:

- Street rights-of-way owned by the City of Del Mar
- Railroad parcels owned by NCTD
- Western bluffs owned by the City of Del Mar

#### ***NCTD Right-of-Way Approval***

NCTD approval is required for any construction or other work in its right-of-way. This is governed by [NCTD Board Policies](#) No. 11 (Real Estate) and No. 18 (Railroad Safety and Community Enhancement Projects) as well as the scope of work for the SANDAG DMB Phase 5 project.

The NCTD railroad right-of-way contains some private encroachments in which adjacent property owners have installed landscaping or small structures on NCTD property, most notably in the areas between Seagrove Park and 9<sup>th</sup> Street. With the concurrence of NCTD, the project team presumed that any private encroachments in the NCTD right-of-way would be removed if needed to construct the design concepts developed in this study.

#### ***Maintenance & Liability Agreements***

Any projects located within the railroad right-of-way will require future agreements with NCTD for the City of Del Mar or another agency to assume responsibility for ongoing maintenance. NCTD Board Policy No. 18 and the scope of work for the SANDAG DMB Phase 5 project recommend that liability and maintenance for any coastal access or recreational improvements in the NCTD right-of-way should be the responsibility of the City of Del Mar. These details will require additional collaboration and consensus among the stakeholder agencies.



Some elements of railroad crossings will require specific maintenance activities to be conducted by NCTD. This includes the need for NCTD parking, most likely at adjacent street ends, to facilitate inspection activities. This will require further coordination with the City of Del Mar for use of the street right-of-way.

- **At-Grade Crossings:** Monthly inspections of signal house and at-grade crossing facilities such as gates, lighting, and other safety systems.
- **Undercrossings:** Annual inspections of undercrossing infrastructure and supporting structural elements.

## CALIFORNIA COASTAL COMMISSION (CCC) APPROVAL

### **Approval of Proposed Concepts via Federal Consistency Certification**

As noted in the study background in Section 1, the proposed design concepts were included as mitigation measures for the SANDAG DMB Phase 5 project, which CCC approved in June 2022 under the federal consistency certification process. The CCC staff report, available in Appendix A, provides additional details on the review of proposed concepts.

At the time of CCC's approval action in June 2022, the proposed concepts in this study were still under development in preliminary draft form. While some of the more complex concepts (such as the ADA-compliant ramp system) were not advanced or refined enough to allow for a full analysis at the time, CCC approved Concept 1 (north-south trail) and Concept 3 (at-grade crossing and stairs at 11<sup>th</sup> Street) as part of the federal consistency certification. To account for potential modifications or refinements to the design concepts as they proceed through development process, the staff report explains:

*As established through Commission review of past projects under Section 930.65 that involved modifications to previously reviewed consistency certifications, the Commission would consider if the change would cause the project to have an effect on any coastal use or resource substantially different than originally described and, as a result, would no longer be consistent with the Coastal Act. If the change is determined to not be substantially different and is still consistent with the Coastal Act, the project and proposed change could proceed. If the change is determined to be substantially different and no longer consistent with the Coastal Act, Commission staff would work with SANDAG to identify modifications or alternatives that could be implemented to achieve consistency and then bring them to the Commission for its consideration.*

### **North Coast Corridor Public Works Plan/Transportation & Resource Enhancement Program (PWP/TREP)**

The [North Coast Corridor PWP/TREP](#) is a 40-year plan for the entire transportation corridor between Oceanside and San Diego that includes railroad double-tracking, infrastructure improvements on Interstate 5, and bicycle and pedestrian projects. It was developed jointly by SANDAG and Caltrans, approved unanimously by CCC in 2014, and updated in 2016.

The PWP/TREP acts as a programmatic CCC permitting document for a suite of corridor projects including railroad and freeway improvements, bicycle and pedestrian projects, and environmental mitigation and preservation. While the pedestrian improvements proposed in this study were not specifically included in the PWP/TREP, they also pose no conflicts to any planned PWP/TREP improvements.



This study and the PWP/TREP both share a similar goal to improve multimodal mobility in the corridor in an environmentally sensitive manner. The PWP/TREP also provides general guidance from CCC on multimodal improvements in the corridor including policies, design/development strategies, and implementation measures that could inform future permitting and implementation of the concepts developed in this study.

## CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) APPROVAL

The CPUC regulates the safety and operations of railroads statewide, including review and approval of most physical and operational modifications. The project team met with CPUC staff three times throughout the study to review design and implementation requirements and will continue consultation through future project development activities.

All seven design concepts developed in this study will require consultation and approval by CPUC due to their proximity to the railroad, with the proposed at-grade crossings undergoing the highest level of review as detailed below.

### ***Approval of At-Grade Crossings***

The CPUC generally prohibits new at-grade crossings. [General Order 75-D](#) explains that “the Commission’s policy is to reduce the number of at-grade crossings on freight or passenger railroad mainlines in California.” Approval of new at-grade crossings therefore will require approval by CPUC as part of a discretionary decision process, with commissioners basing their review on site-specific factors, including an assessment of CPUC’s at-grade crossing fencing requirements.

CPUC staff reported that the critical questions in evaluating any proposed projects include:

- What are the actual safety issues in the project area?
- Will the proposed condition be safer than the existing condition?
- Are there other special considerations such as engineering or environmental constraints?

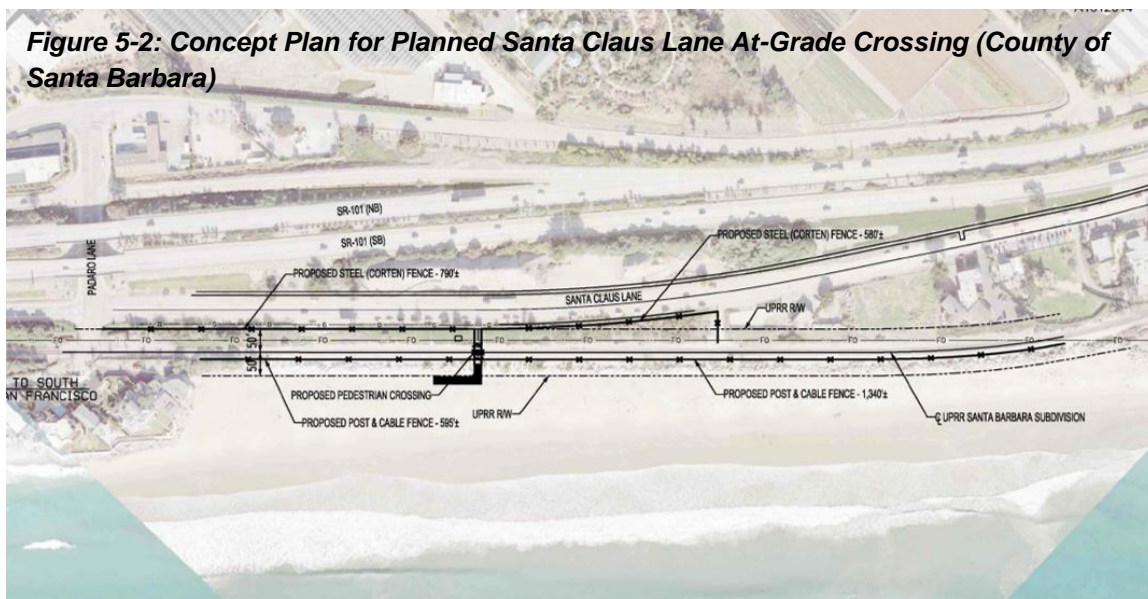
CPUC staff have cited several specific concerns for at-grade crossings in nearby sections of the railroad corridor, including the high frequency of trains, the high speed of trains, the curvature of the railroad tracks limiting visibility, and the history of safety incidents in the corridor.

### ***Potential Precedent: Santa Claus Lane At-Grade Crossing***

While CPUC policy generally prohibits new at-grade crossings, CPUC staff identified a recently approved at-grade crossing at Santa Claus Lane in Santa Barbara County that could serve as a model for potential at-grade crossing approvals in Del Mar. Located on the LOSSAN Rail Corridor near Carpinteria, the project has been permitted but is not yet constructed. Figure 5-1 shows the project location and current conditions, and Figure 5-2 is an excerpt from the approved concept plan. The proposed project includes fencing around the crossing on both sides of the railroad to control and channel pedestrian access.

As described by CPUC staff, factors in the Santa Claus Lane approval included:

- Grade separation study concluding that overcrossing and undercrossing options were infeasible (discussed below)
- Inclusion of channelization fencing on both sides of the railroad to control access



— Support from the railroad owner

CPUC staff also noted that the railroad in Santa Barbara County may have lower train volumes than Del Mar, which could be considered in the discretionary decision by commissioners. CPUC could also consider the temporary nature of the crossing in light of the plans to relocate the railroad off the bluffs, as discussed in Section 2 of this report.

### **Grade Separation Study for At-Grade Crossings**

A major factor in CPUC approval of the Santa Claus Lane at-grade crossing was a grade separation study that evaluated options for potential overcrossings and undercrossings. CPUC staff specifically requested in its letter to applicants: “As part of considering and approving the construction of new at-grade crossing, the CPUC staff requires applicants to conduct a thorough study of a grade separation, exploring all practicable designs of pathways crossing under and over the railroad mainline track.”



The grade separation study for Santa Claus Lane is available in Appendix E and included the following elements:

- Landward and seaward field investigation/geotechnical studies data
- Concept geometrics
- Policy analysis
- Mean high tide study data
- California Coastal Commission staff reports or other reviews
- Projected number of users
- Traffic data

The study concluded that an overcrossing was infeasible for several reasons, including CCC concerns about shoreline protective devices and visual impacts, and that an undercrossing was infeasible due to flooding concerns.

## ENVIRONMENTAL REVIEWS

The access improvement project would be reviewed under the California Environmental Quality Act (CEQA), and potentially also the National Environmental Policy Act (NEPA) if federal funds are used. This process would include an initial review of potential environmental impacts under a variety of topic areas and may require technical studies where needed to substantiate those findings. The results of the environmental analyses also may prompt supporting mitigation measures.

The recently approved at-grade crossing at Santa Claus Lane received a Mitigated Negative Declaration under CEQA (available in Appendix E). This environmental review identified some potential impacts and sufficient mitigations to reduce those impacts below significant levels. The type of environmental document, determination of significance of impacts to resources and potential mitigation will be made by the appropriate CEQA and NEPA lead agencies.

## AUDIBLE SAFETY SYSTEMS FOR AT-GRADE CROSSINGS

At-grade crossings require audible safety systems that would create noise impacts in the surrounding community. Typically, a new at-grade crossing requires warning bells at the crossing itself, as well as the sounding of train horns when trains approach the crossing from either direction, beginning one-quarter mile away.

One potential alternative to the routine sounding of train horns may be a wayside horn, which simulates the sound of train horns from a stationary location at the at-grade crossing itself. This would require one of the following additional regulatory approvals, either of which could be pursued separately, but are not requirements for the implementation of at-grade crossings:

- **Quiet Zone:** The Federal Railroad Administration (FRA) allows the creation of quiet zones that allow wayside horns in lieu of routine train horns. However, FRA regulations require quiet zones to be “bookended” on each side by vehicular crossings with quiet zone status. Attaining quiet zone status for pedestrian at-grade crossings in Del Mar therefore would require attaining quiet zone status for the roadway at-grade crossing at Sorrento Valley Road, located south of the study area in the City of San Diego.



- **Wayside Horn Waiver:** CPUC staff reported that the existing at-grade pedestrian crossings in San Clemente—one of which is pictured in Figure 5-3—received waivers from the Federal Railroad Administration (FRA) to implement wayside horns at the crossings in lieu of train horns, which are required by state law. However, CPUC staff also reported that FRA has made it clear that further waivers are highly unlikely, and that changing state law to allow wayside horns at pedestrian crossings would be the only way to remove the need for the FRA waiver. SANDAG or other stakeholder agencies may choose to pursue this option via the state legislature.

A recent study in Encinitas—the Montgomery Avenue Noise Study Wayside Horn Demonstration Acoustic Monitoring Report (2017), included as Appendix F—showed that wayside horns could reduce community noise impacts compared to train horns, with the sound from train horns traveling farther into the community and at a higher intensity. The study examined both 92-decibel and 80-decibel types of wayside horns, noting: “The current standards for wayside horns are applicable to roadway crossings and consist of 92 decibel horns. However, at similar pedestrian-only quiet zone crossings in San Clemente, the CPUC approved a modified wayside horn of 80 decibels.”

Regardless of the specific audible systems used, implementation of any at-grade crossing in Del Mar could create new noise impacts in the community through warning bells, train horns, and/or wayside horns. Currently train horns are not sounded routinely in the study area, with the nearby Coast Boulevard at-grade crossing using a wayside horn in lieu of routine train horns.

The at-grade crossing concepts developed in this study presume standard requirements for warning bells at the crossing and the routine sounding of train horns. The concepts do not include wayside horns or quiet zone elements because those elements are outside the scope of this study and are not requirements for the implementation of at-grade crossings. Additional approvals for wayside horns or other quiet zone elements could be pursued in the next phases of project development.

**Figure 5-3: At-Grade Crossing in San Clemente (SANDAG)**





## ACCESSIBILITY DESIGN

Design requirements for accessibility are governed by several laws and guidelines as summarized below. The design concepts advanced in this study include several accessibility options to help facilitate future design decisions by stakeholder agencies.

The Americans with Disabilities Act (ADA) requires new facilities to be designed to accommodate users with mobility impairments. Current [ADA Accessibility Standards](#) (2010) require new facilities to include ADA-compliant design unless it is “structurally impracticable,” which is defined as “the unique characteristics of terrain prevent the incorporation of accessibility features.” If full compliance with the 2010 ADA Accessibility Standards is determined to be structurally impracticable, compliance with the standards is required to the extent that it is not structurally impracticable. In that case, any portion of the facility that can be made accessible would be made accessible to the extent that it is not structurally impracticable.

While ADA does not make any explicit distinctions or exceptions for beach access trails or impacts to sensitive resources. A separate federal law, the Architectural Barriers Act (ABA) of 1967, does make these distinctions as detailed in Chapter 10 of the [ABA Accessibility Standards](#) (codified as Appendix D of [36 C.F.R. Part 1191](#)). Use of ABA design standards typically is limited to federal projects on federal lands, or federally funded projects in which ABA standards are explicitly prescribed by the funding source. The U.S. Access Board’s [Accessibility Standards for Federal Outdoor Developed Areas](#) explains:

*The new provisions for trails, picnic and camping facilities, viewing areas, and beach access routes are not included in the Department of Justice’s (DOJ) 2010 ADA Standards and have no legal effect on state and local governments and private entities subject to DOJ’s ADA regulations. State and local governments and private entities may, however, use the provisions for guidance when designing trails, picnic and camping facilities, viewing areas, and beach access routes.*

Although not binding regulations, the ABA standards could provide guidance for outdoor trails and accessways sited in areas with steep terrain or where other environmental laws may preclude full compliance with accessibility standards.

In this conceptual study, the project team found that that the seven design concepts are physically feasible from an engineering perspective, although they may pose a variety of potential impacts and challenges. Of note is the fact that the segment of sandy beach below the bluffs in the project area is narrow and can be inundated with water during certain times of the day and more consistently during certain times of the year. The timing of inundation in this section of the beach is projected to worsen over time with projected sea level rise. In addition, potential changes to the visual character of the bluffs—including associated grading (beyond the grading that will be performed as part of the DMB5 Stabilization Project), retaining walls, and the potential modification of the topography of the bluffs—could present conflicts with coastal policies and potential permitting issues. These issues will be further evaluated in the next phase of project development.

The project team plans to present the concepts for public feedback on accessibility design considerations, including a presentation to SANDAG’s Social Services Transportation Advisory Council (SSTAC). The project team may consult the U.S. Department of Justice and/or any additional federal or state funding entities for additional guidance during future project development activities.



## CONSTRUCTABILITY

The pedestrian improvements developed in this study present a range of constructability considerations, with a major factor being the degree to which construction requires access to the NCTD railroad right-of-way. This is summarized below, followed by a discussion of constructability considerations for the north-south trail and railroad crossings.

### ***Railroad Access***

As shown in the conceptual plans in Section 4, all proposed facilities have at least some elements in the NCTD railroad right-of-way, which at minimum will require a right-of-entry permit from NCTD to construct, as well as NCTD-approved flagging protection staff during construction activities. Additionally, all workers in the right-of-way will be required to complete NCTD's federally mandated roadway worker protection (RWP) program.

NCTD requires that work within the railroad right-of-way be performed in a manner that limits impacts to train operations to the extent practicable. The railroad "foul zone" is defined by NCTD as within 25 feet of the nearest running rail. Any work within the foul zone should be performed such that it can be stopped and cleared of the tracks prior to a train entering the work limits. Equipment and workers may not be able to clear the foul zone in all cases when trains pass, but they must be cleared of the tracks and secured to prohibit movement near them.

As described in the following pages, most construction activities for the improvements developed in this study will fit into two categories with respect to railroad access:

- Some construction activities may require suspending railroad operations. This typically would occur during nighttime work periods or multi-day absolute work windows (AWWs) which are typically scheduled several times per year.
- Some project elements may be constructed primarily from adjacent street ends or beaches, with little or no entry into the railroad foul zone. All work in the NCTD right-of-way still will require a right-of-entry permit, flagging protection, and RWP.

NCTD provides additional guidance in the [Working Around the Rails](#) section of its website.

### ***Constructability Considerations for North-South Trail***

The north-south trail has varying constructability considerations depending on its surrounding context, which is shown in the conceptual plans in Section 4. For construction purposes, the 0.8-mile trail is divided into three potential construction areas described below.

#### ***Seagrove Park to 8<sup>th</sup> Street***

The northern section of the north-south trail is highly constrained by the railroad and adjacent residential development. While the adjacent street ends and alleys will provide some access, construction of the full trail will require entry into the railroad corridor. This will require a right-of-entry permit, flagging protection, and RWP as described above.

Notable construction activities for the section from Seagrove Park to 8<sup>th</sup> Street will include materials delivery via street ends/alleys, materials staging—which is likely to require storage space within the railroad right-of-way—clearing vegetation, excavation, grading, constructing the path and supporting retaining walls, placing pedestrian bridges at Sea Orbit Lane and Lois Lane, and placing ditch crossings near 10<sup>th</sup> and 9<sup>th</sup> Streets. The walls, bridges, and ditch crossings likely will require construction via the railroad corridor and should be completed together, potentially during nighttime work periods or an AWW. Those elements



also should be comprised of prefabricated, modular materials to the greatest degree possible.

### *8<sup>th</sup> Street Culvert Area*

Just north of 8<sup>th</sup> Street, the north-south trail includes a proposed drainage culvert below graded fill, as shown in the conceptual plans and renderings in Section 4. This will require entry into the railroad corridor including right-of-entry permit, flagging protection, and RWP as described above. Mid-size equipment will be required to excavate and install the culvert, and these activities may enter the railroad “foul zone” resulting in operational impacts to the railroad.

Notable construction activities for the 8<sup>th</sup> Street culvert area will include materials delivery via street ends/alleys, materials staging—which is likely to require storage space within the right-of-way near 8<sup>th</sup> Street—clearing vegetation, excavating, placing the precast culvert, grading and fill, and constructing the path. The culvert should be comprised of prefabricated materials to the greatest degree possible.

### *8<sup>th</sup> Street to 4<sup>th</sup> Street*

This southern section of the north-south trail is in a wider part of the NCTD railroad right-of-way, located farther east of the railroad tracks than the section north of 8<sup>th</sup> Street and situated along bluffs that ascend to the south. While construction will require right of entry, flagging protection, and RWP, it is sufficiently far from the railroad “foul zone” to avoid operational impacts.

Notable construction activities for the section from 8<sup>th</sup> Street to 4<sup>th</sup> Street will include materials delivery via street ends/alleys, materials staging—which is likely to require storage space within the right-of-way—clearing vegetation, grading, constructing the path, placing a timber walkway over the drainage facility between 7<sup>th</sup> and 8<sup>th</sup> Streets, and placing ditch crossings near 7<sup>th</sup> and 6<sup>th</sup> Streets. The ditch crossings should be comprised of prefabricated materials to the greatest degree possible. Compared to the section north of 8<sup>th</sup> Street, this southern section will require substantially less excavation and use of heavy equipment.

## **Constructability Considerations for Railroad Crossings**

The proposed railroad crossings have distinct constructability considerations across three areas as described below, all of which are shown in the conceptual plans in Section 4.

### *Western Bluffs (All Crossings)*

The proposed ramps, natural stairs, and retaining walls will require construction access from the beach side, similar to recent work conducted for SANDAG’s Del Mar Bluffs Stabilization projects. Substantial portions of the western bluffs are within the NCTD railroad right-of-way, requiring at minimum a right of entry permit and RWP, with flagging protection required for initial construction along the bluff top. However, once the planned channelization fencing along the bluff top is installed, future work along the bluffs is not likely to require flagging protection given the access control provided by the fencing and the overall distance from the railroad “foul zone.”

Notable construction activities for the western bluffs will include materials delivery via beach; materials staging (which also is likely to require storage space on the beach); clearing vegetation; grading; constructing the path and supporting retaining walls; and constructing a beach access point at a planned seawall opening. The walls should be comprised of prefabricated, modular materials to the greatest degree possible. The natural stairs proposed in some concepts entail largely manual work, requiring less heavy equipment than other elements once the supporting retaining walls and grading activities are complete.



### *At-Grade Crossings and East Side Paths (11<sup>th</sup> Street and 7<sup>th</sup>-8<sup>th</sup> Streets)*

Construction of the at-grade crossings will pose operational impacts to the railroad and should be done during nighttime work periods or an AWW. Construction of the east side paths will require a right-of-entry permit, flagging protection, and RWP as described above. Materials and equipment required to construct both the crossing and east side paths can be delivered via street ends or alleys.

Notable construction activities for the at-grade crossings and east side paths will include materials delivery via street ends/alleys; materials staging (which is likely to require storage space within the right-of-way); clearing vegetation; grading; constructing the east side path; constructing the signal house; installing channelization fencing; and constructing the crossing itself including required gates and warning devices.

### *Undercrossings and East Side Path (7<sup>th</sup>-8<sup>th</sup> Streets)*

Construction of the undercrossing will pose operational impacts to the railroad and should be done during an AWW. Construction the east side path will require a right-of-entry permit, flagging protection, and RWP as described above. Both the undercrossing and east side path will require large equipment due to substantial excavation and construction activities. Materials and equipment can be delivered via street ends or alleys.

Notable construction activities for the undercrossing and east side path at 7<sup>th</sup>-8<sup>th</sup> Streets will include materials delivery via street ends/alleys; materials staging (which also is likely to require storage space within the right-of-way near 8<sup>th</sup> Street); clearing vegetation; substantial excavation (for both the undercrossing and east side path); grading; constructing the east side path and supporting walls; removing a section of railroad track; placing the precast box culvert via crane from 7<sup>th</sup> or 8<sup>th</sup> Streets atop a bed of leveling gravel; waterproofing the culvert walls; backfilling the area; and finally restoring, balancing, and welding the railroad tracks. The walls and box culvert should be comprised of prefabricated, modular materials to the greatest degree possible.

### ***Potential Removal of Pedestrian Facilities After Railroad Realignment***

As discussed in Section 2, SANDAG is currently studying options to realign the railroad away from the coastal bluffs as part of its [San Diego Regional Rail Alignment Study](#). Once the railroad is relocated off the bluffs, stakeholder agencies will assess the study area's physical conditions and evaluate whether infrastructure on the bluffs may need to be removed to ensure public safety and return the bluffs to a more natural state.

## **NEXT STEPS**

This section is currently being developed based on input from stakeholder agencies and will be updated in the final report. In summary, the next steps for implementation include:

- Allocation of funding & grant applications
- Design, including final concept selection, grade separation study, accessibility decisions, and community/stakeholder input
- Environmental review
- CCC approval
- CPUC approval of new crossings
- City & NCTD right-of-way approvals, including maintenance & liability agreements
- Construction