



SANDAG REGIONAL BIKEWAY PROGRAM

# ENCINITAS COASTAL RAIL TRAIL PLANNING

## EVALUATION OF POTENTIAL ALIGNMENTS

JUNE 19, 2020





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# 1 POTENTIAL ALIGNMENTS & METHODOLOGY

This final report for the SANDAG Encinitas Coastal Rail Trail Planning project evaluates the opportunities and constraints of potential Coastal Rail Trail (CRT) alignments within the City of Encinitas.

The CRT is a regional north-south facility that is parallel to—and in most locations shares right-of-way (ROW) with—the North County Transit District (NCTD) railroad corridor and Coast Highway 101. It is part of the SANDAG Regional Bikeway Program and is being implemented in segments. The most recently completed segment is in the Encinitas community of Cardiff-by-the-Sea, spanning 1.1 miles between Santa Fe Dr and Chesterfield Dr (shown in cover photo).

The project team evaluated the feasibility of three potential alignments across multiple segments of the study area and identified the most feasible alignment for future detailed study. This written report is accompanied by roll-plot exhibits in Appendix A that depict the potential alignments, as well as rough-order-of-magnitude cost estimates in Appendix B.

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## KEY ASSUMPTIONS

The evaluation followed these key CRT design assumptions for all alignments:

- **Minimum 16' Width.** The CRT should be at least 16' wide to provide a comfortable, two-way facility that meets regional standards. This includes 12' of travel way plus two 2' shoulders.
- **Within or Immediately Adjacent to NCTD ROW.** Consistent with the policies of the *North Coast Corridor Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP)*, the CRT should be “within or immediately adjacent to” the NCTD ROW. If required by environmental, safety or physical constraints, the CRT may be within 150' of the NCTD ROW. Any deviation from this provision would require a *PWP/TREP* amendment approved by the California Coastal Commission.
- **Minimum 20.5' Setback from Rail.** The CRT should be sited as far as possible from the railroad tracks to maximize comfort for path users. At a minimum, all development must be set back a minimum of 20.5' from the closest center of any existing and planned railroad tracks, to allow for NCTD maintenance access. This 20.5' setback was agreed to be NCTD and the City of Encinitas and is depicted on all exhibits.

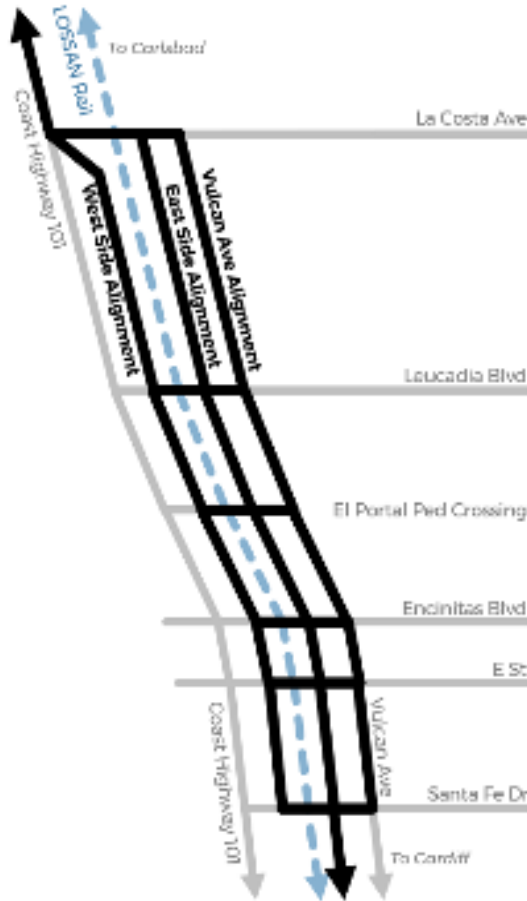
The memorandum in Appendix B-6 contains a full list of assumptions that informed the alignment evaluation and cost estimates.

## POTENTIAL ALIGNMENTS

The project team evaluated three alignments for each segment of the corridor, pictured at right:

- **West Side Alignment.**  
West of the railroad tracks, in/adjacent to NCTD ROW.
- **East Side Alignment.** East of the railroad tracks, in/adjacent to NCTD ROW.
- **Vulcan Ave Alignment.** East of the railroad tracks, in/adjacent to Vulcan Ave ROW.

This report is organized into sections based on the segments listed in the table below. Appendix A contains alignment exhibits and Appendix B contains rough-order-of-magnitude cost estimates for each segment.



Report Section & Segment	Alignment Exhibit
<b>Section 3: La Costa Ave to Encinitas Blvd</b>	
<i>West Side Alignment</i>	<i>Appendix A-1</i>
<i>East Side Alignment</i>	<i>Appendix A-2</i>
<b>Section 4: Leucadia Blvd Intersection</b>	<i>Appendix A-1/A-2</i>
<b>Section 5: Encinitas Blvd Intersection</b>	<i>Appendix A-3</i>
<b>Section 6: Encinitas Blvd to Santa Fe Dr</b>	<i>Appendix A-3</i>
<i>East Side Alignment (Long Term Scenario)</i>	
<i>Vulcan Ave Alignment (Near Term Scenario)</i>	
<b>Chesterfield Dr to Solana Beach</b>	<i>Appendix A-4 (City of Encinitas Striping Plan)</i>

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## EVALUATION METHODOLOGY

The project team used the following approach to evaluate the feasibility of potential alignments:

- **Segments & Key Intersections.** Divide study area into segments and key intersections based on geography and common characteristics:
  - **Connection to Carlsbad.** North of La Costa Ave in the City of Carlsbad, the CRT uses Class II bike lanes and sidewalks along Coast Highway 101.
  - **La Costa Ave to Encinitas Blvd.** Approximately 2.6 miles and includes the Leucadia Blvd intersection (below).
  - **Leucadia Blvd Intersection.** At-grade rail corridor crossing straddled by high-volume intersections with Coast Highway 101 and Vulcan Ave.
  - **Encinitas Blvd Intersection.** Roadway undercrossing of the rail corridor straddled by high-volume intersections with Coast Highway 101 and Vulcan Ave.
  - **Encinitas Blvd to Santa Fe Dr.** Approximately 0.9 miles and includes Encinitas Station.
  - **Connection to Solana Beach.** South of Chesterfield Dr into the City of Solana Beach, the CRT uses Coast Highway 101. Improved Class II bike lanes are currently under construction by the City of Encinitas.
- **Alignment Constraints & Opportunities.** For each segment, evaluate the constraints and opportunities of three potential alignments:
  - **West Side Alignment.** West of the railroad tracks, in/adjacent to NCTD ROW
  - **East Side Alignment.** East of the railroad tracks, in/adjacent to NCTD ROW
  - **Vulcan Ave Alignment.** East of the railroad tracks, in/adjacent to the Vulcan Ave ROW
- **Rail Corridor Crossing Locations.** Identify potential east/west crossing locations that could connect feasible segments.
- **Connectivity Assessment.** Based on constraints, identify alignments with significant constraints or challenges to implementation. Then, by evaluating connectivity with adjacent alignment options, identify subsequent pathways that depend on connections to the most highly constrained options.

## 2 SUMMARY EVALUATION RESULTS

This section summarizes the overall evaluation results and identifies the most feasible alignment recommended for further study. The subsequent sections contain detailed discussions of each segment and key intersection.

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### KEY CONSTRAINTS

Four general constraints were identified during the evaluation of alignments, which led to the identification of the most feasible route. These key constraints are:

- **Rustic Temporary Parking Pods.** This constraint results from the City of Encinitas’s North Coast Highway 101 Leucadia Streetscape project, which proposes to install 9 “rustic temporary parking pods” between Coast Highway 101 and the railroad tracks. The project features an eight-foot-wide strip of parallel parking alongside a thirteen-foot northbound drive lane, partially located in NCTD ROW per agreement between the City of Encinitas and NCTD.
- **Right-of-Way (ROW).** This constraint includes insufficient width for installation of the CRT due to limited existing ROW widths and private improvements adjacent to and within the public ROW.
- **Drainage.** Drainage improvements adjacent to the railroad tracks are proposed as part of the planned double-track project. The space required for these open channels or comparable facilities (see Section 3) constrains the available width for the CRT. Additionally, the City of Encinitas is currently conducting a comprehensive watershed study—expected to be complete in late 2020—that may identify additional drainage options for the corridor.
- **Intersection Operations.** Two major intersections at Leucadia Blvd and Encinitas Blvd were evaluated regarding pedestrian, vehicle and rail operations to determine the optimal route for the CRT through these intersections.

## ALIGNMENT FEASIBILITY

The table and graphic below summarize the results of the evaluation. The constraints limiting the feasibility of each segment are identified in the table, while the graphic shows the “most feasible” alignment containing the fewest current constraints.

- ✓ Generally feasible
- Potentially feasible (constraint is temporary or may be avoidable)
- ✗ Highly constrained (constraint is significant, and may be unavoidable or cost prohibitive)

Segment	West Side Alignment	East Side Alignment	Vulcan Ave Alignment
<b>La Costa Ave to Leucadia Blvd</b>	<ul style="list-style-type: none"> <li>— Temp. parking pods</li> <li>— Drainage channel</li> </ul>	<ul style="list-style-type: none"> <li>✗ Drainage channel</li> <li>✗ Crossing to west side</li> </ul>	<ul style="list-style-type: none"> <li>✗ ROW constraint</li> <li>✗ Crossing to west side</li> </ul>
<b>Leucadia Blvd Intersection</b>	<ul style="list-style-type: none"> <li>— Geometry constraints</li> </ul>	<ul style="list-style-type: none"> <li>✗ Rail crossing operations</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>
<b>Leucadia Blvd to El Portal Crossing</b>	<ul style="list-style-type: none"> <li>— Temp. parking pods</li> </ul>	<ul style="list-style-type: none"> <li>✗ Crossing to west side</li> <li>— ROW constraint</li> </ul>	<ul style="list-style-type: none"> <li>✗ ROW constraint</li> <li>✗ Crossing to west side</li> </ul>
<b>El Portal Crossing</b>	<ul style="list-style-type: none"> <li>— Feasible for rail corridor crossing with design revisions</li> </ul>		<ul style="list-style-type: none"> <li>✗ ROW constraint</li> </ul>
<b>El Portal Crossing to Encinitas Blvd</b>	<ul style="list-style-type: none"> <li>— Temp. parking pods</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>	<ul style="list-style-type: none"> <li>✗ ROW constraint</li> </ul>
<b>Encinitas Blvd Intersection</b>	<ul style="list-style-type: none"> <li>✗ Roadway traffic operations</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible with double-track</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>
<b>Encinitas Blvd to G St</b>	<ul style="list-style-type: none"> <li>✗ ROW constraint</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible with double-track</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>
<b>G St to Santa Fe Dr</b>	<ul style="list-style-type: none"> <li>✗ ROW constraint</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>	<ul style="list-style-type: none"> <li>✓ Generally feasible</li> </ul>



## MOST FEASIBLE ALIGNMENT

Given the constraints summarized in the table above, the project team has identified a “most feasible” alignment as described below and shown at right. While this alignment contains the fewest constraints based on current information, its identification in this report does not eliminate other potential options from consideration. With many adjacent projects and planning efforts underway in the corridor—including the City of Encinitas watershed study, expected to be complete in late 2020—this evaluation may be revised if conditions change or new information arises.

- **La Costa Ave to El Portal Crossing: West Side Alignment.** The rustic temporary parking pods being constructed by the City of Encinitas are designated as temporary and will require modification to fit the CRT.
- **El Portal Crossing to Encinitas Blvd: East Side Alignment.** The El Portal crossing can accommodate the CRT with design changes, and the East Side Alignment has sufficient room for the CRT without major impacts to Vulcan Ave.
- **Encinitas Blvd to G St (Near Term): Vulcan Ave Alignment.** Prior to construction of the double-track project, the most feasible alignment is a two-way cycle track along the east side of Vulcan Ave.
- **Encinitas Blvd to G St (Long Term): East Side Alignment.** With construction of the double-track project, the CRT can return to a Class I facility located in the rail ROW.
- **G St to Santa Fe Dr: East Side Alignment.** There is sufficient room to accommodate the CRT east of the rail corridor where it will connect with the recently completed segment at Santa Fe Dr.



## COST ESTIMATE SUMMARY

### ESTIMATED COSTS OF MOST FEASIBLE ALIGNMENT

The table below summarizes the estimated total project costs for the most feasible alignment identified by the project team, which is a hybrid of several evaluated segments. Appendix B-1 contains full cost estimates for each segment.

<b>Most Feasible Alignment Segment &amp; Key Elements</b>	<b>Estimated Cost *</b>
<b>La Costa Ave to El Portal Crossing</b> <i>West Side Alignment</i> <i>CRT above underground drainage channel (approx. 900')</i> <i>Removal of Coast Highway 101 parking pods as needed</i> <i>Signal modification at Leucadia Blvd</i>	<i>\$8.6 million</i>
<b>El Portal Crossing to Encinitas Blvd</b> <i>East Side Alignment</i> <i>Modification of El Portal Crossing with ramps</i>	<i>\$2.6 million</i>
<b>Encinitas Blvd to G St: Near Term Option</b> <i>Vulcan Ave Alignment</i> <i>4-way protected intersection at Encinitas Blvd</i> <i>CRT as 2-way cycle track on east side of Vulcan Ave with road diet</i>	<i>\$0.6 million</i>
<b>Encinitas Blvd to G St: Long Term Option</b> <i>East Side Alignment</i> <i>Bridge over Encinitas Blvd with double-track</i> <i>Signalization of E St/Vulcan Ave</i>	<i>\$4.4 million</i>
<b>G St to Santa Fe Dr</b> <i>East Side Alignment</i> <i>HAWK crossing north of G St (connects to Near Term Option)</i>	<i>\$1.9 million</i>

\* Includes construction, soft costs, and contingencies as detailed in Appendix B.



## ESTIMATED COSTS OF ALL ANALYZED SEGMENTS

The table below summarizes the estimated total project costs for each alignment segment analyzed by the project team. Appendices B-2 through B-5 (listed in the far-right column) contain full cost estimates for each segment.

<b>Alignment Segment &amp; Key Elements</b>	<b>Estimated Cost *</b>	<b>Cost Estimate Location</b>
<b>La Costa Ave to Encinitas Blvd: West Side Alignment</b> <i>CRT above underground drainage channel (approx. 900')</i> <i>Removal of Coast Highway 101 parking pods as needed</i> <i>Signal modification at Leucadia Blvd</i> <i>Tie-backs at Encinitas Blvd rail undercrossing</i>	<i>\$11.3 million</i>	<i>Appendix B-2</i>
<b>La Costa Ave to Encinitas Blvd: East Side Alignment</b> <i>Bridge overcrossing south of La Costa Ave</i> <i>CRT adjacent to drainage channel with retaining wall</i> <i>Realignment &amp; reconstruction of Vulcan Ave as needed</i> <i>Modification of El Portal Crossing with ramps</i>	<i>\$22.8 million</i>	<i>Appendix B-3</i>
<b>Encinitas Blvd to Santa Fe Dr: Near Term Option</b> <i>4-way protected intersection at Encinitas Blvd</i> <i>CRT as 2-way cycle track on Vulcan Ave with road diet</i> <i>HAWK crossing north of G St</i> <i>CRT adjacent to east side of rail corridor south of G St</i>	<i>\$2.4 million</i>	<i>Appendix B-4</i>
<b>Encinitas Blvd to Santa Fe Dr: Long Term Option</b> <i>Bridge over Encinitas Blvd with double-track</i> <i>CRT adjacent to east side of rail corridor</i> <i>Signalization of E St/Vulcan Ave with rail preemption</i>	<i>\$6.1 million</i>	<i>Appendix B-5</i>

\* Includes construction, soft costs, and contingencies as detailed in Appendix B.

### 3 LA COSTA AVE TO ENCINITAS BLVD

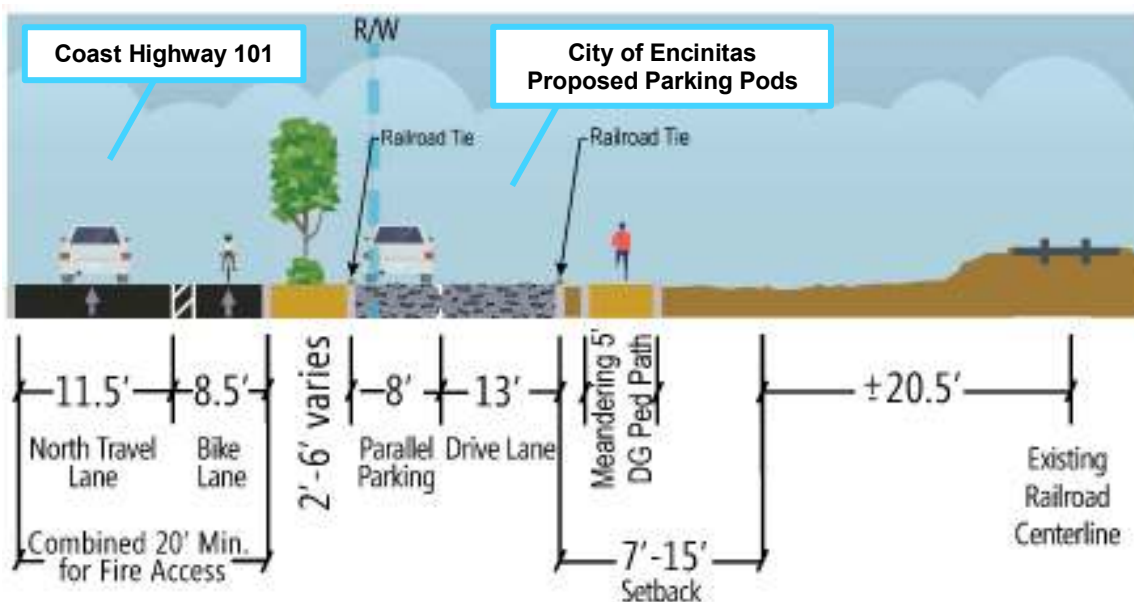
This northernmost segment is approximately 2.6 miles long and bound by many constraints, including the Leucadia Blvd intersection which is discussed in more detail in Section 4. Please refer to the alignment exhibits in Appendix A and cost estimates in Appendix B.

#### BOOKEND CONSTRAINTS

- **North Bookend: West Side Alignment at Coast Highway 101.** North of La Costa Ave heading into Carlsbad, the CRT must use Coast Highway 101—as all other alignments would require a new bridge structure across the environmentally sensitive Batiquitos Lagoon—meaning the facility must be west of the railroad corridor at this northern end.
- **South Bookend: Likely East Side/Vulcan Ave Alignment at Encinitas Blvd.** The CRT is highly likely to be east of the rail corridor in the adjacent segment south of Encinitas Blvd, as discussed in Section 5.

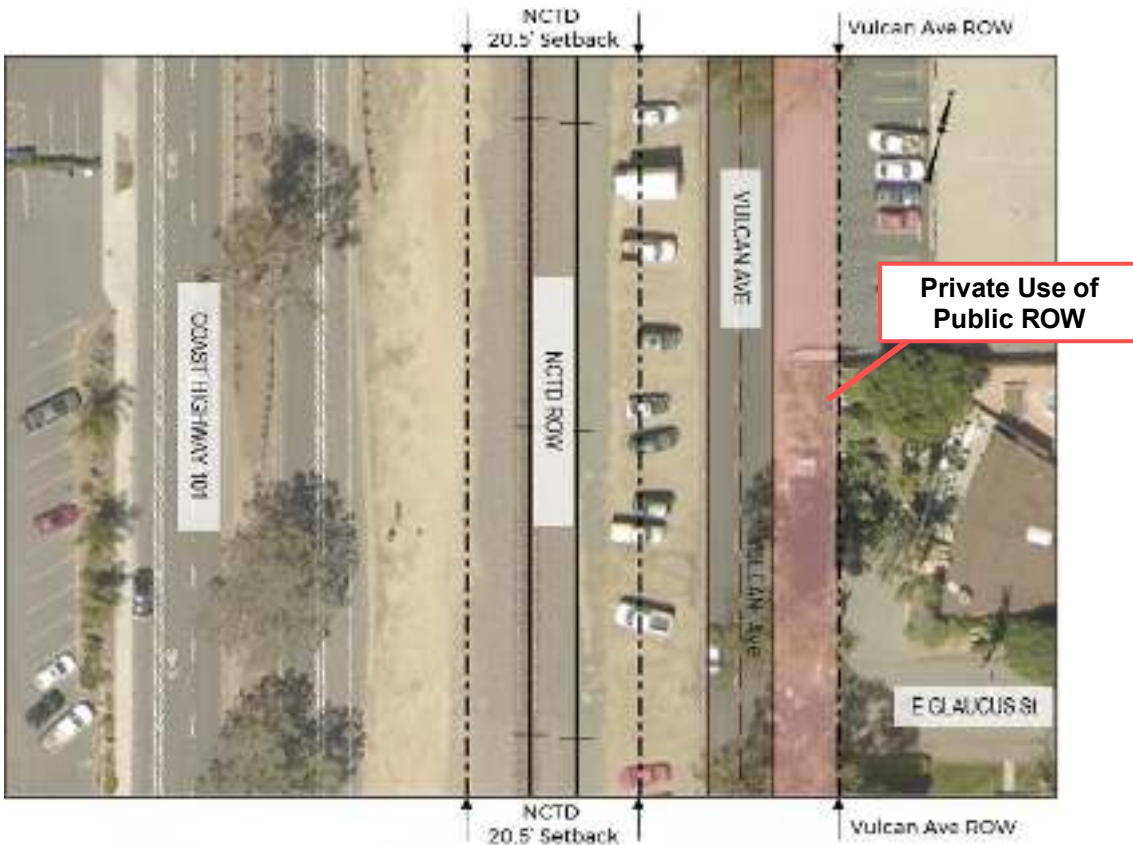
#### SEGMENT CONSTRAINTS

- **North Coast Highway 101 Leucadia Streetscape.** City of Encinitas project to calm traffic, install roundabouts, create new pedestrian crossings, add bike lanes, and improve pedestrian facilities on Coast Highway 101 from La Costa Ave to A St.
- **Rustic Temporary Parking Pods.** City of Encinitas project to install nine “rustic temporary parking pods” between Coast Highway 101 and the railroad tracks, featuring an 8’ strip of parallel parking alongside a 13’ northbound drive lane (see sample cross-section below). Partially located in NCTD ROW per agreement between City of Encinitas and NCTD.
- **La Costa to Swamis Double-Track.** SANDAG project to add a second main track to the railroad, which will shift the existing track west by approximately 5’ and add a new track to the east.



Source: City of Encinitas, 2019

- **Double-Track Drainage.** Two planned stormwater drainage channels required to accommodate the rail corridor double-track project (but which do *not* accommodate drainage from Coast Highway 101 or Vulcan Ave), plus one existing channel:
  - **West of Rail Corridor.** Planned channel, roughly from La Costa Ave to north of Grandview St (approx. 2,000')
  - **East of Rail Corridor.** Planned channel, roughly from La Costa Ave to Leucadia Blvd (approx. 1.3 miles)
  - **East of Rail Corridor.** Existing channel, roughly from Union St to Orpheus Ave (approx. 1,200')
- **Vulcan Ave Informal Parking.** Unofficial parking areas in the undeveloped space between the existing railroad track and the Vulcan Ave southbound travel lane, located partially in the NCTD ROW and partially in the Vulcan Ave ROW.
- **Vulcan Ave ROW.** While the Vulcan Ave ROW is approximately 50' wide, the effective roadway width in this segment is 28'-30', measured from the NCTD ROW to eastern edge of the northbound travel lane. As shown in the figure below, there is an additional 20' of roadway ROW east of the northbound travel lane. However, this area is currently being used by many fronting properties for parking, landscaping, and other private purposes.



## POTENTIAL CROSSING LOCATIONS

If required, the CRT may be able to cross the railroad at the following locations in this segment:

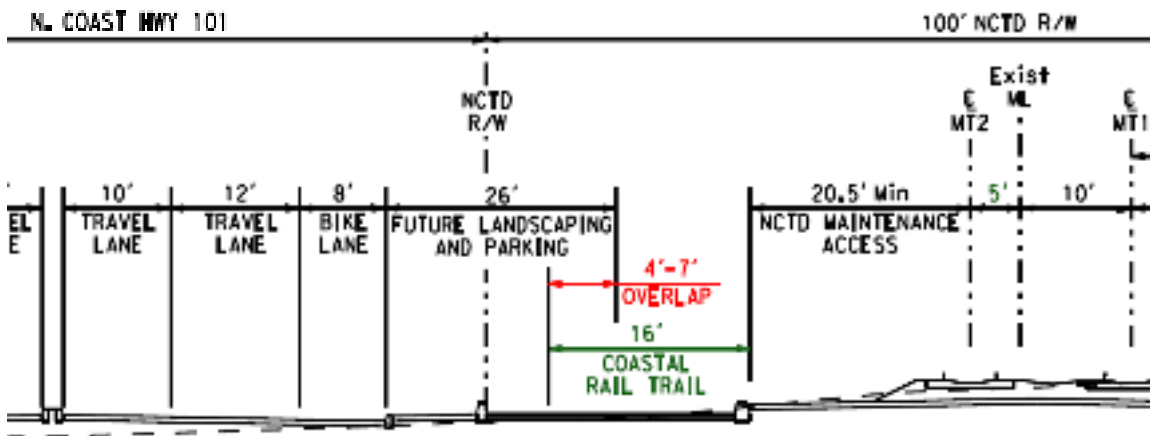
- **La Costa Ave.** This existing roadway overcrossing at the northern end of the segment is highly constrained and would be a high-stress facility for bike/ped travel. It is also difficult to access from the rail corridor due to the grade separation, likely requiring out-of-direction travel though the Vulcan Ave/La Costa Ave intersection, which also would require additional safety improvements.
- **Potential CRT Bridge.** A new grade-separated crossing for the CRT over the railroad corridor would add approximately \$2.5 million to the project cost. This includes an estimated construction cost of \$1.4 million (see Appendix B-3) plus soft costs and contingencies. The major cost drivers are walls needed to achieve sufficient slope and elevation, which are required irrespective of bridge materials. This option is likely cost prohibitive, as it would consume a large share of the overall CRT project budget.
- **Leucadia Blvd.** This existing roadway crossing at the southern end of the segment is discussed in more detail in Section 4. It currently contains a pedestrian crossing of the railroad along the north side of Leucadia Blvd.
- **El Portal St/Union St.** This planned pedestrian undercrossing is in design by SANDAG in collaboration with the City of Encinitas. The current design includes stairs on the east side of the railroad and pathway widths that are narrower than CRT assumptions.
- **Encinitas Blvd.** This existing roadway undercrossing at the southern end of the segment is constrained by travel lanes and abutting bridge structures. As discussed below, the West Side Alignment north of Encinitas Blvd could cross to the east side of the railroad corridor using tie-backs under this railroad bridge.
- **Potential New Pedestrian Crossings.** The City of Encinitas *Cross-Connect Implementation Plan* is currently prioritizing and developing design concepts for potential new pedestrian crossings at the locations below. However, the ultimate timeline, compatibility with CRT, and funding for these projects is unknown.
  - Bishop's Gate Rd
  - Grandview St/Hillcrest Dr
  - Sanford St/Jupiter St
  - Phoebe St/Glaucus St
  - Daphne St/Basil St
  - Marcheta St/Orpheus Ave
  - A St/Sunset Dr

## WEST SIDE ALIGNMENT

The West Side Alignment in this segment is mainly constrained by the planned parking pods just east of Coast Highway 101, in addition to the double-track project and drainage requirements. Please refer to the alignment exhibit in Appendix A-1 and cost estimate in Appendix B-2.

### LA COSTA AVE TO LEUCADIA BLVD

**Key Constraint – Parking Pods.** The parking pods are proposed by the City of Encinitas to meet community goals and the California Coastal Commission permit requirement (see Appendix C) to provide 176 parking spaces between Coast Highway 101 and the railroad as part of the North Coast Highway 101 Leucadia Streetscape project. The planned parking pods constrain a West Side Alignment, with 5 of 6 pods encroaching into the 16' space needed for the CRT. The width of the overlapping (conflicting) area varies in this segment, as shown in the sample figure below (excerpted from Appendix A-1). However, the parking pods are considered a temporary improvement per correspondence between the City of Encinitas, NCTD, and SANDAG (see Appendix C).



The CRT project team conducted a detailed analysis showing how the parking pods and CRT could be accommodated together, which is summarized in Appendix D. The City considered this compromise solution but decided to proceed with construction of the parking pods as designed, to avoid delaying the Streetscape project. Modifications to these temporary improvements can and will be made by the City in the future as needed to accommodate the CRT or other NCTD improvements. The potential loss of the temporary parking will be a future challenge for the City to overcome prior to construction of the CRT or double-track projects.

**Key Constraint – Drainage Channel.** From La Costa Ave to just north of Grandview St, the double-track project requires a drainage channel west of the tracks:

- For an approx. 800' segment north of Bishop's Gate Rd, any CRT West Side Alignment (irrespective of the adjacent parking pod) would require undergrounding this channel. Placing the CRT atop the recommended 24" reinforced concrete pipe is estimated to add approximately \$1.4 million to the project cost. This includes an estimated construction cost of \$0.8 million (see Appendix B-2) plus soft costs and contingencies.

Alternately, the CRT alignment could use Coast Highway 101 north of Bishop's Gate Rd. While feasible, these Class II bike lanes are less desirable for the CRT than a Class I/IV protected facility.

- Between Bishop’s Gate Rd and Grandview St, the drainage channel also conflicts with a planned parking pod.

## LEUCADIA BLVD INTERSECTION

Alignment options for the Leucadia Blvd intersection are discussed in Section 4.

## LEUCADIA BLVD TO ENCINITAS BLVD

**Key Constraint – Parking Pods.** Like the segment north of Leucadia Blvd, the planned parking pods would severely constrain a West Side Alignment south of Leucadia Blvd. All 4 pods in this segment—2 north of El Portal St and 2 south of El Portal St—encroach into the 16’ space needed for the CRT. The width of the overlapping (conflicting) area ranges from 1’ to 12.5’.

**Key Constraint – Private Parcels Near A St.** Beginning near A St approximately 700’ north of Encinitas Blvd, several private parcels form a wedge shape between Coast Highway 101 and the rail corridor. The most feasible location for the West Side Alignment is east of these parcels, immediately adjacent to the rail corridor setback.

The project team also considered a CRT alignment within Coast Highway 101 for this segment between A St and Encinitas Blvd. However, this option has major feasibility constraints including high vehicular volumes at the Encinitas Blvd intersection. It is discussed further in Section 5.

**Key Constraint – Crossing to East Side at Encinitas Blvd.** As described above and in Sections 5 and 6, the bookend constraint at Encinitas Blvd likely requires a connection to either the East Side Alignment or Vulcan Ave Alignment. As such, the West Side Alignment would need to cross under the railroad bridge on the north side of Encinitas Blvd—likely via construction of tie-backs to provide the necessary 16’ width—and then connect to one of the following alignments, which are further described in Sections 5 and 6:

- **Connection to East Side Alignment (Long Term).** The long-term scenario includes a CRT bridge adjacent to a new railroad bridge over Encinitas Blvd, to be constructed with the planned double-track project. The elevation difference of approximately 22’ could be accommodated with a loop ramp—shown in the exhibit and cost estimate with a length of 530’ and maximum grade of 4.1%—or a combination of elevators, ramps, and stairs.
- **Connection to Vulcan Ave Alignment (Near Term).** The near-term scenario includes an at-grade crossing of the Encinitas Blvd/Vulcan Ave intersection, connecting to a two-way cycle track along the east side of Vulcan Ave.

## ENCINITAS BLVD INTERSECTION

Alignment options for the Encinitas Blvd intersection are discussed in Section 5.



## EAST SIDE ALIGNMENT/VULCAN AVE ALIGNMENT

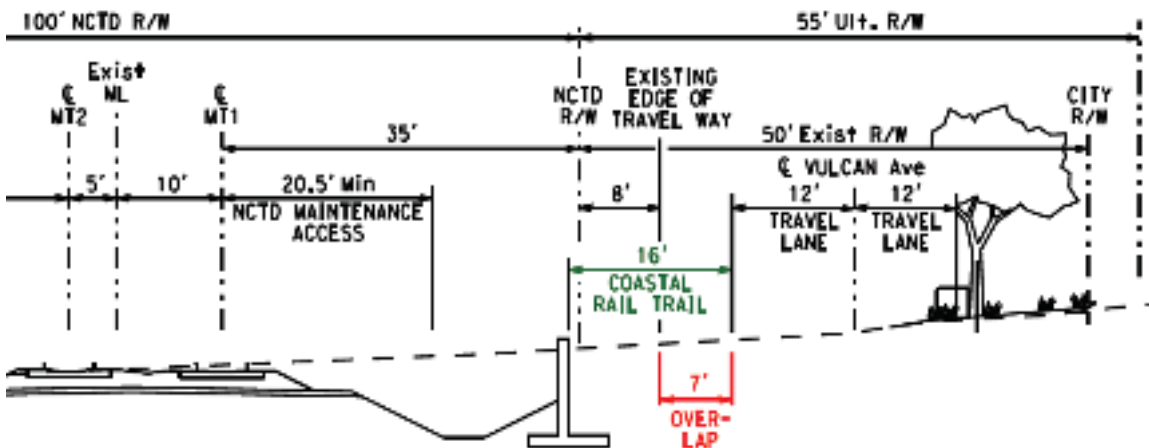
The East Side Alignment in this segment would be adjacent to—and in some locations overlapping—a potential Vulcan Ave Alignment. Both alignments are constrained by the drainage channel required for the double-track project and existing uses in the adjacent Vulcan Ave ROW. They are also constrained by the bookend requirement for a West Side Alignment north of La Costa Ave. Please refer to the alignment exhibit in Appendix A-2 and cost estimate in Appendix B-3.

### LA COSTA AVE TO LEUCADIA BLVD

**Key Constraint – Drainage Channel & Vulcan Ave ROW.** The double-track project includes a drainage channel between the new second track and the Vulcan Ave ROW running approximately 1.3 miles between La Costa Ave and Leucadia Blvd. A potential East Side Alignment would need to share space with either the drainage channel or the Vulcan Ave ROW.

The alignment exhibit in Appendix A-2 (and the excerpted figure below) depicts the latter option, with the CRT using the part of the Vulcan Ave ROW and adjacent to the drainage channel with retaining walls as needed. As detailed in Appendix B-3, implementing this alignment option between La Costa Ave and Encinitas Blvd is estimated to cost at least \$22.8 million. It includes the following modifications to Vulcan Ave:

- Realigning of Vulcan Ave to shift travel and parking lanes to the east
- Eliminating parking on the west side of Vulcan Ave
- Repurposing portions of the eastern edge of the Vulcan Ave ROW for roadway purposes that are currently being used by fronting properties for private purposes (cost includes demolition and roadway construction, but does not include potential legal and/or political costs of ROW reclamation)



Alternately, if the drainage channel is placed underground below the CRT, both facilities would fit without major changes to Vulcan Ave. However, this is estimated to cost approximately \$32.2 million (see flood control memo in Appendix B-3) and therefore is considered cost prohibitive. The major cost drivers are the size of the conveyance—estimated as a 72" reinforced concrete pipe—and the construction methods required to keep the rail corridor operational during construction. This option likely would include curb and gutter improvements and the installation of parallel parking along the west side of Vulcan Ave.

**Key Constraint – Crossing to West Side.** With the connecting CRT segment north of La Costa Ave aligned on Coast Highway 101, an East Side Alignment would need to cross to the west side of the rail corridor somewhere in this segment, either via a new CRT bridge—which is considered cost prohibitive due to its approximately \$2.5 million cost (discussed above and included in Appendix B-3)—or via potential new pedestrian crossings to be constructed by the City of Encinitas, which are currently in very early stages of development and unfunded.

## **LEUCADIA BLVD INTERSECTION**

Alignment options for the Leucadia Blvd intersection are discussed in Section 4.

## **LEUCADIA BLVD TO ENCINITAS BLVD**

Initial analysis indicates there is enough space to accommodate an East Side Alignment across this whole segment. Similar to the new CRT segment along San Elijo Ave in Cardiff, it likely would include curb and gutter improvements and the installation of parallel parking along the west side of Vulcan Ave. While the current informal parking would be eliminated, a substantial amount is likely to be replaced as parallel parking.

The CRT would incorporate the design of the planned pedestrian undercrossing at El Portal St/Union St, which includes a path along Vulcan Ave. This undercrossing also could serve as a rail corridor crossing point for the CRT, allowing it to shift from a potential West Side Alignment north of this location to the likely East Side Alignment/Vulcan Ave Alignment south of Encinitas Blvd (see Section 5).

## **ENCINITAS BLVD INTERSECTION**

Alignment options for the Encinitas Blvd intersection are discussed in Section 5.

## 4 LEUCADIA BLVD INTERSECTION

Leucadia Blvd is a major east-west roadway that crosses the rail corridor at-grade, with adjacent high-volume intersections at Coast Highway 101 and Vulcan Ave. Please refer to the alignment exhibits in Appendix A and cost estimates in Appendix B.

This intersection is highly constrained and will require further analysis, including coordination with the City of Encinitas, NCTD, and the California Public Utilities Commission (CPUC). The sections below describe these constraints and discuss several potential alignment options. However, none of the options are ideal solutions, and all pose potential feasibility issues that will require further study.

### BOOKEND CONSTRAINTS

The planned parking pods west of the rail corridor are the most notable constraint to both the north and south. However, the significant constraints at the Leucadia Blvd intersection are likely to dictate whether the CRT is ultimately aligned west or east of the tracks in these adjoining segments.

### INTERSECTION CONSTRAINTS

This section describes six key constraints that will affect potential CRT alignments:

- Double-tracking and NCTD maintenance setback
- North-south pedestrian movement
- Regulatory approvals
- Rail signal preemption
- Intersection geometry
- Traffic operations

### DOUBLE-TRACKING & NCTD MAINTENANCE SETBACK

The La Costa to Moonlight Double Track Project will add 2.1 miles of second main track to the rail corridor, including through the Leucadia Blvd crossing. The new track is expected to be located east of the existing track. Additionally, all development must be set back a minimum of 20.5' from the center of the closest existing and planned railroad tracks to allow for NCTD maintenance access. These two constraints severely limit the space available for the CRT between the railroad and Vulcan Ave.

**Potential Challenges.** The second track and 20.5' setback are likely to limit the feasibility of an East Side Alignment through this intersection. The 20.5' setback also creates a minor constraint for the West Side Alignment, but is not expected to render it infeasible, as the future new track will be located to the east of the existing track.

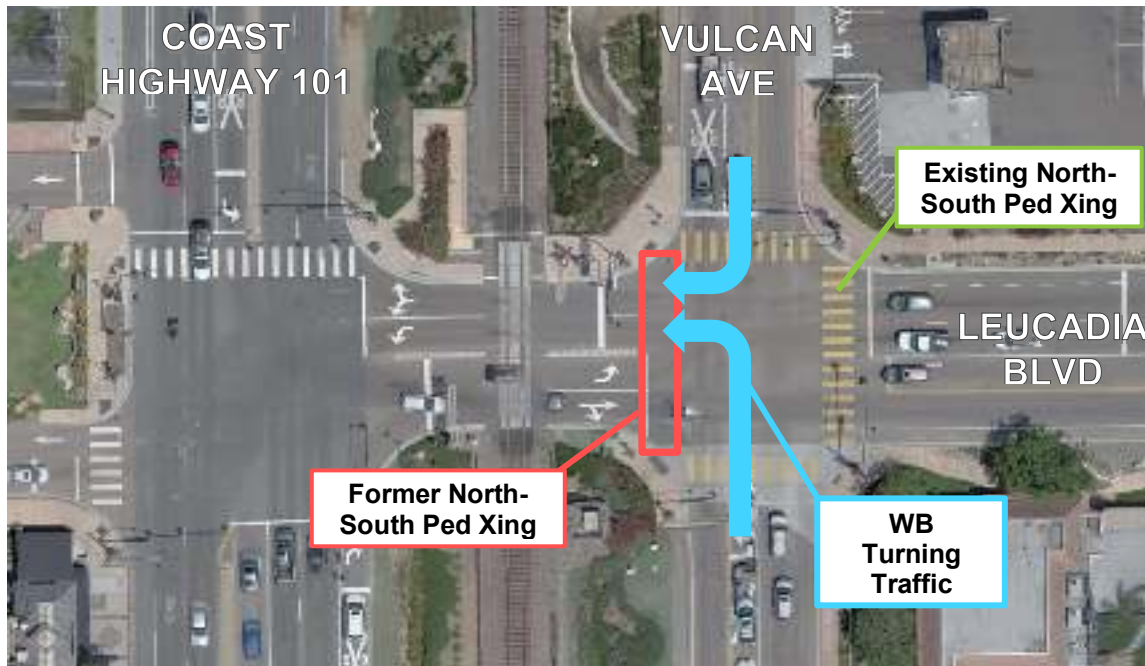
### NORTH-SOUTH PEDESTRIAN MOVEMENT

The rail crossing and adjacent intersections at Coast Highway 101 and Vulcan Ave are controlled by one coordinated signal. As shown in the figure below, the north-south movement of pedestrians is allowed *only* across the eastern leg of the Vulcan Ave/Leucadia Blvd intersection.

This is a change from prior to 2011 (documented in Google Maps), when north-south pedestrian movement also was allowed across the western leg of the Vulcan Ave intersection. Restricting pedestrians to the eastern edge of the intersection reduced delay for westbound traffic turning from Vulcan Ave (blue arrows in the figure below), which is a permitted movement during the

green phase. Pedestrian movement along this leg without a protected left-turn phase also poses a potential safety issue.

**Potential Challenges.** This is likely to limit the feasibility of an East Side Alignment through this intersection.



## REGULATORY APPROVALS

Any change to the operation of this at-grade crossing and associated intersections will require review and approval by NCTD, the City of Encinitas, and the CPUC. Approval by the CPUC is likely to follow the process outlined in General Order 88-B, which requires the consensus of all three agencies.

**Potential Challenges:** Reviews by NCTD, the City of Encinitas, and the CPUC will require substantial lead time and may reveal additional issues or requirements.

## RAIL SIGNAL PREEMPTION

When a train approaches the at-grade crossing, it activates a signal-preemption routine that clears the crossing of any conflicting traffic—first by ending any active north-south pedestrian phase (along the eastern leg of the Vulcan Ave intersection) by allowing sufficient time for pedestrians to clear the intersection, then by holding all traffic movements except the east-west clearance of vehicles away from the at-grade crossing.

**Potential Challenges.** Rail signal preemption may not be a limiting factor for the CRT. Based on field observations, the existing pre-emption routine already allows for the full north-south movement of pedestrians across the eastern leg of the Vulcan Ave intersection, which is the same duration that a multi-use path would require. These observations will need to be validated through more detailed study including consultation with the City of Encinitas, NCTD, and CPUC. Any modifications to signal operations involving rail signal preemption requires CPUC approval.



## INTERSECTION GEOMETRY & ASSOCIATED DRAINAGE

The distances are very short between the existing/proposed railroad tracks and the adjacent intersections of Leucadia Blvd with Coast Highway 101 and Vulcan Ave. These short distances limit the available space for the CRT. Immediately north of Leucadia Blvd on the east side of the track, an existing drainage channel runs to the north and is planned to be preserved and lengthened with the double-track project.

In addition, there is also a significant vertical grade change in the profile of Leucadia Blvd from the existing rail elevation west to Coast Highway 101. This presents drainage issues on the west side of the rail corridor, including sheet flow across the intersection during storm events.

**Potential Challenges.** The planned drainage channel highly constrains the East Side Alignment immediately north of Leucadia Blvd. In addition, the vertical grade change creates potential cross-slope for the CRT as well as potential drainage issues, and may constrain the West Side Alignment as discussed in the next section.

## TRAFFIC OPERATIONS

The *Traffic Impact Analysis (TIA)* for the City of Encinitas *North Coast Highway 101 Streetscape Improvement Project*, published in 2016, analyzed existing and future traffic conditions at the intersections of Leucadia Blvd/Coast Highway 101 and Leucadia Blvd/Vulcan Ave.

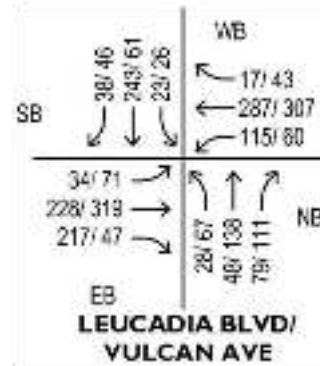
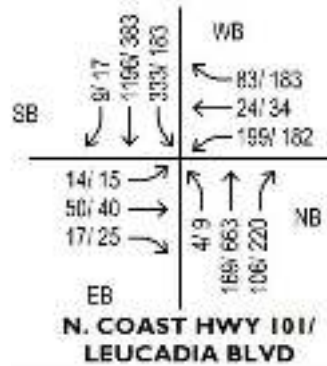
As shown in the diagrams and table below, in 2015, the *TIA* found that approximately 6,800 vehicles crossed the intersections during the combined AM and PM peak hours on a typical weekday. By 2035, the *TIA* projects this volume to grow by 24% to approximately 8,400 vehicles.

Without considering the effects of rail signal preemption, the *TIA* analysis found an intersection level of service (LOS) D in the AM peak hour and LOS C in the PM peak hour. In 2035, the *TIA* projects degradation to LOS E in the AM peak hour and LOS D in the PM peak hour.

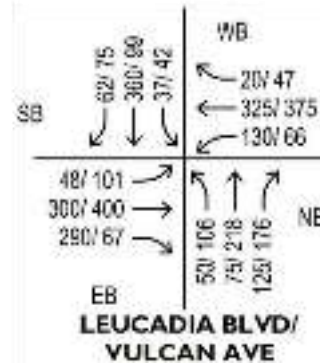
Rail signal preemption will further degrade intersection operations because it overrides the standard signal timing routine assumed in the *TIA* to give priority to approaching trains. Currently, there are 52 preemption events on a typical weekday (26 Amtrak, 22 COASTER, and 6 freight trains). Over the next decade, the number of preemption events is expected to nearly double, with the rail corridor accommodating an estimated 101 trains per day by 2030. This will further degrade intersection operations.

**Potential Challenges.** Intersection delay is a challenge at both intersections and could increase with CRT implementation. This will require in-depth analysis in the next phase of study including detailed coordination with the City of Encinitas and CPUC.

## 2015 Peak Hour Volumes



## 2035 Peak Hour Volumes



Source: North Coast Highway 101 Streetscape Improvement Project Traffic Impact Analysis (TIA), City of Encinitas, 2016

Year	Intersection	Peak Hour	Delay	LOS
2015	Coast Hwy 101 / Leucadia Blvd	AM	52.0	D
		PM	33.3	C
2035	Leucadia Blvd / Vulcan Ave	AM	52.2	D
		PM	44.2	D
	Coast Hwy 101 / Leucadia Blvd	AM	69.5	E
		PM	36.8	D
Leucadia Blvd / Vulcan Ave	AM	68.8	E	
	PM	47.9	D	

Source: North Coast Highway 101 Streetscape Improvement Project Traffic Impact Analysis (TIA), City of Encinitas, 2016

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## WEST SIDE ALIGNMENT

The most feasible CRT alignment through this intersection is the West Side Alignment. There are three potential options outlined below. Please refer to the alignment exhibit in Appendix A-1 (Options 1 and 2 depicted) and cost estimate in Appendix B-2 (Option 1 included).

### WEST SIDE ALIGNMENT OPTION 1: CRT WEST OF TURN LANE

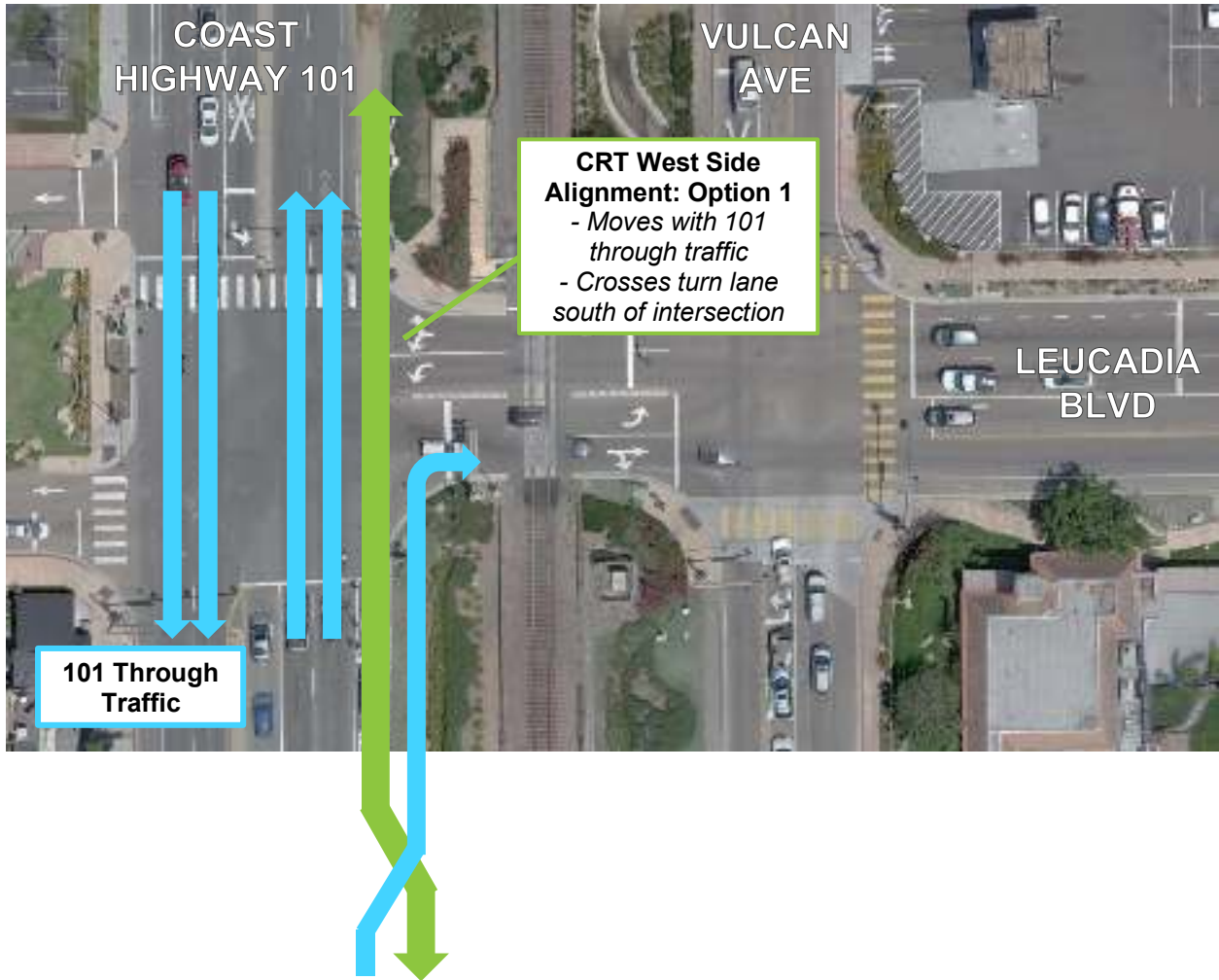
In Option 1, the northbound right-turn lane and two-way CRT would cross approximately 300' south of the intersection, removing the bike/ped/auto conflict from the turning movement and providing a clear pathway for autos. At the intersection, two-way CRT traffic (in green below) would receive a green signal overlapping the Coast Highway 101 through movements (in blue).

**Geometry & Associated Drainage.** From a geometric perspective, this option may be preferred to Option 2, since the vertical grade difference between the existing track and Coast Highway 101 is less on the west side of the right-turn lane. As such, the cross-slope of the CRT through the intersection is likely to be less severe than in Option 2. However, the vehicular turn lane will require further evaluation to determine the acceptable cross-slope and may require restrictions for long-axle vehicles. In addition, this alignment will require further evaluation of drainage needs given the tendency for sheet flow across the intersection during storm events.

Option 1 also would require a conflict area south of the intersection where autos and CRT users must cross paths. This crossing could be accomplished with striping and in-pavement flashers activated by cyclists or pedestrians. Advanced warning signs would alert drivers to the pending crossing. In addition, this option requires a smaller turning radius for vehicle right-turn movements, since the right turn lane is being shifted to the east, closer to the railroad corridor.

**Intersection Operations.** Option 1 would not affect the planned signal timing or add additional delay to the intersection. There would be a slight delay at the conflict area south of the intersection for right-turning vehicles.

This concept requires further analysis including detailed coordination with the City of Encinitas, NCTD, and CPUC.





## WEST SIDE ALIGNMENT OPTION 2: CRT EAST OF TURN LANE

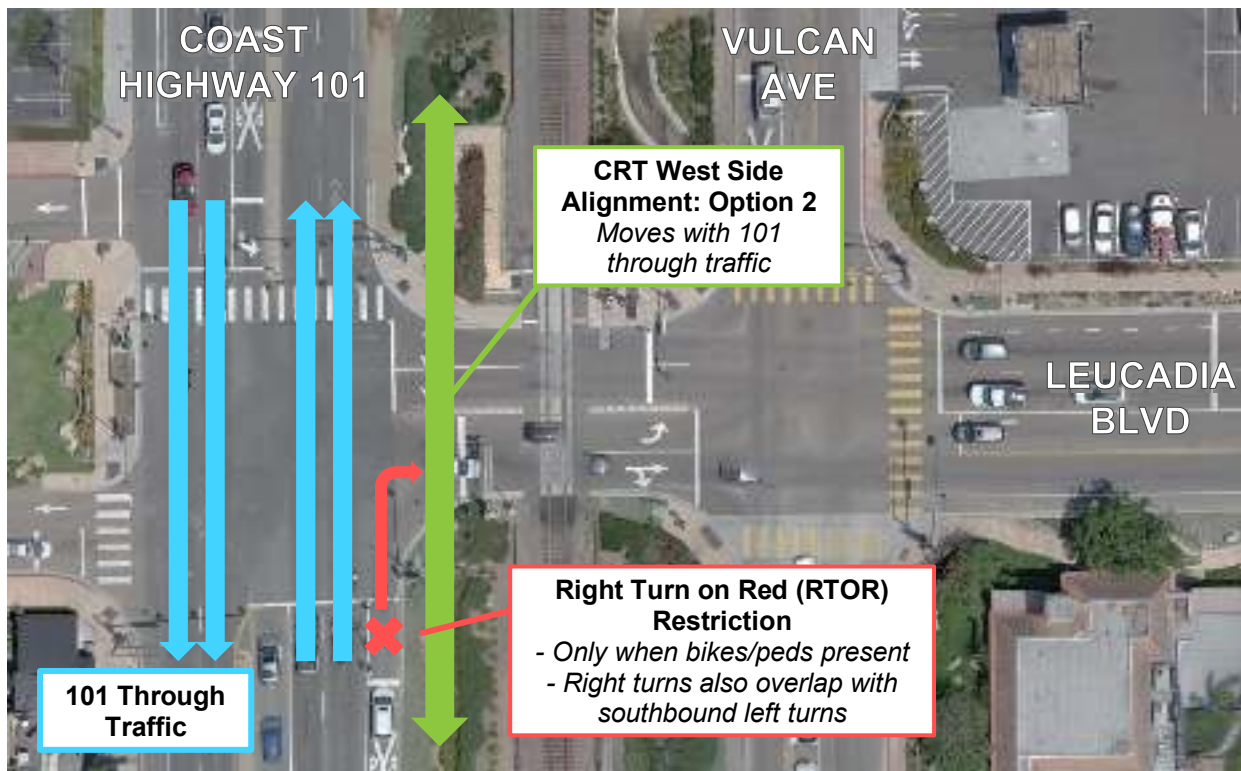
Option 2 avoids the southern bike/ped/auto conflict of Option 1 with minor modifications to intersection phasing to provide protection for CRT users. Like Option 1, at the intersection two-way CRT traffic (green) would receive a green signal overlapping the Coast Highway 101 through movements (blue arrows). However, Option 2 would prohibit northbound right turns on red (RTOR) across the bikeway (red arrows) during this phase *only* when cyclists or pedestrians are present. Northbound right turns also would share an overlap phase with southbound left turns.

**Geometry & Associated Drainage.** Option 2 is challenged by the vertical grade difference between the existing track and Coast Highway 101. Locating the CRT east of the right turn lane could result in a large CRT cross-slope through the intersection. However, this alignment provides for a larger turning radius for vehicle right-turn movements. In addition, this alignment will require further evaluation of drainage needs given the tendency for sheet flow across the intersection during storm events.

**Intersection Operations.** With the only change to operations being the RTOR prohibition for certain movements during a single phase, the project team's preliminary evaluation based on data in the *TIA* indicates this change would have little impact on overall intersection operations and delay. In addition, the overlap phase for northbound right turns and southbound left turns is sufficient to accommodate *TIA*-projected volumes in 2035.

Option 2 is not expected to affect rail signal preemption timing, as the existing preemption scheme needs to include the full time necessary for the north-south crossing along the eastbound leg of the Vulcan Ave intersection. This means Option 2 would not increase the total cycle length, and therefore would not affect the exiting rail preemption.

This concept requires further analysis including detailed coordination with the City of Encinitas, NCTD, and CPUC.



### **WEST SIDE ALIGNMENT OPTION 3: CRT BRIDGE OVER LEUCADIA BLVD**

Given the constraints of this complex intersection, an alternate option is constructing a grade-separated overcrossing for the CRT. As described above and included in Appendix B-3 (for a CRT crossing just south of La Costa Ave), a new grade-separated crossing for the CRT is estimated to add approximately \$2.5 million to the project cost. The major cost drivers are walls needed to achieve slope and elevation, which are required irrespective of bridge materials.

As with the other options for the Leucadia Blvd intersection, this option has many feasibility constraints and will require further study and including detailed coordination with the City of Encinitas, NCTD, and CPUC.

## EAST SIDE ALIGNMENT

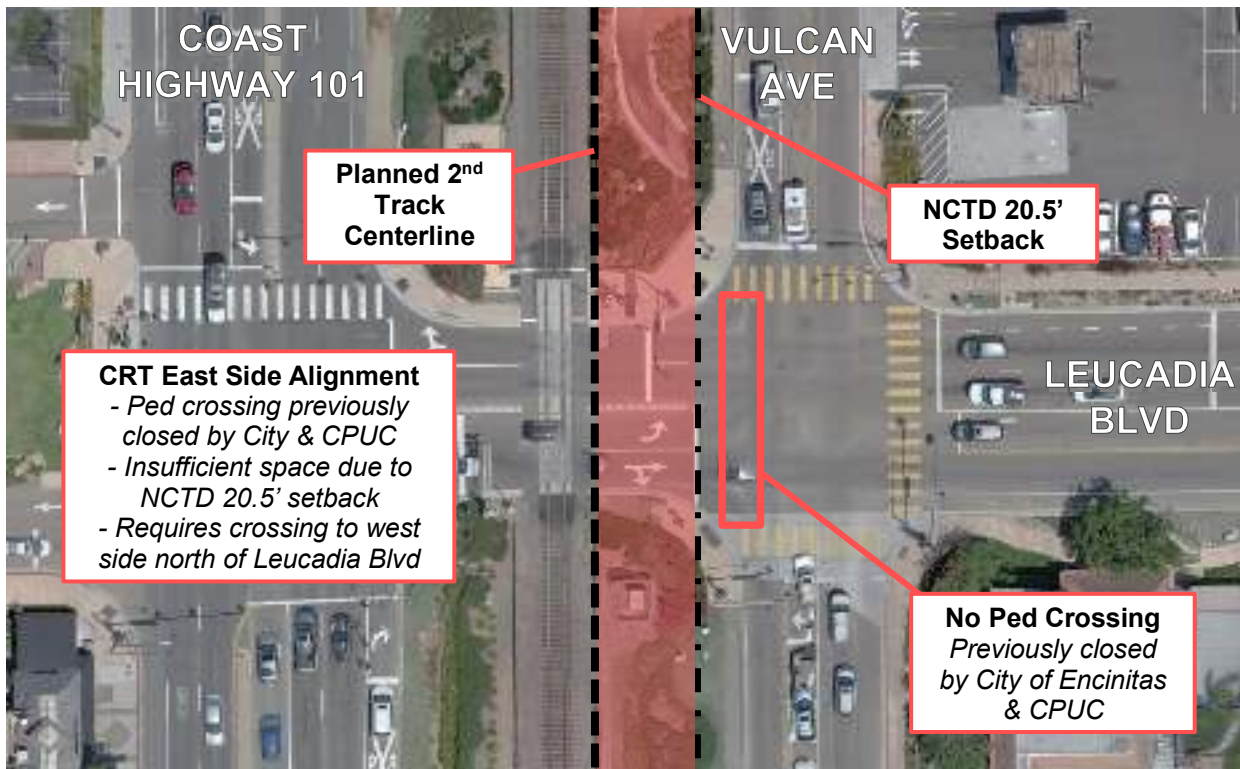
The East Side Alignment is highly constrained by several factors:

**Key Constraint – Double-Track and NCTD Maintenance Setback.** As described above, the La Costa to Moonlight Double Track Project is expected to construct a second railroad track east of the existing track, which also will include a 20.5-foot maintenance setback. Additionally, an existing and planned drainage channel constrain the CRT immediately north of Leucadia Blvd.

**Key Constraint – North-South Pedestrian Operations.** As described above, current operations allow the north-south movement of pedestrians *only* across the eastern leg of the Vulcan Ave/Leucadia Blvd intersection. Just as north-south pedestrian crossings are no longer allowed across the western leg of the intersection, an East Side Alignment is similarly constrained.

**Key Constraint – Crossing to West Side.** With the connecting CRT segment north of La Costa Ave aligned on Coast Highway 101, an East Side Alignment would need to cross to the west side of the rail corridor somewhere between Leucadia Blvd and La Costa Ave. Options evaluated include:

- **La Costa Ave.** The existing bridge is highly constrained.
- **Potential New Pedestrian Crossings.** The City of Encinitas is studying new grade-separated rail crossings and has identified two potential areas—Grandview St/Hillcrest Dr and Sanford St/Jupiter St—as two of the highest-priority locations for implementation. However, the projects are in very early stages of development and currently unfunded.
- **New CRT Bridge.** A new grade-separated crossing for the CRT is estimated to add approximately \$2.5 million to the project cost, as described above and included in Appendix B-3. The major cost drivers are walls needed to achieve slope and elevation, which are required irrespective of bridge materials.



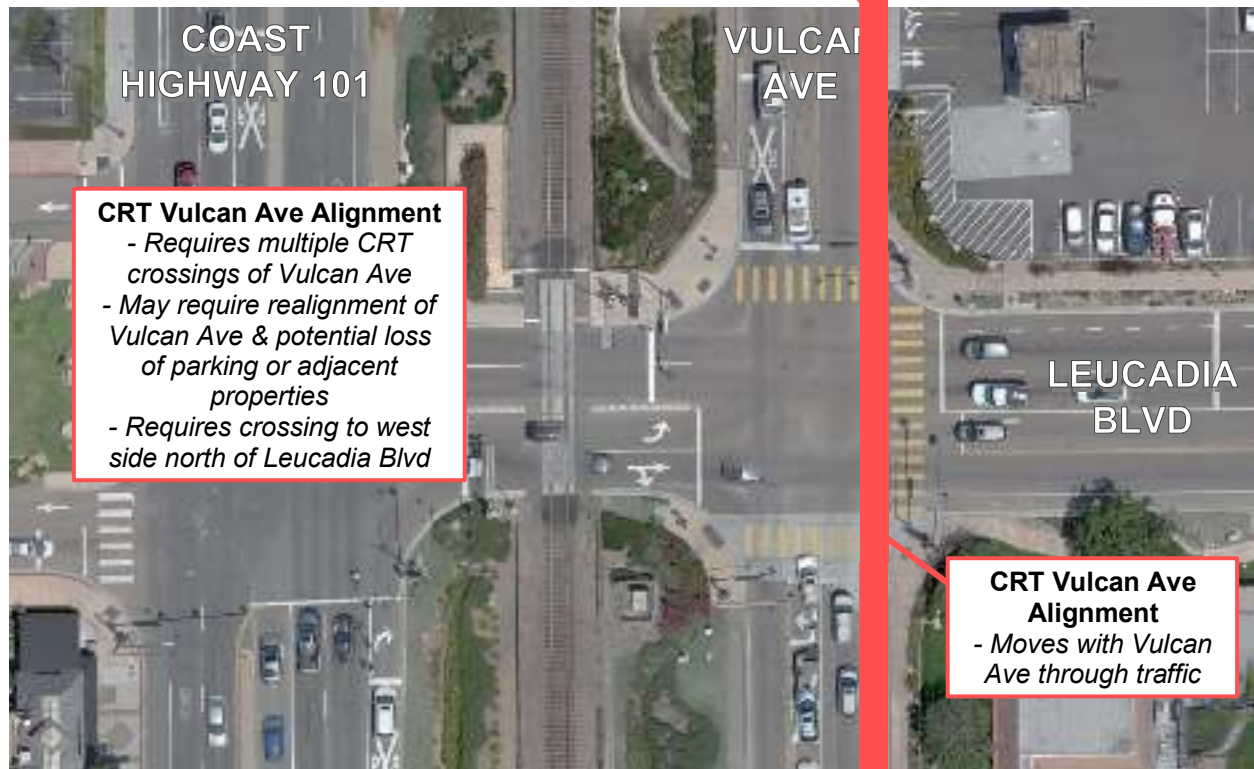
## VULCAN AVE ALIGNMENT

Having the CRT operate with Vulcan Ave through traffic—via a two-way cycle track along the eastern leg of the intersection—is likely to be feasible for crossing the intersection itself. However, several other constraints may limit its feasibility. Please refer to the roll plot exhibit in Appendix A-2 and cost estimate in Appendix B-3.

**Key Constraint – Vulcan Ave Realignment & Potential Loss of Parking or Adjacent Properties.** If the CRT remains in the Vulcan Ave ROW outside the intersection, maintaining two-way traffic likely would require realigning the roadway. Nearly all adjacent properties fronting Vulcan Ave have some encroachment onto the public ROW that is currently used for parking, landscaping and other private purposes. These private encroachments would need to be vacated for the realignment of the roadway.

**Key Constraint – Multiple Crossings of Vulcan Ave.** If the CRT only enters the Vulcan Ave ROW to cross Leucadia Blvd (and otherwise matches the East Side Alignment), this concept would create two additional conflict points between autos and bikes at the Vulcan Ave crossing locations. This also may cause traffic delays on Vulcan Ave.

**Key Constraint – Crossing to West Side.** Like the East Side Alignment described above, a Vulcan Ave Alignment would need to cross to the west side of the rail corridor somewhere between Leucadia Blvd and La Costa Ave. As described with the East Side Option, the most feasible way to do this—a new CRT bridge—is estimated to add approximately \$2.5 million to the project cost, as described above and included in Appendix B-3.



## 5 ENCINITAS BLVD INTERSECTION

Encinitas Blvd is a major east-west roadway that crosses under the rail corridor, with high-volume intersections at Coast Highway 101 and Vulcan Ave. Please refer to the alignment exhibits in Appendix A and cost estimates in Appendix B.

### BOOKEND CONSTRAINTS

- **North Bookend: Likely East Side/Vulcan Ave Alignment.** As discussed in Section 3, significant constraints west of the rail corridor likely will require the CRT to approach Encinitas Blvd from the north via the East Side Alignment or Vulcan Ave Alignment. This would be true even if the West Side Alignment were implemented to the north; as described in Section 3, even this option would cross the rail corridor along the north side of Encinitas Blvd using tie-backs under the railroad bridge.
- **South Bookend: Likely East Side Alignment (Long Term) or Vulcan Ave Alignment (Near Term).** As discussed in Section 6, significant constraints west of the rail corridor likely will require the CRT to approach Encinitas Blvd from the south via the East Side Alignment or Vulcan Ave Alignment. In the near-term scenario, the East side likely is infeasible due to significant impacts to the existing transit station bus bays and parking lot. Therefore, in a near-term scenario, the Vulcan Ave Alignment (specifically the east side of Vulcan Ave) is likely to be the most feasible. The East Side Alignment is feasible in a long-term scenario if the CRT is designed and incorporated into the double-track project, as described in Section 6.

### INTERSECTION CONSTRAINTS

- **La Costa to Swamis Double-Track.** SANDAG project to add a second main track to the railroad to the east of the existing track.
- **Grade-Separated Rail Alignment.** Any CRT alignment within the NCTD ROW will need to cross over Encinitas Blvd with the railroad tracks, requiring design coordination with the double-track project and potentially adding to project cost.

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## WEST SIDE ALIGNMENT

As described in Section 3, the West Side Alignment north of Encinitas Blvd likely would cross to the east side of the railroad corridor before crossing Encinitas Blvd (using tie-backs under the railroad bridge). The alternate option to use the Coast Highway 101/Encinitas Blvd intersection is highly constrained due to intersection operations and high volumes/high stress for bicycles.

**Key Constraint – Intersection Operations.** Intersection operations would likely require a separate phase for the CRT, causing delays at the intersection.

**Key Constraint – High Volume/High Stress.** The western alignment through the Coast Highway 101/Encinitas Blvd intersection is not ideal due to high volumes, and any alignment for bicycles would be considered high stress without lane reductions on Coast Highway 101.

## EAST SIDE ALIGNMENT (LONG-TERM SCENARIO)

An East Side Alignment is only potentially feasible in a long-term scenario if it is implemented with the planned double-track project, which will lengthen the station platforms to 1,000' and add a bridge over Encinitas Blvd.

The CRT could be accommodated in this alignment if it is designed as part of the double track project, providing additional bridge width over Encinitas Blvd for the CRT. Please refer to the alignment exhibit in Appendix A-3 (excerpted in the figure below) and cost estimate in Appendix B-5.

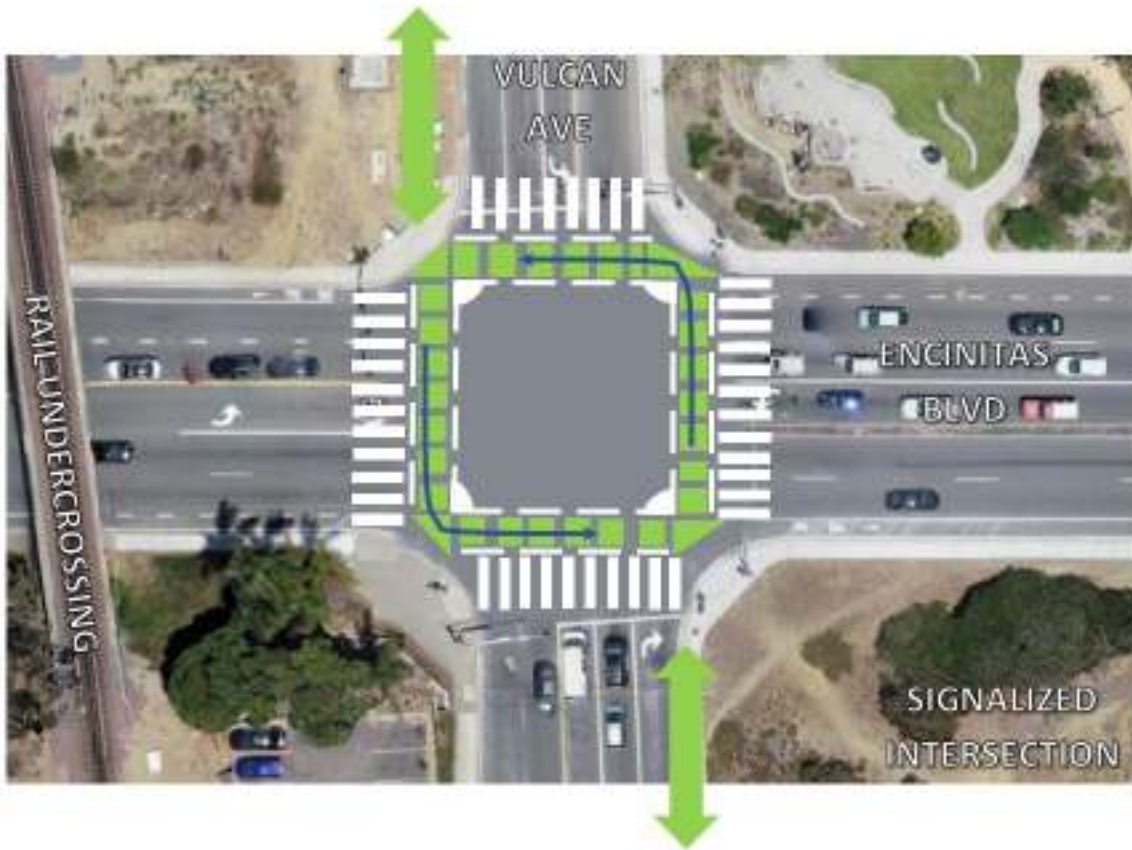


## VULCAN AVE ALIGNMENT (NEAR-TERM SCENARIO)

As discussed above and in Section 6, in a near-term scenario, north of Encinitas Blvd the East Side Alignment is most feasible, while south of Encinitas Blvd the CRT transitions to the east side of Vulcan Ave. Therefore, the CRT near-term alignment must find a way to cross from Vulcan Ave through the Encinitas Blvd intersection. (This is not likely to be necessary during the long-term scenario because the CRT is expected to use the East Side Alignment adjacent to the railroad.)

**Preferred Concept: 4-Leg Protected Intersection.** The project team analyzed several options and identified a 4-leg protected intersection as the preferred option. This concept provides the most protection for all intersection movements, including CRT “through” trips as well as interactions with the Class II bike lanes on Encinitas Blvd. Please refer to the alignment exhibit in Appendix A-3 and cost estimate in Appendix B-4.

The intersection is currently signalized with pedestrian movements allowed across all four legs of the intersection, as shown in the figure below. The fully protected intersection concept would include one-way bike crossings adjacent to the crosswalk markings, across all four legs of the intersection. These bike crossings would be signed and striped to provide signalized crossings of all legs in the same direction of travel as vehicular movements. By providing signs and signals in the direction of vehicular travel for bicycle movements, contra-flow conflicts are prevented, and bicyclists can navigate around the intersection to the opposite corner in a two-stage movement.



Required improvements include a signal modification to provide a pair of bicycle signal heads per crossing movement (8 total signal heads). These bicycle signal movements would align with the vehicle “through phase” of the traffic signal. The intersection will require further study to determine if a no-right-turn-on-red phase or a trap lane for right-turning movements would be required. Additionally, further study is required to determine if a road diet is necessary to provide safe refuge for bicyclists to queue between crossing movements. Expanded curb returns and/or small curb islands may also be necessary to help facilitate the bicycle queuing areas at each corner. Signal modifications at this intersection may result in traffic delays and will require further coordination with the City of Encinitas.

**Other Concepts Evaluated.** The project team also considered several additional options to cross Vulcan Ave in the near-term scenario that may be feasible but are not preferred, including:

- Diagonal crossing allowing movement of bike traffic through the center of the intersection.
- “Danish” crossing featuring a 2-stage perpendicular crossing for two-way bike traffic.

## 6 ENCINITAS BLVD TO SANTA FE DR

This segment is approximately 0.9 miles long and includes Encinitas Station. Please refer to the alignment exhibits in Appendix A and cost estimates in Appendix B.

### BOOKEND CONSTRAINTS

- **North Bookend: Likely East Side/Vulcan Ave Alignment at Encinitas Blvd.** As discussed in Sections 3 and 5, significant constraints west of the rail corridor likely will require the CRT to cross Encinitas Blvd using the East Side or Vulcan Ave Alignment.
- **South Bookend: More Direct Connection to East Side/Vulcan Ave Alignment South of Santa Fe Dr.** The newly completed CRT in Cardiff is located east of the rail corridor, including a pathway leading to the bicycle/pedestrian undercrossing at Santa Fe Dr. While this undercrossing could accommodate the CRT on either side, an East Side Alignment would offer a more direct connection without needing to cross the railroad.

### SEGMENT CONSTRAINTS

- **Dense Development Immediately West of Rail Corridor.** The Old Encinitas business district and Coast Highway 101 commercial parcels line the western edge of the rail corridor.
- **La Costa to Swamis Double-Track.** SANDAG project to add a second main track to the railroad to the east of the existing track.
- **Encinitas Station Platform Replacement.** In conjunction with the double-track project, the existing 600' platform will be replaced by 2 1000' platforms. To avoid constructing platforms on curved track, the new platforms are likely to extend south across D St, requiring the closure of D St to auto traffic. The project potentially could include a pedestrian undercrossing and plaza.
- **NCTD Bus Bays.** Between D St and E St, NCTD operates a series of bus bays serving routes 101, 304, and 309, with buses stopping at interior bays as well as along Vulcan Ave.

### POTENTIAL CROSSING LOCATIONS

If required, the CRT may be able to cross the railroad at the following locations in this segment:

- **Encinitas Blvd.** This existing roadway undercrossing at the northern end of the segment is constrained by travel lanes and abutting bridge structures. As discussed in Section 3, the West Side Alignment north of Encinitas Blvd could cross to the east side of the railroad corridor using tie-backs under this railroad bridge.
- **D St.** This existing roadway at-grade crossing with a traffic signal is constrained in its current configuration but could accommodate a crossing if needed with Class II bike lanes. If the station platform replacement does result in closure of the roadway, the project potentially could include a pedestrian undercrossing and plaza.
- **E St.** This existing roadway at-grade crossing is constrained but could accommodate a crossing if needed with Class II bike lanes.
- **Santa Fe Dr (“Swami’s”).** This existing pedestrian undercrossing at the southern end of the segment could accommodate the CRT.
- **Potential New Pedestrian Crossing at H St/I St.** The City of Encinitas *Cross-Connect Implementation Plan* is currently prioritizing and developing design concepts for potential new pedestrian crossings, including one at H St/I St. However, the ultimate timeline and funding for these projects is unknown.



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## WEST SIDE ALIGNMENT

The project team identified significant constraints for several potential West Side Alignments:

- **Within or Immediately Adjacent to Rail ROW.** Heavily constrained by Coast Highway 101 commercial parcels and existing railroad track. A CRT alignment here would require major ROW acquisitions.
- **Coast Highway 101.** Currently a shared-use but high-stress bike facility, Coast Highway 101 is heavily constrained by existing travel lanes and on-street parking serving the Old Encinitas business district. A CRT alignment here would require reconfiguration of the roadway to eliminate traffic lanes or parking.
- **3<sup>rd</sup> St.** The City of Encinitas has installed Class II bike lanes on 3<sup>rd</sup> St, approximately 800' west of the rail corridor. A CRT alignment here would require out-of-direction travel, contains steep slopes between A St and C St, would need to cross Coast Highway 101 twice, and also would require a *PWP/TREP* amendment for an alignment greater than 150' from the NCTD ROW.

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## EAST SIDE ALIGNMENT (LONG TERM SCENARIO)

Between Encinitas Blvd and E St, the East Side Alignment is constrained in a near-term timeframe by the existing parking lots for Encinitas Station (between Encinitas Blvd and D St, and south of E St), and the NCTD bus bays (between D St and E St). See Vulcan Ave Alignment discussion below for a feasible alignment in a near-term scenario (prior to the double-track project implementation).

Overall, an East Side Alignment is feasible in a long-term scenario if it is designed with the double-track project and includes the elements discussed below. Please refer to the alignment exhibit in Appendix A-3 and cost estimate in Appendix B-1/B-5.

### ENCINITAS BLVD TO E ST

The figure below is an excerpt from Appendix A-3 showing the following elements that are likely to be required between Encinitas Blvd and E St for the East Side Alignment:

- **Vulcan Ave Road Diet Between D St & E St.** Reduction from 4 travel lanes to 3 (depending on traffic analysis, could be 2 northbound/1 southbound, 1 northbound/2 southbound, or 1 northbound/1 southbound with shared center-turn lane).
- **Relocation of Station Parking to Planned Structure.** SANDAG has completed a project study report of a potential parking structure east of Vulcan Ave, between D St and E St. It would contain shared parking for Encinitas Station, the City of Encinitas civic center, and Old Encinitas destinations.
- **Relocation of NCTD Bus Bays.** In conjunction with the Vulcan Ave road diet, the existing bus bays would need to be shifted to the east to accommodate the CRT and adjacent rail projects. The bus bays could be rebuilt with no loss of operational capacity, including preservation of the pull-out area along southbound Vulcan Ave.



## E ST TO G ST

South of E St, the East Side Alignment generally is feasible. Between E St and G St, the alignment would require repurposing some of the existing station parking area between E St and G St, most likely requiring elimination of one row of parking. However, this parking could be replaced by the planned parking structure across Vulcan Ave (discussed above) or by extending the remaining row of parking farther south.

## G ST TO SANTA FE DR

South of G St, there is ample room for the East Side Alignment. It would connect to the existing CRT segment at Santa Fe Dr and the adjacent pedestrian undercrossing. A similar concept was proposed in a 2017 SANDAG study prepared by Nasland Engineering.

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## VULCAN AVE ALIGNMENT (NEAR TERM SCENARIO)

For a near-term scenario, prior to implementation of the double-track project, the CRT alignment on Vulcan Ave is generally feasible, if accompanied by a Vulcan Ave road diet described above. Please refer to the alignment exhibit in Appendix A-3 and cost estimate in Appendix B-1/B-4.

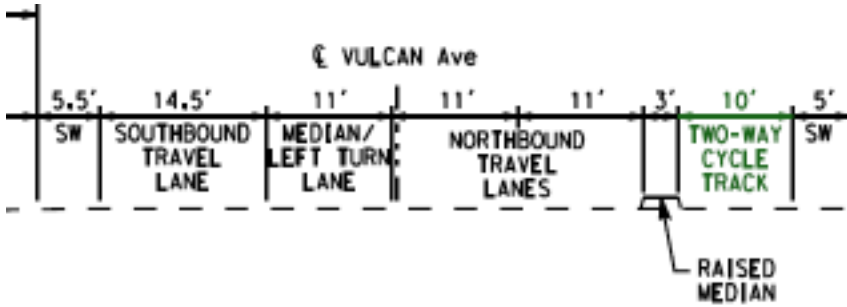
Several variations of a Vulcan Ave Alignment have been proposed in prior studies:

- **Preferred Concept: Two-Way Cycle Track on Vulcan Ave from Encinitas Blvd to E St.** The City of Encinitas *Active Transportation Plan and Rail Corridor Vision Study* envision a two-way protected cycle track along the east side of Vulcan Ave between Encinitas Blvd and E St. It likely would require a reduction of one travel lane on Vulcan Ave as described above. South of E St, the facility would cross to the west side of Vulcan Ave and essentially overlap the East Side Alignment discussed above.

This concept is feasible and could be a viable and/or near-term alternative to the East Side Alignment. It is depicted in Appendix A-3 (and in the excerpted figure below) and is described in more detail in the following pages.

- **Other Concept Evaluated: Class II Bike Lanes on Vulcan Ave.** Bike lanes were conceptually proposed between Encinitas Blvd and G St in a 2014 SANDAG report prepared by Toole Design Group. This would require a reduction of one traffic lane on Vulcan Ave between Encinitas Blvd and E St.

While feasible, Class II bike lanes are less desirable for the CRT than a Class I/IV protected facility.



### ENCINITAS BLVD TO E ST

Between Encinitas Blvd and E St, the Vulcan Ave Alignment is most feasible on the east side of the roadway as a two-way cycle track. There is one intersection along this segment, located at Vulcan Ave and D St. It is currently signalized with pedestrian movements allowed across all four legs of the intersection, as shown in the figure below. As the CRT is most feasible on the east side of Vulcan Ave, it would continue through the intersection on the east side.

Improvements to the Vulcan Ave/D St intersection include a signal modification to control vehicle right-turn movements to prohibit conflicts with bicycle movements. Bicycle movements align with vehicle “through phase” of the traffic signal. This intersection requires further study to determine if a no-right-turn-on-red phase or a trap lane for northbound right-turn movements is required. This intersection also may be a candidate for a transit queue jump in the southbound direction. Signal modification at this intersection may result in traffic delays and would need to be reviewed and approved by CPUC since it is adjacent to the at-grade rail crossing.



## E ST TO G ST

**Preferred Concept.** With the East Side Alignment preferred south of G St, the Vulcan Ave Alignment needs to cross Vulcan Ave between E St and G St. The project team analyzed several options and consulted with the City of Encinitas to identify the following preferred option, shown with the following key features in the exhibit in Appendix A-3 and cost estimate in Appendix B-1/B-4:

- Crossing E St along the eastern leg of the intersection, similar to D St but using stop control.
- Remaining on the east side of Vulcan Ave between E St and midway between F St and G St.
- Crossing Vulcan Ave via HAWK signal between F St and G St, roughly aligned with the southern end of the Encinitas Station parking lot.



**Other Concepts Evaluated.** The project team also considered several additional options to cross Vulcan Ave in the near-term scenario that may be feasible but are not preferred, including:

- Danish or protected crossing at E St with stop control
- Danish or protected crossing at E St with signalization
- Diagonal crossing at E St with signalization
- HAWK crossing at G St with stop control

## G ST TO SANTA FE DR

South of G St there is ample room for the East Side Alignment. While the Vulcan Ave Alignment may be feasible here, the East Side Alignment is preferred and connect to the existing CRT segment at Santa Fe Dr and the adjacent pedestrian undercrossing. Please refer to the alignment exhibit in Appendix A-3 and cost estimate in Appendix B-4.

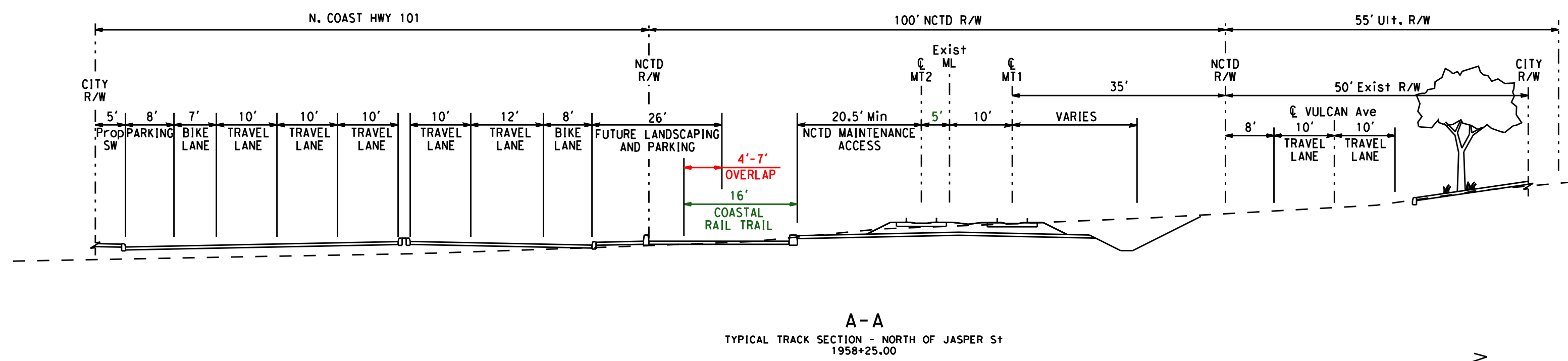
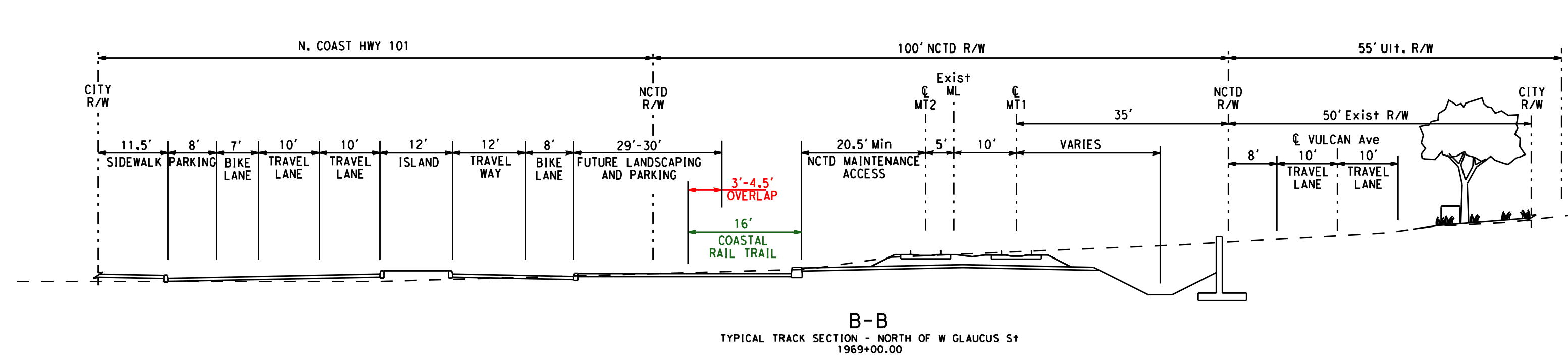
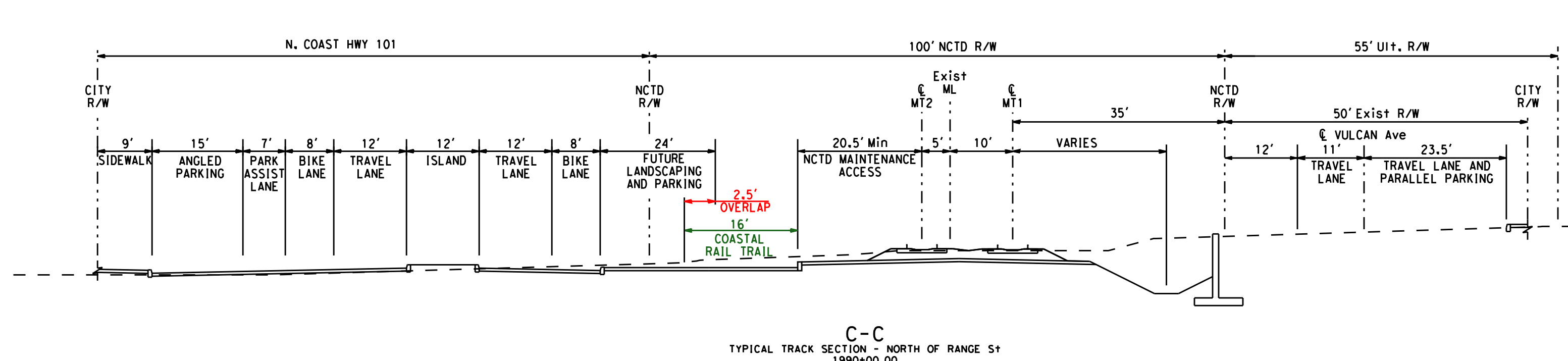
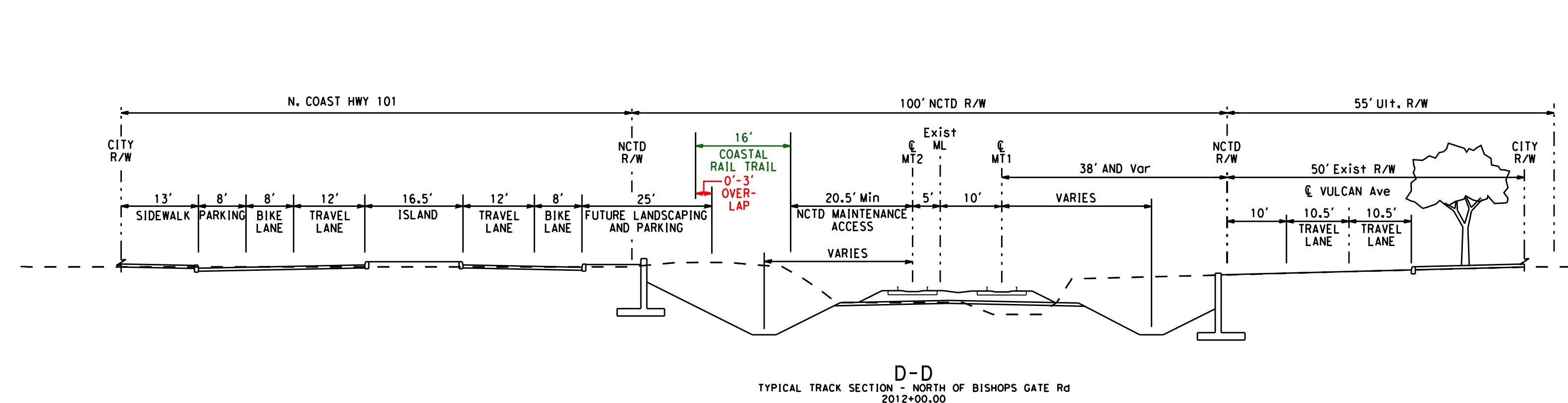
# APPENDIX

## A ALIGNMENT EXHIBITS

- **Appendix A-1**     **La Costa Ave to Encinitas Blvd: West Side Alignment**  
*La Costa Ave to Leucadia Blvd*  
*Leucadia Blvd to Encinitas Blvd*
- **Appendix A-2**     **La Costa Ave to Encinitas Blvd: East Side Alignment**  
*La Costa Ave to Leucadia Blvd*  
*Leucadia Blvd to Encinitas Blvd*
- **Appendix A-3**     **Encinitas Blvd to Santa Fe Dr**  
*Near-Term Alignment*  
*Long-Term Alignment*
- **Appendix A-4**     **City of Encinitas Striping Plan for Coast Highway 101 South of Chesterfield Dr**

# APPENDIX

## *A-1 LA COSTA AVE TO ENCINITAS BLVD: WEST SIDE ALIGNMENT*



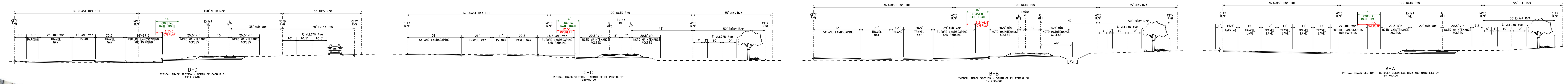
- EXISTING/PROPOSED TRACK CENTERLINE
- PROPOSED N. COAST HWY 101 STREETSCAPE PROJECT IMPROVEMENTS
- ▨ PROPOSED 21' CITY PARKING ZONE
- ▨ PROPOSED DRAINAGE DITCH (DOUBLE TRACKING)
- ▨ 16' OR MORE AVAILABLE FOR CRT
- ▨ 12'-16' AVAILABLE FOR CRT
- ▨ LESS THAN 12' AVAILABLE FOR CRT

**COASTAL RAIL TRAIL ALIGNMENT REVIEW - LA COSTA AVENUE TO LEUCADIA BOULEVARD - WEST SIDE ALIGNMENT**

\*ROADWAY DESIGN PER NORTH COAST HIGHWAY 101 STREETSCAPE PROJECT, OCT. 2019



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- +— EXISTING/PROPOSED TRACK CENTERLINE
- PROPOSED N. COAST HWY 101 STREETSCAPE PROJECT IMPROVEMENTS
- ▨ PROPOSED 21' CITY PARKING ZONE
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- 12'-16' AVAILABLE FOR CRT
- LESS THAN 12' AVAILABLE FOR CRT
- PROPOSED ROADWAY IMPROVEMENTS BY COASTAL RAIL TRAIL

**POD 7** ~11'-12.5' AVAILABLE BETWEEN NCTD FENCE AND BACK OF PARKING ZONE

**POD 8** ~3.5' AVAILABLE BETWEEN NCTD FENCE AND BACK OF PARKING ZONE

**POD 9** ~9.5'-10.5' AVAILABLE BETWEEN NCTD FENCE AND BACK OF PARKING ZONE

**POD 10A** ~8.5' AVAILABLE BETWEEN NCTD FENCE AND BACK OF PARKING ZONE

**POD 10B** 15' AVAILABLE BETWEEN NCTD FENCE AND BACK OF PARKING ZONE

**COASTAL RAIL TRAIL ALIGNMENT REVIEW - LEUCADIA BOULEVARD TO ENCINITAS BOULEVARD - WEST SIDE ALIGNMENT**

\*ROADWAY DESIGN PER NORTH COAST HIGHWAY 101 STREETSCAPE PROJECT, OCT. 2019





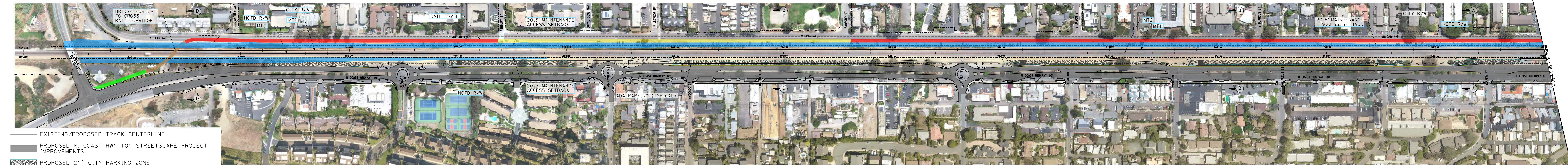
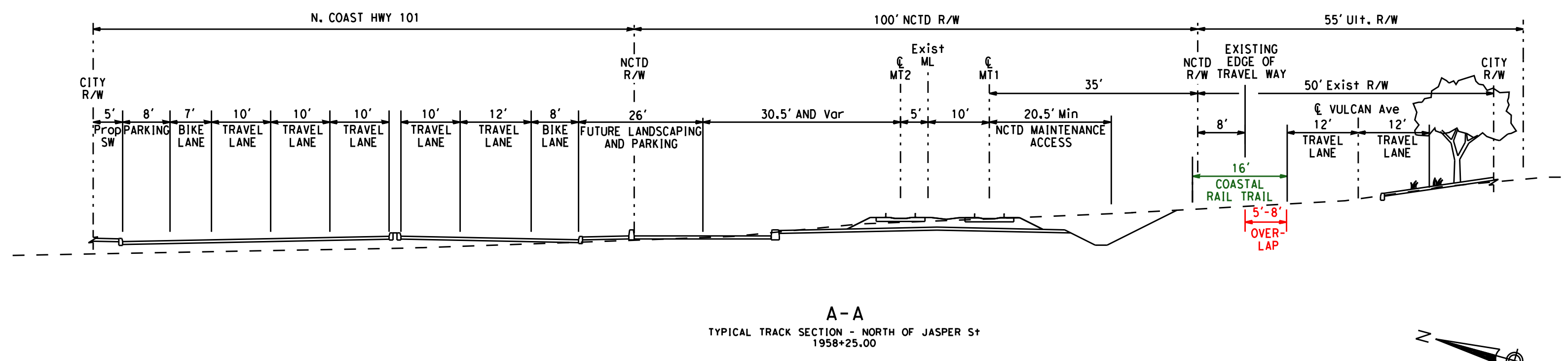
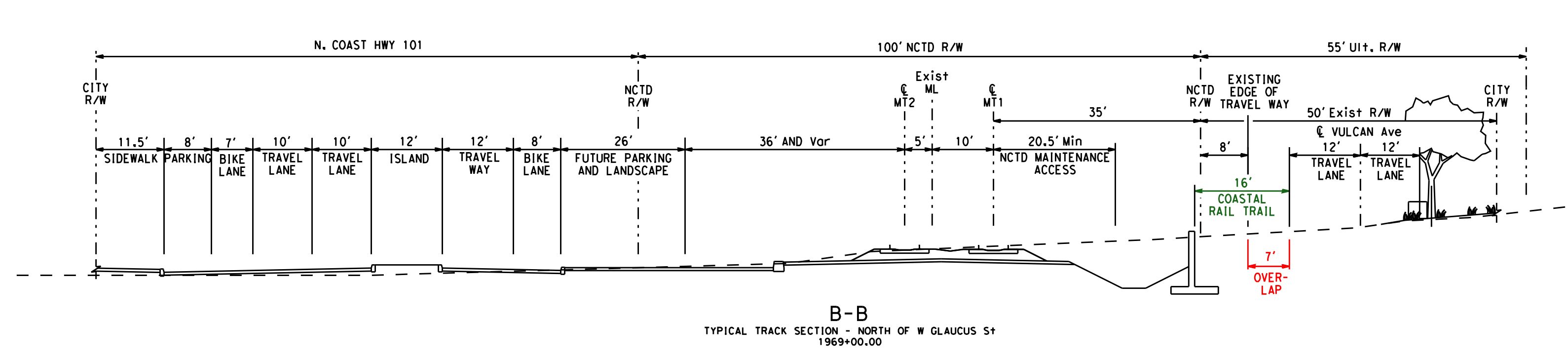
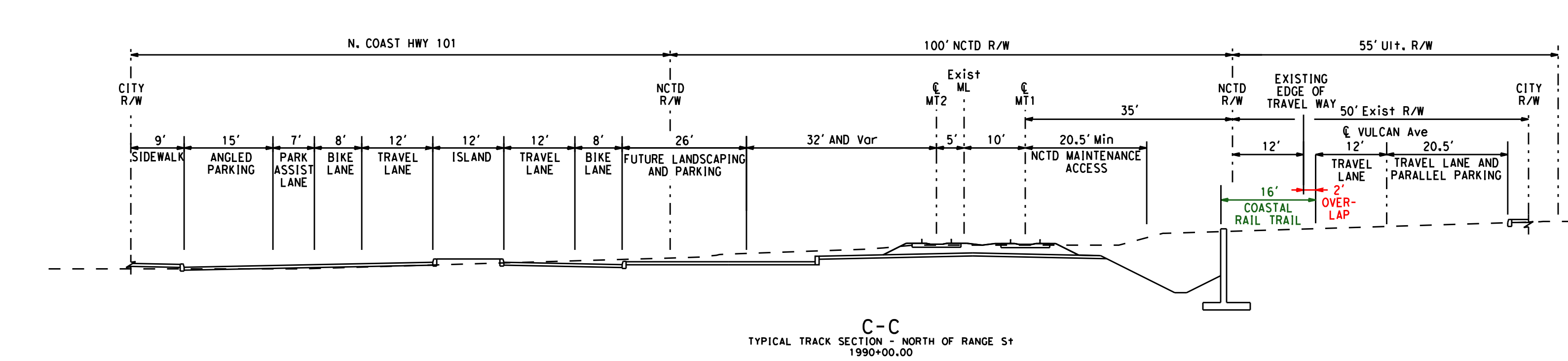
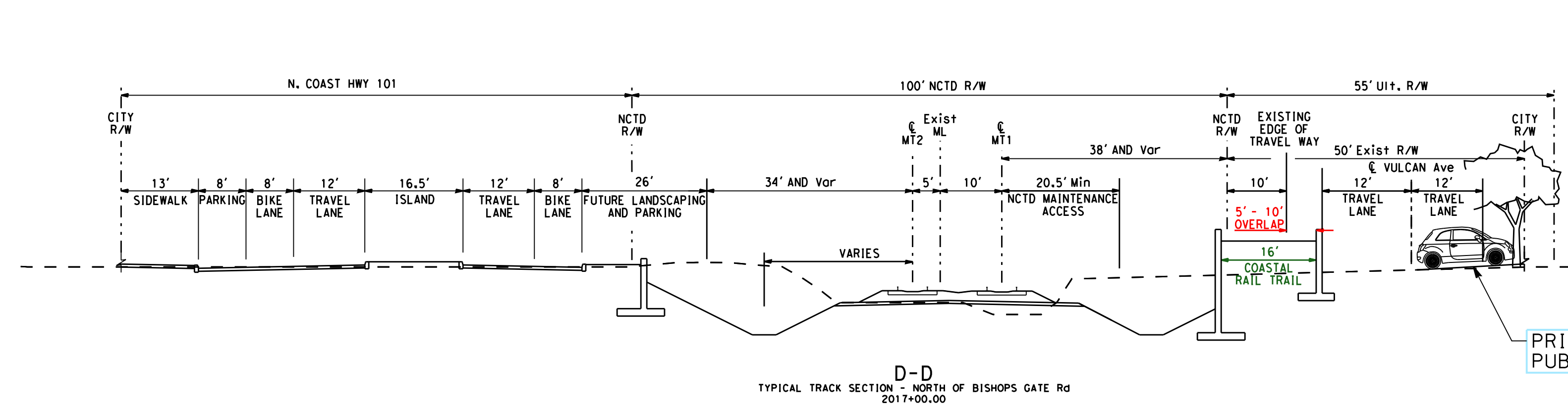
# APPENDIX

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*Long-Term Alignment*
- **Appendix A-4**     **City of Encinitas Striping Plan for Coast Highway 101 South of Chesterfield Dr**

# APPENDIX

## **A-2** *LA COSTA AVE TO ENCINITAS BLVD: EAST SIDE ALIGNMENT*



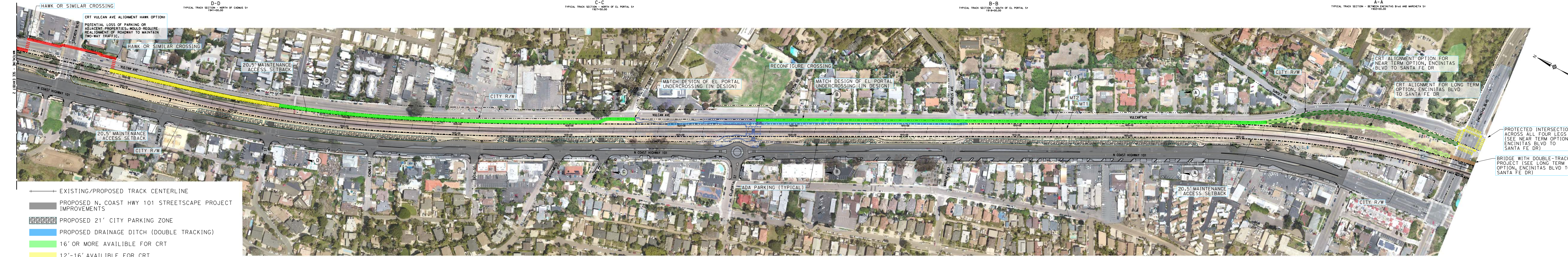
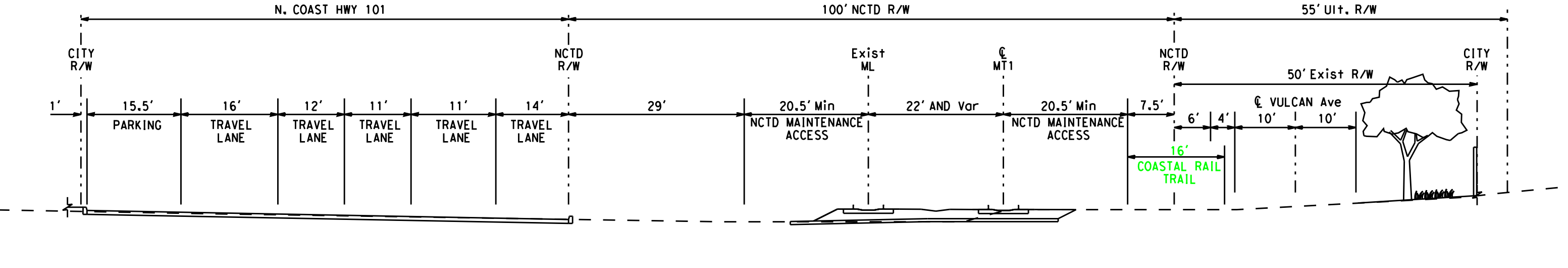
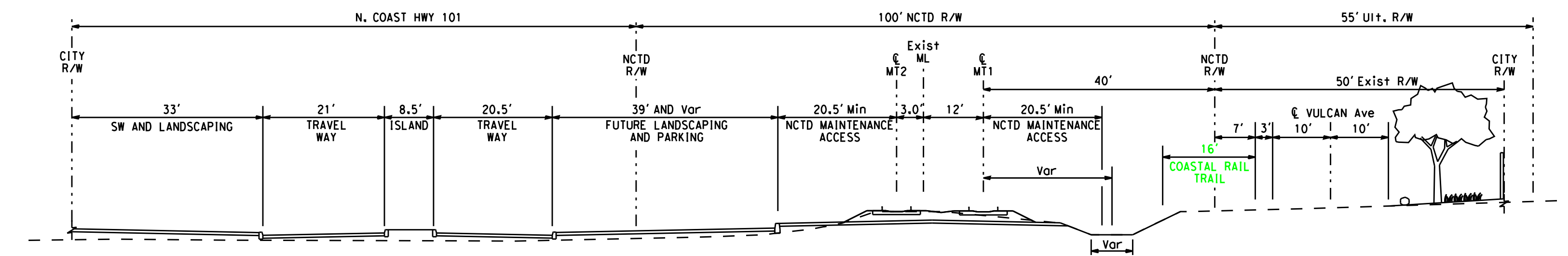
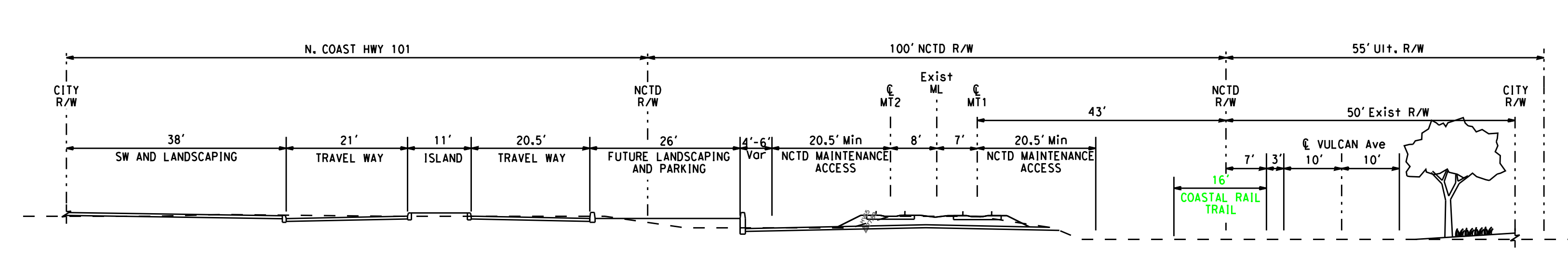
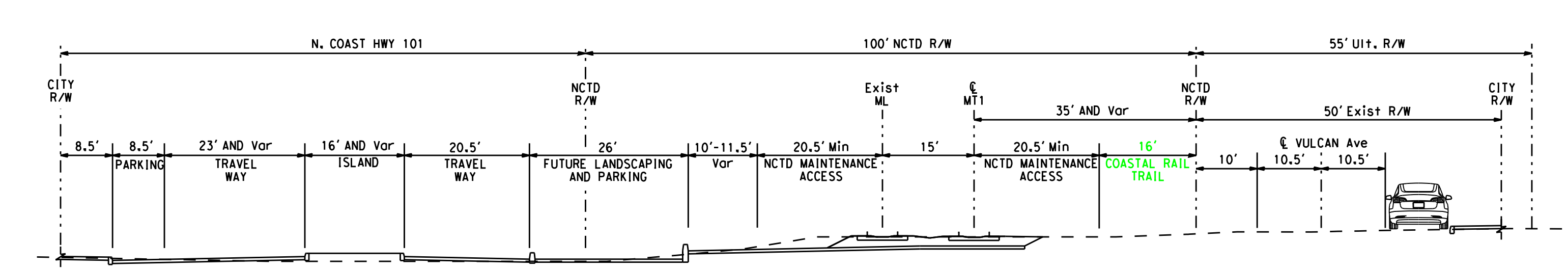
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- PROPOSED N. COAST HWY 101 STREETSCAPE PROJECT IMPROVEMENTS
- ▨ PROPOSED 21' CITY PARKING ZONE
- ▨ PROPOSED DRAINAGE DITCH (DOUBLE TRACKING)
- ▨ 16' OR MORE AVAILABLE FOR CRT
- ▨ 12'-16' AVAILABLE FOR CRT
- ▨ LESS THAN 12' AVAILABLE FOR CRT

**COASTAL RAIL TRAIL ALIGNMENT REVIEW - LA COSTA AVENUE TO LEUCADIA BOULEVARD - EAST SIDE ALIGNMENT**

\*ROADWAY DESIGN PER NORTH COAST HIGHWAY 101 STREETSCAPE PROJECT, OCT. 2019  
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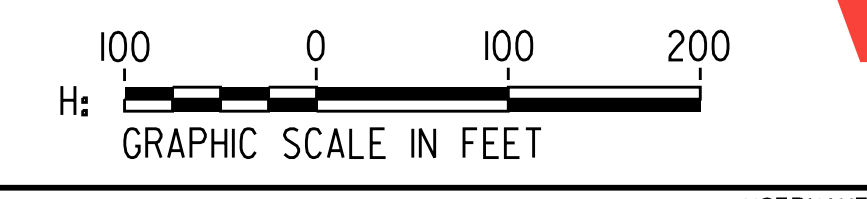
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- PROPOSED N. COAST HWY 101 STREETSCAPE PROJECT IMPROVEMENTS
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**COASTAL RAIL TRAIL ALIGNMENT REVIEW - LEUCADIA BOULEVARD TO ENCINITAS BOULEVARD - EAST SIDE ALIGNMENT**

\*ROADWAY DESIGN PER NORTH COAST HIGHWAY 101 STREETSCAPE PROJECT, OCT. 2019



DATE PLOTTED => 4/29/2020

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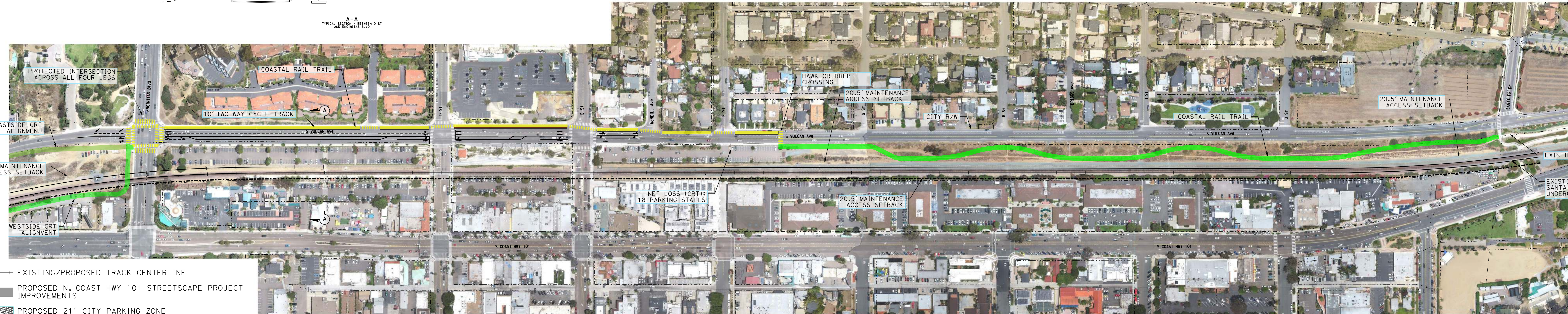
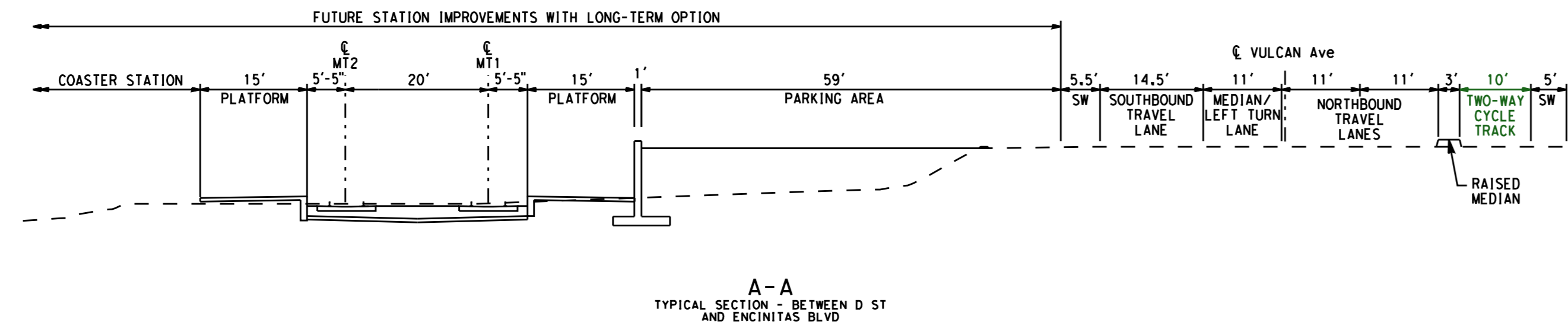
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- **Appendix A-4**     **City of Encinitas Striping Plan for Coast Highway 101 South of Chesterfield Dr**

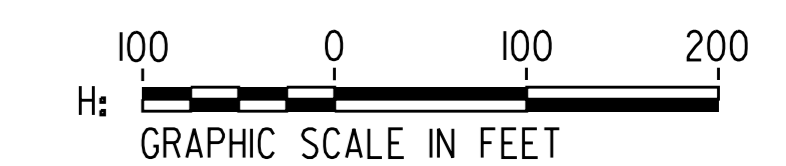
# APPENDIX

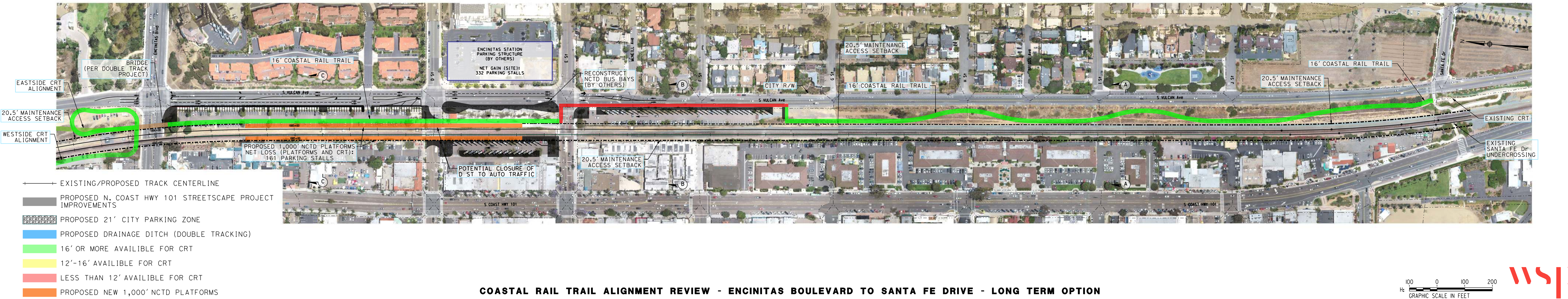
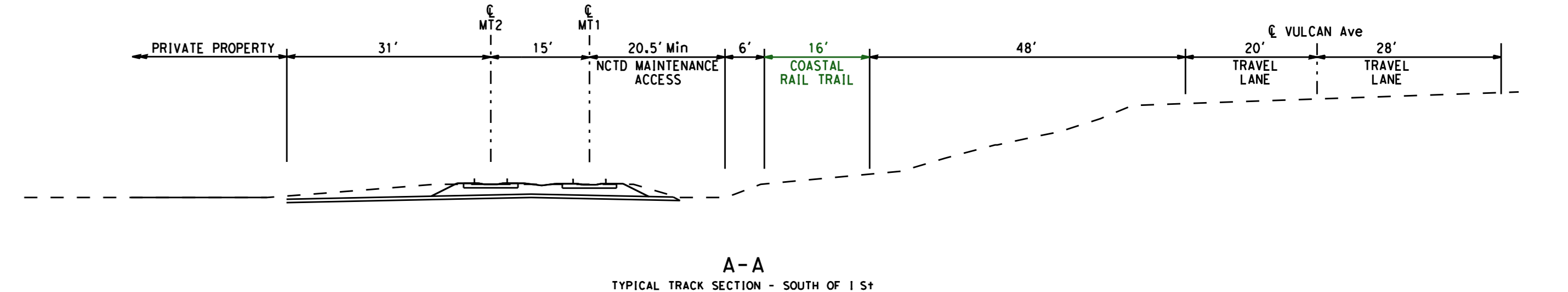
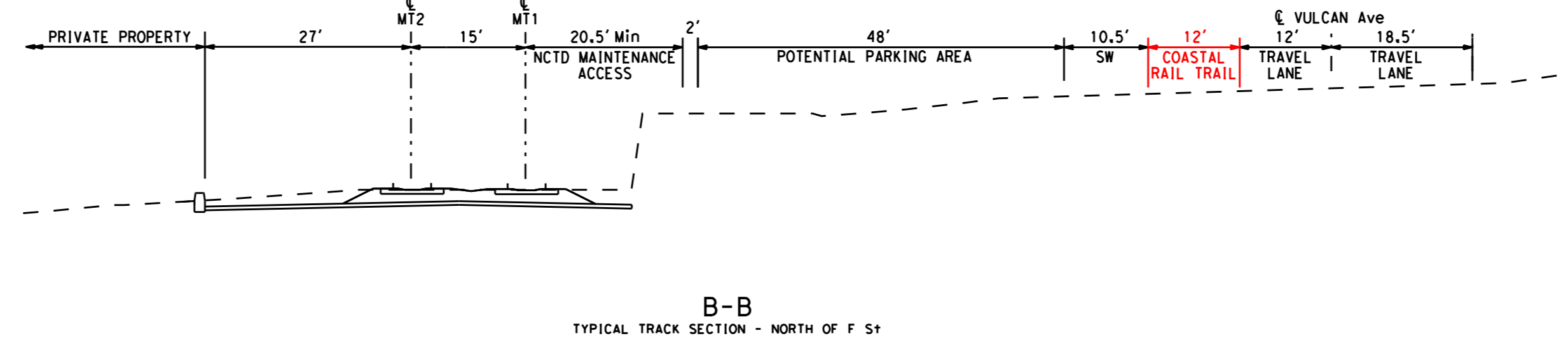
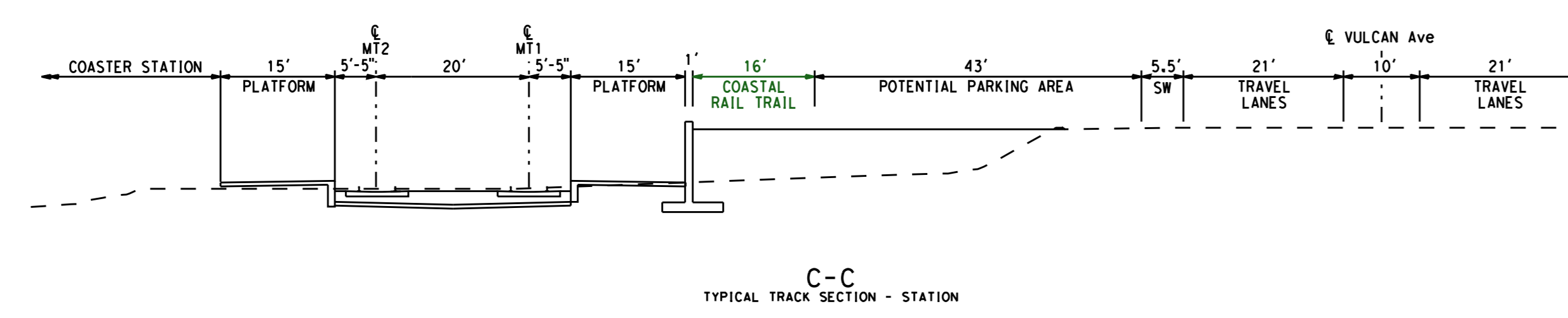
## **A-3** *ENCINITAS BLVD TO SANTA FE DR*



- +—+—+ EXISTING/PROPOSED TRACK CENTERLINE
- PROPOSED N. COAST HWY 101 STREETSCAPE PROJECT IMPROVEMENTS
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**COASTAL RAIL TRAIL ALIGNMENT REVIEW - ENCINITAS BOULEVARD TO SANTA FE DRIVE - NEAR TERM OPTION**







# APPENDIX

## A ALIGNMENT EXHIBITS

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# APPENDIX

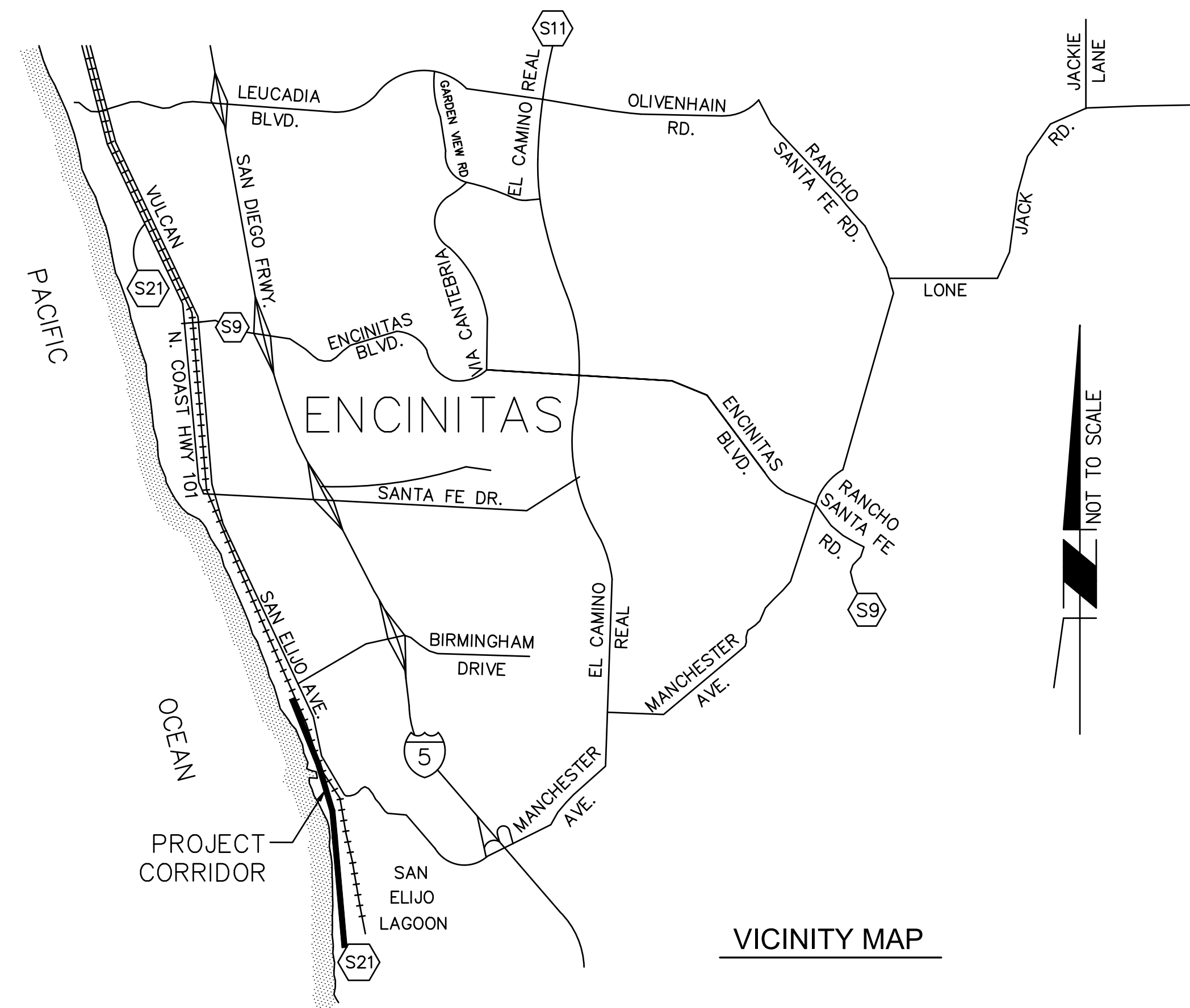
## ***A-4 CITY OF ENCINITAS STRIPING PLAN FOR COAST HIGHWAY 101 SOUTH OF CHESTERFIELD DR***

# CONSTRUCTION PLANS FOR SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS

CONTRACT NO. CS-20E



CITY OF ENCINITAS  
ENCINITAS, CALIFORNIA



VICINITY MAP

### PROJECT DESCRIPTION

INSTALLATION OF GREEN CLASS IV BIKE LANES AND BIKE LANE SIGNAGE.

### PROJECT LOCATION

SOUTH COAST HIGHWAY 101 BETWEEN CHESTERFIELD DR. TO SOUTHERN CITY LIMITS.

### DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF ENCINITAS DOES NOT RELIEVE ME AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

FIRM: STC TRAFFIC, INC.  
 ADDRESS: 5865 AVENIDA ENCINAS, SUITE 142B  
 CITY, ST.: CARLSBAD, CA  
 TELEPHONE: 760-602-4290  
 BY: NICOLAS M. MINICILLI DATE: 11-05-2019  
 R.C.E. NO.: 74667  
 REGISTRATION EXPIRATION DATE: 12-31-2019

## PROJECT DIRECTORY

**OWNER/ PERMITEE:**  
 CITY OF ENCINITAS, CALIFORNIA  
 505 S. VULCAN AVE.  
 ENCINITAS, CA. 92024  
**CITY CONTACT / STAFF NAME & NO.**  
 STAFF NAME: ABRAHAM BANDEGAN  
 PHONE NO: 760-633-2705  
 FAX NO: 760-633-2818  
 EMAIL: ABANDEGAN@ENCINTASCA.GOV

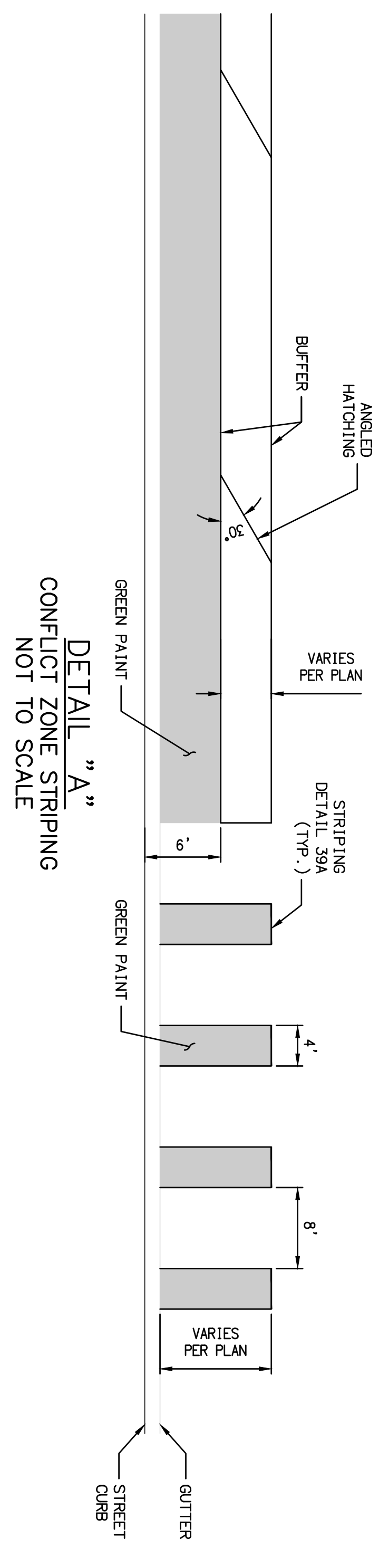
**CONSULTANTS / FIRMS**  
**NAME:** STC TRAFFIC, INC.  
 CONTACT NAME: NICOLAS MINICILLI  
 ADDRESS: 5865 AVENIDA ENCINAS, STE 142B, CARLSBAD, CA 92008  
 PHONE NO: 760-602-4290  
 FAX NO: 760-670-3445  
 EMAIL: NICK.MINICILLI@STCTRAFFIC.COM



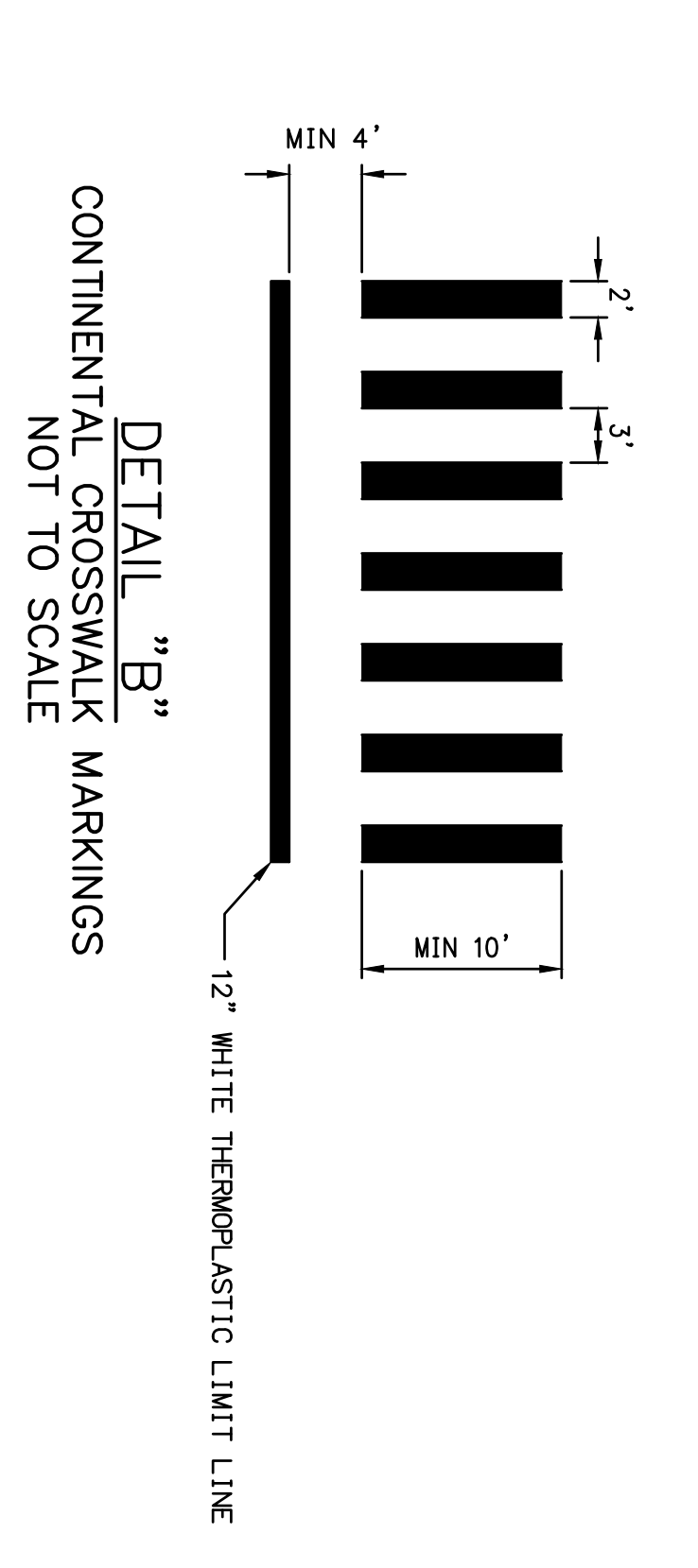
REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.
STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15				HORIZONTAL N/A	CL	TB	NM	RECOMMENDED	CITY OF ENCINITAS ENGINEERING DEPARTMENT	CS-20E
SHARROWS AND R4-11.		2020-02-07				VERTICAL N/A	NICOLAS M. MINICILLI			APPROVED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS	
BUS STOP CONFLICT STRIPING.		2020-02-07									TITLE SHEET	
											SHEET 1 OF 12	

Apr 15, 2020 - 5:28pm T:\Projects\Encinitas\17.0525... As-Needed Civil Engineering\025.0014\_Coast 101 Buffered Green Bike Lanes\07\_Engineering\CADD\DIV\_01\_IT.dwg

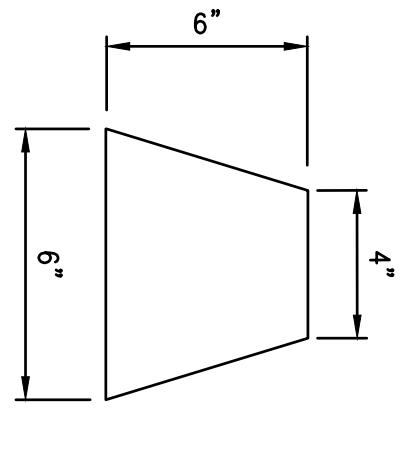




NOTES:  
 1. GREEN PAINT SHALL BE ENNIS-FLINT 985206 GREEN STANDARD FAST DRY WATERBORNE TRAFFIC PAINT WITH REFLEX REFLECTIVE GLASS BEADS.  
 2. ANGLE HATCHING FOR BUFFERED BIKE LANES SHALL BE 8" WIDE, AT A 30° ANGLE, AND SPACED AT 35 FEET ON CENTER.

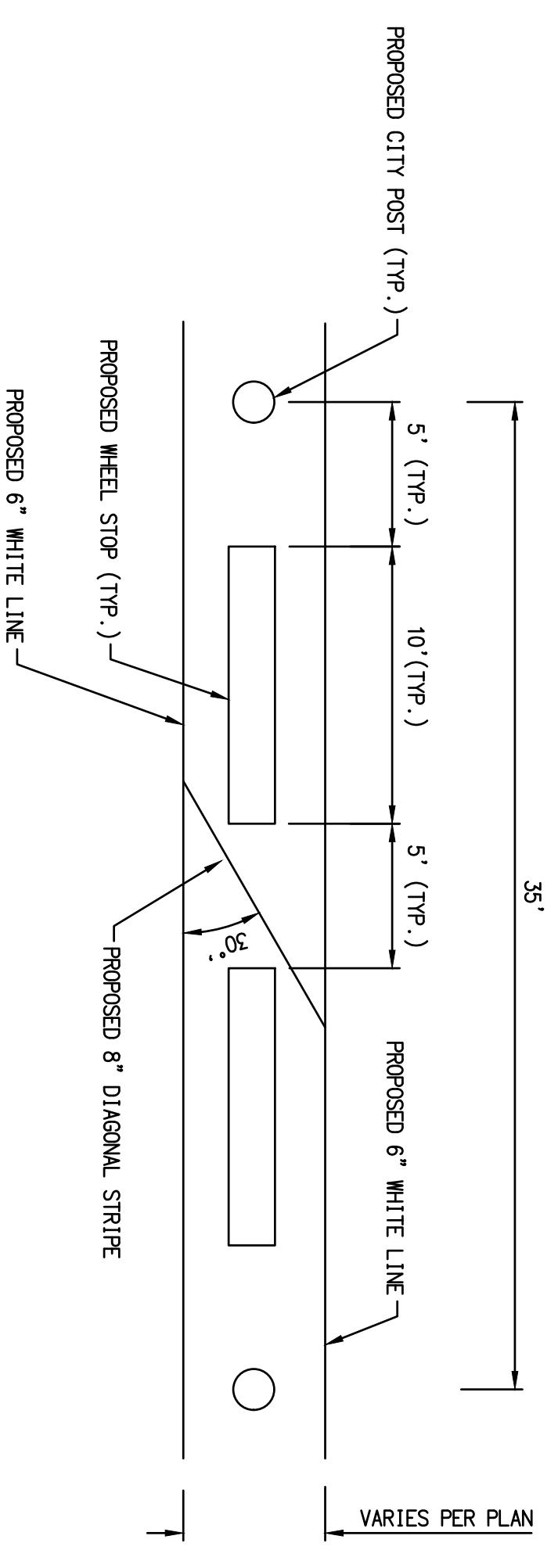


NOTES:  
 1. CONTINENTAL CROSSWALK MARKINGS SHALL BE ALIGNED PARALLEL TO THE DIRECTION OF VEHICULAR TRAVEL.



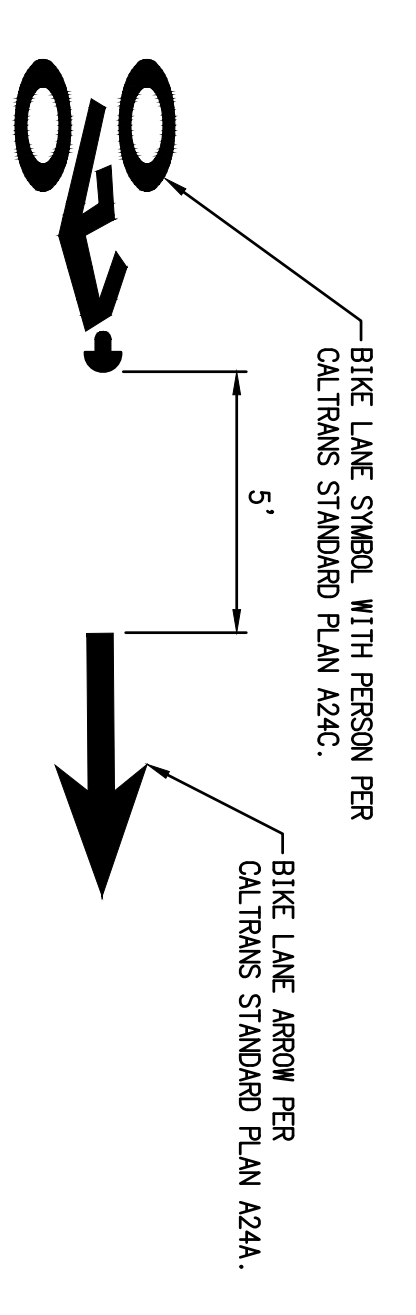
**DETAIL "C"**  
 ASPHALT WHEEL STOP  
 NOT TO SCALE

NOTES:  
 1. WHEEL STOPS SHALL BE PG-70-10 GRADE ASPHALT.  
 2. WHEEL STOPS SHALL BE 10" IN LENGTH.  
 3. CONTRACTOR SHALL ENSURE THERE IS A SECURE BOND BETWEEN WHEEL STOP AND ASPHALT.  
 4. SHAPE AND COMPACT WHEEL STOPS WITH AN EXTRUSION MACHINE OR OTHER EQUIPMENT CAPABLE OF SHAPING AND COMPACTING THE MATERIAL TO REQUIRED CROSS-SECTION.



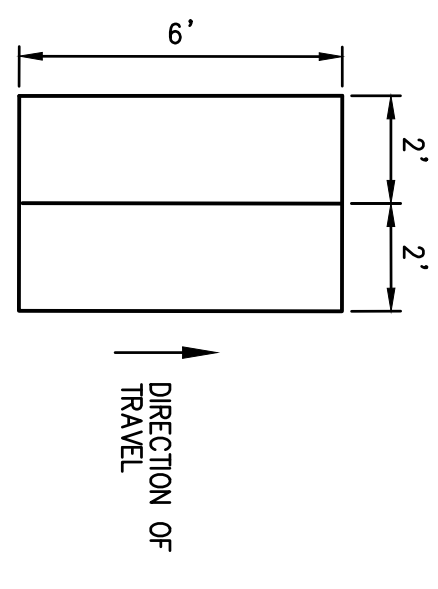
**DETAIL "D"**  
 PROTECTED BIKE LANE BUFFER  
 NOT TO SCALE

NOTES:  
 1. BOLLARD AND WHEEL STOP SHALL BE INSTALLED IN CENTER OF BUFFER UNLESS OTHERWISE SHOWN ON PLANS.  
 2. WHEEL STOPS SHALL BE PAINTED PER DETAIL C.



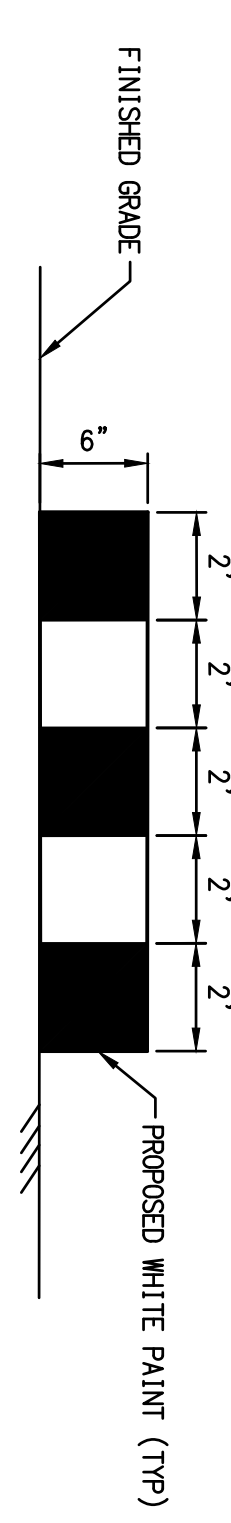
**DETAIL "E"**  
 BIKE LANE MARKINGS  
 NOT TO SCALE

NOTES:  
 1. PAVEMENT MARKINGS SHALL BE CENTERED IN BIKE LANE.

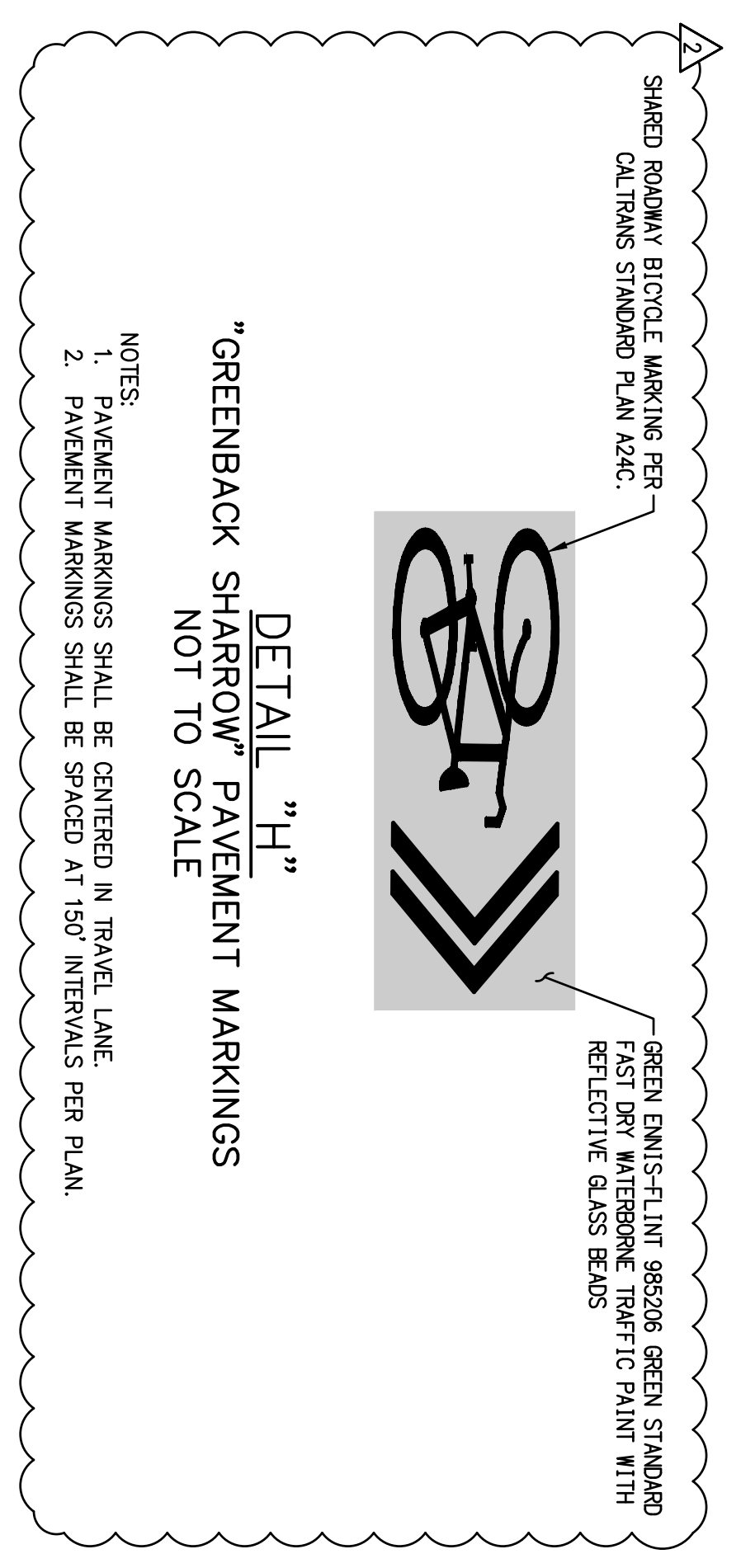


**DETAIL "F"**  
 MODIFIED TYPE Q BICYCLE DETECTOR  
 NOT TO SCALE

NOTE:  
 1. FOR WINDING AND SAW CUT INFORMATION SEE CALTRANS STANDARD PLAN ES-5B.  
 2. LOOP PLACEMENT SHALL BE 44' BEFORE LIMIT LINE.



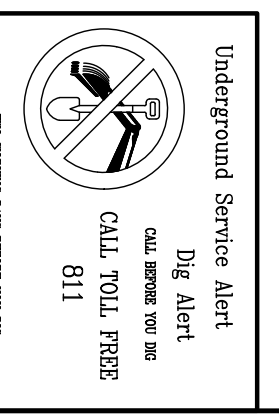
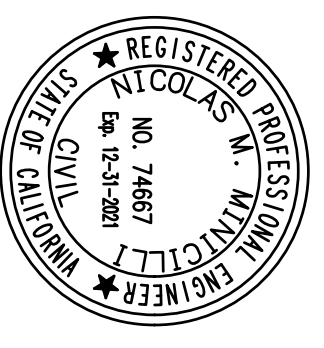
**DETAIL "G"**  
 WHEEL STOP PAINT  
 NOT TO SCALE



**DETAIL "H"**  
 GREENBACK SHARROW PAVEMENT MARKINGS  
 NOT TO SCALE

NOTES:  
 1. PAVEMENT MARKINGS SHALL BE CENTERED IN TRAVEL LANE.  
 2. PAVEMENT MARKINGS SHALL BE SPACED AT 150' INTERVALS PER PLAN.

REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE
STRIPING, SIGN, SIGN, SIGN RESTRICTION, STRIPING AND R-1-1.		2019-11-15		2020-06-07		HORIZONTAL N/A VERTICAL N/A



DESIGNED BY: [Signature] DRAWN BY: [Signature] CHECKED BY: [Signature]

PLANS PREPARED UNDER SUPERVISION OF: [Signature] DATE: 11-05-2019

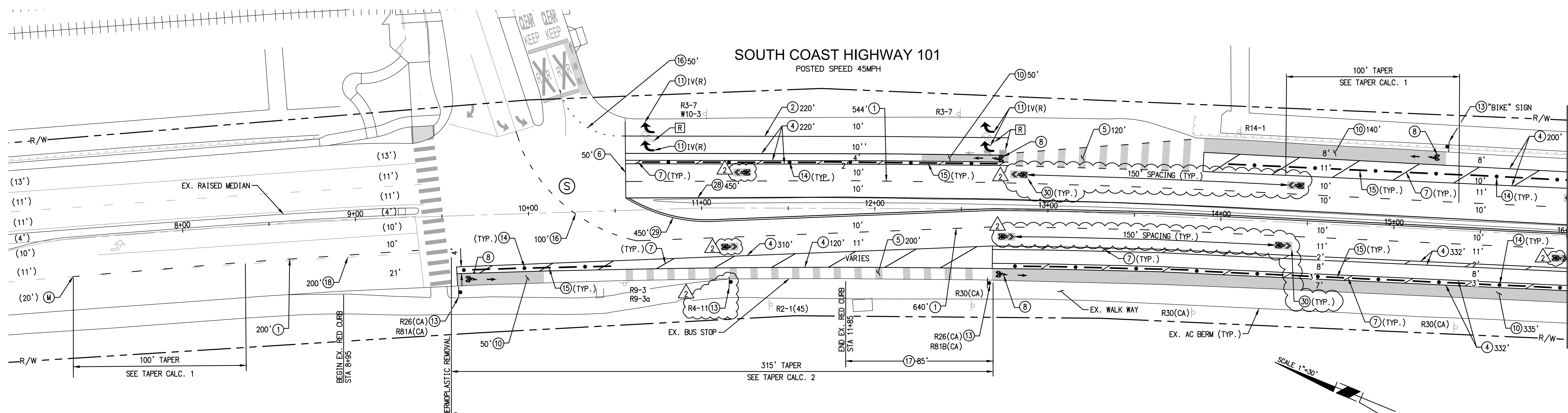
RECOMMENDED BY: [Signature] DATE: [Signature] APPROVED BY: [Signature] DATE: [Signature]

CITY OF ENCINITAS ENGINEERING DEPARTMENT  
 PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS  
 DETAILS SHEET

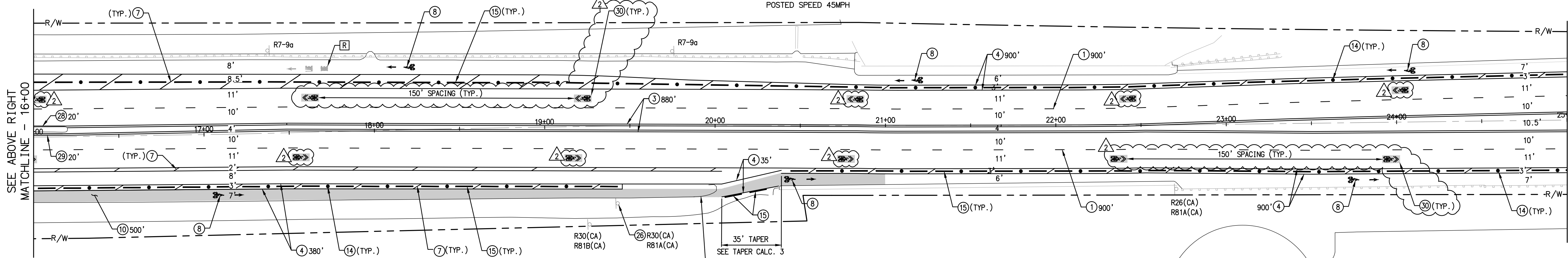
DRAWING NO. CS-20E SHEET 3 OF 12

CHESTERFIELD DR

SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH



SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH



CONSTRUCTION NOTES

- 1) APPLY 4" WHITE LINE PER CAMUTCO, DETAIL 9.
- 2) APPLY 8" WHITE CHANNELIZING LINE PER CAMUTCO, DETAIL 38.
- 3) APPLY 4" DOUBLE YELLOW LINES PER CAMUTCO, DETAIL 29.
- 4) APPLY 6" WHITE BIKE LANE LINE PER CAMUTCO, DETAIL 39.
- 5) INSTALL CONFLICT ZONE STRIPING WITH 6" WHITE BIKE LANE LINE PER CAMUTCO, DETAIL 39A AND GREEN PAINT. SEE DETAIL "A" ON SHEET 3.
- 6) APPLY 12" THERMOPLASTIC WHITE LIMIT LINE PER CALTRANS STANDARD PLAN A24E.
- 7) APPLY 8" WHITE 30° DIAGONAL STRIPE AT 35' O.C.
- 8) INSTALL THERMOPLASTIC PAVEMENT MARKING SYMBOL AND ARROW PER CALTRANS STANDARD PLANS AND DETAIL E ON SHEET 3.
- 10) APPLY GREEN ENNIS-FLINT 985206 GREEN STANDARD FAST DRY WATERBORNE TRAFFIC PAINT WITH REFLECTIVE GLASS BEADS.
- 11) INSTALL THERMOPLASTIC PAVEMENT MARKING ARROW PER CALTRANS STANDARD PLAN A24A, ARROW TYPE PER PLAN.
- 13) INSTALL NEW SIGN AND POST PER PLAN. SIGN SHALL HAVE A MINIMUM OF 7' ABOVE FINISHED SURFACE.
- 14) FURNISH AND INSTALL 28" TAPCO CITY POST PER DETAIL "D" ON SHEET 3.
- 15) INSTALL 10' ASPHALT WHEEL STOP PER DETAIL "C" ON SHEET 3.
- 16) APPLY 4" WHITE LINE PER CAMUTCO, DETAIL 40.
- 17) PAINT CURB RED.
- 18) REMOVE EXISTING STRIPING.
- 26) REMOVE EXISTING SIGN AND POST.
- 28) APPLY 4" YELLOW LINE PER CAMUTCO, DETAIL 25.
- 29) APPLY 4" DOUBLE YELLOW LINES PER CAMUTCO, DETAIL 27.
- 30) APPLY "GREENBACK" SHARED LANE MARKING LANE PER DETAIL "H" ON SHEET 3. MARKINGS SHALL BE CENTERED IN TRAVEL LANE AND SPACED AT 150' INTERVALS.
- M) MATCH EXISTING.

REMOVAL NOTES

- R) REMOVE EXISTING THERMOPLASTIC STRIPING OR PAVEMENT MARKING BY METHOD OF GRINDING.

TAPER LENGTH CALCULATIONS:

1. MIN. TAPER =  $L = (1') \times (45) = 45' \rightarrow 100'$
2. MIN. TAPER =  $L = (7') \times (45) = 315'$
3. MIN. BIKE TAPER =  $L/3 = (10') \times (35)^2 / 2 / 2 = 35'$

$L$  = LENGTH OF TRANSITION FOR SPEEDS GREATER THAN 40 MPH =  $W \times S$

$L$  = LENGTH OF TRANSITION FOR SPEEDS OF 40 MPH OR LESS =  $W \times S^2 / 2 / 60$

$W$  = OFFSET  
 $S$  = DESIGN SPEED

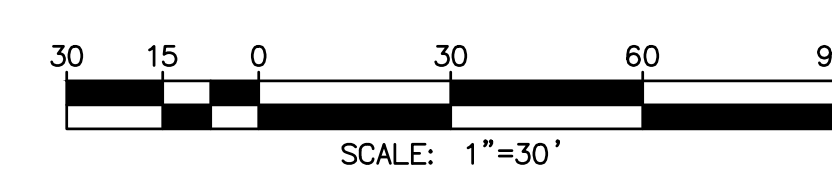
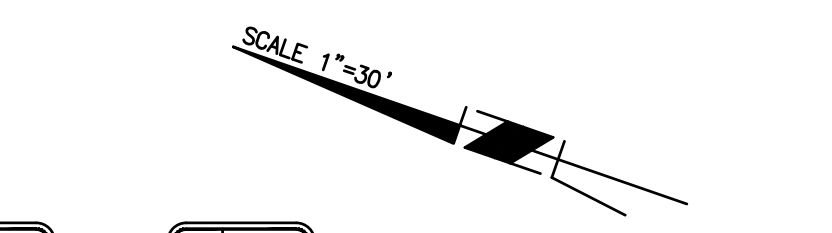
SIGN LEGEND

EXISTING

R2-1 (24 X 30)	R3-7 (30 X 30)	R7-9a (12 X 18)	R9-3 (18 X 18)	R9-3a (12 X 18)	R14-1 (24 X 18)	R26(CA) (12 X 18)	R30(CA) (12 X 18)	R81A(CA) (12 X 5)	R81B(CA) (8 X 5)

PROPOSED

R4-11 (30 X 30)	R26(CA) (12 X 18)	R81A(CA) (12 X 5)	R81B(CA) (8 X 5)	"BIKE" SIGN (30 X 48)

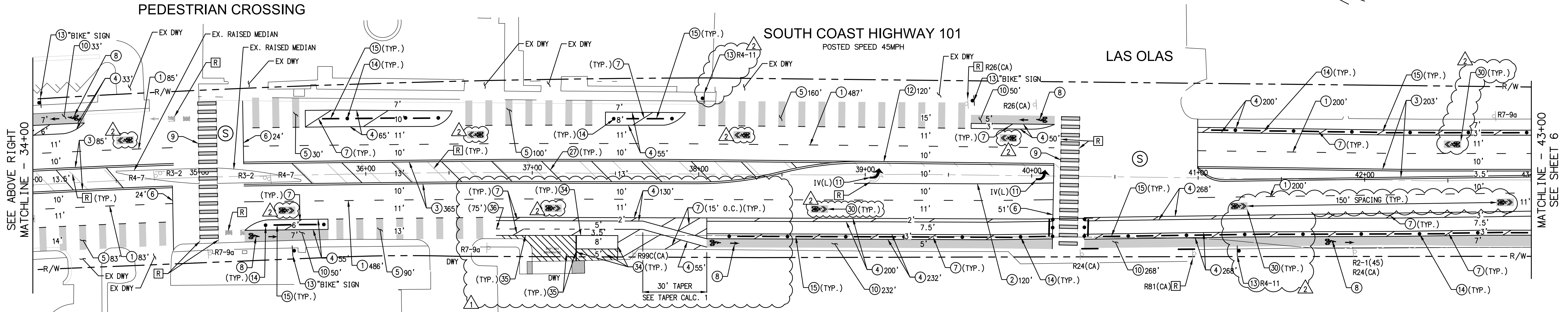
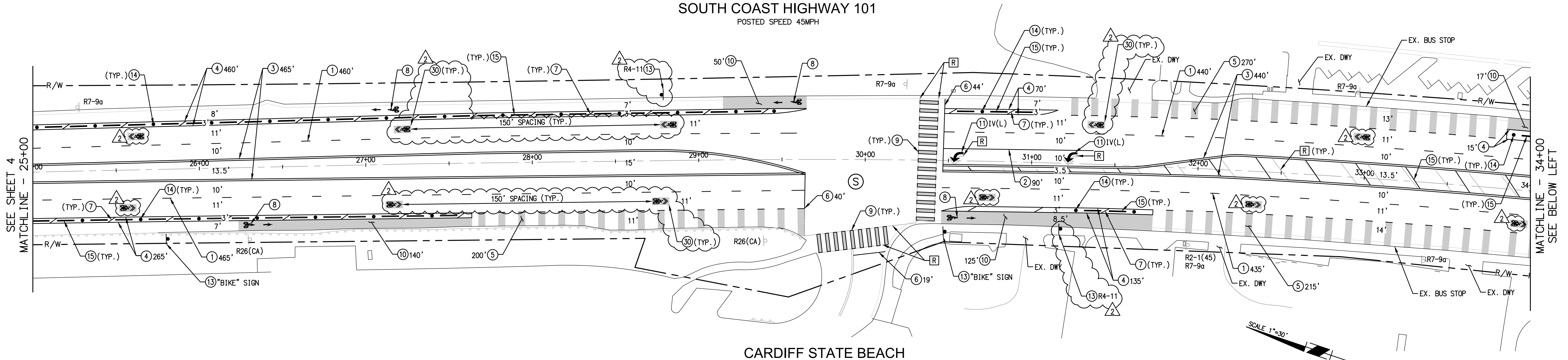


Feb 07, 2020 - 3:19pm T:\Projects\Encinitas\170525\_ As-Needed Civil Engineering\025.0014\_Coast 101 Bufferred Green Bike Lanes\07\_Engineering\CADD\DIV\_04\_SS.dwg  
 GPasareit

REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.
STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15				HORIZONTAL N/A	CL	JB	NM	RECOMMENDED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS	CS-20E
SHARROWS AND R4-11.		2020-02-07				VERTICAL N/A				APPROVED	SIGNING AND STRIPING PLAN	
											SHEET 4 OF 12	

Underground Service Alert  
Dig Alert  
CALL BEFORE YOU DIG  
CALL TOLL FREE  
811

SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH



CONSTRUCTION NOTES

- 1) APPLY 4" WHITE LINE PER CAMUTCD, DETAIL 9.
- 2) APPLY 8" WHITE CHANNELIZING LINE PER CAMUTCD, DETAIL 38.
- 3) APPLY 4" DOUBLE YELLOW LINES PER CAMUTCD, DETAIL 29.
- 4) APPLY 6" WHITE BIKE LANE LINE PER CAMUTCD, DETAIL 39.
- 5) INSTALL CONFLICT ZONE STRIPING WITH 6" WHITE BIKE LANE LINE PER CAMUTCD, DETAIL 39A AND GREEN PAINT. SEE DETAIL "A" ON SHEET 3.
- 6) APPLY 12" THERMOPLASTIC WHITE LIMIT LINE PER CALTRANS STANDARD PLAN A24E.
- 7) APPLY 8" WHITE 30° DIAGONAL STRIPE. STRIPES SHALL BE SPACED AT 35' O.C. UNLESS OTHERWISE NOTED ON PLAN.
- 8) INSTALL THERMOPLASTIC PAVEMENT MARKING SYMBOL AND ARROW PER CALTRANS STANDARD PLANS AND DETAIL E ON SHEET 3.
- 9) INSTALL WHITE THERMOPLASTIC CONTINENTAL CROSSWALK PER DETAIL "B" ON SHEET 3.
- 10) APPLY GREEN ENNIS-FLINT 985206 GREEN STANDARD FAST DRY WATERBORNE TRAFFIC PAINT WITH REFLECTIVE GLASS BEADS.
- 11) INSTALL THERMOPLASTIC PAVEMENT MARKING ARROW PER CALTRANS STANDARD PLAN A24A, ARROW TYPE PER PLAN.
- 12) APPLY 4" DOUBLE YELLOW NO PASSING ZONE LINES PER CAMUTCD, DETAIL 22.
- 13) INSTALL NEW SIGN AND POST PER PLAN. SIGN SHALL HAVE A MINIMUM OF 7' ABOVE FINISHED SURFACE.
- 14) FURNISH AND INSTALL 28" TAPCO CITY POST PER DETAIL "D" ON SHEET 3.
- 15) INSTALL 10" ASPHALT WHEEL STOP PER DETAIL "C" ON SHEET 3.
- 16) APPLY 8" YELLOW 30° DIAGONAL STRIPE AT 35' O.C.
- 17) APPLY "GREENBACK" SHARED LANE MARKING LANE PER DETAIL "H" ON SHEET 3. MARKINGS SHALL BE CENTERED IN TRAVEL LANE AND SPACED AT 150' INTERVALS.
- 18) APPLY 4" BLUE DISABLE PERSONS PARKING LINE PER CAMUTCD FIGURE 3B-22(CA). DIAGONAL LINES SHALL BE SPACED 3' MAX O.C. AT 45 DEGREES. PARKING STALL SHALL BE 25'X8'.
- 19) APPLY 4" RED LINES. DIAGONAL LINES SHALL BE 3' MAX O.C. AT 45°. CONTRACTOR SHALL APPLY "NO PARKING FIRE LANE" LEGEND CENTERED IN FIRE LANE AREA.
- 20) APPLY 6" DASHED WHITE BIKE LANE LINE PER CAMUTCD, DETAIL 39A.

REMOVAL NOTES

- R) REMOVE EXISTING THERMOPLASTIC STRIPING OR PAVEMENT MARKING BY METHOD OF GRINDING.
- S) REMOVE EXISTING SIGN AND POST COMPLETE.

TAPER LENGTH CALCULATIONS:

MIN. BIKE TAPER =  $L/3 = (8') \times (35')^2 / 260 / 2 = 28' \rightarrow 30'$

$L = \text{LENGTH OF TRANSITION FOR SPEEDS OF 40 MPH OR LESS}$   
 $= \frac{W \times S^2}{2}$   
 60

W = OFFSET  
 S = DESIGN SPEED

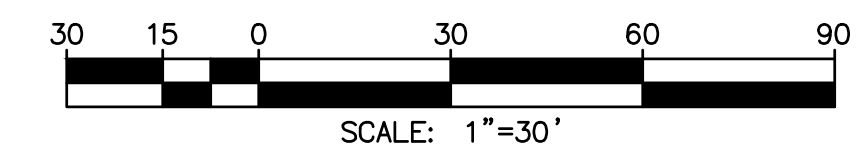
SIGN LEGEND

EXISTING

- R2-1 (24 X 30) SPEED LIMIT 45
- R3-2 (24 X 24) NO LEFT TURN
- R4-7 (24 X 30) AHEAD OF TRAFFIC
- R7-9a (12 X 18) NO BIKE LANE
- R24(CA) (12 X 18) PARK PARALLEL
- R26(CA) (12 X 18) NO PARKING ANY TIME
- R81(CA) (12 X 8) BIKE LANE
- R99C(CA) (12 X 24) PARKING ONLY

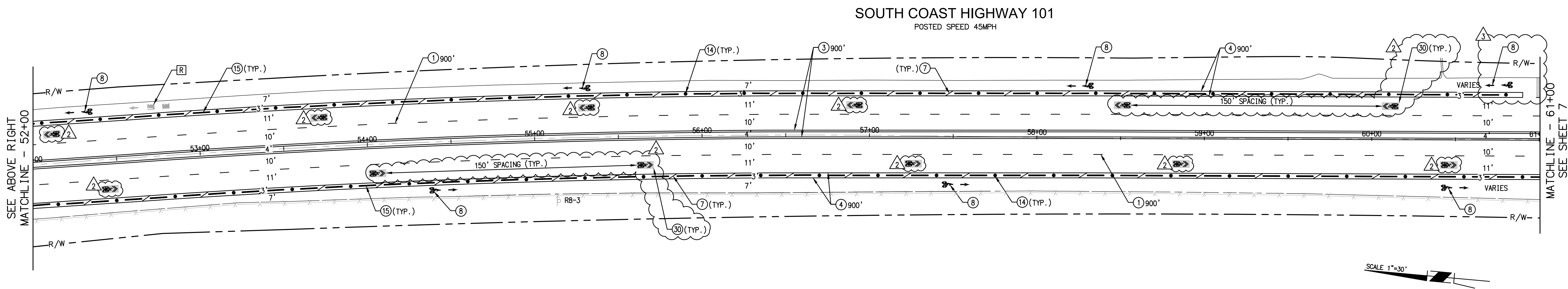
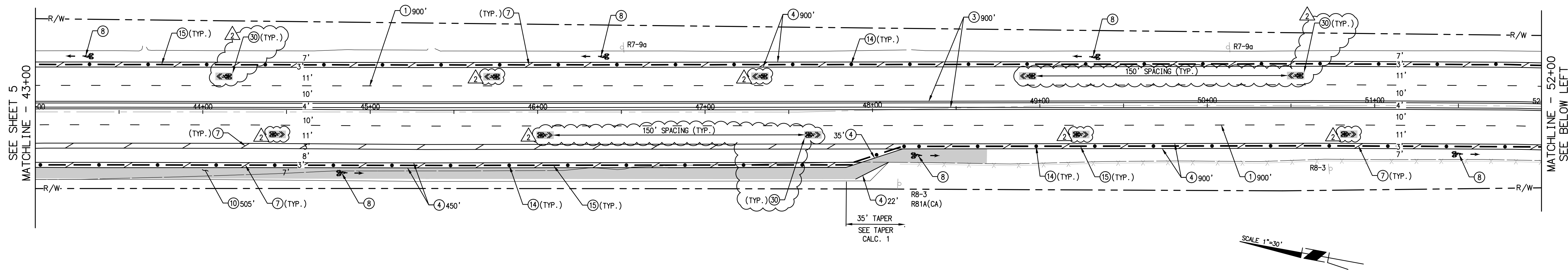
PROPOSED

- R4-11 (30 X 30) MAY USE FULL LANE
- "BIKE" SIGN (30 X 48) YIELD TO BIKES



REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.
STRIPING, SLURRY SEAL, SAND RETENTION. SHARROWS AND R4-11.		2019-11-15 2020-02-07				HORIZONTAL N/A VERTICAL N/A		CL	JB	NM	RECOMMENDED APPROVED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS SIGNING AND STRIPING PLAN	CS-20E

SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH



CONSTRUCTION NOTES

- 1 APPLY 4" WHITE LINE PER CAMUTOC, DETAIL 9.
- 3 APPLY 4" DOUBLE YELLOW LINES PER CAMUTOC, DETAIL 29.
- 4 APPLY 6" WHITE BIKE LANE LINE PER CAMUTOC, DETAIL 39.
- 7 APPLY 8" WHITE 30° DIAGONAL STRIPE AT 35' O.C.
- 8 INSTALL THERMOPLASTIC PAVEMENT MARKING SYMBOL AND ARROW PER CALTRANS STANDARD PLANS AND DETAIL E ON SHEET 3.
- 10 APPLY GREEN ENNIS-FLINT 985206 GREEN STANDARD FAST DRY WATERBORNE TRAFFIC PAINT WITH REFLECTIVE GLASS BEADS.
- 14 FURNISH AND INSTALL 28" TAPCO CITY POST PER DETAIL "D" ON SHEET 3.
- 15 INSTALL 10" ASPHALT WHEEL STOP PER DETAIL "C" ON SHEET 3.
- 30 APPLY "GREENBACK" SHARED LANE MARKING LANE PER DETAIL "H" ON SHEET 3. MARKINGS SHALL BE CENTERED IN TRAVEL LANE AND SPACED AT 150' INTERVALS.

REMOVAL NOTES

- R REMOVE EXISTING THERMOPLASTIC STRIPING OR PAVEMENT MARKING BY METHOD OF GRINDING.

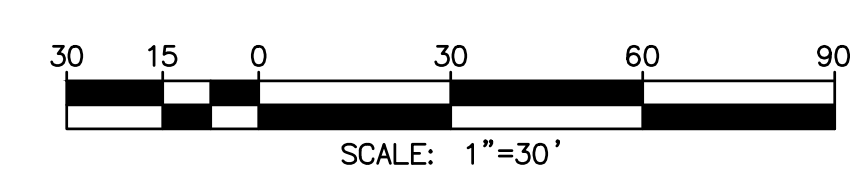
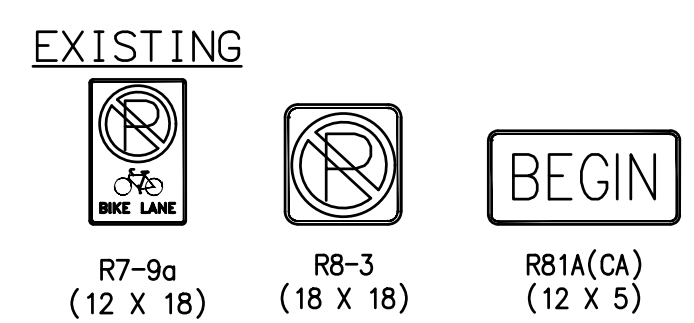
TAPER LENGTH CALCULATIONS:

1. MIN. BIKE TAPER =  $L/3 = (10') \times (35)^2 / 60^2 / 2 = 35'$

$L = \text{LENGTH OF TRANSITION FOR SPEEDS OF 40 MPH OR LESS}$   
 $= W \times S^2 / 2$

W = OFFSET  
 S = DESIGN SPEED

SIGN LEGEND



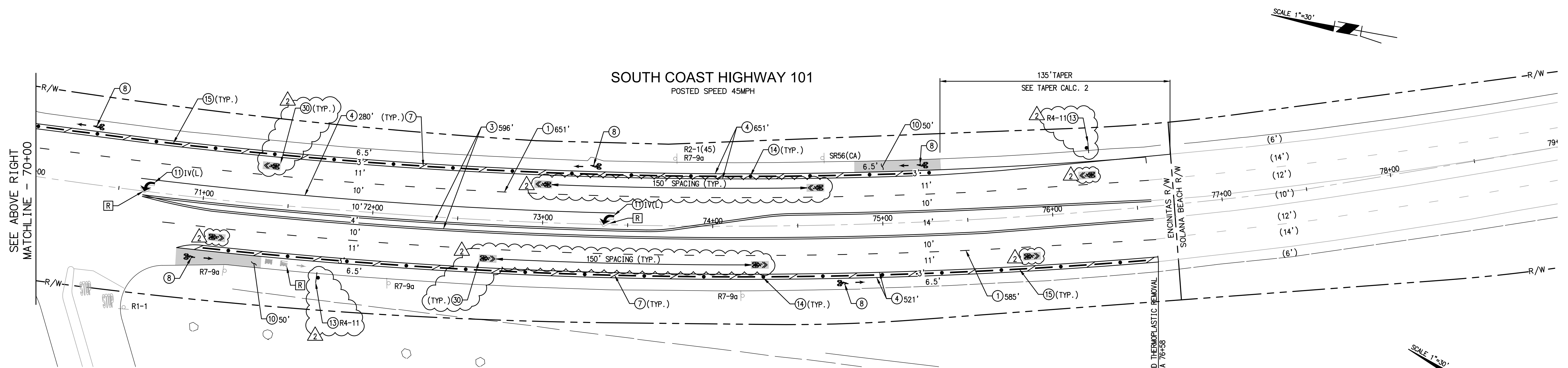
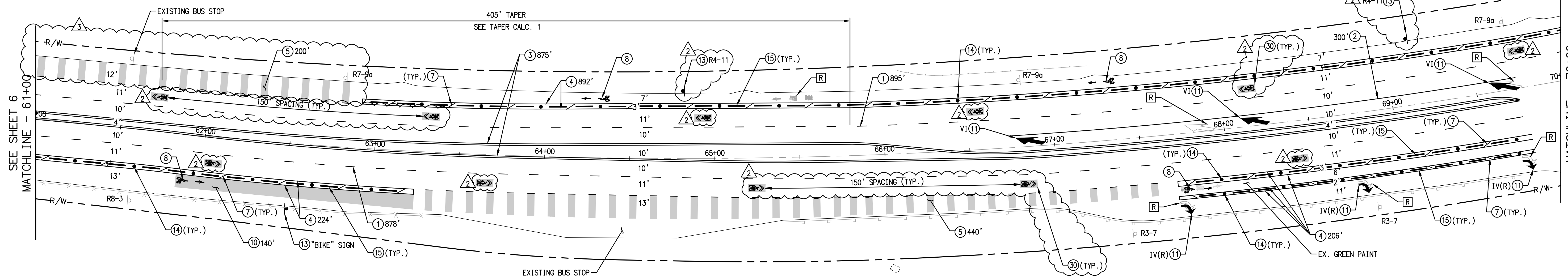
Underground Service Alert  
 Dig Alert  
 CALL BEFORE YOU DIG  
 CALL TOLL FREE  
 811

REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.	
STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15				HORIZONTAL N/A	CL	TB	NM	RECOMMENDED	APPROVED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS SIGNING AND STRIPING PLAN	CS-20E
SHARROWS AND R4-11.		2020-02-07				VERTICAL N/A			BY: _____	BY: _____	SHEET 6 OF 12		
BUS STOP CONFLICT STRIPING.		2020-02-07							DATE: 11-05-2019	DATE: _____			

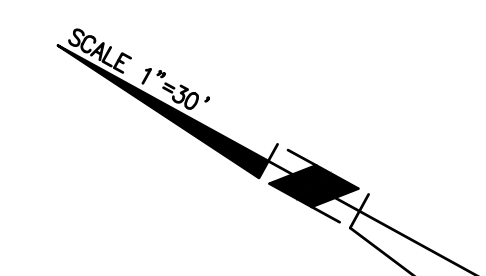
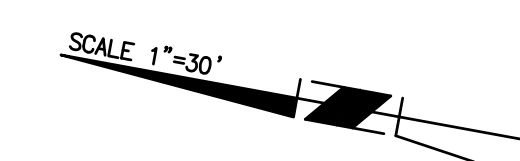
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SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH



SOUTH CARDIFF STATE BEACH



CONSTRUCTION NOTES

- 1) APPLY 4" WHITE LINE PER CAMUTOD, DETAIL 9.
- 2) APPLY 8" WHITE CHANNELIZING LINE PER CAMUTOD, DETAIL 38.
- 3) APPLY 4" DOUBLE YELLOW LINES PER CAMUTOD, DETAIL 29.
- 4) APPLY 6" WHITE BIKE LANE LINE PER CAMUTOD, DETAIL 39.
- 5) INSTALL CONFLICT ZONE STRIPING WITH 6" WHITE BIKE LANE LINE PER CAMUTOD, DETAIL 39A AND GREEN PAINT. SEE DETAIL "A" ON SHEET 3.
- 6) APPLY 8" WHITE 30° DIAGONAL STRIPE AT 35' O.C.
- 7) INSTALL THERMOPLASTIC PAVEMENT MARKING SYMBOL AND ARROW PER CALTRANS STANDARD PLANS AND DETAIL E ON SHEET 3.
- 8) APPLY GREEN ENNIS-FLINT 985206 GREEN STANDARD FAST DRY WATERBORNE TRAFFIC PAINT WITH REFLECTIVE GLASS BEADS.
- 9) INSTALL THERMOPLASTIC PAVEMENT MARKING ARROW PER CALTRANS STANDARD PLAN A24A, ARROW TYPE PER PLAN.
- 10) INSTALL NEW SIGN AND POST PER PLAN. SIGN SHALL HAVE A MINIMUM OF 7' ABOVE FINISHED SURFACE.
- 11) FURNISH AND INSTALL 28" TAPCO CITY POST PER DETAIL "D" ON SHEET 3.
- 12) INSTALL 10" ASPHALT WHEEL STOP PER DETAIL "C" ON SHEET 3.
- 13) APPLY "GREENBACK" SHARED LANE MARKING LANE PER DETAIL "H" ON SHEET 3. MARKINGS SHALL BE CENTERED IN TRAVEL LANE AND SPACED AT 150' INTERVALS.
- 14) MATCH EXISTING.

REMOVAL NOTES

- R) REMOVE EXISTING THERMOPLASTIC STRIPING OR PAVEMENT MARKING BY METHOD OF GRINDING.

TAPER LENGTH CALCULATIONS:

- 1. MIN. TAPER = L = (9') X (45) = 405'
  - 2. MIN. TAPER = L = (3') X (45) = 135'
  - 3.
- L = LENGTH OF TRANSITION FOR SPEEDS GREATER THAN 40 MPH  
= W X S
- W = OFFSET  
S = DESIGN SPEED

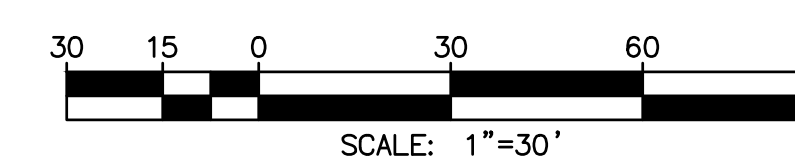
SIGN LEGEND

EXISTING

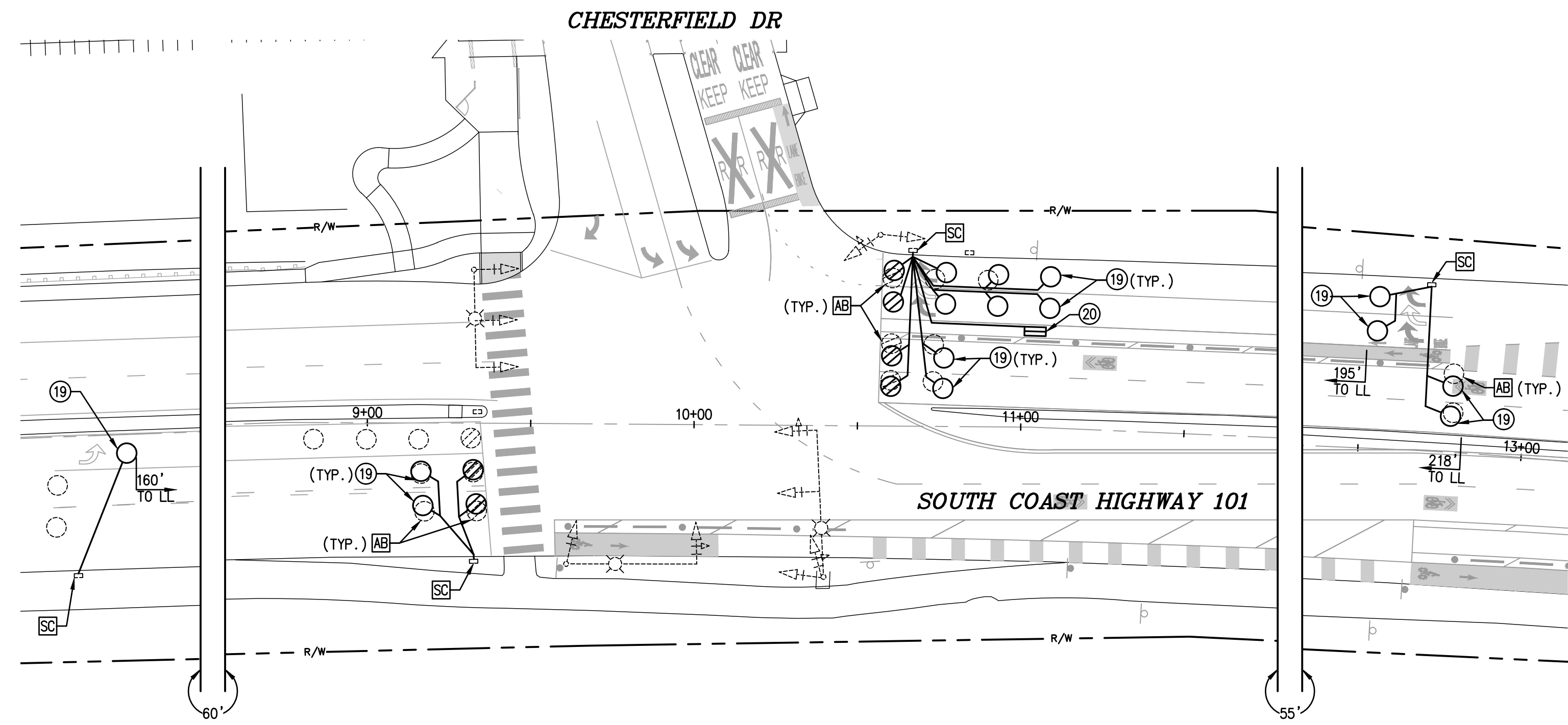
- R1-1 (30 X 30) (36 X 36) STOP
- R2-1 (24 X 30) SPEED LIMIT 45
- R3-7 (30 X 30) RIGHT LANE MUST TURN RIGHT
- R7-9a (12 X 18) BIKE LANE
- R8-3 (18 X 18) BIKE LANE
- SR56(CA) (36 X 54) PHOTO ENFORCED

PROPOSED

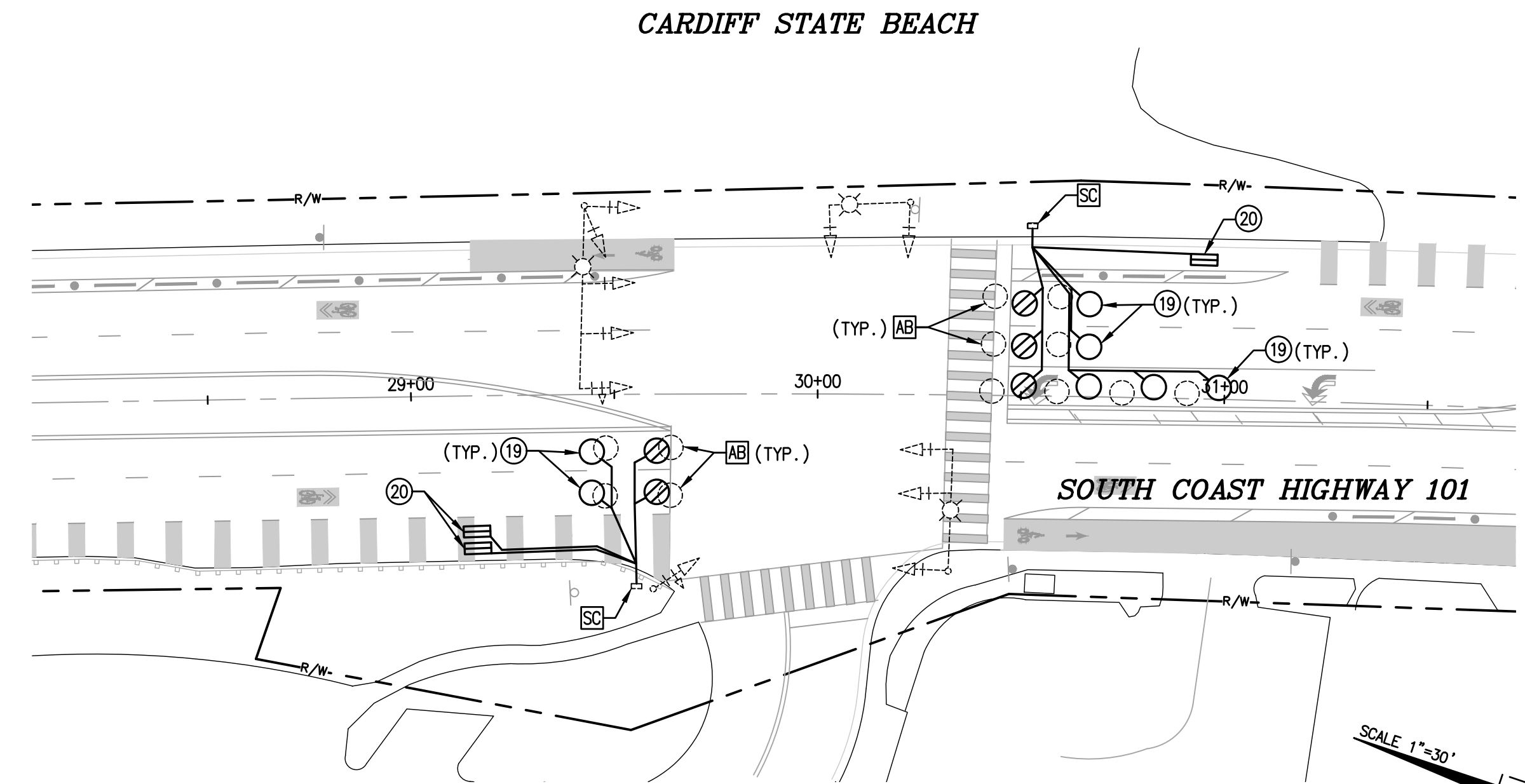
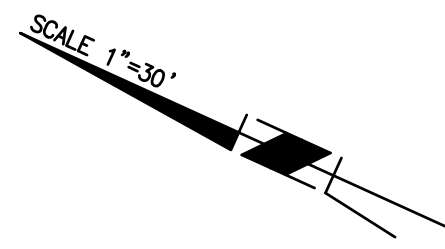
- R4-11 (30 X 30) MAY USE FULL LANE
- "BIKE" SIGN (30 X 48)



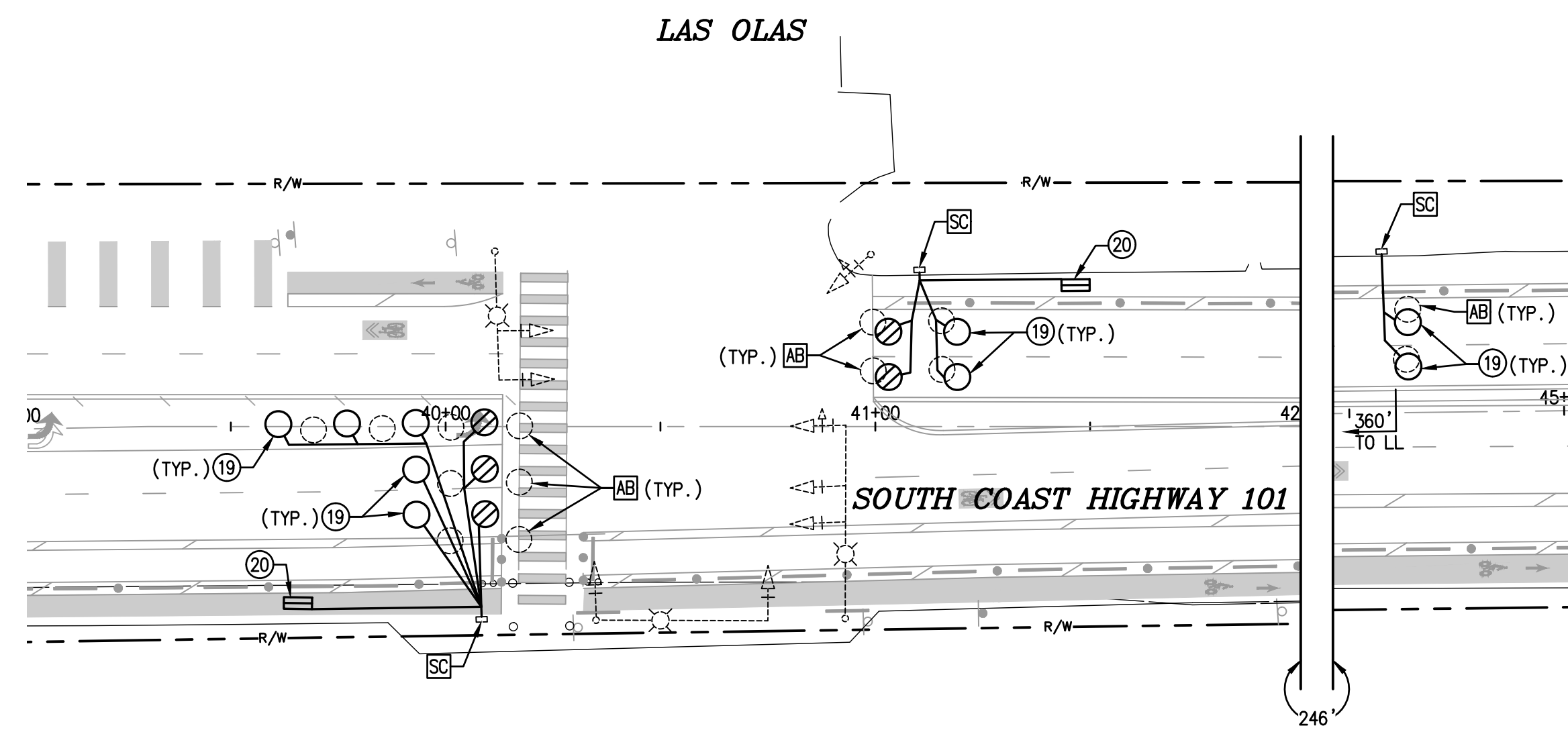
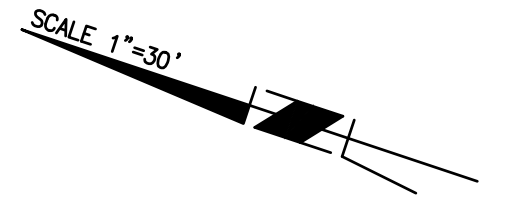
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STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15					CL	TB	NM	RECOMMENDED	APPROVED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS SIGNING AND STRIPING PLAN	CS-20E
SHARROWS AND R4-11.		2020-02-07				HORIZONTAL N/A	PLANS PREPARED UNDER SUPERVISION OF	NICOLAS M. MINICILLI	DATE: 11-05-2019	BY: _____	DATE: _____		
BUS STOP CONFLICT STRIPING.		2020-02-07				VERTICAL N/A	DESIGNED BY	NICOLAS M. MINICILLI	DATE: 12-31-2021	BY: _____	DATE: _____		
							5865 AVENIDA ENCINAS, #142B CARLSBAD, CA 92008 PH: 760-602-4290 WWW.STCTRAFFIC.COM						SHEET 7 OF 12



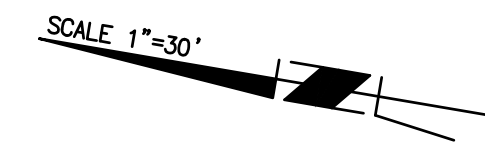
SOUTH COAST HIGHWAY 101 & CHESTERFIELD DR.



SOUTH COAST HIGHWAY 101 & CARDIFF STATE BEACH

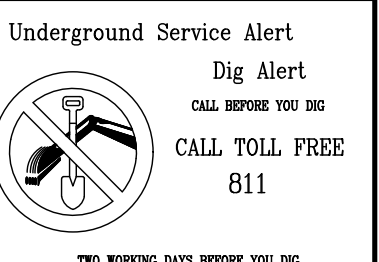
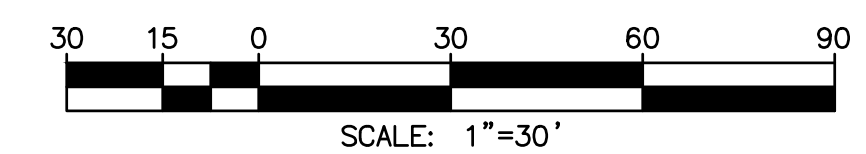


SOUTH COAST HIGHWAY 101 & LAS OLAS



**CONSTRUCTION NOTES**

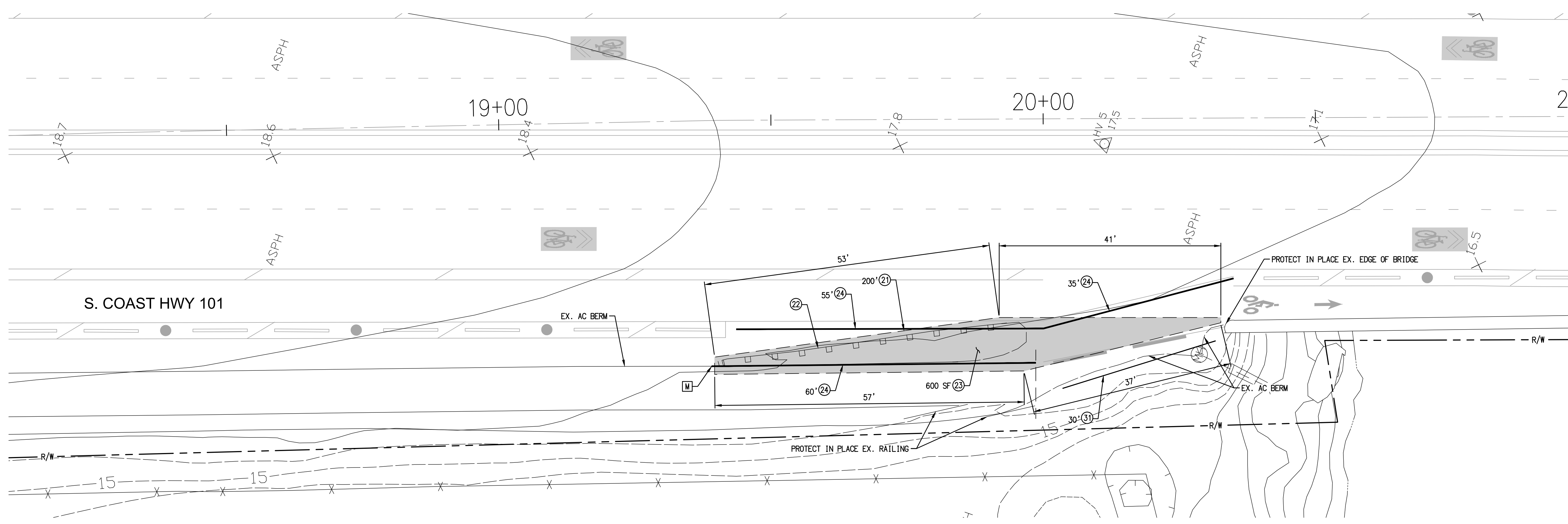
- 19 FURNISH AND INSTALL TYPE E VEHICLE DETECTOR LOOP PER 2018 CALTRANS RSP ES-SB. REFRESH EXISTING PAVEMENT MARKINGS AS NECESSARY PER SIGNING AND STRIPING PLANS. LIMIT LINE DETECTOR LOOPS SHALL BE TYPE F.
- 20 FURNISH AND INSTALL 4'X 6' MODIFIED TYPE Q BICYCLE DETECTOR PER 2018 CALTRANS RSP ES-SB. SIZE LOOP PER DETAIL "F" ON SHEET 3. FURNISH AND INSTALL NEW DETECTOR CARDS IN CABINET AS NECESSARY. FURNISH AND INSTALL NEW DLC TO TRAFFIC SIGNAL CABINET. REFRESH EXISTING PAVEMENT MARKINGS AS NECESSARY PER SIGNING AND STRIPING PLANS.



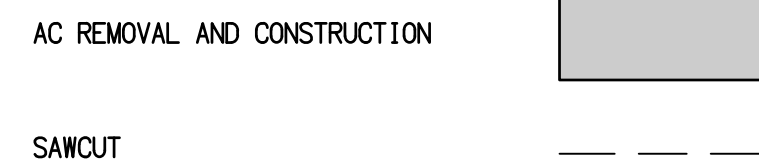
REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.		
STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15				HORIZONTAL N/A	CL	TB	NM	RECOMMENDED	CITY OF ENCINITAS ENGINEERING DEPARTMENT	CS-20E		
SHARROWS AND R4-11.		2020-02-07				VERTICAL N/A				APPROVED	CITY OF ENCINITAS ENGINEERING DEPARTMENT			
							5865 AVENIDA ENCINAS, #142B CARLSBAD, CA 92008 PH: 760-602-4290 WWW.STCTRAFFIC.COM			PLANS PREPARED UNDER SUPERVISION OF <i>Nicolas M. Mincilli</i> NICOLAS M. MINCILLI DATE: 11-05-2019 R.C.E. NO. 74667 EXP. 12-31-2021		PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS TRAFFIC SIGNAL PLAN		SHEET 8 OF 12

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 GPasarelli

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**LEGEND**

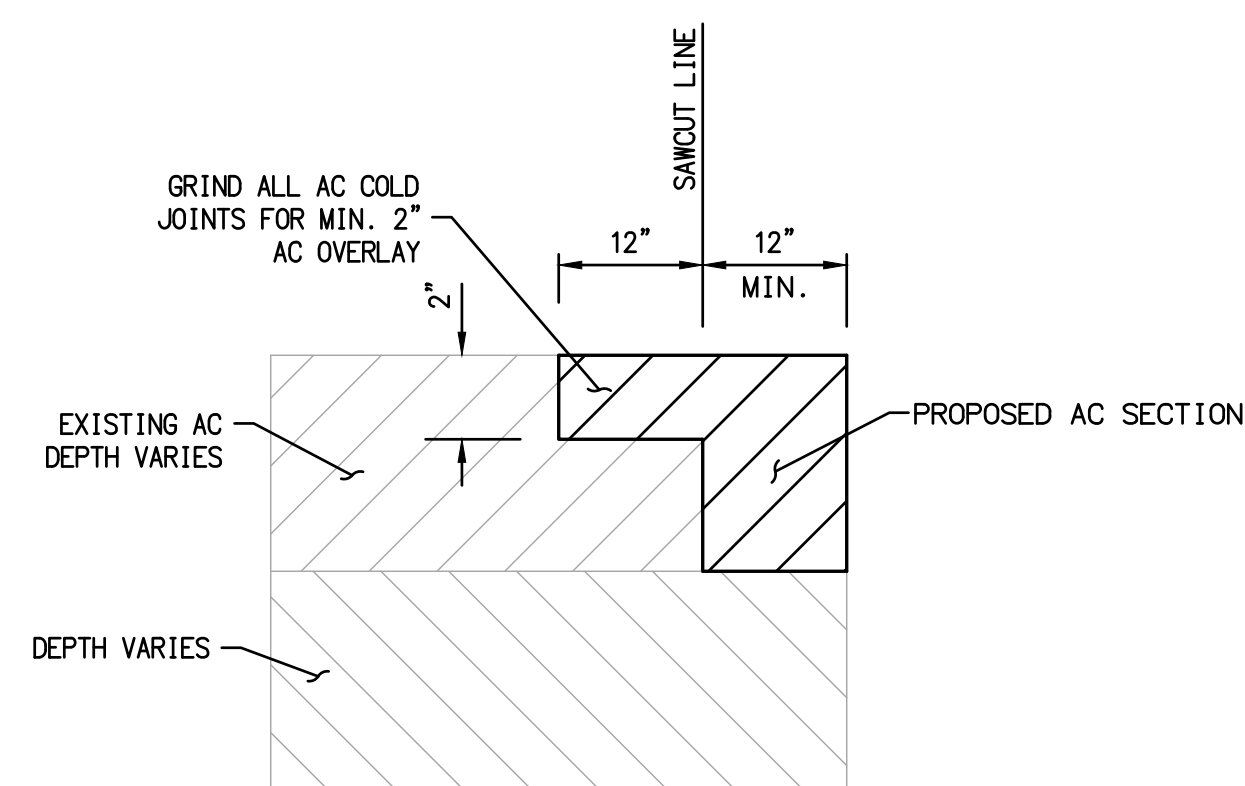


**CONSTRUCTION NOTES**

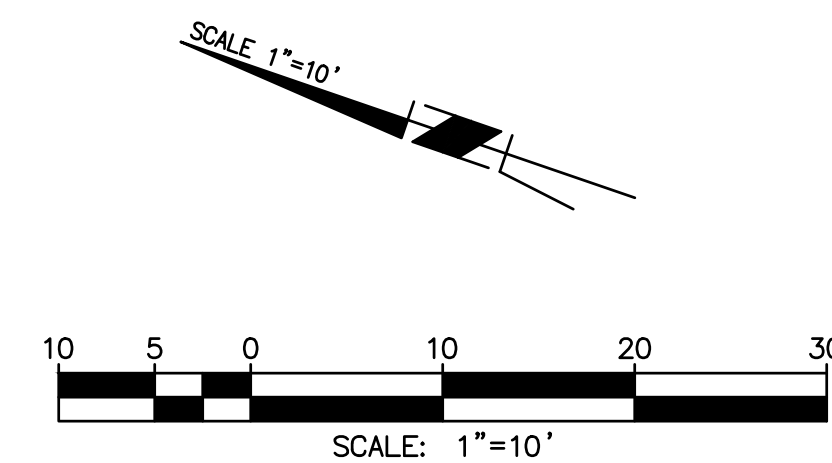
- CONTRACTOR SHALL PROTECT IN PLACE ALL EXISTING UTILITIES AND STRUCTURES, AND SHALL BE RESPONSIBLE FOR REPLACEMENT SHOULD ANY DAMAGE OCCUR.

**CONSTRUCTION NOTES**

- SAWCUT EX. PAVEMENT PER DETAIL "I" ON THIS SHEET.
- REMOVE EXISTING GUARDRAIL COMPLETE.
- REMOVE EXISTING AC PAVEMENT COMPLETE. CONSTRUCT AC PAVEMENT AND TYPE 2 AGGREGATE BASE. MATCH EXISTING ROADWAY SECTION IN KIND.
- CONSTRUCT "TYPE A" 6" AC BERM PER SDRSD G-05. ADD 2' CUTOUTS EVERY 15' FOR DRAINAGE. PAINT 2' WHITE STRIPES EVERY 4'.
- FURNISH AND INSTALL PROTECTIVE RAILING PER SDRSD DRAWING NO. M-24. RAILING SHALL BE PIPE GUARDRAIL-POST TYPE AND INTERMEDIATE RAILS SHALL BE SPACED AT 4 INCHES. POSTS SHALL BE DRILLED INTO EXISTING AC BERM AND GROUTED IN PLACE.
- MATCH EXISTING AC BERM.

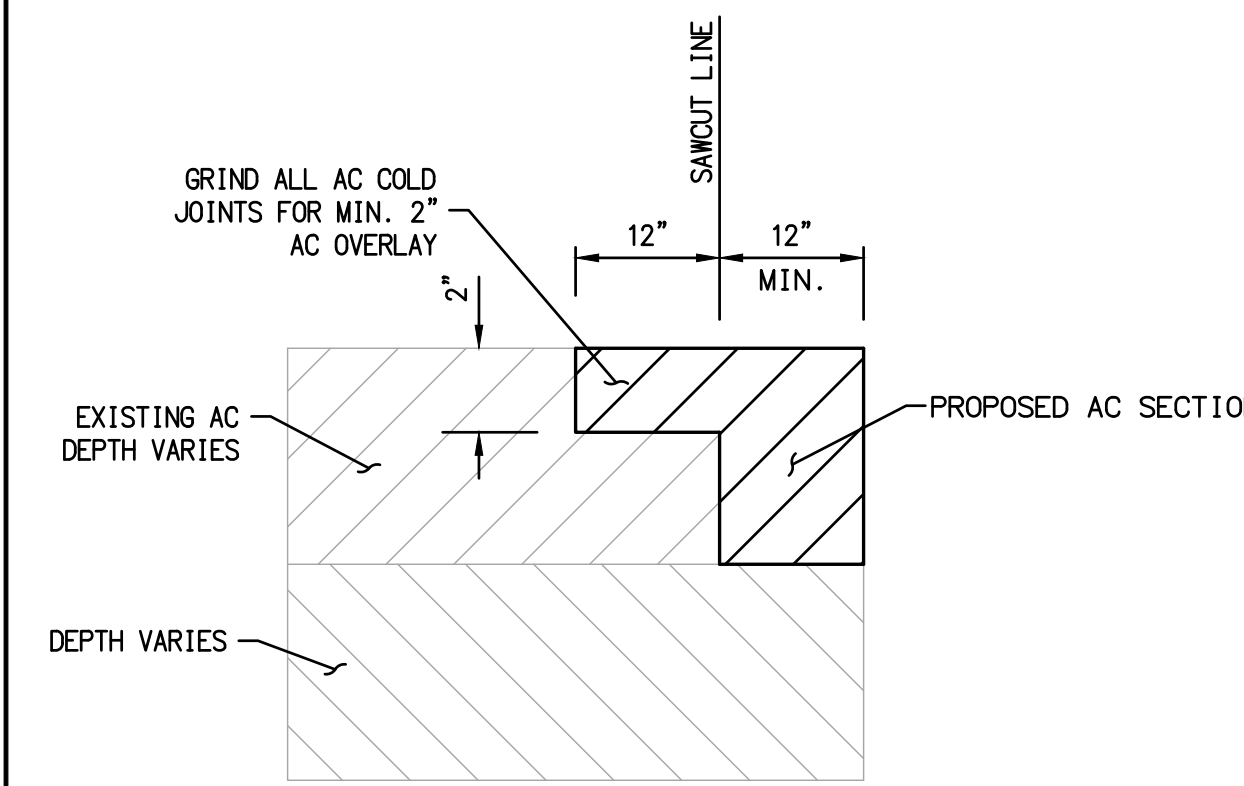
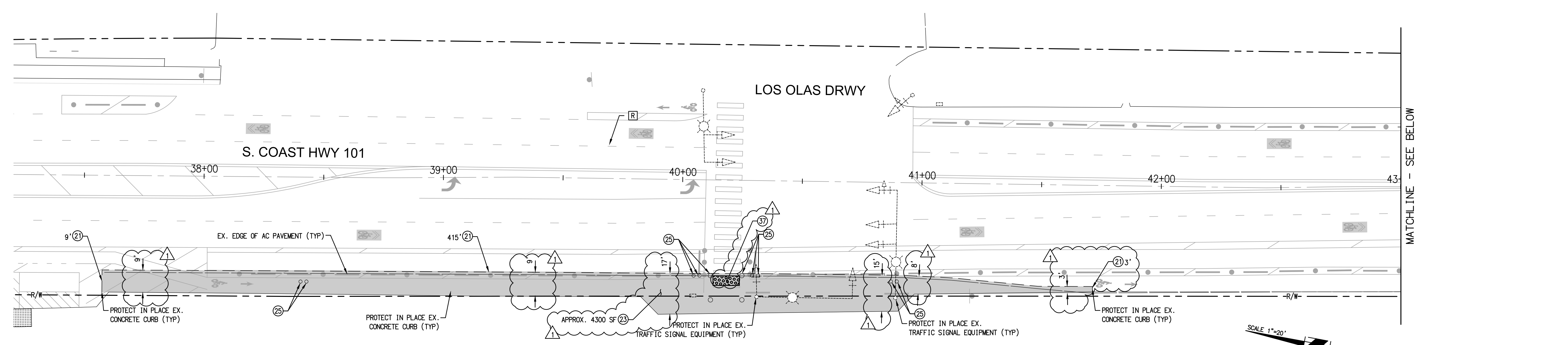


**DETAIL "I"**  
AC PAVEMENT JOINT  
NOT TO SCALE



REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.	
STRIPING, SLURRY SEAL, SAND RETENTION, SHARROWS AND R4-11.		2019-11-15 2020-02-07				HORIZONTAL N/A VERTICAL N/A	CL	TB	NM	RECOMMENDED BY: _____ DATE: _____ R.C.E. NO.: 74667	APPROVED BY: _____ DATE: _____ R.C.E. NO.: _____	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS STREET IMPROVEMENT PLAN	CS-20E
							5865 AVENIDA ENCINAS, #142B CARLSBAD, CA 92008 PH: 760-602-4290 WWW.STCTRAFFIC.COM	PLANS PREPARED UNDER SUPERVISION OF <i>Nicolas M. Mincilli</i> NICOLAS M. MINCILLI			SHEET 9 OF 12		

Feb 07, 2020 - 3:22pm T:\Projects\Encinitas\17.0525\_ As-Needed Civil Engineering\025.0014\_Coast 101 Bufferred Green Bike Lanes\07\_Engineering\CADD\DWG\###\_DIV\_10\_ST.dwg  
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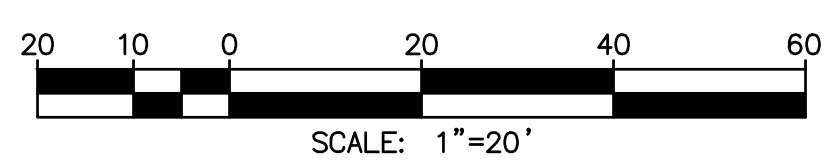
**DETAIL "1"**  
AC PAVEMENT JOINT  
NOT TO SCALE

- LEGEND**
- AC/DIRT REMOVAL AND AC CONSTRUCTION
  - SAWCUT

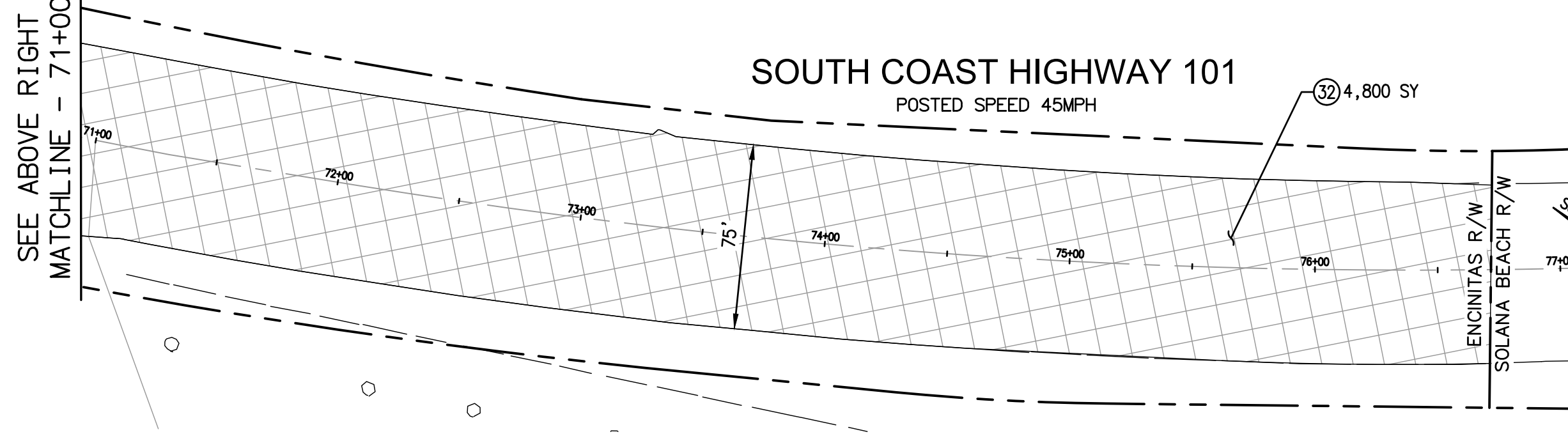
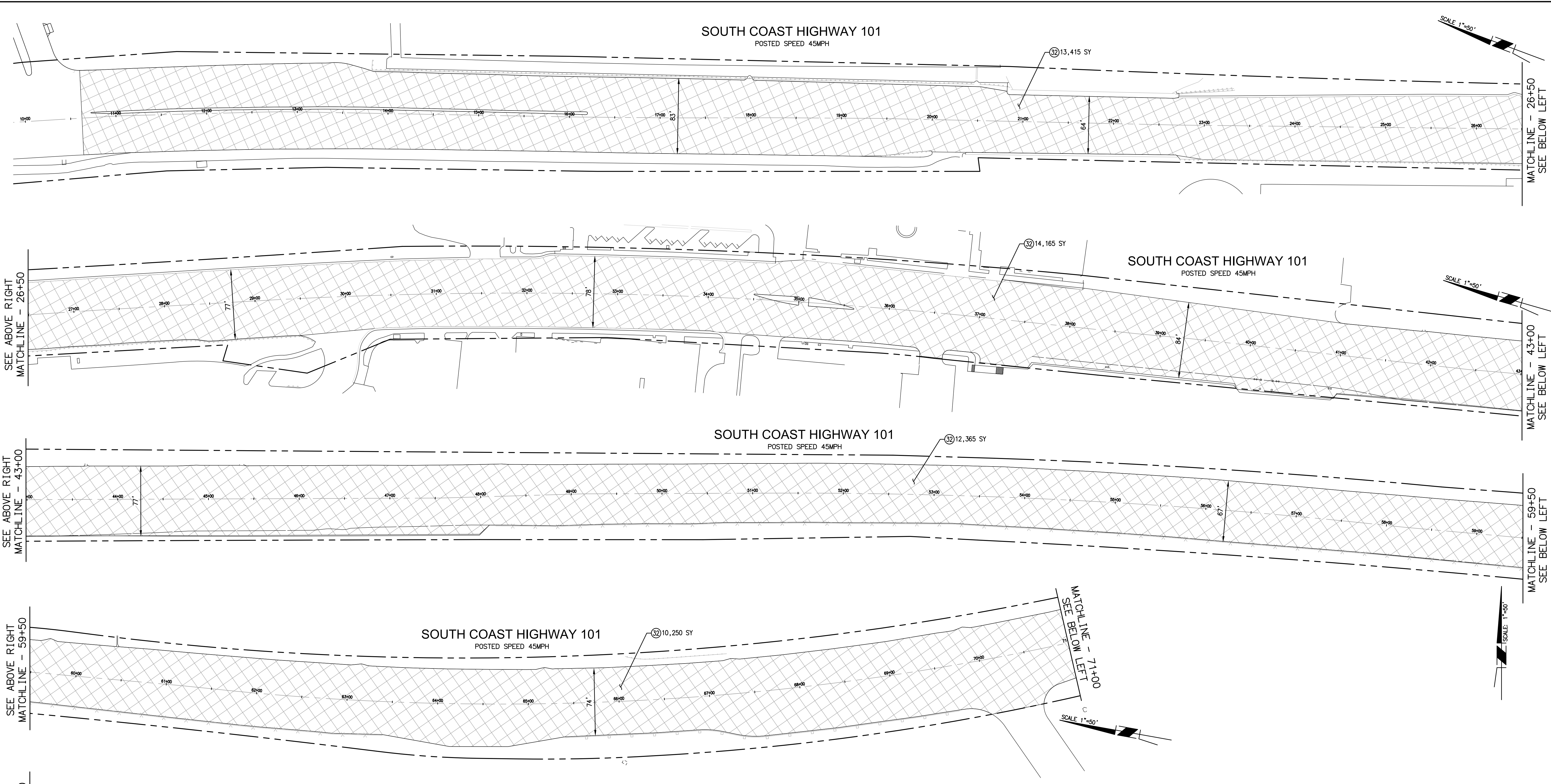
- CONSTRUCTION NOTES**
1. CONTRACTOR SHALL PROTECT IN PLACE ALL EXISTING UTILITIES AND STRUCTURES, AND SHALL BE RESPONSIBLE FOR REPLACEMENT SHOULD ANY DAMAGE OCCUR. ANY PULL BOXES FOUND IN AC PAVING AREA SHALL BE BROUGHT TO FINISH GRADE.

- CONSTRUCTION NOTES**
- (21) SAWCUT EX. PAVEMENT PER DETAIL "1" ON THIS SHEET.
  - (23) REMOVE EXISTING AC PAVEMENT COMPLETE. CONSTRUCT AC PAVEMENT AND TYPE 2 AGGREGATE BASE. MATCH EXISTING ROADWAY SECTION IN KIND.
  - (25) REMOVE CONCRETE BOLLARD AND FOUNDATION COMPLETE.
  - (37) FURNISH AND INSTALL YELLOW TRUNCATED DOMES PER SORSO G-30.

REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.	
STRIPING, SLURRY SEAL, SAND RETENTION. SHARROWS AND R4-11.		2019-11-15 2020-02-07				HORIZONTAL N/A VERTICAL N/A	CL	TB	NM	RECOMMENDED BY: _____ DATE: _____ R.C.E. NO.: _____	APPROVED BY: _____ DATE: _____ R.C.E. NO.: _____	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS STREET IMPROVEMENT PLAN	CS-20E
SHEET 10 OF 12													

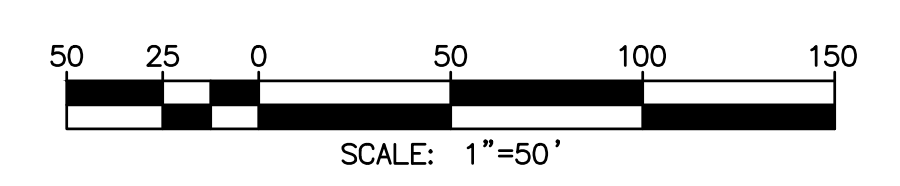


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**CONSTRUCTION NOTES**  
 (32) APPLY TYPE II SLURRY SEAL ON ROAD FROM STATION 10+62 TO STATION 76+70.

**LEGEND**  
 TYPE II SLURRY SEAL



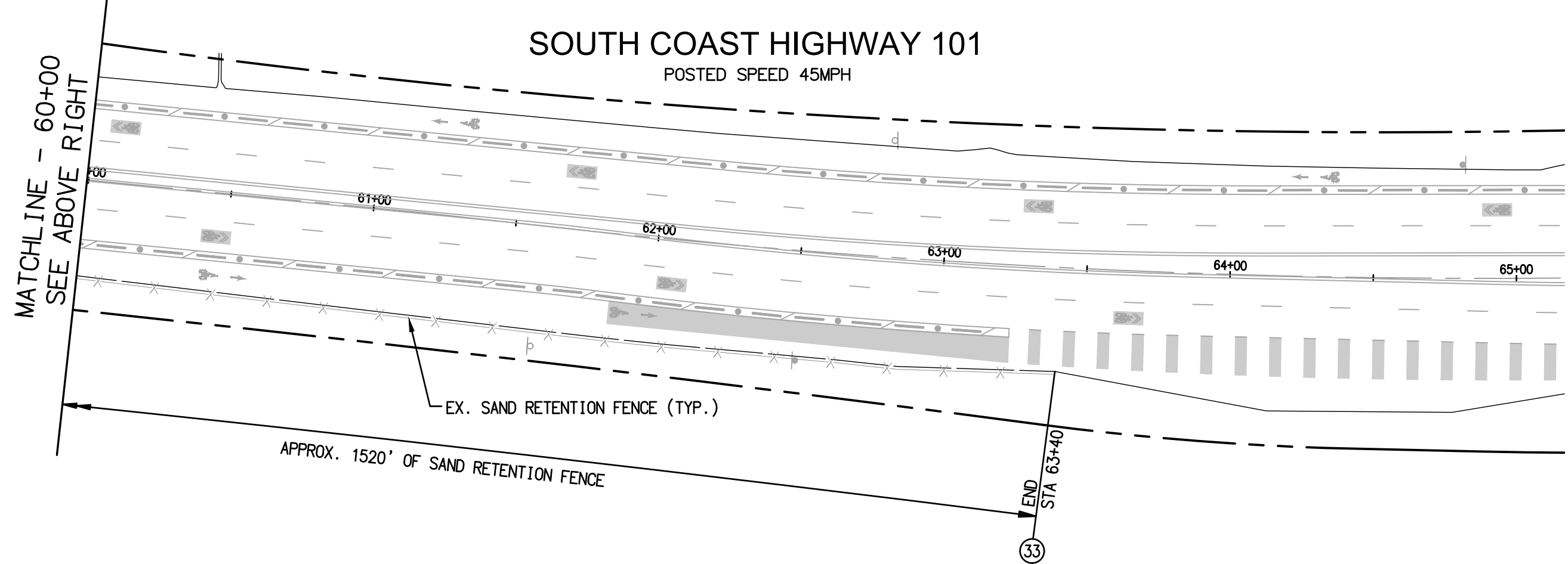
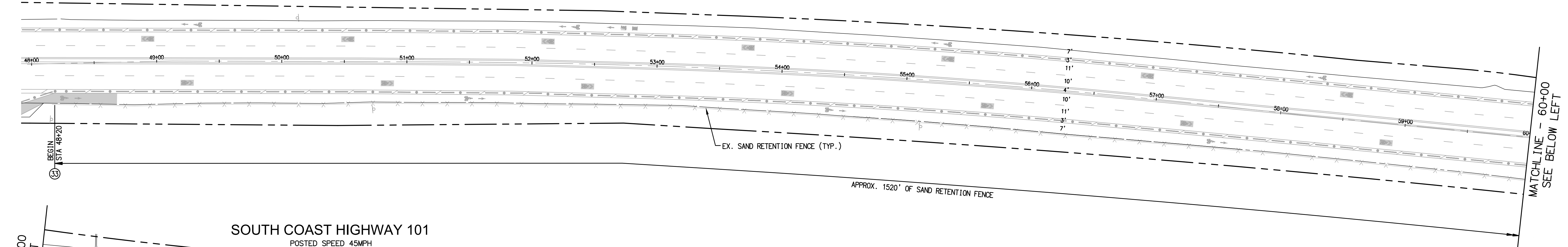
REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.
STRIPING, SLURRY SEAL, SAND RETENTION.		2019-11-15					CL	JW	NM	RECOMMENDED	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS ASPHALT SLURRY SEAL IMPROVEMENTS	CS-20E
SHARROWS AND R4-11.		2020-02-07							APPROVED		SHEET 11 OF 12	

5865 AVENIDA ENCINAS, #142B  
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PLANS PREPARED UNDER SUPERVISION OF  
*Nicolas M. Mincilli*  
 NICOLAS M. MINCILLI  
 DATE: 11-05-2019  
 R.C.E. NO. 74667  
 EXP. 12-31-2021

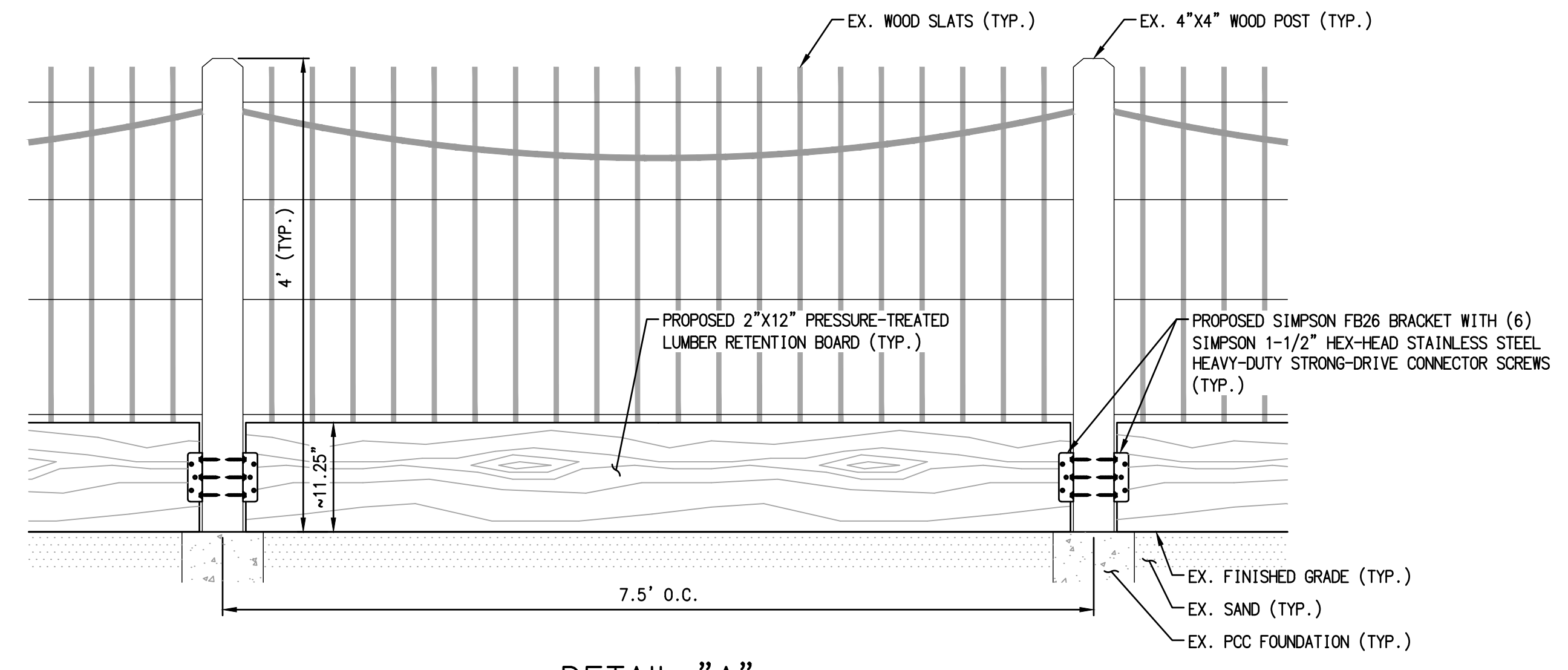
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 R.C.E. NO.: \_\_\_\_\_ R.C.E. NO.: \_\_\_\_\_

SOUTH COAST HIGHWAY 101  
POSTED SPEED 45MPH

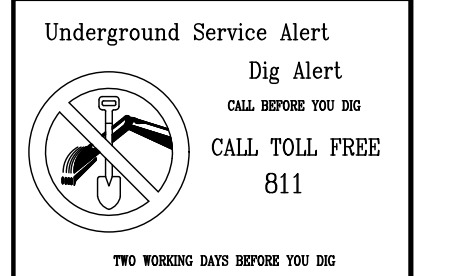
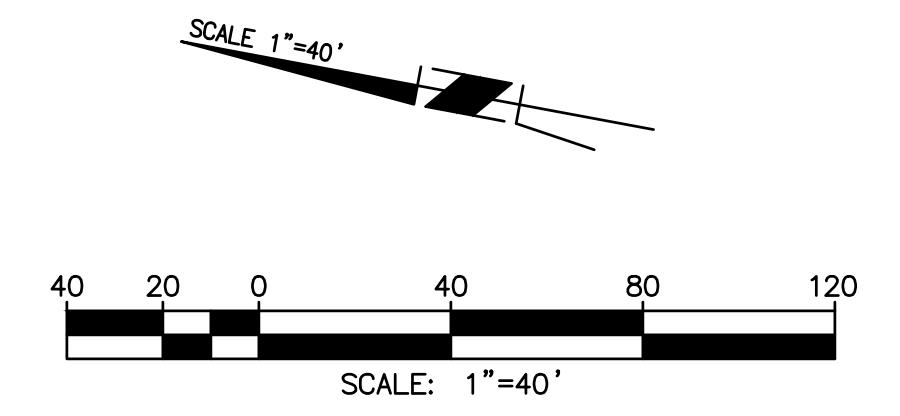


CONSTRUCTION NOTES

③ FURNISH AND INSTALL 2"x12" PRESSURE-TREATED LUMBER RETENTION BOARD BETWEEN EXISTING 4"x4" WOOD POSTS. LUMBER SHALL BE HEM FIR (HF) MINIMUM GRADE WITH BROWN STAIN. FURNISH AND INSTALL SIMPSON STRONG-TIE PART# FB26 GALVANIZED FENCE RAIL BRACKET WITH SIMPSON 1-1/2" HEX-HEAD STAINLESS STEEL HEAVY-DUTY STRONG-DRIVE CONNECTOR SCREWS. ATTACH PROPOSED RETENTION BOARDS TO EXISTING 4"x4" POSTS PER DETAIL "A" THIS SHEET.



DETAIL "A"  
SAND RETENTION BOARD INSTALLATION  
NOT TO SCALE



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REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCHMARK	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVALS	CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWING NO.	
STRIPING, SLURRY SEAL, SAND RETENTION. SHARROWS AND R4-11.		2019-11-15 2020-02-07				HORIZONTAL N/A VERTICAL N/A	CL	JW	NM	RECOMMENDED BY: _____ DATE: _____ R.C.E. NO.: 74667 EXP. 12-31-2021	APPROVED BY: _____ DATE: _____ R.C.E. NO.: _____	PUBLIC IMPROVEMENT PLANS FOR: SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS SAND RETENTION BOARD IMPROVEMENTS	CS-20E
											SHEET 12 OF 12		

5865 AVENIDA ENCINAS, #142B  
CARLSBAD, CA 92008  
PH: 760-602-4290  
WWW.STCTRFFIC.COM

PLANS PREPARED UNDER SUPERVISION OF  
*Nicolas M. Mincilli*  
NICOLAS M. MINCILLI

DATE: 11-05-2019  
R.C.E. NO.: 74667  
EXP. 12-31-2021

CITY OF ENCINITAS ENGINEERING DEPARTMENT  
PUBLIC IMPROVEMENT PLANS FOR:  
SOUTH COAST HIGHWAY 101 SAFETY AND MOBILITY IMPROVEMENTS  
SAND RETENTION BOARD IMPROVEMENTS  
DRAWING NO. CS-20E  
SHEET 12 OF 12

# APPENDIX

## B

## COST ESTIMATES

- **Appendix B-1** **Most Feasible Alignment**  
*La Costa Ave to El Portal Crossing: West Side Alignment*  
*El Portal Crossing to Encinitas Blvd: East Side Alignment*  
*Encinitas Blvd to G St (Near Term): Vulcan Ave Alignment*  
*Encinitas Blvd to G St (Long Term): East Side Alignment*  
*G St to Santa Fe Dr: East Side Alignment*
- **Appendix B-2** **La Costa Ave to Encinitas Blvd: West Side Alignment**  
*Alignment Cost Estimate*  
*Flood Control Concept & Estimate*
- **Appendix B-3** **La Costa Ave to Encinitas Blvd: East Side Alignment**  
*Alignment Cost Estimate*  
*Flood Control Concept & Estimate*
- **Appendix B-4** **Encinitas Blvd to Santa Fe Dr (Near Term)**  
*Vulcan Ave/East Side Alignment Cost Estimate*
- **Appendix B-5** **Encinitas Blvd to Santa Fe Dr (Long Term)**  
*East Side Alignment Cost Estimate*
- **Appendix B-6** **Cost Assumptions Memo**

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## COST ESTIMATE SUMMARY

### ESTIMATED COSTS OF MOST FEASIBLE ALIGNMENT

The table below summarizes the estimated total project costs for the most feasible alignment identified by the project team, which is a hybrid of several alignment segments. Appendix B-1 contains full cost estimates for each segment.

<b>Most Feasible Alignment Segment &amp; Key Elements</b>	<b>Estimated Cost *</b>
<b>La Costa Ave to El Portal Crossing</b> <i>West Side Alignment</i> <i>CRT above underground drainage channel (approx. 900')</i> <i>Removal of Coast Highway 101 parking pods as needed</i> <i>Signal modification at Leucadia Blvd</i>	<i>\$8.6 million</i>
<b>El Portal Crossing to Encinitas Blvd</b> <i>East Side Alignment</i> <i>Modification of El Portal Crossing with ramps</i>	<i>\$2.6 million</i>
<b>Encinitas Blvd to G St: Near Term Option</b> <i>Vulcan Ave Alignment</i> <i>4-way protected intersection at Encinitas Blvd</i> <i>CRT as 2-way cycle track on east side of Vulcan Ave with road diet</i>	<i>\$0.6 million</i>
<b>Encinitas Blvd to G St: Long Term Option</b> <i>East Side Alignment</i> <i>Bridge over Encinitas Blvd with double-track</i> <i>Signalization of E St/Vulcan Ave</i>	<i>\$4.4 million</i>
<b>G St to Santa Fe Dr</b> <i>East Side Alignment</i> <i>HAWK crossing north of G St (connects to Near Term Option)</i>	<i>\$1.9 million</i>

\* Includes construction, soft costs, and contingencies as detailed in Appendix B.



## ESTIMATED COSTS OF ALL ANALYZED SEGMENTS

The table below summarizes the estimated total project costs for each alignment segment analyzed by the project team. Appendices B-2 through B-5 (listed in the far-right column) contain full cost estimates for each segment.

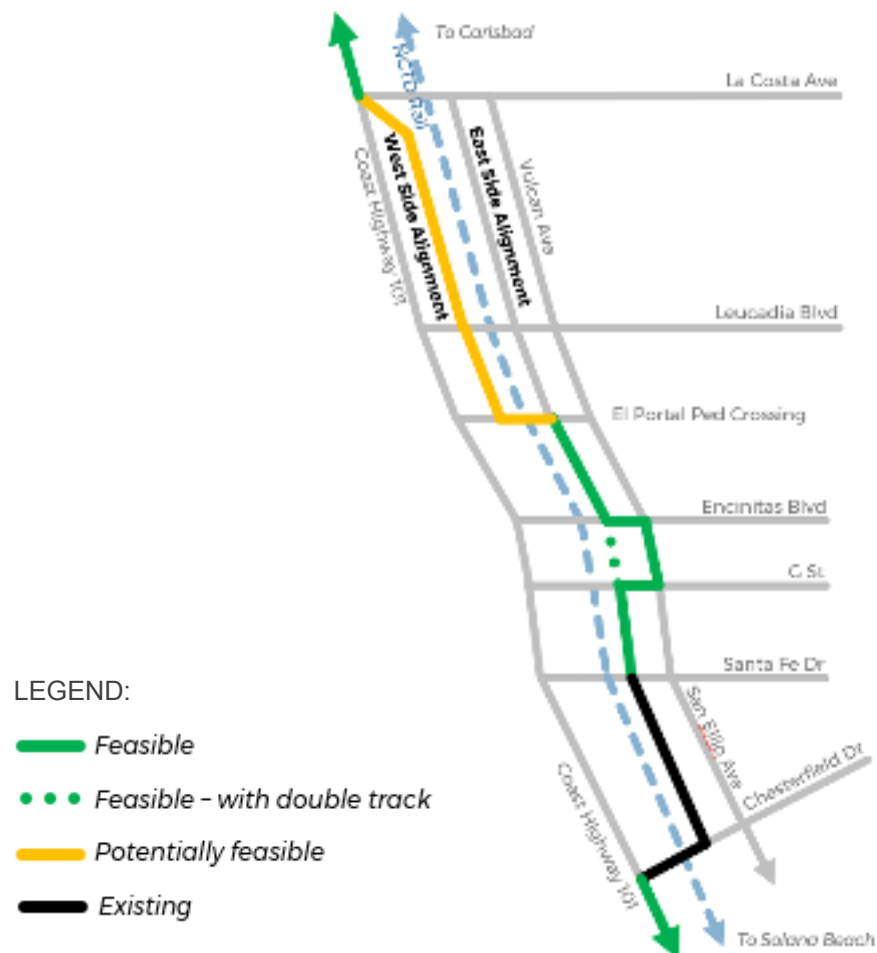
<b>Alignment Segment &amp; Key Elements</b>	<b>Estimated Cost *</b>	<b>Cost Estimate Location</b>
<b>La Costa Ave to Encinitas Blvd: West Side Alignment</b> <i>CRT above underground drainage channel (approx. 900')</i> <i>Removal of Coast Highway 101 parking pods as needed</i> <i>Signal modification at Leucadia Blvd</i> <i>Tie-backs at Encinitas Blvd rail undercrossing</i>	\$11.3 million	Appendix B-2
<b>La Costa Ave to Encinitas Blvd: East Side Alignment</b> <i>Bridge overcrossing south of La Costa Ave</i> <i>CRT adjacent to drainage channel with retaining wall</i> <i>Realignment &amp; reconstruction of Vulcan Ave as needed</i> <i>Modification of El Portal Crossing with ramps</i>	\$22.8 million	Appendix B-3
<b>Encinitas Blvd to Santa Fe Dr: Near Term Option</b> <i>4-way protected intersection at Encinitas Blvd</i> <i>CRT as 2-way cycle track on Vulcan Ave with road diet</i> <i>HAWK crossing north of G St</i> <i>CRT adjacent to east side of rail corridor south of G St</i>	\$2.4 million	Appendix B-4
<b>Encinitas Blvd to Santa Fe Dr: Long Term Option</b> <i>Bridge over Encinitas Blvd with double-track</i> <i>CRT adjacent to east side of rail corridor</i> <i>Signalization of E St/Vulcan Ave with rail preemption</i>	\$6.1 million	Appendix B-5

\* Includes construction, soft costs, and contingencies as detailed in Appendix B.

# APPENDIX

## *B-1 MOST FEASIBLE ALIGNMENT*

- La Costa Ave to El Portal Crossing: West Side Alignment
- El Portal Crossing to Encinitas Blvd: East Side Alignment
- Encinitas Blvd to G St (Near Term): Vulcan Ave Alignment
- Encinitas Blvd to G St (Long Term): East Side Alignment
- G St to Santa Fe Dr: East Side Alignment





**SANDAG Encinitas Coastal Rail Trail Planning  
La Costa Ave to El Portal Crossing - West Side Alignment**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 371,931
2	Demolition	\$ 76,317
3	Earthwork	\$ 330,063
4	Civil Improvements/Pavement	\$ 2,844,790
5	Drainage	\$ 780,804
6	Landscape & Irrigation	\$ 1,656
7	Miscellaneous Items	\$ 252,368
8	Traffic	\$ 81,075
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 4,739,004</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 236,950
	Contingencies - 20% of Engineer's Estimate	\$ 947,801
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 473,900
	<b>Total Capital Construction Cost</b>	<b>\$ 6,397,655</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 319,883
	Final Design - 10% of Capital Construction Cost	\$ 639,765
	Project Management - 5% of Capital Construction Cost	\$ 319,883
	Construction Management - 12% of Capital Construction Cost	\$ 767,719
	Professional Liability - 2.5% of Capital Construction Cost	\$ 159,941
	<b>Total Project Cost</b>	<b>\$ 8,604,846</b> <b>\$ 8.6 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from La Costa Ave to Encinitas Blvd dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/5/2020

**La Costa Ave to El Portal Crossing  
 West Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	9,900	\$38	\$371,931
	<b>SUBTOTAL - GENERAL</b>				<b>\$371,931</b>
	<b>DEMOLITION</b>				
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	29.63	\$100	\$2,963
3	REMOVE CONCRETE SIDEWALK (SY)	SY	77.78	\$32	\$2,489
4	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	665.00	\$5	\$3,325
5	REMOVE PAVEMENT MARKER	EA	30.00	\$1.25	\$38
6	REMOVE PAINTED TRAFFIC STRIPE	LF	1150.00	\$0.35	\$403
7	REMOVE LANDSCAPE & IRRIGATION	SF	3600.00	\$2	\$7,200
8	REMOVE 4" GRAVEL PARKING	SF	29950.00	\$2	\$59,900
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$76,317</b>
	<b>EARTHWORK</b>				
9	OVERALL COST	LF	9,900	\$33	\$330,063
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$330,063</b>
	<b>CIVIL IMPROVEMENTS</b>				
10	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	200	\$22	\$4,400
11	INTERSECTION OF LEUCADIA BLVD/N COAST HWY 101	LS	1	\$15,200	\$15,200
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$19,600</b>
	<b>PAVEMENT</b>				
12	CRT PAVEMENT (LA COSTA AVE TO EL PORTAL CROSSING))	LS	1	\$2,792,593	\$2,792,593
13	INTERSECTION OF LEUCADIA BLVD/N COAST HWY 101 INCLUDING SLURRY SEAL	LS	1	\$32,597	\$32,597
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$2,825,190</b>
	<b>DRAINAGE</b>				
14	DRAINAGE, WATER QUALITY & FLOOD CONTROL ELEMENTS INCLUDE THE FOLLOWING: 24" DUAL RCP CULVERTS UNDER THE CRT, A TRAPEZOIDAL OVERFLOW CONCRETE DITCH, A 4' x 4' RCB UNDERNEATH THE CRT, HEADWALL W/ WING WALLS AND A RIP RAP CATCH BASIN. ELEMENTS ARE DESCRIBED IN THE MEMO ATTACHED.	LS	1	\$780,804	\$780,804
	<b>SUBTOTAL - DRAINAGE</b>				<b>\$780,804</b>
	<b>LANDSCAPE &amp; IRRIGATION</b>				
15	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$0.79	\$948
16	SLOPE IRRIGATION	SF	1,200	\$0.59	\$708
	<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>				<b>\$1,656</b>
	<b>MISCELLANEOUS ITEMS</b>				
17	NCTD 6' CHAIN LINK FENCE	LF	8,944	\$22	\$196,768
18	16' METAL GATE	EA	12	\$4,500	\$54,000
19	DEMOUNTABLE POST - SDRSD M-16	EA	2	\$800	\$1,600
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$252,368</b>
	<b>TRAFFIC</b>				
20	PAVEMENT MARKER (RETROREFLECTIVE)	EA	40	\$1.25	\$50
21	PAINT TRAFFIC STRIPE (2-COAT)	LF	1,150	\$0.30	\$345
22	THERMO CROSSWALK AND PAVEMENT MARKING (EWNV)	SF	200	\$3.40	\$680
23	TRAFFIC SIGNAL MODIFICATIONS AT LEUCADIA BLVD	LS	1	\$80,000	\$80,000
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$81,075</b>
				<b>TOTAL</b>	<b>\$4,739,004</b>



**SANDAG Encinitas Coastal Rail Trail Planning  
EI Portal Crossing to Encinitas Blvd - East Side Alignment**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 112,706
2	Demolition	\$ 31,926
3	Earthwork	\$ 100,019
4	Civil Improvements/Pavement	\$ 837,778
5	Structural	\$ 258,500
6	Miscellaneous Items	\$ 78,720
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 1,419,649</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 70,982
	Contingencies - 20% of Engineer's Estimate	\$ 283,930
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 141,965
	<b>Total Capital Construction Cost</b>	<b>\$ 1,916,526</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 95,826
	Final Design - 10% of Capital Construction Cost	\$ 191,653
	Project Management - 5% of Capital Construction Cost	\$ 95,826
	Construction Management - 12% of Capital Construction Cost	\$ 229,983
	Professional Liability - 2.5% of Capital Construction Cost	\$ 47,913
	<b>Total Project Cost</b>	<b>\$ 2,577,728</b> <b>\$ 2.6 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from La Costa Ave to Encinitas Blvd dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
Encinitas Coastal Rail Trail Planning  
Project Number: 12093G

5/5/2020

**El Portal Crossing to Encinitas Blvd  
East Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	3,000	\$38	\$112,706
	<b>SUBTOTAL - GENERAL</b>				<b>\$112,706</b>
	<b>DEMOLITION</b>				
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	159.26	\$100	\$15,926
3	REMOVE LANDSCAPE & IRRIGATION	SF	8000.00	\$2	\$16,000
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$31,926</b>
	<b>EARTHWORK</b>				
4	OVERALL COST	LF	3,000	\$33	\$100,019
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$100,019</b>
	<b>PAVEMENT</b>				
5	CRT PAVEMENT (EL PORTAL CROSSING TO ENCINITAS BLVD)	LS	1	\$837,778	\$837,778
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$837,778</b>
	<b>STRUCTURAL</b>				
6	RETAINING WALLS (EL PORTAL CROSSING)	SF	2,350	\$110	\$258,500
	<b>SUBTOTAL - STRUCTURAL</b>				<b>\$258,500</b>
	<b>MISCELLANEOUS ITEMS</b>				
7	NCTD 6' CHAIN LINK FENCE	LF	2,760	\$22	\$60,720
8	16' METAL GATE	EA	4	\$4,500	\$18,000
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$78,720</b>

**TOTAL** **\$1,419,649**



**SANDAG Encinitas Coastal Rail Trail Planning  
Encinitas Blvd to G St - Near Term Option**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 18,784
2	Demolition	\$ 11,893
3	Earthwork	\$ 16,670
4	Civil Improvements/Pavement	\$ 85,120
5	Miscellaneous Items	\$ 4,800
6	Traffic	\$ 177,016
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 314,283</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 15,714
	Contingencies - 20% of Engineer's Estimate	\$ 62,857
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 31,428
	<b>Total Capital Construction Cost</b>	<b>\$ 424,283</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 21,214
	Final Design - 10% of Capital Construction Cost	\$ 42,428
	Project Management - 5% of Capital Construction Cost	\$ 21,214
	Construction Management - 12% of Capital Construction Cost	\$ 50,914
	Professional Liability - 2.5% of Capital Construction Cost	\$ 10,607
	<b>Total Project Cost</b>	<b>\$ 570,660</b> <b>\$ 0.6 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from Encinitas Blvd to Santa Fe Dr dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
Encinitas Coastal Rail Trail Planning  
Project Number: 12093G

5/5/2020

**Encinitas Blvd to G St  
Near Term Option**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	500	\$38	\$18,784
	<b>SUBTOTAL - GENERAL</b>				<b>\$18,784</b>
	<b>DEMOLITION</b>				
2	REMOVE CONCRETE SIDEWALK (SY)	SY	266.67	\$32	\$8,533
3	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	200	\$5	\$1,000
4	REMOVE PAVEMENT MARKER	EA	40	\$1.25	\$50
5	REMOVE PAINTED TRAFFIC STRIPE	LF	6,600	\$0.35	\$2,310
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$11,893</b>
	<b>EARTHWORK</b>				
6	OVERALL COST	LF	500	\$33	\$16,670
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$16,670</b>
	<b>CIVIL IMPROVEMENTS</b>				
7	INTERSECTION OF ENCINITAS BLVD/VULCAN AVE	LS	1	\$37,600	\$37,600
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$37,600</b>
	<b>PAVEMENT</b>				
8	SLURRY SEAL OF ROAD (ENCINITAS BLVD TO F ST)	LS	1	\$47,520	\$47,520
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$47,520</b>
	<b>MISCELLANEOUS ITEMS</b>				
9	DEMOUNTABLE POST - SDRSD M-16	EA	6	\$800	\$4,800
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$4,800</b>
	<b>TRAFFIC</b>				
10	PAVEMENT MARKER (RETROREFLECTIVE)	EA	50	\$1.25	\$63
11	PAINT TRAFFIC STRIPE (2-COAT)	LF	2,200	\$0.30	\$660
12	THERMO CROSSWALK AND PAVEMENT MARKING (EWNV)	SF	1,400	\$3.40	\$4,760
13	TRAFFIC SIGNAL MODIFICATIONS AT D ST	LS	1	\$80,000	\$80,000
14	TRAFFIC SIGNAL MODIFICATIONS AT ENCINITAS BLVD/VULCAN AVE	LS	1	\$80,000	\$80,000
15	PAVEMENT DELINEATION ALONG VULCAN AVE FROM ENCINITAS BLVD TO G ST	LS	1	\$11,533	\$11,533
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$177,016</b>

**TOTAL ENGINEER'S ESTIMATE** **\$314,283**





**SANDAG Encinitas Coastal Rail Trail Planning  
Encinitas Blvd to G St - Long Term Option**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 93,922
2	Demolition	\$ 288
3	Earthwork	\$ 83,349
4	Civil Improvements/Pavement	\$ 451,125
5	Structural	\$ 1,699,000
8	Traffic	\$ 80,932
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 2,408,616</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 120,431
	Contingencies - 20% of Engineer's Estimate	\$ 481,723
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 240,862
	<b>Total Capital Construction Cost</b>	<b>\$ 3,251,632</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 162,582
	Final Design - 10% of Capital Construction Cost	\$ 325,163
	Project Management - 5% of Capital Construction Cost	\$ 162,582
	Construction Management - 12% of Capital Construction Cost	\$ 390,196
	Professional Liability - 2.5% of Capital Construction Cost	\$ 81,291
	<b>Total Project Cost</b>	<b>\$ 4,373,445</b> <b>\$ 4.4 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from Encinitas Blvd to Santa Fe Dr dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/5/2020

**Encinitas Blvd to G St  
 Long Term Option**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	2,500	\$38	\$93,922
	<b>SUBTOTAL - GENERAL</b>				<b>\$93,922</b>
	<b>DEMOLITION</b>				
2	REMOVE PAVEMENT MARKER	EA	30	\$1.25	\$38
3	REMOVE PAINTED TRAFFIC STRIPE	LF	715	\$0.35	\$250
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$288</b>
	<b>EARTHWORK</b>				
4	OVERALL COST	LF	2,500	\$33	\$83,349
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$83,349</b>
	<b>CIVIL IMPROVEMENTS</b>				
5	MINOR CONCRETE (CURB RAMP)-SDRSD G-29 (33)	EA	2	\$2,230	\$4,460
6	MINOR CONCRETE (SIDEWALK)	SF	400	\$6	\$2,560
7	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	80	\$22	\$1,760
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$8,780</b>
	<b>PAVEMENT</b>				
8	SLURRY SEAL	SF	28,600	\$0.60	\$17,160
9	CRT PAVEMENT (ENCINITAS BLVD TO G ST)	LS	1	\$425,185	\$425,185
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$442,345</b>
	<b>STRUCTURAL</b>				
10	BRIDGE (ENCINITAS BLVD)	SF	1,140	\$400	\$456,000
11	BRIDGE RAMP RETAINING WALLS (ENCINITAS BLVD)	SF	11,300	\$110	\$1,243,000
	<b>SUBTOTAL - STRUCTURAL</b>				<b>\$1,699,000</b>
	<b>TRAFFIC</b>				
12	PAVEMENT MARKER (RETROREFLECTIVE)	EA	30	\$1.25	\$38
13	PAINT TRAFFIC STRIPE (2-COAT)	LF	715	\$0.30	\$215
14	THERMO CROSSWALK AND PAVEMENT MARKING	SF	200	\$3.40	\$680
15	TRAFFIC SIGNAL MODIFICATIONS AT E ST	LS	1	\$80,000	\$80,000
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$80,932</b>

**TOTAL ENGINEER'S ESTIMATE** **\$2,408,616**



# SANDAG Encinitas Coastal Rail Trail Planning G St to Santa Fe Dr - East Side Alignment

Encinitas, CA

## Project Cost Opinion

Preliminary Engineering & Environmental through Final Design & Construction

Prepared by WSP

May 5, 2020

	Summary of Items	Cost
1	BMPs	\$ 86,408
2	Earthwork	\$ 76,681
3	Civil Improvements/Pavement	\$ 703,459
4	Landscape & Irrigation	\$ 12,696
5	Miscellaneous Items	\$ 75,992
6	Traffic	\$ 75,000
	Engineer's Estimate Subtotal	\$ 1,030,236
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 51,512
	Contingencies - 20% of Engineer's Estimate	\$ 206,047
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 103,024
	<b>Total Capital Construction Cost</b>	<b>\$ 1,390,819</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 69,541
	Final Design - 10% of Capital Construction Cost	\$ 139,082
	Project Management - 5% of Capital Construction Cost	\$ 69,541
	Construction Management - 12% of Capital Construction Cost	\$ 166,898
	Professional Liability - 2.5% of Capital Construction Cost	\$ 34,770
	<b>Total Project Cost</b>	<b>\$ 1,870,651</b> <b>\$ 1.9 million</b>

### NOTES

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from Encinitas Blvd to Santa Fe Dr dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
Encinitas Coastal Rail Trail Planning  
Project Number: 12093G

5/5/2020

**G St to Santa Fe Dr  
East Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	2,300	\$38	\$86,408
	<b>SUBTOTAL - GENERAL</b>				<b>\$86,408</b>
	<b>EARTHWORK</b>				
2	OVERALL COST	LF	2,300	\$33	\$76,681
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$76,681</b>
	<b>CIVIL IMPROVEMENTS</b>				
3	MINOR CONCRETE (CURB RAMP)-SDRSD G-29	EA	1	\$2,230	\$2,230
4	MINOR CONCRETE (SIDEWALK)	SF	600	\$6	\$1,610
5	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	50	\$22	\$1,100
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$4,940</b>
	<b>PAVEMENT</b>				
6	CRT PAVEMENT (G TO SANTA FE DR)	LS	1	\$698,519	\$698,519
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$698,519</b>
	<b>LANDSCAPE &amp; IRRIGATION</b>				
7	SLOPE PLANTING (GROUND COVER)	SF	9,200	\$1	\$7,268
8	SLOPE IRRIGATION	SF	9,200	\$1	\$5,428
	<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>				<b>\$12,696</b>
	<b>MISCELLANEOUS ITEMS</b>				
9	NCTD 6' CHAIN LINK FENCE	LF	2,636	\$22	\$57,992
10	16' METAL GATE	EA	4	\$4,500	\$18,000
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$75,992</b>
	<b>TRAFFIC</b>				
11	HIGH INTENSITY ACTIVATED CROSSWALK (HAWK) NORTH OF G ST	EA	1	\$75,000	\$75,000
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$75,000</b>

**TOTAL ENGINEER'S ESTIMATE** **\$1,030,236**

# APPENDIX

## ***B-2 LA COSTA AVE TO ENCINITAS BLVD: WEST SIDE ALIGNMENT***



**SANDAG Encinitas Coastal Rail Trail Planning  
La Costa Ave to Encinitas Blvd - West Side Alignment**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 495,908
2	Demolition	\$ 116,317
3	Earthwork	\$ 440,084
4	Civil Improvements/Pavement	\$ 3,766,345
5	Structural	\$ 198,000
6	Drainage	\$ 780,804
7	Landscape & Irrigation	\$ 1,656
8	Miscellaneous Items	\$ 347,368
9	Traffic	\$ 81,075
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 6,227,557</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 311,378
	Contingencies - 20% of Engineer's Estimate	\$ 1,245,511
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 622,756
	<b>Total Capital Construction Cost</b>	<b>\$ 8,407,202</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 420,360
	Final Design - 10% of Capital Construction Cost	\$ 840,720
	Project Management - 5% of Capital Construction Cost	\$ 420,360
	Construction Management - 12% of Capital Construction Cost	\$ 1,008,864
	Professional Liability - 2.5% of Capital Construction Cost	\$ 210,180
	<b>Total Project Cost</b>	<b>\$ 11,307,687</b> <b>\$ 11.3 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from La Costa Ave to Encinitas Blvd dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/5/2020

**La Costa Ave to Encinitas Blvd  
 West Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
<b>BMPs</b>					
1	OVERALL COST	LF	13,200	\$38	\$495,908
<b>SUBTOTAL - GENERAL</b>					<b>\$495,908</b>
<b>DEMOLITION</b>					
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	29.63	\$100	\$2,963
3	REMOVE CONCRETE SIDEWALK (SY)	SY	78	\$32	\$2,489
4	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	665	\$5	\$3,325
5	REMOVE PAVEMENT MARKER	EA	30	\$1.25	\$38
6	REMOVE PAINTED TRAFFIC STRIPE	LF	1,150	\$0.35	\$403
7	REMOVE LANDSCAPE & IRRIGATION	SF	3,600	\$2	\$7,200
8	REMOVE 4" GRAVEL PARKING	SF	49,950	\$2	\$99,900
<b>SUBTOTAL - DEMOLITION</b>					<b>\$116,317</b>
<b>EARTHWORK</b>					
9	OVERALL COST	LF	13,200	\$33	\$440,084
<b>SUBTOTAL - EARTHWORK</b>					<b>\$440,084</b>
<b>CIVIL IMPROVEMENTS</b>					
10	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	200	\$22	\$4,400
11	INTERSECTION OF LEUCADIA BLVD/N COAST HWY 101	LS	1	\$15,200	\$15,200
<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>					<b>\$19,600</b>
<b>PAVEMENT</b>					
12	CRT PAVEMENT (NORTH OF ENCINITAS BLVD)	LS	1	\$3,714,148	\$3,714,148
13	INTERSECTION OF LEUCADIA BLVD/N COAST HWY 101 INCLUDING SLURRY SEAL	LS	1	\$32,597	\$32,597
<b>SUBTOTAL - PAVEMENT</b>					<b>\$3,746,745</b>
<b>STRUCTURAL</b>					
14	TIE-BACKS AT ABUTMENT (ENCINITAS BLVD)	SF	1,800	\$110	\$198,000
<b>SUBTOTAL - STRUCTURAL</b>					<b>\$198,000</b>
<b>DRAINAGE</b>					
15	DRAINAGE, WATER QUALITY & FLOOD CONTROL ELEMENTS INCLUDE THE FOLLOWING: 24" DUAL RCP CULVERTS UNDER THE CRT, A TRAPEZOIDAL OVERFLOW CONCRETE DITCH, A 4' x 4' RCB UNDERNEATH THE CRT, HEADWALL W/ WING WALLS AND A RIP RAP CATCH BASIN. ELEMENTS ARE DESCRIBED IN THE MEMO ATTACHED.	LS	1	\$780,804	\$780,804
<b>SUBTOTAL - DRAINAGE</b>					<b>\$780,804</b>
<b>LANDSCAPE &amp; IRRIGATION</b>					
16	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$0.79	\$948
17	SLOPE IRRIGATION	SF	1,200	\$0.59	\$708
<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>					<b>\$1,656</b>
<b>MISCELLANEOUS ITEMS</b>					
18	NCTD 6' CHAIN LINK FENCE	LF	12,444	\$22	\$273,768
19	16' METAL GATE	EA	16	\$4,500	\$72,000
20	DEMOUNTABLE POST - SDRSD M-16	EA	2	\$800	\$1,600
<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>					<b>\$347,368</b>
<b>TRAFFIC</b>					
21	PAVEMENT MARKER (RETROREFLECTIVE)	EA	40	\$1.25	\$50
22	PAINT TRAFFIC STRIPE (2-COAT)	LF	1,150	\$0.30	\$345
23	THERMO CROSSWALK AND PAVEMENT MARKING (EWNV)	SF	200	\$3.40	\$680
24	TRAFFIC SIGNAL MODIFICATIONS AT LEUCADIA BLVD	LS	1	\$80,000	\$80,000
<b>SUBTOTAL - TRAFFIC</b>					<b>\$81,075</b>
<b>TOTAL</b>					<b>\$6,227,557</b>



## MEMO

**TO:** Danny Veeh and Tim DeWitt, SANDAG  
**FROM:** Pete Ruscitti, Richard Bottcher, and Chris Koury, WSP  
**SUBJECT:** Encinitas Coastal Rail Trail: Leucadia West Side Alignment Flood Control Concept Design & Estimate (DRAFT)  
**DATE:** April 10, 2020

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In support of SANDAG's evaluation of the future Coastal Rail Trail (CRT) in Encinitas, this memorandum discusses drainage, water quality, and flood control requirements for the potential "West Side Alignment" in Leucadia. The study area is roughly between the railway and Coast Highway 101, from La Costa Ave to Grandview St.

This memo describes and quantifies the systems required for permitting, design, and construction of a flood control system that will prevent flooding of the tracks from a 100-year storm event. The estimate also considers water quality improvements that would be required during construction with a Stormwater Pollution Prevention Plan (SWPPP).

The analysis assumes construction of proposed improvements by the City of Encinitas that include a 60" storm drain along the adjacent Coast Highway 101 that will protect the tracks from an approximate 50-year storm event. This storm drain system has historically overflowed near Grandview St.

### EXISTING CONDITIONS

Construction of the CRT West Side Alignment likely would require placement of fill in a floodplain and planned storm water channel in proximity to the west side of the tracks. Therefore, we must make improvements to the existing drainage infrastructure in this area including undergrounding of existing channel flow.

Water in this area generally flows northerly along the tracks and Coast Highway 101 toward the La Costa Ave overcrossing and is then conveyed into Batiquitos Lagoon. Along the west side of the track, the existing drainage flow pattern is northerly from Leucadia Blvd to La Costa Ave and consists of a small drainage system in Coast Highway 101 conveying flow northerly. This small system is sized for a 5-year storm event and anything bigger currently overflows from SR 101 toward the track property at approximate track station 2000+00. Per the *Hydrology and Hydraulics Submittal for Batiquitos Double Track Project (HNTB, 2016)* the 100-year peak flow for this area is estimated at 300 cfs while the Coast Highway 101 system which currently conveys up to the 5-year storm, will convey an approximate 240 cfs when the proposed 60" pipeline is constructed by the City of Encinitas. The difference in peak flow has therefore been estimated to be on the order of 60 cfs.

### PROPOSED IMPROVEMENTS

A storm drain system to be built as part of the CRT is proposed to capture and convey this overflow northerly along the west side of the tracks. This includes interception and





conveyance of the additional storm flow from the 100-year event for which the 60" storm drain along Coast Highway 101 is not sized. This system includes 40' of 24" dual RCP culverts to convey the flow off Coast Highway 101 and under the CRT into a proposed trapezoidal overflow conc ditch (2' deep, 2' bottom, 2:1 side slopes) located within the NCTD maintenance setback. This facility is designed to capture and convey the excess flow for the 100-year event northerly for 900' until flow is conveyed underground into an 800' long 4' x 4' RCB underneath the CRT. Stormwater exits the RCB via headwall with wingwalls into a ditch running northerly to Batiquitos Lagoon where it will flow to a rip rap basin for energy dissipation before discharging to the Batiquitos Lagoon.

### ESTIMATED COST

The total estimated design and construction costs for the systems described above are itemized in Table 1. Also included are the costs for temporary water pollution control (SWPPP), preliminary engineering, alternatives analysis, environmental analysis, permitting, mobilization, and traffic control.

In addition, costs of labor may be escalated pending the work schedule as within rail ROW there is an estimated 5 hours of production for each 8 hours of scheduled work which could prolong the project by approximately 1.6 times. Another option is to schedule work for a continuous 40-hour period over a weekend while rail operations agree to cease during the time window, which escalates labor cost based on time and a half and double-time pay. Thus, the total cost of the project could be higher than the \$1.2 million shown in Table 1 but these escalations are not included in the estimate.

**Table 1: Estimated Construction Cost**

Item	Quantity	Unit	Unit Price	Amount
Excavation	2,792	CY	\$19	\$53,047
800' of 4' x 4' RCB (Minor Concrete)	356	CY	\$710	\$252,444
900' of 10'T x 2'B with 2:1 side slope trap. CHNL (Minor Concrete)	203	CY	\$845	\$171,535
Rip Rap	11	CY	\$1,600	\$17,778
Dual 24" RCP	1	LS	\$250,000	\$250,000
SWPPP	200	LF	\$180	\$36,000
Backfill	1,433	CY	\$19	\$27,234
<b>SUBTOTAL</b>				<b>\$780,804</b>
Construction Management	12.7	%		\$99,162
Mobilization	10	%		\$78,080
Preliminary Design	3	%		\$23,424
Environmental Analysis	2	%		\$15,616
Final Design and Permitting	7	%		\$54,656
Bid and Construction Support	2	%		\$15,616
Program Management	3	%		\$23,424
Contingencies	25	%		\$195,201
<b>TOTAL</b>				<b>\$1,285,984</b> <b>\$1.3 million</b>

# APPENDIX

## ***B-3 LA COSTA AVE TO ENCINITAS BLVD: EAST SIDE ALIGNMENT***



**SANDAG Encinitas Coastal Rail Trail Planning  
La Costa Ave to Encinitas Blvd - East Side Alignment**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 6, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 713,807
2	Demolition	\$ 393,105
3	Earthwork	\$ 633,455
4	Civil Improvements/Pavement	\$ 4,284,635
5	Structural	\$ 2,738,500
6	Drainage	\$ 3,325,000
7	Landscape & Irrigation	\$ 1,656
8	Miscellaneous Items	\$ 313,240
9	Traffic	\$ 154,965
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 12,558,362</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 627,918
	Contingencies - 20% of Engineer's Estimate	\$ 2,511,672
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 1,255,836
	<b>Total Capital Construction Cost</b>	<b>\$ 16,953,789</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 847,689
	Final Design - 10% of Capital Construction Cost	\$ 1,695,379
	Project Management - 5% of Capital Construction Cost	\$ 847,689
	Construction Management - 12% of Capital Construction Cost	\$ 2,034,455
	Professional Liability - 2.5% of Capital Construction Cost	\$ 423,845
	<b>Total Project Cost</b>	<b>\$ 22,802,846</b> <b>\$ 22.8 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from La Costa Ave to Encinitas Blvd dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/6/2020

**La Costa Ave to Encinitas Blvd  
 East Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
<b>BMPs</b>					
1	OVERALL COST	LF	19,000	\$38	\$713,807
<b>SUBTOTAL - GENERAL</b>					<b>\$713,807</b>
<b>DEMOLITION</b>					
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	3,185	\$100	\$318,519
3	REMOVE CONCRETE SIDEWALK (SY)	SY	1,130.00	\$32	\$36,160
4	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	2,315	\$5	\$11,575
5	REMOVE PAVEMENT MARKER	EA	30	\$1.25	\$38
6	REMOVE PAINTED TRAFFIC STRIPE	LF	8,040	\$0.35	\$2,814
7	REMOVE LANDSCAPE & IRRIGATION	SF	12,000	\$2	\$24,000
<b>SUBTOTAL - DEMOLITION</b>					<b>\$393,105</b>
<b>EARTHWORK</b>					
8	OVERALL COST	LF	19,000	\$33	\$633,455
<b>SUBTOTAL - EARTHWORK</b>					<b>\$633,455</b>
<b>CIVIL IMPROVEMENTS</b>					
9	MINOR CONCRETE (CURB RAMP)-SDRSD G-29	EA	6	\$2,230	\$13,380
10	MINOR CONCRETE (SIDEWALK)	SF	3,900	\$6	\$11,580
11	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	350	\$22	\$7,700
12	RECONSTRUCTION ALONG VULCAN AVE FROM ANDREW AVE TO LEUCADIA BLVD	LS	1	\$425,400	\$425,400
<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>					<b>\$458,060</b>
<b>PAVEMENT</b>					
13	ROADWAY PAVEMENT ALONG WEST SIDE OF VULCAN AVE INCLUDING SLURRY SEAL (NORTH OF ENCINITAS BLVD)	LS	1	\$104,161	\$104,161
14	ROADWAY PAVEMENT ALONG EAST SIDE OF VULCAN AVE FROM ANDREW AVE TO LEUCADIA BLVD	LS	1	\$301,488	\$301,488
15	CRT PAVEMENT (NORTH OF ENCINITAS BLVD)	LS	1	\$3,420,926	\$3,420,926
<b>SUBTOTAL - PAVEMENT</b>					<b>\$3,826,575</b>
<b>STRUCTURAL</b>					
16	BRIDGE (LA COSTA AVE)	SF	1,800	\$400	\$720,000
17	BRIDGE RAMP RETAINING WALLS (LA COSTA AVE)	SF	6,000	\$110	\$660,000
18	RETAINING WALL (ALONG VULCAN AVE)	SF	10,000	\$110	\$1,100,000
19	RETAINING WALLS (EL PORTAL CROSSING)	SF	2,350	\$110	\$258,500
<b>SUBTOTAL - STRUCTURAL</b>					<b>\$2,738,500</b>
<b>DRAINAGE</b>					
20	DRAINAGE AND WATER QUALITY ELEMENTS ALONG VULCAN AVE (LA COSTA AVE TO LEUCADIA BLVD)	LS	1	\$3,325,000	\$3,325,000
<b>SUBTOTAL - DRAINAGE</b>					<b>\$3,325,000</b>
<b>LANDSCAPE &amp; IRRIGATION</b>					
21	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$1	\$948
22	SLOPE IRRIGATION	SF	1,200	\$1	\$708
<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>					<b>\$1,656</b>
<b>MISCELLANEOUS ITEMS</b>					
23	NCTD 6' CHAIN LINK FENCE	LF	11,170	\$22	\$245,740
24	16' METAL GATE	EA	15	\$4,500	\$67,500
<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>					<b>\$313,240</b>
<b>TRAFFIC</b>					
25	PAVEMENT MARKER (RETROREFLECTIVE)	EA	50	\$1.25	\$63
26	PAINT TRAFFIC STRIPE (2-COAT)	LF	9,540	\$0.30	\$2,862
27	THERMO CROSSWALK AND PAVEMENT MARKING (EWNV)	SF	600	\$3.40	\$2,040
28	R920 RECTANGULAR RAPID FLASHING BEACON (RRFB) @ LEUCADIA BLVD	EA	2	\$75,000	\$150,000
<b>SUBTOTAL - TRAFFIC</b>					<b>\$154,965</b>



SANDAG  
Encinitas Coastal Rail Trail Planning  
Project Number: 12093G

5/6/2020

**La Costa Ave to Encinitas Blvd  
East Side Alignment**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
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TOTAL 

\$9,233,362
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## MEMO

**TO:** Danny Veeh and Tim DeWitt, SANDAG  
**FROM:** Pete Ruscitti, Richard Bottcher, and Chris Koury, WSP  
**SUBJECT:** Encinitas Coastal Rail Trail: Leucadia East Side Alignment Flood Control Concept Design & Estimate (DRAFT)  
**DATE:** April 24, 2020

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In support of SANDAG's alignment evaluation of the future Coastal Rail Trail (CRT) in Encinitas, this memorandum discusses drainage, water quality, and flood control requirements for the potential "East Side Alignment" in Leucadia. The study area for this evaluation is roughly between the railway and Vulcan Ave, from La Costa Ave to Leucadia Blvd.

This memo describes and quantifies the systems required for permitting, design, and construction of a flood control system that will prevent flooding of the tracks from a 100-year storm event. The estimate also considers water quality improvements that would be required during construction with a Stormwater Pollution Prevention Plan (SWPPP).

### EXISTING CONDITIONS

Construction of the CRT East Side Alignment would require placement of fill in a floodplain and storm water channel in proximity to the east side of the tracks and within the rail ROW. Therefore, we must make improvements to the existing drainage infrastructure in this area including undergrounding of existing channel flow, much of which is generated from offsite runoff flowing down a drainage system in Leucadia, east of the project site.

Water in this area generally flows westerly towards the tracks from the Leucadia community, and northerly along the tracks towards the La Costa Ave overcrossing. Currently, 100-year storm flows typically overflow onto the track right of way from Coast Highway 101 immediately south of La Costa Ave.

### PROPOSED IMPROVEMENTS

Along the east side of the railroad tracks, a reinforced concrete pipe (RCP) is proposed to underground stormwater from Leucadia Blvd northerly to La Costa Ave, between the track and North Vulcan Ave. This will convey stormwater from an offsite system that currently flows into an existing channel/unlined ditch running along the east side of the tracks that will be filled to allow for the Coastal Rail Trail. The conveyance capacity for the proposed RCP is estimated at 190 cfs per the *Hydrology and Hydraulics Submittal for Batiquitos Double Track Project (HNTB 2016)*. The pipeline size is estimated at 72" and length of 5,500' with manholes placed every 500'. Note that construction of this system within the railway ROW will require shoring and slurry backfill due to adjacent railroad loading.



On the south side of the La Costa Ave overcrossing, the pipeline will outlet into a widened trapezoidal channel with articulated concrete block for energy dissipation and water quality control via infiltration. This will provide additional treatment for low flows and convey high flows northerly under La Costa Ave through an existing narrow channel. Per the 2016 *Hydrology and Hydraulics Submittal* noted above, the plan would be to outlet this flow into a rip rap flume and basin prior to conveyance to Batiquitos Lagoon, north of La Costa Ave.

Track drainage will be intercepted by an underdrain system consisting of an 8" perforated plastic pipe surrounded by 3/4" gravel wrapped within a filter fabric blanket located on the east side of the tracks and placed at the bottom of the track sub-grade. The underdrain system will consist of cleanouts spaced approximately 300' apart, connecting to the 72" RCP described above.

Along Vulcan Ave, approximately 12 inlets will connect to the 72" RCP described above via 18" laterals. Each inlet will be equipped with water quality filter inserts to meet stormwater quality treatment standards for surface street runoff.

## **ESTIMATED COST**

The total estimated design and construction costs for the systems described above are itemized in Table 1 on the following page. Also included are the costs for temporary water pollution control (SWPPP), preliminary engineering, alternatives analysis, environmental analysis, permitting, mobilization, and traffic control.

In addition, costs of labor may be escalated pending the work schedule as within rail ROW there is an estimated 5 hours of production for each 8 hours of scheduled work which could prolong the project by approximately 1.6 times. Another option is to schedule work for a continuous 40-hour period over a weekend while rail operations agree to cease during the time window, which escalates labor cost based on time and a half and double-time pay. Thus, the total cost of the project could be higher than the \$32.2 million shown in Table 1 but these escalations are not included in the estimate.



**Table 1: Estimated Construction Cost**

<b>Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Amount</b>	<b>Remarks</b>
<b>Shoring</b>	360,000	SF	\$30	\$10,800,000	
<b>Excavation</b>	17622	CY	\$19	\$334,822	
<b>Backfill</b>	10,978	CY	\$71	\$779,462	75% slurry backfill
<b>72" RCP</b>	5500	LF	\$620	\$3,410,000	
<b>48" RCP</b>	1900	LF	\$525	\$997,500	
<b>Track Drainage System</b>	5300	LF	\$100	\$530,000	
<b>Curb Inlets w/ 18" RCP Lateral (400')</b>	12	EA	\$10,000	\$120,000	
<b>Drainage Inserts</b>	12	EA	\$5,000	\$60,000	
<b>Curb and Gutter</b>	6600	LF	\$35	\$231,000	
<b>Rip Rap Energy Dissipation Basin</b>	200	CY	\$100	\$20,000	
<b>Rip Rap Channel</b>	670	CY	\$100	\$67,000	
<b>Articulated Concrete Block</b>	10,000	SF	\$20	\$200,000	
<b>SWPPP</b>	1	LS	\$1,000,000	\$1,000,000	
<b>Traffic Control</b>	1	LS	\$1,000,000	\$1,000,000	
<b>SUBTOTAL</b>				<b>\$27,931,000</b>	
<b>Construction Management</b>	12.7	%		\$2,482,823	
<b>Mobilization</b>	10	%		\$1,954,978	
<b>Preliminary Design</b>	3	%		\$586,494	
<b>Environmental Analysis</b>	2	%		\$390,996	
<b>Final Design and Permitting</b>	7	%		\$1,368,485	
<b>Bid and Construction Support</b>	2	%		\$390,996	
<b>Program Management</b>	3	%		\$586,494	
<b>Contingencies</b>	25	%		\$4,887,446	
<b>TOTAL</b>				<b>\$32,198,494</b>	
				<b>\$32.2 million</b>	



# Attachment: Drainage Estimate for Double-Track Project (Page 1 of 2)

SANDAG: N. Vulcan Ave Drainage Improvements in Leucadia					Prepared by: HNTB	
Opinion of Probable Construction Cost (OPCC)					Draft: 1/8/2019	
Item	Quantity	Unit	Unit Price	Amount	Subtotals	
<b>Design Costs</b>						
Design--Alternatives Analysis & Environmental + Preliminary to 30%	4.75	%	Current CCE	\$2,149,085		
Design--30% to 60% and Permits + 60% to Final PS&E, Bid Support	9.00	%	Current CCE	\$4,071,951		
Agency Design Admin. - SANDAG	3.75	%	Current CCE	\$1,696,646		
Agency Program Mgmt. - SANDAG	2.25	%	Current CCE	\$1,017,988		
Agency Design Admin. - NCTD/MTS	0.25	%	Current CCE	\$113,110		
Independent Peer Reviews	0.00	%	Current CCE	\$0		
					<b>\$9,048,780</b>	
<b>Right-of-Way</b>						
Temporary R/W, Easements	1	LS	\$250,000	\$250,000		
Property Acquisition for Detention Basin	1	LS	\$5,000,000	\$5,000,000		
					<b>\$5,250,000</b>	
<b>Construction Cost Estimate</b>						
SWPPP/Erosion Control	1	LS	\$500,000	\$500,000		
Trenching*	74,000	CY	\$20	\$1,480,000		
Shoring*	360,000	SF	\$30	\$10,800,000		
Slurry Backfill*	47,000	CY	\$160	\$7,520,000		
Dozer Backfill*	27,000	CY	\$15	\$405,000		
Exported Excavated Material	17,000	CY	\$25	\$425,000		
Interim Structure	2	EA	\$150,000	\$300,000		
72" RCP (incl. cleanout structure)	5,500	LF	\$620	\$3,410,000		
48" RCP (incl. cleanout structure)	1,900	LF	\$525	\$997,500		
Curb Inlet w/ 18" RCP Lateral (Approx. 400 FT O.C)	12	EA	\$10,000	\$120,000		
Water Quality BMP at each inlet (e.g., Stormfilter)	12	EA	\$100,000	\$1,200,000		
6" Conc Curb & Gutter w/ minor AC patch	6,600	LF	\$35	\$231,000		
Detention Basin/System	1	LS	\$3,500,000	\$3,500,000		
					<b>\$30,888,500</b>	
<b>Base Construction Cost Est. (BCE)</b>					<b>\$30,888,500</b>	
<b>Other Construction Costs</b>						
Contractor Mobilization/De-Mobilization	10.0	%	BCE	\$3,088,850		
Traffic Control	1	LS	1,000,000	\$1,000,000		
Utility Protection/Relocation	1	LS	\$3,500,000	\$1,000,000		
					<b>\$5,088,850</b>	
<b>Contingency</b>					<b>\$9,266,550</b>	
					<b>\$9,266,550</b>	
<b>Construction Cost Estimate (CCE)</b>					<b>\$45,243,900</b>	
<b>Ancillary Construction Costs</b>						
Design Svcs During Const.	2.00	%	CCE	\$904,878		
Construction Management	12.70	%	CCE	\$5,745,975		
Agency Const. Admin. - SANDAG	2.20	%	CCE	\$995,366		
Agency Const. Prog. Mgmt. - SANDAG	1.00	%	CCE	\$452,439		
Agency Const. Admin. - NCTD	0.40	%	CCE	\$180,976		
Agency Signal Maint. & Support-NCTD	1.25	%	CCE	\$565,549		
Railroad Flagging Services - General	2,000	HR	\$75	\$150,000		
Railroad Flagging - Signal Work	0	HR	\$75	\$0		
Dynamic Ballast Stabilizer Rental from Bombardier	0	HR	\$350	\$0		
Bussing Passengers During AWW	0	AWW	\$75,000	\$0		
Bio Monitoring during Construction	0	HR	\$100	\$0		
Cultural Monitoring during Construction	0	HR	\$100	\$0		
					<b>\$8,995,182</b>	
<b>Total Construction Estimate (TCE)</b>					<b>\$54,239,082</b>	
<b>Total Project Cost Estimate (in 2018 dollars)</b>					<b>\$68,537,862</b>	
<b>COST ESCALATION</b>						
<b>Year of Expenditure</b>	<b>Annual</b>		<b>Cumulative</b>	<b>Estimated</b>	<b>Escalation</b>	
2018 (7-17 through 6-18)	2.8%		2.8%	\$0	\$0	
2019 (7-18 through 6-19)	2.8%		5.6%	\$0	\$0	
2020 (7-19 through 6-20)	2.8%		8.4%	\$0	\$0	
2021 (7-20 through 6-21)	2.8%		11.2%	\$0	\$0	
2022 (7-21 through 6-22)	2.8%		14.0%	\$0	\$0	

## Attachment: Drainage Estimate for Double-Track Project (Page 2 of 2)

SANDAG: N. Vulcan Ave Drainage Improvements in Leucadia Opinion of Probable Construction Cost (OPCC)					Prepared by: HNTB Draft: 1/8/2019
Item	Quantity	Unit	Unit Price	Amount	Subtotals
2023 (7-22 through 6-23)	2.8%		16.8%	\$0	\$0
2024 (7-23 through 6-24)	2.8%		19.6%	\$0	\$0
2025 (7-24 through 6-25)	2.8%		22.4%	\$0	\$0
TOTAL EXPENDITURES IN 2018 DOLLARS					
TOTAL COST ESCALATION					\$0
<b>PROJECT COST IN YEAR OF EXPENDITURE DOLLARS</b>					<b>\$68,537,862</b>
<b>Cost Estimate Notes</b>					
<p>1 - This OPCC relies upon the City's Hwy 101 Drainage Improvement- Alternate 3 OPCC prepared by Rick Engineering in 2005. Detailed analysis is needed to confirm the assumptions made in this order of magnitude OPCC. Construction approach would be similar between SD improvements on either side of the rail corridor.</p> <p>2 - *Quantity is roughly proportional to the pipe size (e.g 6'/9' pipes) according to the Alt. 3 Rick Engineering Estimate.</p> <p>3 - Excludes dewatering (same as Rick Eng OPCC)</p> <p>4- 7,400 LF of total piping is estimated from Leucadia Ave. to existing concrete downdrain in the lagoon.</p> <p>5- Excludes Mitigation costs</p> <p>6- Excludes relocation of 12" SDG&amp;E (5400 LF) along Vulcan Ave.</p> <p>7- If the detention system can be in-line with the addition/upsizing of the piping, the R/W acquisition costs may be reduced if additional land is not required for a basin.</p>					

# APPENDIX

## ***B-4 ENCINITAS BLVD TO SANTA FE DR (NEAR TERM)***



**SANDAG Encinitas Coastal Rail Trail Planning  
Encinitas Blvd to Santa Fe - Near Term Option**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 105,193
2	Demolition	\$ 11,893
3	Earthwork	\$ 93,351
4	Civil Improvements/Pavement	\$ 788,579
5	Miscellaneous Items	\$ 80,792
6	Traffic	\$ 252,016
	Engineer's Estimate Subtotal	\$ 1,331,824
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 66,591
	Contingencies - 20% of Engineer's Estimate	\$ 266,365
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 133,182
	<b>Total Capital Construction Cost</b>	<b>\$ 1,797,962</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 89,898
	Final Design - 10% of Capital Construction Cost	\$ 179,796
	Project Management - 5% of Capital Construction Cost	\$ 89,898
	Construction Management - 12% of Capital Construction Cost	\$ 215,755
	Professional Liability - 2.5% of Capital Construction Cost	\$ 44,949
	<b>Total Project Cost</b>	<b>\$ 2,418,259</b> <b>\$ 2.4 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from Encinitas Blvd to Santa Fe Dr dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/5/2020

**Encinitas Blvd to Santa Fe Dr  
 Near Term Option**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	2,800	\$38	\$105,193
	<b>SUBTOTAL - GENERAL</b>				<b>\$105,193</b>
	<b>DEMOLITION</b>				
3	REMOVE CONCRETE SIDEWALK (SY)	SY	266.67	\$32	\$8,533
4	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	200	\$5	\$1,000
5	REMOVE PAVEMENT MARKER	EA	40	\$1.25	\$50
6	REMOVE PAINTED TRAFFIC STRIPE	LF	6,600	\$0.35	\$2,310
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$11,893</b>
	<b>EARTHWORK</b>				
8	OVERALL COST	LF	2,800	\$33	\$93,351
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$93,351</b>
	<b>CIVIL IMPROVEMENTS</b>				
9	MINOR CONCRETE (CURB RAMP)-SDRSD G-29 (33)	EA	1	\$2,230	\$2,230
10	MINOR CONCRETE (SIDEWALK)	SF	600	\$6	\$1,610
11	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	50	\$22	\$1,100
13	INTERSECTION OF ENCINITAS BLVD/VULCAN AVE	LS	1	\$37,600	\$37,600
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$42,540</b>
	<b>PAVEMENT</b>				
14	SLURRY SEAL OF ROAD (ENCINITAS BLVD TO F ST)	LS	1	\$47,520	\$47,520
15	CRT PAVEMENT (SOUTH OF F ST))	LS	1	\$698,519	\$698,519
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$746,039</b>
	<b>LANDSCAPE &amp; IRRIGATION</b>				
16	SLOPE PLANTING (GROUND COVER)	SF	9,200	\$1	\$7,268
17	SLOPE IRRIGATION	SF	9,200	\$1	\$5,428
	<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>				<b>\$12,696</b>
	<b>MISCELLANEOUS ITEMS</b>				
18	NCTD 6' CHAIN LINK FENCE	LF	2,636	\$22	\$57,992
19	16' METAL GATE	EA	4	\$4,500	\$18,000
20	DEMOUNTABLE POST - SDRSD M-16	EA	6	\$800	\$4,800
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$80,792</b>
	<b>TRAFFIC</b>				
21	PAVEMENT MARKER (RETROREFLECTIVE)	EA	50	\$1.25	\$63
22	PAINT TRAFFIC STRIPE (2-COAT)	LF	2,200	\$0.30	\$660
23	THERMO CROSSWALK AND PAVEMENT MARKING (EWNV)	SF	1,400	\$3.40	\$4,760
24	HIGH INTENSITY ACTIVATED CROSSWALK (HAWK) NORTH OF G ST	EA	1	\$75,000	\$75,000
25	TRAFFIC SIGNAL MODIFICATIONS AT D ST	LS	1	\$80,000	\$80,000
26	TRAFFIC SIGNAL MODIFICATIONS AT ENCINITAS BLVD/VULCAN AVE	LS	1	\$80,000	\$80,000
27	PAVEMENT DELINEATION ALONG VULCAN AVE FROM ENCINTAS BLVD TO G ST	LS	1	\$11,533	\$11,533
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$252,016</b>

**TOTAL ENGINEER'S ESTIMATE** **\$1,344,520**

# APPENDIX

## ***B-5 ENCINITAS BLVD TO SANTA FE DR (LONG TERM)***



**SANDAG Encinitas Coastal Rail Trail Planning  
Encinitas Blvd to Santa Fe Dr - Long Term Option**

**Encinitas, CA**

**Project Cost Opinion**

**Preliminary Engineering & Environmental through Final Design & Construction**

**Prepared by WSP**

**May 5, 2020**

	<b>Summary of Items</b>	<b>Cost</b>
1	BMPs	\$ 180,330
2	Demolition	\$ 288
3	Earthwork	\$ 160,031
4	Civil Improvements/Pavement	\$ 1,119,273
5	Structural	\$ 1,699,000
6	Landscape & Irrigation	\$ 14,904
7	Miscellaneous Items	\$ 80,792
8	Traffic	\$ 80,932
	<b>Engineer's Estimate Subtotal</b>	<b>\$ 3,335,550</b>
	Minor Items & Mobilization - 5% of Engineer's Estimate	\$ 166,777
	Contingencies - 20% of Engineer's Estimate	\$ 667,110
	Traffic Handling & Flagging - 10% of Engineer's Estimate	\$ 333,555
	<b>Total Capital Construction Cost</b>	<b>\$ 4,502,992</b>
	Preliminary Design - 5% of Capital Construction Cost	\$ 225,150
	Final Design - 10% of Capital Construction Cost	\$ 450,299
	Project Management - 5% of Capital Construction Cost	\$ 225,150
	Construction Management - 12% of Capital Construction Cost	\$ 540,359
	Professional Liability - 2.5% of Capital Construction Cost	\$ 112,575
	<b>Total Project Cost</b>	<b>\$ 6,056,525</b> <b>\$ 6.1 million</b>

**NOTES**

- 1 Escalation is excluded.
- 2 Estimates are based on preliminary exhibits from Encinitas Blvd to Santa Fe Dr dated April 24, 2020.
- 3 Assumes no utility relocations will be necessary.



SANDAG  
 Encinitas Coastal Rail Trail Planning  
 Project Number: 12093G

5/5/2020

**Encinitas Blvd to Santa Fe Dr  
 Long Term Option**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT COST	AMOUNT
	<b>BMPs</b>				
1	OVERALL COST	LF	4,800	\$38	\$180,330
	<b>SUBTOTAL - GENERAL</b>				<b>\$180,330</b>
	<b>DEMOLITION</b>				
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	0	\$100	\$0
3	REMOVE CONCRETE SIDEWALK (SY)	SY	0	\$32	\$0
4	REMOVE CONCRETE (CURB AND GUTTER) (2)	LF	0	\$5	\$0
5	REMOVE PAVEMENT MARKER	EA	30	\$1.25	\$38
6	REMOVE PAINTED TRAFFIC STRIPE	LF	715	\$0.35	\$250
7	REMOVE LANDSCAPE & IRRIGATION	SF	0	\$2	\$0
	<b>SUBTOTAL - DEMOLITION</b>				<b>\$288</b>
	<b>EARTHWORK</b>				
8	OVERALL COST	LF	4,800	\$33	\$160,031
	<b>SUBTOTAL - EARTHWORK</b>				<b>\$160,031</b>
	<b>CIVIL IMPROVEMENTS</b>				
9	MINOR CONCRETE (CURB RAMP)-SDRSD G-29 (33)	EA	2	\$2,230	\$4,460
10	MINOR CONCRETE (SIDEWALK)	SF	400	\$6	\$2,560
11	MINOR CONCRETE (CURB,CURB&GUTTER)	LF	80	\$22	\$1,760
	<b>SUBTOTAL - CIVIL IMPROVEMENTS</b>				<b>\$8,780</b>
	<b>PAVEMENT</b>				
12	SLURRY SEAL	SF	28,600	\$0.60	\$17,160
13	CRT PAVEMENT (SOUTH OF ENCINITAS BLVD)	LS	1	\$1,093,333	\$1,093,333
	<b>SUBTOTAL - PAVEMENT</b>				<b>\$1,110,493</b>
	<b>STRUCTURAL</b>				
14	BRIDGE (ENCINITAS BLVD)	SF	1,140	\$400	\$456,000
15	BRIDGE RAMP RETAINING WALLS (ENCINITAS BLVD)	SF	11,300	\$110	\$1,243,000
	<b>SUBTOTAL - STRUCTURAL</b>				<b>\$1,699,000</b>
	<b>LANDSCAPE &amp; IRRIGATION</b>				
16	SLOPE PLANTING (GROUND COVER)	SF	10,800	\$1	\$8,532
17	SLOPE IRRIGATION	SF	10,800	\$1	\$6,372
	<b>SUBTOTAL - LANDSCAPE &amp; IRRIGATION</b>				<b>\$14,904</b>
	<b>MISCELLANEOUS ITEMS</b>				
18	NCTD 6' CHAIN LINK FENCE	LF	2,636	\$22	\$57,992
19	16' METAL GATE	EA	4	\$4,500	\$18,000
20	DEMOUNTABLE POST - SDRSD M-16	EA	6	\$800	\$4,800
	<b>SUBTOTAL - MISCELLANEOUS ITEMS</b>				<b>\$80,792</b>
	<b>TRAFFIC</b>				
21	PAVEMENT MARKER (RETROREFLECTIVE)	EA	30	\$1.25	\$38
22	PAINT TRAFFIC STRIPE (2-COAT)	LF	715	\$0.30	\$215
23	THERMO CROSSWALK AND PAVEMENT MARKING	SF	200	\$3.40	\$680
24	TRAFFIC SIGNAL MODIFICATIONS AT E ST	LS	1	\$80,000	\$80,000
	<b>SUBTOTAL - TRAFFIC</b>				<b>\$80,932</b>

**TOTAL ENGINEER'S ESTIMATE** **\$3,335,550**



# APPENDIX

## ***B-6*** *COST ASSUMPTIONS* *MEMO*



## MEMO

**TO:** Danny Veeh, SANDAG  
**FROM:** Pete Ruscitti, WSP  
**SUBJECT:** Design & Cost Assumptions for Encinitas Coastal Rail Trail Alignments (DRAFT)  
**DATE:** April 27, 2020

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The WSP project team is employing a set of design and cost assumptions in development of the final report, alignment exhibits, and cost estimates for the *Encinitas Coastal Rail Trail (CRT) Planning* project. This memo summarizes these assumptions, which were developed collaboratively by the SANDAG/WSP project team.

### ASSUMPTIONS APPLYING TO MULTIPLE ALIGNMENTS

#### 1. CRT Materials

- a. The CRT will feature a 12' travel way of concrete.
- b. The CRT will include a 2' shoulder of permeable pavement on the downstream side.
- c. The CRT will include a 2' shoulder of concrete on the opposite side.

#### 2. Fencing

- a. The CRT cost will include a fence along the rail corridor as a line item.
- b. Assume NCTD standard 6' chain link fence. Note that the City, NCTD and SANDAG could come to agreement on a different type of fencing, similar to the Cardiff CRT.

#### 3. Facility Treatments

- a. For long-term options, in general the proposed alignments and cost estimates will assume the higher end of facility treatments which yield higher benefits for CRT users but also carry higher costs.
- b. The primary exception is the near-term alignment between Encinitas Blvd and E St, which will use striping and delineators rather than raised curbs due to its interim nature.

#### 4. EI Portal Pedestrian Crossing

- a. The EI Portal pedestrian crossing will be in place when the CRT is constructed.
- b. The crossing design will contain ramps (no stairs) that the CRT will use to descend to the crossing grade and then return to street grade.
- c. The cost estimate will include the cost of the south-facing ramp on the east side of the tracks as a CRT cost.



## WEST SIDE ALIGNMENT – LA COSTA AVE TO ENCINITAS BLVD

### 1. Coast Highway 101 Parking Pods

- a. The planned parking pods will be in place when the CRT is constructed.
- b. The parking pods and adjacent pedestrian trail will be removed as needed to accommodate the full 16' CRT.
- c. The CRT project will not assume the cost of replacing lost parking.
- d. WSP will confirm with the City that the parking pods will be gravel 4" deep.
- e. WSP will confirm with the City that the pedestrian path adjacent to the parking pods is decomposed granite.

### 2. La Costa Ave to Bishop's Gate Rd – Drainage

- a. **Baseline Option:** Exhibits and cost estimate will show the CRT atop a reinforced drainage pipe or box culvert approximately 800' long.
  - i. WSP will evaluate drainage needs in light of City's recent plans to add a 60" pipe under Coast Highway 101.
  - ii. This could allow for a reduction in size to the previously designed overflow channel.
- b. **Alternate Option:** The cost estimate will include an alternate option to transition the CRT alignment to Coast Highway 101 at Bishop's Gate Rd.

### 3. Leucadia Blvd Intersection

- a. The report will note that all options have feasibility issues, including cross-slope and traffic operations, that will require further study and coordination with City and NCTD.
- b. The exhibits and cost estimate will show the primary option from the draft exhibits, which is the transition of the northbound right-turn lane to be outside of the CRT alignment approximately 300' south of the intersection.
- c. The cost estimate will double the contingency allowance for this intersection.
- d. The SANDAG/WSP team will follow-up on the potential to add a bridge over this intersection as an alternate option.

## EAST SIDE ALIGNMENT – LA COSTA AVE TO ENCINITAS BLVD

### 1. La Costa Ave to Leucadia Blvd – Drainage

- a. **Baseline Option:** The exhibits and cost estimate will show the CRT adjacent to the LOSSAN drainage channel as the baseline option.
  - i. CRT cost will exclude the retaining wall along the LOSSAN drainage channel, as this is part of the double-track design.
  - ii. CRT cost will include additional retaining walls as needed on the Vulcan Ave side.



- iii. The cost of this option will include reconstructing Vulcan Ave, restriping, and associated impacts to private uses in public ROW where needed. Exhibits will include new striping plan.
- b. **Alternate Option:** The cost estimate will include an alternate option to place the CRT atop a reinforced concrete drainage pipe.
  - i. Based on draft estimate prepared by WSP in 2019.
  - ii. Includes some curb & gutter improvements.
  - iii. Exhibits will provide cross section to compare to baseline option.

## **NEAR-TERM ALIGNMENT – ENCINITAS BLVD TO SANTA FE DR**

### **1. Encinitas Blvd Intersection**

- a. **Baseline Option:** The exhibits and cost estimate will show a protected intersection design across all 4 legs. (Note the cost will include 2-4 bicycle heads per corner plus 4 pop-outs.)
- b. **Alternate Option 1:** The cost estimate and report will include an alternate option for a diagonal crossing.
- c. **Alternate Option 2:** The cost estimate and report will include a third option for a two-stage Danish crossing.

### **2. Encinitas Blvd to E St**

- a. CRT will be a two-way cycle track on the east side of Vulcan Ave constructed with striping and delineators.
- b. CRT cost will include a signal modification at D St.

### **3. E St to Santa Fe Dr**

- a. CRT cycle track remains on the east side of Vulcan Ave through the E St intersection, which will retain stop control.
- b. CRT cycle track crosses Vulcan Ave mid-block between F St and G St (just south of the NCTD parking lot) using HAWK or RRFB.
- c. The report will discuss additional options for the near-term scenario that were considered but are not the preferred concept:
  - i. Danish or protected crossing at E St with stop control
  - ii. Danish or protected crossing at E St with signalization
  - iii. Diagonal crossing at E St with signalization
  - iv. HAWK or RRFB crossing at G St with stop control

## **LONG-TERM ALIGNMENT – ENCINITAS BLVD TO SANTA FE DR**

### **1. Encinitas Blvd to E St**

- a. The CRT cost will assume a standard bike/pedestrian bridge over Encinitas Blvd and the standard 16' CRT facility (as described above) between Encinitas Blvd and E St.
- b. The cost estimate will include a note that further analysis is needed to determine costs of combining rail and bike bridge structures.



- c. To connect the West Side Alignment to the bridge over Encinitas Blvd, the WSP team will investigate ramp options, including a spiral ramp as depicted in the draft exhibits. Grade should not exceed 5%.
- d. The CRT cost will exclude reconfiguration of Encinitas Station bus bays and parking between Encinitas Blvd and E St, as this is expected to be implemented with the double-track project.
- e. The CRT cost will exclude the Encinitas Station parking structure.

## **2. E St to Santa Fe Dr**

- a. The CRT will cross E St on the west leg of the Vulcan Ave intersection using a combination crossing shared with pedestrians.
- b. The CRT cost will include signalization of the E St/Vulcan Ave intersection.
- c. Between E St and the south end of the NCTD parking lot (roughly between F St and G St), the CRT will use the west side of Vulcan Ave including existing sidewalk space.
- d. Where needed, the CRT will include costs of realigning Vulcan Ave and reconfiguring the NCTD parking lot.
- e. South of the NCTD parking lot between F St and G St, the CRT near-term and long-term alignments will come together as a single meandering alignment between Vulcan Ave and the rail corridor.

## **PROPOSED COST ESTIMATES**

The project team proposes developing the following cost estimates. The first four estimates are consistent with the alignment exhibits showing all options, and the fifth estimate is a hybrid representing the most feasible alignment identified in the project report. The fifth option uses the Near-Term Alignment for the segment from Encinitas Blvd to Santa Fe Dr, as this best captures SANDAG's potential cost of implementation in the first phase of the project.

- 1. La Costa Ave to Encinitas Blvd: East Side Alignment**
- 2. La Costa Ave to Encinitas Blvd: West Side Alignment**
- 3. Encinitas Blvd to Santa Fe Dr: Near-Term Alignment**
- 4. Encinitas Blvd to Santa Fe Dr: Long-Term Alignment**
- 5. Hybrid Alignment from Report Recommended as Most Feasible:**
  - a. **La Costa Ave to El Portal St: West Side Alignment**
  - b. **El Portal St to Encinitas Blvd: East Side Alignment**
  - c. **Encinitas Blvd to Santa Fe Dr: Near-Term Alignment**

# APPENDIX

## C PROJECT-RELATED AGENCY COMMUNICATIONS

- **California Coastal Commission (CCC) Permit Requirement to Provide 176 Parking Spaces East of Coast Highway 101**  
*Excerpt of Special Conditions section from approved Coastal Development Permit for North Coast Highway 101 Leucadia Streetscape project. From CCC staff report, September 28, 2018.*
- **SANDAG Letter to City of Encinitas, March 20, 2019**
- **NCTD Letter to City of Encinitas, November 6, 2019**

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### EXHIBITS

[Exhibit 1 – Project Location](#)

[Exhibit 2 – Proposed Lane Reduction Map](#)

[Exhibit 3 – Proposed Roundabout Map](#)

[Exhibit 4 – Proposed Parking Bays Map](#)

[Exhibit 5 – Project Plans](#)

[Exhibit 6 – Proposed Changes to Figure 2 -Circulation Element of the City’s Land Use Plan](#)

[Exhibit 7 – Proposed Changes to Figure 5-C - North Corridor 101 Specific Plan](#)

[Exhibit 8 – Traffic Memoranda](#)

[Exhibit 9 – Appeals by Commissioner Steve Padilla, Commissioner Effie Turnbull-Sanders, Leah Bissonette, Frank Birkner, Christine Wagner, Susan Turney, Lynn Marr, Richard Kingsland, Spencer Mosher, James Mosher, Doug Fiske, Robert Hemphill, Alice Lemon, David Smith, Donna Westbrook](#)

[Exhibit 10 – City of Encinitas Final Resolution No. 2018-34](#)

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the certified LCP and the public access policies of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

## VII. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

## VIII. SPECIAL CONDITIONS

The permit is subject to the following conditions:

1. **Final Plans.** PRIOR TO ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT, the applicant shall submit final plans for the proposed streetscape improvements. The final plans shall be in substantial conformance with the plans submitted with this application by Michael Baker International dated April 2, 2018, shall be subject to the review and written approval of the Executive Director, and shall:
  - (a) Identify the number and location of all public parking spaces proposed for the development site. A minimum of 235 formal public on-street vehicle parking



spaces and 39 motorcycle parking spaces shall be provided on the Highway and 176 formal vehicle parking spaces shall be provided within the three new parking bays on the east side of Highway 101.

- (b) Designate three exclusive “Rideshare” pickup and drop off locations within the Highway corridor adjacent to the Grandview, Beacons, and Stonesteps beach access points. If proposed public parking spaces are used to meet this requirement, the “Rideshare” spaces shall be limited to a maximum of six parking spaces.

The permittee shall undertake the development in accordance with the approved final streetscape improvement plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Coastal Commission approved amendment to this coastal development permit amendment unless the Executive Director determines that no additional amendment is legally required.

2. **Final Landscape Plans.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit final landscape plans for the proposed streetscape improvements. The final landscape plans shall be in substantial conformance with the plans submitted with this application by MW Peltz and Associates, Inc. received 04/02/2018 and shall be subject to the review and written approval of the Executive Director. The final landscape plans shall include the following:

- (a) A plan showing the type, size, extent and location of all proposed vegetation and any necessary irrigation.
- (b) Only drought tolerant native or non-invasive plant materials may be planted throughout the project site. No plant species listed as problematic and/or invasive by the California Native Plant Society, the California Invasive Plant Council, or as may be identified from time to time by the State of California shall be employed or allowed to naturalize or persist on the site. No plant species listed as ‘noxious weed’ by the State of California or the U.S. Federal Government shall be planted within the property.
- (c) Low-flow efficient irrigation systems shall be utilized. Any irrigation system shall be designed with drip lines, where feasible; check valves at low points to reduce excess drainage; automatic controllers; rainy weather shut off controls; and, if rotor heads are used, minimal head coverage overlap.

The permittee shall undertake the development in accordance with the approved final landscape plans. Any proposed changes to the approved final plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

3. **Storm Water Quality Management Plan.** PRIOR TO CONSTRUCTION, the Green Streets PDP Exempt Storm Water Quality Management Plan (SWQMP), dated January 22, 2018, shall be updated in accordance with the findings of a geotechnical investigation regarding site-specific soil-infiltration conditions. The 30% Plan sheets shall be updated, where needed, to reflect the final site drainage and BMP design. The final documents shall be submitted for review and written approval of the Executive Director.

4. **Construction Pollution Prevention Plan.** PRIOR TO CONSTRUCTION, a Construction Pollution Prevention Plan (CPPP) shall be submitted for review and approval. The plan shall incorporate the Best Management Practices cited in the preliminary SWQMP and the final SWQMP. In addition, the CPPP shall comply with the following requirements:

- (a) **Protect Public Access.** Construction shall protect and maximize public access, including by:
  - i. All construction methods to be used, including all methods to keep the construction areas separated from public recreational use areas (e.g., using unobtrusive fencing or equivalent measures to delineate construction areas), shall be clearly identified on the construction site map.
- (b) **Property Owner Consent.** The Construction and Pollution Prevention Plan shall be submitted with evidence indicating that the owners of any properties on which construction activities are to take place, including properties to be crossed in accessing the site, consent to use of their properties.
- (c) **Minimize Other Impacts of Construction Activities.** Other impacts of construction activities shall be minimized through the use of appropriate BMPs, including:
  - i. The damage or removal of non-invasive vegetation (including trees, native vegetation, and root structures) during construction shall be minimized, to achieve water quality benefits such as transpiration, vegetative interception, pollutant uptake, shading of waterways, and erosion control.
  - ii. Soil compaction due to construction activities shall be minimized, to retain the natural stormwater infiltration capacity of the soil.
  - iii. The use of temporary erosion and sediment control products (such as fiber rolls, erosion control blankets, mulch control netting, and silt fences) that incorporate plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers) shall be avoided, to minimize wildlife entanglement and plastic debris pollution.
  - iv. Staging and storage of construction equipment and materials shall occur in inland areas at least 50 feet from coastal waters, drainage courses, and storm drain inlets, if feasible. Upon a showing of infeasibility, the applicant may

submit a request for review and written approval to the Executive Director for staging and storage of construction equipment and materials closer than 50 feet from coastal water, drainage courses, and storm drain inlets. Construction is prohibited outside of the defined construction, staging, and storage areas.

- (d) Construction Site Map and Narrative Description. The Construction and Pollution Prevention Plan shall include a construction site map and a narrative description addressing, at a minimum, the following required components:
- i. A map delineating the construction site, construction phasing boundaries, and the location of all temporary construction-phase BMPs (such as silt fences, inlet protection, and sediment basins).
  - ii. A description of the BMPs that will be implemented to minimize land disturbance activities, minimize the project footprint, minimize soil compaction, and minimize damage or removal of non-invasive vegetation. Include a construction phasing schedule, if applicable to the project, with a description and timeline of significant land disturbance activities.
  - iii. A description of the BMPs that will be implemented to minimize erosion and sedimentation, control runoff and minimize the discharge of other pollutants resulting from construction activities. Include calculations that demonstrate proper sizing of BMPs.
  - iv. A description and schedule for the management of all construction-phase BMPs (including installation and removal, ongoing operation, inspection, maintenance, and training). Identify any temporary BMPs that will be converted to permanent post-development BMPs.

5. **Sign Program.** PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit plans for a comprehensive sign program, documenting all signage proposed for the development site. The comprehensive sign program plans shall be subject to the review and written approval of the Executive Director. These plans shall include the following:

- (a) No commercial or other advertising shall be permitted.
- (b) Roof or tall freestanding pole signs shall not be permitted and monument signs shall not exceed eight feet in height.

The permittee shall undertake development in accordance with the approved final sign plans. Any proposed changes to the approved final sign plans shall be reported to the Executive Director. No changes to the approved final plans shall occur without an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

6. **Local Coastal Program Amendment.** PRIOR TO THE ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT, the City shall submit, for review and written concurrence of the Executive Director, documentation that the Coastal Commission has effectively certified Local Coastal Program Amendment No. LCP-6-ENC-18-0034-1, as necessary to ensure that the subject project is consistent with the City's certified LCP.

7. **North County Transit District Final Approval.** PRIOR TO THE ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written concurrence of the Executive Director, documentation that the City and the North County Transit District have executed a final agreement to locate the proposed parking spaces, landscaping, and infrastructure improvements within North County Transit Right-Of-Way. An amendment to this permit will be required if any of the parking spaces are proposed to be removed in the future.

8. **Traffic Monitoring Plan.** PRIOR TO THE ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written concurrence of the Executive Director, a traffic monitoring plan to monitor the performance of the project corridor, which requires the following:

- (a) Northbound and southbound travel time through the project corridor shall be measured on a Saturday or Sunday, a minimum of two separate days each month, during beach use and peak travel volume periods. Determination of the monitoring dates shall be randomized and selected for the entire year prior to September 1 of each year.
- (b) Provisions for submittal of a report to the Executive Director of the Coastal Commission by September 1 of each year (beginning the first year after construction of the project is completed). Annual reports shall be prepared and submitted for a period of 5 years after completion of project construction, and a final report 10 years after completion.

The applicant shall undertake monitoring and reporting in accordance with the approved final monitoring and reporting program. Any proposed changes to the approved final monitoring and reporting program shall be reported to the Executive Director. No changes to the approved final monitoring and reporting program shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

9. **Fence Plan.** PRIOR TO THE ISSUANCE OF THIS COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for review and written concurrence of the Executive Director, a fence plan, documenting all permanent fencing that is proposed for the development site. The fence plan shall be subject to the review and written approval of the Executive Director. The plan shall include the following:

- (a) Chain link fencing is prohibited.

- (b) Fencing shall consist of post and rail type fencing or an alternative fencing style that is compatible with the character or the surrounding area.

The permittee shall undertake development in accordance with the approved final fence plan. Any proposed changes to the approved final fence plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without an amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

10. **Parking Restrictions.** By acceptance of this permit, the applicant acknowledges and agrees to the following:

- (a) Paid parking within the three new parking bays on the east side of the Highway is prohibited.
- (b) Proposals for paid parking elsewhere in the project corridor will require an amendment to this permit.
- (c) Proposals for timed parking within the three new parking bays on the east side of the Highway or elsewhere in the project corridor will require an amendment to this permit.

## **IX. FINDINGS AND DECLARATIONS**

The Commission finds and declares as follows:

### **A. PROJECT DESCRIPTION**

A detailed project description is contained above within the Substantial Issue findings. The City has not modified the proposed project since the filing of the appeals. However, the City has provided additional information and analysis related to the proposed project. Specifically, the City has provided additional analysis related to the expected traffic circulation.

The standard of review is the certified City of Encinitas Local Coastal Program (LCP) and because the site is partially located between the first public road and the sea, the public access policies of Chapter 3 of the Coastal Act also serve as a standard of review.

### **B. PUBLIC ACCESS/RECREATION**

The relevant public access and recreation policies of the Coastal Act and the City of Encinitas' certified LCP are cited in the Substantial Issue portion of the staff report, and are incorporated herein.



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March 20, 2019

File Number 3400600

Ms. Brenda Wisneski  
 Development Services Director  
 City of Encinitas  
 505 South Vulcan Avenue  
 Encinitas, CA 92024

*MEMBER AGENCIES*

*Cities of  
 Carlsbad  
 Chula Vista  
 Coronado  
 Del Mar  
 El Cajon  
 Encinitas  
 Escondido  
 Imperial Beach  
 La Mesa  
 Lemon Grove  
 National City  
 Oceanside  
 Poway  
 San Diego  
 San Marcos  
 Santee  
 Solana Beach  
 Vista  
 and  
 County of San Diego*

*ADVISORY MEMBERS*

*Imperial County  
 California Department  
 of Transportation  
 Metropolitan  
 Transit System  
 North County  
 Transit District  
 United States  
 Department of Defense  
 San Diego  
 Unified Port District  
 San Diego County  
 Water Authority  
 Southern California  
 Tribal Chairmen's Association  
 Mexico*

Dear Ms. Wisneski:

Subject: City of Encinitas North Coast Highway 101 Streetscape and El Portal Undercrossing Design Reviews

After further discussions with city staff, this letter replaces the February 13, 2019, letter from SANDAG.

In their December 27, 2018, letter to the City of Encinitas, North County Transit District (NCTD) staff requested that the San Diego Association of Governments (SANDAG) perform a consistency review to ensure the proposed Coast Highway 101 Streetscape Project is consistent with the long-range Regional Transportation Plan (RTP) as determined by SANDAG and in collaboration with NCTD, pursuant to California Senate Bill 1703 (Peace, 2002). Furthermore, the SANDAG review was to include future double-track plans, Coastal Rail Trail (CRT), and handling of storm water drainage using NCTD's design standard drawings providing minimum track and maintenance operation requirements. In their December 14, 2018, comments on the 100 percent design plans for the El Portal Undercrossing, NCTD noted that the Underpass 100 percent design plan alignment may be in conflict with the future railroad double-track alignment between Encinitas COASTER Station and La Costa Avenue and noted that the Undercrossing shall be compatible with the long-range RTP as determined by SANDAG.

Overall, SANDAG supports the needs of all projects in this vicinity but recognizes the challenges that exist in a constrained environment. SANDAG staff has completed this consistency review and has the following comments.

- The RTP (also referred to as San Diego Forward: The Regional Plan) is the transportation blueprint for the San Diego region and addresses the region's future to 2050 through implementing regional transportation goals, including future double-tracking of the Los Angeles – San Diego – San Luis Obispo (LOSSAN) Rail Corridor to add additional passenger and freight rail service and completion of the CRT, including the segments in the City of Encinitas.

- Currently, the segment of the LOSSAN Rail Corridor from Control Point (CP) Ponto in south Carlsbad to CP Swami just south of the Encinitas Transit Center is single-tracked. The RTP calls for this section to be double-tracked in the second phase of improvements by 2035, although this implementation could occur sooner pending additional project funding.
- The Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP) for the North Coast Corridor is the permitting and implementation document for a multimodal set of improvements for a 27-mile stretch in the coastal zone, including the City of Encinitas. The double-tracking improvements in the PWP/TREP are consistent with the RTP. Furthermore, all phases of the CRT are shown in the first phase of the PWP/TREP.
- SANDAG has determined at a conceptual engineering level that the future second track can be located to the east of the existing track. This is based on a preliminary review of the entire future double-track alignment from La Costa Avenue to CP Swami just south of the Encinitas Transit Center. This finding is the result of several factors:
  - At the Encinitas Station, the second track and second platform will be on the east side.
  - At Leucadia Grade Crossing, the second track most likely will be on the east side due to the steep terrain on the west side.
  - At La Costa Avenue, the tracks need to be shifted to allow for a second track under the La Costa Avenue overcrossing bridge.
- The final track configuration also will need to consider the significant storm water drainage challenges in this area and the need for the areas to the east and west of the future second track to be reserved for future drainage improvement(s) to be studied by the City of Encinitas in conjunction with SANDAG and NCTD. Furthermore, all projects will need a design approach that does not increase the limits of flooding, which currently exists in this area.
- The Streetscape Improvements need to consider surface drainage along the east side of Highway 101 from Leucadia Boulevard to La Costa Avenue, as the area floods during rain events.
- The engineering requirement to travel under the existing La Costa Avenue bridge requires the existing main line to be relocated generally five feet west of its current location.
- SANDAG also recognizes potentially significant constructability challenges with shifting this track while keeping the railroad open for operations. Further study will be needed as more design work on the future second track is completed.
- The drainage improvements needed for the future double track will reduce parking opportunities within the NCTD right-of-way along Vulcan Avenue—in particular, north of Leucadia Boulevard.
- SANDAG agrees that NCTD will require unrestricted access to the Main Track(s), and specifically that a 20.5-foot setback from centerline of one of the tracks is needed for NCTD inspection and maintenance needs.
- If SANDAG implements the above assumptions, the CRT cannot be located to the east of the tracks north of Leucadia Boulevard without further study. Furthermore, because the future El Portal Undercrossing will be grade separated, SANDAG prefers to cross the CRT at this location rather than Leucadia Boulevard should the future CRT be located to the east of the tracks, south of the El Portal Undercrossing project. The CRT will need to be located to the west of the tracks, north of the El Portal crossing.

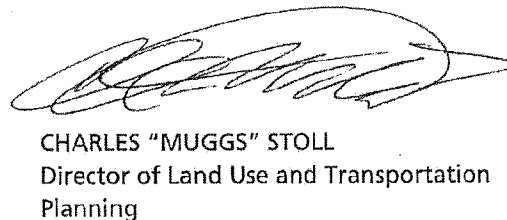
- SANDAG requests that the City of Encinitas recognize the need for access and ramps on the west side and the southeast corner stairs on the east side of the El Portal Crossing to accommodate the future CRT. SANDAG also requests that the City of Encinitas work with SANDAG during the construction process to consider these design changes, pending review of feasibility, schedule, and budget.
- SANDAG prefers 16 feet for the CRT, including two 2-foot unpaved shoulders. This would result in the paved trail being at least 2 feet from the fence. We understand that space is more constrained in some areas. In those cases, we will work with the City of Encinitas on final design plans to include a smaller footprint.
- SANDAG suggests that the City of Encinitas consider increasing the super-elevation of Highway 101 through the Leucadia intersection. This will help reduce the substantial grade differential between Highway 101 and the westernmost track. This approach also will help with the future design of the Leucadia grade crossing and CRT.
- SANDAG is the lead and the City of Encinitas is the co-lead for a planning grant awarded in 2018 to study these improvements further to identify the future alignment of the CRT from Santa Fe Drive to La Costa Avenue. SANDAG requests that the City of Encinitas and NCTD work with us to complete that comprehensive look. SANDAG will base future CRT design on this study.

Based on the consensus on these assumptions, SANDAG finds the Streetscape and El Portal Projects consistent with the RTP and looks forward to continuing to work with the City of Encinitas and NCTD on these important improvements. If you have any questions, please contact Linda Culp, Principal Planner, at [linda.culp@sandag.org](mailto:linda.culp@sandag.org) or (619) 699-6957.

Sincerely,



JIM LINTHICUM  
Director of Mobility Management  
and Project Implementation



CHARLES "MUGGS" STOLL  
Director of Land Use and Transportation  
Planning

JLIN/MST/BSM/TDE/LCU/fwe

cc: Karen Brust, City Manager, City of Encinitas  
Ed Wimmer, City Engineer, City of Encinitas  
Matthew Tucker, Executive Director, NCTD  
Jacob Gould, Senior Legal Counsel, NCTD  
Stephen Fordham, Director of Railroad Engineering, NCTD  
Tracey Foster, Chief Development Officer, NCTD  
Beth Freeman, Manager of Real Estate, NCTD



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November 6, 2019

Ms. Brenda Wisneski  
Development Services Director  
City of Encinitas  
505 S. Vulcan Avenue  
Encinitas, CA 92024

Re: City of Encinitas - Leucadia 101 Streetscape 70% Design Review

Dear Ms. Wisneski:

The North County Transit District (NCTD) has reviewed the Leucadia 101 Streetscape 70% Design Plans (Submittal), submitted by the City of Encinitas for the proposed North Coast Highway 101 Streetscape Project (Project). As the Project has long term impacts to the right-of-way (ROW) and as previously discussed, the San Diego Association of Governments (SANDAG) will need to perform a consistency review to ensure the proposed Project is consistent with the long-range Regional Transportation Plan (RTP) as determined by SANDAG and in collaboration with NCTD, pursuant to Senate Bill No. 1703. Additionally, and as previously discussed, the Project will require the execution of the Streetscape Agreement prior to any use of the NCTD ROW which is currently with the parties for review.

NCTD is providing comments on all design elements of the Project which have any impact on NCTD's ownership interests, preservation of right-of-way (ROW) for future use, safety, operations, and maintenance. NCTD has specifically identified the following elements which have an impact on operations, maintenance, or safety as "Significant and Material." The following constitute Significant and Material issues as identified in the Submittal.

**Preservation of ROW for Future Use:**

- The limit line for improvements shall extend 20.5' from center line of future double track alignment.
- Provide the Project storm drain plans for review.

**Safety:**

- Fencing will be required for the Project no closer than 20.5' from center line of the future double track alignment. An agreement between NCTD and the City shall be required to memorialize fence deviations, corresponding indemnifications, incremental costs and installation responsibilities and coordination. (NCTD legal counsel has previously discussed with City Attorney the inclusion of the fencing requirements in the Project Agreement.)
- Update the Submittal with the current version of NCTD General Notes, a copy of which is enclosed.

**Bus Stops:**

- Identify existing NCTD bus stops, new bus stop locations and improvements to be installed with the Project. Construction plans shall also identify bus stops requiring relocation or closure during construction.

**Ownership Interest to NCTD:**

- The City shall be required to enter into an agreement with NCTD for the use of NCTD's ROW for the Project as stated above, as NCTD must retain its ownership interest in the ROW.

Based upon the foregoing, NCTD requires the City to revise and resubmit the Project plans. NCTD will not enter into any agreement described herein until the Project plans have been revised to incorporate the Significant and Material issues described above, and design approval and/or concurrence is provided by NCTD.

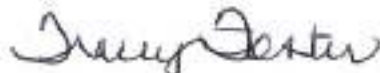
Alternatively, and in an effort to accommodate the City's plans using the existing rail track alignment, NCTD would require the following:

1. A letter from the Coastal Commission acknowledging all improvements in NCTD's right-of-way are temporary and may be removed and/or altered without any obligation to replace parking or other improvement deemed to enhance coastal access.
2. A surety bond or other monetary security in an amount equivalent to the cost for removal and/or replacement of the improvements (e.g. fencing) in order to facilitate the double track capacity enhancing project.

The City and NCTD must coordinate with SANDAG for the Project consistency review of this Submittal. The City previously provided a copy of the Submittal to SANDAG and NCTD will copy this letter to SANDAG electronically for SANDAG's consistency review.

Should you have any questions, please contact me at [tfoster@nctd.org](mailto:tfoster@nctd.org) or 760-966-6674.

Sincerely,



Tracey Foster  
Chief Development Officer

Attachments: NCTD General Notes

cc: Karen Burst, City Manager, City of Encinitas  
Ed Wimmer, City Engineer, City of Encinitas  
Jim Linthicum, Director of Mobility Management and Project Implementation, SANDAG  
Linda Culp, Principal Planner, SANDAG  
Christy Villa, CEO/Principal Engineer, Hoch Consulting  
Matthew O. Tucker, Executive Director, NCTD  
R. Jacob Gould, Senior Legal Counsel, NCTD  
Stephen Fordham, Director of Railroad Engineering, NCTD  
Beth Freeman, Manager of Real Estate, NCTD

### **NCTD General Notes**

1. In case of emergencies and for track and train safety call North County Transit District (NCTD) 24/7 Operations Control Center at (760) 966-6700.
2. No work shall be performed on NCTD's Right-of-Way (ROW) or Property without a Right-of-Entry permit. See NCTD's website at [GoNCTD.com/working-around-the-rails/#submittals](http://GoNCTD.com/working-around-the-rails/#submittals) for information on Property Access Requests.
3. All personnel entering NCTD's ROW or Property shall comply with all NCTD requirements. Failure to comply shall be grounds for termination of work and revocation of the Right-of-Entry Permit.
4. Prior to entering onto the ROW and at the Contractor's expense, all personnel working in or around the ROW, including subcontractors and third parties, shall complete NCTD's Roadway Worker Protection (RWP) training course. RWP training is provided by NCTD's Rail Contractor. See NCTD's website at [GoNCTD.com/working-around-the-rails/#rwp](http://GoNCTD.com/working-around-the-rails/#rwp) for rates, class times, scheduling, and contact information.
5. All persons entering the railroad ROW shall have the RWP sticker affixed to the right side of their hard hat and RWP badge in their possession.
6. The Contractor shall adhere to all requirements set forth by NCTD, the Right-of-Entry Permit, project plans and specifications, and the job site NCTD Railroad Flagman/Employee in Charge (EIC). Failure to comply may result in work stoppage or removal from NCTD property.
7. All Contractors performing work on the ROW whose duties include inspection, construction, maintenance or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery are required to submit to NCTD a Federal Railroad Administration accepted 49 CFR Part 219 Control of Drug and Alcohol Use Plan, prior to the commencement of any work.
8. NCTD Railroad Roadway Worker Flag Protection (Flagging) is required any time when working in the railroad ROW, or working on non-railroad property near or adjacent to the ROW with the potential to impact the railroad tracks, operations or infrastructure. A railroad flagman may be defined as Flagman, EIC, Roadway Worker in Charge (RWIC), or Watchman/Lookout/Flagger (Railroad Flagman). Only an NCTD authorized Railroad Flagman, provided by NCTD's Rail Contractor, is permitted to perform Flagging within the railroad ROW. The Railroad Flagman has sole responsibility to protect the railroad operations and infrastructure. At all times the Contractor shall follow the Railroad Flagman's direction.
9. The Contractor is responsible for requesting Flagging services with adequate notice to meet Contractor's construction schedule. See NCTD's website at [GoNCTD.com/working-around-the-rails/#rowss](http://GoNCTD.com/working-around-the-rails/#rowss) for information on requesting services.
10. The Contractor must contact Dig Alert/Call Before You Dig (811) before any excavations or grade level penetration can occur.
11. NCTD utilities within the ROW are not part of Dig Alert/Call Before You Dig (811). NCTD utilities must be marked out by NCTD's Rail Contractor. The Contractor must request NCTD utility mark out with adequate notice to meet Contractor's construction schedule before any excavations or any grade-level penetration can occur. See NCTD's website at [GoNCTD.com/working-around-the-rails/#rowss](http://GoNCTD.com/working-around-the-rails/#rowss) for information on requesting services.
12. The Contractor shall pay all costs associated with RWP training, Flagging, utility mark out, inspections, and reviews, as required by NCTD policy and/or the Right-of-Entry Permit.

13. The Contractor shall make the necessary arrangements for each equipment operator to have constant and direct radio communications with their foreman and Railroad Flagman.
14. The Contractor shall have the permitted stamped set of plans on-site. Work will be terminated by NCTD should no stamped plans be on-site.
15. All work on or adjacent to the San Diego Trolley shall also adhere to NCTD requirements.
16. The Contractor shall contact NCTD 72-hours in advance for any inspections required in the Permit.
17. Upon project completion the NCTD ROW shall be left in as good if not better condition as prior to the start of the project. The Contractor shall restore all disturbed or damaged area and facilities as directed by NCTD at the Contractor's expense.
18. NCTD ROW and Property shall not be used for storage or disposal of spoils.

# APPENDIX

## D CRT/PARKING POD CONFLICT ANALYSIS

The following exhibits were prepared to identify conflicts between the potential West Side Alignment of the Coastal Rail Trail and the City of Encinitas's North Coast Highway 101 Leucadia Streetscape project—which proposes to install 9 “rustic temporary parking pods” between Coast Highway 101 and the railroad tracks. The exhibits show a compromise solution where the Coastal Rail Trail and parking pods could coexist if tradeoffs were made in the designs of both facilities, including:

- Deviating from the preferred 16' width of the Coastal Rail Trail
- Modifying the design of the Coast Highway 101 project by narrowing the parking pods or converting some parking pods to on-street parallel parking

# La Costa to Bishop's Gate (Pod 1)

## Key Constraints:

- Overflow channel conflicts with CRT and pod
- Undergrounding channel infeasible
- Parking pod 0'-1' conflict with CRT

## Option 1:

- Align CRT along east side of 101 AND
- Eliminate parking pod AND
- Move/realign bus stop

CRT Impacts	101 Impacts
- May need to reduce width	- Loss of pod & 16 parking spaces - Bus stop move/realign

## Option 2:

- Avoid constraint by moving CRT to 101 at Bishop's Gate

CRT Impacts	101 Impacts
- Downgrade to Class II bike lanes	- Pod conflict with rail overflow channel



# Bishop's Gate to Grandview (Pod 2)

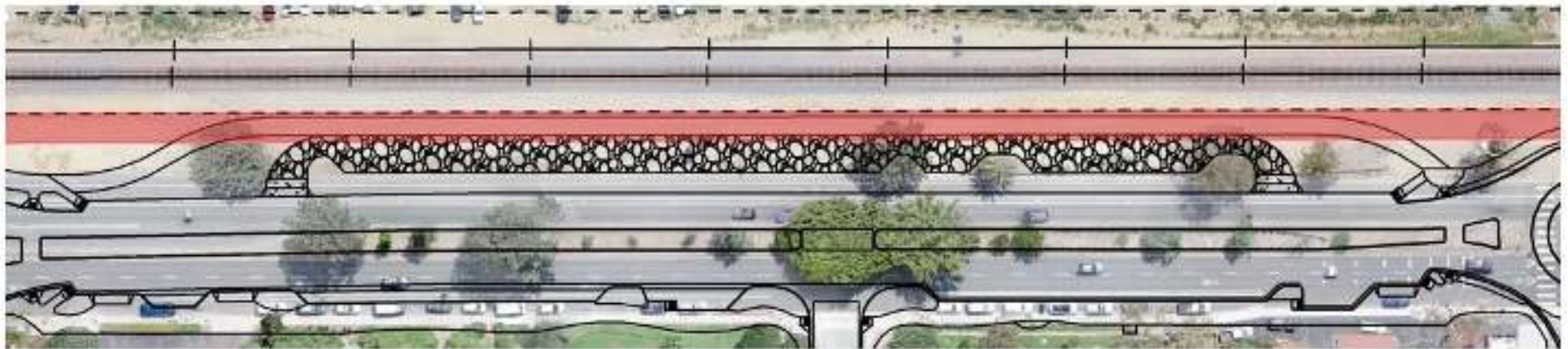
## Key Constraints:

- NCTD overflow channel
- Parking pod 3'-4' conflict with CRT
- Landscape area has up to 11'-12' available

## Option 1:

- Move overflow channel into 20.5' NCTD setback AND
- Move pod west 3'-4' into landscape area AND
- Narrow CRT and/or pod by total 3'-4' at 4 tree cutouts

CRT Impacts	101 Impacts
- Reduce width 2'-3' at 4 tree cutouts	- Reduce width 1' at 4 tree cutouts - Reduce landscape area 3'-4'





## Grandview to Jupiter (Pod 3)

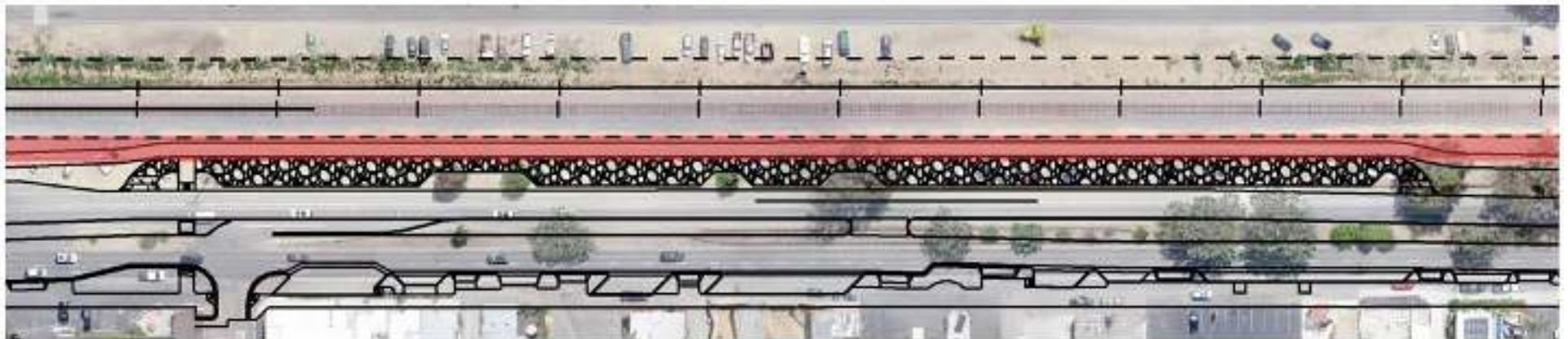
### Key Constraints:

- Parking pod ~2.5' conflict with CRT
- Landscape area has up to 3' available

### Option 1:

- Move pod west ~1' into landscape area OR
- Narrow drive aisle by 1' AND
- Narrow CRT ~1.5' throughout

CRT Impacts	101 Impacts
- Reduce width -1.5' throughout	- Reduce landscape area 1'



## Jupiter to Phoebe (Pod 4)

### Key Constraints:

- *Parking pod 2'-3' conflict with CRT*
- *Landscape area has up to 4'-9' available*

### Option 1:

- *Shorten pod to avoid northernmost tree AND*
- *Move pod west 2' into landscape area AND*
- *Narrow CRT by 1' AND*
- *Narrow CRT and/or pod by total 1'-2' at 4 tree cutouts*

<b>CRT Impacts</b>	<b>101 Impacts</b>
<ul style="list-style-type: none"><li>- Reduce width 1' throughout</li><li>- Reduce width additional 1' at 2 tree cutouts</li></ul>	<ul style="list-style-type: none"><li>- Loss of 2 parking spaces from shortening</li><li>- Reduce landscape area 2'</li><li>- Reduce width 1' at 2 tree cutouts</li></ul>



## Phoebe to South of Diana (Pod 5)

### Key Constraints:

- *Parking pod 3'-4.5' conflict with CRT*
- *Landscape area has up to 8'-9' available*

### Option 1:

- *Move pod west 3'-4.5' into landscape area AND*
- *Narrow pod and/or CRT by total 3'-4.5' at 3 tree cutouts*

CRT Impacts	101 Impacts
- Reduce width 3.5' at 3 tree cutouts	- Reduce width 1' at 3 tree cutouts - Reduce landscape area



# South of Diana to Leucadia (Pod 6)

## Key Constraints:

- Parking pod 4'-7' conflict with CRT
- Landscape area has up to 5' available

## Option 1:

- Convert pod to parallel parking on 101

CRT Impacts	101 Impacts
- No impact	- Pod converted to parallel parking

## Option 2:

- Move pod west 3' into landscape area AND
- Reduce drive aisle 1' AND
- Skew pod driveways AND
- Reduce CRT 3' AND
- Eliminate tree

CRT Impacts	101 Impacts
- Reduce width 5'	- Reduce landscape area 3' - Reduce 1' from drive aisle - Skew driveways - Eliminate tree



## Leucadia to Basil (Pod 7)

### Key Constraints:

- Parking pod 3.5'-5' conflict with CRT
- Landscape area has 5'-6.5' available

### Option 1:

- Move pod west 3'-4.5' into landscape area **AND**
- Narrow pod and/or CRT by total 3.5'-5' at 5 tree cutouts

CRT Impacts	101 Impacts
<ul style="list-style-type: none"><li>- Narrow 2' throughout</li><li>- Narrow 2.5'-4' at 5 tree cutouts</li></ul>	<ul style="list-style-type: none"><li>- Narrow 1' at 5 tree cutouts</li><li>- Reduce landscape area</li></ul>



## Basil to El Portal (Pod 8)

### Key Constraints:

- *Parking pod -12.5' conflict with CRT*
- *Landscape area has up to 6.5' available*

### Option 1:

- *Convert pod to parallel parking on 101*

CRT Impacts	101 Impacts
- No impact	- Pod converted to parallel parking

