

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)**
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East Side Alignment Cost Estimate
- **Appendix B-6** **Cost Assumptions Memo**

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.

Most Feasible Alignment Segment & Key Elements	Estimated Cost *
La Costa Ave to El Portal Crossing <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>
El Portal Crossing to Encinitas Blvd <i>East Side Alignment</i> <i>Modification of El Portal Crossing with ramps</i>	<i>\$2.6 million</i>
Encinitas Blvd to G St: Near Term Option <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>
Encinitas Blvd to G St: Long Term Option <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>
G St to Santa Fe Dr <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.

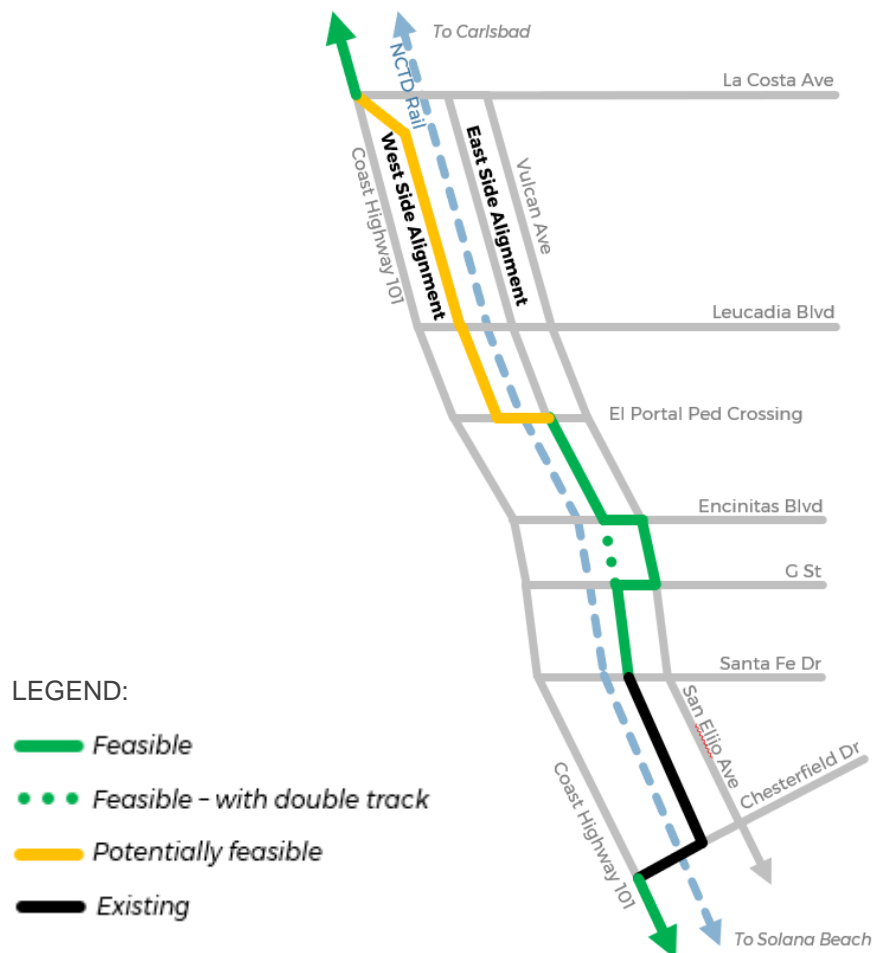
Alignment Segment & Key Elements	Estimated Cost *	Cost Estimate Location
La Costa Ave to Encinitas Blvd: West Side Alignment <i>CRT above underground drainage channel (approx. 900')</i> <i>Removal of Coast Highway 101 parking pods as needed</i> <i>Signal modification at Leucadia Blvd</i> <i>Tie-backs at Encinitas Blvd rail undercrossing</i>	\$11.3 million	Appendix B-2
La Costa Ave to Encinitas Blvd: East Side Alignment <i>Bridge overcrossing south of La Costa Ave</i> <i>CRT adjacent to drainage channel with retaining wall</i> <i>Realignment & reconstruction of Vulcan Ave as needed</i> <i>Modification of El Portal Crossing with ramps</i>	\$22.8 million	Appendix B-3
Encinitas Blvd to Santa Fe Dr: Near Term Option <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
Encinitas Blvd to Santa Fe Dr: Long Term Option <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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 4,739,004
	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
	Total Capital Construction Cost	\$ 6,397,655
	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
	Total Project Cost	\$ 8,604,846 \$ 8.6 million

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
	BMPs				
1	OVERALL COST	LF	9,900	\$38	\$371,931
	SUBTOTAL - GENERAL				\$371,931
	DEMOLITION				
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
	SUBTOTAL - DEMOLITION				\$76,317
	EARTHWORK				
9	OVERALL COST	LF	9,900	\$33	\$330,063
	SUBTOTAL - EARTHWORK				\$330,063
	CIVIL IMPROVEMENTS				
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
	SUBTOTAL - CIVIL IMPROVEMENTS				\$19,600
	PAVEMENT				
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
	SUBTOTAL - PAVEMENT				\$2,825,190
	DRAINAGE				
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
	SUBTOTAL - DRAINAGE				\$780,804
	LANDSCAPE & IRRIGATION				
15	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$0.79	\$948
16	SLOPE IRRIGATION	SF	1,200	\$0.59	\$708
	SUBTOTAL - LANDSCAPE & IRRIGATION				\$1,656
	MISCELLANEOUS ITEMS				
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
	SUBTOTAL - MISCELLANEOUS ITEMS				\$252,368
	TRAFFIC				
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
	SUBTOTAL - TRAFFIC				\$81,075
				TOTAL	\$4,739,004



**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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 1,419,649
	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
	Total Capital Construction Cost	\$ 1,916,526
	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
	Total Project Cost	\$ 2,577,728 \$ 2.6 million

NOTES

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- 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
	BMPs				
1	OVERALL COST	LF	3,000	\$38	\$112,706
	SUBTOTAL - GENERAL				\$112,706
	DEMOLITION				
2	REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	159.26	\$100	\$15,926
3	REMOVE LANDSCAPE & IRRIGATION	SF	8000.00	\$2	\$16,000
	SUBTOTAL - DEMOLITION				\$31,926
	EARTHWORK				
4	OVERALL COST	LF	3,000	\$33	\$100,019
	SUBTOTAL - EARTHWORK				\$100,019
	PAVEMENT				
5	CRT PAVEMENT (EL PORTAL CROSSING TO ENCINITAS BLVD)	LS	1	\$837,778	\$837,778
	SUBTOTAL - PAVEMENT				\$837,778
	STRUCTURAL				
6	RETAINING WALLS (EL PORTAL CROSSING)	SF	2,350	\$110	\$258,500
	SUBTOTAL - STRUCTURAL				\$258,500
	MISCELLANEOUS ITEMS				
7	NCTD 6' CHAIN LINK FENCE	LF	2,760	\$22	\$60,720
8	16' METAL GATE	EA	4	\$4,500	\$18,000
	SUBTOTAL - MISCELLANEOUS ITEMS				\$78,720

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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 314,283
	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
	Total Capital Construction Cost	\$ 424,283
	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
	Total Project Cost	\$ 570,660 \$ 0.6 million

NOTES

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- 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
	BMPs				
1	OVERALL COST	LF	500	\$38	\$18,784
	SUBTOTAL - GENERAL				\$18,784
	DEMOLITION				
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
	SUBTOTAL - DEMOLITION				\$11,893
	EARTHWORK				
6	OVERALL COST	LF	500	\$33	\$16,670
	SUBTOTAL - EARTHWORK				\$16,670
	CIVIL IMPROVEMENTS				
7	INTERSECTION OF ENCINITAS BLVD/VULCAN AVE	LS	1	\$37,600	\$37,600
	SUBTOTAL - CIVIL IMPROVEMENTS				\$37,600
	PAVEMENT				
8	SLURRY SEAL OF ROAD (ENCINITAS BLVD TO F ST)	LS	1	\$47,520	\$47,520
	SUBTOTAL - PAVEMENT				\$47,520
	MISCELLANEOUS ITEMS				
9	DEMOUNTABLE POST - SDRSD M-16	EA	6	\$800	\$4,800
	SUBTOTAL - MISCELLANEOUS ITEMS				\$4,800
	TRAFFIC				
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
	SUBTOTAL - TRAFFIC				\$177,016

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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 2,408,616
	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
	Total Capital Construction Cost	\$ 3,251,632
	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
	Total Project Cost	\$ 4,373,445 \$ 4.4 million

NOTES

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- 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
	BMPs				
1	OVERALL COST	LF	2,500	\$38	\$93,922
	SUBTOTAL - GENERAL				\$93,922
	DEMOLITION				
2	REMOVE PAVEMENT MARKER	EA	30	\$1.25	\$38
3	REMOVE PAINTED TRAFFIC STRIPE	LF	715	\$0.35	\$250
	SUBTOTAL - DEMOLITION				\$288
	EARTHWORK				
4	OVERALL COST	LF	2,500	\$33	\$83,349
	SUBTOTAL - EARTHWORK				\$83,349
	CIVIL IMPROVEMENTS				
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
	SUBTOTAL - CIVIL IMPROVEMENTS				\$8,780
	PAVEMENT				
8	SLURRY SEAL	SF	28,600	\$0.60	\$17,160
9	CRT PAVEMENT (ENCINITAS BLVD TO G ST)	LS	1	\$425,185	\$425,185
	SUBTOTAL - PAVEMENT				\$442,345
	STRUCTURAL				
10	BRIDGE (ENCINITAS BLVD)	SF	1,140	\$400	\$456,000
11	BRIDGE RAMP RETAINING WALLS (ENCINITAS BLVD)	SF	11,300	\$110	\$1,243,000
	SUBTOTAL - STRUCTURAL				\$1,699,000
	TRAFFIC				
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
	SUBTOTAL - TRAFFIC				\$80,932

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
	Total Capital Construction Cost	\$ 1,390,819
	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
	Total Project Cost	\$ 1,870,651 \$ 1.9 million

NOTES

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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
	BMPs				
1	OVERALL COST	LF	2,300	\$38	\$86,408
	SUBTOTAL - GENERAL				\$86,408
	EARTHWORK				
2	OVERALL COST	LF	2,300	\$33	\$76,681
	SUBTOTAL - EARTHWORK				\$76,681
	CIVIL IMPROVEMENTS				
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
	SUBTOTAL - CIVIL IMPROVEMENTS				\$4,940
	PAVEMENT				
6	CRT PAVEMENT (G TO SANTA FE DR)	LS	1	\$698,519	\$698,519
	SUBTOTAL - PAVEMENT				\$698,519
	LANDSCAPE & IRRIGATION				
7	SLOPE PLANTING (GROUND COVER)	SF	9,200	\$1	\$7,268
8	SLOPE IRRIGATION	SF	9,200	\$1	\$5,428
	SUBTOTAL - LANDSCAPE & IRRIGATION				\$12,696
	MISCELLANEOUS ITEMS				
9	NCTD 6' CHAIN LINK FENCE	LF	2,636	\$22	\$57,992
10	16' METAL GATE	EA	4	\$4,500	\$18,000
	SUBTOTAL - MISCELLANEOUS ITEMS				\$75,992
	TRAFFIC				
11	HIGH INTENSITY ACTIVATED CROSSWALK (HAWK) NORTH OF G ST	EA	1	\$75,000	\$75,000
	SUBTOTAL - TRAFFIC				\$75,000

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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 6,227,557
	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
	Total Capital Construction Cost	\$ 8,407,202
	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
	Total Project Cost	\$ 11,307,687 \$ 11.3 million

NOTES

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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
BMPs					
1	OVERALL COST	LF	13,200	\$38	\$495,908
SUBTOTAL - GENERAL					\$495,908
DEMOLITION					
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
SUBTOTAL - DEMOLITION					\$116,317
EARTHWORK					
9	OVERALL COST	LF	13,200	\$33	\$440,084
SUBTOTAL - EARTHWORK					\$440,084
CIVIL IMPROVEMENTS					
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
SUBTOTAL - CIVIL IMPROVEMENTS					\$19,600
PAVEMENT					
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
SUBTOTAL - PAVEMENT					\$3,746,745
STRUCTURAL					
14	TIE-BACKS AT ABUTMENT (ENCINITAS BLVD)	SF	1,800	\$110	\$198,000
SUBTOTAL - STRUCTURAL					\$198,000
DRAINAGE					
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
SUBTOTAL - DRAINAGE					\$780,804
LANDSCAPE & IRRIGATION					
16	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$0.79	\$948
17	SLOPE IRRIGATION	SF	1,200	\$0.59	\$708
SUBTOTAL - LANDSCAPE & IRRIGATION					\$1,656
MISCELLANEOUS ITEMS					
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
SUBTOTAL - MISCELLANEOUS ITEMS					\$347,368
TRAFFIC					
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
SUBTOTAL - TRAFFIC					\$81,075
TOTAL					\$6,227,557



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

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
SUBTOTAL				\$780,804
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
TOTAL				\$1,285,984 \$1.3 million

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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 12,558,362
	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
	Total Capital Construction Cost	\$ 16,953,789
	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
	Total Project Cost	\$ 22,802,846 \$ 22.8 million

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
BMPs					
1	OVERALL COST	LF	19,000	\$38	\$713,807
SUBTOTAL - GENERAL					\$713,807
DEMOLITION					
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
SUBTOTAL - DEMOLITION					\$393,105
EARTHWORK					
8	OVERALL COST	LF	19,000	\$33	\$633,455
SUBTOTAL - EARTHWORK					\$633,455
CIVIL IMPROVEMENTS					
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
SUBTOTAL - CIVIL IMPROVEMENTS					\$458,060
PAVEMENT					
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
SUBTOTAL - PAVEMENT					\$3,826,575
STRUCTURAL					
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
SUBTOTAL - STRUCTURAL					\$2,738,500
DRAINAGE					
20	DRAINAGE AND WATER QUALITY ELEMENTS ALONG VULCAN AVE (LA COSTA AVE TO LEUCADIA BLVD)	LS	1	\$3,325,000	\$3,325,000
SUBTOTAL - DRAINAGE					\$3,325,000
LANDSCAPE & IRRIGATION					
21	SLOPE PLANTING (GROUND COVER)	SF	1,200	\$1	\$948
22	SLOPE IRRIGATION	SF	1,200	\$1	\$708
SUBTOTAL - LANDSCAPE & IRRIGATION					\$1,656
MISCELLANEOUS ITEMS					
23	NCTD 6' CHAIN LINK FENCE	LF	11,170	\$22	\$245,740
24	16' METAL GATE	EA	15	\$4,500	\$67,500
SUBTOTAL - MISCELLANEOUS ITEMS					\$313,240
TRAFFIC					
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
SUBTOTAL - TRAFFIC					\$154,965



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



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

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

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

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	
Design Costs						
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		
					\$9,048,780	
Right-of-Way						
Temporary R/W, Easements	1	LS	\$250,000	\$250,000		
Property Acquisition for Detention Basin	1	LS	\$5,000,000	\$5,000,000		
					\$5,250,000	
Construction Cost Estimate						
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		
					\$30,888,500	
Base Construction Cost Est. (BCE)					\$30,888,500	
Other Construction Costs						
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		
					\$5,088,850	
Contingency					\$9,266,550	
					\$9,266,550	
Construction Cost Estimate (CCE)					\$45,243,900	
Ancillary Construction Costs						
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		
					\$8,995,182	
Total Construction Estimate (TCE)					\$54,239,082	
Total Project Cost Estimate (in 2018 dollars)					\$68,537,862	
COST ESCALATION						
Year of Expenditure	Annual		Cumulative	Estimated	Escalation	
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
PROJECT COST IN YEAR OF EXPENDITURE DOLLARS					\$68,537,862
Cost Estimate Notes					
<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&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

	Summary of Items	Cost
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
	Total Capital Construction Cost	\$ 1,797,962
	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
	Total Project Cost	\$ 2,418,259 \$ 2.4 million

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
	BMPs				
1	OVERALL COST	LF	2,800	\$38	\$105,193
	SUBTOTAL - GENERAL				\$105,193
	DEMOLITION				
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
	SUBTOTAL - DEMOLITION				\$11,893
	EARTHWORK				
8	OVERALL COST	LF	2,800	\$33	\$93,351
	SUBTOTAL - EARTHWORK				\$93,351
	CIVIL IMPROVEMENTS				
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
	SUBTOTAL - CIVIL IMPROVEMENTS				\$42,540
	PAVEMENT				
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
	SUBTOTAL - PAVEMENT				\$746,039
	LANDSCAPE & IRRIGATION				
16	SLOPE PLANTING (GROUND COVER)	SF	9,200	\$1	\$7,268
17	SLOPE IRRIGATION	SF	9,200	\$1	\$5,428
	SUBTOTAL - LANDSCAPE & IRRIGATION				\$12,696
	MISCELLANEOUS ITEMS				
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
	SUBTOTAL - MISCELLANEOUS ITEMS				\$80,792
	TRAFFIC				
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
	SUBTOTAL - TRAFFIC				\$252,016

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

	Summary of Items	Cost
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
	Engineer's Estimate Subtotal	\$ 3,335,550
	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
	Total Capital Construction Cost	\$ 4,502,992
	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
	Total Project Cost	\$ 6,056,525 \$ 6.1 million

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
	BMPs				
1	OVERALL COST	LF	4,800	\$38	\$180,330
	SUBTOTAL - GENERAL				\$180,330
	DEMOLITION				
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
	SUBTOTAL - DEMOLITION				\$288
	EARTHWORK				
8	OVERALL COST	LF	4,800	\$33	\$160,031
	SUBTOTAL - EARTHWORK				\$160,031
	CIVIL IMPROVEMENTS				
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
	SUBTOTAL - CIVIL IMPROVEMENTS				\$8,780
	PAVEMENT				
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
	SUBTOTAL - PAVEMENT				\$1,110,493
	STRUCTURAL				
14	BRIDGE (ENCINITAS BLVD)	SF	1,140	\$400	\$456,000
15	BRIDGE RAMP RETAINING WALLS (ENCINITAS BLVD)	SF	11,300	\$110	\$1,243,000
	SUBTOTAL - STRUCTURAL				\$1,699,000
	LANDSCAPE & IRRIGATION				
16	SLOPE PLANTING (GROUND COVER)	SF	10,800	\$1	\$8,532
17	SLOPE IRRIGATION	SF	10,800	\$1	\$6,372
	SUBTOTAL - LANDSCAPE & IRRIGATION				\$14,904
	MISCELLANEOUS ITEMS				
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
	SUBTOTAL - MISCELLANEOUS ITEMS				\$80,792
	TRAFFIC				
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
	SUBTOTAL - TRAFFIC				\$80,932

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

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**