

Appendix G
Preliminary Cost Estimates

Memorandum

To: Ric Rattray, Program Manager

Cc: Michael Tree, Executive Director

Subject: Valley Link Operations and Maintenance Cost Memorandum – Revised

From: Justin Fox, AECOM; Ryan Park, AECOM

Date: July 2, 2020

Introduction

This memorandum presents the conceptual operations and maintenance (O&M) costs for the Valley Link project. Both a discussion on the methodology to develop the O&M cost and the summary-level projected O&M costs for the project are included.

The Valley Link service is envisioned to operate with self-propelled rail cars known as multiple units (MUs). O&M costs for various Valley Link scenarios have been developed, covering the full project from the Dublin/Pleasanton BART station to North Lathrop as well as three initial operating segments (IOS) terminating at Southfront Road, Greenville Road, or Mountain House. The full route and IOS to Mountain House scenarios include a station in eastern Livermore at either Southfront Road or Greenville Road (but not both). An overview of the stations included in each scenario is found in **Table 1**.

Table 1: Scenario Station Locations

	Full Build – Greenville	Full Build – Southfront	IOS – Greenville	IOS – Southfront	IOS – Greenville + Mountain House	IOS – Southfront + Mountain House
Dublin/Pleasanton	x	x	x	x	x	x
Isabel Avenue	x	x	x	x	x	x
Greenville Road	x		x		x	
Southfront Road		x		x		x
Mountain House	x	x			x	x
Downtown Tracy	x	x				
River Islands	x	x				
North Lathrop	x	x				

The operating plans for the scenarios are defined in **Table 2**. The 2025 scenarios (both Full Build and IOS options) assume that Valley Link would operate with an initial service window between 5:00 a.m. and 8:00 p.m. By 2040, it is assumed that there would be sufficient ridership growth to justify a longer service window that would more closely match BART’s current service hours.

Two operating segments are proposed for the Valley Link service: the Tri-Valley IOS segment, between Mountain House and Dublin/Pleasanton BART, and the Full Build route between North Lathrop and Dublin/Pleasanton. For the IOS options, there is no distinction between the two; all service would operate at the Tri-Valley segment headways.

Service on the Tri-Valley segment would operate at a base headway of 12, 24, or 36 minutes, while the service on the rest of the route (for the Full Build route scenarios) would operate at twice the base IOS headway, with one exception: during peak hours in the 2040 scenarios, service would be provided at 12-minute headways along the full route.

It is assumed that the IOS scenarios in 2025 would be extended to full route operations by 2040; therefore, O&M costs for the IOS scenarios have only been calculated for 2025.

Table 2: Project Scenarios

Scenario	Hours of Service			Headways (minutes) Tri-Valley segment full route						
	Week-days	Satur-days	Sun-days and Holi-days	Weekdays						Weekend s And Holidays
				Morning (start – 5 a.m.)	AM peak (5 a.m. – 8 a.m.)	Midday (8 a.m. – 4 p.m.)	PM peak (4 p.m. – 7 p.m.)	Evening (7 p.m. – 8 p.m.)	Late Evening (8 p.m. – 1 a.m.)	
2025 Scenarios (12/24)	5 a.m. – 8 p.m.	8 a.m. – 8 p.m.	—	—	12 24	36 72	12 24	24 48	—	36 72
2040 Scenarios (12/12)	4 a.m. – 1 a.m.	6 a.m. – 1 a.m.	8 a.m. – 1 a.m.	24 48	12 12	24 48	12 12	24 48	24 48	36 72

O&M Cost Estimates Methodology

The conceptual O&M estimates were calculated using existing costs from MU services in the U.S. that have similar operating conditions. This methodology focuses on calculating costs on a per train mile basis. The approach requires an average cost per train mile of similar existing MU services, which, when multiplied by the total train miles for each Valley Link scenario, yields a reliable estimate of O&M costs for the service.

The cost per train mile was calculated using data from the National Transit Database (NTD) *2017 Operating Expense Report*¹ on the existing MU services in the U.S. listed in **Table 3**. Fuel was not included as the proposed MU vehicle type concept for Valley Link is an MU Hybrid (that is, MUs that draw power from battery packs as well as from diesel motors), while the MUs in the NTD Report are not (drawing power from diesel motors only). Since fuel consumption statistics are different, fuel costs per mile for the MU Hybrid were added to the average NTD cost per train mile without fuel to get the total cost per train mile.

Of the five services listed, only two – New Jersey Transit’s River LINE in southern New Jersey and North County Transit District’s SPRINTER in San Diego County – were used in the

¹ 2017 Annual Database Operating Expense <https://www.transit.dot.gov/ntd/data-product/2017-annual-database-operating-expense>

calculations. Despite being another MU service, the A-Train operated by Denton County Transportation Authority near Dallas was not considered in the calculations due to outlier maintenance costs. The vehicle maintenance cost for the A-Train was far lower than the average vehicle maintenance cost for the other services listed (\$0.16 per train mile versus an average value of \$6.07 per train mile). Similarly, Capital Metro MetroRail in Austin and Westside Express (WES) Commuter Rail near Portland were also not included due to low total vehicle miles, making them dissimilar to the proposed Valley Link operations.

The average cost per train mile most similar to Valley Link was determined to be \$22.16, based on the average between the River LINE and SPRINTER. The estimated fuel costs for the MU Hybrid is \$1.04 per mile. Adding the MU Hybrid fuel cost of \$1.04 per mile to the River LINE / SPRINTER average cost per train mile of \$22.16 per mile without fuel resulted in a total operating cost per train mile of **\$23.20** per mile for Valley Link.

Table 3: U.S. MU Cost Metrics

Service	Annual Total Train Miles	Annual Deadhead Miles	Cost per Train Mile (no Fuel)
Westside Express (WES)	165,000	2,200	\$ 42.31
MetroRail	340,000	38,200	\$ 62.69
A-Train	560,000	26,500	\$ 24.17
River LINE	1,300,000	27,900	\$ 22.85
SPRINTER	690,000	4,000	\$ 21.47

The expected Valley Link annual train miles (**Table 4**) were calculated using each scenario’s operating schedule and alignment measurements to find revenue miles, and then applying a deadhead factor of 1.63 percent. The deadhead factor was derived by dividing the average annual deadhead miles (15,959) by the average annual revenue miles (979,087) between the two aforementioned MU services found in the NTD *2017 Operating Expense Report*². In the table below, train miles are shown by service scenario.

² Ibid., p. 1

Table 4: Annual Train Miles by Service Scenario

Scenario Year	Scenario	Train Miles		
		Revenue	Deadhead	Total
2025	IOS – Greenville	372,800	6,100	378,900
	IOS - Southfront	308,400	5,00	313,400
	IOS - Greenville + Mountain House	773,300	12,600	785,900
	IOS - Southfront + Mountain House	773,300	12,600	785,900
	Full Build - Greenville	1,034,900	16,900	1,051,700
	Full Build - Southfront	1,034,900	16,900	1,051,700
2040	Full Build - Greenville	1,600,300	26,100	1,626,400
	Full Build - Southfront	1,600,300	26,100	1,626,400

The conceptual O&M cost estimates were then calculated by multiplying the average cost per train mile with fuel (\$23.20) by the total annual train miles for each Valley Link scenario.

O&M Cost Estimates

Cost projections for 2028 and 2040 (for \$Year of Expenditure [\$YOE]) are displayed in **Table 5**. The assumed year that operating service begins is 2028. The values are escalated using a standard California yearly inflation rate of 3.2 percent.

Table 5: Annual O&M Cost Projections (\$YOE) By Service Scenario

Scenario	Scenario	Year of Expenditure (YOE)	
		\$ 2028	\$ 2040
12/24	IOS - Greenville	\$ 12,430,000	N/A
	IOS - Southfront	\$ 10,283,000	N/A
	IOS - Greenville + Mountain House	\$ 25,783,000	N/A
	IOS - Southfront + Mountain House	\$ 25,783,000	N/A
	Full Build - Greenville	\$ 34,504,000	\$ 55,344,000
	Full Build - Southfront	\$ 34,504,000	\$ 55,344,000
12/12	Full Build - Greenville	N/A	\$ 85,581,000
	Full Build - Southfront	N/A	\$ 85,581,000

O&M Cost Estimate Bottom-up Validation

In order to validate these costs, a *pro forma* calculation of O&M costs for the Valley Link service was performed in May 2019. The estimate assumed a Full Build scenario in 2028, a total of 140 Valley Link employees, inclusive of administration, operations and dispatch, maintenance of equipment, signals, communication, and maintenance of way functions. The employees were

assigned average wage rates by classification.

In addition to labor, costs were assumed for consumables and insurance. Consumables include parts, miscellaneous services (e.g., marketing, legal, etc.), fuel/electrical power for the maintenance facility vehicles, and station maintenance. Cost estimates for consumables were largely based on costs incurred by the Altamont Corridor Express (ACE) commuter rail service. The vehicle fuel cost was calculated based on the schedules. The insurance cost estimate also was scaled from ACE insurance costs.

The resultant cost estimate, which was then escalated from 2019 dollars using a 3.2 percent annual adjustment factor, varied about one percent from estimate based on the all-inclusive cost per train mile figure multiplied by total train miles, as described in the preceding section. The escalated figure in 2025 dollars totaled \$27 million. Increasing that figure by the growth in train miles assumed by the current schedules (17 percent), the total becomes \$34.8 million, similar to the total cost estimate shown in Table 5.

Memorandum

To: Ric Rattray, Program Manager

Cc: Michael Tree, Executive Director

Subject: Valley Link Capital Cost Memorandum – Revised

From: Daniel Hartman and David Vilorio, AECOM

Date: July 30, 2020

Introduction

As part of the Valley Link 15% Preliminary Engineering (PE) Submittal, AECOM has developed an opinion of construction cost estimate for the 41.8 mile-long DMU passenger rail service. The estimate was based on the framework established in the draft CEQA document and follows the alignment from the existing Dublin / Pleasanton BART Station to the Proposed ACE North Lathrop Station.

The Valley Link rail alignment will travel along the I-580 median to Greenville Road where it will transition into the aerial guideway towards an aerial station at Greenville Road then back to an at-grade trackway on the north side of I-580 where it will utilize the former SPRR ROW through the Altamont Pass. It will then travel along the existing UPRR ROW through Tracy terminating at North Lathrop.

Estimate Summary Base Case

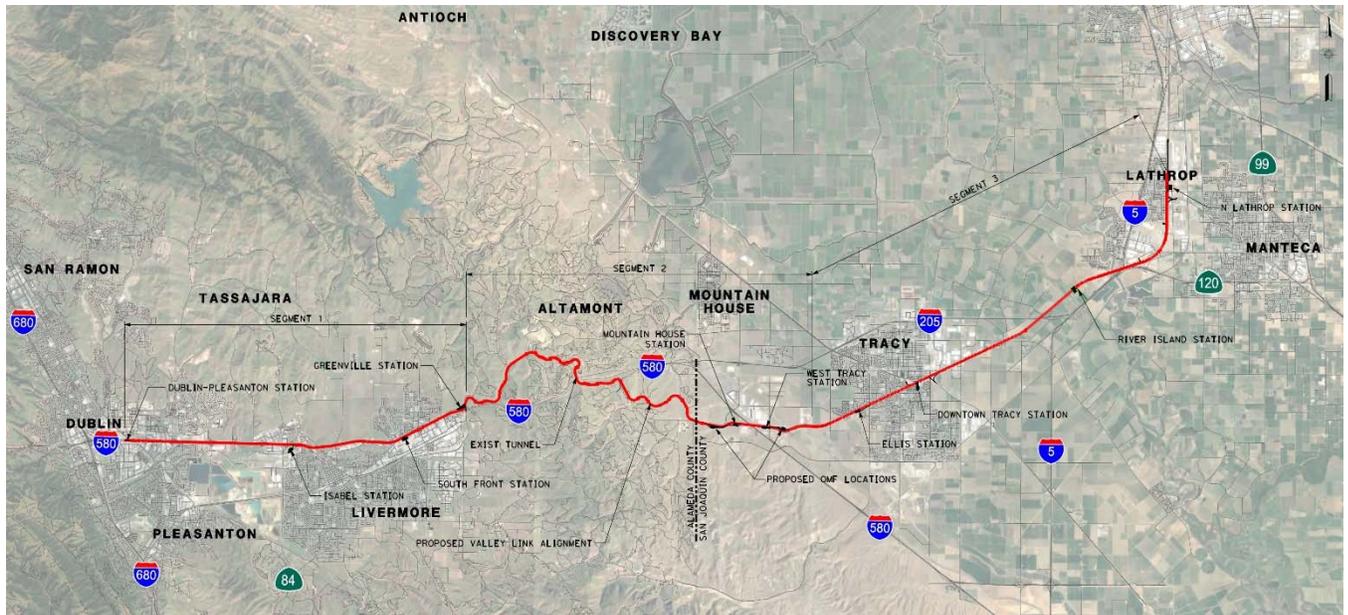
The project construction cost range is based on the Final 15% PE drawings and utilizes unit cost from multiple sources and other local projects of similar scope and magnitude. The project is estimated to be:

\$2.335 to \$2.919 Billion for the base case. (See Attachment 1)

Project Scope of Work

The Proposed Project scope for this estimate is described in detail under Section 1.3 of the Basis of Design Report dated June 5, 2020. By treating the project as three separate segments, the estimate was tailored to the changing character and topography of work along the alignment as identified in the mapping below.

Valley link 15% PE Final Submittal Cost Estimate



Segment 1: Dublin / Pleasanton (D/P) to Greenville Road (11.74 miles)

Trackway Alignment

The 11.74 miles of trackway alignment will be at-grade single track with passing sidings in the I-580 median starting from the D/P BART Station to Greenville Road where the trackway will transition to an aerial trackway structure that will depart from the I-580 median in the northern direction into the proposed Greenville Valley Link Station. This segment will require I-580 to be widened for approximately 9 miles of freeway section from Hacienda Drive to Greenville Road.

Stations

There are three (3) Stations in this segment starting at the Valley Link / BART connection at the existing D/P BART Station. This transfer station will consist of a Valley Link station platform that will run parallel with the existing BART Station. The station will have a concourse level below with multiple vertical circulations for passengers to connect with the BART station concourse level as well as the outside of BART station areas.

There is a proposed Valley Link Station located in the I-580 median at Isabel Ave. The at-grade station will have a pedestrian bridge that will cross over the east bound lanes of I-580 to an 852-space surface parking lot and passenger drop areas that can be accessed from E. Airway Blvd.

The Greenville aerial station will be on the north side of I-580 located at the intersection of Greenville Road and Altamont Pass Road. The station will consist of 674 space surface parking lot and drop off areas. The station will also have passenger access locations for connecting to the proposed ACE station platform along the existing UPRR railway.

Segment 2: Greenville to West Tracy (14.52 miles)

Trackway Alignment

The 14.52 miles at-grade trackway is along the Altamont Pass alignment utilizing the former Southern Pacific Railroad corridor with a grade separation at Altamont Pass / Carroll Roads and ten (10) grade

Valley link 15% PE Final Submittal Cost Estimate

crossings. It would also require existing tunnel rehabilitation, landside stabilization, and a sinkhole repair near the existing tunnel.

Stations

One at-grade station platform at Mountain House location accessible from Via Nicolo Road. The Mountain House location includes 944 surface parking spaces and a passenger drop off area.

Segment 3: West Tracy to North Lathrop

Trackway Alignment

The 15.58 mile-long at-grade trackway will be shared with the existing UPRR trackway up to the proposed Downtown Tracy Station. The alignment will then continue as a new double trackway along the existing UPRR to North Lathrop Station. There are three (3) existing grade crossings that do not require additional upgrades and eleven (11) existing grade crossings that will require modifications.

This will require negotiations with UPRR to determine best options and confirm feasibility of viable alignment alternatives to the railroad corridor. This segment requires three (3) shared bridge structures with UPRR at Paradise Cut Bridge, San Joaquin River Bridge, and Manthey Road Bridge.

Stations

There will be three (3) at-grade stations in this segment: Downtown Tracy, River Island, and North Lathrop. Each of these stations will connect with ACE and have surface parking and drop off areas.

OMF Maintenance & Storage Facility

There are two location options for the OMF maintenance & storage facility. The one that was considered as the base case for this estimate is the 200 acre City of Tracy Site.

Train Controls & Communication

The preliminary engineering for the train control & communication systems have not been developed at this time. The cost estimate is based on the design criteria described in Section 3 and 4 in the Basis of Design Report dated June 5, 2020.

Revenue Vehicles

It is anticipated that the Valley Link will require thirty-two (32) 3-car multiple unit consists with hybrid Diesel/Batteries (DMU) vehicles at a cost of \$11.7 Million each. For the alternative to include OCS, the EMU vehicles cost \$13.7 Million each.

Phases and Alternatives

Phases and alternatives to the rail alignment, stations, OMF, and other project scope were considered that will impact the project cost but could also result in limitations to the operational capacity of the DMU rail service. (See Attachment 3)

Valley link 15% PE Final Submittal Cost Estimate

List of proposed phases are as follow:

- + Greenville North IOS with maximum parking and temporary OMF **\$1,371.85M**
- + Southfront IOS with maximum parking and temporary OMF **\$1,346.60M**
- + Mountain House IOS with maximum parking and OMF **\$1,901.12M**
- + West Tracy IOS with maximum parking and OMF **\$1,951.44M**

List of proposed alternatives / options along with the cost impacts to the project are as follow (Red Text indicates a credit):

- + Segment 1: Southfront Station Alternative **-\$8.49M**
- + Segment 2: West Tracy Station Option **+\$1.16M**
- + Segment 2: Stone Cut Alternative **+\$33.51M**
- + Segment 2 & 3: Shared Track with UPRR **-\$77.25M**
- + Segment 2 & 3: Second Track **+\$31.83M**
- + Segment 1, 2 & 3 : Addition of OCS (Low Range) **+185.36M**
- + Segment 1, 2 & 3 : Addition of OCS (High Range) **+231.70M**
- + Maintenance & Storage Facilities (OMF) Options:
 - o Mountain House. **-\$1.61M**
- + Other Alternative Stations:
 - o Downtown Tracy Station (South Parking Garage) **+\$30.12M**
 - o Downtown Tracy Station (North Parking Garage) **+\$26.21M**

Project Estimate Breakdown

The project estimate is broken down into the following outline:

SEGMENT 1: D/P BART TO GREENVILLE

- 1.0 Trackway Civil works
- 2.0 Trackwork – Ballast / Ties / Rail / Turnouts
- 3.0 Stations:
 - 3.01 Dublin/Pleasanton Station
 - 3.02 Isabel Station
 - 3.03 Greenville Station (North side of I-580)
- 4.0 Highway I-580 Widening
- 5.0 Train Controls & Communications
- 6.0 Other Project Cost
- 7.0 Right-of-Way

SEGMENT 2: GREENVILLE TO WEST TRACY

- 1.0 Trackway Civil works
- 2.0 Tunnel Rehabilitation
- 3.0 Grade Separations – Altamont Pass Rd.
- 4.0 Grade Crossings

Valley link 15% PE Final Submittal Cost Estimate

- 5.0 Trackwork – Ballast / Ties / Rail / Turnouts
- 6.0 Stations:
 - 6.1 Mountain House Station
- 7.0 Train Controls & Communications
- 8.0 Right-of-Way

SEGMENT 3: WEST TRACY TO NORTH LATHROP

- 1.0 Trackway Civil works
- 2.0 Grade Crossings
- 3.0 Trackwork – Ballast / Ties / Rail / Turnouts
- 4.0 Stations
 - 4.1 Downtown Tracy Station
 - 4.2 River Island Station
 - 4.3 North Lathrop Station (Connection to ACE)
- 5.0 Train Controls & Communications
- 6.0 Right-of-Way

OPERATION MAINTENANCE & STORAGE FACILITY: HANSEN ROAD

- 1.0 Yard Trackway
- 2.0 Facilities / Shop
- 3.0 Civil works
- 4.0 Train Controls & Communications
- 5.0 Right-of-Way

Estimate Pricing

Unit Prices

Unit prices used in the 15% PE Estimate for civil work, structural, station elements, trackwork, train controls, communications, etc. are based on multiple sources. The sources used for pricing are as follow:

- + ACEforward Study (Altamont Corridor dated February 2017)
- + Past Project Studies (BART to Livermore dated May 2009)
- + Caltrans Contract Cost Data (Roadwork & Highway Structures)
- + Industry Publications (RS Means Heavy Construction Cost Data)
- + Past Project Experiences
- + Local Project Historical Data
- + Cost Allowances (Where scope information is limited)

Typical Sections Composite Worksheets (See Attachment 4)

Valley link 15% PE Final Submittal Cost Estimate

The Typical Sections Composite unit prices for trackway civil works were developed based on the typical section drawings for each segment. Each composite worksheet calculates the quantities for the work elements shown in the typical sections (i.e. earthwork, sub-ballast, ballast, drainage, etc) and then applies a unit price to each work element based on a sample section length of 1000 feet to come up with a cost per liner foot for that typical section. The results of the typical section unit cost were then applied to the trackway civil work lengths for those sections to arrive at the total trackway civil work costs in each of segment.

Also, the unit cost library prices used in to develop the composite worksheet are based on an AECOM study for the BART to Livermore Project dated May 2009. Prices were escalated to 2018 dollars.

Documents Used

The following documents were used in preparing this estimate:

- + Basis of Design Report dated June 5, 2020.
- + Valley Link Project: 15% Preliminary Engineering Final Submittal Dated July 2, 2020 for the following disciplines:
 - o Track Guideway with options
 - o Stations with options
 - o OMF with options
 - o Roadways
 - o At-Grade Crossings
 - o Right of Way
 - o Utilities
 - o Tunnel Rehabilitation
 - o Construction Area Plans
 - o Architecture (Stations)
 - o Structures
 - o Stone Cut Alternative

General Discussion

The estimate is based on 2018 pricing and with the assumption that the procurement process will take advantage of a competitive bidding environment for a Design-Build contract following a 30% design submittal.

All unit prices include costs for material, labor and equipment, local sales tax, subcontracts, and prime contractor's markups for general conditions and overhead & profit. Material prices are based on industry publications and from other recent projects data with adjustments for site specific and market conditions. Labor rates are based on the local prevailing wages including fringes, payroll taxes, PL/PD and workmen's compensation.

The following is a list of some items that may affect the cost estimate:

- + Modifications to the scope of work or assumptions included in this estimate.
- + Unforeseen or differing sub-surface conditions.
- + Special phasing requirements.
- + Restrictive technical specifications or excessive contract conditions.
- + Any specified item of equipment, material, or product that cannot be obtained from at least

Valley link 15% PE Final Submittal Cost Estimate

three different sources.

Estimate Markup Costs

A 28.00% markup percentage was applied to the total construction cost at each segment. The markup categories are as follows:

Description	Markup Percentage
Inter-Agency Fees	1%
Environmental Mitigation	2%
Design 35%	3%
Design 65%	3%
Design 90%	2%
Design Bid Set	1%
Construction Management	10%
Program Management	2%
Agency Administration	3%
Railroad Traffic Management	1%
Total Markup	28.00%

Contingency

Contingency is an allowance to cover design development and recognizes the approximate estimating methods used during the early stage of project development. Allocated contingency was developed as a percentage in the areas of construction based on the information provided and the estimating methods used. The percentages normally vary from 10% to 30% and the percentages are expected to be lowered as the design develops and more definitive information becomes available. At this PE Phase, contingency was applied as follows:

- + Trackway = 25% to 30%
- + Track & Special Track = 10% to 15%
- + Grade Crossings = 25%
- + Stations = 25% to 30%
- + Highway & Roadway = 25%
- + Structures = 25% to 30%
- + Train Control & Communications = 20%
- + Other Project Cost = 20%
- + OMF = 10% to 30%
- + ROW = 0%

Estimate Assumptions

The following assumptions were used:

Valley link 15% PE Final Submittal Cost Estimate

- + Estimate is based on FTA guidance and utilizes allocated and unallocated contingency
- + Estimate is based on 4th Quarter 2018 pricing.
- + NTP for construction is not determined at this time.
- + Cost allowances were applied for scope of work that was not defined at this level of design.
- + Siding locations based on LTK model 4-2020 for 12/12 service.
- + Electrification is assumed for Dublin Pleasanton BART Station, all of Segment 2, North Lathrop Station and the OMF (High Range).
- + BART provides the ROW at Isabel for a reduced cost.
- + River Islands Development provides ROW for River Islands Station parking.
- + SJRRC provides ROW for North Lathrop Station parking.
- + Estimate range is developed by adding 10% Unallocated Contingency for Low and 25% for High and High included Electrification.

Estimate Exclusions

Following are the estimate exclusions:

- + Escalation
- + Hazardous materials abatement, including contaminated soils
- + Independent third-party commissioning
- + Existing site utilities relocation
- + Acceleration of schedule, premium for shift work, and working hour's restrictions.
- + Change orders during construction
- + Program Reserve
- + Finance Charges
- + Non-Revenue Vehicles

Limitations

The estimate is intended to be a determination of fair market value for the project construction. Since AECOM has no control over market conditions, costs of labor, materials, equipment and other factors which may affect the bid prices, AECOM cannot and does not warrant or guarantee that bids or ultimate construction costs will not vary from the cost estimate. AECOM makes no other warranties, either expressed or implied, and is not responsible for the interpretation by others of the contents herein the cost estimate.

It should be noted that the cost estimate is a "snapshot in time" and that the reliability of this opinion of probable construction cost will inherently degrade over time. The estimate should be updated as design progresses or when market conditions have changed.

Attachments

The following attachments are included in this memorandum:

Attachment 1: Estimate Summary Reports Base Case

- + Project Summary
- + Summary by Segments

Attachment 2: Estimate Detail Report by Segment

Valley link 15% PE Final Submittal Cost Estimate

- + Segment Details
- + Segment Quantity Details
- + Stations Details
- + OMF Details

Attachment 3: Phasing and Alternatives

Attachment 4: Typical Sections Composite Worksheets & Unit Prices

- + Unit Prices
- + Composite Worksheets

Attachment 5: Project Cost Backup

- + I-580 Widening Estimate
- + Communications Estimate
- + Train Control Estimate

Attachment 1

Estimate Summary Reports

Project Summary

Summary by Segments



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
PROJECT SUMMARY: BASE CASE - LOW RANGE (DMU)

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

DESCRIPTION		CONSTRUCTION (\$Million)	ALLOCATED CONTINGENCY (\$Million)	MARKUP (\$Million)	TOTAL (\$Million)
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)	11.74 Miles	\$714.02	\$153.84	\$317.91	\$1,185.77
SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)	14.52 Miles	\$201.44	\$42.85	\$68.40	\$312.70
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)	15.65 Miles	\$204.01	\$42.76	\$69.10	\$315.87
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE		\$104.40	\$9.80	\$31.98	\$146.18
SUBTOTAL CONSTRUCTION & ROW COST	41.91 Miles	\$1,223.88	\$249.25	\$487.39	\$1,960.52
ROLLING STOCK (32 DMU TRAINS)					\$374.40
UNALLOCATED CONTINGENCY (0%)					\$0.00
TOTAL PROJECT COST BASE CASE	2018 Dollars				\$2,334.92



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - LOW RANGE (DMU)

DATE: JULY 2020
 REV:
 PREP. BY: DSH
 CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
SEGMENT 1: D/P BART TO GREENVILLE 11.74 Miles				
1.00 Trackway Civilwork	\$121.00	\$30.25	\$151.25	At-grade from D/P BART to Greenville Rd in I-580 Median then aerial flyover structure over WB I-580 at Greenville Rd to an Aerial Greenville Station.
2.00 Trackwork - Ballast / Ties / Rail / T.O.	\$34.78	\$4.95	\$39.73	At-Grade Track with sidings
3.01 Dublin-Pleasanton BART / DMU Station	\$40.74	\$12.22	\$52.97	Construct a new DMU station platform on the Northside of the existing D/P BART Station in the I-580 median. The DMU platform will connect with BART and includes a platform canopies, a concourse level with vertical circulation (2-escalators, 4-stairs, & 1-elevators), and an opening to access to the D/P BART Station concourse area.
3.02 Isabel Station	\$15.57	\$3.89	\$19.46	At-Grade Station in I-580 Median with pedestrian bridge on the Northside & Southside to parking lot and drop off area.
3.03 Greenville Station (North Aerial)	\$29.76	\$7.44	\$37.20	Aerial Station on the North side of I-580 with ACE platform connection & pedestrian ramps.
4.00 Highway I-580 Widening	\$356.39	\$89.10	\$445.49	11 miles of Hwy I-580 widening from East Dougherty Rd Overcrossing to Greenville Rd. Undercrossing.
5.00 Train Controls & Communications	\$28.70	\$5.74	\$34.44	Signals, Train Control, Communications, & Radio System
6.00 Other Project Cost	\$1.24	\$0.25	\$1.49	Interface with BART & Caltrans
7.00 Right-of-Way	\$85.84	\$0.00	\$85.84	
SUBTOTAL FOR SEGMENT 1				
	\$714.02	\$153.84	\$867.86	
8.00 Markups (Highway I-580 Widening)			\$133.65	
Markups (All of the Remaining Items)			\$118.26	
I-580 Toll System			\$66.00	
TOTAL FOR SEGMENT 1: D/P BART TO GREENVILLE				
			\$1,185.77	
SEGMENT 2 - GREENVILLE TO WEST TRACY 14.52 Miles				
1.00 Trackway Civilwork	\$70.71	\$17.68	\$88.39	
2.00 Tunnel Rehabilitation	\$20.50	\$5.13	\$25.63	
3.00 Grade Separations - Altamont Pass Rd.	\$6.49	\$1.62	\$8.11	
4.00 Grade Crossings	\$7.99	\$2.00	\$9.99	
5.00 Trackwork - Ballast / Ties / Rail / T.O.	\$49.76	\$7.03	\$56.79	
6.01 Mountain House Station	\$10.91	\$2.73	\$13.64	
7.00 Train Controls & Communications	\$33.35	\$6.67	\$40.02	
8.00 Right-of-Way	\$1.74	\$0.00	\$1.74	
SUBTOTAL FOR SEGMENT 2				
	\$201.44	\$42.85	\$244.29	



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - LOW RANGE (DMU)

DATE: JULY 2020
 REV:
 PREP. BY: DSH
 CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
9.00 Markups			\$68.40	
TOTAL FOR SEGMENT 2 - GREENVILLE TO WEST TRACY			\$312.70	
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION 15.65 Miles				
1.00 Trackway Civilwork	\$59.66	\$14.92	\$74.58	
2.00 Grade Crossings	\$4.83	\$1.21	\$6.04	
3.00 Trackwork - Ballast / Ties / Rail / T.O.	\$62.22	\$8.04	\$70.26	
4.01 Downtown Tracy Station	\$9.97	\$2.49	\$12.46	
4.02 River Island Station	\$12.33	\$3.08	\$15.41	
4.03 North Lathrop Station (Connection to ACE)	\$15.46	\$3.87	\$19.33	
5.00 Train Controls & Communications	\$36.62	\$9.15	\$45.77	
6.00 Right-of-Way	\$2.92	\$0.00	\$2.92	
SUBTOTAL FOR SEGMENT 3	\$204.01	\$42.76	\$246.77	
7.00 Markups			\$69.10	
TOTAL FOR SEGMENT 3 - WEST TRACY TO N. LATHROP STATION			\$315.87	
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE				
1.00 Yard Trackwork	\$18.31	\$2.14	\$20.45	
2.00 Facilities / Shop	\$26.20	\$3.93	\$30.13	
3.00 Civilwork	\$22.29	\$3.34	\$25.64	
4.00 Train Controls & Communications	\$2.60	\$0.39	\$2.99	
5.00 Right-of-Way	\$35.00	\$0.00	\$35.00	
SUBTOTAL FOR OMF	\$104.40	\$9.80	\$114.21	
6.00 Markups			\$31.98	
TOTAL FOR OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE			\$146.18	
SUBTOTAL CONSTRUCTION & ROW COST	41.81 Miles	\$1,223.88	\$249.25	\$1,473.13 Segments 1, 2, & 3.
TOTAL MARKUPS			\$487.39	
TOTAL CONSTRUCTION & ROW COST			\$1,960.52	



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - LOW RANGE (DMU)

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
ROLLING STOCK (32 DMU TRAINS)			\$374.40	\$11.7M each
UNALLOCATED CONTINGENCY (0%)			\$0.00	
TOTAL PROJECT COST BASE CASE			\$2,334.92	<i>2018 Dollars</i>



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
PROJECT SUMMARY: BASE CASE - HIGH RANGE (DMU)

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

DESCRIPTION		CONSTRUCTION (\$Million)	ALLOCATED CONTINGENCY (\$Million)	MARKUP (\$Million)	TOTAL (\$Million)
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)	11.74 Miles	\$714.02	\$153.84	\$317.91	\$1,185.77
SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)	14.52 Miles	\$201.44	\$42.85	\$68.40	\$312.70
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)	15.65 Miles	\$204.01	\$42.76	\$69.10	\$315.87
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE		\$104.40	\$9.80	\$31.98	\$146.18
SUBTOTAL CONSTRUCTION & ROW COST	41.91 Miles	\$1,223.88	\$249.25	\$487.39	\$1,960.52
ROLLING STOCK (32 DMU TRAINS)					\$374.40
UNALLOCATED CONTINGENCY (25%)					\$583.73
TOTAL PROJECT COST BASE CASE	2018 Dollars				\$2,918.65



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - HIGH RANGE (DMU)

DATE: JULY 2020
 REV:
 PREP. BY: DSH
 CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
SEGMENT 1: D/P BART TO GREENVILLE 11.74 Miles				
1.00 Trackway Civilwork	\$121.00	\$30.25	\$151.25	At-grade from D/P BART to Greenville Rd in I-580 Median then aerial flyover structure over WB I-580 at Greenville Rd to an Aerial Greenville Station.
2.00 Trackwork - Ballast / Ties / Rail / T.O.	\$34.78	\$4.95	\$39.73	At-Grade Track with sidings
3.01 Dublin-Pleasanton BART / DMU Station	\$40.74	\$12.22	\$52.97	Construct a new DMU station platform on the Northside of the existing D/P BART Station in the I-580 median. The DMU platform will connect with BART and includes a platform canopies, a concourse level with vertical circulation (2-escalators, 4-stairs, & 1-elevators), and an opening to access to the D/P BART Station concourse area.
3.02 Isabel Station	\$15.57	\$3.89	\$19.46	At-Grade Station in I-580 Median with pedestrian bridge on the Northside & Southside to parking lot and drop off area.
3.03 Greenville Station (North Aerial)	\$29.76	\$7.44	\$37.20	Aerial Station on the North side of I-580 with ACE platform connection & pedestrian ramps.
4.00 Highway I-580 Widening	\$356.39	\$89.10	\$445.49	11 miles of Hwy I-580 widening from East Dougherty Rd Overcrossing to Greenville Rd. Undercrossing.
5.00 Train Controls & Communications	\$28.70	\$5.74	\$34.44	Signals, Train Control, Communications, & Radio System
6.00 Other Project Cost	\$1.24	\$0.25	\$1.49	Interface with BART & Caltrans
7.00 Right-of-Way	\$85.84	\$0.00	\$85.84	
SUBTOTAL FOR SEGMENT 1				
	\$714.02	\$153.84	\$867.86	
8.00 Markups (Highway I-580 Widening)			\$133.65	
Markups (All of the Remaining Items)			\$118.26	
I-580 Toll System			\$66.00	
TOTAL FOR SEGMENT 1: D/P BART TO GREENVILLE				
			\$1,185.77	
SEGMENT 2 - GREENVILLE TO WEST TRACY 14.52 Miles				
1.00 Trackway Civilwork	\$70.71	\$17.68	\$88.39	
2.00 Tunnel Rehabilitation	\$20.50	\$5.13	\$25.63	
3.00 Grade Separations - Altamont Pass Rd.	\$6.49	\$1.62	\$8.11	
4.00 Grade Crossings	\$7.99	\$2.00	\$9.99	
5.00 Trackwork - Ballast / Ties / Rail / T.O.	\$49.76	\$7.03	\$56.79	
6.01 Mountain House Station	\$10.91	\$2.73	\$13.64	
7.00 Train Controls & Communications	\$33.35	\$6.67	\$40.02	
8.00 Right-of-Way	\$1.74	\$0.00	\$1.74	
SUBTOTAL FOR SEGMENT 2				
	\$201.44	\$42.85	\$244.29	



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - HIGH RANGE (DMU)

DATE: JULY 2020
 REV:
 PREP. BY: DSH
 CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
9.00 Markups			\$68.40	
TOTAL FOR SEGMENT 2 - GREENVILLE TO WEST TRACY			\$312.70	
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION 15.65 Miles				
1.00 Trackway Civilwork	\$59.66	\$14.92	\$74.58	
2.00 Grade Crossings	\$4.83	\$1.21	\$6.04	
3.00 Trackwork - Ballast / Ties / Rail / T.O.	\$62.22	\$8.04	\$70.26	
4.01 Downtown Tracy Station	\$9.97	\$2.49	\$12.46	
4.02 River Island Station	\$12.33	\$3.08	\$15.41	
4.03 North Lathrop Station (Connection to ACE)	\$15.46	\$3.87	\$19.33	
5.00 Train Controls & Communications	\$36.62	\$9.15	\$45.77	
6.00 Right-of-Way	\$2.92	\$0.00	\$2.92	
SUBTOTAL FOR SEGMENT 3	\$204.01	\$42.76	\$246.77	
7.00 Markups			\$69.10	
TOTAL FOR SEGMENT 3 - WEST TRACY TO N. LATHROP STATION			\$315.87	
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE				
1.00 Yard Trackwork	\$18.31	\$2.14	\$20.45	
2.00 Facilities / Shop	\$26.20	\$3.93	\$30.13	
3.00 Civilwork	\$22.29	\$3.34	\$25.64	
4.00 Train Controls & Communications	\$2.60	\$0.39	\$2.99	
5.00 Right-of-Way	\$35.00	\$0.00	\$35.00	
SUBTOTAL FOR OMF	\$104.40	\$9.80	\$114.21	
6.00 Markups			\$31.98	
TOTAL FOR OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE			\$146.18	
SUBTOTAL CONSTRUCTION & ROW COST	41.81 Miles	\$1,223.88	\$249.25	\$1,473.13 Segments 1, 2, & 3.
TOTAL MARKUPS			\$487.39	
TOTAL CONSTRUCTION & ROW COST			\$1,960.52	



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SUMMARY BY SEGMENTS: BASE CASE - HIGH RANGE (DMU)

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

DESCRIPTION	CONSTRUCTION (\$Million)	CONTINGENCY (\$Million)	TOTAL (\$Million)	COMMENTS
ROLLING STOCK (32 DMU TRAINS)			\$374.40	\$11.7M each
UNALLOCATED CONTINGENCY (25%)			\$583.73	
TOTAL PROJECT COST BASE CASE			\$2,918.65	<i>2018 Dollars</i>

Attachment 2

Estimate Detail Reports

Segment Details

Segment Quantity Details

Stations Details

OMF Details



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							
1.01	Section A: D-P BART Station Single Track	710 LF	\$0	\$0	0%	\$0	\$0	Included with the D/P DMU-BART Station Cost Estimate.
1.02	Section B: Single Track At-Grade / BART Pleasanton Station	100 LF	\$631	\$63,089	25%	\$15,772	\$78,861	
1.03	Section C: Double Track At-Grade / BART Pleasanton Station Tail Track	1,390 LF	\$631	\$876,930	25%	\$219,233	\$1,096,163	
1.04	Section C1: Single Track Aerial	2,520 LF	\$8,349	\$21,039,140	25%	\$5,259,785	\$26,298,925	
1.05	Section C2: Single Track Aerial on Straddle Bent	380 LF	\$10,499	\$3,989,772	25%	\$997,443	\$4,987,215	
1.06	Section C3: Double Track Aerial on Straddle Bent	720 LF	\$16,127	\$11,611,231	25%	\$2,902,808	\$14,514,039	
1.07	Section C3A: Double Track Aerial on Straddle Bent for the Station Platform at Greenville	620 LF	\$16,854	\$10,449,666	25%	\$2,612,417	\$13,062,083	
1.08	Section D: Single Track At-Grade / BART Tail Track	4,680 LF	\$585	\$2,737,028	25%	\$684,257	\$3,421,285	
1.09	Section E: Single Track At-Grade Along I-580	31,260 LF	\$1,096	\$34,260,647	25%	\$8,565,162	\$42,825,809	
1.10	Section E1: Double Track At-Grade Along I-580 (20' to 35')	5,670 LF	\$1,174	\$6,658,139	25%	\$1,664,535	\$8,322,674	
1.11	Section E2: Double Track At-Grade Along I-580 (20' to 61')	11,440 LF	\$1,174	\$13,433,706	25%	\$3,358,427	\$16,792,133	
1.12	Section G: Single Track At-Grade Overcrossing Pier	380 LF	\$2,275	\$864,451	25%	\$216,113	\$1,080,563	
1.13	Section L: Double Track At-Grade	870 LF	\$456	\$396,629	25%	\$99,157	\$495,786	
1.14	Section M1: Double Track at Isabel Station	1,250 LF	\$1,119	\$1,398,769	25%	\$349,692	\$1,748,461	
1.15	Structures							
1.16	Dougherty UC	164 LF	\$17,500	\$2,870,000	25%	\$717,500	\$3,587,500	Remove and Replace
1.17	Tassajara Creek Bridge	94 LF	\$8,750	\$822,500	25%	\$205,625	\$1,028,125	Remove and Replace
1.18	Median Culver Bridge	425 SF	\$220	\$93,500	25%	\$23,375	\$116,875	Bridge over Culvert
1.19	Median Culver Bridge	1,168 SF	\$220	\$256,960	25%	\$64,240	\$321,200	Bridge over Culvert
1.20	Median Culver Bridge	590 SF	\$220	\$129,800	25%	\$32,450	\$162,250	Bridge over Culvert
1.21	Median Culver Bridge	1,366 SF	\$220	\$300,520	25%	\$75,130	\$375,650	Bridge over Culvert
1.22	Median Culver Bridge	882 SF	\$220	\$194,040	25%	\$48,510	\$242,550	Bridge over Culvert
1.23	Arroyo Las Positas	175 LF	\$17,500	\$3,062,500	25%	\$765,625	\$3,828,125	Remove and Replace
1.24	Arroyo Las Positas	177 LF	\$8,750	\$1,548,750	25%	\$387,188	\$1,935,938	Remove and Replace
1.25	North Livermore Ave OC	159 LF	\$8,750	\$1,391,250	25%	\$347,813	\$1,739,063	Remove and Replace
1.26	Arroyo Las Positas	131 LF	\$8,750	\$1,146,250	25%	\$286,563	\$1,432,813	Remove and Replace
1.27	Median Culver Bridge	2,109 SF	\$220	\$463,980	25%	\$115,995	\$579,975	Bridge over Culvert
1.28	Median Culver Bridge	879 SF	\$220	\$193,380	25%	\$48,345	\$241,725	Bridge over Culvert
1.29	MSE Retaining Wall at Greenville Station	10,000 SF	\$75	\$750,000	25%	\$187,500	\$937,500	500' L x 20' H (Located at Sta. 4707+00)
	SUBTOTAL	61,990 LF		\$121,002,626		\$30,250,657	\$151,253,283	
2.00	Trackwork - Ballast / Ties / Rail / T.O.							
2.01	Track (Rail-Ties-Ballast)	83,950 TF	\$350	\$29,382,500	15%	\$4,407,375	\$33,789,875	Including Sidings.
2.02	Turnout No. 15	3 EA	\$350,000	\$1,050,000	10%	\$105,000	\$1,155,000	
2.03	Turnout No. 20	3 EA	\$400,000	\$1,200,000	10%	\$120,000	\$1,320,000	
2.04	Turnout Signals	6 EA	\$325,000	\$1,950,000	10%	\$195,000	\$2,145,000	
2.05	Signal House	6 EA	\$200,000	\$1,200,000	10%	\$120,000	\$1,320,000	
	SUBTOTAL			\$34,782,500		\$4,947,375	\$39,729,875	
3.00	Stations							For details see station estimate worksheet
3.01	Dublin-Pleasanton BART / DMU Station	1 LS	\$40,743,722	\$40,743,722	30%	\$12,223,117	\$52,966,839	Connection Station DMU / BART.
3.02	Isabel Station	1 LS	\$15,568,000	\$15,568,000	25%	\$3,892,000	\$19,460,000	At-grade platform in I-580 median, pedestrian bridge & touchdown structure, parking, etc.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
3.03	Greenville Station (North Aerial)	1 LS	\$29,759,000	\$29,759,000	25%	\$7,439,750	\$37,198,750	Includes aerial platform, parking, bus drop off, etc.
	SUBTOTAL			\$86,070,722		\$23,554,867	\$109,625,589	
4.00	Highway I-580 Widening							East of Dougherty Rd O.C. to Greenville Rd U.C.
4.01	Roadway							
4.02	Roadway Excavation	344,300 CY	\$21	\$7,078,132	25%	\$1,769,533	\$8,847,665	
4.03	Remove Unsuitable Materials	34,430 CY	\$53	\$1,840,314	25%	\$460,079	\$2,300,393	
4.04	Clearing & Grubbing	1 LS	\$205,580	\$205,580	25%	\$51,395	\$256,975	
4.05	Develop Water Supply	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.06	Hot Mixed Asphalt (Open Graded)	14,100 TON	\$107	\$1,507,315	25%	\$376,829	\$1,884,144	
4.07	Rubberized Hot Mix Asphalt (Gap Graded)	28,200 TON	\$99	\$2,782,736	25%	\$695,684	\$3,478,420	
4.08	Hot Mixed Asphalt (Type A)	91,400 TON	\$74	\$6,764,416	25%	\$1,691,104	\$8,455,520	
4.09	Lean Concrete Base	55,600 CY	\$214	\$11,887,479	25%	\$2,971,870	\$14,859,348	
4.10	Class 2 Aggregate Subbase	125,000 CY	\$25	\$3,083,705	25%	\$770,926	\$3,854,632	
4.11	Drainage system (6.0%)	1 LS	\$32,277,761	\$32,277,761	25%	\$8,069,440	\$40,347,201	
4.12	Erosion Control (0.5%)	1 LS	\$2,689,813	\$2,689,813	25%	\$672,453	\$3,362,267	
4.13	Prepare SWPPP	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.14	Temporary Water Pollution Control (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.15	NPDES (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.16	Remove Misc. (Sidewalk, Conc Curb, C&G)	1 LS	\$509,839	\$509,839	25%	\$127,460	\$637,299	
4.17	Minor Concrete (Curb, C&G, Sidewalk C&G)	1 LS	\$817,388	\$817,388	25%	\$204,347	\$1,021,734	
4.18	Environmental Mitigation (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.19	Highway Planting (1%)	1 LS	\$5,379,627	\$5,379,627	25%	\$1,344,907	\$6,724,533	
4.20	Concrete Barrier	1 LS	\$6,348,321	\$6,348,321	25%	\$1,587,080	\$7,935,402	
4.21	Remove Conc Barrier	32,384 LF	\$16	\$532,601	25%	\$133,150	\$665,751	
4.22	Remove Guardrail	11,318 LF	\$5	\$55,842	25%	\$13,961	\$69,803	
4.23	Sound Wall	11,000 SF	\$35	\$388,958	25%	\$97,240	\$486,198	
4.24	Remove Retaining Wall	12,764 LF	\$41	\$524,806	25%	\$131,201	\$656,007	
4.25	Retaining Walls	281,900 SF	\$82	\$23,181,241	25%	\$5,795,310	\$28,976,551	
4.26	Architectural Treatment	112,760 SF	\$3	\$370,900	25%	\$92,725	\$463,625	
4.27	Traffic Delineation Items	683,957 LF	\$0.33	\$224,973	25%	\$56,243	\$281,216	
4.28	Roadside Signs	46 EA	\$822	\$37,827	25%	\$9,457	\$47,283	
4.29	Overhead Signs	35 EA	\$164,464	\$5,756,250	25%	\$1,439,063	\$7,195,313	
4.30	Express Lane Signs	1 LS	\$4,782,621	\$4,782,621	25%	\$1,195,655	\$5,978,277	
4.31	Traffic Control System (2%)	1 LS	\$10,759,254	\$10,759,254	25%	\$2,689,813	\$13,449,067	
4.32	Detour ramps and local streets	1 LS	\$8,223,214	\$8,223,214	25%	\$2,055,804	\$10,279,018	
4.33	Traffic Management Plan	1 LS	\$6,385,326	\$6,385,326	25%	\$1,596,331	\$7,981,657	
4.34	Highway Caltrans Lighting	1 LS	\$4,933,929	\$4,933,929	25%	\$1,233,482	\$6,167,411	
4.35	Caltrans TOS	1 LS	\$6,578,571	\$6,578,571	25%	\$1,644,643	\$8,223,214	
4.36	Minor Items (10%)	1 LS	\$28,575,670	\$28,575,670	25%	\$7,143,917	\$35,719,587	
4.37	Roadway Mobilization (10%)	1 LS	\$31,433,237	\$31,433,237	25%	\$7,858,309	\$39,291,546	
4.38	Supplemental Work (5%)	1 LS	\$15,716,289	\$15,716,289	25%	\$3,929,072	\$19,645,362	
4.39	I-580 Utility Relocations	1 LS	\$25,685,210	\$25,685,210	25%	\$6,421,302	\$32,106,512	
4.40	Structures							
4.41	Dougherty UC (33 0150L)	6,689 SF	\$663	\$4,433,409	25%	\$1,108,352	\$5,541,762	Westbound outside widening
4.42	Tassajara Creek Bridge (33 0015L)	2,600 SF	\$663	\$1,723,257	25%	\$430,814	\$2,154,071	Westbound outside widening
4.43	Tassajara Creek Foot Bridge	3,273 SF	\$663	\$2,169,315	25%	\$542,329	\$2,711,644	Remove and Replace Bridge



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
4.44	Airway Blvd OC (33-0408L)	25,784 SF	\$663	\$17,089,405	25%	\$4,272,351	\$21,361,756	Remove and Replace Bridge
4.45	Arroyo Las Positas (33-0012S)	8,055 SF	\$663	\$5,338,782	25%	\$1,334,696	\$6,673,478	Remove and Replace Bridge
4.46	Arroyo Las Positas (33-0012)	4,240 SF	\$663	\$2,810,234	25%	\$702,559	\$3,512,793	Westbound outside widening
4.47	Arroyo Las Positas (33-0012)	2,933 SF	\$663	\$1,943,966	25%	\$485,992	\$2,429,958	Eastbound outside widening
4.48	Arroyo Las Positas (33-0203)	3,564 SF	\$663	\$2,362,187	25%	\$590,547	\$2,952,734	Westbound outside widening
4.49	North Livermore Ave OC (33-0153)	4,861 SF	\$663	\$3,221,827	25%	\$805,457	\$4,027,284	Eastbound outside widening
4.50	Arroyo Las Positas (33-0085)	1,275 SF	\$663	\$845,059	25%	\$211,265	\$1,056,323	Westbound outside widening
4.51	Los Colinas Rd OC (33-0390)	12,238 SF	\$663	\$8,111,237	25%	\$2,027,809	\$10,139,046	Remove and Replace Bridge
4.52	First Street OC (33-0389)	28,185 SF	\$663	\$18,680,766	25%	\$4,670,192	\$23,350,958	Remove and Replace Bridge
4.53	Vasco Road OC (33-0400)	27,330 SF	\$663	\$18,114,080	25%	\$4,528,520	\$22,642,600	Remove and Replace Bridge
	SUBTOTAL			\$356,391,412		\$89,097,853	\$445,489,265	
5.00	Train Controls & Communications							
5.01	Communications - FO Backbone	11.74 MILE	\$191,670	\$2,250,307	20%	\$450,061	\$2,700,369	2 FO Cables 48str, 4 conduit 2x2 ductbank
5.02	Station Enclosures	3 EA	\$155,732	\$467,196	20%	\$93,439	\$560,635	NEMA5 Cabinets, UPS & Batteries
5.03	VMS (2 per station)	6 EA	\$42,878	\$257,268	20%	\$51,454	\$308,721	Headend Controls and Station Signs, Labor
5.04	TVM (2 per station)	6 EA	\$65,031	\$390,185	20%	\$78,037	\$468,222	Station TVM & Headend Servers
5.05	PA System	3 EA	\$178,649	\$535,948	20%	\$107,190	\$643,138	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
5.06	SCADA - Station	3 EA	\$34,146	\$102,437	20%	\$20,487	\$122,925	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	7 EA	\$89,233	\$624,630	20%	\$124,926	\$749,557	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
5.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
5.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
5.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
5.13	Train Control & Signals	11.74 MILE	\$1,964,618	\$23,065,651	20%	\$4,613,130	\$27,678,782	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$28,697,014		\$5,739,403	\$34,436,417	
6.00	Other Project Cost							
6.01	BART Interface	500 DAYS	\$825	\$412,500	20%	\$82,500	\$495,000	
6.02	Caltrans Interface	1,000 DAYS	\$825	\$825,000	20%	\$165,000	\$990,000	
	SUBTOTAL			\$1,237,500		\$247,500	\$1,485,000	
7.00	Right-of-Way							
7.01	ROW - I-580 Acquisition	498,608 SF	\$110	\$54,846,880	0%	\$0	\$54,846,880	For I-580 roadway widening
7.02	ROW - I-580 Relinquishment	338,348 SF	\$0	\$0	0%	\$0	\$0	For I-580 roadway widening
7.03	ROW - I-580 TCE	600,866 SF	\$15	\$9,012,990	0%	\$0	\$9,012,990	For I-580 roadway widening
7.04	ROW - Isabel Station	941,324 SF	\$15	\$14,119,860	0%	\$0	\$14,119,860	
7.05	ROW - Greenville Station	524,027 SF	\$15	\$7,860,402	0%	\$0	\$7,860,402	
	SUBTOTAL			\$85,840,132		\$0	\$85,840,132	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
SUBTOTAL				\$714,021,906		\$153,837,654	\$867,859,561	
8.00	Markups (Highway I-580 Widening)		30.00%				\$133,646,780	
	Markups (All of the Remaining Items)		28.00%				\$118,263,683	
	I-580 Toll System						\$66,000,000	
TOTAL FOR SEGMENT 1: D/P BART TO NORTH GREENVILLE (BASE CASE - LOW)							\$1,185,770,023	<i>2018 Dollars</i>



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: Alignment Quantity North Greenville (Base Case - Low)**

DATE: JULY 2020
REV:
PREP. BY: AK
CHKD BY: DV

Drawing No.	Typical Section		Stations		Route Length		Comments
			From	To	Linear Feet	Miles	
TT-D1101-LV	C	Double Track At-Grade D-P BART Station Tail Track	4096+50	4100+00	350	0.07	
	A	D-P BART Station	4100+00	4107+10	710	0.13	
	B	Double Track At-Grade D-P BART Station	4107+10	4108+10	100	0.02	
	C	Double Track At-Grade D-P BART Station Tail Track	4108+10	4118+50	1,040	0.20	#20 T.O.
TT-D1102-LV	D	Single Track At-Grade / BART Tail Track	4118+50	4125+00	650	0.12	
TT-D1103-LV	D	Single Track At-Grade / BART Tail Track	4125+00	4150+00	2,500	0.47	Hacienda Dr.
	E	Single Track At-Grade Along I-580	4150+00	4165+30	1,530	0.29	
TT-D1104-LV	E	Single Track At-Grade Along I-580	4165+30	4175+00	970	0.18	
	G	Single Track At-Grade Along I-580	4175+00	4181+50	650	0.12	
	E	Single Track At-Grade Overcrossing Pier	4181+50	4182+50	100	0.02	Tassajara Rd.
TT-D1105-LV	E	Single Track At-Grade Along I-580	4182+50	4200+00	1,750	0.33	
	E	Single Track At-Grade Along I-580	4200+00	4225+00	2,500	0.47	
TT-D1106-LV	E	Single Track At-Grade Along I-580	4225+00	4247+20	2,220	0.42	
	G	Single Track At-Grade Overcrossing Pier	4247+20	4248+00	80	0.02	El Charro Rd.
	E	Single Track At-Grade Along I-580 Approaching Overcrossing Pier	4248+00	4250+00	200	0.04	
TT-D1107-LV	E	Single Track At-Grade Along I-580 Approaching Overcrossing Pier	4250+00	4275+00	2,500	0.47	
TT-D1108-LV	E	Single Track At-Grade Along I-580	4275+00	4296+00	2,100	0.40	
	E1	Double Track At-Grade Along I-580	4296+00	4300+00	400	0.08	#20 T.O.
TT-D1109-LV	E1	Double Track At-Grade Along I-580	4300+00	4325+00	2,500	0.47	
TT-D1110-LV	E1	Double Track At-Grade Along I-580	4325+00	4328+80	380	0.07	
	E2	Double Track At-Grade Along I-580	4328+80	4350+00	2,120	0.40	
TT-D1111-LV	E1	Double Track At-Grade Along I-580	4350+00	4373+90	2,390	0.45	
	E2	Double Track At-Grade Along I-580	4373+90	4375+00	110	0.02	
TT-D1112-LV	E2	Double Track At-Grade Along I-580	4375+00	4387+60	1,260	0.24	Isabel Ave.
	M1	Double Track at Isabel Station	4387+60	4393+80	620	0.12	
	E2	Double Track At-Grade Along I-580	4393+80	4400+00	620	0.12	
TT-D1113-LV	E2	Double Track At-Grade Along I-580	4400+00	4401+90	190	0.04	#15 T.O.
	E	Single Track At-Grade Along I-580	4401+90	4425+00	2,310	0.44	
TT-D1114-LV	E	Single Track At-Grade Along I-580	4425+00	4433+30	830	0.16	
	G	Single Track At-Grade Overcrossing Pier	4433+30	4433+80	50	0.01	Portola Ave.
	E	Single Track At-Grade Along I-580	4433+80	4450+00	1,620	0.31	
TT-D1115-LV	E	Single Track At-Grade Along I-580	4450+00	4475+00	2,500	0.47	Livermore Ave.
TT-D1116-LV	E	Single Track At-Grade Along I-580	4475+00	4500+00	2,500	0.47	
TT-D1117-LV	E	Single Track At-Grade Along I-580	4500+00	4520+30	2,030	0.38	Arroyo Las Positas Creek
	G	Single Track At-Grade Overcrossing Pier	4520+30	4520+80	50	0.01	Las Colinas Rd
	E2	Double Track At-Grade Along I-580	4520+80	4525+00	420	0.08	#20 T.O.
TT-D1118-LV	E2	Double Track At-Grade Along I-580	4525+00	4550+00	2,500	0.47	
TT-D1119-LV	E2	Double Track At-Grade Along I-580	4550+00	4575+00	2,500	0.47	First St.
TT-D1120-LV	E2	Double Track At-Grade Along I-580	4575+00	4584+30	930	0.18	
	M1	Double Track at Southfront Station	4584+30	4590+60	630	0.12	
	E2	Double Track At-Grade Along I-580	4590+60	4598+50	790	0.15	#15 T.O.
	E	Single Track At-Grade Along I-580	4598+50	4600+00	150	0.03	
TT-D1121-LV	E	Single Track At-Grade Along I-580	4600+00	4618+00	1,800	0.34	
	G	Single Track At-Grade Overcrossing Pier	4618+00	4619+00	100	0.02	Vasco Rd.
	E	Single Track At-Grade Along I-580	4619+00	4625+00	600	0.11	
TT-D1122-LV	E	Single Track At-Grade Along I-580	4625+00	4650+00	2,500	0.47	
TT-D1123-LV	E	Single Track At-Grade Along I-580	4650+00	4665+30	1,530	0.29	
	C1	Single Track Aerial	4665+30	4675+00	970	0.18	
TT-D1124-LV	C1	Single Track Aerial	4675+00	4690+50	1,550	0.29	
	C2	Single Track Aerial on Straddle Bent	4690+50	4694+30	380	0.07	Greenville Rd.
	C3	Double Track Aerial on Straddle Bent	4694+30	4700+00	570	0.11	#15 T.O.
TT-D1125-LV	C3	Double Track Aerial on Straddle Bent	4700+00	4700+50	50	0.01	
	C3A	Double Track Aerial on Straddle Bent (w/ Station Platform) Greenville	4700+50	4706+70	620	0.12	Station Aerial Platform
	C3	Double Track Aerial on Straddle Bent	4706+70	4707+70	100	0.02	To Retain Wall
	L	Double Track At-Grade	4707+70	4716+40	870	0.16	
TOTAL					61,990	11.74	

SUMMARY FOR SEGMENT 1 BASE CASE						
Drawing No.	Typical Section		Unit Cost 2018\$	Linear Feet	Miles	Track Length
TT-D0101-LV	A	D-P BART Station Single Track	\$0	710	0.13	710
TT-D0102-LV	B	Single Track At-Grade / BART Pleasanton Station	\$631	100	0.02	100
TT-D0103-LV	C	Double Track At-Grade / BART Pleasanton Station Tail Track	\$631	1,390	0.26	2,780
TT-D0107-LV	C1	Single Track Aerial	\$8,349	2,520	0.48	2,520

TT-D0107-LV	C2	Single Track Aerial on Straddle Bent	\$10,499	380	0.07	380
TT-D0107-LV	C3	Double Track Aerial on Straddle Bent	\$16,127	720	0.14	1,440
TT-D0110-LV	C3A	Double Track Aerial on Straddle Bent for the Station Platform at Greenville	\$16,854	620	0.12	1,240
TT-D0103-LV	D	Single Track At-Grade / BART Tail Track	\$585	4,680	0.89	4,680
TT-D0104-LV	E	Single Track At-Grade Along I-580	\$1,096	31,260	5.92	31,260
TT-D0104-LV	E1	Double Track At-Grade Along I-580 (20' to 35')	\$1,174	5,670	1.07	11,340
TT-D0104-LV	E2	Double Track At-Grade Along I-580 (20' to 61')	\$1,174	11,440	2.17	22,880
TT-D0106-LV	G	Single Track At-Grade Overcrossing Pier	\$2,275	380	0.07	380
TT-D0108-LV	L	Double Track At-Grade	\$456	870	0.16	1,740
TT-D0105-LV	M1	Double Track at Isabel Station	\$1,119	1,250	0.24	2,500
TOTAL				61,990	11.74	83,950

Total # of Turnouts	
#15	3
#20	3
Total T.O.	6



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							
1.01	Section C2: Single Track - Cut	1,500 LF	\$272	\$408,000	25%	\$102,000	\$510,000	
1.02	Section D1: Single Track - At-Grade	8,040 LF	\$255	\$2,050,200	25%	\$512,550	\$2,562,750	
1.03	Section D1-A: Double Track - Retained Fill	9,410 LF	\$1,420	\$13,357,495	25%	\$3,339,374	\$16,696,869	
1.04	Section D2: Single Track - At-Grade	12,070 LF	\$264	\$3,180,445	25%	\$795,111	\$3,975,556	
1.05	Section D3: Single Track At-Grade	3,180 LF	\$264	\$837,930	25%	\$209,483	\$1,047,413	
1.06	Section D3-A: Double Track - Retained Cut	500 LF	\$2,015	\$1,007,250	25%	\$251,813	\$1,259,063	
1.07	Section D4: Single Track At-Grade	7,470 LF	\$213	\$1,587,375	25%	\$396,844	\$1,984,219	
1.08	Section D5: Single Track At-Grade	- LF	\$255	\$0	25%	\$0	\$0	
1.09	Section D5-A: Double Track - Retained Cut	3,710 LF	\$2,091	\$7,757,610	25%	\$1,939,403	\$9,697,013	At the Altamont Pass Rd. Grade Separation
1.10	Section E: Single Track - Fill	2,000 LF	\$510	\$1,020,000	25%	\$255,000	\$1,275,000	
1.11	Section F: Double Track - At-Grade	19,580 LF	\$315	\$6,157,910	25%	\$1,539,478	\$7,697,388	
1.12	Section G: Double Track - Fill	6,770 LF	\$1,250	\$8,459,115	25%	\$2,114,779	\$10,573,894	
1.13	Section H: Single Track in Sub-Way Box	470 LF	\$5,865	\$2,756,550	25%	\$689,138	\$3,445,688	
1.14	Section J: Single Track Tunnel	1,180 LF	\$196	\$230,690	25%	\$57,673	\$288,363	
1.15	Section K: Double Track At-Grade with Station Platform	800 LF	\$476	\$380,800	25%	\$95,200	\$476,000	
1.16	Utility Relocation	1 LS	\$3,367,069	\$3,367,069	25%	\$841,767	\$4,208,836	5% of Trackway Civil
1.17	Landslide Stabilizations	1 LS	\$15,000,000	\$15,000,000	25%	\$3,750,000	\$18,750,000	Allowance
1.18	Delta Mendota Canal Bridges	5,000 SF	\$450	\$2,250,000	25%	\$562,500	\$2,812,500	One bridge each side
1.19	Sinkhole Repair Near Tunnel	1 LS	\$900,000	\$900,000	25%	\$225,000	\$1,125,000	Located at Sta. 5000+00
	SUBTOTAL	76,680 LF		\$70,708,439		\$17,677,110	\$88,385,548	
2.00	Tunnel Rehabilitation							
2.01	Tunnel Rehabilitation & Seismic Upgrade	1 LS	\$20,500,000	\$20,500,000	25%	\$5,125,000	\$25,625,000	
	SUBTOTAL			\$20,500,000		\$5,125,000	\$25,625,000	
3.00	Grade Separations - Altamont Pass Rd.							
3.01	Earthwork Common	98,700 CY	\$20	\$1,974,000	25%	\$493,500	\$2,467,500	at Carroll Rd.
3.02	DMU Underpass Structure (Section H)			\$0	25%	\$0	\$0	Included in the Trackway Civilwork above.
3.03	Retaining Wall, MSE	25,000 SF	\$45	\$1,125,000	25%	\$281,250	\$1,406,250	
3.04	Retaining Wall, Type 1	29,930 SF	\$50	\$1,496,500	25%	\$374,125	\$1,870,625	
3.05	Concrete Barrier	2,300 LF	\$40	\$92,000	25%	\$23,000	\$115,000	
3.06	Roadway Construction (Base, Pave, Finishes)	90,000 SF	\$20	\$1,800,000	25%	\$450,000	\$2,250,000	
	SUBTOTAL			\$6,487,500		\$1,621,875	\$8,109,375	
4.00	Grade Crossings							
4.01	Dyer Xing	75 TF	\$638	\$47,813	25%	\$11,953	\$59,766	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.02	Private Road Xing (Active Warning Sign Only) No.1	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.03	Altamont Pass Road	120 TF	\$638	\$76,500	25%	\$19,125	\$95,625	4 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.04	Private Road Xing (Active Warning Sign Only) No.2	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.05	Private Road Xing (Active Warning Sign Only) No.3	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.06	Private Road Xing (Active Warning Sign Only) No.4	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.07	Private Road Xing (Active Warning Sign Only) No. 5 Jess Ranch	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.08	N Midway Road Xing	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
4.09	Patterson Pass Road Xing at Midway Rd	170 TF	\$638	\$108,375	25%	\$27,094	\$135,469	6 R/R Signal Guard/Gate 1 Signal House 3 Stop Bars
4.10	Via Nicolo Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.11	Hansen Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.12	Private Road Xing (Signals) No. 4	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.13	R/R Xing Signs	6 EA	\$1,275	\$7,650	25%	\$1,913	\$9,563	
4.14	Active Warning R/R Sign with post (with electric service)	10 EA	\$85,000	\$850,000	25%	\$212,500	\$1,062,500	
4.15	Stop Bars	15 EA	\$8,500	\$127,500	25%	\$31,875	\$159,375	
4.16	Signal House (with electric service)	7 EA	\$212,500	\$1,487,500	25%	\$371,875	\$1,859,375	
4.17	Crossing Gate & Flasher	20 EA	\$255,000	\$5,100,000	25%	\$1,275,000	\$6,375,000	
	SUBTOTAL			\$7,989,150		\$1,997,288	\$9,986,438	
5.00	Trackwork - Ballast / Ties / Rail / T.O.							
5.01	Mainline Track (Rail-Ties-Ballast)	117,450 TF	\$350	\$41,107,500	15%	\$6,166,125	\$47,273,625	Including sidings
5.02	Turnout No. 11	1 EA	\$250,000	\$250,000	10%	\$25,000	\$275,000	
5.03	Turnout No. 15	9 EA	\$350,000	\$3,150,000	10%	\$315,000	\$3,465,000	
5.04	Turnout Signals	10 EA	\$325,000	\$3,250,000	10%	\$325,000	\$3,575,000	
5.05	Signal House	10 EA	\$200,000	\$2,000,000	10%	\$200,000	\$2,200,000	
	SUBTOTAL			\$49,757,500		\$7,031,125	\$56,788,625	
6.00	Stations							
6.01	Mountain House Station	1 LS	\$10,914,000	\$10,914,000	25%	\$2,728,500	\$13,642,500	For details see station estimate worksheet Includes platform, parking, bus drop off, etc.
	SUBTOTAL			\$10,914,000		\$2,728,500	\$13,642,500	
7.00	Train Controls & Communications							
7.01	Communications - FO Backbone	14.52 MILE	\$191,670	\$2,783,571	20%	\$556,714	\$3,340,285	2 FO Cables 48str, 4 conduit 2x2 ductbank
7.02	Station Enclosures	1 EA	\$155,732	\$155,732	20%	\$31,146	\$186,878	NEMA5 Cabinets, UPS & Batteries
7.03	VMS (2 per station)	2 EA	\$42,878	\$85,756	20%	\$17,151	\$102,907	Headend Controls and Station Signs, Labor
7.04	TVM (2 per station)	2 EA	\$65,031	\$130,062	20%	\$26,012	\$156,074	Station TVM & Headend Servers
7.05	PA System	1 EA	\$178,649	\$178,649	20%	\$35,730	\$214,379	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
7.06	SCADA - Station	1 EA	\$34,146	\$34,146	20%	\$6,829	\$40,975	PCC & BCC PA Headends, SCADA shelves at Stations
7.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
7.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
7.09	CCTV	5 EA	\$89,233	\$446,165	20%	\$89,233	\$535,398	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
7.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
7.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
7.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
7.13	Train Control & Signals	14.52 MILE	\$1,964,618	\$28,531,604	20%	\$5,706,321	\$34,237,925	Wayside signals, cab signal / speed, grade xing warning, etc.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT	
					%	AMOUNT			
				\$33,349,075		\$6,669,815	\$40,018,890		
8.00	Right-of-Way								
8.01	ROW - Mountain House Station	347,494	SF	\$5	\$1,737,470	0%	\$0	\$1,737,470	
	SUBTOTAL				\$1,737,470		\$0	\$1,737,470	
SUBTOTAL					\$201,443,134		\$42,850,712	\$244,293,846	
9.00	Markups		28.00%				\$68,402,277		
TOTAL FOR SEGMENT 2 - GREENVILLE TO WEST TRACY (BASE CASE - LOW)							\$312,696,123	2018 Dollars	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: Alignment Quantity Base Case**

DATE: JULY 2020
REV :
PREP. BY: AK
CHKD BY: DV

Drawing No.	Typical Section	Stations		Route Length		Comments	
		From	To	Linear Feet	Miles		
TT-D1125-LV	F	Double Track - At-Grade	4690+80	4697+00	620	0.12	
TT-D1201-LA	D1-A	Double Track - Retained Fill	4697+00	4725+00	2,800	0.53	
TT-D1202-LA	D1-A	Double Track - Retained Fill	4725+00	4739+70	1,470	0.28	#15 T.O.
	D1	Single Track - At-Grade	4739+70	4746+00	630	0.12	
	D2	Single Track - At-Grade	4746+00	4748+80	280	0.05	
	H	Single Track in Sub-Way Box	4748+80	4750+00	120	0.02	Grade Separation at Altamont & Carroll Rd
TT-D1203-LA	H	Single Track in Sub-Way Box	4750+00	4753+50	350	0.07	Grade Separation at Altamont & Carroll Rd
	D2	Single Track - At-Grade	4753+50	4768+00	1,450	0.27	
	D1	Single Track - At-Grade	4768+00	4775+00	700	0.13	
TT-D1204-LA	D1	Single Track - At-Grade	4775+00	4790+00	1,500	0.28	
	C2	Single Track - Cut	4790+00	4803+00	1,300	0.25	
TT-D1205-LA	C2	Single Track - Cut	4803+00	4805+00	200	0.04	
	E	Single Track - Fill	4805+00	4825+00	2,000	0.38	Dyer Rd Xing
	D1	Single Track - At-Grade	4825+00	4831+00	600	0.11	
TT-D1206-LA	D2	Single Track - At-Grade	4831+00	4856+00	2,500	0.47	Private Grade Xing No.1 75' x 250' MOW Laydown ADD 300 ft of Track
	D1	Single Track At-Grade	4856+00	4859+00	300	0.06	
TT-D1207-LA	D1	Single Track At-Grade	4859+00	4870+10	1,110	0.21	UPPR Exist Bridge
	D1-A	Double Track - Retained Fill	4870+10	4884+00	1,390	0.26	#15 T.O.
TT-D1208-LA	D1-A	Double Track - Retained Fill	4884+00	4909+00	2,500	0.47	
TT-D1209-LA	G	Double Track - Fill	4909+00	4934+00	2,500	0.47	
TT-D1210-LA	D1-A	Double Track - Retained Fill	4934+00	4941+30	730	0.14	#15 T.O.
	D1	Single Track - At-Grade	4941+30	4945+00	370	0.07	
	D3	Single Track - At-Grade	4945+00	4959+00	1,400	0.27	
TT-D1211-LA	D3	Single Track - At-Grade	4959+00	4965+00	600	0.11	
	D4	Single Track - At-Grade	4965+00	4975+00	1,000	0.19	Private Grade Crossing (Signs) No. 2
	D1	Single Track - At-Grade	4975+00	4981+00	600	0.11	
	J	Single Track Tunnel	4981+00	4984+00	300	0.06	
TT-D1212-LA	J	Single Track Tunnel	4984+00	4992+80	880	0.17	
	D3	Single Track - At-Grade	4992+80	4996+60	380	0.07	Hwy 580
	D4	Single Track - At-Grade	4996+60	5009+00	1,240	0.23	
TT-D1213-LA	D3	Single Track - At-Grade	5009+00	5017+00	800	0.15	
	D4	Single Track - At-Grade	5017+00	5024+30	730	0.14	
	G	Double Track - Fill	5024+30	5037+00	1,270	0.24	#15 T.O.
TT-D1214-LA	G	Double Track - Fill	5037+00	5055+00	1,800	0.34	
	D3-A	Double Track - Retained Cut	5055+00	5060+00	500	0.09	
	G	Double Track - Fill	5060+00	5065+00	500	0.09	
TT-D1215-LA	G	Double Track - Fill	5065+00	5072+00	700	0.13	
	F	Double Track - At-Grade	5072+00	5093+00	2,100	0.40	Private Grade Crossing (Signs) No. 3 (24 FT) Jess Ranch Road

TT-D1216-LA	F	Double Track - At-Grade	5093+00	5098+50	550	0.10	
	D1-A	Double Track - Retained Fill	5098+50	5103+70	520	0.10	#15 T.O
	D1	Single Track - At-Grade	5103+70	5112+00	830	0.16	
	D4	Single Track - At-Grade	5112+00	5121+00	900	0.17	
TT-D1217-LA	D1	Single Track - At-Grade	5121+00	5135+00	1,400	0.27	
	D4	Single Track - At-Grade	5135+00	5146+00	1,100	0.21	
TT-D1218-LA	D4	Single Track - At-Grade	5146+00	5171+00	2,500	0.47	
TT-D1219-LA	D2	Single Track - At-Grade	5171+00	5181+30	1,030	0.20	
	F	Double Track - At-Grade	5181+30	5199+00	1,770	0.34	#15 T.O
TT-D1220-LA	F	Double Track - At-Grade	5199+00	5214+90	1,590	0.30	Grade Crossing - N Midway Road 50 FT
	D5-A	Double Track - Retained Cut	5214+90	5227+00	1,210	0.23	
TT-D1221-LA	D5-A	Double Track - Retained Cut	5227+00	5252+00	2,500	0.47	
TT-D1222-LA	F	Double Track - At-Grade	5252+00	5277+00	2,500	0.47	Patterson Pass Rd Xing
TT-D1223-LA	F	Double Track - At-Grade	5277+00	5283+70	670	0.13	#15 T.O.
	D2	Single Track - At-Grade	5283+70	5302+00	1,830	0.35	#10 T.O. to OMF do not count
TT-D1224-LA	D2	Single Track - At-Grade	5302+00	5323+10	2,110	0.40	#8 T.O. & #15 T.O. to OMF do not count
	F	Double Track - At-Grade	5323+10	5327+00	390	0.07	#15 T.O.
TT-D1225-LA	F	Double Track - At-Grade	5327+00	5335+70	870	0.16	
	K	Double Track At-Grade with Station Platform	5335+70	5339+70	400	0.08	Mountain House
	F	Double Track - At-Grade	5339+70	5344+60	490	0.09	#11 T.O.
	D2	Single Track - At-Grade	5344+60	5352+00	740	0.14	Station with Parking Lot. Mountain House Via Nicolo Rd Xing
TT-D1226-LA	D2	Single Track - At-Grade	5352+00	5373+30	2,130	0.40	California Aqueduct Bridge
	F	Double Track - At-Grade	5373+30	5377+00	370	0.07	#15 T.O
TT-D1227-LA	F	Double Track - At-Grade	5377+00	5386+00	900	0.17	
	K	Double Track At-Grade with Station Platform	5386+00	5390+00	400	0.08	West Tracy Station (Optional)
	F	Double Track - At-Grade	5390+00	5402+00	1,200	0.23	
TT-D1228-LA	F	Double Track - At-Grade	5402+00	5430+00	2,800	0.53	#15 T.O. to OMF and yard lead do not count
TT-D1229-LA	F	Double Track - At-Grade	5430+00	5457+60	2,760	0.52	#15 T.O./ OMF and Yard Lead Don't Count) Private Road Xing No. 4 Medota Canal
TOTAL					76,680	14.52	

SUMMARY FOR SEGMENT 2 BASE CASE						
Drawing No.	Typical Section		Unit Cost 2018\$	Linear Feet	Miles	Track Length
TT-D0201-LA	C2	Single Track - Cut	\$272	1,500	0.28	1,500
TT-D0201-LA	D1	Single Track - At-Grade	\$255	8,040	1.52	8,040
TT-D0202-LA	D1-A	Double Track - Retained Fill	\$1,420	9,410	1.78	18,820
TT-D0202-LA	D2	Single Track - At-Grade	\$264	12,070	2.29	12,070
TT-D0202-LA	D3	Single Track At-Grade	\$264	3,180	0.60	3,180
TT-D0202-LA	D3-A	Double Track - Retained Cut	\$2,015	500	0.09	1,000
TT-D0203-LA	D4	Single Track At-Grade	\$213	7,470	1.41	7,470
TT-D0203-LA	D5	Single Track At-Grade	\$255	-	-	-
TT-D0203-LA	D5-A	Double Track - Retained Cut	\$2,091	3,710	0.70	7,420
TT-D0204-LA	E	Single Track - Fill	\$510	2,000	0.38	2,000

TT-D0204-LA	F	Double Track - At-Grade	\$315	19,580	3.71	39,160
TT-D0205-LA	G	Double Track - Fill	\$1,250	6,770	1.28	13,540
TT-D0205-LA	H	Single Track in Sub-Way Box	\$5,865	470	0.09	470
TT-D0206-LA	J	Single Track Tunnel	\$196	1,180	0.22	1,180
TT-D0206-LA	K	Double Track At-Grade with Station Platform	\$476	800	0.15	1,600
TOTAL				76,680	14.52	117,450

Total # of Turnouts	
#8	with OMF
#10	with OMF
#11	1
#15	9



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT	
					%	AMOUNT			
1.00	Trackway Civilwork								
1.01	Trackway - Shared Existing Track	20,150	TF	\$94	\$1,884,025	25%	\$471,006	\$2,355,031	Upgrade Existing UPRR Track
1.02	Trackway - New Track	71,210	TF	\$255	\$18,158,550	25%	\$4,539,638	\$22,698,188	Propose New Track with Existing UPRR
1.03	Trackway - New Siding	24,200	TF	\$315	\$7,610,900	25%	\$1,902,725	\$9,513,625	Siding Trackway Only.
1.04	Utility Relocations	1	LS	\$2,841,178	\$2,841,178	25%	\$710,295	\$3,551,473	5% of Trackway Civil
1.05	I-5 Abutment Retaining Wall	2,900	SF	\$64	\$184,875	25%	\$46,219	\$231,094	290 ft x 10 ft H
1.06	Hwy 20 Ramp to I-5 Retaining Wall	750	SF	\$64	\$47,813	25%	\$11,953	\$59,766	75 ft x 10 ft H
1.07	Paradise Cut Bridge - Trestle Section	690	LF	\$13,600	\$9,384,000	25%	\$2,346,000	\$11,730,000	Assumed Shared Bridge with UPRR
1.08	Paradise Cut Bridge - Main Span Section	300	LF	\$25,500	\$7,650,000	25%	\$1,912,500	\$9,562,500	Assumed Shared Bridge with UPRR
1.09	San Joaquin River Bridge - Trestle Section	317	LF	\$10,200	\$3,233,400	25%	\$808,350	\$4,041,750	Assumed Shared Bridge with UPRR
1.10	San Joaquin River Bridge - Main Span Section	295	LF	\$25,500	\$7,522,500	25%	\$1,880,625	\$9,403,125	Assumed Shared Bridge with UPRR
1.11	Manthey Rd Bridge	90	LF	\$12,750	\$1,147,500	25%	\$286,875	\$1,434,375	Assumed Shared Bridge with UPRR
	SUBTOTAL				\$59,664,741		\$14,916,185	\$74,580,926	Existing Grade Crossing at Corral Hollow Rd / Shulte Rd / Tracy Blvd.
2.00	Grade Crossings								
2.01	S. Lammers Rd. Improvement	50	TF	\$638	\$31,875	25%	\$7,969	\$39,844	
2.02	N. Central Ave. New	90	TF	\$638	\$57,375	25%	\$14,344	\$71,719	1 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.03	N. Central Ave. Improvement	100	TF	\$468	\$46,750	25%	\$11,688	\$58,438	
2.04	N. Macarthur Dr. New	60	TF	\$638	\$38,250	25%	\$9,563	\$47,813	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.05	Banta Rd. New	50	TF	\$638	\$31,875	25%	\$7,969	\$39,844	1 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.06	6th St. New	40	TF	\$638	\$25,500	25%	\$6,375	\$31,875	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.07	7th St. New	30	TF	\$638	\$19,125	25%	\$4,781	\$23,906	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.08	Grant Line Rd. New	60	TF	\$638	\$38,250	25%	\$9,563	\$47,813	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.09	Steward Rd New	80	TF	\$638	\$51,000	25%	\$12,750	\$63,750	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.10	D'Arcy Pkwy New	90	TF	\$638	\$57,375	25%	\$14,344	\$71,719	2 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
2.11	E. Louise Ave New	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.12	Stop Bars	9 EA	\$8,500	\$76,500	25%	\$19,125	\$95,625	
2.13	New Signal House	7 EA	\$212,500	\$1,487,500	25%	\$371,875	\$1,859,375	
2.14	Remove Signal House	7 EA	\$42,500	\$297,500	25%	\$74,375	\$371,875	
2.15	Relocate R/R Signal Guard/Gate	10 EA	\$255,000	\$2,550,000	25%	\$637,500	\$3,187,500	
	SUBTOTAL			\$4,834,375		\$1,208,594	\$6,042,969	
3.00	Trackwork - Ballast / Ties / Rail / T.O.							
3.01	Shared Existing UPRR Track Improvement to existing trackwork	20,150 TF	\$150	\$3,022,500	15%	\$453,375	\$3,475,875	
3.02	New Track (Rail-Ties-Ballast)	71,210 TF	\$350	\$24,923,500	15%	\$3,738,525	\$28,662,025	
3.03	Siding Track (Rail-Ties-Ballast)	24,200 TF	\$350	\$8,470,000	15%	\$1,270,500	\$9,740,500	
3.04	#11 Turnout	24 EA	\$250,000	\$6,000,000	10%	\$600,000	\$6,600,000	
3.05	#15 Turnout	4 EA	\$350,000	\$1,400,000	10%	\$140,000	\$1,540,000	
3.06	#20 Turnout	4 EA	\$400,000	\$1,600,000	10%	\$160,000	\$1,760,000	
3.07	Turnout Signals	32 EA	\$325,000	\$10,400,000	10%	\$1,040,000	\$11,440,000	
3.08	Signal House	32 EA	\$200,000	\$6,400,000	10%	\$640,000	\$7,040,000	
	SUBTOTAL			\$62,216,000		\$8,042,400	\$70,258,400	
4.00	Stations							(For details see station estimate worksheet)
4.01	Downtown Tracy Station	1 LS	\$9,968,000	\$9,968,000	25%	\$2,492,000	\$12,460,000	Includes platform, parking, bus drop off, etc.
4.02	River Island Station	1 LS	\$12,330,000	\$12,330,000	25%	\$3,082,500	\$15,412,500	Includes platform, parking, bus drop-off, pedestrian bridge, etc.
4.03	North Lathrop Station (Connection to ACE)	1 LS	\$15,461,500	\$15,461,500	25%	\$3,865,375	\$19,326,875	Includes platform, parking expansion, pedestrian bridge, etc.
	SUBTOTAL			\$37,759,500		\$9,439,875	\$47,199,375	
5.00	Train Controls & Communications							Signals, Train Control, Communications, & Radio System
5.01	Communications - FO Backbone	15.65 MILE	\$191,670	\$2,999,563	25%	\$749,891	\$3,749,454	2 FO Cables 48str, 4 conduit 2x2 ductbank
5.02	Station Enclosures	3 EA	\$155,732	\$467,196	25%	\$116,799	\$583,995	NEMA5 Cabinets, UPS & Batteries
5.03	VMS (2 per station)	6 EA	\$42,878	\$257,268	25%	\$64,317	\$321,585	Headend Controls and Station Signs, Labor
5.04	TVM (2 per station)	6 EA	\$65,031	\$390,185	25%	\$97,546	\$487,732	Station TVM & Headend Servers
5.05	PA System	3 EA	\$178,649	\$535,948	25%	\$133,987	\$669,935	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
5.06	SCADA - Station	3 EA	\$34,146	\$102,437	25%	\$25,609	\$128,046	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	2 EA	\$34,146	\$68,291	25%	\$17,073	\$85,364	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	2 EA	\$93,439	\$186,878	25%	\$46,720	\$233,598	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	5 EA	\$89,233	\$446,165	25%	\$111,541	\$557,706	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
5.10	Telephone	1 LS	\$162,420	\$162,420	25%	\$40,605	\$203,025	2 Headend IP PBXs, Help Pole IP Phones
5.11	PCC & BCC	1 LS	\$253,963	\$253,963	25%	\$63,491	\$317,453	
5.12	Train Control & Signals	15.65 MILE	\$1,964,618	\$30,745,520	25%	\$7,686,380	\$38,431,900	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$36,615,834		\$9,153,959	\$45,769,793	
6.00	Right-of-Way							
6.01	ROW - Downtown Tracy Station	324,784 SF	\$9	\$2,923,056	0%	\$0	\$2,923,056	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT	
					%	AMOUNT			
6.02	ROW - River Island Station	1,020,000	SF	\$0	\$0	0%	\$0	\$0	Assume River Island ROW Provided by River Island Development Project.
6.03	ROW - North Lathrop Station (Not Required)	-	SF	\$9	\$0	0%	\$0	\$0	SJRRC will purchase the land.
	SUBTOTAL				\$2,923,056		\$0	\$2,923,056	
SUBTOTAL					\$204,013,506		\$42,761,012	\$246,774,518	
7.00	Markups			28.00%				\$69,096,865	
TOTAL FOR SEGMENT 3 - WEST TRACY TO N. LATHROP STATION (BASE CASE - LOW)								\$315,871,383	2018 Dollars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3: Alignment Quantity Base Case (Hybrid 3A&B)**

DATE: JULY 2020
REV:
PREP. BY: AK
CHKD BY: DV

Drawing No.	Typical Section	Stations		Route Length		Shared Existing UPRR Track	New Track	Siding Track	Grade Xing	Turnouts	Turnout Type
		From	To	Linear Feet	Miles	Linear Feet	Linear Feet	Linear Feet		Each	#
TT-D1301-TU	Shared Existing UPRR Track	5458+50	5486+00	2,750	0.52	2,750		1,600		1	#15
TT-D1302-TU	Shared Existing UPRR Track	5486+00	5514+00	2,800	0.53	2,800			Lammers Road (New)		
TT-D1303-TU	Shared Existing UPRR Track	5514+00	5542+00	2,800	0.53	2,800					
TT-D1304-TU	Shared Existing UPRR Track	5542+00	5570+00	2,800	0.53	2,800					
TT-D1305-TU	Shared Existing UPRR Track	5570+00	5598+00	2,800	0.53	2,800			Corral Hollow Rd (Existing)		
TT-D1306-TU	Shared Existing UPRR Track	5598+00	5626+00	2,800	0.53	2,800			W Schulte Rd (Existing)		
TT-D1307-TU	Shared Existing UPRR Track	5626+00	5654+00	2,800	0.53	2,800			Tracy Blvd (Existing)		
TT-D1308-TU	Shared Existing UPRR Track / Downtown Tracy Station	5654+00	5660+00	600	0.11	600		410		1	#11
TT-D1408-TU	New Propose Track / DT Tracy Station	5660+00	5682+00	2,200	0.42		4,400		N. Central Ave	2	#11
TT-D1409-TU	New Propose Track	5682+00	5710+00	2,800	0.53		3,330		N. Macarthur Dr	8	#11
TT-D1410-TU	New Propose Track	5710+00	5738+00	2,800	0.53		2,800				
TT-D1411-TU	New Propose Track	5738+00	5766+00	2,800	0.53		2,800				
TT-D14112TU	New Propose Track	5766+00	5794+00	2,800	0.53		2,800				
TT-D1413-TU	New Propose Track	5794+00	5822+00	2,800	0.53		2,800		Banta Rd		
TT-D1414-TU	New Propose Track	5822+00	5850+00	2,800	0.53		2,800		6th St S. 7th St Grant Line Rd		
TT-D1415-TU	New Propose Track	5850+00	5878+00	2,800	0.53		2,800				
TT-D1416-TU	New Propose Track	5878+00	5906+00	2,800	0.53		4,400				
TT-D1417-TU	New Propose Track	5906+00	5934+00	2,800	0.53		5,600	820		1	#20
TT-D1418-TU	New Propose Track	5934+00	5962+00	2,800	0.53		4,400	2,800		2	#15
TT-D1419-TU	New Propose Track / Paradise Cut Bridge (990' L x 19' W)	5962+00	5990+00	2,800	0.53		2,800	2,800			
TT-D1420-TU	New Propose Track / River Island Station	5990+00	6018+00	2,800	0.53		2,800	2,610		1	#20
TT-D1421-TU	New Propose Track	6018+00	6046+00	2,800	0.53		2,800				
TT-D1422-TU	New Propose Track / SJ River Bridge (512' L x 24' W)	6046+00	6074+00	2,800	0.53		2,800		Stewart Rd		
TT-D1423-TU	New Propose Track	6074+00	6102+00	2,800	0.53		2,800	1,060		1	#20
TT-D1424-TU	New Propose Track	6102+00	6130+00	2,800	0.53		2,800	2,800		1	#11
TT-D1425-TU	New Propose Track	6130+00	6158+00	2,800	0.53		2,800	2,800	D'Arcy Pkwy		
TT-D1426-TU	New Propose Track	6158+00	6186+00	2,800	0.53		2,800	2,800		1	#20
TT-D1427-TU	New Propose Track	6186+00	6214+00	2,800	0.53		2,800	1,650	Louise Ave	4	#11
TT-D1428-TU	New Propose Track	6214+00	6242+00	2,800	0.53		2,800			3	#11
TT-D1429-TU	New Propose Track	6242+00	6270+00	2,800	0.53		2,800	570		3	#11
TT-D1430-TU	New Propose Track / N. Lathrop Station	6270+00	6284+80	1,480	0.28		1,480	1,480		1	#15
TOTAL				82,630	15.65	20,150	71,210	24,200		30	

Total # of	
#11	24
#15	4
#20	4
Total	32



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
DMU STATION ESTIMATES**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	COMMENT
1.00	Dublin-Pleasanton Station <i>CV-D1001-LV</i>				
1.01	Platform Structure DMU 25'x660'	16,500 SF	\$425	\$7,012,500	Elevated platform with concourse below. In center of platform.
1.02	Track Slab Structure DMU 11'x750'x2	16,500 SF	\$600	\$9,900,000	Elevated platform with concourse below
1.03	Excavation for Concourse Level	12,222 CY	\$100	\$1,222,222	
1.04	Concourse Level Slab	16,500 SF	\$150	\$2,475,000	
1.05	Concourse Level Walls	31,200 SF	\$110	\$3,432,000	
1.06	Opening to BART Station	1 LS	\$1,000,000	\$1,000,000	Allowance
1.07	Fare Gates	2 LOC	\$200,000	\$400,000	
1.08	Station Agent Booth	1 EA	\$350,000	\$350,000	
1.09	Station Canopy (Not to match existing BART canopy)	7,440 SF	\$300	\$2,232,000	3 Canopies: 60 ft & 240 ft & 60 ft long = 360' long x 20'-8" wide.
1.10	Platform Level Amenities	16,500 LF	\$150	\$2,475,000	Finishes, furnishings, etc.
1.11	Concourse Level Amenities	16,500 LF	\$100	\$1,650,000	Finishes, furnishings, etc.
1.12	Elevator	1 EA	\$1,000,000	\$1,000,000	
1.13	Escalator	2 EA	\$1,000,000	\$2,000,000	
1.14	Stairs & Railings	4 EA	\$350,000	\$1,400,000	
1.15	Guardrail	750 LF	\$260	\$195,000	Along I-580
1.16	Lighting & Electrical Allowance	1 LS	\$2,000,000	\$2,000,000	
1.17	Miscellaneous Sitework Allowance	1 LS	\$2,000,000	\$2,000,000	
	TOTAL			\$40,743,722	
2.00	Isabel Station <i>CV-D1002-LV</i> BASE CASE				
2.01	Platform Structure DMU 30'x400'	12,000 SF	\$275	\$3,300,000	25" High Platform
2.02	Platform Amenities	11,400 SF	\$120	\$1,368,000	Shelters, railings, finishes, furnishings, etc.
2.03	Pedestrian Bridge Structure	500 LF	\$7,000	\$3,500,000	Over EB I-580, north Ped Bridge would be funded by others
2.04	Pedestrian Bridge - Touchdown Structure	2 EA	\$850,000	\$1,700,000	Including stairs & railings.
2.05	Elevator	2 EA	\$500,000	\$1,000,000	
2.06	Parking Lot Civil Site Work	350 SPACE	\$3,500	\$1,225,000	Surface parking lot
2.07	Striping, Marking and Signage Allowance	1 LS	\$350,000	\$350,000	
2.08	Lighting, Electrical & Communication Allowance	1 LS	\$1,025,000	\$1,025,000	
2.09	Street Modifications	1 LS	\$600,000	\$600,000	On Airway Blvd
2.10	Civilwork Allowance	1 LS	\$1,500,000	\$1,500,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
	TOTAL			\$15,568,000	
2.00	Isabel Station (Greenville IOS) <i>CV-D1002-LV</i>				
2.01	Platform Structure DMU 30'x400'	12,000 SF	\$275	\$3,300,000	25" High Platform
2.02	Platform Amenities	11,400 SF	\$120	\$1,368,000	Shelters, railings, finishes, furnishings, etc.
2.03	Pedestrian Bridge Structure	500 LF	\$7,000	\$3,500,000	Over EB I-580, north Ped Bridge would be funded by others
2.04	Pedestrian Bridge - Touchdown Structure	2 EA	\$850,000	\$1,700,000	Including stairs & railings.
2.05	Elevator	2 EA	\$500,000	\$1,000,000	
2.06	Parking Lot Civil Site Work	852 SPACE	\$3,500	\$2,982,000	Surface parking lot
2.07	Striping, Marking and Signage Allowance	1 LS	\$350,000	\$350,000	
2.08	Lighting, Electrical & Communication Allowance	1 LS	\$2,500,000	\$2,500,000	
2.09	Street Modifications	1 LS	\$600,000	\$600,000	On Airway Blvd



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
DMU STATION ESTIMATES**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	COMMENT
2.10	Civilwork Allowance	1 LS	\$1,500,000	\$1,500,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
	TOTAL			\$18,800,000	
3.00	Southfront Road Station				<i>FUTURE</i>
3.01	Platform Structure DMU 30'x400'	12,000 SF	\$275	\$3,300,000	
3.02	Platform Amenities	11,400 SF	\$120	\$1,368,000	Shelters, railings, finishes, furnishings, etc.
3.03	Pedestrian Bridge Structure	200 LF	\$7,000	\$1,400,000	Over EB I-580
3.04	Pedestrian Bridge - Touchdown Structure	2 EA	\$850,000	\$1,700,000	Including stairs & railings.
3.05	Elevator	2 EA	\$500,000	\$1,000,000	
3.06	Parking Lot Civil Site Work	684 SPACE	\$3,500	\$2,394,000	Surface parking lot
3.07	Striping, Marking and Signage Allowance	1 LS	\$300,000	\$300,000	
3.08	Lighting, Electrical & Communication Allowance	1 LS	\$2,000,000	\$2,000,000	
3.09	Civilwork Allowance	1 LS	\$1,500,000	\$1,500,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
	TOTAL			\$14,962,000	
3A	Southfront Road Station (Max Parking)				<i>FUTURE</i>
3A.01	Platform Structure DMU 30'x400'	12,000 SF	\$275	3,300,000	
3A.02	Platform Amenities	11,400 SF	\$120	1,368,000	Shelters, railings, finishes, furnishings, etc.
3A.03	Pedestrian Bridge Structure	200 LF	\$7,000	1,400,000	Over EB I-580
3A.04	Pedestrian Bridge - Touchdown Structure	2 EA	\$850,000	1,700,000	Including stairs & railings.
3A.05	Elevator	2 EA	\$500,000	1,000,000	
3A.06	Parking Lot Civil Site Work	1,588 SPACE	\$3,500	5,558,000	Surface parking lot
3A.07	Parking Lot on Existing Paved Surface	1,721 SPACE	\$1,000	1,721,000	Surface parking lot restriping existing paved surface
3A.08	Striping, Marking and Signage Allowance	1 LS	\$1,350,000	1,350,000	
3A.09	Lighting, Electrical & Communication Allowance	1 LS	\$9,000,000	9,000,000	
3A.10	Civilwork Allowance	1 LS	\$1,500,000	1,500,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
	TOTAL			\$27,897,000	
4.00	Greenville Station (North Aerial)	<i>CV-D1104-LV</i>			<i>BASE CASE</i>
					North Side of I-580.
4.01	Aerial Platform Structure DMU 30'x400'	12,000 SF	\$425	5,100,000	Elevated platform with plaza below. Center platform. Future expansion to be 615 ft long
4.02	Platform Structure ACE 15'x1000'	15,000 SF	\$300	4,500,000	
4.03	Platform Amenities DMU	12,000 SF	\$120	1,440,000	Shelters, railings, finishes, furnishings, etc.
4.04	Platform Amenities ACE	15,000 SF	\$120	1,800,000	Shelters, railings, finishes, furnishings, etc.
4.05	Surface Plaza Area	12,000 SF	\$75	900,000	At-Grade
4.06	Elevator	2 EA	\$1,000,000	2,000,000	
4.07	Stairs & Railings	2 EA	\$350,000	700,000	2 Locations within the station to the platform level.
4.08	Pedestrian Ramps & Stairs	1 LS	\$1,100,000	1,100,000	
4.09	ACE Platform Retaining Wall 10' H	10,000 SF	\$75	750,000	1000 ft Long
4.10	Station Site Retaining Walls 20' H	31,000 SF	\$85	2,635,000	1550 ft Long
4.11	Parking Lot Civil Site Work	674 SPACE	\$3,500	2,359,000	Surface parking lot
4.12	Striping, Marking and Signage Allowance	1 LS	\$275,000	275,000	
4.13	Lighting, Electrical & Communication Allowance	1 LS	\$2,000,000	2,000,000	
4.14	Street Modifications	1 LS	\$1,200,000	1,200,000	On Altamont Pass Rd



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
DMU STATION ESTIMATES**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	COMMENT
4.15	Civilwork Allowance	1 LS	\$3,000,000	3,000,000	Earthwork, retention basin, access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
TOTAL				\$29,759,000	
4A.00	Greenville Station (North Aerial) - Max Parking	PHASE 1A NORTH			North Side of I-580. MAX. SURFACE PARKING.
4A.01	Aerial Platform Structure DMU 30'x400'	12,000 SF	\$425	5,100,000	Elevated platform with plaza below. Center platform. Future expansion to be 615 ft long
4A.02	Platform Structure ACE 15'x1000'	15,000 SF	\$275	4,125,000	
4A.03	Platform Amenities DMU	12,000 SF	\$120	1,440,000	Shelters, railings, finishes, furnishings, etc.
4A.04	Platform Amenities ACE	15,000 SF	\$120	1,800,000	Shelters, railings, finishes, furnishings, etc.
4A.05	Surface Plaza Area	12,000 SF	\$75	900,000	At-Grade
4A.06	Elevator	2 EA	\$1,000,000	2,000,000	
4A.07	Stairs & Railings	2 EA	\$350,000	700,000	2 Locations within the station to the platform level.
4A.08	Pedestrian Ramps & Stairs	1 LS	\$550,000	550,000	
4A.09	ACE Platform Retaining Wall 10' H	5,000 SF	\$75	375,000	500 ft Long
4A.10	Station Site Retaining Walls 20' H	31,000 SF	\$85	2,635,000	1550 ft Long
4A.11	Station Site Retaining Walls 10' H	4,000 SF	\$75	300,000	400 ft Long
4A.12	Station Site Retaining Walls 5' H	11,500 SF	\$75	862,500	2300 ft Long
4A.13	Parking Lot Civil Site Work	2,500 SPACE	\$3,500	8,750,000	Surface parking lots
4A.14	Striping, Marking and Signage Allowance	1 LS	\$1,025,000	1,025,000	
4A.15	Lighting, Electrical & Communication Allowance	1 LS	\$7,250,000	7,250,000	
4A.16	Street Modifications	1 LS	\$1,200,000	1,200,000	On Altamont Pass Rd
4A.17	Civilwork Allowance	1 LS	\$4,000,000	\$4,000,000	Earthwork, retention basin, access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
TOTAL				\$43,012,500	
5.00	Mountain House Station	CV-D1008-LA BASE CASE			
5.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
5.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
5.03	Parking Lot Civil Site Work	944 SPACE	\$3,500	3,304,000	Surface parking lot
5.04	Striping, Marking and Signage Allowance	1 LS	\$200,000	200,000	
5.05	Lighting, Electrical & Communication Allowance	1 LS	\$2,750,000	2,750,000	
5.06	Street Modifications	1 LS	\$200,000	200,000	On Via Nicolo Rd
5.07	Civilwork Allowance	1 LS	\$1,300,000	\$1,300,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
TOTAL				\$10,914,000	
5A.00	Mountain House Station (Max Parkin	CV-D1008b-LA			
5A.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
5A.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
5A.03	Parking Lot Civil Site Work	2,820 SPACE	\$3,500	9,870,000	Surface parking lot
5A.04	Striping, Marking and Signage Allowance	1 LS	\$1,055,000	1,055,000	
5A.05	Lighting, Electrical & Communication Allowance	1 LS	\$8,175,000	8,175,000	
5A.06	Street Modifications	1 LS	\$200,000	200,000	On Via Nicolo Rd
5A.07	Civilwork Allowance	1 LS	\$2,500,000	\$2,500,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
DMU STATION ESTIMATES**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	COMMENT
TOTAL				\$24,960,000	
6.00	West Tracy Station	CV-D1009-TU	OPTIONAL		Instead of Mountain House Station.
6.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
6.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
6.03	Pedestrian Ramps & Stairs	1 LS	\$100,000	100,000	
6.04	Parking Lot Civil Site Work	891 SPACE	\$3,500	3,118,500	Surface parking lot
6.05	Striping, Marking and Signage Allowance	1 LS	\$1,270,000	1,270,000	
6.06	Lighting, Electrical & Communication Allowance	1 LS	\$2,590,000	2,590,000	
6.07	Street Modifications	1 LS	\$100,000	100,000	On Hansen Rd
6.08	Civilwork Allowance	1 LS	\$1,300,000	\$1,300,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
TOTAL				\$11,638,500	
6A.00	West Tracy Station	CV-D1009b-TU	OPTIONAL		Instead of Mountain House Station.
6A.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
6A.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
6A.03	Pedestrian Ramps & Stairs	1 LS	\$50,000	50,000	
6A.04	Parking Lot Civil Site Work	739 SPACE	\$3,500	2,586,500	Surface parking lot
6A.05	Parking Garage	2,061 SPACE	\$20,000	41,220,000	3 Levels
6A.06	Striping, Marking and Signage Allowance	1 LS	\$1,005,000	1,005,000	
6A.07	Lighting, Electrical & Communication Allowance	1 LS	\$7,710,000	7,710,000	
6A.08	Street Modifications	1 LS	\$100,000	100,000	On Hansen Rd
6A.09	Civilwork Allowance	1 LS	\$1,300,000	\$1,300,000	Access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
TOTAL				\$57,131,500	
8.00	Downtown Tracy Station	CV-D1007-TU	BASE CASE		SURFACE PARKING LOT
8.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
8.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
8.03	Pedestrian Ramps	1 LS	\$100,000	100,000	
8.04	Parking Lot Civil Site Work	808 SPACE	\$3,500	2,828,000	Surface parking lot
8.05	Striping, Marking and Signage Allowance	1 LS	\$330,000	330,000	
8.06	Lighting, Electrical & Communication Allowance	1 LS	\$2,350,000	2,350,000	
8.07	Street Modifications	1 LS	\$200,000	200,000	On N. Central Ave.
8.08	Civilwork Allowance	1 LS	\$1,000,000	\$1,000,000	Access roads, bus stops, landscaping, drainage & utilities, etc.
TOTAL				\$9,968,000	
8A.00	Downtown Tracy Station	CV-D1109-TU	ALTERNATIVE 1		SOUTH PARKING GARAGE
8A.01	Platform Structure DMU 20'x400'	8,000 SF	\$275	2,200,000	
8A.02	Platform Amenities DMU	8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
8A.03	Pedestrian Ramps	1 LS	\$100,000	100,000	
8A.04	Parking Garage	1,044 SPACE	\$20,000	20,880,000	3 Levels
8A.05	Striping, Marking and Signage Allowance	1 LS	\$430,000	430,000	
8A.06	Lighting, Electrical & Communication Allowance	1 LS	\$3,025,000	3,025,000	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
DMU STATION ESTIMATES**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	COMMENT	
8A.07	Street Modifications	1 LS	\$200,000	200,000	On N. Central Ave.	
8A.08	Civilwork Allowance	1 LS	\$1,000,000	\$1,000,000	Access roads, bus stops, landscaping, drainage & utilities, etc.	
	TOTAL			\$28,795,000		
8B.00	Downtown Tracy Station	CV-D1109-TU	ALTERNATIVE 2		NORTH PARKING GARAGE	
8B.01	Platform Structure DMU	20'x400'	8,000 SF	\$275	2,200,000	
8B.02	Platform Amenities DMU		8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
8B.03	Pedestrian Ramps		1 LS	\$100,000	100,000	
8B.04	Parking Garage		939 SPACE	\$20,000	18,780,000	3 Levels
8B.05	Striping, Marking and Signage Allowance		1 LS	\$385,000	385,000	
8B.06	Lighting, Electrical & Communication Allowance		1 LS	\$2,723,100	2,723,100	
8B.07	Street Modifications		1 LS	\$200,000	200,000	On N. Central Ave.
8B.08	Civilwork Allowance		1 LS	\$1,000,000	\$1,000,000	Access roads, bus stops, landscaping, drainage & utilities, etc.
	TOTAL			\$26,348,100		
9.00	River Island Station	CV-D1011-RI	BASE CASE			
9.01	Platform Structure DMU	20'x400'	8,000 SF	\$275	2,200,000	
9.02	Platform Amenities DMU		8,000 SF	\$120	960,000	Shelters, railings, finishes, furnishings, etc.
9.03	Pedestrian Bridge Structure		240 LF	\$5,000	1,200,000	
9.04	Pedestrian Bridge - Touchdown Structure		2 EA	\$450,000	900,000	Including stairs, ramps, & railings.
9.05	Parking Lot Civil Site Work		730 SPACE	\$3,500	2,555,000	Surface parking lot
9.06	Striping, Marking and Signage Allowance		1 LS	\$300,000	300,000	
9.07	Lighting, Electrical & Communication Allowance		1 LS	\$2,115,000	2,115,000	
9.08	Street Modifications		1 LS	\$100,000	100,000	On Manthey Rd.
9.09	Civilwork Allowance		1 LS	\$2,000,000	\$2,000,000	Long access roads, bus stops, kiss & rides, landscaping, drainage & utilities, etc.
	TOTAL			\$12,330,000		
10.00	North Lathrop Station	CV-D1013-NL	BASE CASE			
10.01	Platform Structure DMU	30'x400'	12,000 SF	\$275	3,300,000	Connection to ACE Station.
10.02	Platform Amenities DMU		12,000 SF	\$120	1,440,000	Shelters, railings, finishes, furnishings, etc.
10.03	Pedestrian Bridge Structure		170 LF	\$5,000	850,000	Expansion
10.04	Pedestrian Bridge - Touchdown Structure		1 EA	\$850,000	850,000	Including stairs & railings.
10.05	Elevator		1 EA	\$500,000	500,000	
10.06	Parking Lot Civil Site Work		1,179 SPACE	\$3,500	4,126,500	Surface parking lot
10.07	Striping, Marking and Signage Allowance		1 LS	\$270,000	270,000	
10.08	Lighting, Electrical & Communication Allowance		1 LS	\$3,425,000	3,425,000	
10.09	Civilwork Allowance		1 LS	\$700,000	\$700,000	Drainage & utilities, landscaping, etc.
	TOTAL			\$15,461,500		



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Yard Trackwork							
1.01	Storage Track (Rail-Ties-Ballast)	5,250 TF	\$300	\$1,575,000	15%	\$236,250	\$1,811,250	Storage tracks for 28 vehicles others store on S&I track
1.02	S&I Track (Rail-Ties-Ballast)	3,000 TF	\$300	\$900,000	15%	\$135,000	\$1,035,000	2 of the 3 S&I tracks
1.03	MOW Track	1,000 TF	\$300	\$300,000	15%	\$45,000	\$345,000	1 MOW Track
1.04	Yard Track	4,200 TF	\$300	\$1,260,000	15%	\$189,000	\$1,449,000	
1.05	Shop Track	3,000 TF	\$300	\$900,000	15%	\$135,000	\$1,035,000	Shop Track 1,2, & 3
1.06	Yard Lead Track	3,500 TF	\$350	\$1,225,000	15%	\$183,750	\$1,408,750	Parallel to corridor
1.07	# 8 Turnouts	18 EA	\$200,000	\$3,600,000	10%	\$360,000	\$3,960,000	
1.08	# 15 Turnouts	4 EA	\$350,000	\$1,400,000	10%	\$140,000	\$1,540,000	
1.09	Turnout Yard Signals	22 EA	\$325,000	\$7,150,000	10%	\$715,000	\$7,865,000	
	SUBTOTAL			\$18,310,000		\$2,139,000	\$20,449,000	
2.00	Facilities / Shop							
2.01	Train Wash Equipment Building	1 LS	\$1,200,000	\$1,200,000	15%	\$180,000	\$1,380,000	
2.02	Operation / Maintenance Shop / Storage / Workshops / Etc	100,000 SF	\$250	\$25,000,000	15%	\$3,750,000	\$28,750,000	
2.03	Traction Power Sub Station	- LS	\$6,900,000	\$0	15%	\$0	\$0	
	SUBTOTAL			\$26,200,000		\$3,930,000	\$30,130,000	
3.00	Civilwork							
3.01	Clearing & Grub Area	120 ACRE	\$5,000	\$600,000	15%	\$90,000	\$690,000	
3.02	Earthwork / Grading	225,000 SY	\$10	\$2,250,000	15%	\$337,500	\$2,587,500	
3.03	Drainage Basin Excavation	50,000 CY	\$39	\$1,950,000	15%	\$292,500	\$2,242,500	
3.04	Parking Lot	300 SPACE	\$3,500	\$1,050,000	15%	\$157,500	\$1,207,500	
3.05	Yard Lighting	1 LS	\$12,500,000	\$12,500,000	15%	\$1,875,000	\$14,375,000	
3.06	Fencing	12,400 LF	\$65	\$806,000	15%	\$120,900	\$926,900	
3.07	Gates	9 EA	\$5,000	\$45,000	15%	\$6,750	\$51,750	
3.08	Access Road	180,000 SF	\$8	\$1,440,000	15%	\$216,000	\$1,656,000	
3.09	Yard Overhead Catenary System	- TF	\$200	\$0	15%	\$0	\$0	
3.10	Solar Farm	15 ACRE	\$0	\$0	15%	\$0	\$0	Assume PPA
3.11	Site Drainage	##### \$	5%	\$1,032,050	15%	\$154,808	\$1,186,858	
3.12	Utilities	##### \$	3%	\$619,230	15%	\$92,885	\$712,115	
	SUBTOTAL			\$22,292,280		\$3,343,842	\$25,636,122	
4.00	Train Controls & Communications							
4.01	FO Backbone Switches and WAN Access Pts	1 LS	\$1,000,000	\$1,000,000	15%	\$150,000	\$1,150,000	PCC, BCC, Radio Sites, Yard Transmission Equipment and NMS
4.02	CCTV	1 EA	\$100,000	\$100,000	15%	\$15,000	\$115,000	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
4.03	Train Control Room Allowance	1 EA	\$1,000,000	\$1,000,000	15%	\$150,000	\$1,150,000	For Dispatch, SCADA, Central Control, etc.
4.04	Yard Train Control System Allowance	1 LS	\$500,000	\$500,000	15%	\$75,000	\$575,000	
	SUBTOTAL			\$2,600,000		\$390,000	\$2,990,000	
5.00	Right-of-Way							
5.01	ROW - OMF	1 LS	\$35,000,000	\$35,000,000	0%	\$0	\$35,000,000	Provided by the City of Tracy
	SUBTOTAL			\$35,000,000		\$0	\$35,000,000	
SUBTOTAL				\$104,402,280		\$9,802,842	\$114,205,122	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
6.00	Markups		28.00%				\$31,977,434	
TOTAL FOR OPERATION MAINTENANCE & STORAGE FACILITY (OMF): CITY SITE							\$146,182,556	

Attachment 3

Phasing and Alternatives



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
PROJECT SUMMARY : PHASES & ALTERNATIVES**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

2018 Dollars

DESCRIPTION	ESTIMATE AMOUNT (\$Million)	COST IMPACT TO THE PROJECT (\$Million)	COMMENTS
IOS GREENVILLE NORTH			
D/P BART TO GREENVILLE (GREENVILLE NORTH AERIAL STATION)	\$1,254.85		With maximum surface parking.
TEMPORARY LAYOVER / OMF - ALTAMONT / DRYER ROADS (INCLUDED ABOVE)			Includes track from Sta. 4690+00 to 4846+30 & at-grade xing at Altamont Pass Rd.
ROLLING STOCK (10 DMU TRAINS)	\$117.00		\$11.7M each
TOTAL FOR IOS GREENVILLE NORTH	\$1,371.85		
IOS SOUTHFRONT			
D/P BART TO SOUTHFRONT (BUILDOUT THROUGH GREENVILLE)	\$1,229.60		With maximum surface parking.
TEMPORARY LAYOVER / OMF - ALTAMONT / DRYER ROADS (INCLUDED ABOVE)			Includes track from Sta. 4690+00 to 4846+30 & at-grade xing at Altamont Pass Rd.
ROLLING STOCK (10 DMU TRAINS)	\$117.00		\$11.7M each
TOTAL FOR IOS SOUTHFRONT	\$1,346.60		
IOS MOUNTAIN HOUSE			
D/P BART TO GREENVILLE (GREENVILLE NORTH AERIAL STATION)	\$1,185.77		
GREENVILLE TO OMF - CITY SITE	\$312.70		
SUBSTITUTE MOUNTAIN HOUSE IOS STATION VS MOUNTAIN HOUSE STATION	\$22.47		\$39,936,000 vs \$17,462,400
OMF - CITY SITE	\$146.18		
ROLLING STOCK (20 DMU TRAINS)	\$234.00		\$11.7M each
TOTAL FOR IOS MOUNTAIN HOUSE	\$1,901.12		
IOS WEST TRACY			
D/P BART TO GREENVILLE (GREENVILLE NORTH AERIAL STATION)	\$1,185.77		



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
PROJECT SUMMARY : PHASES & ALTERNATIVES**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

2018 Dollars

DESCRIPTION	ESTIMATE AMOUNT (\$Million)	COST IMPACT TO THE PROJECT (\$Million)	COMMENTS
GREENVILLE TO OMF - CITY SITE	\$312.70		
SUBSTITUTE WEST TRACY IOS STATION VS MOUNTAIN HOUSE STATION	\$72.79		\$91,410,400 vs \$18,621,600
TEMPORARY LAYOVER - ALTAMONT ROAD / DRYER ROAD (OPS MAINT. & STORAGE FAC.)	\$146.18		
ROLLING STOCK (20 DMU TRAINS)	\$234.00		\$11.7M each
TOTAL FOR IOS WEST TRACY	\$1,951.44		
ADDITION OF OCS			
ADDITION OF OCS	\$185.36		
UNALLOCATED CONTINGENCY (FOR HIGH RANGE)	\$46.34		
TOTAL FOR OCS (LOW RANGE)	\$185.36		
TOTAL FOR OCS (HIGH RANGE)	\$231.70		
SEGMENT 2			
S2: GREENVILLE TO WEST TRACY - BASE CASE	\$312.70		
S2: GREENVILLE TO WEST TRACY - STONE CUT ALTERNATIVE	\$346.20		
TOTAL		\$33.51	
SEGMENT 2 & 3			
<u>GREENVILLE TO N. LATHROP STATION - BASE CASE</u>			
S2: GREENVILLE TO WEST TRACY - BASE CASE	\$312.70		
S3: WEST TRACY TO N. LATHROP STATION - BASE CASE	\$315.87		
TOTAL	\$628.57		
<u>GREENVILLE TO N. LATHROP STATION - ALTERNATIVE (SHARED TRACK)</u>			
S2: GREENVILLE TO WEST TRACY - BASE CASE	\$312.70		



TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
PROJECT SUMMARY : PHASES & ALTERNATIVES

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

2018 Dollars

DESCRIPTION	ESTIMATE AMOUNT (\$Million)	COST IMPACT TO THE PROJECT (\$Million)	COMMENTS
S3: OPTION A: WEST TRACY TO N. LATHROP STATION (SHARED EXISTING UPRR TRACK)	\$238.62		
TOTAL	\$551.32	(\$77.25)	
<u>GREENVILLE TO N. LATHROP STATION - ALTERNATIVE (SECOND TRACK)</u>			
S2: GREENVILLE TO WEST TRACY - ALTERNATIVE (SECOND TRACK FROM MOUNTAIN HOUSE TO DOWNTOWN TRACY)	\$329.56		
S3: OPTION B: WEST TRACY TO N. LATHROP STATION (SECOND TRACK)	\$330.84		
TOTAL	\$660.40	\$31.83	
OPERATION MAINTENANCE & STORAGE FACILITY (OMF)			
OMF - CITY SITE - BASE CASE	\$146.18		
OMF - MOUNTAIN HOUSE OPTION	\$144.58	(\$1.61)	
ALTERNATIVE STATIONS			
GREENVILLE STATION - BASE CASE	\$60.19		Segment 1, Station and ROW
SOUTHFRONT STATION	\$51.70	(\$8.49)	Station and ROW
MOUNTAIN HOUSE STATION - BASE CASE	\$17.46		Segment 2, Station
WEST TRACY STATION	\$18.62	\$1.16	Station
DOWNTOWN TRACY STATION - BASE CASE	\$15.95		Segment 3
DOWNTOWN TRACY STATION - SOUTH PARKING GARAGE	\$46.07	\$30.12	3 level garage 1,044 spaces.
DOWNTOWN TRACY STATION - NORTH PARKING GARAGE	\$42.16	\$26.21	3 level garage, 939 spaces.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
ADDITION OF OCS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
1.00	OCS Unit Cost - Single Track (Cost per 1000')							
1.01	Poles	6 EA	\$12,500	\$75,000	0%	\$0	\$75,000	25% contingency added below
1.02	Foundations	6 EA	\$10,000	\$60,000	0%	\$0	\$60,000	25% contingency added below
1.03	Cantilever Arm	6 EA	\$5,000	\$30,000	0%	\$0	\$30,000	25% contingency added below
1.04	OCS Wire	1,000 LF	\$115	\$115,000	0%	\$0	\$115,000	25% contingency added below
1.05	Miscellaneous OCS Assemblies	1 LS	\$6,250	\$6,250	0%	\$0	\$6,250	25% contingency added below
	SUBTOTAL			\$286,250		\$0	\$286,250	
2.00	OCS Unit Cost - Double Track (Cost per 1000')							
2.01	Poles	6 EA	\$12,500	\$75,000	0%	\$0	\$75,000	25% contingency added below
2.02	Foundations	6 EA	\$10,000	\$60,000	0%	\$0	\$60,000	25% contingency added below
2.03	Cantilever Arm	12 EA	\$5,000	\$60,000	0%	\$0	\$60,000	25% contingency added below
2.04	OCS Wire	2,000 LF	\$115	\$230,000	0%	\$0	\$230,000	25% contingency added below
2.05	Miscellaneous OCS Assemblies	2 LS	\$6,250	\$12,500	0%	\$0	\$12,500	25% contingency added below
	SUBTOTAL			\$437,500		\$0	\$437,500	
3.00	Substations							
3.01	Civil Work	1 LS	\$300,000	\$300,000	0%	\$0	\$300,000	25% contingency added below
3.02	Foundations	1 LS	\$150,000	\$150,000	0%	\$0	\$150,000	25% contingency added below
3.03	Ductbank HV (500')	500 LF	\$2,400	\$1,200,000	0%	\$0	\$1,200,000	25% contingency added below
3.04	ET Ductbank MV (400')	400 LF	\$625	\$250,000	0%	\$0	\$250,000	25% contingency added below
3.05	MV Substation	1 LS	\$5,000,000	\$5,000,000	0%	\$0	\$5,000,000	25% contingency added below
	SUBTOTAL			\$6,900,000		\$0	\$6,900,000	
4.00	Segment 1 OCS							
4.01	Single Track OCS	700 LF	\$286	\$200,375	25%	\$50,094	\$250,469	
4.02	Double Track OCS	1,100 LF	\$438	\$481,250	25%	\$120,313	\$601,563	
4.03	Substations	1 EA	\$6,900,000	\$6,900,000	25%	\$1,725,000	\$8,625,000	
	SUBTOTAL			\$7,381,250		\$1,845,313	\$9,226,563	
5.00	Segment 2 OCS							
5.01	Single Track OCS	35,910 LF	\$286	\$10,279,238	25%	\$2,569,809	\$12,849,047	
5.02	Double Track OCS	40,770 LF	\$438	\$17,836,875	25%	\$4,459,219	\$22,296,094	
5.03	Substations	2 EA	\$6,900,000	\$13,800,000	25%	\$3,450,000	\$17,250,000	
	SUBTOTAL			\$41,916,113		\$10,479,028	\$52,395,141	
6.00	Segment 3 OCS							
6.01	Single Track OCS	2,600 LF	\$286	\$744,250	25%	\$186,063	\$930,313	
6.02	Double Track OCS	- LF	\$438	\$0	25%	\$0	\$0	
6.03	Substations	1 EA	\$6,900,000	\$6,900,000	25%	\$1,725,000	\$8,625,000	
	SUBTOTAL			\$7,644,250		\$1,911,063	\$9,555,313	
7.00	OMF OCS							
7.01	Single Track OCS	19,950 LF	\$286	\$5,710,688	25%	\$1,427,672	\$7,138,359	
7.02	Double Track OCS	- LF	\$438	\$0	25%	\$0	\$0	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
ADDITION OF OCS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
7.03	Substations	1 EA	\$6,900,000	\$6,900,000	25%	\$1,725,000	\$8,625,000	
	SUBTOTAL			\$12,610,688		\$3,152,672	\$15,763,359	
SUBTOTAL				\$77,376,425		\$17,438,169	\$94,814,594	
8.00	Markups Vehicle Addition (32 vehicles @ \$2 M each)		28.00%				\$26,548,086 \$64,000,000	
TOTAL FOR ADDITION OF OCS (LOW RANGE)							\$185,362,680	<i>2018 Dollars</i>
UNALLOCATED CONTINGENCY (25%)							\$46,340,670	
TOTAL FOR ADDITION OF OCS (HIGH RANGE)							\$231,703,350	<i>2018 Dollars</i>



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							
1.01	Section A: D-P BART Station Single Track	710 LF	\$0	\$0	0%	\$0	\$0	Included with the D/P DMU-BART Station Cost Estimate.
1.02	Section B: Single Track At-Grade / BART Pleasanton Station	100 LF	\$631	\$63,089	25%	\$15,772	\$78,861	
1.03	Section C: Double Track At-Grade / BART Pleasanton Station Tail Track	1,390 LF	\$631	\$876,930	25%	\$219,233	\$1,096,163	
1.04	Section C1: Single Track Aerial	2,520 LF	\$8,349	\$21,039,140	25%	\$5,259,785	\$26,298,925	
1.05	Section C2: Single Track Aerial on Straddle Bent	380 LF	\$10,499	\$3,989,772	25%	\$997,443	\$4,987,215	
1.06	Section C3: Double Track Aerial on Straddle Bent	720 LF	\$16,127	\$11,611,231	25%	\$2,902,808	\$14,514,039	
1.07	Section C3A: Double Track Aerial on Straddle Bent for the Station Platform at Greenville	620 LF	\$16,854	\$10,449,666	25%	\$2,612,417	\$13,062,083	
1.08	Section D: Single Track At-Grade / BART Tail Track	4,680 LF	\$585	\$2,737,028	25%	\$684,257	\$3,421,285	
1.09	Section E: Single Track At-Grade Along I-580	31,260 LF	\$1,096	\$34,260,647	25%	\$8,565,162	\$42,825,809	
1.10	Section E1: Double Track At-Grade Along I-580 (20' to 35')	5,670 LF	\$1,174	\$6,658,139	25%	\$1,664,535	\$8,322,674	
1.11	Section E2: Double Track At-Grade Along I-580 (20' to 61')	11,440 LF	\$1,174	\$13,433,706	25%	\$3,358,427	\$16,792,133	
1.12	Section G: Single Track At-Grade Overcrossing Pier	380 LF	\$2,275	\$864,451	25%	\$216,113	\$1,080,563	
1.13	Section L: Double Track At-Grade	870 LF	\$456	\$396,629	25%	\$99,157	\$495,786	
1.14	Section M1: Double Track at Isabel Station	1,250 LF	\$1,119	\$1,398,769	25%	\$349,692	\$1,748,461	
1.15	Structures							
1.16	Dougherty UC	164 LF	\$17,500	\$2,870,000	25%	\$717,500	\$3,587,500	Remove and Replace
1.17	Tassajara Creek Bridge	94 LF	\$8,750	\$822,500	25%	\$205,625	\$1,028,125	Remove and Replace
1.18	Median Culver Bridge	425 SF	\$220	\$93,500	25%	\$23,375	\$116,875	Bridge over Culvert
1.19	Median Culver Bridge	1,168 SF	\$220	\$256,960	25%	\$64,240	\$321,200	Bridge over Culvert
1.20	Median Culver Bridge	590 SF	\$220	\$129,800	25%	\$32,450	\$162,250	Bridge over Culvert
1.21	Median Culver Bridge	1,366 SF	\$220	\$300,520	25%	\$75,130	\$375,650	Bridge over Culvert
1.22	Median Culver Bridge	882 SF	\$220	\$194,040	25%	\$48,510	\$242,550	Bridge over Culvert
1.23	Arroyo Las Positas	175 LF	\$17,500	\$3,062,500	25%	\$765,625	\$3,828,125	Remove and Replace
1.24	Arroyo Las Positas	177 LF	\$8,750	\$1,548,750	25%	\$387,188	\$1,935,938	Remove and Replace
1.25	North Livermore Ave OC	159 LF	\$8,750	\$1,391,250	25%	\$347,813	\$1,739,063	Remove and Replace
1.26	Arroyo Las Positas	131 LF	\$8,750	\$1,146,250	25%	\$286,563	\$1,432,813	Remove and Replace
1.27	Median Culver Bridge	2,109 SF	\$220	\$463,980	25%	\$115,995	\$579,975	Bridge over Culvert
1.28	Median Culver Bridge	879 SF	\$220	\$193,380	25%	\$48,345	\$241,725	Bridge over Culvert
1.29	MSE Retaining Wall at Greenville Station	10,000 SF	\$75	\$750,000	25%	\$187,500	\$937,500	500' L x 20' H (Located at Sta. 4707+00)
	SUBTOTAL	61,990 LF		\$121,002,626		\$30,250,657	\$151,253,283	
2.00	Trackwork - Ballast / Ties / Rail / T.O.							
2.01	Track (Rail-Ties-Ballast)	83,950 TF	\$350	\$29,382,500	15%	\$4,407,375	\$33,789,875	Including Sidings.
2.02	Turnout No. 15	3 EA	\$350,000	\$1,050,000	10%	\$105,000	\$1,155,000	
2.03	Turnout No. 20	3 EA	\$400,000	\$1,200,000	10%	\$120,000	\$1,320,000	
2.04	Turnout Signals	6 EA	\$325,000	\$1,950,000	10%	\$195,000	\$2,145,000	
2.05	Signal House	6 EA	\$200,000	\$1,200,000	10%	\$120,000	\$1,320,000	
	SUBTOTAL			\$34,782,500		\$4,947,375	\$39,729,875	
3.00	Stations							For details see station estimate worksheet
3.01	Dublin-Pleasanton BART / DMU Station	1 LS	\$40,743,722	\$40,743,722	30%	\$12,223,117	\$52,966,839	Connection Station DMU / BART.
3.02	Isabel Station	1 LS	\$18,800,000	\$18,800,000	25%	\$4,700,000	\$23,500,000	At-grade platform in I-580 median, pedestrian bridge & touchdown structure, parking, etc.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE IOS**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
3.03	Greenville Station (North Aerial) - Max Parking	1 LS	\$43,012,500	\$43,012,500	25%	\$10,753,125	\$53,765,625	Includes aerial platform, parking, bus drop off, etc.
	SUBTOTAL			\$102,556,222		\$27,676,242	\$130,232,464	
4.00	Highway I-580 Widening							East of Dougherty Rd O.C. to Greenville Rd U.C.
4.01	Roadway							
4.02	Roadway Excavation	344,300 CY	\$21	\$7,078,132	25%	\$1,769,533	\$8,847,665	
4.03	Remove Unsuitable Materials	34,430 CY	\$53	\$1,840,314	25%	\$460,079	\$2,300,393	
4.04	Clearing & Grubbing	1 LS	\$205,580	\$205,580	25%	\$51,395	\$256,975	
4.05	Develop Water Supply	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.06	Hot Mixed Asphalt (Open Graded)	14,100 TON	\$107	\$1,507,315	25%	\$376,829	\$1,884,144	
4.07	Rubberized Hot Mix Asphalt (Gap Graded)	28,200 TON	\$99	\$2,782,736	25%	\$695,684	\$3,478,420	
4.08	Hot Mixed Asphalt (Type A)	91,400 TON	\$74	\$6,764,416	25%	\$1,691,104	\$8,455,520	
4.09	Lean Concrete Base	55,600 CY	\$214	\$11,887,479	25%	\$2,971,870	\$14,859,348	
4.10	Class 2 Aggregate Subbase	125,000 CY	\$25	\$3,083,705	25%	\$770,926	\$3,854,632	
4.11	Drainage system (6.0%)	1 LS	\$32,277,761	\$32,277,761	25%	\$8,069,440	\$40,347,201	
4.12	Erosion Control (0.5%)	1 LS	\$2,689,813	\$2,689,813	25%	\$672,453	\$3,362,267	
4.13	Prepare SWPPP	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.14	Temporary Water Pollution Control (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.15	NPDES (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.16	Remove Misc. (Sidewalk, Conc Curb, C&G)	1 LS	\$509,839	\$509,839	25%	\$127,460	\$637,299	
4.17	Minor Concrete (Curb, C&G, Sidewalk C&G)	1 LS	\$817,388	\$817,388	25%	\$204,347	\$1,021,734	
4.18	Environmental Mitigation (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.19	Highway Planting (1%)	1 LS	\$5,379,627	\$5,379,627	25%	\$1,344,907	\$6,724,533	
4.20	Concrete Barrier	1 LS	\$6,348,321	\$6,348,321	25%	\$1,587,080	\$7,935,402	
4.21	Remove Conc Barrier	32,384 LF	\$16	\$532,601	25%	\$133,150	\$665,751	
4.22	Remove Guardrail	11,318 LF	\$5	\$55,842	25%	\$13,961	\$69,803	
4.23	Sound Wall	11,000 SF	\$35	\$388,958	25%	\$97,240	\$486,198	
4.24	Remove Retaining Wall	12,764 LF	\$41	\$524,806	25%	\$131,201	\$656,007	
4.25	Retaining Walls	281,900 SF	\$82	\$23,181,241	25%	\$5,795,310	\$28,976,551	
4.26	Architectural Treatment	112,760 SF	\$3	\$370,900	25%	\$92,725	\$463,625	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
4.27	Traffic Delineation Items	683,957 LF	\$0.33	\$224,973	25%	\$56,243	\$281,216	
4.28	Roadside Signs	46 EA	\$822	\$37,827	25%	\$9,457	\$47,283	
4.29	Overhead Signs	35 EA	\$164,464	\$5,756,250	25%	\$1,439,063	\$7,195,313	
4.30	Express Lane Signs	1 LS	\$4,782,621	\$4,782,621	25%	\$1,195,655	\$5,978,277	
4.31	Traffic Control System (2%)	1 LS	\$10,759,254	\$10,759,254	25%	\$2,689,813	\$13,449,067	
4.32	Detour ramps and local streets	1 LS	\$8,223,214	\$8,223,214	25%	\$2,055,804	\$10,279,018	
4.33	Traffic Management Plan	1 LS	\$6,385,326	\$6,385,326	25%	\$1,596,331	\$7,981,657	
4.34	Highway Caltrans Lighting	1 LS	\$4,933,929	\$4,933,929	25%	\$1,233,482	\$6,167,411	
4.35	Caltrans TOS	1 LS	\$6,578,571	\$6,578,571	25%	\$1,644,643	\$8,223,214	
4.36	Minor Items (10%)	1 LS	\$28,575,670	\$28,575,670	25%	\$7,143,917	\$35,719,587	
4.37	Roadway Mobilization (10%)	1 LS	\$31,433,237	\$31,433,237	25%	\$7,858,309	\$39,291,546	
4.38	Supplemental Work (5%)	1 LS	\$15,716,289	\$15,716,289	25%	\$3,929,072	\$19,645,362	
4.39	I-580 Utility Relocations	1 LS	\$25,685,210	\$25,685,210	25%	\$6,421,302	\$32,106,512	
4.40	Structures							
4.41	Dougherty UC (33 0150L)	6,689 LS	\$663	\$4,433,409	25%	\$1,108,352	\$5,541,762	Westbound outside widening
4.42	Tassajara Creek Bridge (33 0015L)	2,600 LS	\$663	\$1,723,257	25%	\$430,814	\$2,154,071	Westbound outside widening
4.43	Tassajara Creek Foot Bridge	3,273 LS	\$663	\$2,169,315	25%	\$542,329	\$2,711,644	Remove and Replace Bridge
4.44	Airway Blvd OC (33-0408L)	25,784 LS	\$663	\$17,089,405	25%	\$4,272,351	\$21,361,756	Remove and Replace Bridge
4.45	Arroyo Las Positas (33-0012S)	8,055 LS	\$663	\$5,338,782	25%	\$1,334,696	\$6,673,478	Remove and Replace Bridge
4.46	Arroyo Las Positas (33-0012)	4,240 LS	\$663	\$2,810,234	25%	\$702,559	\$3,512,793	Westbound outside widening
4.47	Arroyo Las Positas (33-0012)	2,933 LS	\$663	\$1,943,966	25%	\$485,992	\$2,429,958	Eastbound outside widening
4.48	Arroyo Las Positas (33-0203)	3,564 LS	\$663	\$2,362,187	25%	\$590,547	\$2,952,734	Westbound outside widening
4.49	North Livermore Ave OC (33-0153)	4,861 LS	\$663	\$3,221,827	25%	\$805,457	\$4,027,284	Eastbound outside widening
4.50	Arroyo Las Positas (33-0085)	1,275 LS	\$663	\$845,059	25%	\$211,265	\$1,056,323	Westbound outside widening
4.51	Los Colinas Rd OC (33-0390)	12,238 LS	\$663	\$8,111,237	25%	\$2,027,809	\$10,139,046	Remove and Replace Bridge
4.52	First Street OC (33-0389)	28,185 LS	\$663	\$18,680,766	25%	\$4,670,192	\$23,350,958	Remove and Replace Bridge
4.53	Vasco Road OC (33-0400)	27,330 LS	\$663	\$18,114,080	25%	\$4,528,520	\$22,642,600	Remove and Replace Bridge
	SUBTOTAL			\$356,391,412		\$89,097,853	\$445,489,265	
5.00	Train Controls & Communications							
5.01	Communications - FO Backbone	11.74 MILE	\$191,670	\$2,250,307	20%	\$450,061	\$2,700,369	2 FO Cables 48str, 4 conduit 2x2 ductbank
5.02	Station Enclosures	3 EA	\$155,732	\$467,196	20%	\$93,439	\$560,635	NEMA5 Cabinets, UPS & Batteries
5.03	VMS (2 per station)	6 EA	\$42,878	\$257,268	20%	\$51,454	\$308,721	Headend Controls and Station Signs, Labor
5.04	TVM (2 per station)	6 EA	\$65,031	\$390,185	20%	\$78,037	\$468,222	Station TVM & Headend Servers
5.05	PA System	3 EA	\$178,649	\$535,948	20%	\$107,190	\$643,138	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
5.06	SCADA - Station	3 EA	\$34,146	\$102,437	20%	\$20,487	\$122,925	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	7 EA	\$89,233	\$624,630	20%	\$124,926	\$749,557	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO NORTH GREENVILLE IOS**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
5.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
5.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
5.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
5.13	Train Control & Signals	11.74 MILE	\$1,964,618	\$23,065,651	20%	\$4,613,130	\$27,678,782	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$28,697,014		\$5,739,403	\$34,436,417	
6.00	Other Project Cost							
6.01	BART Interface	500 DAYS	\$825	\$412,500	20%	\$82,500	\$495,000	
6.02	Caltrans Interface	1,000 DAYS	\$825	\$825,000	20%	\$165,000	\$990,000	
	SUBTOTAL			\$1,237,500		\$247,500	\$1,485,000	
7.00	Right-of-Way							
7.01	ROW - I-580 Acquisition	498,608 SF	\$110	\$54,846,880	0%	\$0	\$54,846,880	For I-580 roadway widening
7.02	ROW - I-580 Relinquishment	338,348 SF	\$0	\$0	0%	\$0	\$0	For I-580 roadway widening
7.03	ROW - I-580 TCE	600,866 SF	\$15	\$9,012,990	0%	\$0	\$9,012,990	For I-580 roadway widening
7.04	ROW - Isabel Station	941,324 SF	\$15	\$14,119,860	0%	\$0	\$14,119,860	
7.05	ROW - Greenville Station	524,027 SF	\$15	\$7,860,402	0%	\$0	\$7,860,402	
7.06	ROW - Greenville Station (Expanded)	214,000 SF	\$30	\$6,420,000	0%	\$0	\$6,420,000	
	SUBTOTAL			\$92,260,132		\$0	\$92,260,132	
8.00	OPS - Maintenance & Storage Facility							
8.01	Temporary OPS at Altamont	1 LS	\$26,940,813	\$26,940,813	0%	\$0	\$26,940,813	Contingency already included in buildup of unit cost
	SUBTOTAL			\$26,940,813		\$0	\$26,940,813	
SUBTOTAL				\$763,868,219		\$157,959,029	\$921,827,249	
8.00	Markups (Highway I-580 Widening)		30.00%				\$133,646,780	
	Markups (All of the Remaining Items)		28.00%				\$133,374,635	
	I-580 Toll System						\$66,000,000	
TOTAL FOR SEGMENT 1: D/P BART TO NORTH GREENVILLE IOS							\$1,254,848,663	2018 Dollars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO SOUTHFRONT IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							
1.01	Section A: D-P BART Station Single Track	710 LF	\$0	\$0	0%	\$0	\$0	Included with the D/P DMU-BART Station Cost Estimate.
1.02	Section B: Single Track At-Grade / BART Pleasanton Station	100 LF	\$631	\$63,089	25%	\$15,772	\$78,861	
1.03	Section C: Double Track At-Grade / BART Pleasanton Station Tail Track	1,390 LF	\$631	\$876,930	25%	\$219,233	\$1,096,163	
1.04	Section C1: Single Track Aerial	2,520 LF	\$8,349	\$21,039,140	25%	\$5,259,785	\$26,298,925	
1.05	Section C2: Single Track Aerial on Straddle Bent	380 LF	\$10,499	\$3,989,772	25%	\$997,443	\$4,987,215	
1.06	Section C3: Double Track Aerial on Straddle Bent	720 LF	\$16,127	\$11,611,231	25%	\$2,902,808	\$14,514,039	
1.07	Section C3A: Double Track Aerial on Straddle Bent for the Station Platform at Greenville	620 LF	\$16,854	\$10,449,666	25%	\$2,612,417	\$13,062,083	
1.08	Section D: Single Track At-Grade / BART Tail Track	4,680 LF	\$585	\$2,737,028	25%	\$684,257	\$3,421,285	
1.09	Section E: Single Track At-Grade Along I-580	31,260 LF	\$1,096	\$34,260,647	25%	\$8,565,162	\$42,825,809	
1.10	Section E1: Double Track At-Grade Along I-580 (20' to 35')	5,670 LF	\$1,174	\$6,658,139	25%	\$1,664,535	\$8,322,674	
1.11	Section E2: Double Track At-Grade Along I-580 (20' to 61')	11,440 LF	\$1,174	\$13,433,706	25%	\$3,358,427	\$16,792,133	
1.12	Section G: Single Track At-Grade Overcrossing Pier	380 LF	\$2,275	\$864,451	25%	\$216,113	\$1,080,563	
1.13	Section L: Double Track At-Grade	870 LF	\$456	\$396,629	25%	\$99,157	\$495,786	
1.14	Section M1: Double Track at Isabel Station	1,250 LF	\$1,119	\$1,398,769	25%	\$349,692	\$1,748,461	
1.15	Structures							
1.16	Dougherty UC	164 LF	\$17,500	\$2,870,000	25%	\$717,500	\$3,587,500	Remove and Replace
1.17	Tassajara Creek Bridge	94 LF	\$8,750	\$822,500	25%	\$205,625	\$1,028,125	Remove and Replace
1.18	Median Culver Bridge	425 SF	\$220	\$93,500	25%	\$23,375	\$116,875	Bridge over Culvert
1.19	Median Culver Bridge	1,168 SF	\$220	\$256,960	25%	\$64,240	\$321,200	Bridge over Culvert
1.20	Median Culver Bridge	590 SF	\$220	\$129,800	25%	\$32,450	\$162,250	Bridge over Culvert
1.21	Median Culver Bridge	1,366 SF	\$220	\$300,520	25%	\$75,130	\$375,650	Bridge over Culvert
1.22	Median Culver Bridge	882 SF	\$220	\$194,040	25%	\$48,510	\$242,550	Bridge over Culvert
1.23	Arroyo Las Positas	175 LF	\$17,500	\$3,062,500	25%	\$765,625	\$3,828,125	Remove and Replace
1.24	Arroyo Las Positas	177 LF	\$8,750	\$1,548,750	25%	\$387,188	\$1,935,938	Remove and Replace
1.25	North Livermore Ave OC	159 LF	\$8,750	\$1,391,250	25%	\$347,813	\$1,739,063	Remove and Replace
1.26	Arroyo Las Positas	131 LF	\$8,750	\$1,146,250	25%	\$286,563	\$1,432,813	Remove and Replace
1.27	Median Culver Bridge	2,109 SF	\$220	\$463,980	25%	\$115,995	\$579,975	Bridge over Culvert
1.28	Median Culver Bridge	879 SF	\$220	\$193,380	25%	\$48,345	\$241,725	Bridge over Culvert
1.29	MSE Retaining Wall at Greenville Station	10,000 SF	\$75	\$750,000	25%	\$187,500	\$937,500	500' L x 20' H (Located at Sta. 4707+00)
	SUBTOTAL	61,990 LF		\$121,002,626		\$30,250,657	\$151,253,283	
2.00	Trackwork - Ballast / Ties / Rail / T.O.							
2.01	Track (Rail-Ties-Ballast)	83,950 TF	\$350	\$29,382,500	15%	\$4,407,375	\$33,789,875	Including Sidings.
2.02	Turnout No. 15	3 EA	\$350,000	\$1,050,000	10%	\$105,000	\$1,155,000	
2.03	Turnout No. 20	3 EA	\$400,000	\$1,200,000	10%	\$120,000	\$1,320,000	
2.04	Turnout Signals	6 EA	\$325,000	\$1,950,000	10%	\$195,000	\$2,145,000	
2.05	Signal House	6 EA	\$200,000	\$1,200,000	10%	\$120,000	\$1,320,000	
	SUBTOTAL			\$34,782,500		\$4,947,375	\$39,729,875	
3.00	Stations							For details see station estimate worksheet
3.01	Dublin-Pleasanton BART / DMU Station	1 LS	\$40,743,722	\$40,743,722	30%	\$12,223,117	\$52,966,839	Connection Station DMU / BART.
3.02	Isabel Station	1 LS	\$15,568,000	\$15,568,000	25%	\$3,892,000	\$19,460,000	At-grade platform in I-580 median, pedestrian bridge & touchdown structure, parking, etc.



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO SOUTHFRONT IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
3.03	Southfront Road Station (Max Parking)	1 LS	\$27,897,000	\$27,897,000	25%	\$6,974,250	\$34,871,250	Includes aerial platform, parking, bus drop off, etc.
	SUBTOTAL			\$84,208,722		\$23,089,367	\$107,298,089	
4.00	Highway I-580 Widening							East of Dougherty Rd O.C. to Greenville Rd U.C.
4.01	Roadway							
4.02	Roadway Excavation	344,300 CY	\$21	\$7,078,132	25%	\$1,769,533	\$8,847,665	
4.03	Remove Unsuitable Materials	34,430 CY	\$53	\$1,840,314	25%	\$460,079	\$2,300,393	
4.04	Clearing & Grubbing	1 LS	\$205,580	\$205,580	25%	\$51,395	\$256,975	
4.05	Develop Water Supply	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.06	Hot Mixed Asphalt (Open Graded)	14,100 TON	\$107	\$1,507,315	25%	\$376,829	\$1,884,144	
4.07	Rubberized Hot Mix Asphalt (Gap Graded)	28,200 TON	\$99	\$2,782,736	25%	\$695,684	\$3,478,420	
4.08	Hot Mixed Asphalt (Type A)	91,400 TON	\$74	\$6,764,416	25%	\$1,691,104	\$8,455,520	
4.09	Lean Concrete Base	55,600 CY	\$214	\$11,887,479	25%	\$2,971,870	\$14,859,348	
4.10	Class 2 Aggregate Subbase	125,000 CY	\$25	\$3,083,705	25%	\$770,926	\$3,854,632	
4.11	Drainage system (6.0%)	1 LS	\$32,277,761	\$32,277,761	25%	\$8,069,440	\$40,347,201	
4.12	Erosion Control (0.5%)	1 LS	\$2,689,813	\$2,689,813	25%	\$672,453	\$3,362,267	
4.13	Prepare SWPPP	1 LS	\$61,674	\$61,674	25%	\$15,419	\$77,093	
4.14	Temporary Water Pollution Control (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.15	NPDES (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.16	Remove Misc. (Sidewalk, Conc Curb, C&G)	1 LS	\$509,839	\$509,839	25%	\$127,460	\$637,299	
4.17	Minor Concrete (Curb, C&G, Sidewalk C&G)	1 LS	\$817,388	\$817,388	25%	\$204,347	\$1,021,734	
4.18	Environmental Mitigation (0.75%)	1 LS	\$4,035,131	\$4,035,131	25%	\$1,008,783	\$5,043,914	
4.19	Highway Planting (1%)	1 LS	\$5,379,627	\$5,379,627	25%	\$1,344,907	\$6,724,533	
4.20	Concrete Barrier	1 LS	\$6,348,321	\$6,348,321	25%	\$1,587,080	\$7,935,402	
4.21	Remove Conc Barrier	32,384 LF	\$16	\$532,601	25%	\$133,150	\$665,751	
4.22	Remove Guardrail	11,318 LF	\$5	\$55,842	25%	\$13,961	\$69,803	
4.23	Sound Wall	11,000 SF	\$35	\$388,958	25%	\$97,240	\$486,198	
4.24	Remove Retaining Wall	12,764 LF	\$41	\$524,806	25%	\$131,201	\$656,007	
4.25	Retaining Walls	281,900 SF	\$82	\$23,181,241	25%	\$5,795,310	\$28,976,551	
4.26	Architectural Treatment	112,760 SF	\$3	\$370,900	25%	\$92,725	\$463,625	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO SOUTHFRONT IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
4.27	Traffic Delineation Items	683,957 LF	\$0.33	\$224,973	25%	\$56,243	\$281,216	
4.28	Roadside Signs	46 EA	\$822	\$37,827	25%	\$9,457	\$47,283	
4.29	Overhead Signs	35 EA	\$164,464	\$5,756,250	25%	\$1,439,063	\$7,195,313	
4.30	Express Lane Signs	1 LS	\$4,782,621	\$4,782,621	25%	\$1,195,655	\$5,978,277	
4.31	Traffic Control System (2%)	1 LS	\$10,759,254	\$10,759,254	25%	\$2,689,813	\$13,449,067	
4.32	Detour ramps and local streets	1 LS	\$8,223,214	\$8,223,214	25%	\$2,055,804	\$10,279,018	
4.33	Traffic Management Plan	1 LS	\$6,385,326	\$6,385,326	25%	\$1,596,331	\$7,981,657	
4.34	Highway Caltrans Lighting	1 LS	\$4,933,929	\$4,933,929	25%	\$1,233,482	\$6,167,411	
4.35	Caltrans TOS	1 LS	\$6,578,571	\$6,578,571	25%	\$1,644,643	\$8,223,214	
4.36	Minor Items (10%)	1 LS	\$28,575,670	\$28,575,670	25%	\$7,143,917	\$35,719,587	
4.37	Roadway Mobilization (10%)	1 LS	\$31,433,237	\$31,433,237	25%	\$7,858,309	\$39,291,546	
4.38	Supplemental Work (5%)	1 LS	\$15,716,289	\$15,716,289	25%	\$3,929,072	\$19,645,362	
4.39	I-580 Utility Relocations	1 LS	\$25,685,210	\$25,685,210	25%	\$6,421,302	\$32,106,512	
4.40	Structures							
4.41	Dougherty UC (33 0150L)	6,689 LS	\$663	\$4,433,409	25%	\$1,108,352	\$5,541,762	Westbound outside widening
4.42	Tassajara Creek Bridge (33 0015L)	2,600 LS	\$663	\$1,723,257	25%	\$430,814	\$2,154,071	Westbound outside widening
4.43	Tassajara Creek Foot Bridge	3,273 LS	\$663	\$2,169,315	25%	\$542,329	\$2,711,644	Remove and Replace Bridge
4.44	Airway Blvd OC (33-0408L)	25,784 LS	\$663	\$17,089,405	25%	\$4,272,351	\$21,361,756	Remove and Replace Bridge
4.45	Arroyo Las Positas (33-0012S)	8,055 LS	\$663	\$5,338,782	25%	\$1,334,696	\$6,673,478	Remove and Replace Bridge
4.46	Arroyo Las Positas (33-0012)	4,240 LS	\$663	\$2,810,234	25%	\$702,559	\$3,512,793	Westbound outside widening
4.47	Arroyo Las Positas (33-0012)	2,933 LS	\$663	\$1,943,966	25%	\$485,992	\$2,429,958	Eastbound outside widening
4.48	Arroyo Las Positas (33-0203)	3,564 LS	\$663	\$2,362,187	25%	\$590,547	\$2,952,734	Westbound outside widening
4.49	North Livermore Ave OC (33-0153)	4,861 LS	\$663	\$3,221,827	25%	\$805,457	\$4,027,284	Eastbound outside widening
4.50	Arroyo Las Positas (33-0085)	1,275 LS	\$663	\$845,059	25%	\$211,265	\$1,056,323	Westbound outside widening
4.51	Los Colinas Rd OC (33-0390)	12,238 LS	\$663	\$8,111,237	25%	\$2,027,809	\$10,139,046	Remove and Replace Bridge
4.52	First Street OC (33-0389)	28,185 LS	\$663	\$18,680,766	25%	\$4,670,192	\$23,350,958	Remove and Replace Bridge
4.53	Vasco Road OC (33-0400)	27,330 LS	\$663	\$18,114,080	25%	\$4,528,520	\$22,642,600	Remove and Replace Bridge
	SUBTOTAL			\$356,391,412		\$89,097,853	\$445,489,265	
5.00	Train Controls & Communications							
5.01	Communications - FO Backbone	11.74 MILE	\$191,670	\$2,250,307	20%	\$450,061	\$2,700,369	2 FO Cables 48str, 4 conduit 2x2 ductbank
5.02	Station Enclosures	3 EA	\$155,732	\$467,196	20%	\$93,439	\$560,635	NEMA5 Cabinets, UPS & Batteries
5.03	VMS (2 per station)	6 EA	\$42,878	\$257,268	20%	\$51,454	\$308,721	Headend Controls and Station Signs, Labor
5.04	TVM (2 per station)	6 EA	\$65,031	\$390,185	20%	\$78,037	\$468,222	Station TVM & Headend Servers
5.05	PA System	3 EA	\$178,649	\$535,948	20%	\$107,190	\$643,138	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
5.06	SCADA - Station	3 EA	\$34,146	\$102,437	20%	\$20,487	\$122,925	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	7 EA	\$89,233	\$624,630	20%	\$124,926	\$749,557	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 1: D/P BART TO SOUTHFRONT IOS**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	CONSTRUCTION AMOUNT	CONTINGENCY		TOTAL AMOUNT	COMMENT
					%	AMOUNT		
5.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
5.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
5.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
5.13	Train Control & Signals	11.74 MILE	\$1,964,618	\$23,065,651	20%	\$4,613,130	\$27,678,782	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$28,697,014		\$5,739,403	\$34,436,417	
6.00	Other Project Cost							
6.01	BART Interface	500 DAYS	\$900	\$450,000	20%	\$90,000	\$540,000	
6.02	Caltrans Interface	1,000 DAYS	\$900	\$900,000	20%	\$180,000	\$1,080,000	
	SUBTOTAL			\$1,350,000		\$270,000	\$1,620,000	
7.00	Right-of-Way							
7.01	ROW - I-580 Acquisition	498,608 SF	\$110	\$54,846,880	0%	\$0	\$54,846,880	For I-580 roadway widening
7.02	ROW - I-580 Relinquishment	338,348 SF	\$0	\$0	0%	\$0	\$0	For I-580 roadway widening
7.03	ROW - I-580 TCE	600,866 SF	\$15	\$9,012,990	0%	\$0	\$9,012,990	For I-580 roadway widening
7.04	ROW - Isabel Station	941,324 SF	\$15	\$14,119,860	0%	\$0	\$14,119,860	
7.05	ROW - Southfront Station	348,500 SF	\$15	\$5,227,500	0%	\$0	\$5,227,500	
7.06	ROW - Southfront Station (Expanded- Purchase)	300,000 SF	\$30	\$9,000,000	0%	\$0	\$9,000,000	
7.07	ROW - Southfront Station (Expanded- Lease)	625,000 SF	\$5	\$3,125,000	0%	\$0	\$3,125,000	
	SUBTOTAL			\$95,332,230		\$0	\$95,332,230	
8.00	OPS - Maintenance & Storage Facility							
8.01	Temporary OPS at Altamont	1 LS	\$26,940,813	\$26,940,813	0%	\$0	\$26,940,813	
	SUBTOTAL			\$26,940,813		\$0	\$26,940,813	
SUBTOTAL				\$748,705,317		\$153,394,654	\$902,099,972	
8.00	Markups (Highway I-580 Widening)		30.00%				\$133,646,780	
	Markups (All of the Remaining Items)		28.00%				\$127,850,998	
	I-580 Toll System						\$66,000,000	
TOTAL FOR SEGMENT 1: D/P BART TO SOUTHFRONT IOS							\$1,229,597,749	2018 Dollars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
TEMPORARY OPERATION MAINTENANCE & STORAGE FACILITY FOR PHASE 1A**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Yard Trackwork							
1.01	Storage Track (Rail-Ties-Ballast)	1,860 TF	\$300	\$558,000	15%	\$83,700	\$641,700	Storage Track 1, 2, & 3
1.02	Shop Track	700 TF	\$400	\$280,000	15%	\$42,000	\$322,000	Shop Track 1, 2, & 3
1.03	# 15 Turnouts	2 EA	\$350,000	\$700,000	10%	\$70,000	\$770,000	
1.04	Turnout Yard Signals	2 EA	\$325,000	\$650,000	10%	\$65,000	\$715,000	
	SUBTOTAL			\$2,188,000		\$260,700	\$2,448,700	
2.00	Facilities / Shop							
2.01	Operation / Maintenance Shop / Storage / Workshops / Etc	28,500 SF	\$150	\$4,275,000	30%	\$1,282,500	\$5,557,500	Pre-Engineered Bldg
	SUBTOTAL			\$4,275,000		\$1,282,500	\$5,557,500	
3.00	Civilwork							
3.01	Single Track at Grade From 4690+00 to 4846+30	15,630 LF	\$275	\$4,298,250	25%	\$1,074,563	\$5,372,813	
3.02	Trackwork	15,630 TF	\$500	\$7,815,000	25%	\$1,953,750	\$9,768,750	
3.03	Grade Xing at Altamont Pass Road	1 EA	\$500,000	\$500,000	25%	\$125,000	\$625,000	
3.04	Clearing & Grub Area	5 ACRE	\$5,000	\$22,957	25%	\$5,739	\$28,696	
3.05	Earthwork / Grading	22,222 SY	\$10	\$222,222	25%	\$55,556	\$277,778	
3.06	Parking Lot	15 SPACE	\$3,000	\$45,000	25%	\$11,250	\$56,250	
3.07	Yard Lighting	1 LS	\$200,000	\$200,000	25%	\$50,000	\$250,000	
3.08	Fencing	2,565 LF	\$65	\$166,725	25%	\$41,681	\$208,406	
3.09	Gates	1 EA	\$5,000	\$5,000	25%	\$1,250	\$6,250	
3.10	Access Roads	60,600 SF	\$8	\$484,800	25%	\$121,200	\$606,000	
3.11	Drainage	1,146,704 \$	5%	\$57,335	25%	\$14,334	\$71,669	
3.12	Utilities	1,146,704 \$	3%	\$34,401	25%	\$8,600	\$43,001	
	SUBTOTAL			\$13,851,690		\$3,462,923	\$17,314,613	
4.00	Train Controls & Communications							
4.01	FO Backbone Switches and WAN Access Pts	1 LS	\$500,000	\$500,000	20%	\$100,000	\$600,000	PCC, BCC, Radio Sites, Yard Transmission Equipment and NMS
4.02	CCTV	1 EA	\$100,000	\$100,000	20%	\$20,000	\$120,000	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
4.03	Train Control Room Allowance	1 EA	\$500,000	\$500,000	20%	\$100,000	\$600,000	For Dispatch, SCADA, Central Control, etc.
4.04	Yard Train Control System Allowance	1 LS	\$250,000	\$250,000	20%	\$50,000	\$300,000	
	SUBTOTAL			\$1,350,000		\$270,000	\$1,620,000	
5.00	Right-of-Way							
5.01	ROW - OMF	- SF	\$7	\$0	0%	\$0	\$0	
	SUBTOTAL			\$0		\$0	\$0	
SUBTOTAL				\$35,516,381		\$5,276,123	\$26,940,813	



TRI-VALLEY SAN JOAQUIN VALLEY

VALLEY LINK PROJECT

15% PRELIMINARY ENGINEERING FINAL ESTIMATE

SEGMENT 2: GREENVILLE TO WEST TRACY ALTERNATIVE (SECOND TRACK FROM MH TO DT TRACY)

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							SECOND TRACK FROM MOUNTAIN HOUSE
1.01	Section C2: Single Track - Cut	1,500 LF	\$272	\$408,000	30%	\$122,400	\$530,400	
1.02	Section D1: Single Track - At-Grade	8,040 LF	\$255	\$2,050,200	30%	\$615,060	\$2,665,260	
1.03	Section D1-A: Double Track - Retained Fill	9,410 LF	\$1,420	\$13,357,495	30%	\$4,007,249	\$17,364,744	
1.04	Section D2: Single Track - At-Grade	10,200 LF	\$264	\$2,687,700	30%	\$806,310	\$3,494,010	
1.05	Section D3: Single Track At-Grade	3,180 LF	\$264	\$837,930	30%	\$251,379	\$1,089,309	
1.06	Section D3-A: Double Track - Retained Cut	500 LF	\$2,015	\$1,007,250	30%	\$302,175	\$1,309,425	
1.07	Section D4: Single Track At-Grade	8,270 LF	\$213	\$1,757,375	30%	\$527,213	\$2,284,588	
1.08	Section D5: Single Track At-Grade	- LF	\$255	\$0	30%	\$0	\$0	
1.09	Section D5-A: Double Track - Retained Cut	3,710 LF	\$2,091	\$7,757,610	30%	\$2,327,283	\$10,084,893	At the Altamont Pass Rd. Grade Separation
1.10	Section E: Single Track - Fill	2,000 LF	\$510	\$1,020,000	30%	\$306,000	\$1,326,000	
1.11	Section F: Double Track - At-Grade	20,400 LF	\$315	\$6,415,800	30%	\$1,924,740	\$8,340,540	
1.12	Section G: Double Track - Fill	7,500 LF	\$1,250	\$9,371,250	30%	\$2,811,375	\$12,182,625	
1.13	Section H: Single Track in Sub-Way Box	470 LF	\$5,865	\$2,756,550	30%	\$826,965	\$3,583,515	
1.14	Section H1: Single Track in Steel Truss Bridge (California Aquaduct	230 LF	\$30,000	\$6,900,000	25%	\$1,725,000	\$8,625,000	
1.15	Section J: Single Track Tunnel	1,180 LF	\$196	\$230,690	30%	\$69,207	\$299,897	
1.16	Section K: Double Track At-Grade with Station Platform	900 LF	\$476	\$428,400	30%	\$128,520	\$556,920	
1.17	Delta Mendota Canal Bridges	5,000 SF	\$500	\$2,500,000	30%	\$750,000	\$3,250,000	One bridge each side
1.18	I-580 Abutment Retaining Wall	3,500 SF	\$75	\$262,500	25%	\$65,625	\$328,125	350' L x 10' H at Sta. 5365+00
1.19	Landslide Stabilization (3 Locations)	1 LS	\$20,000,000	\$20,000,000	30%	\$6,000,000	\$26,000,000	Allowance
1.20	Sinkhole Repair Near Tunnel	1 LS	\$1,000,000	\$1,000,000	30%	\$300,000	\$1,300,000	Located at Sta. 5000+00
	SUBTOTAL	67,210 LF		\$80,748,750		\$23,866,500	\$104,615,250	
2.00	Tunnel Rehabilitation 1,180 ft L x 16 ft W							
2.01	Tunnel Rehabilitation & Seismic Upgrade	1 LS	\$20,500,000	\$20,500,000	25%	\$5,125,000	\$25,625,000	
	SUBTOTAL			\$20,500,000		\$5,125,000	\$25,625,000	
3.00	Grade Separations - Altamont Pass Rd.							at Carroll Rd.
3.01	Earthwork Common	98,700 CY	\$20	\$1,974,000	25%	\$493,500	\$2,467,500	
3.02	DMU Underpass Structure (Section H)			\$0	0%	\$0	\$0	Included in the Trackway Civilwork above.
3.03	Retaining Wall, MSE	25,000 SF	\$45	\$1,125,000	25%	\$281,250	\$1,406,250	
3.04	Retaining Wall, Type 1	29,930 SF	\$50	\$1,496,500	25%	\$374,125	\$1,870,625	
3.05	Concrete Barrier	2,300 LF	\$40	\$92,000	25%	\$23,000	\$115,000	
3.06	Roadway Construction (Base, Pave, Finishes)	90,000 SF	\$20	\$1,800,000	25%	\$450,000	\$2,250,000	
	SUBTOTAL			\$6,487,500		\$1,621,875	\$8,109,375	
4.00	Grade Crossings							
4.01	Dyer Xing	75 TF	\$638	\$47,813	25%	\$11,953	\$59,766	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.02	Private Road Xing (Active Warning Sign Only) No.1	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.03	Altamont Pass Road	120 TF	\$638	\$76,500	25%	\$19,125	\$95,625	4 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.04	Private Road Xing (Active Warning Sign Only) No.2	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.05	Private Road Xing (Active Warning Sign Only) No.3		\$553					2 Active Warning R/R Sign with post
4.06	Private Road Xing (Active Warning Sign Only) No.4		\$553					2 Active Warning R/R Sign with post
4.07	Private Road Xing (Active Warning Sign Only) No. 5 Jess Ranch	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.08	N Midway Road Xing	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars



TRI-VALLEY SAN JOAQUIN VALLEY

VALLEY LINK PROJECT

15% PRELIMINARY ENGINEERING FINAL ESTIMATE

SEGMENT 2: GREENVILLE TO WEST TRACY ALTERNATIVE (SECOND TRACK FROM MH TO DT TRACY)

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
4.09	Patterson Pass Road Xing at Midway Rd	170 TF	\$638	\$108,375	25%	\$27,094	\$135,469	6 R/R Signal Guard/Gate 1 Signal House 3 Stop Bars
4.10	Via Nicolo Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.11	Hansen Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.12	Private Road Xing (Signals) No. 4	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.13	R/R Xing Signs	6 EA	\$1,275	\$7,650	25%	\$1,913	\$9,563	
4.14	Active Warning R/R Sign with post (with electric service)	10 EA	\$85,000	\$850,000	25%	\$212,500	\$1,062,500	
4.15	Stop Bars	15 EA	\$8,500	\$127,500	25%	\$31,875	\$159,375	
4.16	Signal House (with electric service)	7 EA	\$212,500	\$1,487,500	25%	\$371,875	\$1,859,375	
4.17	Crossing Gate & Flasher	20 EA	\$255,000	\$5,100,000	25%	\$1,275,000	\$6,375,000	
	SUBTOTAL			\$7,961,525		\$1,990,381	\$9,951,906	
5.00	Trackwork - Ballast / Ties / Rail / T.O.							
5.01	Mainline Track (Rail-Ties-Ballast)	106,290 TF	\$350	\$37,201,500	15%	\$5,580,225	\$42,781,725	Including sidings
5.02	Turnout No. 11	- EA	\$250,000	\$0	10%	\$0	\$0	
5.03	Turnout No. 15	11 EA	\$350,000	\$3,850,000	10%	\$385,000	\$4,235,000	
5.04	Turnout Signals	11 EA	\$325,000	\$3,575,000	10%	\$357,500	\$3,932,500	
5.05	Signal House	11 EA	\$200,000	\$2,200,000	10%	\$220,000	\$2,420,000	
	SUBTOTAL			\$46,826,500		\$6,542,725	\$53,369,225	
6.00	Stations							For details see station estimate worksheet
6.01	Mountain House Station	1 LS	\$10,914,000	\$10,914,000	25%	\$2,728,500	\$13,642,500	Includes platform, parking, bus drop off, etc.
	SUBTOTAL			\$10,914,000		\$2,728,500	\$13,642,500	
7.00	Train Controls & Communications							
7.01	Communications - FO Backbone	14.68 MILE	\$191,670	\$2,812,975	20%	\$562,595	\$3,375,570	2 FO Cables 48str, 4 conduit 2x2 ductbank
7.02	Station Enclosures	1 EA	\$155,732	\$155,732	20%	\$31,146	\$186,878	NEMA5 Cabinets, UPS & Batteries
7.03	VMS (2 per station)	2 EA	\$42,878	\$85,756	20%	\$17,151	\$102,907	Headend Controls and Station Signs, Labor
7.04	TVM (2 per station)	2 EA	\$65,031	\$130,062	20%	\$26,012	\$156,074	Station TVM & Headend Servers
7.05	PA System	1 EA	\$178,649	\$178,649	20%	\$35,730	\$214,379	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
7.06	SCADA - Station	1 EA	\$34,146	\$34,146	20%	\$6,829	\$40,975	PCC & BCC PA Headends, SCADA shelves at Stations



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: GREENVILLE TO WEST TRACY ALTERNATIVE (SECOND TRACK FROM MH TO DT TRACY)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
7.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
7.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
7.09	CCTV	5 EA	\$89,233	\$446,165	20%	\$89,233	\$535,398	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
7.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
7.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
7.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
7.13	Train Control & Signals	14.68 MILE	\$1,964,618	\$28,832,994	20%	\$5,766,599	\$34,599,593	Wayside signals, cab signal / speed, grade xing warning, etc.
				\$33,679,869		\$6,735,974	\$40,415,843	
8.00	Right-of-Way							
8.01	ROW - Mountain House Station	347,494 SF	\$5	\$1,737,470	0%	\$0	\$1,737,470	
	SUBTOTAL			\$1,737,470		\$0	\$1,737,470	
SUBTOTAL				\$208,855,614		\$48,610,955	\$257,466,569	
9.00	Markups		28.00%				\$72,090,639	
TOTAL FOR SEGMENT 2: GREENVILLE TO WEST TRACY ALTERNATIVE (SECOND TRACK FROM MH TO DT TRACY)							\$329,557,209	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: Alignment Quantity Alternative**

DATE: JULY 2020
REV:
PREP. BY: AK
CHKD BY: DV

Drawing No.	Typical Section		Stations		Route Length		Comments
			From	To	Linear Feet	Miles	
TT-D1125-LV	F	Double Track - At-Grade	4690+80	4697+00	620	0.12	
TT-D1201-LA	D1-A	Double Track - Retained F#il	4697+00	4725+00	2,800	0.53	
TT-D1202-LA	D1-A	Double Track - Retained F#il	4725+00	4739+70	1,470	0.28	#15 T.O.
	D1	Single Track - At-Grade	4739+70	4746+00	630	0.12	
	D2	Single Track - At-Grade	4746+00	4748+80	280	0.05	
TT-D1203-LA	H	Single Track in Sub-Way Box	4748+80	4750+00	120	0.02	Grade Separation at Altamont & Carroll Rd
	H	Single Track in Sub-Way Box	4750+00	4753+50	350	0.07	Grade Separation at Altamont & Carroll Rd
	D2	Single Track - At-Grade	4753+50	4768+00	1,450	0.27	
TT-D1204-LA	D1	Single Track - At-Grade	4768+00	4775+00	700	0.13	
	D1	Single Track - At-Grade	4775+00	4790+00	1,500	0.28	
TT-D1205-LA	C2	Single Track - Cut	4790+00	4803+00	1,300	0.25	
	C2	Single Track - Cut	4803+00	4805+00	200	0.04	
TT-D1206-LA	E	Single Track - Fill	4805+00	4825+00	2,000	0.38	Dyer Rd Xing
	D1	Single Track - At-Grade	4825+00	4831+00	600	0.11	
TT-D1207-LA	D2	Single Track - At-Grade	4831+00	4856+00	2,500	0.47	Private Grade Xing No. 1
	D1	Single Track At-Grade	4856+00	4859+00	300	0.06	
TT-D1208-LA	D1	Single Track At-Grade	4859+00	4870+10	1,110	0.21	UPPR Exist Bridge
	D1-A	Double Track - Retained F#il	4870+10	4884+00	1,390	0.26	#15 T.O.
TT-D1209-LA	D1-A	Double Track - Retained F#il	4884+00	4909+00	2,500	0.47	
TT-D1209-LA	G	Double Track - Fill	4909+00	4934+00	2,500	0.47	
TT-D1210-LA	D1-A	Double Track - Retained F#il	4934+00	4941+30	730	0.14	#15 T.O.
	D1	Single Track - At-Grade	4941+30	4945+00	370	0.07	
	D3	Single Track - At-Grade	4945+00	4959+00	1,400	0.27	
TT-D1211-LA	D3	Single Track - At-Grade	4959+00	4965+00	600	0.11	
	D4	Single Track - At-Grade	4965+00	4975+00	1,000	0.19	Private Grade Crossing (Signs) No. 2
	D1	Single Track - At-Grade	4975+00	4981+00	600	0.11	
	J	Single Track Tunnel	4981+00	4984+00	300	0.06	
TT-D1212-LA	J	Single Track Tunnel	4984+00	4992+80	880	0.17	
	D3	Single Track - At-Grade	4992+80	4996+60	380	0.07	Hwy 580
	D4	Single Track - At-Grade	4996+60	5009+00	1,240	0.23	
TT-D1213-LA	D3	Single Track - At-Grade	5009+00	5017+00	800	0.15	
	D4	Single Track - At-Grade	5009+00	5024+30	1,530	0.29	
	G	Double Track - Fill	5017+00	5037+00	2,000	0.38	#15 T.O.
TT-D1214-LA	G	Double Track - Fill	5037+00	5055+00	1,800	0.34	
	D3-A	Double Track - Retained Cut	5055+00	5060+00	500	0.09	
	G	Double Track - Fill	5060+00	5065+00	500	0.09	
TT-D1215-LA	G	Double Track - Fill	5065+00	5072+00	700	0.13	
	F	Double Track - At-Grade	5072+00	5093+00	2,100	0.40	Private Grade Crossing (Signs) No. 3 (24 FT) Jess Ranch Road
TT-D1216-LA	F	Double Track - At-Grade	5093+00	5098+50	550	0.10	
	D1-A	Double Track - Retained F#il	5098+50	5103+70	520	0.10	#15 T.O.
	D1	Single Track - At-Grade	5103+70	5112+00	830	0.16	
	D4	Single Track - At-Grade	5112+00	5121+00	900	0.17	
TT-D1217-LA	D1	Single Track - At-Grade	5121+00	5135+00	1,400	0.27	
	D4	Single Track - At-Grade	5135+00	5146+00	1,100	0.21	
TT-D1218-LA	D4	Single Track - At-Grade	5146+00	5171+00	2,500	0.47	
TT-D1219-LA	D2	Single Track - At-Grade	5171+00	5181+30	1,030	0.20	
	F	Double Track - At-Grade	5181+30	5199+00	1,770	0.34	#15 T.O.

TT-D1220-LA	F	Double Track - At-Grade	5199+00	5214+90	1,590	0.30	Grade Crossing - N Midway Road 50 FT
	D5-A	Double Track - Retained Cut	5214+90	5227+00	1,210	0.23	
TT-D1221-LA	D5-A	Double Track - Retained Cut	5227+00	5252+00	2,500	0.47	
TT-D1222-LA	F	Double Track - At-Grade	5252+00	5277+00	2,500	0.47	Patterson Pass Rd Xing
TT-D1223-LA	F	Double Track - At-Grade	5277+00	5283+70	670	0.13	#15 T.O.
	D2	Single Track - At-Grade	5283+70	5302+00	1,830	0.35	#10 T.O. to OMF do not count
TT-D1234-LA	D2	Single Track - At-Grade	5302+00	5321+80	1,980	0.38	#8 T.O. & #15 T.O. to OMF do not count
	F	Double Track - At-Grade	5321+80	5327+00	520	0.10	#15 T.O.
TT-D1235-LA	F	Double Track - At-Grade	5327+00	5335+40	840	0.16	
	K	Double Track At-Grade with Station Platform	5335+40	5340+40	500	0.09	Mountain House
	F	Double Track - At-Grade	5340+40	5344+70	430	0.08	Station with Parking Lot. Mountain House Via Nicolo Rd Xing
TT-D1236-LA	F	Double Track - At-Grade	5344+70	5361+20	800	0.15	#15 T.O. (x2)
	D2	Single Track - At-Grade	5361+20	5363+80	880	0.17	
	H1	Single Track in Steel Truss Bridge	5363+80	5371+30	230	0.04	California Aqueduct Bridge
	D2	Single Track - At-Grade	5371+30	5373+70	250	0.05	
	F	Double Track - At-Grade	5373+70	5377+00	340	0.06	#15 T.O.
TT-D1237-LA	F	Double Track - At-Grade	5377+00	5386+00	900	0.17	
	K	Double Track At-Grade with Station Platform	5386+00	5390+00	400	0.08	West Tracy Station (Optional)
	F	Double Track - At-Grade	5390+00	5402+00	1,200	0.23	
TT-D1238-LA	F	Double Track - At-Grade	5402+00	5430+00	2,800	0.53	#15 T.O. to OMF and yard lead do not count
TT-D1239-LA	F	Double Track - At-Grade	5430+00	5457+70	2,770	0.52	Don't Count) Private Road Xing
TOTAL					77,490	14.68	

SUMMARY FOR SEGMENT 2 BASE CASE						
Drawing No.	Typical Section		Unit Cost	Linear Feet	Miles	Track Length
TT-D0201-LA	C2	Single Track - Cut	\$272	1,500	0.28	1,500
TT-D0201-LA	D1	Single Track - At-Grade	\$255	8,040	1.52	8,040
TT-D0202-LA	D1-A	Double Track - Retained Fill	\$1,420	9,410	1.78	9,410
TT-D0202-LA	D2	Single Track - At-Grade	\$264	10,200	1.93	10,200
TT-D0202-LA	D3	Single Track At-Grade	\$264	3,180	0.60	3,180
TT-D0202-LA	D3-A	Double Track - Retained Cut	\$2,015	500	0.09	500
TT-D0203-LA	D4	Single Track At-Grade	\$213	8,270	1.57	8,270
TT-D0203-LA	D5	Single Track At-Grade	\$255	-	-	-
TT-D0203-LA	D5-A	Double Track - Retained Cut	\$2,091	3,710	0.70	3,710
TT-D0204-LA	E	Single Track - Fill	\$510	2,000	0.38	2,000
TT-D0204-LA	F	Double Track - At-Grade	\$315	20,400	3.86	40,800
TT-D0205-LA	G	Double Track - Fill	\$1,250	7,500	1.42	15,000
TT-D0205-LA	H	Single Track in Sub-Way Box	\$5,865	470	0.09	470
TT-D0205-LA	H1	Single Track in Steel Truss Bridge (California Aqueduct	\$30,000	230	0.04	230
TT-D0206-LA	J	Single Track Tunnel	\$196	1,180	0.22	1,180
TT-D0206-LA	K	Double Track At-Grade with Station Platform	\$476	900	0.17	1,800
TOTAL				77,490	14.68	106,290

Total # of Turnouts	
#8	with OMF
#10	with OMF
#15	11



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: WITH STONE CUT ALTERNATIVE**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							
1.01	Section C2: Single Track - Cut	1,500 LF	\$272	\$408,000	25%	\$102,000	\$510,000	
1.02	Section D1: Single Track - At-Grade	7,070 LF	\$255	\$1,802,850	25%	\$450,713	\$2,253,563	
1.03	Section D1-A: Double Track - Retained Fill	7,980 LF	\$1,420	\$11,327,610	25%	\$2,831,903	\$14,159,513	
1.04	Section D2: Single Track - At-Grade	12,070 LF	\$264	\$3,180,445	25%	\$795,111	\$3,975,556	
1.05	Section D3: Single Track At-Grade	- LF	\$264	\$0	25%	\$0	\$0	
1.06	Section D3-A: Double Track - Retained Cut	863 LF	\$2,015	\$1,738,514	25%	\$434,628	\$2,173,142	
1.07	Section D4: Single Track At-Grade	4,500 LF	\$213	\$956,250	25%	\$239,063	\$1,195,313	
1.08	Section D5: Single Track At-Grade	- LF	\$255	\$0	25%	\$0	\$0	
1.09	Section D5-A: Double Track - Retained Cut	3,710 LF	\$2,091	\$7,757,610	25%	\$1,939,403	\$9,697,013	At the Altamont Pass Rd. Grade Separation
1.10	Section E: Single Track - Fill	2,000 LF	\$510	\$1,020,000	25%	\$255,000	\$1,275,000	
1.11	Section F: Double Track - At-Grade	31,444 LF	\$315	\$9,889,138	25%	\$2,472,285	\$12,361,423	
1.12	Section G: Double Track - Fill	2,100 LF	\$1,250	\$2,623,950	25%	\$655,988	\$3,279,938	
1.13	Section H: Single Track in Sub-Way Box	470 LF	\$5,865	\$2,756,550	25%	\$689,138	\$3,445,688	
1.14	Section J: Single Track Tunnel	- LF	\$196	\$0	25%	\$0	\$0	
1.15	Section K: Double Track At-Grade with Station Platform	800 LF	\$476	\$380,800	25%	\$95,200	\$476,000	
1.16	Utility Relocation	1 LS	\$3,029,586	\$3,029,586	25%	\$757,396	\$3,786,982	5% of Trackway Civil
1.17	Landslide Stabilizations	1 LS	\$5,000,000	\$5,000,000	25%	\$1,250,000	\$6,250,000	Allowance
	Westbound I-580 Overhead modification	1 LS	\$5,000,000	\$5,000,000	25%	\$1,250,000	\$6,250,000	
	Eastbound I-580 Bridge	180 LF	\$25,000	\$4,500,000	25%	\$1,125,000	\$5,625,000	One bridge each side
1.18	Delta Mendota Canal Bridges	5,000 SF	\$450	\$2,250,000	25%	\$562,500	\$2,812,500	Located at Sta. 5000+00
1.19	Sinkhole Repair Near Tunnel	- LS	\$900,000	\$0	25%	\$0	\$0	
	SUBTOTAL	74,507 LF		\$63,621,302		\$15,905,326	\$79,526,628	
2.00	Tunnel Avoidance Earthwork							
	Tunnel Avoidance Earthwork (Cut)	705,000 CY	\$39	\$27,495,000	25%	\$6,873,750	\$34,368,750	
2.01	Tunnel Avoidance Earthwork (Fill)	568,000 CY	\$39	\$22,152,000	25%	\$5,538,000	\$27,690,000	
	SUBTOTAL			\$22,152,000		\$5,538,000	\$62,058,750	
3.00	Grade Separations - Altamont Pass Rd.							at Carroll Rd.
3.01	Earthwork Common	98,700 CY	\$20	\$1,974,000	25%	\$493,500	\$2,467,500	
3.02	DMU Underpass Structure (Section H)			\$0	25%	\$0	\$0	Included in the Trackway Civilwork above.
3.03	Retaining Wall, MSE	25,000 SF	\$45	\$1,125,000	25%	\$281,250	\$1,406,250	
3.04	Retaining Wall, Type 1	29,930 SF	\$50	\$1,496,500	25%	\$374,125	\$1,870,625	
3.05	Concrete Barrier	2,300 LF	\$40	\$92,000	25%	\$23,000	\$115,000	
3.06	Roadway Construction (Base, Pave, Finishes)	90,000 SF	\$20	\$1,800,000	25%	\$450,000	\$2,250,000	
	SUBTOTAL			\$6,487,500		\$1,621,875	\$8,109,375	
4.00	Grade Crossings							
4.01	Dyer Xing	75 TF	\$638	\$47,813	25%	\$11,953	\$59,766	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.02	Private Road Xing (Active Warning Sign Only) No.1	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.03	Altamont Pass Road	120 TF	\$638	\$76,500	25%	\$19,125	\$95,625	4 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.04	Private Road Xing (Active Warning Sign Only) No.2	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.05	Private Road Xing (Active Warning Sign Only) No.3	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.06	Private Road Xing (Active Warning Sign Only) No.4	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post
4.07	Private Road Xing (Active Warning Sign Only) No. 5 Jess Ranch	25 TF	\$553	\$13,813	25%	\$3,453	\$17,266	2 Active Warning R/R Sign with post



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: WITH STONE CUT ALTERNATIVE**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
4.08	N Midway Road Xing	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.09	Patterson Pass Road Xing at Midway Rd	170 TF	\$638	\$108,375	25%	\$27,094	\$135,469	6 R/R Signal Guard/Gate 1 Signal House 3 Stop Bars
4.10	Via Nicolo Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.11	Hansen Road Xing	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.12	Private Road Xing (Signals) No. 4	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	2 R/R Signal Guard/Gate 1 Signal House 2 Stop Bars
4.13	R/R Xing Signs	6 EA	\$1,275	\$7,650	25%	\$1,913	\$9,563	
4.14	Active Warning R/R Sign with post (with electric service)	10 EA	\$85,000	\$850,000	25%	\$212,500	\$1,062,500	
4.15	Stop Bars	15 EA	\$8,500	\$127,500	25%	\$31,875	\$159,375	
4.16	Signal House (with electric service)	7 EA	\$212,500	\$1,487,500	25%	\$371,875	\$1,859,375	
4.17	Crossing Gate & Flasher	20 EA	\$255,000	\$5,100,000	25%	\$1,275,000	\$6,375,000	
	SUBTOTAL			\$7,989,150		\$1,997,288	\$9,986,438	
5.00	Trackwork - Ballast / Ties / Rail / T.O.							
5.01	Mainline Track (Rail-Ties-Ballast)	121,404 TF	\$350	\$42,491,400	15%	\$6,373,710	\$48,865,110	Including sidings
5.02	Turnout No. 11	1 EA	\$250,000	\$250,000	10%	\$25,000	\$275,000	
5.03	Turnout No. 15	7 EA	\$350,000	\$2,450,000	10%	\$245,000	\$2,695,000	
5.04	Turnout Signals	8 EA	\$325,000	\$2,600,000	10%	\$260,000	\$2,860,000	
5.05	Signal House	8 EA	\$200,000	\$1,600,000	10%	\$160,000	\$1,760,000	
	SUBTOTAL			\$49,391,400		\$7,063,710	\$56,455,110	
6.00	Stations							For details see station estimate worksheet
6.01	Mountain House Station	1 LS	\$10,914,000	\$10,914,000	25%	\$2,728,500	\$13,642,500	Includes platform, parking, bus drop off, etc.
	SUBTOTAL			\$10,914,000		\$2,728,500	\$13,642,500	
7.00	Train Controls & Communications							
7.01	Communications - FO Backbone	14.11 MILE	\$191,670	\$2,704,689	20%	\$540,938	\$3,245,627	2 FO Cables 48str, 4 conduit 2x2 ductbank
7.02	Station Enclosures	1 EA	\$155,732	\$155,732	20%	\$31,146	\$186,878	NEMA5 Cabinets, UPS & Batteries
7.03	VMS (2 per station)	2 EA	\$42,878	\$85,756	20%	\$17,151	\$102,907	Headend Controls and Station Signs, Labor



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: WITH STONE CUT ALTERNATIVE**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
7.04	TVM (2 per station)	2 EA	\$65,031	\$130,062	20%	\$26,012	\$156,074	Station TVM & Headend Servers
7.05	PA System	1 EA	\$178,649	\$178,649	20%	\$35,730	\$214,379	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor
7.06	SCADA - Station	1 EA	\$34,146	\$34,146	20%	\$6,829	\$40,975	PCC & BCC PA Headends, SCADA shelves at Stations
7.07	SCADA - Radio Site	4 EA	\$34,146	\$136,583	20%	\$27,317	\$163,899	PCC & BCC PA Headends, SCADA shelves Radio Sites
7.08	VNF V&D Radio	4 EA	\$93,439	\$373,757	20%	\$74,751	\$448,508	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
7.09	CCTV	5 EA	\$89,233	\$446,165	20%	\$89,233	\$535,398	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
7.10	Master Clock	1 EA	\$76,668	\$76,668	20%	\$15,334	\$92,002	GPS Satellite Radio & Antenna
7.11	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
7.12	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
7.13	Train Control & Signals	14.11 MILE	\$1,964,618	\$27,723,060	20%	\$5,544,612	\$33,267,672	Wayside signals, cab signal / speed, grade xing warning, etc.
				\$32,461,649		\$6,492,330	\$38,953,978	
8.00	Right-of-Way							
8.01	ROW - Mountain House Station	347,494 SF	\$5	\$1,737,470	0%	\$0	\$1,737,470	
	SUBTOTAL			\$1,737,470		\$0	\$1,737,470	
	SUBTOTAL			\$222,249,471		\$48,220,778	\$270,470,249	
9.00	Markups		28.00%				\$75,731,670	
	TOTAL FOR SEGMENT 2: WITH STONE CUT ALTERNATIVE						\$346,201,918	2018 Dollars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 2: Alignment Quantity Stone Cut Alternative**

DATE: JULY 2020

REV :

PREP. BY: AK

CHKD BY: DV

Drawing No.	Typical Section	Stations		Route Length		Comments	
		From	To	Linear Feet	Miles		
TT-D1125-LV	F	Double Track - At-Grade	4690+80	4697+00	620	0.12	
TT-D1201-LA	D1-A	Double Track - Retained Fill	4697+00	4725+00	2,800	0.53	
TT-D1202-LA	D1-A	Double Track - Retained Fill	4725+00	4739+70	1,470	0.28	#15 T.O.
	D1	Single Track - At-Grade	4739+70	4746+00	630	0.12	
	D2	Single Track - At-Grade	4746+00	4748+80	280	0.05	
	H	Single Track in Sub-Way Box	4748+80	4750+00	120	0.02	Grade Separation at Allamont & Carroll Rd
TT-D1203-LA	H	Single Track in Sub-Way Box	4750+00	4753+50	350	0.07	Grade Separation at Allamont & Carroll Rd
	D2	Single Track - At-Grade	4753+50	4768+00	1,450	0.27	
	D1	Single Track - At-Grade	4768+00	4775+00	700	0.13	
TT-D1204-LA	D1	Single Track - At-Grade	4775+00	4790+00	1,500	0.28	
	C2	Single Track - Cut	4790+00	4803+00	1,300	0.25	
TT-D1205-LA	C2	Single Track - Cut	4803+00	4805+00	200	0.04	
	E	Single Track - Fill	4805+00	4825+00	2,000	0.38	Dyer Rd Xing
	D1	Single Track - At-Grade	4825+00	4831+00	600	0.11	
TT-D1206-LA	D2	Single Track - At-Grade	4831+00	4856+00	2,500	0.47	Private Grade Xing No.1 75' x 250' MOW Laydown ADD 300 ft of Track
	D1	Single Track At-Grade	4856+00	4859+00	300	0.06	
TT-D1207-LA	D1	Single Track At-Grade	4859+00	4870+10	1,110	0.21	UPPR Exist Bridge
	D1-A	Double Track - Retained Fill	4870+10	4884+00	1,390	0.26	#15 T.O.
TT-D1208A-LA	D1-A	Double Track - Retained Fill	4884+00	4902+00	1,800	0.34	
	F	Double Track - At-Grade	4902+00	4909+00	700	0.13	
TT-D1209A-LA	F	Double Track - At-Grade	4909+00	4934+00	2,500	0.47	
TT-D1210A-LA	F	Double Track - At-Grade	4934+00	4959+00	2,500	0.47	
TT-D1211A-LA	F	Double Track - At-Grade	4959+00	4984+00	2,500	0.47	
TT-D1212A-LA	F	Double Track - At-Grade	4984+00	5009+00	2,500	0.47	
TT-D1213A-LA	F	Double Track - At-Grade	5009+00	5020+64	1,164	0.22	
	D3-A	Double Track - Retained Cut	5042+37	5046+00	363	0.07	
TT-D1214A-LA	G	Double Track - Fill	5046+00	5055+00	900	0.17	
	D3-A	Double Track - Retained Cut	5055+00	5060+00	500	0.09	
	G	Double Track - Fill	5060+00	5065+00	500	0.09	
TT-D1215-LA	G	Double Track - Fill	5065+00	5072+00	700	0.13	
	F	Double Track - At-Grade	5072+00	5093+00	2,100	0.40	Private Grade Crossing (Signs) No. 3 (24 FT) Jess Ranch Road
TT-D1216-LA	F	Double Track - At-Grade	5093+00	5098+50	550	0.10	
	D1-A	Double Track - Retained Fill	5098+50	5103+70	520	0.10	#15 T.O
	D1	Single Track - At-Grade	5103+70	5112+00	830	0.16	
	D4	Single Track - At-Grade	5112+00	5121+00	900	0.17	
TT-D1217-LA	D1	Single Track - At-Grade	5121+00	5135+00	1,400	0.27	
	D4	Single Track - At-Grade	5135+00	5146+00	1,100	0.21	
TT-D1218-LA	D4	Single Track - At-Grade	5146+00	5171+00	2,500	0.47	
TT-D1219-LA	D2	Single Track - At-Grade	5171+00	5181+30	1,030	0.20	

	F	Double Track - At-Grade	5181+30	5199+00	1,770	0.34	#15 T.O.
TT-D1220-LA	F	Double Track - At-Grade	5199+00	5214+90	1,590	0.30	Grade Crossing - N Midway Road 50 FT
	D5-A	Double Track - Retained Cut	5214+90	5227+00	1,210	0.23	
TT-D1221-LA	D5-A	Double Track - Retained Cut	5227+00	5252+00	2,500	0.47	
TT-D1222-LA	F	Double Track - At-Grade	5252+00	5277+00	2,500	0.47	Patterson Pass Rd Xing
TT-D1223-LA	F	Double Track - At-Grade	5277+00	5283+70	670	0.13	#15 T.O.
	D2	Single Track - At-Grade	5283+70	5302+00	1,830	0.35	#10 T.O. to OMF do not count
TT-D1224-LA	D2	Single Track - At-Grade	5302+00	5323+10	2,110	0.40	#8 T.O. & #15 T.O. to OMF do not count
	F	Double Track - At-Grade	5323+10	5327+00	390	0.07	#15 T.O.
TT-D1225-LA	F	Double Track - At-Grade	5327+00	5335+70	870	0.16	
	K	Double Track At-Grade with Station Platform	5335+70	5339+70	400	0.08	Mountain House
	F	Double Track - At-Grade	5339+70	5344+60	490	0.09	#11 T.O.
	D2	Single Track - At-Grade	5344+60	5352+00	740	0.14	Station with Parking Lot. Mountain House Via Nicolo Rd Xing
TT-D1226-LA	D2	Single Track - At-Grade	5352+00	5373+30	2,130	0.40	California Aqueduct Bridge
	F	Double Track - At-Grade	5373+30	5377+00	370	0.07	#15 T.O.
TT-D1227-LA	F	Double Track - At-Grade	5377+00	5386+00	900	0.17	
	K	Double Track At-Grade with Station Platform	5386+00	5390+00	400	0.08	West Tracy Station (Optional)
	F	Double Track - At-Grade	5390+00	5402+00	1,200	0.23	
TT-D1228-LA	F	Double Track - At-Grade	5402+00	5430+00	2,800	0.53	#15 T.O. to OMF and yard lead do not count
TT-D1229-LA	F	Double Track - At-Grade	5430+00	5457+60	2,760	0.52	#15 T.O./ OMF and Yard Lead Don't Count) Private Road Xing No. 4 Medota Canal
TOTAL					74,507	14.11	

SUMMARY FOR SEGMENT 2 BASE CASE						
Drawing No.	Typical Section		Unit Cost 2018\$	Linear Feet	Miles	Track Length
TT-D0201-LA	C2	Single Track - Cut	\$272	1,500	0.28	1,500
TT-D0201-LA	D1	Single Track - At-Grade	\$255	7,070	1.34	7,070
TT-D0202-LA	D1-A	Double Track - Retained Fill	\$1,420	7,980	1.51	15,960
TT-D0202-LA	D2	Single Track - At-Grade	\$264	12,070	2.29	12,070
TT-D0202-LA	D3	Single Track At-Grade	\$264	-	-	-
TT-D0202-LA	D3-A	Double Track - Retained Cut	\$2,015	863	0.16	1,726
TT-D0203-LA	D4	Single Track At-Grade	\$213	4,500	0.85	4,500
TT-D0203-LA	D5	Single Track At-Grade	\$255	-	-	-
TT-D0203-LA	D5-A	Double Track - Retained Cut	\$2,091	3,710	0.70	7,420
TT-D0204-LA	E	Single Track - Fill	\$510	2,000	0.38	2,000
TT-D0204-LA	F	Double Track - At-Grade	\$315	31,444	5.96	62,888
TT-D0205-LA	G	Double Track - Fill	\$1,250	2,100	0.40	4,200
TT-D0205-LA	H	Single Track in Sub-Way Box	\$5,865	470	0.09	470
TT-D0206-LA	J	Single Track Tunnel	\$196	-	-	-
TT-D0206-LA	K	Double Track At-Grade with Station Platform	\$476	800	0.15	1,600
TOTAL				74,507	14.11	121,404

Total # of Turnouts	
#8	with OMF
#10	with OMF
#11	1
#15	7



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - OPTION A: WEST TRACY TO N.LATHROP STATION (SHARED EXISTING UPRR TRACK)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							SHARED EXISTING UPRR TRACK
1.01	Trackway - Shared Existing Track	82,630 TF	\$94	\$7,725,905	25%	\$1,931,476	\$9,657,381	Upgrade Existing UPRR Track
1.02	Trackway - New Siding	36,960 TF	\$315	\$11,623,920	25%	\$2,905,980	\$14,529,900	Siding Trackway Only.
1.03	Utility Relocations	1 LS	\$1,969,491	\$1,969,491	25%	\$492,373	\$2,461,864	5% of Trackway Civil
1.04	Paradise Cut Bridge - Trestle Section	690 LF	\$16,000	\$11,040,000	25%	\$2,760,000	\$13,800,000	
1.05	Paradise Cut Bridge - Main Span Section	300 LF	\$30,000	\$9,000,000	25%	\$2,250,000	\$11,250,000	
	SUBTOTAL			\$9,000,000		\$2,250,000	\$11,250,000	
2.00	Grade Crossings							Mainly using existing grade crossings with the exception of Lammers & Central.
2.01	S. Lammers Rd. New	50 TF	\$750	\$37,500	25%	\$9,375	\$46,875	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.02	N. Central Ave. New	90 TF	\$750	\$67,500	25%	\$16,875	\$84,375	1 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.03	N. Central Ave. Improvement	100 TF	\$550	\$55,000	25%	\$13,750	\$68,750	
2.04	Stop Bars	2 EA	\$10,000	\$20,000	25%	\$5,000	\$25,000	
2.05	New Signal House	1 EA	\$200,000	\$200,000	25%	\$50,000	\$250,000	
2.06	Remove Signal House	1 EA	\$50,000	\$50,000	25%	\$12,500	\$62,500	
2.07	Relocate R/R Signal Guard/Gate	2 EA	\$100,000	\$200,000	25%	\$50,000	\$250,000	
	SUBTOTAL			\$630,000		\$157,500	\$787,500	
3.00	Trackwork - Ballast / Ties / Rail / T.O.							
3.01	Shared Existing UPRR Track Improvement to Existing Trackwork	82,630 TF	\$150	\$12,394,500	15%	\$1,859,175	\$14,253,675	
3.02	Siding Track (Rail-Ties-Ballast)	36,960 TF	\$350	\$12,936,000	15%	\$1,940,400	\$14,876,400	
3.03	#11 Turnout	5 EA	\$250,000	\$1,250,000	10%	\$125,000	\$1,375,000	
3.04	#15 Turnout	5 EA	\$350,000	\$1,750,000	10%	\$175,000	\$1,925,000	
3.05	Turnout Signals	10 EA	\$325,000	\$3,250,000	10%	\$325,000	\$3,575,000	
3.06	Signal House	10 EA	\$200,000	\$2,000,000	10%	\$200,000	\$2,200,000	
	SUBTOTAL			\$33,580,500		\$4,624,575	\$38,205,075	
4.00	Stations							(For details see station estimate worksheet)
4.01	Downtown Tracy Station	1 LS	\$9,968,000	\$9,968,000	25%	\$2,492,000	\$12,460,000	Includes platform, parking, bus drop off, etc.
4.02	River Island Station	1 LS	\$12,330,000	\$12,330,000	25%	\$3,082,500	\$15,412,500	Includes platform, parking, bus drop-off, pedestrian bridge, etc.
4.03	North Lathrop Station (Connection to ACE)	1 LS	\$15,461,500	\$15,461,500	25%	\$3,865,375	\$19,326,875	Includes platform, parking expansion, pedestrian bridge, etc.
	SUBTOTAL			\$37,759,500		\$9,439,875	\$47,199,375	
5.00	Train Controls & Communications							Signals, Train Control, Communications, & Radio System
5.01	Communications - FO Backbone	15.65 MILE	\$200,000	\$3,129,921	20%	\$625,984	\$3,755,905	2 FO Cables 48str, 4 conduit 2x2 ductbank
5.02	Station Enclosures	3 EA	\$162,500	\$487,500	20%	\$97,500	\$585,000	NEMA5 Cabinets, UPS & Batteries
5.03	VMS (2 per station)	6 EA	\$44,741	\$268,449	20%	\$53,690	\$322,138	Headend Controls and Station Signs, Labor
5.04	TVM (2 per station)	6 EA	\$67,857	\$407,143	20%	\$81,429	\$488,571	Station TVM & Headend Servers



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - OPTION A: WEST TRACY TO N.LATHROP STATION (SHARED EXISTING UPRR TRACK)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
5.05	PA System	3 EA	\$186,414	\$559,241	20%	\$111,848	\$671,089	Signals AVL, Labor
5.06	SCADA - Station	3 EA	\$35,630	\$106,889	20%	\$21,378	\$128,267	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	2 EA	\$35,630	\$71,259	20%	\$14,252	\$85,511	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	2 EA	\$97,500	\$195,000	20%	\$39,000	\$234,000	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	5 EA	\$93,111	\$465,555	20%	\$93,111	\$558,666	Wall Displays
5.10	Telephone	1 LS	\$169,479	\$169,479	20%	\$33,896	\$203,375	2 Headend IP PBXs, Help Pole IP Phones
5.11	PCC & BCC	1 LS	\$65,000	\$65,000	20%	\$13,000	\$78,000	
5.12	Train Control & Signals	15.65 MILE	\$2,050,000	\$32,081,723	20%	\$6,416,345	\$38,498,068	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$38,007,159		\$7,601,432	\$45,608,591	
6.00	Right-of-Way							
6.01	ROW - Downtown Tracy Station	324,784 SF	\$9	\$2,923,056	0%	\$0	\$2,923,056	
6.02	ROW - River Island Station	1,020,351 SF	\$0	\$0	0%	\$0	\$0	Project.
6.03	ROW - North Lathrop Station (Not Required)	- SF	\$0	\$0	0%	\$0	\$0	SJRRC will purchase the land.
	SUBTOTAL			\$2,923,056		\$0	\$2,923,056	
SUBTOTAL				\$154,259,531		\$32,163,211	\$186,422,742	
7.00	Markups		28.00%				\$52,198,368	
TOTAL FOR SEGMENT 3 - OPTION A: WEST TRACY TO N.LATHROP STATION (SHARED EXISTING UPRR TRACK)							\$238,621,110	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3A: Alignment Quantity (Shared Existing UPRR Track)**

DATE: JULY 2020
REV. BY: AK
PREP. BY: TR
CHKD BY:

Drawing No.	Typical Section	Stations		Route Length		Shared Existing UPRR Track	Siding Track	Grade Xing	Turnouts	Turnout Type
		From	To	Linear Feet	Miles	Linear Feet	Linear Feet		Each	#
TT-D1301-TU	Shared Existing UPRR Track	5458+50	5486+00	2,750	0.52	2,750	1,600		1	#15
TT-D1302-TU	Shared Existing UPRR Track	5486+00	5514+00	2,800	0.53	2,800		Lammers Road (New)		
TT-D1303-TU	Shared Existing UPRR Track	5514+00	5542+00	2,800	0.53	2,800				
TT-D1304-TU	Shared Existing UPRR Track	5542+00	5570+00	2,800	0.53	2,800				
TT-D1305-TU	Shared Existing UPRR Track	5570+00	5598+00	2,800	0.53	2,800		Corral Hollow Rd (Existing)		
TT-D1306-TU	Shared Existing UPRR Track	5598+00	5626+00	2,800	0.53	2,800		W Schulte Rd (Existing)		
TT-D1307-TU	Shared Existing UPRR Track	5626+00	5654+00	2,800	0.53	2,800		Tracy Blvd (Existing)		
TT-D1308-TU	Shared Existing UPRR Track / Downtown Tracy Station	5654+00	5682+00	2,800	0.53	2,800	2,610	N. Central (New)	1	#11
TT-D1309-TU	Shared Existing UPRR Track	5682+00	5710+00	2,800	0.53	2,800	830	N. Macarthur (Existing)	3	#11
TT-D1310-TU	Shared Existing UPRR Track	5710+00	5738+00	2,800	0.53	2,800				
TT-D1311-TU	Shared Existing UPRR Track	5738+00	5766+00	2,800	0.53	2,800				
TT-D1312-TU	Shared Existing UPRR Track	5766+00	5794+00	2,800	0.53	2,800				
TT-D1313-TU	Shared Existing UPRR Track	5794+00	5822+00	2,800	0.53	2,800		Banta Road (Existing)		
TT-D1314-TU	Shared Existing UPRR Track	5822+00	5850+00	2,800	0.53	2,800		Grant Line Rd (Existing)		
TT-D1315-TU	Shared Existing UPRR Track	5850+00	5878+00	2,800	0.53	2,800				
TT-D1316-TU	Shared Existing UPRR Track	5878+00	5906+00	2,800	0.53	2,800				
TT-D1317-TU	Shared Existing UPRR Track	5906+00	5934+00	2,800	0.53	2,800	800		1	#20
TT-D1318-TU	Shared Existing UPRR Track	5934+00	5962+00	2,800	0.53	2,800	2,800			
TT-D1319-TU	Shared Existing UPRR Track / Paradise Cut Bridge	5962+00	5990+00	2,800	0.53	2,800	4,850		1	#20
TT-D1320-TU	Shared Existing UPRR Track / River Island Station	5990+00	6018+00	2,800	0.53	2,800	5,430		1	#20
TT-D1321-TU	Shared Existing UPRR Track	6018+00	6046+00	2,800	0.53	2,800	1,780		1	#15
TT-D1322-TU	Shared Existing UPRR Track / SJ River Bridge (Existing)	6046+00	6074+00	2,800	0.53	2,800		Stewart Rd (Existing)		
TT-D1323-TU	Shared Existing UPRR Track	6074+00	6102+00	2,800	0.53	2,800	1,070		1	#20
TT-D1324-TU	Shared Existing UPRR Track	6102+00	6130+00	2,800	0.53	2,800	2,800		1	#15
TT-D1325-TU	Shared Existing UPRR Track	6130+00	6158+00	2,800	0.53	2,800	2,800	D' Arcy Pkwy (Existing)		
TT-D1326-TU	Shared Existing UPRR Track	6158+00	6186+00	2,800	0.53	2,800	2,800			
TT-D1327-TU	Shared Existing UPRR Track	6186+00	6214+00	2,800	0.53	2,800	1,560		2	#20
TT-D1328-TU	Shared Existing UPRR Track	6214+00	6242+00	2,800	0.53	2,800			1	#11
TT-D1329-TU	Shared Existing UPRR Track	6242+00	6270+00	2,800	0.53	2,800	2,270		2	#15
TT-D1330-TU	Shared Existing UPRR Track / North Lathrop Station	6270+00	6284+80	1,480	0.28	1,480	2,960			
TOTAL				82,630	15.65	82,630	36,960		16	

Total # of	
#11	5
#15	5
#20	6
Total	16



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - OPTION B: WEST TRACY TO N.LATHROP STATION (SECOND TRACK)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Trackway Civilwork							NEW DEDICATED TRACK IN UPRR ROW (SECOND TRACK)
1.01	Trackway - New Track	93,360 TF	\$255	\$23,806,800	25%	\$5,951,700	\$29,758,500	Propose New Track with Existing UPRR
1.02	Trackway - New Siding	23,850 TF	\$315	\$7,500,825	25%	\$1,875,206	\$9,376,031	Siding Trackway Only.
1.03	Utility Relocations	1 LS	\$2,841,178	\$2,841,178	25%	\$710,295	\$3,551,473	5% of Trackway Civil
1.04	I-5 Abutment Retaining Wall	2,900 SF	\$64	\$184,875	25%	\$46,219	\$231,094	290 ft x 10 ft H
1.05	Hwy 20 Ramp to I-5 Retaining Wall	750 SF	\$64	\$47,813	25%	\$11,953	\$59,766	75 ft x 10 ft H
1.06	Paradise Cut Bridge - Tressle Section	690 LF	\$13,600	\$9,384,000	25%	\$2,346,000	\$11,730,000	Bridge Dimensions: 990 ft L x 19 ft W
1.07	Paradise Cut Bridge - Main Span Section	300 LF	\$25,500	\$7,650,000	25%	\$1,912,500	\$9,562,500	
1.08	San Joaquin River Bridge - Tressle Section	317 LF	\$10,200	\$3,233,400	25%	\$808,350	\$4,041,750	Bridge Dimensions: 612 ft L x 24 ft W
1.09	San Joaquin River Bridge - Main Span Section	295 LF	\$25,500	\$7,522,500	25%	\$1,880,625	\$9,403,125	
1.10	Manthey Rd Bridge	90 LF	\$12,750	\$1,147,500	25%	\$286,875	\$1,434,375	
	SUBTOTAL			\$63,318,891		\$15,829,723	\$79,148,613	
2.00	Grade Crossings							
2.01	S. Lammers Rd. New	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.02	Corral Hollow Rd New	130 TF	\$638	\$82,875	25%	\$20,719	\$103,594	2 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.03	Schulte Rd. New	110 TF	\$638	\$70,125	25%	\$17,531	\$87,656	2 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.04	Tracy Blvd. New	120 TF	\$638	\$76,500	25%	\$19,125	\$95,625	2 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.05	N. Central Ave. New	90 TF	\$638	\$57,375	25%	\$14,344	\$71,719	1 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.06	N. Central Ave. Improvement	100 TF	\$468	\$46,750	25%	\$11,688	\$58,438	
2.07	N. Macarthur Dr. New	60 TF	\$638	\$38,250	25%	\$9,563	\$47,813	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.08	Banta Rd, New	50 TF	\$638	\$31,875	25%	\$7,969	\$39,844	1 Relocate R/R Signal Guard/Gate 1 Existing Signal House to Remain 1 New Stop Bars
2.09	6th St. New	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars
2.10	7th St. New	30 TF	\$638	\$19,125	25%	\$4,781	\$23,906	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - OPTION B: WEST TRACY TO N.LATHROP STATION (SECOND TRACK)**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT	
					%	AMOUNT			
2.11	Grant Line Rd. New	60 TF	\$638	\$38,250	25%	\$9,563	\$47,813	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars	
2.12	Steward Rd Improvement	80 TF	\$468	\$37,400	25%	\$9,350	\$46,750	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars	
2.13	D'Arcy Pkwy New	90 TF	\$638	\$57,375	25%	\$14,344	\$71,719	2 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars	
2.14	E. Louise Ave New	40 TF	\$638	\$25,500	25%	\$6,375	\$31,875	1 Relocate R/R Signal Guard/Gate 1 New Signal House 1 Remove Signal House 1 New Stop Bars	
2.15	Stop Bars	13 EA	\$8,500	\$110,500	25%	\$27,625	\$138,125		
2.16	New Signal House	8 EA	\$212,500	\$1,700,000	25%	\$425,000	\$2,125,000		
2.17	Remove Signal House	7 EA	\$42,500	\$297,500	25%	\$74,375	\$371,875		
2.18	Relocate R/R Signal Guard/Gate	17 EA	\$255,000	\$4,335,000	25%	\$1,083,750	\$5,418,750		
SUBTOTAL					\$7,081,775		\$1,770,444	\$8,852,219	
3.00	Trackwork - Ballast / Ties / Rail / T.O.								
3.01	New Track (Rail-Ties-Ballast)	93,360 TF	\$350	\$32,676,000	15%	\$4,901,400	\$37,577,400		
3.02	Siding Track (Rail-Ties-Ballast)	23,850 TF	\$350	\$8,347,500	15%	\$1,252,125	\$9,599,625		
3.03	#11 Turnout	25 EA	\$250,000	\$6,250,000	10%	\$625,000	\$6,875,000		
3.04	#15 Turnout	4 EA	\$350,000	\$1,400,000	10%	\$140,000	\$1,540,000		
3.05	#20 Turnout	4 EA	\$400,000	\$1,600,000	10%	\$160,000	\$1,760,000		
3.05	Turnout Signals	33 EA	\$325,000	\$10,725,000	10%	\$1,072,500	\$11,797,500		
3.06	Signal House	33 EA	\$200,000	\$6,600,000	10%	\$660,000	\$7,260,000		
SUBTOTAL					\$67,598,500		\$8,811,025	\$76,409,525	
4.00	Stations								
4.01	Downtown Tracy Station	1 LS	\$9,968,000	\$9,968,000	25%	\$2,492,000	\$12,460,000	(For details see station estimate worksheet) Includes platform, parking, bus drop off, etc.	
4.02	River Island Station	1 LS	\$12,330,000	\$12,330,000	25%	\$3,082,500	\$15,412,500	Includes platform, parking, bus drop-off, pedestrian bridge, etc.	
4.03	North Lathrop Station (Connection to ACE)	1 LS	\$15,461,500	\$15,461,500	25%	\$3,865,375	\$19,326,875	Includes platform, parking expansion, pedestrian bridge, etc.	
SUBTOTAL					\$37,759,500		\$9,439,875	\$47,199,375	
5.00	Train Controls & Communications								
5.01	Communications - FO Backbone	15.65 MILE	\$191,670	\$2,999,563	20%	\$599,913	\$3,599,475	Signals, Train Control, Communications, & Radio System	
5.02	Station Enclosures	3 EA	\$155,732	\$467,196	20%	\$93,439	\$560,635	2 FO Cables 48str, 4 conduit 2x2 ductbank	
5.03	VMS (2 per station)	6 EA	\$42,878	\$257,268	20%	\$51,454	\$308,721	NEMA5 Cabinets, UPS & Batteries	
5.04	TVM (2 per station)	6 EA	\$65,031	\$390,185	20%	\$78,037	\$468,222	Headend Controls and Station Signs, Labor	
5.05	PA System	3 EA	\$178,649	\$535,948	20%	\$107,190	\$643,138	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3 - OPTION B: WEST TRACY TO N.LATHROP STATION (SECOND TRACK)**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
5.06	SCADA - Station	3 EA	\$34,146	\$102,437	20%	\$20,487	\$122,925	PCC & BCC PA Headends, SCADA shelves at Stations
5.07	SCADA - Radio Site	2 EA	\$34,146	\$68,291	20%	\$13,658	\$81,950	PCC & BCC PA Headends, SCADA shelves Radio Sites
5.08	VNF V&D Radio	2 EA	\$93,439	\$186,878	20%	\$37,376	\$224,254	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS
5.09	CCTV	5 EA	\$89,233	\$446,165	20%	\$89,233	\$535,398	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
5.10	Telephone	1 LS	\$162,420	\$162,420	20%	\$32,484	\$194,904	2 Headend IP PBXs, Help Pole IP Phones
5.11	PCC & BCC	1 LS	\$253,963	\$253,963	20%	\$50,793	\$304,755	
5.12	Train Control & Signals	15.65 MILE	\$1,964,618	\$30,745,520	20%	\$6,149,104	\$36,894,624	Wayside signals, cab signal / speed, grade xing warning, etc.
	SUBTOTAL			\$36,615,834		\$7,323,167	\$43,939,001	
6.00	Right-of-Way							
6.01	ROW - Downtown Tracy Station	324,784 SF	\$9	\$2,923,056	0%	\$0	\$2,923,056	
6.02	ROW - River Island Station	1,020,351 SF	\$0	\$0	0%	\$0	\$0	Assume River Island ROW Provided by River Island Development Project.
6.03	ROW - North Lathrop Station (Not Required)	- SF	\$0	\$0	0%	\$0	\$0	SJRRC will purchase the land.
	SUBTOTAL			\$2,923,056		\$0	\$2,923,056	
SUBTOTAL				\$215,297,556		\$43,174,233	\$258,471,789	
7.00	Markups		28.00%				\$72,372,101	
TOTAL FOR SEGMENT 3 - OPTION B: WEST TRACY TO N.LATHROP STATION (SECOND TRACK)							\$330,843,890	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
SEGMENT 3B: Alignment Quantity (Second Track)**

DATE: JULY 2020
REV.:
PREP. BY: AK
CHKD BY: DV

Drawing No.	Typical Section	Stations		Route Length		New Track Linear Feet	Siding Track Linear Feet	Grade Xing	Turnouts		Turnout Type
		From	To	Linear Feet	Miles				Each	#	
TT-D1401-TU	New Propose Track	5458+50	5486+00	2,750	0.52	2,750	1,660		1	#15	
TT-D1402-TU	New Propose Track	5486+00	5514+00	2,800	0.53	2,800		S. Lammers Rd.			
TT-D1403-TU	New Propose Track	5514+00	5542+00	2,800	0.53	2,800					
TT-D1404-TU	New Propose Track	5542+00	5570+00	2,800	0.53	2,800					
TT-D1405-TU	New Propose Track	5570+00	5598+00	2,800	0.53	2,800		Corral Hollow Rd.	2	#11	
TT-D1406-TU	New Propose Track	5598+00	5626+00	2,800	0.53	2,800		W. Schulte Rd			
TT-D1407-TU	New Propose Track	5626+00	5654+00	2,800	0.53	4,200		Tracy Blvd	2	#11	
TT-D1408-TU	New Propose Track / DT Tracy Station	5654+00	5682+00	2,800	0.53	5,600		N. Central Ave	2	#11	
TT-D1409-TU	New Propose Track	5682+00	5710+00	2,800	0.53	3,330		N. Macarthur Dr	8	#11	
TT-D1410-TU	New Propose Track	5710+00	5738+00	2,800	0.53	2,800					
TT-D1411-TU	New Propose Track	5738+00	5766+00	2,800	0.53	2,800					
TT-D14112TU	New Propose Track	5766+00	5794+00	2,800	0.53	2,800					
TT-D1413-TU	New Propose Track	5794+00	5822+00	2,800	0.53	2,800		Banta Rd			
TT-D1414-TU	New Propose Track	5822+00	5850+00	2,800	0.53	2,800		6th St S. 7th St Grant Line Rd			
TT-D1415-TU	New Propose Track	5850+00	5878+00	2,800	0.53	2,800					
TT-D1416-TU	New Propose Track	5878+00	5906+00	2,800	0.53	4,400					
TT-D1417-TU	New Propose Track	5906+00	5934+00	2,800	0.53	5,600	820		1	#20	
TT-D1418-TU	New Propose Track	5934+00	5962+00	2,800	0.53	4,400	2,800		2	#15	
TT-D1419-TU	New Propose Track / Paradise Cut Bridge (990' L x 19' W)	5962+00	5990+00	2,800	0.53	2,800	2,800				
TT-D1420-TU	New Propose Track / River Island Station	5990+00	6018+00	2,800	0.53	2,800	2,610		1	#20	
TT-D1421-TU	New Propose Track	6018+00	6046+00	2,800	0.53	2,800					
TT-D1422-TU	New Propose Track / SJ River Bridge (512' L x 24' W)	6046+00	6074+00	2,800	0.53	2,800		Stewart Rd			
TT-D1423-TU	New Propose Track	6074+00	6102+00	2,800	0.53	2,800	1,060		1	#20	
TT-D1424-TU	New Propose Track	6102+00	6130+00	2,800	0.53	2,800	2,800		1	#11	
TT-D1425-TU	New Propose Track	6130+00	6158+00	2,800	0.53	2,800	2,800	D'Arcy Pkwy			
TT-D1426-TU	New Propose Track	6158+00	6186+00	2,800	0.53	2,800	2,800		1	#20	
TT-D1427-TU	New Propose Track	6186+00	6214+00	2,800	0.53	2,800	1,650	Louise Ave	4	#11	
TT-D1428-TU	New Propose Track	6214+00	6242+00	2,800	0.53	2,800			3	#11	
TT-D1429-TU	New Propose Track	6242+00	6270+00	2,800	0.53	2,800	570		3	#11	
TT-D1430-TU	New Propose Track / N. Lathrop Station	6270+00	6284+80	1,480	0.28	1,480	1,480		1	#15	
TOTAL				82,630	15.65	93,360	23,850		33		

Total # of	
#11	25
#15	4
#20	4
Total	33



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): MOUNTAIN HOUSE**

DATE: JULY 2020
REV:
PREP. BY: DSH
CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
1.00	Yard Trackwork							
1.01	Storage Track (Rail-Ties-Ballast)	15,270 TF	\$300	\$4,581,000	15%	\$687,150	\$5,268,150	
1.02	S&I Track (Rail-Ties-Ballast)	4,120 TF	\$300	\$1,236,000	15%	\$185,400	\$1,421,400	
1.04	MOW Track	750 TF	\$300	\$225,000	15%	\$33,750	\$258,750	
1.05	Yard Track	1,040 TF	\$300	\$312,000	15%	\$46,800	\$358,800	
1.03	Shop Track	2,100 TF	\$300	\$630,000	15%	\$94,500	\$724,500	
1.06	# 8 Turnouts	23 EA	\$200,000	\$4,600,000	10%	\$460,000	\$5,060,000	
1.04	# 10 Turnouts	1 EA	\$225,000	\$225,000	10%	\$22,500	\$247,500	
1.05	Turnout No. 15	1 EA	\$350,000	\$350,000	10%	\$35,000	\$385,000	
1.07	Turnout Yard Signals	25 EA	\$325,000	\$8,125,000	10%	\$812,500	\$8,937,500	
	SUBTOTAL			\$20,284,000		\$2,377,600	\$22,661,600	
2.00	Facilities / Shop							
2.01	Train Wash Equipment Building	1 LS	\$1,200,000	\$1,200,000	30%	\$360,000	\$1,560,000	
2.02	Maintenance Shop / Storage / Workshops	100,000 SF	\$300	\$30,000,000	30%	\$9,000,000	\$39,000,000	
2.03	Fuel & Sanding Bulk	1 LS	\$6,900,000	\$6,900,000	30%	\$2,070,000	\$8,970,000	
	SUBTOTAL			\$38,100,000		\$11,430,000	\$49,530,000	
3.00	Civilwork							
3.01	Clearing & Grub Area	25 ACRE	\$5,000	\$125,000	25%	\$31,250	\$156,250	
3.02	Earthwork (Allowance)	1 LS	\$7,500,000	\$7,500,000	25%	\$1,875,000	\$9,375,000	Major cut & fill earthwork with sometype of earth retaining system.
3.03	Grading	144,444 SY	\$10	\$1,444,444	25%	\$361,111	\$1,805,556	
3.04	Parking Lot	76 SPACE	\$3,000	\$228,000	25%	\$57,000	\$285,000	
3.05	Yard Lighting	1 LS	\$1,000,000	\$1,000,000	25%	\$250,000	\$1,250,000	
3.06	Fencing	75,100 LF	\$65	\$4,881,500	25%	\$1,220,375	\$6,101,875	
3.07	Gates	4 EA	\$5,000	\$20,000	25%	\$5,000	\$25,000	
3.08	Access Road 4800' L x 30'W	144,000 SF	\$8	\$1,152,000	25%	\$288,000	\$1,440,000	
3.09	Yard Overhead Catenary System	23,280 TF	\$200	\$4,656,000	25%	\$1,164,000	\$5,820,000	
3.10	Solar Farm	5 ACRE	\$500,000	\$2,500,000	25%	\$625,000	\$3,125,000	
3.11	Drainage	##### \$	5%	\$817,547	25%	\$204,387	\$1,021,934	
3.12	Utilities	##### \$	3%	\$490,528	25%	\$122,632	\$613,160	
	SUBTOTAL			\$24,815,020		\$6,203,755	\$31,018,775	
4.00	Train Controls & Communications							
4.01	FO Backbone Switches and WAN Access Pts	1 LS	\$1,000,000	\$1,000,000	20%	\$200,000	\$1,200,000	PCC, BCC, Radio Sites, Yard Transmission Equipment and NMS
4.02	CCTV	1 EA	\$100,000	\$100,000	20%	\$20,000	\$120,000	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays
4.03	Train Control Room Allowance	1 EA	\$1,000,000	\$1,000,000	20%	\$200,000	\$1,200,000	For Dispatch, SCADA, Central Control, etc.
4.04	Yard Train Control System Allowance	1 LS	\$500,000	\$500,000	20%	\$100,000	\$600,000	
	SUBTOTAL			\$2,600,000		\$520,000	\$3,120,000	
5.00	Right-of-Way							
5.01	ROW - OMF	1,324,000 SF	\$5	\$6,620,000	0%	\$0	\$6,620,000	
	SUBTOTAL			\$6,620,000		\$0	\$6,620,000	
SUBTOTAL				\$92,419,020		\$20,531,355	\$112,950,375	



**TRI-VALLEY SAN JOAQUIN VALLEY
VALLEY LINK PROJECT
15% PRELIMINARY ENGINEERING FINAL ESTIMATE
OPERATION MAINTENANCE & STORAGE FACILITY (OMF): MOUNTAIN HOUSE**

DATE: JULY 2020

REV:

PREP. BY: DSH

CHKD BY: DV

ITEM NO.	DESCRIPTION	QUANTITY	UNIT COST	BASED AMOUNT	CONTINGENCY		TOTAL AMOUNT WITH CONTINGENCY	COMMENT
					%	AMOUNT		
6.00	Markups		28.00%				\$31,626,105	
TOTAL FOR OPERATION MAINTENANCE & STORAGE FACILITY (OMF): MOUNTAIN HOUSE							\$144,576,480	

Attachment 4

Typical Sections Composite Worksheets

Unit Prices

Composite Worksheets

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
01	GENERAL REQUIREMENTS	
0151101	Traffic Control	\$110.00 lf
0156495	Barricade 42"	\$98.00 lf
0156497	Gate to Extended Platform	\$11,482.00 ea
0156501	Install Temporary Barrier Fencing	\$29.00 lf
0156505	Buffer Zone Crash Wall	\$45,928.00 ls
0156507	Erosion Control - Frontage Roads	\$18.00 lf
0156510	Erosion Control	\$18.00 rf
0156512	Erosion Control - I-580	\$11.00 lf
02	EXISTING CONDITIONS	
0211225	Remove Shoring and Temporary Fencing	\$46.00 tf
	Remove Guardrail	\$0.00
0211495	Hazardous Material Handling Allowance	\$114.00 rf
0211500	Environmental Mitigation Allowance	\$86.00 rf
0231005	Demolition	\$57.00 rf
0231007	Pavement Demolition	\$13.00 sy
0231009	Sawcutting	\$9.00 lf
0231013	Clear and Grubbing	\$29.00 rf
0231015	Clear and Grub Frontage Road	\$2.00 sy
0231025	Demolition of UPRR Track (Single Track) DMU Option Only	\$57.00 tf
0231027	Demolish BART Trackwork (incl Ballast)	\$86.00 tf
0231031	Demolish Existing BART Transportation Building (incl disposal)	\$172.00 sf
0231033	Demolish Underpass Bridge Structure (incl. Disposal)	\$114.00 sf
0231035	Demolish Bridge Structure (incl. Disposal)	\$114.00 sf
0231043	Remove Crossover	\$22,964.00 ea
0231045	BART Track Removal	\$86.00 tf
0262119	Modify Drainage	\$34.00 tf
03	CONCRETE	
0302000	Abutment Foundations (All-in Cost) (Forms, Concrete, & Rebar)	\$919.00 cy
0302005	Abutment Walls (All-in Cost) (Forms, Concrete, & Rebar)	\$919.00 cy
0302010	Footing, Piers (All-in Cost) (Forms, Concrete, & Rebar)	\$1,114.00 cy
0302020	Pier Column and Caps	\$1,254.00 cy
0302040	Precast Prestressed Girder	\$1,378.00 lf
0302060	Post Tensioning	\$1.00 \$
0302070	Concrete Deck	\$919.00 cy
0302075	U-Wall (Walls)	\$919.00 cy
0302080	U-Wall (Slab)	\$919.00 cy
0302090	Concrete Roof Slab	\$927.00 cy
0302091	Concrete Exterior Walls	\$827.00 cy
0302092	Concrete Interior Wall	\$877.00 cy
0302093	Concrete SOG	\$775.00 cy
0307011	Plinth Concrete incl Reinf & Forms	\$1,033.00 cy
0320150	Approach Slab (All-in Cost) (Forms, Concrete, & Rebar)	\$862.00 cy
0320160	Concrete Barrier with Metal Railing	\$132.00 lf
0370101	Platform for DMU Stations	\$114.00 sf
0370102	Raised Platform Structure with Cableway Space	\$172.00 sf

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
0370105	Concourse Structure	\$172.00 sf
0370109	Canopy Structure	\$138.00 sf
0370110	Cross Walk (Over Tracks)	\$29.00 sf
0370117	Ped Bridge Struct.	\$172.00 sf
0370120	Pedestrian Ramp	\$57,410.00 ea
0370151	Retaining Walls	\$75.00 sf
0370160	Retaining Walls	\$919.00 cy
0370165	Retaining Wall Foundation	\$459.00 cy
0370167	Pier Protection Wall	\$132.00 sf
0370175	Emergency Stairs to Bailey Rd	\$86,115.00 ea
0370181	Stair Risers	\$919.00 ea
0384101	Walkway	\$29.00 lf
0391105	PC P/S Concrete Box Girder, 6.5' H x 16' W	\$5,606.00 lf
0391107	Concrete Box Girder, 5' H x 15' W (Typical BART Station)	\$3,444.00 lf
04	MASONRY	
0442204	Sound Wall - 10ft H Incl Footings	\$344.00 lf
05	METALS	
0565500	Steel Plate Girders	\$4,593.00 ton
0565510	X-Bracing & Stiffeners for Steel Plate Girders	\$8,612.00 ton
0565512	Steel Box Beams	\$11,482.00 ton
0565514	Drainage, Aerial Structure	\$57.00 lf
0565518	Handrails, Tunnel	\$18.00 lf
0565520	Handrails	\$230.00 lf
06	WOOD & PLASTICS	
07	THERMAL & MOISTURE PROTECTION	
0765500	Waterproofing	\$2.00 sf
08	DOORS & WINDOWS	
09	ARCHITECTURAL FINISHES	
10	SPECIALTIES	
1014190	Frontage Road Signage Allowance	\$22,964.00 ls
1091155	Architectural Railing	\$98.00 lf
1091161	Architectural Finishes (Includes Signage, Furnishings, Specialities, etc.)	\$98.00 sf
11	INDUSTRIAL EQUIPMENT	
12	FURNISHINGS	
13	SPECIAL CONSTRUCTION	
1321101	BART Transportation Building	\$517.00 sf
1321111	Maintenance Facility: Shop Areas	\$230.00 sf
1321115	Maint Facility: Cont Twr/Transp & Admn Areas	\$287.00 sf
1321181	Maintenance Facility - Shop Equipment Allowance	\$1.00 \$
1321183	Maintenance Facility - MOW Equipment & Tools	\$1,148,200.00 ls
1321185	Maintenance Facility - Waste Water Treatment	\$401,870.00 ls
1321189	Maintenance Facility - Fuel Storage Tanks	\$229,640.00 ls
1331101	At Grade Intersection: Roadwork, Signage & Striping	\$57,410.00 ea
1331105	At Grade Intersection: Traffic Signals	\$287,050.00 ea
1331201	Maintenance Facility- Site Prep & Grading	\$8,612.00 ac
1331206	Maintenance Facility- Misc Site Work, Lighting Security	\$1,148,200.00 ls
1331209	Maintenance Facility- Site Remediation	\$287,050.00 ls

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
1331213	Maintenance Facility- Relocate Existing Utilities	\$1,148,200.00 ls
1351201	Maintenance Facility- New Site Utilities	\$2,870,501.00 ls
1365201	Maintenance Facility - Lead & Storage Tracks	\$172.00 tf
1365205	Maintenance Facility - Special Trackwork Allowance	\$2,296,400.00 ls
1372121	Maintenanace Facility- Landscaping Allowance	\$172,230.00 ls
14	CONVEYING SYSTEMS	
1451101	Elevator - Station incl Structure	\$287,050.00 ea
23	MECHANICAL	
2355101	Fire Protection	\$4.00 sf
2355120	Tunnel Fire Protection	\$287.00 lf
2355201	Mechanical & Plumbing	\$29.00 sf
26	ELECTRICAL	
2615501	4 - 4" PVC in Concrete	\$57.00 lf
2615505	4 x 4 x 4 pull boxes every 500 ft	\$2,297.00 ea
2615529	16-4" GRS Conduit Riser to Train Control	\$746.00 lf
2671101	Management & Initial Analyses & Submittals	\$2,870,501.00 ls
2671105	Analyses, Manuals, Training, Records	\$287,050.00 ls
2671109	Design, Reviews, Plans	\$287,050.00 ls
2671112	Lighting & Power Tunnel	\$402.00 lf
2671113	Equipment and Cable Delivery	\$1,148,200.00 ls
2671117	Equipment Installation - Stage 1	\$287,050.00 ls
2671121	Equipment Installation - Stage 2	\$287,050.00 ls
2671125	Equipment Installation - Stage 3	\$401,870.00 ls
2671129	Night-time & Staging Inefficiencies	\$574,101.00 ls
2671133	Static Test	\$287,050.00 ls
2671137	Dynamic Test	\$57,410.00 ls
2671141	New DB to TC Room - W End of Platform (Assumed 16-4" PVC)	\$287.00 lf
2671145	New Ductbank E of PBP (Assumed 16-4"PVC)	\$287.00 lf
2671149	Modify Cable Tray System	\$68,892.00 ls
2671153	Transfer Cabling to New Duct bank	\$287,050.00 ls
2671155	Site Preparation - Train Control & Signals	\$50,521.00 ls
2671161	Reconstruct TC Vertical Ductbank over Existing Vault MH #799	\$71,188.00 ls
2671181	Management, Mobilization	\$1,148,200.00 ls
2671185	Design, Review, Products	\$861,150.00 ls
2671189	Testing - Signaling	\$172.00 hrs
2671193	Home Signals	\$20,668.00 ea
2671197	Intermediate Signals	\$14,123.00 ea
2671201	Wayside Cab Signals	\$13,778.00 ea
2671205	Train Control Onboard Equipment	\$36,743.00 ea
2671209	DC Coded Track Circuit	\$13,778.00 ea
2671217	Switch Machine	\$43,631.00 ea
2671221	Electronic Interlocking	\$137,784.00 ea
2671225	Train Control House / Rooms	\$32,150.00 ea
2671229	Cases	\$20,668.00 ea
2671233	Central Control (Yard)	\$918,561.00 ea
2671237	3#2 Wire - Power to House	\$9.00 lf
2671241	3#6 Wire - Power to Case	\$8.00 lf

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
2671245	19#14 Cable - Case to Case / Case to House	\$9.00 lf
2671249	2#6 - Track Circuit Cable	\$6.00 lf
2671251	4#12 Cable - Signal	\$7.00 lf
2671253	Batteries, Chargers, Entrance Racks	\$3,674.00 ea
2671254	Power Drops, Each Location	\$57,410.00 ea
2671255	Conduit	\$574,101.00 ls
2671259	Yard	\$36,743.00 ls
2671263	Grade Crossing - Warning Predictors	\$103,338.00 ea
2671265	Grade Crossing - Gates & Mechanisms	\$86,115.00 ea
2671501	Fare Collection System - Allowance @ DMU Station	\$1,148,200.00 ls
2671505	Fare Collection System - Allowance @ DMU Transfer Station	\$2,296,400.00 ls
2672501	Site Preparation - Third rail	\$57,410.00 ls
2672505	Jack Pipe incl Pits & Mob/Demob	\$1,148.00 lf
2672509	Ductbanks - Stage 1 (Assume 24-4")	\$344.00 tf
2672513	Ductbanks - Stage 2 (Assume 24-4")	\$344.00 tf
2672517	Ductbanks - Stage 3 (Assume 24-4")	\$344.00 tf
2672518	34.5 KV Ductbank	\$471.00 lf
2672519	Systemwide Cable Trench	\$459.00 lf
2672521	Design, Drawings, Reviews	\$287,050.00 ls
2672525	Gap Breaker Station	\$1,090,791.00 ea
2672529	Contact Rail (for both Tracks) - Furnish & Install	\$92.00 tf
2672533	Insulators - Furnish & Install	\$114.00 ea
2672537	Coverboard - Furnish & Install	\$29.00 lf
2672541	Contact Rail (for both Tracks) - Install	\$46.00 tf
2672545	Insulators - Install	\$46.00 ea
2672549	Coverboard - Install	\$11.00 lf
2672553	Cabling	\$574,101.00 ls
2672557	Staging	\$172,230.00 ls
2672561	Testing	\$114,820.00 ls
2673109	Relocation of Signs	\$1,470.00 ea
2673113	Cabling - Communications	\$14,697.00 ls
2673117	Transportation Building and Trail Tracks	\$36,743.00 ls
2673501	PA System @ Stations	\$32,150.00 ea
2673505	Central Equipment at Yard	\$48,224.00 ls
2673509	Station Comm Equipment	\$20,668.00 ea
2673513	Station Signs	\$2,067.00 ea
2673517	Wayside Installation - Fiber Optic	\$4,822,441.00 ls
2674101	SCADA Revisions	\$207.00 hrs
2674105	Data Tables	\$110.00 hrs
2674109	Displays/Controls	\$138.00 hrs
2674113	Miscellaneous	\$184.00 hrs
2674117	Testing - Central Control	\$172.00 hrs
2681151	Electrical	\$29.00 sf
28	ELECTRONIC SAFETY & SECURITY	
2874501	Intrusion & CCTV	\$8,956.00 ea
2874505	SCADA	\$25,260.00 ea

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
27	COMMUNICATIONS	
2773101	PA System @ Station	\$32,150.00 ea
2773105	CCTV System	\$8,956.00 ls
2774509	Train Radio System - 2 Tower & Base	\$401,870.00 ea
2774513	On-Board Radios & Portables	\$9,874.00 ea
2774517	Software Systems	\$482,244.00 ls
2774521	Communication House	\$25,260.00 ea
2774525	Phone System in TC Rooms	\$7,807.00 ea
2774529	Testing - Communications	\$113.00 hrs
31	EARTHWORK	
3111550	6" Sand Underdrain	\$23.00 cy
3121222	Excavation	\$34.00 cy
3121224	Backfill Native Soil	\$7.00 cy
3121226	Hauling	\$26.00 cy
3131009	Grading	\$4.00 sy
3131010	Grading - I-580	\$4.00 sy
3131012	Subgrade Preparation - I-580	\$2.00 sy
3131014	Subgrade Preparation - Frontage Roads	\$6.00 sy
3131017	Imported Fill	\$52.00 cy
3131019	Aggregate Base	\$29.00 cy
3131038	Earthwork - Station	\$17,223.00 ls
3137120	Concrete Piles - 12" Dia x 70' Long Precast (70 Ton Cap)	\$4,593.00 ea
3137122	Concrete Piles - 14" Dia x 70' Long Precast (70 Ton Cap)	\$5,166.00 ea
3137124	Abutment Piles - 24" Dia x 50' Long Precast	\$2,871.00 ea
3137126	Steel Piles - 16" Dia x 70' Long Precast (100 Ton Cap)	\$8,037.00 ea
3137136	Drilled Caissons 36" Dia with Steel Casing	\$344.00 lf
3137138	Drilled Caissons 3.5' Dia with Steel Casing	\$689.00 lf
3137148	CIDH 8' dia.	\$915.00 lf
3161220	Temporary Shoring (SF)	\$52.00 sf
3161223	Temporary Shoring (LF, Avg 10' H)	\$459.00 lf
3161230	Support of Excavation, C&C Tunnel Work	\$75.00 sf
3162111	Underdrain System (Incl Cross Drainage)	\$34.00 lf
3185135	Excavation (Trackwork)	\$29.00 tf
32	EXTERIOR IMPROVEMENTS	
3201132	Fog Seal Coat	\$4.00 sy
3211231	11" Aggregate Subbase	\$23.00 sy
3211232	6" Cement Treated Base	\$34.00 sy
3211234	4" AC Pavement	\$37.00 sy
3211236	9" Aggregate Base	\$23.00 sy
3211238	Filter Fabric	\$17.00 sy
3213134	9" PCC incl Reinforcement & Joints	\$46.00 sy
3217231	Pavement Delineation	\$3.00 lf
3217235	Pavement Markers/Reflectors	\$9.00 ea
3263115	Pump Station Addition Allowance	\$114,820.00 ls
3264500	Drainage Structure Extension	\$114,820.00 ea
3272105	Landscaping	\$29.00 rf
3282525	Parking Area - Sitework, Paving, Drainage & Lighting	\$29.00 sf

AECOM UNIT COST LIBRARY

(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
3282533	Access Roads - Sitework, Paving, Drainage & Lighting	\$29.00 sf
3282601	Roadwork at Grade Separations	\$229,640.00 ls
3282603	Roadwork at Street - Type 1	\$172,230.00 ls
3282605	Roadwork at Street - Type 2	\$229,640.00 ls
3282610	Additional Roadwork for At-Grade X'ing	\$57,410.00 ls
3282613	Street Closure (Civil Cul-de-sac Work)	\$57,410.00 ls
3283101	MSE Wall	\$29.00 sf
3283105	MSE Wall - Additional Backfill	\$57.00 cy
3283109	MSE Wall - Barrier Slab + Barrier + Railing	\$86.00 lf
3284105	Barrier Type 2, 10' High	\$230.00 lf
3284106	Concrete Barrier (2' Wide, 4' High)	\$306.00 lf
3284107	Concrete Barrier (Caltrans Type 60SE)	\$247.00 lf
3284113	Chain Link Fence 8'H	\$40.00 lf
3284114	Fencing	\$40.00 lf
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	\$52.00 lf
3284116	CL-WA Fence (Barrier Type 2 Mtd), 2.5' High	\$40.00 lf
3284117	CL-WA Fence (Retaining Wall Mtd), 6' High	\$63.00 lf
3284135	Geotextile / Erosion Control	\$18.00 lf
3285127	Bridge (Creek / Canal)	\$459.00 sf
3285129	Underpass Bridge Structure Modification	\$746.00 sf
3285133	Typical Bridge Structure Modification	\$689.00 sf
33	UTILITIES	
3341130	Drainage	\$18.00 lf
3341132	Tunnel Drainage	\$23.00 lf
3341134	Frontage Road Drainage	\$33.00 lf
3362115	Utility Relocation Allowance	\$114.00 rf
3362117	Frontage Road Utility Relocation Allowance	\$114.00 lf
3363105	Relocate Utilities at Grade Crossing	\$57,410.00 ea
3363109	Utility Allowance at Grade Separation	\$114,820.00 ea
3391000	Trench Excavation	\$11.00 cy
3391100	Trench Bedding	\$44.00 cy
3391200	Trench Backfill	\$27.00 cy
3391300	Trench Shoring	\$4.00 sf
3391400	Pot Holing	\$2,297.00 ea
3392100	Remove & Dispose Coated Steel Pipe 12" dia	\$92.00 lf
3392200	Furnish & Install Coated Steel Pipe 12" dia	\$184.00 lf
3392300	Cathodic Protection	\$11.00 lf
3392400	Testing & Commissioning	\$12,056.00 ls
34	TRANSPORTATION	
3465011	Furnish 115# Rail	\$40.00 tf
3465015	Furnish 119# Rail	\$46.00 lf
3465019	Furnish 136# Rail	\$63.00 tf
3465023	Furnish Concrete Ties & Fasteners	\$155.00 ea
3465031	Distribute & Install 115# Rail & Conc Ties	\$34.00 tf
3465032	Distribute & Install 115# Rail	\$29.00 tf
3465039	Distribute & Install 136# Rail & Conc Ties	\$57.00 tf
3465051	Pandrol Direct Fixation Fasteners (24" Spacing)	\$57.00 ea

AECOM UNIT COST LIBRARY

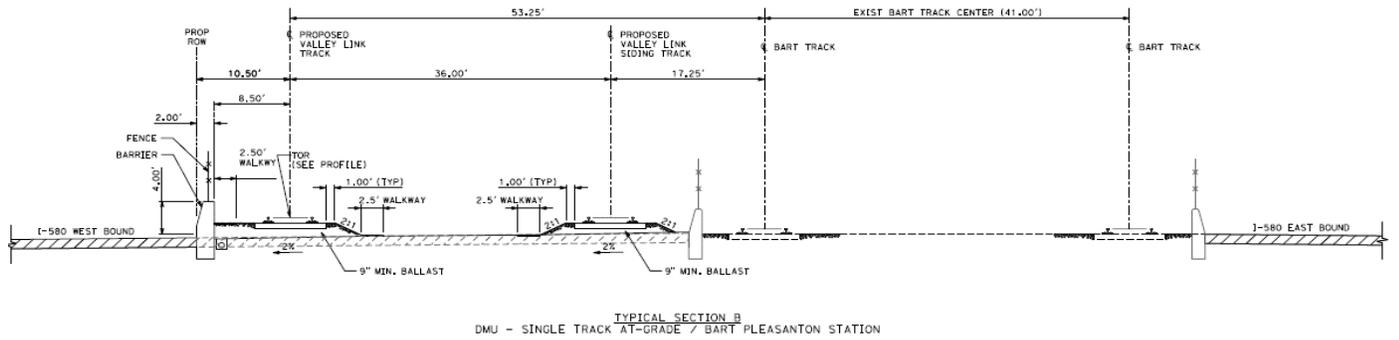
(Based on the AECOM's BART to Livermore Project Study dated May 2009)

Code	Description	Unit Price (Escalated to 2018)
3465081	#20 Turnout Ballasted, Furn & Install	\$160,748.00 ea
3465083	#20 Turnout Ballasted, Furn & Install (136#)	\$241,122.00 ea
3465086	#15 Turnout Ballasted, Furn & Install	\$142,377.00 ea
3465088	#15 Turnout Ballasted, Furn & Install (136#)	\$213,565.00 ea
3465091	#10 Turnout Ballasted, Furn & Install	\$128,599.00 ea
3465093	#10 Turnout Ballasted, Furn & Install (136#)	\$192,898.00 ea
3484119	Subballast	\$35.00 cy
3484123	Ballast	\$45.00 cy
3484124	Additional Cost Working Adjacent to Railroad	\$172.00 lf
3484125	At-Grade Trackwork BART (Including Ballast, Ties, & Rail)	\$0.00 0
3490001	Overhead Catenary System (Single Track)	\$227.00 lf
3490002	Overhead Catenary System (Double Track)	\$346.00 lf
3490003	Overhead Catenary System (In Tunnel)	\$120.00 lf
3490004	Traktion Power Substation	\$6,900,000.00 lf

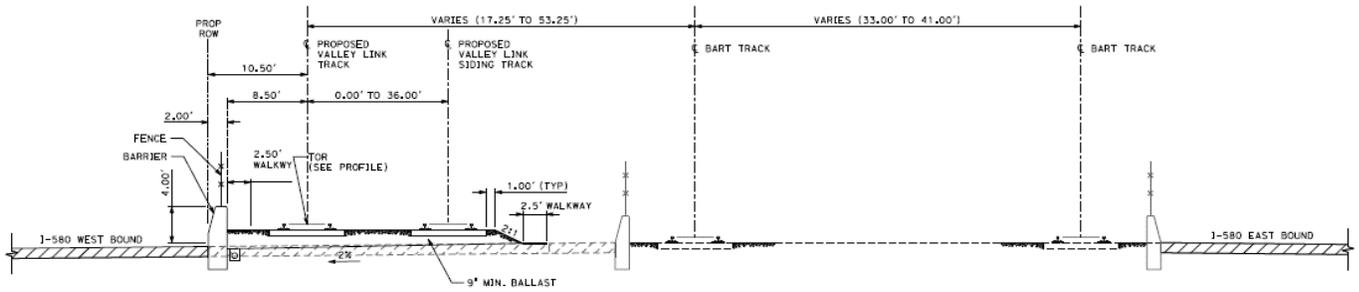
TYPICAL SECTIONS UNIT COST SUMMARY

DESCRIPTION	UNIT PRICE	
SEGMENT 1		
Typical Section B - Double Track At-Grade / BART D/P Station	\$631	RF
Typical Section C - Double Track At-Grade / BART D/P Station - Tail Track	\$631	RF
Typical Section C1 - Single Track Aerial	\$8,349	RF
Typical Section C2 - Single Track Aerial on Straddle Bent	\$10,499	RF
Typical Section C3 - Double Track Aerial on Straddle Bent	\$16,127	RF
Typical Section C3A - Double Track Aerial on Straddle Bent with Platform	\$16,854	RF
Typical Section D - Single Track At-Grade / BART Tail Track	\$585	RF
Typical Section E - Single Track At-Grade Along I-580	\$1,096	RF
Typical Section E1 - Double Track At-Grade Along I-580	\$1,174	RF
Typical Section E2 - Double Track At-Grade Along I-580	\$1,174	RF
Typical Section G - Single Track At Overcrossing Pier	\$2,275	RF
Typical Section L - Double Track At-Grade	\$454	RF
Typical Section M1 - Double Track at Isabel Station	\$1,119	RF
SEGMENT 2		
Typical Section C2 - Single Track in Cut	\$272	RF
Typical Section D1 - Single Track At-Grade	\$255	RF
#REF!	#REF!	RF
Typical Section D1-A - Double Track On Retained Fill	\$1,420	RF
Typical Section D2 - Single Track At-Grade	\$264	RF
Typical Section D3 - Single Track At-Grade	\$264	RF
Typical Section D3-A - Double Track in Retained Cut	\$2,015	RF
Typical Section D4 - Single Track At-Grade	\$213	RF
Typical Section D5 - Single Track At-Grade	\$255	RF
Typical Section D5-A - Double Track in Retained Cut	\$2,091	RF
Typical Section E - Single Track on Fill	\$510	RF
Typical Section F - Double Track At-Grade	\$315	RF
Typical Section G - Double Track on Fill	\$1,250	RF
Typical Section H - Single Track in Subway Box	\$5,865	RF
Typical Section J - Single Track in Existing Tunnel	\$196	RF
Typical Section K - Double Track At-Grade with Station Platform	\$476	RF
SEGMENT 3A		
Typical Section - Shared Existing UPRR Track	\$94	RF
Typical Section - Shared Existing UPRR Track with Siding	\$315	RF

DESCRIPTION	UNIT PRICE
SEGMENT 3B	
Typical Section - Proposed Double Track	\$255 RF

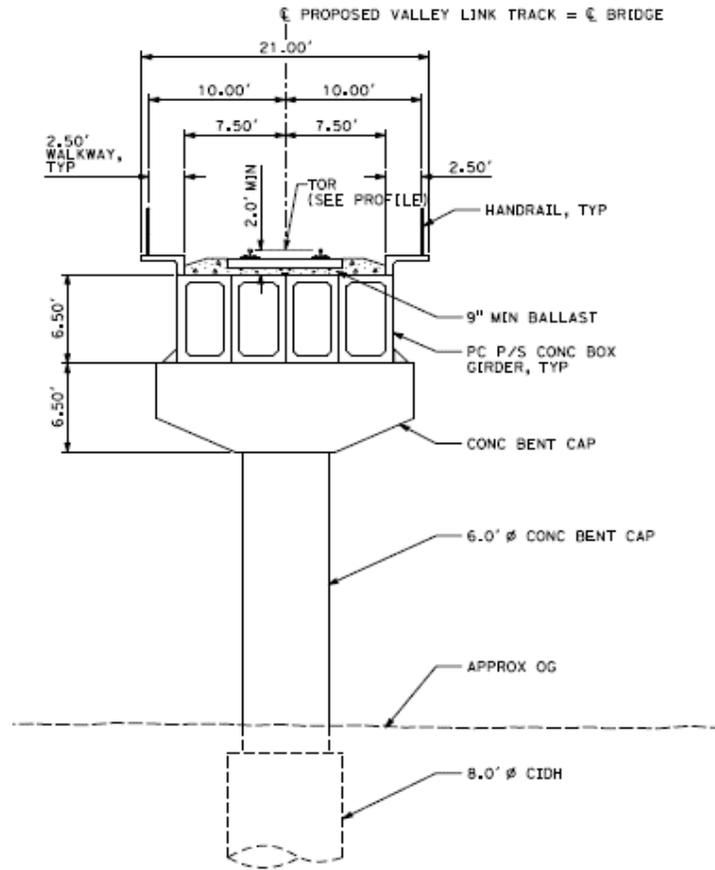


Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section B - Double Track At-Grade / BART D/P Station	1,000 RF		
0151101	Traffic Control	1,000 lf	\$110.00	\$110,000
0231009	Sawcutting	2,000 lf	\$9.00	\$18,000
0231007	Pavement Demolition	167 sy	\$13.00	\$2,167
3121222	Excavation	167 cy	\$34.00	\$5,667
3121226	Hauling	217 cy	\$26.00	\$5,633
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3284106	Concrete Barrier (2' Wide, 4' High)	1,000 lf	\$306.00	\$306,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	1,000 lf	\$52.00	\$52,000
3484123	Ballast	875 cy	\$45.00	\$39,375
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$631	\$630,842
			USE	\$631 / RF



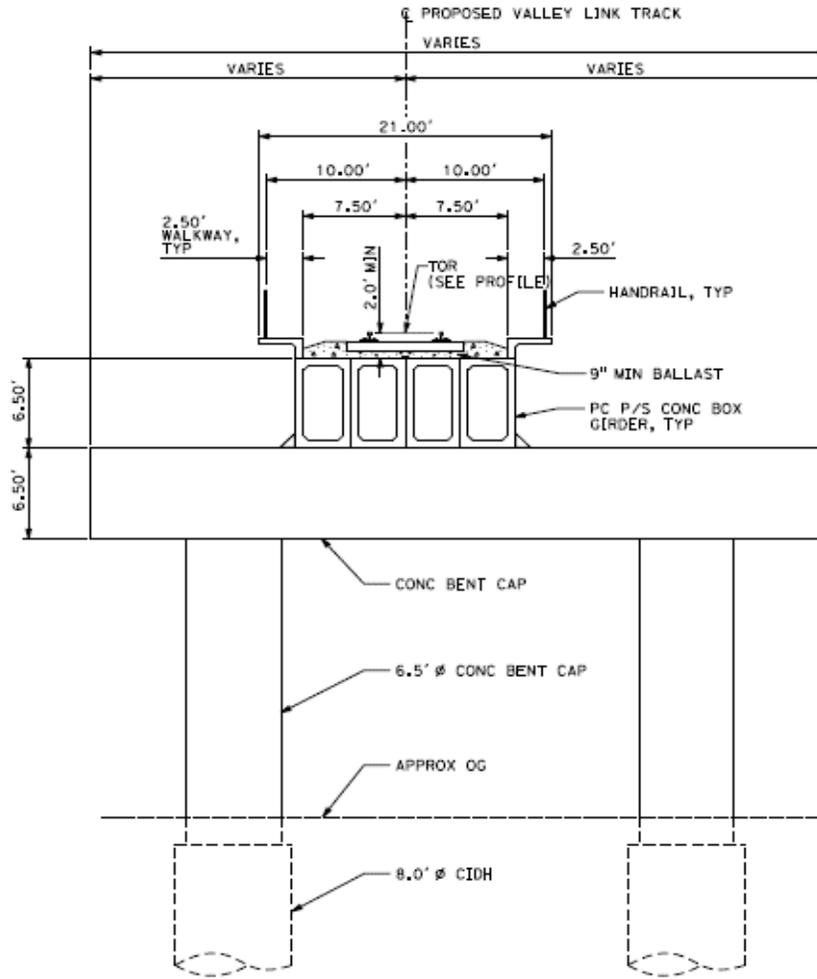
TYPICAL SECTION C
DMU - DOUBLE TRACK AT-GRADE / BART PLEASANTON STATION-TAIL TRACK

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section C - Double Track At-Grade / BART D/P Station - Tail Track	1,000 RF		
0151101	Traffic Control	1,000 lf	\$110.00	\$110,000
0231009	Sawcutting	2,000 lf	\$9.00	\$18,000
0231007	Pavement Demolition	167 sy	\$13.00	\$2,167
3121222	Excavation	167 cy	\$34.00	\$5,667
3121226	Hauling	217 cy	\$26.00	\$5,633
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3284106	Concrete Barrier (2' Wide, 4' High)	1,000 lf	\$306.00	\$306,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	1,000 lf	\$52.00	\$52,000
3484123	Ballast	875 cy	\$45.00	\$39,375
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$631	\$630,842
			USE	\$631 / RF



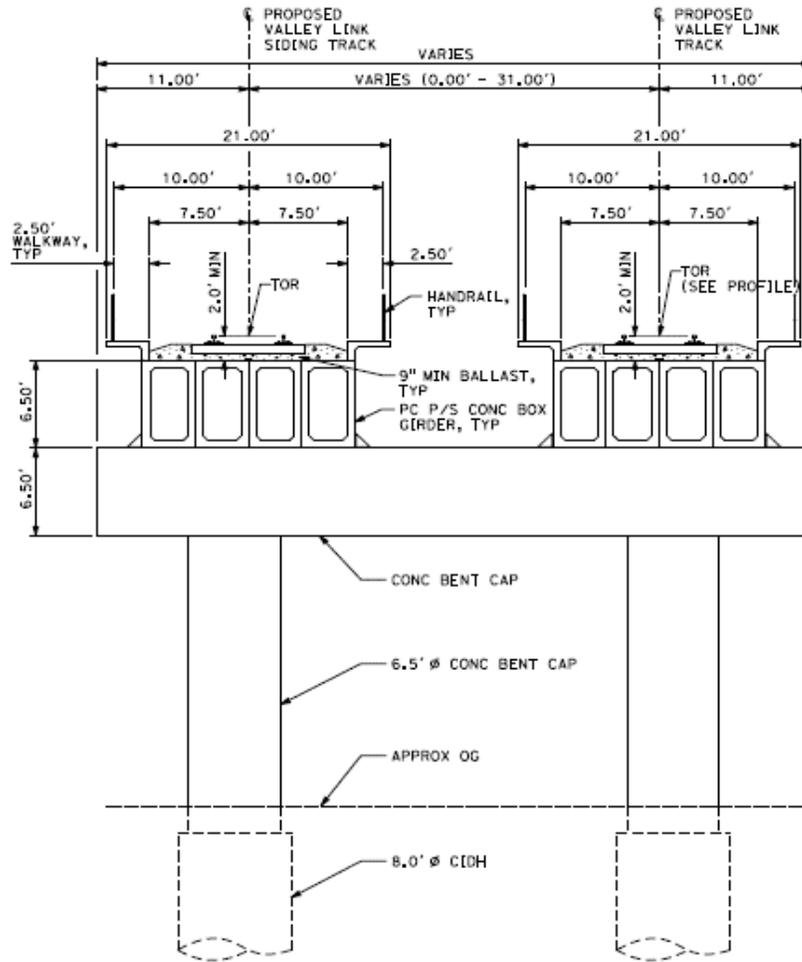
TYPICAL SECTION C1
SINGLE TRACK AERIAL

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section C1 - Single Track Aerial	1,000 RF		
0151101	Traffic Control	2,000	If \$110.00	\$220,000
0302020	Pier Column and Caps	627	cy \$1,254.00	\$786,790
0565520	Handrails	2,000	If \$230.00	\$460,000
0391105	PC P/S Concrete Box Girder, 6.5' H x 16' W	1,000	If \$5,606.00	\$5,606,000
0565514	Drainage, Aerial Structure	1,000	If \$57.00	\$57,000
3137148	CIDH 8' dia.	1,250	cy \$915.00	\$1,143,750
3484123	Ballast	389	cy \$45.00	\$17,500
0384101	Walkway	2,000	If \$29.00	\$58,000
	<i>Assume 80 feet spacing</i>			
	<i>Assume 100 feet deep CIDH</i>			
	<i>Assume 20 feet high pier</i>			
	Total Cost per Route Feet	1,000 RF	\$8,349	\$8,349,040
			USE \$8,349 / RF	



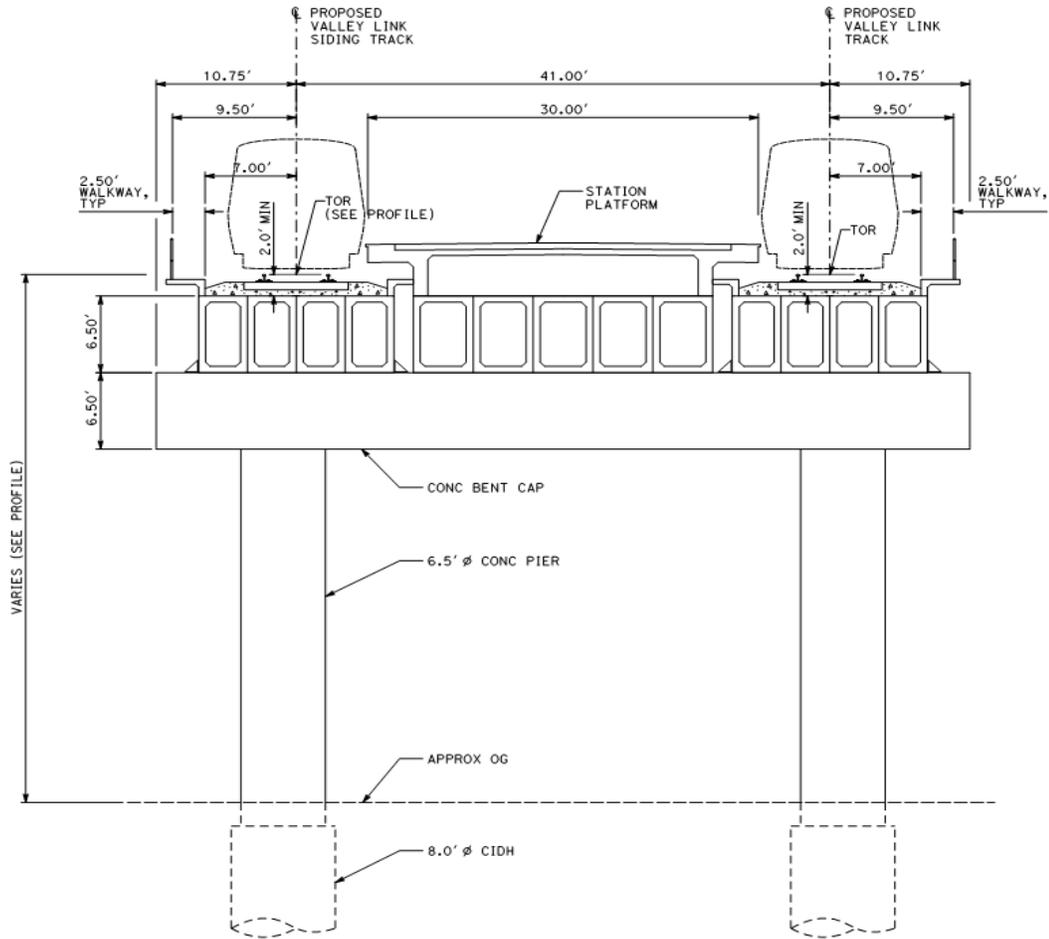
TYPICAL SECTION C2
SINGLE TRACK AERIAL ON STRADDLE BENT

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section C2 - Single Track Aerial on Straddle Bent	1,000 RF		
0151101	Traffic Control	2,000	If \$110.00	\$220,000
0302020	Pier Column and Caps	1,430	cy \$1,254.00	\$1,793,220
0565520	Handrails	2,000	If \$230.00	\$460,000
0391105	PC P/S Concrete Box Girder, 6.5' H x 16' W	1,000	If \$5,606.00	\$5,606,000
0565514	Drainage, Aerial Structure	1,000	If \$57.00	\$57,000
3137148	CIDH 8' dia.	2,500	If \$915.00	\$2,287,500
3484123	Ballast	389	cy \$45.00	\$17,500
0384101	Walkway	2,000	If \$29.00	\$58,000
	<i>Assume 80 feet spacing</i>			
	<i>Assume 100 feet deep CIDH</i>			
	<i>Assume 20 feet high pier</i>			
Total Cost per Route Feet		1,000 RF	\$10,499	\$10,499,220
			USE \$10,499 / RF	



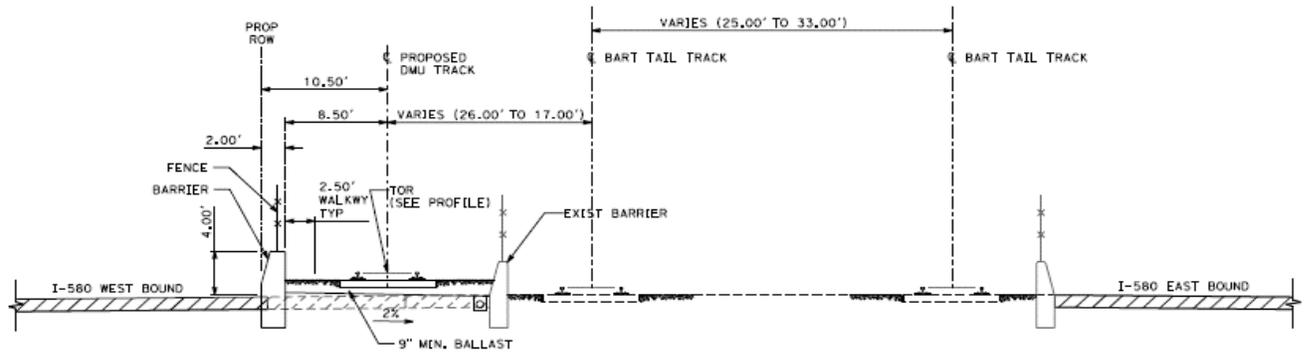
TYPICAL SECTION C3
DOUBLE TRACK AERIAL

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section C3 - Double Track Aerial on Straddle Bent	1,000 RF		
0151101	Traffic Control	2,000	If \$110.00	\$220,000
0302020	Pier Column and Caps	1,066	cy \$1,254.00	\$1,337,201
0565520	Handrails	4,000	If \$230.00	\$920,000
0391105	PC P/S Concrete Box Girder, 6.5' H x 16' W	2,000	If \$5,606.00	\$11,212,000
0565514	Drainage, Aerial Structure	1,000	If \$57.00	\$57,000
3137148	CIDH 8' dia.	2,500	If \$915.00	\$2,287,500
3484123	Ballast	778	cy \$45.00	\$35,000
0384101	Walkway	2,000	If \$29.00	\$58,000
	<i>Assume 80 feet spacing</i>			
	<i>Assume 100 feet deep CIDH</i>			
	<i>Assume 20 feet high pier</i>			
Total Cost per Route Feet		1,000 RF	\$16,127	\$16,126,701
		USE	\$16,127 / RF	



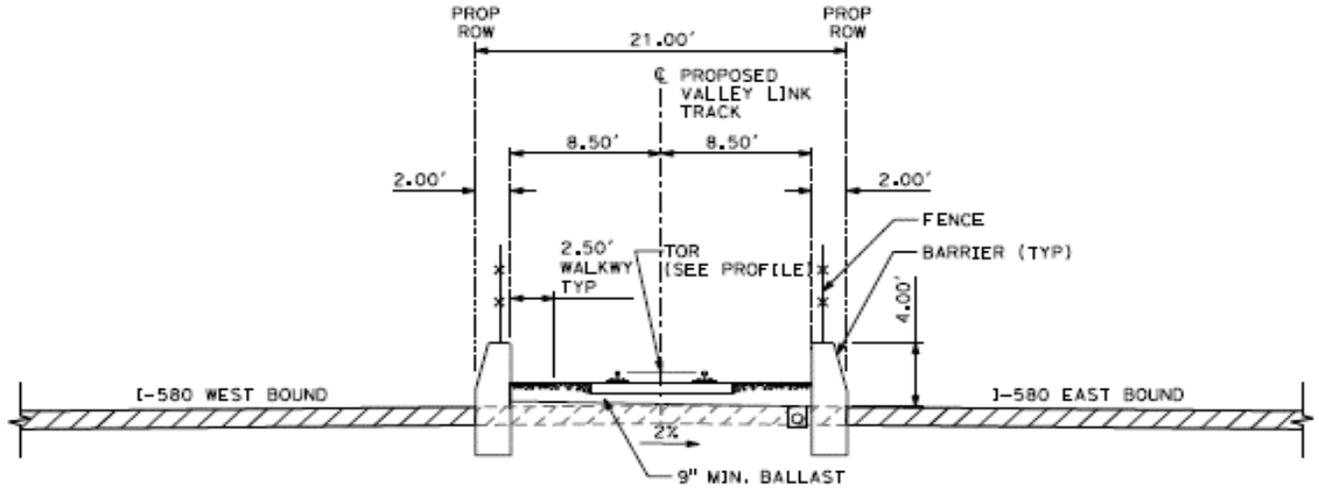
TYPICAL SECTION C3
DOUBLE TRACK AERIAL AT GREENVILLE NORTH STATION

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section C3A - Double Track Aerial on Straddle Bent with Platform	1,000 RF		
0151101	Traffic Control	2,000	If \$110.00	\$220,000
0302020	Pier Column and Caps	1,647	cy \$1,254.00	\$2,064,905
0565520	Handrails	4,000	If \$230.00	\$920,000
0391105	PC P/S Concrete Box Girder, 6.5' H x 16' W	2,000	If \$5,606.00	\$11,212,000
0565514	Drainage, Aerial Structure	1,000	If \$57.00	\$57,000
3137148	CIDH 8' dia.	2,500	If \$915.00	\$2,287,500
3484123	Ballast	778	cy \$45.00	\$35,000
0384101	Walkway	2,000	If \$29.00	\$58,000
	<i>Assume 80 feet spacing</i>			
	<i>Assume 100 feet deep CIDH</i>			
	<i>Assume 20 feet high pier</i>			
	Platform Structure included with Station Estimate.			
Total Cost per Route Feet		1,000 RF	\$16,854	\$16,854,405
			USE \$16,854 / RF	



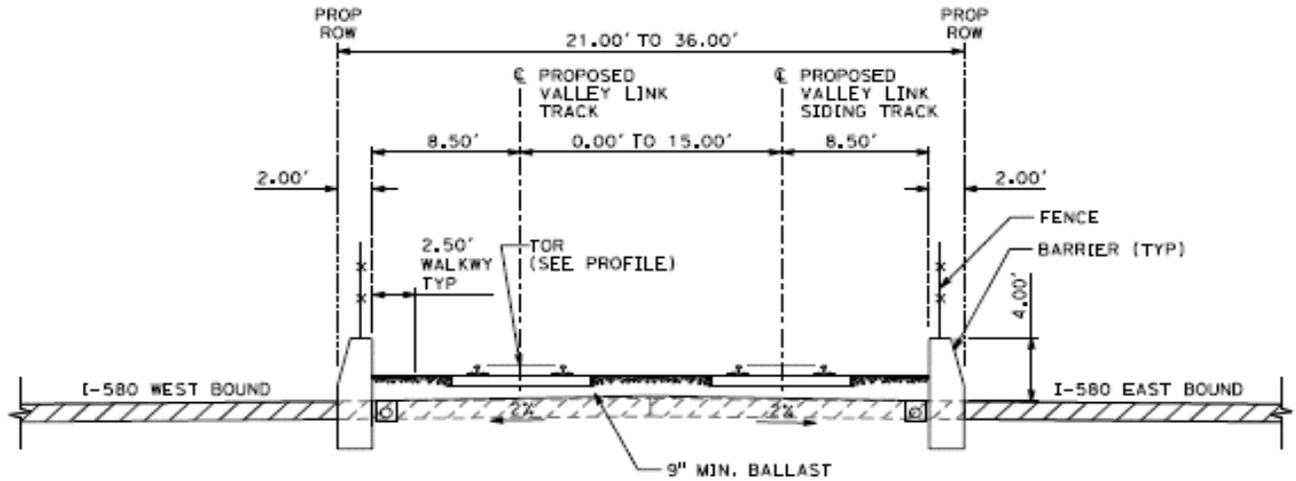
TYPICAL SECTION D
DMU - SINGLE TRACK AT-GRADE / BART TAIL TRACK

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section D - Single Track At-Grade / BART Tail Track	1,000 RF		
0151101	Traffic Control	1,000 lf	\$110.00	\$110,000
0231009	Sawcutting	2,000 lf	\$9.00	\$18,000
0231007	Pavement Demolition	170 sy	\$13.00	\$2,210
3121222	Excavation	170 cy	\$34.00	\$5,780
3121226	Hauling	221 cy	\$26.00	\$5,746
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3284106	Concrete Barrier (2' Wide, 4' High)	1,000 lf	\$306.00	\$306,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	1,000 lf	\$52.00	\$52,000
3484123	Ballast	486 cy	\$45.00	\$21,875
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$585	\$584,611
			USE	\$585 / RF



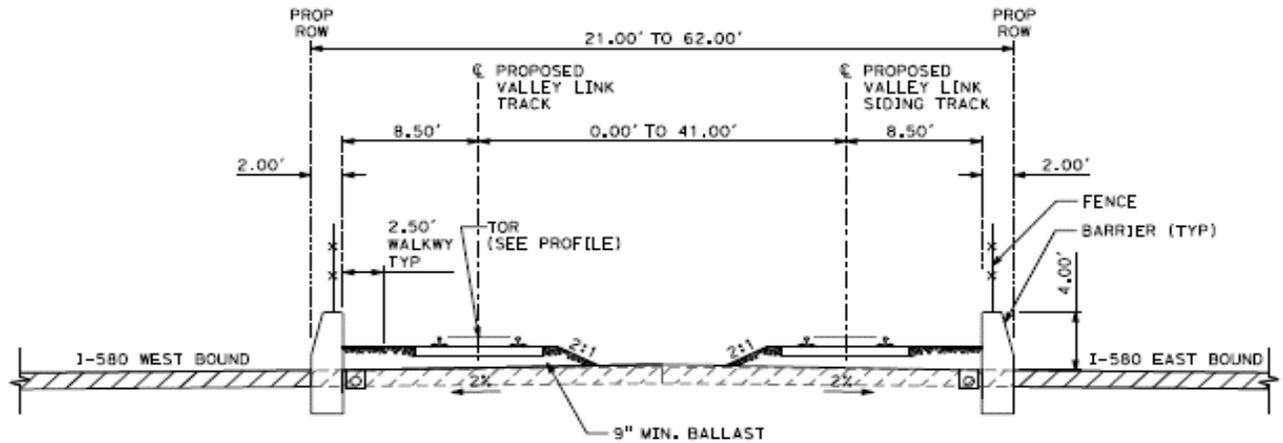
TYPICAL SECTION E
SINGLE TRACK AT-GRADE ALONG I-580

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section E - Single Track At-Grade Along I-580	1,000 RF		
0151101	Traffic Control	2,000 lf	\$110.00	\$220,000
0231009	Sawcutting	4,000 lf	\$9.00	\$36,000
0231007	Pavement Demolition	490 sy	\$13.00	\$6,370
3121222	Excavation	490 cy	\$34.00	\$16,660
3121226	Hauling	637 cy	\$26.00	\$16,562
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3284106	Concrete Barrier (2' Wide, 4' High)	2,000 lf	\$306.00	\$612,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	2,000 lf	\$52.00	\$104,000
3484123	Ballast	472 cy	\$45.00	\$21,250
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$1,096	\$1,095,842
			USE \$1,096 / RF	



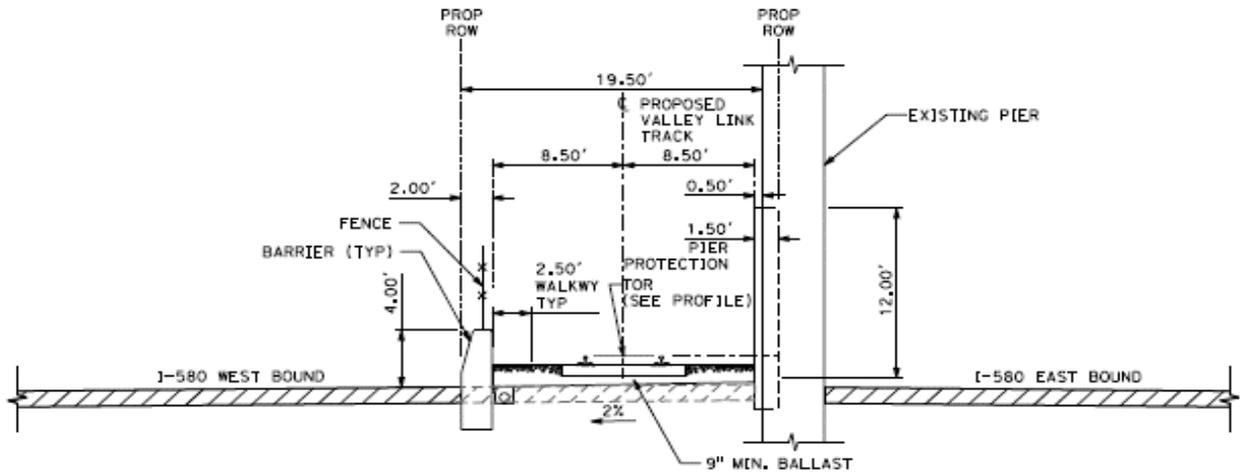
TYPICAL SECTION E1
DOUBLE TRACK AT-GRADE ALONG I-580

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section E1 - Double Track At-Grade Along I-580	1,000 RF		
0151101	Traffic Control	2,000 lf	\$110.00	\$220,000
0231009	Sawcutting	4,000 lf	\$9.00	\$36,000
0231007	Pavement Demolition	440 sy	\$13.00	\$5,720
3121222	Excavation	440 cy	\$34.00	\$14,960
3121226	Hauling	572 cy	\$26.00	\$14,872
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
3284106	Concrete Barrier (2' Wide, 4' High)	2,000 lf	\$306.00	\$612,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	2,000 lf	\$52.00	\$104,000
3484123	Ballast	889 cy	\$45.00	\$40,000
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$1,174	\$1,173,552
			USE	\$1,174 / RF



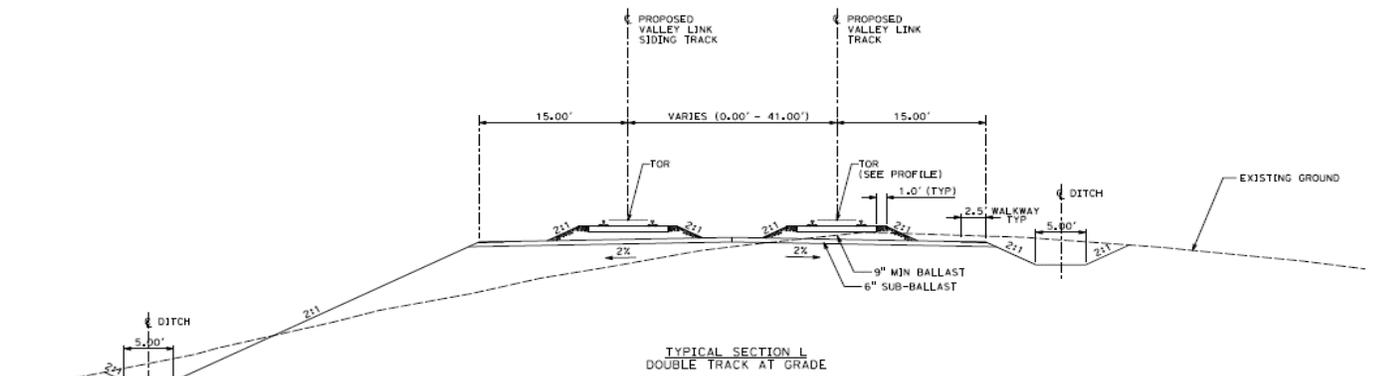
TYPICAL SECTION E2
DOUBLE TRACK AT-GRADE ALONG I-580

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section E2 - Double Track At-Grade Along I-580	1,000 RF		
0151101	Traffic Control	2,000 lf	\$110.00	\$220,000
0231009	Sawcutting	4,000 lf	\$9.00	\$36,000
0231007	Pavement Demolition	440 sy	\$13.00	\$5,720
3121222	Excavation	440 cy	\$34.00	\$14,960
3121226	Hauling	572 cy	\$26.00	\$14,872
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
3284106	Concrete Barrier (2' Wide, 4' High)	2,000 lf	\$306.00	\$612,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	2,000 lf	\$52.00	\$104,000
3484123	Ballast	889 cy	\$45.00	\$40,000
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$1,174	\$1,173,552
			USE	\$1,174 / RF

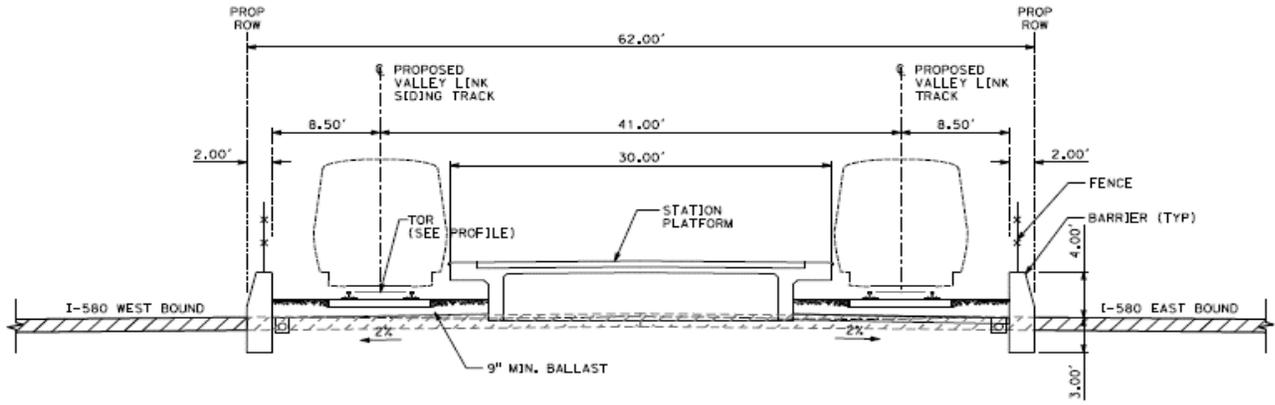


TYPICAL SECTION G
SINGLE TRACK AT OVERCROSSING PIER

Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section G - Single Track At Overcrossing Pier	1,000 RF		
0151101	Traffic Control	2,000 lf	\$110.00	\$220,000
0231009	Sawcutting	2,000 lf	\$9.00	\$18,000
0231007	Pavement Demolition	135 sy	\$13.00	\$1,755
3121222	Excavation	135 cy	\$34.00	\$4,590
3121226	Hauling	176 cy	\$26.00	\$4,563
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3284106	Concrete Barrier (2' Wide, 4' High)	1,000 lf	\$306.00	\$306,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	1,000 lf	\$52.00	\$52,000
3484123	Ballast	472 cy	\$45.00	\$21,250
0370167	Pier Protection Wall	12,000 sf	\$132.00	\$1,584,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$2,275	\$2,275,158
			USE	\$2,275 / RF

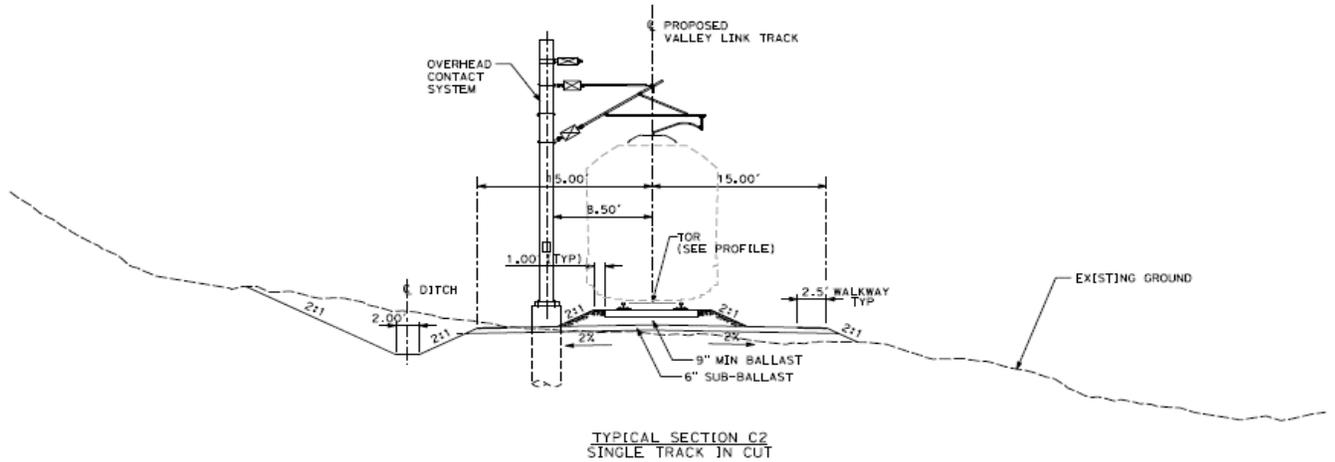


Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section L - Double Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	2,593 cy	\$34.00	\$88,148
3121224	Backfill Native Soil	4,241 cy	\$7.00	\$29,685
3131017	Imported Fill	1,648 cy	\$52.00	\$85,704
3131009	Grading	11,111 sy	\$4.00	\$44,444
3341130	Drainage	2,000 lf	\$18.00	\$36,000
3484119	Subballast	944 cy	\$35.00	\$33,056
3484123	Ballast	944 cy	\$45.00	\$42,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$454	\$453,537
			USE \$454 / RF	

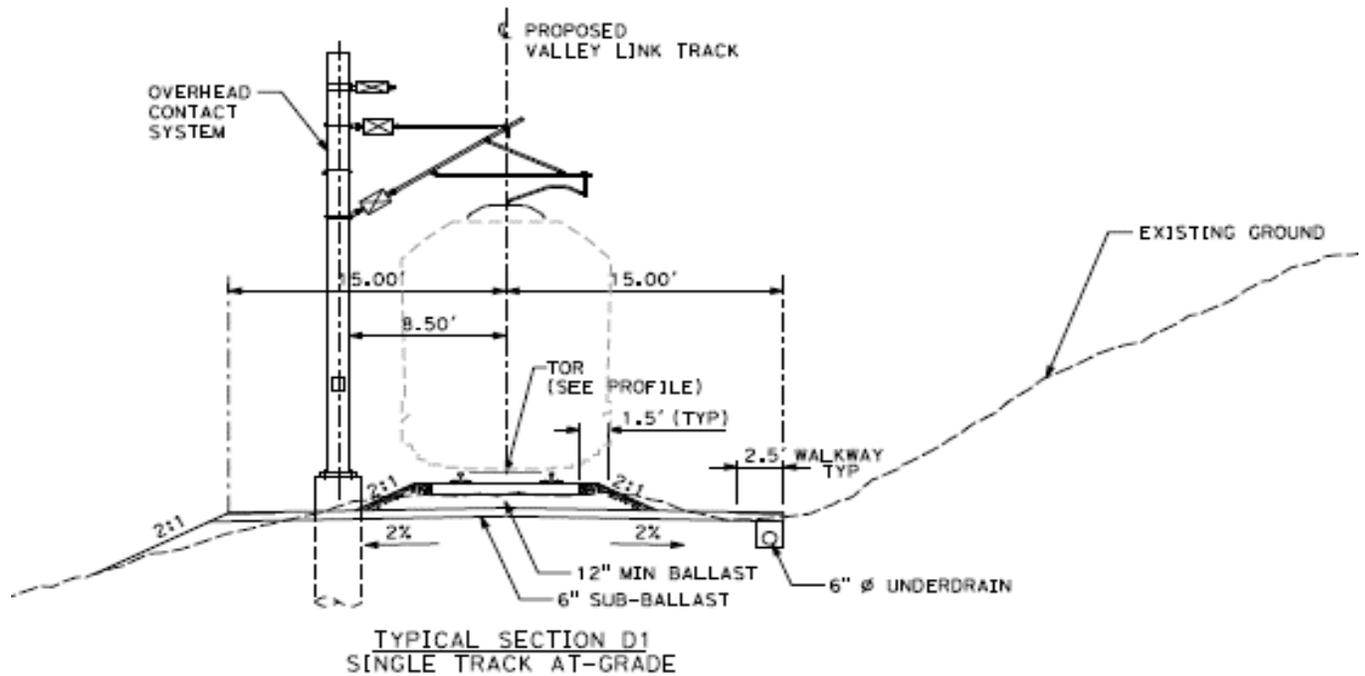


TYPICAL SECTION M1
DOUBLE TRACK AT ISABEL AND SOUTHFRONT STATIONS

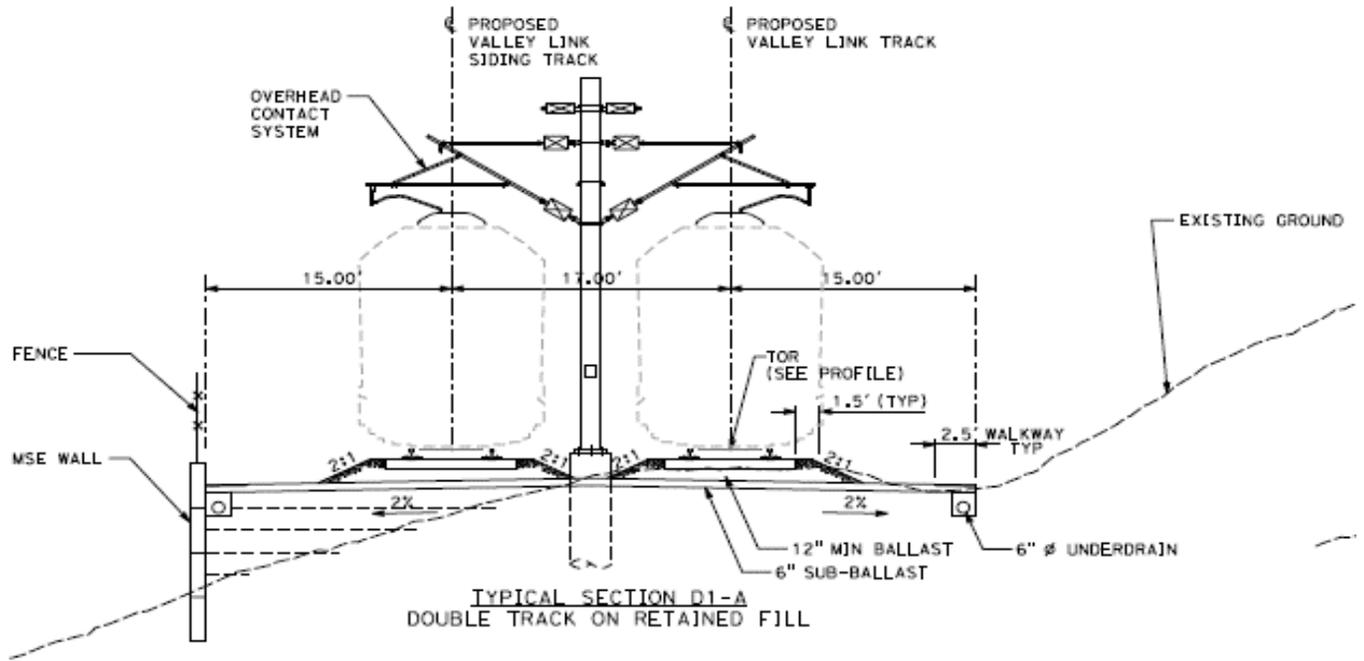
Code	Description	Quantity	Unit Cost	Total
Segment 1	Typical Section M1 - Double Track at Isabel Station	1,000 RF		
0151101	Traffic Control	2,000 lf	\$110.00	\$220,000
0231009	Sawcutting	4,000 lf	\$9.00	\$36,000
0231007	Pavement Demolition	450 sy	\$13.00	\$5,850
3121222	Excavation	450 cy	\$34.00	\$15,300
3121226	Hauling	585 cy	\$26.00	\$15,210
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
3284106	Concrete Barrier (2' Wide, 4' High)	2,000 lf	\$306.00	\$612,000
3284115	CL-WA Fence (Barrier Mtd), 4.5' High	2,000 lf	\$52.00	\$104,000
3484123	Ballast	944 cy	\$45.00	\$42,500
	<i>Platform Structure included with Station Estimate.</i>			
	Total Cost per Route Feet	1,000 RF	\$1,119	\$1,118,860
		USE	\$1,119 / RF	



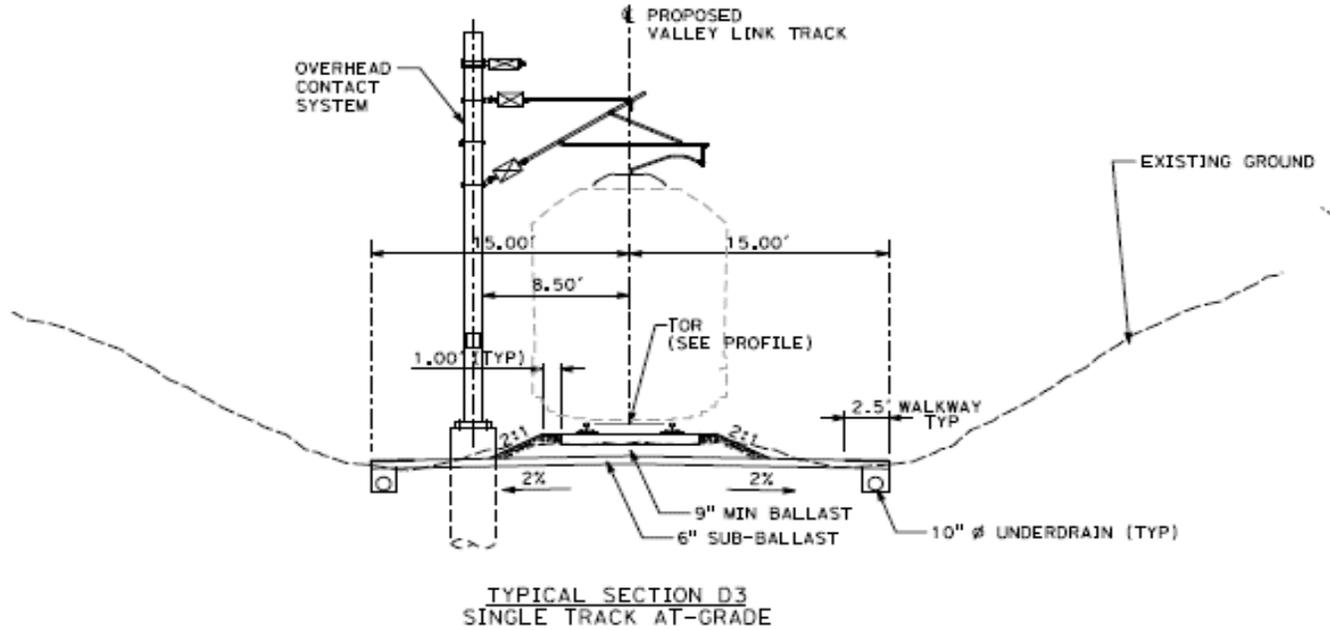
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section C2 - Single Track in Cut	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,796 cy	\$34.00	\$61,074
3121224	Backfill Native Soil	370 cy	\$7.00	\$2,593
3121226	Hauling	1,426 cy	\$26.00	\$37,074
3131009	Grading	6,000 sy	\$4.00	\$24,000
3341130	Drainage	1,000 lf	\$18.00	\$18,000
3484119	Subballast	463 cy	\$35.00	\$16,204
3484123	Ballast	417 cy	\$45.00	\$18,750
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$272	\$271,694
			USE	\$272 / RF



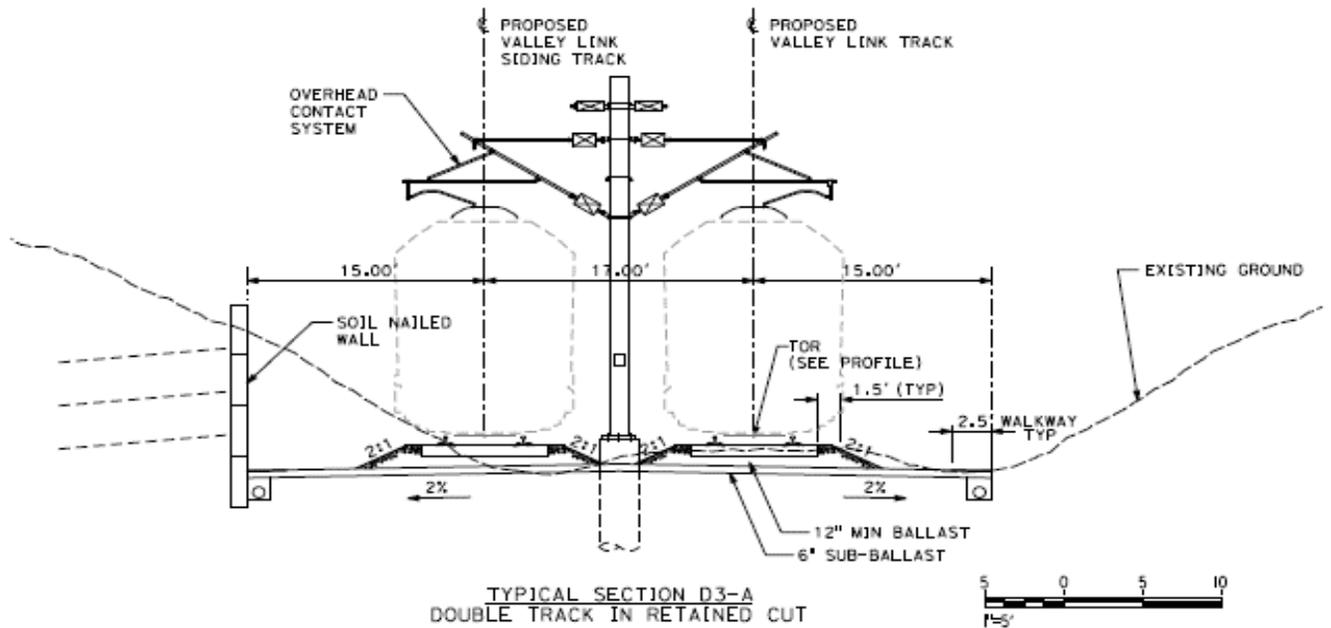
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D1 - Single Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,333 cy	\$34.00	\$45,333
3121224	Backfill Native Soil	185 cy	\$7.00	\$1,296
3121226	Hauling	1,148 cy	\$26.00	\$29,852
3131009	Grading	3,889 sy	\$4.00	\$15,556
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3484119	Subballast	463 cy	\$35.00	\$16,204
3484123	Ballast	417 cy	\$45.00	\$18,750
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$255	\$254,991
			USE	\$255 / RF



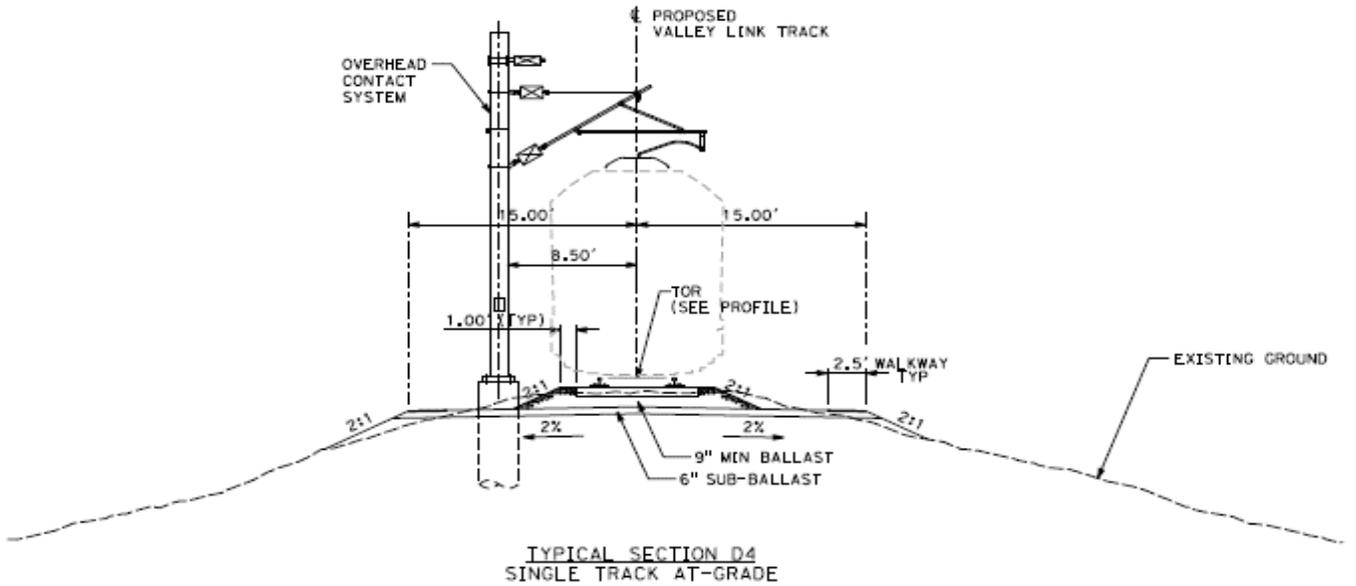
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D1-A - Double Track On Retained Fill	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,370 cy	\$34.00	\$46,593
3121224	Backfill Native Soil	1,370 cy	\$7.00	\$9,593
3131017	Imported Fill	1,296 cy	\$52.00	\$67,407
3131009	Grading	3,667 sy	\$4.00	\$14,667
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3484119	Subballast	833 cy	\$35.00	\$29,167
3484123	Ballast	833 cy	\$45.00	\$37,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
0370151	Retaining Walls	14,500 sf	\$75.00	\$1,087,500
Total Cost per Route Feet		1,000 RF	\$1,420	\$1,420,426
		USE	\$1,420 / RF	



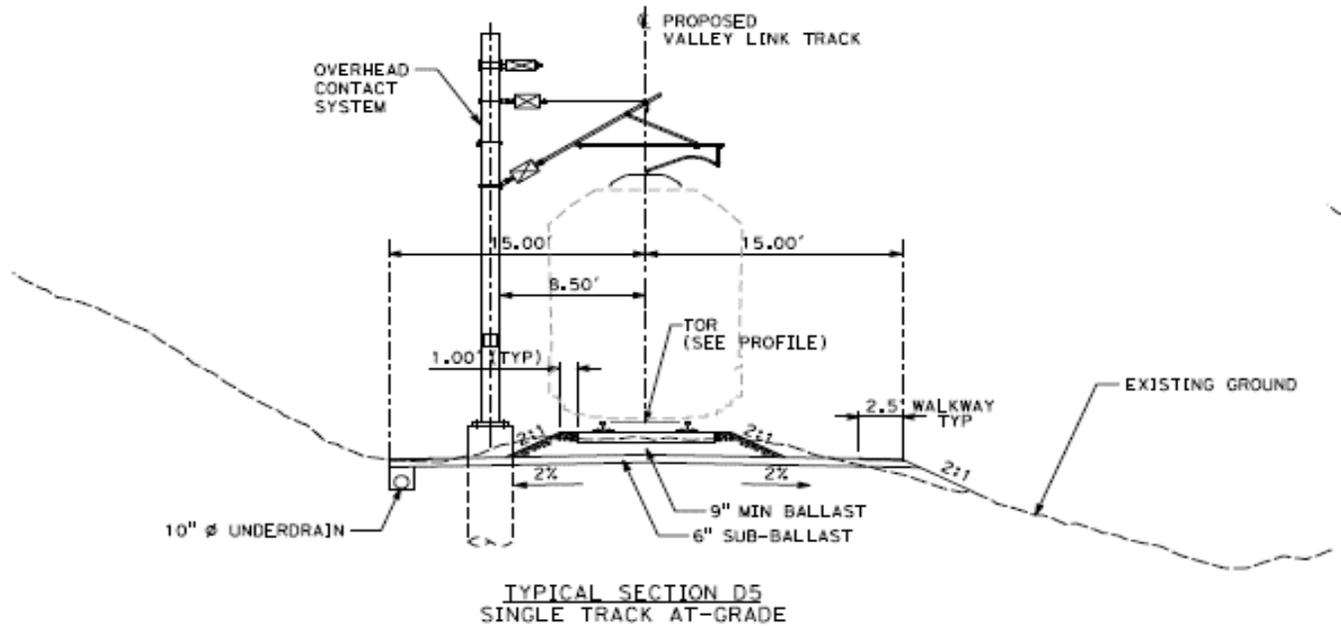
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D3 - Single Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	852 cy	\$34.00	\$28,963
3121224	Backfill Native Soil	185 cy	\$7.00	\$1,296
3121226	Hauling	667 cy	\$26.00	\$17,333
3131009	Grading	3,333 sy	\$4.00	\$13,333
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
3484119	Subballast	556 cy	\$35.00	\$19,444
3484123	Ballast	472 cy	\$45.00	\$21,250
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$264	\$263,620
			USE	\$264 / RF



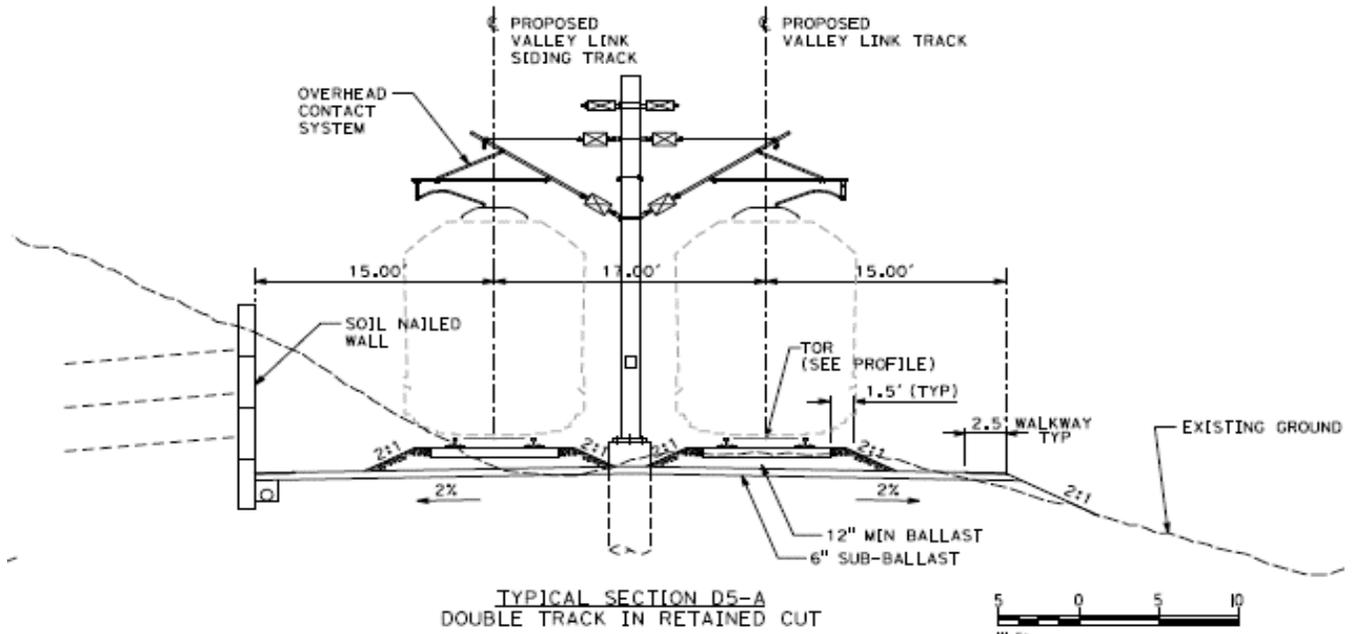
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D3-A - Double Track in Retained Cut	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	11,500 cy	\$34.00	\$391,000
3121224	Backfill Native Soil	222 cy	\$7.00	\$1,556
3121226	Hauling	11,278 cy	\$26.00	\$293,222
3131009	Grading	3,333 sy	\$4.00	\$13,333
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
3484119	Subballast	833 cy	\$35.00	\$29,167
3484123	Ballast	833 cy	\$45.00	\$37,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
0370151	Retaining Walls	14,500 sf	\$75.00	\$1,087,500
Total Cost per Route Feet		1,000 RF	\$2,015	\$2,015,278
		USE	\$2,015 / RF	



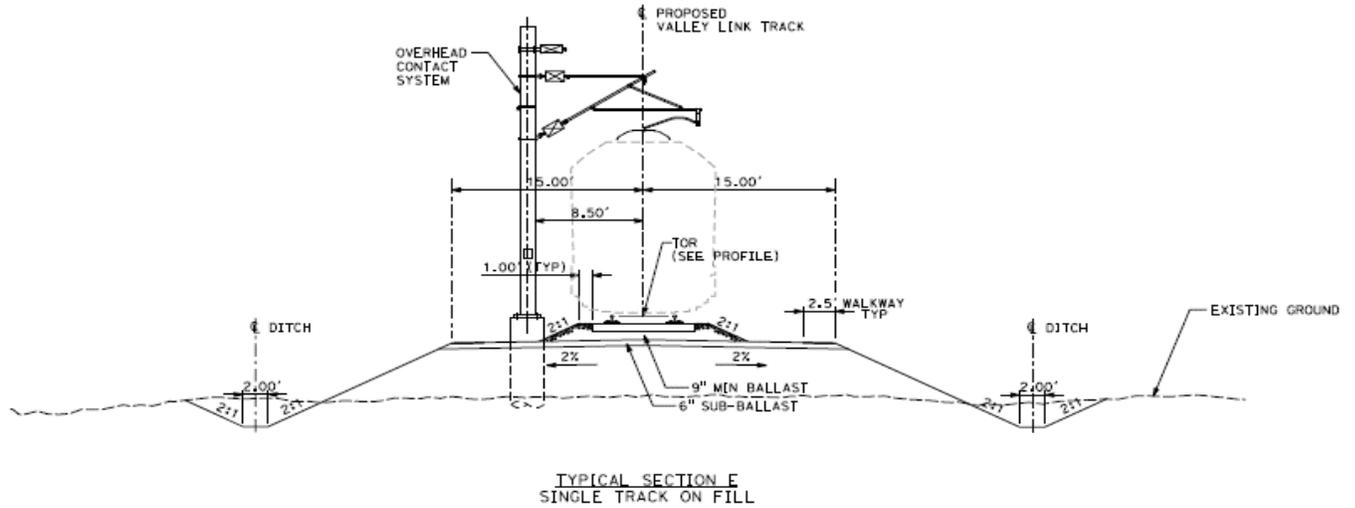
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D4 - Single Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,241 cy	\$34.00	\$42,185
3121224	Backfill Native Soil	185 cy	\$7.00	\$1,296
3121226	Hauling	1,056 cy	\$26.00	\$27,444
3131009	Grading	3,333 sy	\$4.00	\$13,333
3484119	Subballast	463 cy	\$35.00	\$16,204
3484123	Ballast	417 cy	\$45.00	\$18,750
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$213	\$213,213
		USE	\$213 / RF	



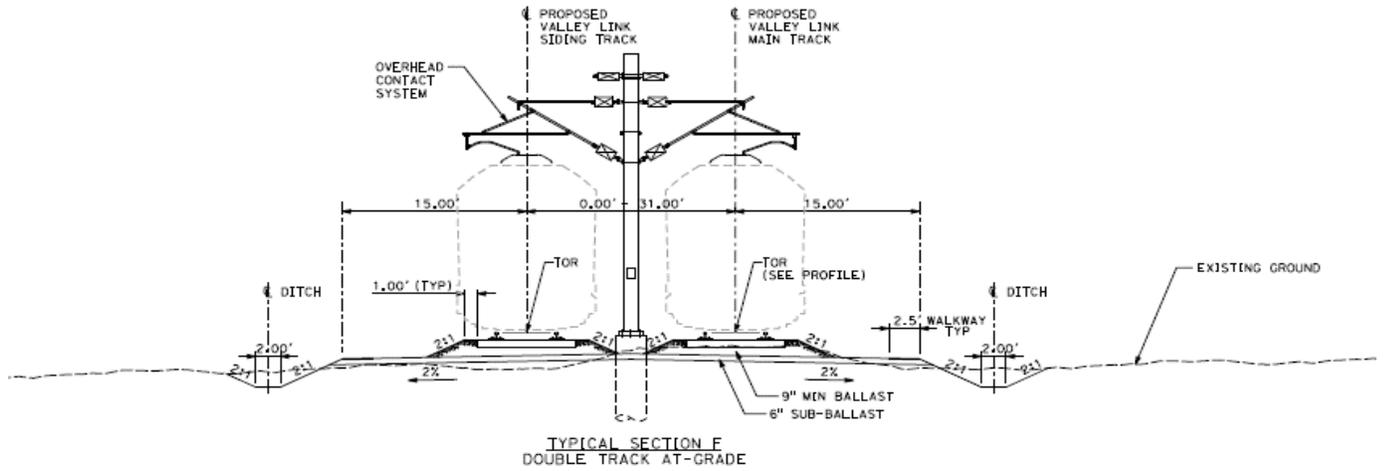
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D5 - Single Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,352 cy	\$34.00	\$45,963
3121224	Backfill Native Soil	111 cy	\$7.00	\$778
3121226	Hauling	1,241 cy	\$26.00	\$32,259
3131009	Grading	3,333 sy	\$4.00	\$13,333
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3484119	Subballast	463 cy	\$35.00	\$16,204
3484123	Ballast	417 cy	\$45.00	\$18,750
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$255	\$255,287
			USE	\$255 / RF



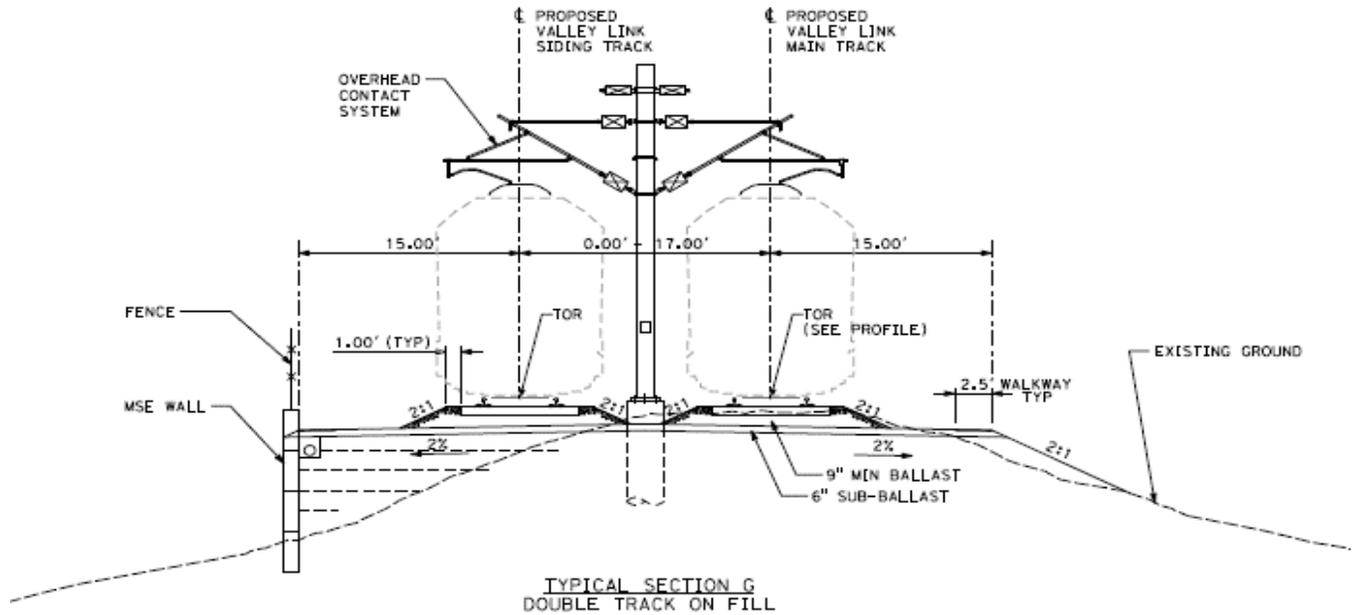
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section D5-A - Double Track in Retained Cut	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	12,667 cy	\$34.00	\$430,667
3121224	Backfill Native Soil	111 cy	\$7.00	\$778
3121226	Hauling	12,556 cy	\$26.00	\$326,444
3131009	Grading	3,333 sy	\$4.00	\$13,333
3162111	Underdrain System (Incl Cross Drainage)	1,000 lf	\$34.00	\$34,000
3484119	Subballast	833 cy	\$35.00	\$29,167
3484123	Ballast	833 cy	\$45.00	\$37,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
0370151	Retaining Walls	15,000 sf	\$75.00	\$1,125,000
Total Cost per Route Feet		1,000 RF	\$2,091	\$2,090,889
		USE	\$2,091 / RF	



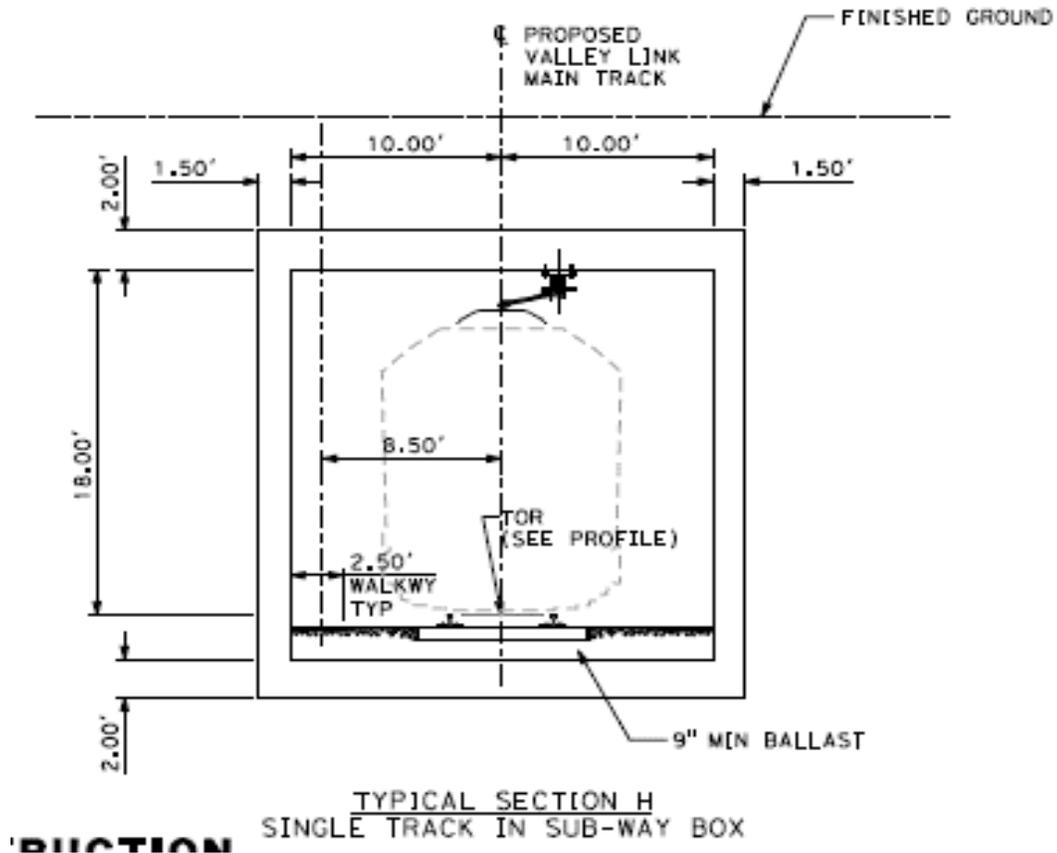
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section E - Single Track on Fill	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	704 cy	\$34.00	\$23,926
3121224	Backfill Native Soil	704 cy	\$7.00	\$4,926
3131017	Imported Fill	5,519 cy	\$52.00	\$286,963
3131009	Grading	7,222 sy	\$4.00	\$28,889
3484119	Subballast	463 cy	\$35.00	\$16,204
3484123	Ballast	417 cy	\$45.00	\$18,750
3341130	Drainage	2,000 lf	\$18.00	\$36,000
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$510	\$509,657
		USE	\$510 / RF	



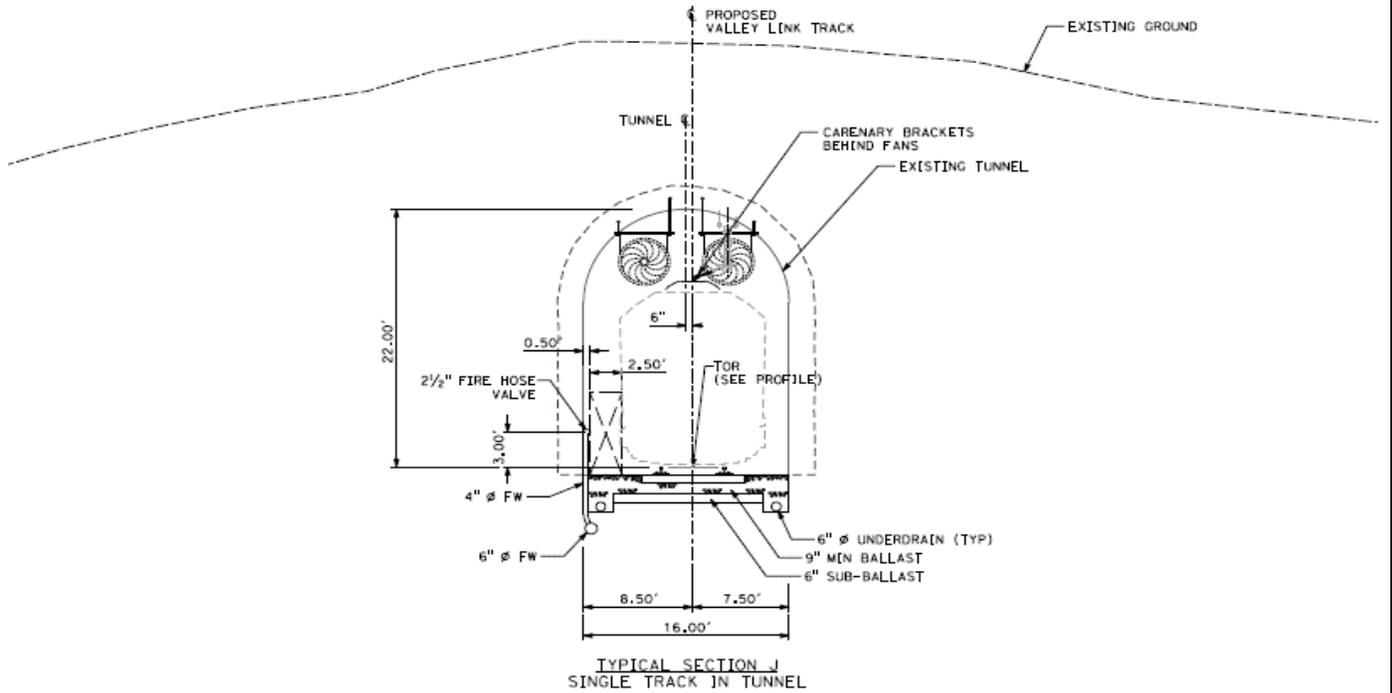
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section F - Double Track At-Grade	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	1,463 cy	\$34.00	\$49,741
3121224	Backfill Native Soil	259 cy	\$7.00	\$1,815
3121226	Hauling	1,204 cy	\$26.00	\$31,296
3131009	Grading	7,222 sy	\$4.00	\$28,889
3341130	Drainage	2,000 lf	\$18.00	\$36,000
3484119	Subballast	1,019 cy	\$35.00	\$35,648
3484123	Ballast	833 cy	\$45.00	\$37,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$315	\$314,889
		USE	\$315 / RF	



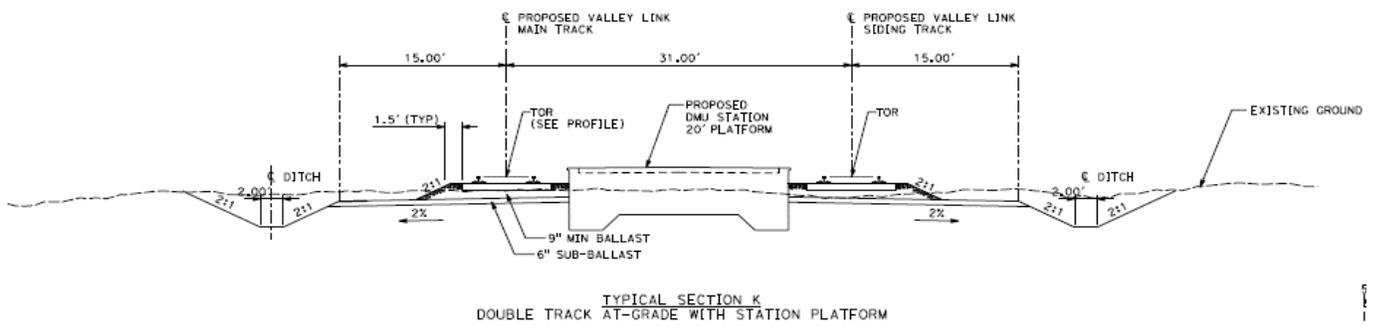
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section G - Double Track on Fill	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	926 cy	\$34.00	\$31,481
3121224	Backfill Native Soil	926 cy	\$7.00	\$6,481
3131017	Imported Fill	5,037 cy	\$52.00	\$261,926
3131009	Grading	8,333 sy	\$4.00	\$33,333
3484119	Subballast	1,019 cy	\$35.00	\$35,648
3484123	Ballast	833 cy	\$45.00	\$37,500
0384101	Walkway	2,000 lf	\$29.00	\$58,000
0370151	Retaining Walls	10,000 sf	\$75.00	\$750,000
Total Cost per Route Feet		1,000 RF	\$1,250	\$1,250,370
		USE	\$1,250 / RF	



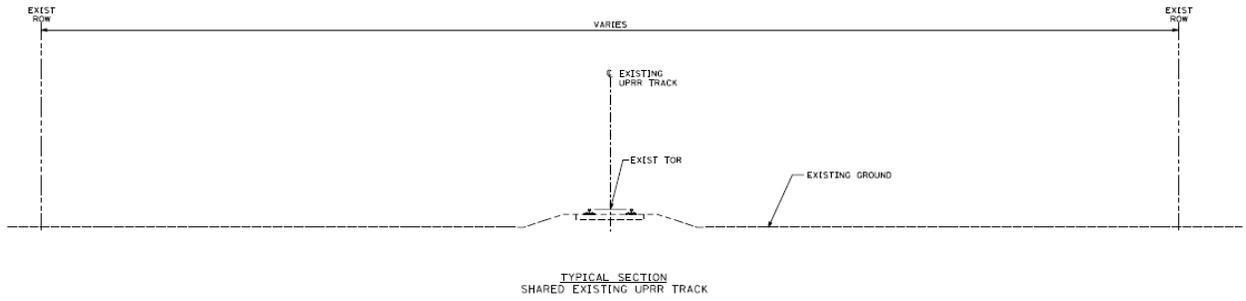
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section H - Single Track in Subway Box	1,000 RF		
0151101	Traffic Control	1,000 lf	\$110.00	\$110,000
0302090	Concrete Roof Slab	1,704 cy	\$927.00	\$1,579,333
0302091	Concrete Exterior Walls	2,222 cy	\$827.00	\$1,837,778
0302093	Concrete SOG	1,704 cy	\$775.00	\$1,320,370
0765500	Waterproofing	94,000 sf	\$2.00	\$188,000
2355120	Tunnel Fire Protection	1,000 lf	\$287.00	\$287,000
2671112	Lighting & Power Tunnel	1,000 lf	\$402.00	\$402,000
3121224	Backfill Native Soil	5,222 cy	\$7.00	\$36,556
3131009	Grading	2,556 sy	\$4.00	\$10,222
3131019	Aggregate Base	571 cy	\$29.00	\$16,551
3341132	Tunnel Drainage	1,000 lf	\$23.00	\$23,000
3484123	Ballast	556 cy	\$45.00	\$25,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$5,865	\$5,864,811
			USE \$5,865 / RF	



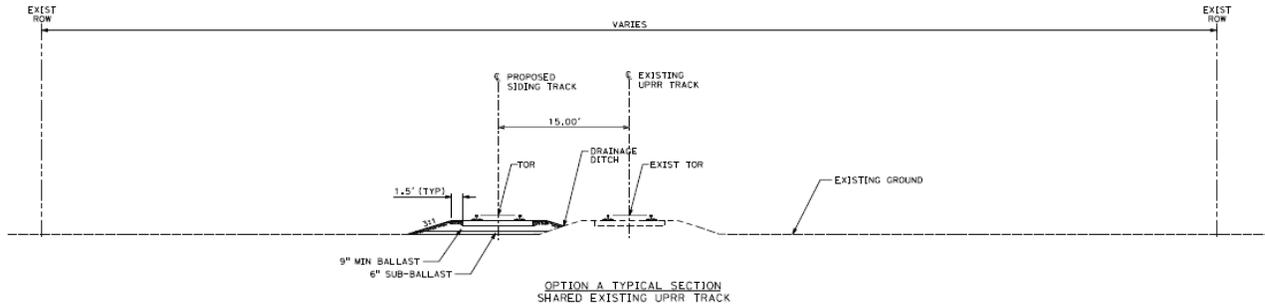
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section J - Single Track in Existing Tunnel	1,000 RF		
3121222	Excavation	1,444 cy	\$34.00	\$49,111
3484119	Subballast	204 cy	\$35.00	\$7,130
3484123	Ballast	306 cy	\$45.00	\$13,750
3162111	Underdrain System (Incl Cross Drainage)	2,000 lf	\$34.00	\$68,000
0384101	Walkway	2,000 lf	\$29.00	\$58,000
Total Cost per Route Feet		1,000 RF	\$196	\$195,991
		USE	\$196 / RF	



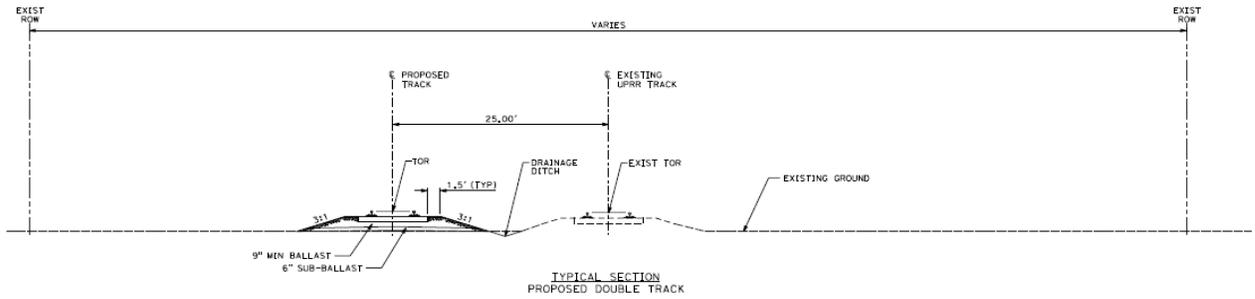
Code	Description	Quantity	Unit Cost	Total
Segment 2	Typical Section K - Double Track At-Grade with Station Platform	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3121222	Excavation	4,926 cy	\$34.00	\$167,481
3121224	Backfill Native Soil	0 cy	\$7.00	\$0
3121226	Hauling	4,926 cy	\$26.00	\$128,074
3131009	Grading	10,111 sy	\$4.00	\$40,444
3341130	Drainage	2,000 lf	\$18.00	\$36,000
3484119	Subballast	870 cy	\$35.00	\$30,463
3484123	Ballast	833 cy	\$45.00	\$37,500
	<i>Platform Structure included with Station Estimate.</i>			
	Total Cost per Route Feet	1,000 RF	\$476	\$475,963
		USE	\$476 / RF	



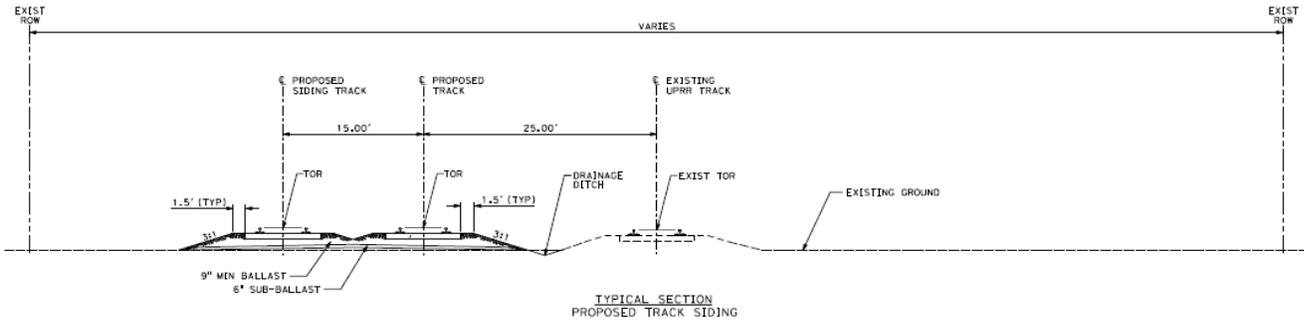
Code	Description	Quantity	Unit Cost	Total
Segment 3A	Typical Section - Shared Existing UPRR Track	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3131009	Grading	722 sy	\$4.00	\$2,889
3484119	Subballast	0 cy	\$35.00	\$0
3484123	Ballast	181 cy	\$45.00	\$8,125
3341130	Drainage	1,000 lf	\$18.00	\$18,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$94	\$94,014
			USE	\$94 / RF



Code	Description	Quantity	Unit Cost	Total
Segment 3A	Typical Section - Shared Existing UPRR Track with Siding	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3131009	Grading	1,944 sy	\$4.00	\$7,778
3131017	Imported Fill	3,759 cy	\$52.00	\$195,481
3484119	Subballast	278 cy	\$35.00	\$9,722
3484123	Ballast	417 cy	\$45.00	\$18,750
3341130	Drainage	1,000 lf	\$18.00	\$18,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$315	\$314,731
		USE	\$315 / RF	



Code	Description	Quantity	Unit Cost	Total
Segment 3B	Typical Section - Proposed Double Track	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3131009	Grading	1,667 sy	\$4.00	\$6,667
3131017	Imported Fill	2,639 cy	\$52.00	\$137,222
3484119	Subballast	278 cy	\$35.00	\$9,722
3484123	Ballast	417 cy	\$45.00	\$18,750
3341130	Drainage	1,000 lf	\$18.00	\$18,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$255	\$255,361
			USE \$255 / RF	



Code	Description	Quantity	Unit Cost	Total
Segment 3B	Typical Section - Proposed Double Track with Siding (Siding Only)	1,000 RF		
0156510	Erosion Control	2,000 rf	\$18.00	\$36,000
3131009	Grading	1,778 sy	\$4.00	\$7,111
3131017	Imported Fill	3,785 cy	\$52.00	\$196,830
3484119	Subballast	278 cy	\$35.00	\$9,722
3484123	Ballast	417 cy	\$45.00	\$18,750
3341130	Drainage	1,000 lf	\$18.00	\$18,000
0384101	Walkway	1,000 lf	\$29.00	\$29,000
Total Cost per Route Feet		1,000 RF	\$315	\$315,413
		USE	\$315 / RF	

Attachment 5

Project Cost Backup

I-580 Widening Estimate

Communications Estimate

Train Control Estimate

I-580 ROADWAY VALLEY LINK PRELIMINARY PROJECT COST ESTIMATE

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

District-County-Route: 4-ALA-I-580
 Type of Estimate: PSR-PDS
 PM: _____
 EA: 3Q820
 Program Code: _____

Project Description: Valley Link - I-580 Roadway Widening and Bridge Reconstruction

Limits: From East of Dougherty Road Overcrossing to Greenville Road Undercrossing

Proposed Improvement (Scope):

The project proposes to widen I-580 on WB and EB direction to accommodate Valley Link rail alignment in the median
Construction two new stations - Isabel Station and Southfron Station in the I-580 Median,
with double track passing sidings between stations

SUMMARY OF PROJECT COST ESTIMATE

	Costs
TOTAL ROADWAY ITEMS	\$ 549,474,000
TOTAL STRUCTURE ITEMS	<u>\$ 105,607,000</u>
SUBTOTAL CONSTRUCTION COSTS	\$ 655,081,000
ESCALATION COST	<u>\$ 64,921,000 ⁽¹⁾</u>
TOTAL CONSTRUCTION COSTS	\$ 720,002,000
TOTAL RIGHT OF WAY (ESCALATED)	\$ 103,562,000
RISK ASSESSMENT COST	\$ 6,108,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$ 829,672,000
PAVED Support \$ 19,653,000 ⁽²⁾	
PS&E Support \$ 65,509,000 ⁽³⁾	
ROW Support \$ 1,000,000	
Construction Support \$ 108,001,000 ⁽⁴⁾	
TOTAL SUPPORT COST	\$ 194,163,000
TOTAL PROJECT COST	\$ 1,023,835,000

- Note 1: Based on escalation rate of 3.20% per year for three years upto 2023
- Note 2: 3% of Total Construction Cost. (non-escalated)
- Note 3: 10.00% of Total Construction Cost. (non-escalated)
- Note 4: 15.00% of Total Construction Cost.

Estimated by: Marius Gogosanu
(Signature)

Reviewed by Project Manager: Ramesh Sathiamurthy
(Signature)

Date: May 26, 2020

Phone No.: 510-874-3141

I-580 ROADWAY VALLEY LINK PRELIMINARY PROJECT COST ESTIMATE

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

District-County-Route: 4-ALA-I-580
 Type of Estimate: PSR-PDS
 PM: _____
 EA: 3Q820

I. ROADWAY ITEMS

Section 1 Earthwork	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Roadway Excavation	344,300	CY	\$ 25.00	\$ 8,607,500	
Remove Unsuitable Materials	34,430	CY	\$ 65.00	\$ 2,237,950	
Clearing & Grubbing	1	LS	\$ 250,000.00	\$ 250,000	
Develop Water Supply	<u>1</u>	<u>LS</u>	<u>\$ 75,000.00</u>	<u>\$ 75,000</u>	
				Subtotal Earthwork	\$ 11,171,000
Section 2 Pavement Structural Section	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Hot Mixed Asphalt (Open Graded)	14,100	TON	\$ 130.00	\$ 1,833,000	
Rubberized Hot Mix Asphalt (Gap Graded)	28,200	TON	\$ 120.00	\$ 3,384,000	
Hot Mixed Asphalt (Type A)	91,400	TON	\$ 90.00	\$ 8,226,000	
Lean Concrete Base	55,600	CY	\$ 260.00	\$ 14,456,000	
Class 2 Aggregate Subbase	<u>125,000</u>	<u>CY</u>	<u>\$ 30.00</u>	<u>\$ 3,750,000</u>	
				Subtotal Pavement Structural Section	\$ 31,649,000
Section 3 Drainage	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Drainage system (6.0%)	1	LS	\$ 39,252,000.00	\$ 39,252,000	
				Subtotal Drainage	\$ 39,252,000
Section 4 Specialty Items	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Unit Cost</u>	<u>Section Cost</u>
Erosion Control (0.5%)	1	LS	\$ 3,271,000.00	\$ 3,271,000	
Prepare SWPPP	1	LS	\$ 75,000.00	\$ 75,000	
Temporary Water Pollution Control (0.75%)	1	LS	\$ 4,907,000.00	\$ 4,907,000	
NPDES(0.75%)	1	LS	\$ 4,907,000.00	\$ 4,907,000	
Remove Misc. (Sidewalk, Conc Curb, C&G)	1	LS	\$ 620,000.00	\$ 620,000	
Minor Concrete (Curb, C&G, Sidewalk C&G)	1	LS	\$ 994,000.00	\$ 994,000	
Environmental Mitigation (0.075%)	1	LS	\$ 4,907,000.00	\$ 4,907,000	
Highway Planting (1%)	1	LS	\$ 6,542,000.00	\$ 6,542,000	
Concrete Barrier	1	LS	\$ 7,720,000.00	\$ 7,720,000	
Remove Conc Barrier	32,384	LF	\$ 20.00	\$ 647,700	
Remove Guardrail	11,318	LF	\$ 6.00	\$ 91,010	
Sound Wall	11,000	SF	\$ 43.00	\$ 473,000	
Remove Retaining Wall	12,764	LF	\$ 50.00	\$ 638,200	
Retaining Walls	281,900	SF	\$ 100.00	\$ 28,190,000	
Architectural Treatment	<u>112,760</u>	<u>SF</u>	<u>\$ 4.00</u>	<u>\$ 451,040</u>	
				Subtotal Specialty Items	\$ 64,434,000

I-580 ROADWAY VALLEY LINK PRELIMINARY PROJECT COST ESTIMATE

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

District-County-Route: 4-ALA-I-580
 Type of Estimate: PSR-PDS
 PM: _____
 EA: 3Q820

Section 5 Traffic Items

Traffic Delineation Items	683,957	LF	\$ 0.40	\$	273,583
Roadside Signs	46	EA	\$ 1,000.00	\$	46,000
Overhead Signs	35	EA	\$ 200,000.00	\$	7,000,000
Express Lane Signs	1	LS	\$ 5,816,000.00	\$	5,816,000
Express Lanes Toll Systems (Includes Interim ETS system during construction)	1	LS	\$ 143,000,000.00	\$	143,000,000
Traffic Control System (2%)	1	LS	\$ 13,084,000.00	\$	13,084,000
Detour ramps and local streets	1	LS	\$ 10,000,000.00	\$	10,000,000
Traffic Management Plan (From TMP Data Sht)	1	LS	\$ 7,765,000.00	\$	7,765,000
Highway Caltrans Lighting	1	LS	\$ 6,000,000.00	\$	6,000,000
Caltrans TOS	<u>1</u>	<u>LS</u>	<u>\$ 8,000,000.00</u>	<u>\$</u>	<u>8,000,000</u>

Subtotal Traffic Items \$ 200,985,000
TOTAL SECTIONS 1-5 \$ 347,491,000

Section 6 Minor Items

Subtotal Sections 1 - 5 \$ 347,491,000 x 10% \$ 34,749,100

Total Minor Items \$ 34,750,000

Section 7 Roadway Mobilization

Subtotal Sections 1 - 5 \$ 347,491,000
 Minor Items \$ 34,750,000

Subtotal Sections 1 - 6 \$ 382,241,000 x 10% \$ 38,224,100

Total Roadway Mobilization \$ 38,225,000

I-580 ROADWAY VALLEY LINK PRELIMINARY PROJECT COST ESTIMATE

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

District-County-Route: 4-ALA-I-580
 Type of Estimate: PSR-PDS
 PM: _____
 EA: 3Q820

Section 8 Roadway Additions Supplemental Work	\$ 382,241,000	x	5%	\$ 19,112,100	
				\$ -	
Contingencies	\$ 439,578,100	x	25%	\$ 109,895,000	
				Total Roadway Additions	\$ 129,008,000

Total Roadway Items (Total of Sections 1-8) \$ 549,474,000

II. STRUCTURES ITEMS

		<u>Roadway Structures</u>			
Total Area - (ft ²)	131,026				
Cost Per ft ²	\$ 806				
(incl. 10% mobilization and 25% contingency)					
Total Cost for Structure	<u>\$ 105,606,867</u>			Subtotal Structures Items	\$ 105,607,000
				(Sum of Total Cost for Structures)	
Railroad Related Costs:				Subtotal Railroad Items	\$ -
				Total Structures Items	\$ 105,607,000
				(Sum of Structures Items plus Railroad Items)	

II. RIGHT OF WAY ITEMS

	Current Value 2020	Escalation Rate Per Year	Escalated Value 2023
A. Acquisition	\$ 57,340,000	2.00%	\$ 60,850,000
B. Utility Relocation	\$ 31,235,000	2.00%	\$ 33,147,000
C. Relocation Assistance		2.00%	\$ -
D. TCE/Permit to Enter	\$ 9,013,000	2.00%	\$ 9,565,000
E. Cost (Eng. Appraisals, etc.)		2.00%	\$ -
Total Right of Way & Utilities (Current Value)	\$ 97,588,000	Total Esc. Value	\$ 103,562,000
			Rounded
			\$ 103,562,000

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) _____

F.	Construction Contract Work	Brief Description of Work

	Right of Way Branch Cost Estimate for Work	<u>\$ -</u>

Updated by Jose 5/11/2020

Structural Section				
20-Year Design Life Flexible Widening (HMA with RHMA-G)				
Item	Depth Ft	Area SqFt	Quantity	Unit
HMA (open graded)	0.1	1873886	14100	TON
RHMA (gap graded)	0.2	1873886	28200	TON
HMA (A)	0.65	1873886	91400	TON
LCB	0.8	1873886	55600	CY
Class 4 AS	1.8	1873886	125000	CY
TOTAL	3.55			

Section 4: Concrete Barrier			
Type	Quantity -(LF)	Unit price	Total
Median Lighting	15,120	\$ 200	\$ 3,024,000
Median OH	4,025	\$ 200	\$ 805,000
Median Reader	5,250	\$ 200	\$ 1,050,000
CB (Type 60MC)	23,635	\$ 120	\$ 2,836,200
			\$ 7,720,000

Roadway Excavation			
Depth Ft	Area SqFt	Quantity CF	Quantity CY
3.55	1,873,886	6652295	246,381
Total	1,873,886		247,000

Roadway Removal			
Depth Ft	Area SqFt	Quantity CF	Quantity CY
3.55	2,450,000	8697500	322,130
Total	2,450,000		323,000

red (3) 1735515 2000000 Lan's comment: This number is low. The area of should be larger
Magenta (13) 417565 450000 Lan's comment: This number is low. The area of should be larger

		LF	CY/LF	CY	Unit price	Total
731860	REMOVE CONCRETE (CURB, GUTTER, AND SIDEWALK) (LF)	11100			\$ 30	\$ 333,000
731710	REMOVE CONCRETE CURB (LF)	17300			\$ 10	\$ 173,000
731840	REMOVE CONCRETE (CURB AND GUTTER)	6600			\$ 16	\$ 105,600
						\$ 620,000
731510	MINOR CONCRETE (CURB, GUTTER, SIDEWALK AND DRIVEWAY)	11800	0.13	1534	\$ 500	\$ 767,000
731504	MINOR CONCRETE (CURB AND GUTTER)	6600	0.06	396	\$ 300	\$ 118,800
730020	MINOR CONCRETE (CURB) (CY)	17300	0.025	432.5	\$ 250	\$ 108,200
						\$ 994,000

REMOVE CONCRETE BARRIER						
SHEET NO.	STATION				LOCATION	LF
	"B"		TO "B"			
	"B"	272+60.00	TO "B"	366+50.00	CL	9,390
	"B"	273+05.00	TO "B"	287+53.00	Lt	1,448
	"B"	289+40.00	TO "B"	295+66.00	Lt	626
	"B"	297+55.00	TO "B"	307+27.00	Lt	972
	"B"	378+90.00	TO "B"	408+03.00	Lt	2,913
	"B"	443+60.00	TO "B"	456+53.00	Lt	1,293
	"B"	469+35.00	TO "B"	517+06.00	Lt	4,771
	"B"	493+50.00	TO "B"	508+31.00	Rt	1,481
	"B"	499+50.00	TO "B"	595+00.00	CL	9,550
	"B"	525+55.00	TO "B"	539+43.00	Rt	1,388
	"B"	536+25.00	TO "B"	551+28.00	Lt	1,503
	"B"	585+95.00	TO "B"	594+59.00	Rt	864
	"B"	588+20.00	TO "B"	594+08.00	Lt	588
	"B"	619+35.00	TO "B"	648+25.00	Lt	2,890
	"B"	625+30.00	TO "B"	630+75.00	CL	545
	"B"	639+90.00	TO "B"	697+00.00	CL	5,710
	"B"	643+70.00	TO "B"	669+20.00	Rt	2,550
	"B"	679+95.00	TO "B"	688+92.00	Lt	897
	"B"	689+45.00	TO "B"	692+72.00	Lt	327
	"B"	694+05.00	TO "B"	704+25.00	Lt	1,020
	"B"	707+20.00	TO "B"	724+14.00	Lt	1,694
	"B"	727+05.00	TO "B"	742+64.00	Lt	1,559
	"B"	731+15.00	TO "B"	738+34.00	Rt	719
	"B"	736+50.00	TO "B"	857+00.00	CL	12,050
	"B"	745+95.00	TO "B"	748+86.00	Rt	291
	"B"	756+82.00	TO "B"	780+36.00	Rt	2,354
	"B"	761+95.00	TO "B"	764+31.00	Lt	236
	"B"	771+80.00	TO "B"	781+58.00	Lt	978
TOTAL						32,384

REMOVE CONCRETE BARRIER						
SHEET NO.	STATION				LOCATION	LF
	"B"	272+60.00	TO "B"	366+50.00	CL	9,390
	"B"	273+05.00	TO "B"	287+53.00	Lt	1,448
	"B"	289+40.00	TO "B"	295+66.00	Lt	626
	"B"	297+55.00	TO "B"	307+27.00	Lt	972
	"B"	378+90.00	TO "B"	408+03.00	Lt	2,913
	"B"	443+60.00	TO "B"	456+53.00	Lt	1,293
	"B"	469+35.00	TO "B"	517+06.00	Lt	4,771
	"B"	493+50.00	TO "B"	508+31.00	Rt	1,481
	"B"	499+50.00	TO "B"	595+00.00	CL	9,550
	"B"	525+55.00	TO "B"	539+43.00	Rt	1,388
	"B"	536+25.00	TO "B"	551+28.00	Lt	1,503
	"B"	585+95.00	TO "B"	594+59.00	Rt	864
	"B"	588+20.00	TO "B"	594+08.00	Lt	588
	"B"	619+35.00	TO "B"	648+25.00	Lt	2,890
	"B"	625+30.00	TO "B"	630+75.00	CL	545
	"B"	639+90.00	TO "B"	697+00.00	CL	5,710
	"B"	643+70.00	TO "B"	669+20.00	Rt	2,550
	"B"	679+95.00	TO "B"	688+92.00	Lt	897
	"B"	689+45.00	TO "B"	692+72.00	Lt	327
	"B"	694+05.00	TO "B"	704+25.00	Lt	1,020
	"B"	707+20.00	TO "B"	724+14.00	Lt	1,694
	"B"	727+05.00	TO "B"	742+64.00	Lt	1,559
	"B"	731+15.00	TO "B"	738+34.00	Rt	719
	"B"	736+50.00	TO "B"	857+00.00	CL	12,050
	"B"	745+95.00	TO "B"	748+86.00	Rt	291
	"B"	756+82.00	TO "B"	780+36.00	Rt	2,354
	"B"	761+95.00	TO "B"	764+31.00	Lt	236
	"B"	771+80.00	TO "B"	781+58.00	Lt	978
TOTAL						32,384

REMOVE RETAINING WALL

STATION				LOCATION	LF
"B"	275+95.00	TO "B"	279+05.00	Lt	310
"B"	297+50.00	TO "B"	301+13.00	Lt	363
"B"	426+75.00	TO "B"	428+75.00	Lt	200
"B"	509+00.00	TO "B"	517+09.00	Lt	809
"B"	587+00.00	TO "B"	597+32.00	Rt	1,032
"B"	588+90.00	TO "B"	593+71.00	Lt	481
"B"	619+48.00	TO "B"	621+80.00	Lt	232
"B"	623+00.00	TO "B"	648+39.00	Lt	2,539
"B"	645+50.00	TO "B"	649+62.00	Rt	412
"B"	651+23.00	TO "B"	654+18.00	Rt	295
"B"	654+50.00	TO "B"	657+49.00	Rt	299
"B"	659+90.00	TO "B"	670+06.00	Rt	1,016
"B"	679+00.00	TO "B"	684+82.00	Lt	582
"B"	685+30.00	TO "B"	688+04.00	Lt	274
"B"	690+50.00	TO "B"	692+77.00	Lt	227
"B"	694+07.00	TO "B"	702+77.00	Lt	870
"B"	703+00.00	TO "B"	704+50.00	Lt	150
"B"	707+20.00	TO "B"	707+80.00	Lt	60
"B"	709+30.00	TO "B"	713+50.00	Lt	420
"B"	715+50.00	TO "B"	719+50.00	Lt	400
"B"	731+37.00	TO "B"	738+69.00	Rt	732
"B"	733+50.00	TO "B"	742+58.00	Lt	908
"B"	747+25.00	TO "B"	748+78.00	Lt	153
"B"		TO "B"			0
"B"		TO "B"			0
"B"		TO "B"			0
TOTAL					12,764

Valley Link 15% I-580 Retaining Walls

5/11/2020

New #	#	Assumed Type	Sta Beg	Sta End	Side	Average Height (Ft)	Length (Ft)	Comment	RW Area SQFT	Roadway excavation CY	Average Height (Ft)	Average width (Ft)	
1	0	Type 1	271+25	275+18	WB	5.1	393	Cut	2000	new RW	157	3.1	3.5
2	1	Type 1	276+00	279+20	WB	7.5	320	Fill	2400				
3	2	MSE	279+20	287+20	WB	18.5	800	Fill	14800				
4	3	MSE	288+68	298+20	WB	16.3	952	Fill	15500				
5	4	Type 1	298+20	302+00	WB	7.6	380	Fill	2900				
6	5	Type 1	303+14	307+00	WB	5.3	386	Cut	2050		166	3.3	3.5
7	6	Top-down, Tieback Construction	318+00	320+14	WB	12	214	Cut back overpass abutment slope to accommodate roadway shift (At Hacienda)	2568				
8	7	Top-down, Tieback Construction	364+45	366+59	WB	12	214	Cut back overpass abutment slope to accommodate roadway shift (At Tassajara)	2568				
9	8	Type 1	385+00	416+20	WB	5.4	3120	Fill	17000	new RW			
10	8	Top-down, Tieback Construction	428+58	431+35	WB	12	277	Cut back overpass abutment slope to accommodate roadway shift (At Fallon)	3324				
11	10	Type 1	507+33	515+28	WB	8.8	800*	Cut	7000	new RW	800	6.8	4
12	11	Type 1	499+30	502+70	EB	5.9	340	Fill	2000	new RW			
13	9	Type 1	506+00	510+70	EB	5.1	470	Fill	2400				
14	10	Type 1	513+42	517+72	EB	7	484*	Fill	3388				
15	14	Type 1	526+25	538+70	EB	5.3	1245	Fill	6600	new RW			
16	15	Type 1	535+00	539+70	WB	4.9	470	Fill	2300	new RW			
17	11	Type 1	564+10	568+56	WB	10	448*	Cut	4480		5985	8.0	4.5
18	12	Top-down, Tieback Construction	568+56	571+15	WB	12	259	Cut back overpass abutment slope to accommodate roadway shift (At Isabel)	3108				
19	13	Top-down, Tieback Construction	565+23	568+03	EB	12	280	Cut back overpass abutment slope to accommodate roadway shift (At Isabel)	3360				
20	14	Type 1	568+03	577+36	EB	10	936*	Cut at EB loop on-ramp at Isabel	9360				
21	15	Type 1	575+00	580+70	EB	8	573*	Fill at EB diagonal on-ramp at Isabel	4584				
22	16	Type 1	577+53	582+71	WB	9	547*	Cut at WB off-ramp at Isabel	4923				
23	17	MSE	584+50	595+00	WB	9.4	1050	Fill	9900				
24	18	Type 1	582+50	583+70	EB	6	120	Fill	720				
25	19	Type 1	585+20	594+10	EB	10	890	Cut	8900		1187	8.0	4.5
26	25	Type 1	601+00	605+10	WB	5.4	410	Cut	2200	new RW	153	3.4	3
27	20	Type 1	607+00	616+00	WB	11	900	Cut	9900		1350	9.0	4.5
28	27	Type 1	619+40	621+93	WB	16.6	253	Fill	4200	new RW			
29	21	Soil Nail	621+93	645+25	WB	16.5	2332	Cut	38500		6266	14.5	5
30	22	Type 5	642+42	649+57	EB	12	715	Fill	8580				
31	23	Type 5	651+16	654+84	EB	12	368	Fill	4416				
32	24	Type 5	652+90	669+20	EB	8	1630	Fill	13040				
33	25	Type 1	678+30	685+00	WB	5	670	Cut	3349		223	3.0	3
34	26	Soil Nail	685+00	688+10	WB	10.2	310	Cut	3150		422	8.2	4.5
35	27	Type 1	688+10	692+79	WB	5.1	469	Cut	2392		162	3.1	3
36	28	Type 1	694+09	703+00	WB	4.8	891	Cut	4277		277	2.8	3
37	29	Soil Nail	703+00	704+50	WB	13	150	Cut	1950		306	11.0	5
38	30	Type 1	704+50	707+75	WB	4	325	Cut	1300		72	2.0	3
39	31	Type 5	707+75	724+58	WB	5	1683	Fill	8415				
40	32	Type 5	725+56	729+39	WB	10	383	Fill	3830				
41	33	Soil Nail	729+39	743+62	WB	16	1423	Cut	22768		3689	14.0	5
42	34	Type 5	734+40	742+52	EB	10	1140*	Fill at EB off-ramp at First St	11400				
42	35	Sound wall	765+28	772+14	WB	16	686	Sound wall	11000	Max wall height used (16')			
						9.4		Retaining Walls TOTAL	281,900		21,300		

Note: Retaining walls types taken from as built plans for projects EA 04-2908C4 and 04-2908E4
 Stationing based off "B" line
 Final Type of wall to be coordinated with structures and finalized once surveys are obtained
 * Taken from actual length of wall and not from stationing

Cost Per SqFt
Including Mobilization
Contingency

\$ 810.00

Roadway Bridge Replacements

Bridge No.	Bridge Name	Work Description	Approx. Length (ft)	Approx. Area (ft ²)
33 0150L	Dougherty Bridge UC	Westbound outside widening	149	6,689
33 0015L	Tassajara Creek	Westbound outside widening	94	2,600
n/a	Tassajara Creek (Creek Path)	Remove and Replace Bridge	94	3,273
33-0408L	Airway Blvd OC	Remove and Replace Bridge	430	25,784
33-0012S	Arroyo Las Positas	Remove and Replace Bridge	181	8,055
33-0012	Arroyo Las Positas	Westbound outside widening	174	4,240
33-0012	Arroyo Las Positas	Eastbound outside widening	182	2,933
33-0203	Arroyo Las Positas	Westbound outside widening	177	3,564
33-0153	N. Livermore Ave. UC	Eastbound outside widening	159	4,861
33-0085	Arroyo Las Positas	Westbound outside widening	131	1,275
33-0390	Las Colinas Rd. OC	Remove and Replace Bridge	255	12,238
33-0389	First Street OC	Remove and Replace Bridge	360	28,185
33-0400	Vasco Road OC	Remove and Replace Bridge	346	27,330

Removal cost based on Las Colinas

Drainage culverts structures 131,026
2,481
TOTAL 133,507

\$ 106,130,970.41

Median Rail Bridge Replacements

Station Begin*	Station End*	Approx. Width (ft)	Approx. Length (ft)	Approx. Area (ft ²)
288+81	290+45	56	164	9,154
344+71	345+65	57	94	5,356
368+96	369+16	21	20	425
384+95	385+51	21	56	1,168
406+09	406+37	21	28	590
487+66	488+04	36	38	1,366
549+74	549+99	36	24	882
581+49	583+24	43	175	7,582
617+85	619+61	21	177	3,714
649+72	651+31	21	159	3,335
692+66	693+97	21	131	2,747
729+10	729+69	36	59	2,109
821+22	821+64	21	42	879

* Stationing Based on "B" Line

Segment 1 Utility Conflicts

Utility Type	Beg Station	End Station	LF	Relocate/Protect	Utility Size	Material Type	Remarks	Verify	Unit Cost	Total Cost
PG&E Electrical Overhead (Distribution)	273+61	281+06	7	Relocate	21KV - 7 Poles	UNK	Needs to relocate due to Scarlett Court Relocation/ Widening		\$85,000	\$595,000
PG&E Gas HP Transmission	276+90	286+00	910	Relocate	12"	UNK	Needs to relocate due to Scarlett Court Relocation		\$2,000	\$1,820,000
DRSRD Water	280+20	284+80	460	Relocate	8"	PVC	Needs to relocate due to Scarlett Court Relocation		\$275	\$126,500
DRSRD Sewer	283+22	284+54	158	Relocate	39"	VCP	Needs to relocate due to Scarlett Court Relocation	done	\$400	\$63,200
Zone 7 Water	292+94	304+34	1144	Relocate	16"	UNK	Need to relocate due to I-580 WB widening	done	\$350	\$400,400
DRSRD Fire Service Water	292+94	296+58	417	Relocate	6"	UNK	Need to relocate due to I-580 WB widening	done	\$250	\$104,250
Zone 7 Water	292+94		100	Relocate	24" with STL Casing	UNK	Need to relocate due to I-580 WB widening (24" W with STL Casing)	done	\$1,200	\$120,000
DRSRD Sewer	294+08	303+80	972	Relocate	36"	UNK	Need to relocate due to I-580 WB widening/Ikea-Westin	done	\$400	\$388,800
PG&E Electrical Overhead (Distribution)	296+58	304+34	4	Relocate - 4 poles	21 KV	UNK	Need to relocate due to I-580 WB widening/Ikea-Westin	done	\$85,000	\$340,000
DRSRD Water	296+58	304+34	865	Relocate	12"	UNK	Need to relocate due to I-580 WB widening/Ikea-Westin	done	\$300	\$259,500
DRSRD RCW	296+58	304+34	840	Relocate	8"	UNK	Need to relocate due to I-580 WB widening/Ikea-Westin	done	\$275	\$231,000
PG&E Gas HP (Transmission)	296+58	304+34	800	Relocate	12"	PLC	Need to relocate due to I-580 WB widening/Ikea-Westin	done	\$2,000	\$1,600,000
PG&E Gas HP (Transmission)	334+00	344+20	1020	Relocate	12"	PLC	Need to relocate due to I-580 WB widening		\$2,000	\$2,040,000
PG&E Electrical Underground (Distribution)	334+00	344+20	1020	Relocate	21KV-6"	UNK	Need to relocate due to I-580 WB widening		\$750	\$765,000
PG&E Electrical (Distribution)	344+20	346+14	236	Relocate	6" conduit	UNK	Tassajara Creek Bridge reconstruction	done	\$750	\$177,000
PG&E HP Gas (Transmission)	344+20	346+14	236	Relocate	12"	PLC	Tassajara Creek Bridge reconstruction (Jack and Bore)	done	\$4,000	\$944,000
DRSRD Reclaimed Water	344+20	346+14	236	Relocate	2" in 18" STL Casing	UNK	Tassajara Creek Bridge reconstruction	done	\$1,200	\$283,200
PGE Gas	345+95		60	Relocate	8" in 12" STL Casing	STL	Extend casing on I-580 WB (Split STL Casing)	done	\$1,250	\$75,000
PG&E Electrical Overhead (Distribution)	371+30	411+65	12	Relocate-2400'	21 KV - 12 Poles	UNK	Need to relocate due to I-580 WB Widening		\$85,000	\$1,020,000
Sprint Fiber Optic Underground	372+00	384+78	1278	Relocate	UNK	UNK	Due to Northside Drive Relocation	done	\$400	\$511,200
Sprint Fiber Optic	387+70	411+65	2395	Relocate	UNK	UNK	Need to relocate due to I-580 WB Widening	done	\$400	\$958,600
Comcast Aerial Communication	436+36	506+85	24	Relocate-6450	12 KV -24 Poles	UNK	Relocate due to I-580 WB Widening Joint with PG&E Electrical Overhead (Distribution) (Above)	done	\$30,000	\$720,000
PG&E Electrical Overhead (Distribution)	436+38	515+84	30	Relocate-6450'	12 KV -30 Poles	UNK	Relocate due to I-580 WB Widening Joint With Comcast (OH) (Below)		\$85,000	\$2,550,000
Sprint Fiber Optic	470+70	506+85	3615	Relocate	UNK	UNK	Needs to Relocate due to Collier Canyon Road relocation		\$400	\$1,446,000
City Of Livermore Sewer	500+83	506+19	536	Relocate	12"	RCP	Relocate due to Collier Canyon Road relocation	done	\$300	\$160,728
Joint trench (TEL,FO,Gas,21KV)	530+71	556+56	2585	Relocate	UNK	UNK	Relocate due to Collier Canyon Road relocation		\$1,100	\$2,843,500
City of Livermore RCW	531+40	544+10	1270	Relocate	12"	PVC	Relocate due to Collier Canyon Road relocation		\$300	\$381,000
City Of Livermore Sewer	540+50	553+46	1296	Relocate	12"	VCP	Relocate due to Collier Canyon Road relocation		\$300	\$388,800
City of Livermore Water	556+20		60	Relocate	4" in 24" STL Casing	UNK	Extend casing on I-580 EB (Split STL Casing)	done	\$1,250	\$75,000
City of Livermore Reclaimed Water	558+20		270	Relocate	24"	PVC	RCW pipe with steel casing (Jack and Bore)	done	\$1,500	\$405,000
PG&E Electrical Underground (Distribution)	574+70	582+00	850	Relocate	2-6" Conduits	UNK	Relocation due to realignment of I-580 off-ramp to Isabel IC	done	\$500	\$425,000
AT&T and Comcast JT	583+13	594+00	1087	Relocate	UNK	UNK	Relocation due to realignment of East Airway Blvd.	done	\$400	\$434,800
PG&E Electrical OH (Distribution)	621+00	635+00	5	Relocate-1400'	OH		Relocation due to realignment of Cayetano Ct (5 poles relocation)	done	\$85,000	\$425,000
City of Livermore Sanitary Sewer	699+80		60	Relocate	33" in STL Casing	UNK	Extend casing past widening on I-580 WB (Split STL Casing)	done	\$1,500	\$90,000
Cal Water	701+10	702+40	130	Relocate	8"	UNK	Relocate due to widening on I-580 WB	done	\$275	\$35,750
PG&E Electrical OH (Distribution)	701+20	702+30	2	Relocate-260'	OH		Relocate due to widening on I-580 WB (2 pole)	done	\$85,000	\$170,000
Cal Water	708+30	715+30	700	Relocate	8"	UNK	Relocate due to Colinas Rd. relocation		\$275	\$192,500
PG&E Electrical OH (Distribution)	719+50	721+60	2	Relocate-360'	OH		Relocate due to widening on I-580 WB (2 pole)	done	\$85,000	\$170,000
PG&E Electrical OH (Distribution)	752+70	790+20	16	Relocate	Poles		Relocate due to widening on I-580 WB		\$85,000	\$1,360,000
AT&T Telephone	752+70	790+30	16	Relocate	UNK	UNK	Relocate due to widening on I-580 WB		\$25,000	\$400,000
City of Livermore Sewer	754+60	782+60	2800	Relocate	24"	VCP	Relocate due to widening on I-580 WB		\$350	\$980,000
City of Livermore Water	757+70	781+25	2355	Relocate	8"	ACP	Relocate due to widening on I-580 WB		\$275	\$647,625
PG&E Gas	759+70	779+70	2000	Relocate	6"	UNK	Relocate due to widening on I-580 WB		\$450	\$900,000
PGE Electrical Underground	760+50	764+00	350	Relocate	UNK	UNK	Relocate due to widening on I-580 WB		\$750	\$262,500
AT&T Telephone	766+80	790+30	2350	Relocate	UNK	UNK	Relocate due to widening on I-580 WB		\$250	\$587,500
PG&E Electrical Underground (Distribution)	770+60	782+00	1140	Relocate	21 kv	UNK	Relocate due to widening on I-580 WB		\$750	\$855,000
City of Livermore Water	790+00		40	Relocate	3" in 14" STL Casing	UNK	Extend casing past widening on I-580 WB (Split STL Casing)	done	\$1,250	\$50,000
Comcast Fiber Optic	801+50	1200	Relocate			UNK	Relocate due to Vasco bridge reconstruction	done	\$400	\$480,000
Comcast Television	801+50	1200	Relocate			UNK	Relocate due to Vasco bridge reconstruction	done	\$250	\$300,000
City of Livermore Water	823+50	60	Relocate	5" in 12" STL Casing			Extend casing past widening on I-580 WB (Split STL Casing)	done	\$1,250	\$75,000
PG&E Electrical Underground (Distribution)	825+30	60	Relocate	7" on 10" STL Casing	UNK	UNK	Extend casing past widening on I-580 WB (Split STL Casing)	done	\$1,200	\$72,000
PG&E Gas	825+30	60	Relocate	30" STL Casing	UNK	UNK	Extend casing past widening on I-580 WB (Split STL Casing)	done	\$1,500	\$90,000
CenturyLink Fiberoptic Underground	4705+00	4716+00	1100	Relocate			Outside of I-580		\$400	\$440,000

TOTAL 40439

\$31,235,000

Westbound I-580 Widening (Alameda County) Required ROW	Total (SF)	Total (Acre)	Unit Price Per SqFt	Total Cost	Remarks	Number of Parcels
TCE	455,604	10.46	\$ 15.00	\$ 6,834,058.52	TCE unit prize is assumed @ 13% of ROW take cost Blended unite cost is used, based on past project data.	69
City Acquisition (Private)	196,309	4.51	\$ 115.00	\$ 22,575,570.10		21
Caltrans Acquisition (Private)	153,466	3.52	\$ 115.00	\$ 17,648,566.37		30
Caltrans Acquisition (Section 83)	230,688	5.30	\$ -	\$ -	ROW relinquishment btw City and Caltrans	9
Eastbound I-580 Widening (Alameda County) Required R/W	Total (SF)	Total (Acre)				Number of Parcels
TCE	145,263	3.33	\$ 15.00	\$ 2,178,938.63	TCE unit prize is assumed @ 13% of ROW take cost Blended unite cost is used, based on past project data.	30
City Acquisition (Private)	132,954	3.05	\$ 115.00	\$ 15,289,710.00		18
Caltrans Acquisition (Private)	15,879	0.36	\$ 115.00	\$ 1,826,085.00	ROW relinquishment btw City and Caltrans at no cost. Soft cost is needed	3
Caltrans Acquisition (Section 83)	107,660	2.47	\$ -	\$ -		3
Total ROW Take Cost				\$ 57,339,931.47		
Total TCE Cost				\$ 9,012,997.15		
Total ROW Take + TCE Cost				\$ 66,352,928.62		

Parcel (APN)	Ownership	Total Parcel Area (Acres)	Total Parcel Area (Square Feet)	TCE (Sq Ft)	ROW Acquisition (Sq Ft)	Reason for Acquisition or Easement
<i>Tri Valley- Westbound I-580 Widening (Alameda County)</i>						
941-550-25-2	Private (X)	2.0969	91,341	1,257		Temporary Construction Easement
941-550-32-2	Private (X)	2.4966	108,752	3,789	1,305	TCE & City Acquisition
941-550-32-3	Private (X)	1.4476	63,057	1,604	1,503	TCE & City Acquisition
Scarlett Court	Public (X)	-	-	7,409	14,825	TCE & Section 83
941-550-28	Private (X)	1.9051	82,986	651	2,148	TCE & City Acquisition
941-550-77-1	Public (X)	3.6668	159,726	7,123	16,636	TCE & City Acquisition & Caltrans Acquisition
941-550-23-3	Private (X)	0.04	1,742	675	2,067	TCE & Caltrans Acquisition
986-1-3-1	Private (X)	0.04	1,742	821	2,622	TCE & Caltrans Acquisition
986-34-19	Private (X)	8.0759	351,786	7,698	3,664	TCE & Caltrans Acquisition
Altamirano Ave	Public (X)	-	-	7,955	9,886	TCE & Section 83
986-34-14	Public (X)	0.09	3,920	6,500	1,748	TCE & City Acquisition
986-33-5-2	Private (X)	13.5633	590,817	3,867	3,970	TCE & Caltrans Acquisition
986-8-1	Private (X)	13.4601	586,322	1,427	214	TCE & Caltrans Acquisition
986-8-17	Private (X)	1.3194	57,473	2,706	875	TCE & Caltrans Acquisition
986-16-23	Private (X)	3.3477	145,826	3,255	2,510	TCE & Caltrans Acquisition
986-16-24	Private (X)	15.8002	688,257	3,920	2,821	TCE & Caltrans Acquisition
986-16-18	Private (X)	7.1235	310,300	19,942	1,776	TCE & Caltrans Acquisition
986-16-4-1	Private (X)	5.5866	243,352	6,469	3,768	TCE & Caltrans Acquisition
986-16-13-2	Private (X)	6.6961	291,682	2,391	904	TCE & Caltrans Acquisition
985-51-5	Private (X)	20.919	911,232	2,722	1,279	TCE & City Acquisition
985-61-7	Private (X)	12.2366	533,026	7,791	8,378	TCE & City Acquisition
985-132-2	Private (X)	2.08	90,605	2,575	2,269	TCE & City Acquisition

Parcel (APN)	Ownership	Total Parcel Area (Acres)	Total Parcel Area (Square Feet)	TCE (Sq Ft)	ROW Acquisition (Sq Ft)	Reason for Acquisition or Easement
Northside Drive	Public (X)	-	-	15,693	18,885	TCE & Section 83
985-61-4	Private (X)	10.7031	466,227	5,130	5,729	TCE & Caltrans Acquisition
985-61-1	Private (X)	0.03	1,307	-	947	TCE & Caltrans Acquisition
985-27-28	Private (X)	16.02	697,648	6,853	6,177	TCE & Caltrans Acquisition
985-27-22	Private (X)	38.78	773,419	9,670	7,593	TCE & Caltrans Acquisition
985-79-6	Private (X)	2.20	773,419	1,237	328	TCE & Caltrans Acquisition
985-27-2	Private (X)	135.7928	5,915,134	13,648	10,874	TCE & City Acquisition
985-27-4	Private (X)	0.8433	36,734	1,298	2,387	TCE & City Acquisition
985-27-5	Private (X)	0.1731	7,540	1,144	2,007	TCE & Caltrans Acquisition
Croak Road	Public (X)	-	-	8,991	12,582	TCE & Section 83
905-1-6-3	Private (X)	50.4126	2,195,973	8,286	9,179	TCE & Caltrans Acquisition
905-1-5-2	Private (X)	49.3736	2,150,714	7,901	9,019	TCE & Caltrans Acquisition
905-1-4-3	Private (X)	8.7969	383,193	4,252	9,198	TCE & City Acquisition
905-1-4-4	Private (X)	39.8626	1,736,415	3,786	8,700	TCE & City Acquisition
905-1-3-2	Private (X)	76.5634	3,335,102	10,656	30,399	TCE & City Acquisition
Collier Canyon Road	Public (X)	-	-	37,240	108,605	TCE & Section 83
905-1-1-2	Private (X)	1.0661	46,439	15,246	44,651	TCE & City Acquisition
905-1-2-2	Private (X)	109.9613	4,789,914	3,207	5,736	Temporary Construction Easement
905-16-88	Private (X)	3.8358	167,087	4,351	8,351	TCE & Caltrans Acquisition
905-9-13-3	Private (X)	11.3141	492,842	4,817	2,966	TCE & Caltrans Acquisition
905-9-60	Private (X)	1.8195	79,257	2,457	3,163	TCE & City Acquisition
905-9-27-1	Private (X)	15.322	667,426	9,210	19,513	TCE & City Acquisition
905-15-17	Private (X)	2.7518	119,868	3,276	6,842	TCE & City Acquisition
905-15-18	Private (X)	2.9245	127,391	2,827	4,192	TCE & City Acquisition
905-15-26	Private (X)	2.7928	121,654	3,496	5,757	TCE & City Acquisition
905-15-27	Private (X)	2.2966	100,040	2,505	3,610	TCE & City Acquisition
Constitution Dr	Public (X)	-	-	23,141	25,681	TCE & Section 83
903-10-36-3	Private (X)	6.5368	284,743	3,590	2,173	TCE & Caltrans Acquisition
903-10-37-4	Private (X)	10.9215	475,741	369	-	Temporary Construction Easement
Arroyo Las Positas	Public (X)	-	-	4,617	2,394	TCE & Section 83

Parcel (APN)	Ownership	Total Parcel Area (Acres)	Total Parcel Area (Square Feet)	TCE (Sq Ft)	ROW Acquisition (Sq Ft)	Reason for Acquisition or Easement
903-9-6-3	Private (X)	26.8435	1,169,303	1,005	222	TCE & Caltrans Acquisition
903-9-6-10	Private (X)	124.1143	5,406,419	799	571	TCE & Caltrans Acquisition
CAYETANO CT	Public (X)	-	-	63,361	7,998	TCE & Section 83
99-15-16-3	Private (X)	103.4915	4,508,090	12,289	3,645	TCE & Caltrans Acquisition
902-8-5-5	Private (X)	3.9854	173,604	2,754	2,491	TCE & Caltrans Acquisition
LAS COLINA RD	Public (X)	-	-	11,091	29,831	TCE & Section 83
902-8-5-9	Private (X)	8.8092	383,729	8,998	22,945	TCE & City Acquisition
902-8-5-8	Private (X)	0.6134	26,720	1,005	2,707	TCE & City Acquisition
902-8-7-2	Private (X)	1.917	83,505	3,553	7,406	TCE & Caltrans Acquisition
902-8-8-2	Private (X)	3.893	169,579	4,805	9,447	TCE & Caltrans Acquisition
902-8-2-2	Private (X)	33.982	1,480,256	10,158	35,366	TCE & Caltrans Acquisition
99-1315-53	Private (X)	0.71	30,928	180	-	Temporary Construction Easement
99-1315-54	Private (X)	1.54	67,082	2,011	-	Temporary Construction Easement
Sunburst Ln/Sundance Dr/Sunflower Ct	Public (X)	-	-	3,087	-	Temporary Construction Easement
Sunflower Ct	Public (X)	-	-	1,164	-	Temporary Construction Easement
Northfront Road	Public (X)	-	-	5,194	-	Temporary Construction Easement
99B-5500-5	Private (X)	0.275	11,979	499	-	Temporary Construction Easement
99B-5500-1-2	Private (X)	0.951	41,426	2,211	762	TCE & Caltrans Acquisition

Tri Valley- Eastbound I-580 Widening (Alameda County)

904-2-6	Private (X)	257.6198	11,221,918	9,370	-	Temporary Construction Easement
904-11-1	Private (X)	2.6043	113,443	921	688	TCE & City Acquisition
904-11-3	Private (X)	1.21	52,708	3,732	6,736	TCE & Caltrans Acquisition
904-4-57	Private (X)	2.5	108,900	3,093	3,206	TCE & City Acquisition
904-4-10-1	Private (X)	5.4867	239,001	7,429	-	Temporary Construction Easement
Kitty Hawk Road	Public (X)	-	-	14,777	9,075	TCE & Section 83

Parcel (APN)	Ownership	Total Parcel Area (Acres)	Total Parcel Area (Square Feet)	TCE (Sq Ft)	ROW Acquisition (Sq Ft)	Reason for Acquisition or Easement
904-4-10-2	Private (X)	4.4	191,664	5,866	-	Temporary Construction Easement
904-4-73	Private (X)	4.8597	211,689	2,833	-	Temporary Construction Easement
904-5-4-7	Private (X)	2.9013	126,381	5,963	6,806	TCE & Caltrans Acquisition
East AIRWAY BLVD	Public (X)	-	-	9,531	5,269	TCE & Section 83
99-15-35-2	Private (X)	0.14	6,098	71	-	Temporary Construction Easement
99-15-36	Private (X)	0.66	28,750	6,123	2,337	TCE & Caltrans Acquisition
99-21-10-2	Private (X)	0.03	1,307	321	32	TCE & City Acquisition
99-21-10-3	Private (X)	3.5763	155,784	3,478	440	TCE & City Acquisition
99-1325-16	Private (X)	2.796	121,794	63	5	TCE & City Acquisition
99-40-1-6	Private (X)	3.4323	149,511	2,846	4,783	TCE & City Acquisition
99-40-2-5	Private (X)	2.4852	108,255	2,005	5,095	TCE & City Acquisition
99-40-3-16	Private (X)	0.5437	23,684	2,260	5,631	TCE & City Acquisition
99-40-6-4	Private (X)	1.0991	47,877	1,992	5,893	TCE & City Acquisition
99-40-53	Private (X)	3.3197	144,606	2,250	7,824	TCE & City Acquisition
99-40-8-5	Private (X)	2.1427	93,336	2,153	8,467	TCE & City Acquisition
99-40-75	Private (X)	64.8572	2,825,180	9,988	56,430	TCE & City Acquisition
99-40-76	Private (X)	5.6491	246,075	2,759	10,825	TCE & City Acquisition
99-40-77	Private (X)	41.1332	1,791,762	6,601	20,633	TCE & City Acquisition
99B-5900-26	Private (X)	2.8967	126,180	2,201	1,825	TCE & City Acquisition
99B-5900-6-22	Private (X)	0.2341	10,197	500	405	TCE & City Acquisition
99B-5900-6-16	Private (X)	0.6118	26,650	1,194	707	TCE & City Acquisition
99B 5900-5-2	Private (X)	2.1103	91,925	204	65	TCE & City Acquisition
SouthFront Road	Public	-	-	34,487	93,316	TCE & Section 83
99B-5900-1-1	Private (X)	2.4975	108,791	251	-	Temporary Construction Easement

Valley Link 15% I-580 Existing Culvert Crossings

#	Culvert Size	Sta Beg	Offset (Ft)	Sta End	Offset (Ft)	Side	Cover (Ft) *	Comment
1	Double 120" x 48" RCB	277+00	168 Lt	278+66	190 Lt	WB x-ing	approx. 13'	Relocation due to Scarlett Ct shift 13' at the median. No cover at Scarlett Ct
2	72" x 48" RCB	297+45				x-ing	TBD	looks deep
3	Triple 54" RCP	305+00				x-ing	approx. 6'	approx. cover depth at the median
4	96" x 48" RCB	315+25				x-ing	approx. 5'	approx. cover depth at the median
5	96" x 36" RCB	369+00				x-ing	approx. 3'	approx. cover depth at the median
6	Triple 165" x 106" RCB	385+25				x-ing	approx. 5'	approx. cover depth at the median
7	Double 96" x 48" RCB	406+25				x-ing	approx. 4'	approx. cover depth at the median
8	72" x 24 RCB	426+00	135 Lt	428+00	114 Lt	WB	TBD	Need extension under shifted on-ramp
9	96" x 36" RCB	438+20	138 Lt	439+55	136Lt	x-ing	TBD	Need extension due to widening
10	Double 118" x 96" RCB	487+88				x-ing	approx. 4'	approx. cover depth at the median
11	36" CMP	508+66				x-ing	approx. 4'	approx. cover depth at the median
12	42" RCP	515+40				x-ing	approx. 4'	approx. cover depth at the median
13	42" RCP	527+00				x-ing	TBD	
14	36" CMP	538+20				x-ing	approx. 4'	approx. cover depth at the median
15	Double 120" x 84" RCB	550+00				x-ing	approx. 6'	approx. cover depth at the median
16	72" RCP	565+50				x-ing	approx. 20'	approx. cover depth at the median
17	36" CMP	699+00				x-ing	approx. 10'	approx. cover depth at the median
18	36" CMP	715+60				x-ing	approx. 5'	approx. cover depth at the median
20	47" x 24 RCB	750+60				x-ing	TBD	
21	Double 36" RCP	806+00				x-ing	approx. 4'	approx. cover depth at the median
22	Double 216" x 96" RCB	821+50				x-ing	approx. 3'	approx. cover depth at the median

The total for the box culverts is right at \$2,000,000 or about \$165/sf. Per Thomas Barnard

\$2,000,000.00

Note: Culvert size information taken from advertised plans for projects EA 04-2908C4 and 04-2908E4

Stationing based off "B" line

* Depth of cover to be confirmed by survey, all dimensions are approximate

Section 5: I-580 Express Lanes System

Existing System Cost (2015 \$ Cost)				Temporary Electrical & TOS Cost			Electrical & TOS Cost			
Contract	Lighting and Sign Illumination	Electronic Toll System (ETS)	System Integrator	Lighting and Sign Illumination	Electronic Toll System (ETS)	System Integrator	Lighting and Sign	Electronic Toll System (ETS)	System Integrator	PG&E Coordination
WB HOV WEST EA-04-2908E4	\$ 1,075,000.00	\$ 570,000.00	\$ 17,400,000.00	Temporary (.5 times original cost)	Temporary (.75 times original cost) *	Temporary (original cost) **	Final (double existing)	Final (double existing)	Final (1.2 times original cost)	
WB HOV EAST EA-04-2908C4	\$ 974,000.00	\$ 1,270,000.00		\$ 1,150,000.00	\$ 3,975,000.00	\$ 19,600,000.00	\$ 4,600,000.00	\$ 10,600,000.00	\$ 23,520,000.00	\$ 500,000.00
EB Aux LANE EA-04-2908V4	\$ 21,000.00	\$ 2,840,000.00		\$ 1,150,000.00	\$ 3,975,000.00	\$ 19,600,000.00	\$ 4,600,000.00	\$ 10,600,000.00	\$ 23,520,000.00	\$ 500,000.00
Total			\$ 24,150,000.00	\$ 24,730,000.00			\$ 39,220,000.00			
							\$ 64,000,000			
Per ACTC EX Lanes (IC-417-LAVTA1617.pdf)			\$ 55,000,000	\$ 33,000,000			\$ 110,000,000			2 times original c
ACTC EX Lanes\ACTC comments and letters\IC-417-LAVTA1617.pdf				(0.6* original cost)			\$ 143,000,000			WB and one new to use the same coul

VALLEY LINK
COMMUNICATIONS BUDGETARY ESTIMATE

M. LAVIOLA
Feb. 15,2019

Item No.	Subsystem	Equipment Included	Quantity		\$/ft	HW &SW	HW/SW+Install	Total UC
1	FO Backbone	2 FO Cables 48str, 4 conduit 2x2 ductbank	41.82	mi	30		\$8,324,390	\$200,000
2	Station Enclosures	NEMA5 Cabinets,UPS&Batteries	7			\$455,000	\$1,137,500	\$162,500
3	FO Backbone Switches and WAN Access Pts	PCC, BCC, Radio Sites, Yard Transmission Equipment and NMS	LS			\$403,671	\$1,009,178	\$1,009,178
4	CCTV	PCC, BCC, Radio Sites, Yard Cameras NVR, Video Management and Wall Displays	18			\$670,400	\$1,676,000	\$93,111
5	Master Clock	GPS Satellite Radio & Antenna	2			\$64,000	\$160,000	\$80,000
6	VNF V&D Radio	8 channel VHF Radio, Tower, Antennas Cabinet, UPS, Batteries, DAS	10			\$390,000	\$975,000	\$97,500
7	SCADA	PCC & BCC PA Headends, SCADA shelves at 7 Stations & 10 Radio Sites	17			\$242,282	\$605,705	\$35,630
8	Telephone	2 Headend IP PBXs, Help Pole IP Phones	3			\$203,375	\$508,438	\$169,479
9	PA System	PCC & BCC PA Headends, Station Equipment, Interfaces with VMS & Signals AVL, Labor	7			\$521,958	\$1,304,895	\$186,414
10	VMS (2 per station)	Headend Controls and Station Signs, Labor	14			\$250,552	\$626,380	\$44,741
11	TVM (2 per station)	Station TVM & Headend Servers	14			\$380,000	\$950,000	\$67,857
COMMUNICATIONS TOTALS			41.8206				\$17,277,485	\$413,133

VALLEY LINK

Train Controls & Signaling

DESCRIPTION	UNIT COST	SEGMENT 1				SEGMENT 2				SEGMENT 3				TOTAL ALL SEGMENTS
		QUANTITY	EQUIPMENT COST	INSTALL COST	TOTAL	QUANTITY	EQUIPMENT COST	INSTALL COST	TOTAL	QUANTITY	EQUIPMENT COST	INSTALL COST	TOTAL	
SEGMENT LENTH	MILES	11.00				14.00				4.60				29.60 Miles
	FEET	58,080				73,920				24,288				156,288 Feet
Train Control & Signaling														
New Intermediate Signals Double Track	\$300,000 EACH	5	\$1,500,000	\$3,000,000	\$4,500,000	6	\$1,800,000	\$3,600,000	\$5,400,000	2	\$600,000	\$1,200,000	\$1,800,000	\$11,700,000
New Turnout Signal	\$650,000 EACH	6	\$3,900,000	\$7,800,000	\$11,700,000	3	\$1,950,000	\$3,900,000	\$5,850,000	5	\$3,250,000	\$6,500,000	\$9,750,000	\$27,300,000
New Grade Crossing Signals	\$350,000 EACH	-	\$0	\$0	\$0	6	\$2,100,000	\$4,200,000	\$6,300,000	5	\$1,750,000	\$3,500,000	\$5,250,000	\$11,550,000
Switches	\$30,000 EACH	12	\$360,000	\$720,000	\$1,080,000	6	\$180,000	\$360,000	\$540,000	10	\$300,000	\$600,000	\$900,000	\$2,520,000
Switch Cable	\$12.00 LF	8,000	\$96,000	\$192,000	\$288,000	4000	\$48,000	\$96,000	\$144,000	6000	\$72,000	\$144,000	\$216,000	\$648,000
Signals	\$5,000 EACH	30	\$150,000	\$300,000	\$450,000	15	\$75,000	\$150,000	\$225,000	15	\$75,000	\$150,000	\$225,000	\$900,000
Signal cable	\$7.00 LF	12,000	\$84,000	\$168,000	\$252,000	6000	\$42,000	\$84,000	\$126,000	6000	\$42,000	\$84,000	\$126,000	\$504,000
Main Gates	\$10,000 EACH	10	\$100,000	\$200,000	\$300,000	12	\$120,000	\$240,000	\$360,000	10	\$100,000	\$200,000	\$300,000	\$960,000
Sidewalk Gates	\$6,000 EACH	10	\$60,000	\$120,000	\$180,000	12	\$72,000	\$144,000	\$216,000	10	\$60,000	\$120,000	\$180,000	\$576,000
Gate Cables	\$6.00 LF	4,000	\$24,000	\$48,000	\$72,000	8000	\$48,000	\$96,000	\$144,000	8000	\$48,000	\$96,000	\$144,000	\$360,000
Fiber	\$4.00 LF	60,000	\$240,000	\$480,000	\$720,000	75000	\$300,000	\$600,000	\$900,000	30000	\$120,000	\$240,000	\$360,000	\$1,980,000
Inner Duct	\$3.00 LF	60,000	\$180,000	\$360,000	\$540,000	75000	\$225,000	\$450,000	\$675,000	30000	\$90,000	\$180,000	\$270,000	\$1,485,000
Power Cables	\$4.00 LF	2,000	\$8,000	\$16,000	\$24,000	6000	\$24,000	\$48,000	\$72,000	6000	\$24,000	\$48,000	\$72,000	\$168,000
SUBTOTAL			\$6,702,000	\$13,404,000	\$20,106,000		\$6,984,000.00	\$13,968,000.00	\$20,952,000.00		\$6,531,000	\$13,062,000	\$19,593,000	\$60,651,000
														USE ==> \$2,049,020 per mile
PCC & BCC														
OCC Servers (Redundant for PCC and BCC)	\$50,000 EACH	2	\$100,000		\$100,000				\$0				\$0	\$100,000
OCC Contro Consoles (Redundant for PCC and BCC)	\$20,000 EACH	2	\$40,000		\$40,000				\$0				\$0	\$40,000
OCC Work Stations (Maintenance) (Redundant for PCC and BCC)	\$15,000 EACH	2	\$30,000		\$30,000				\$0				\$0	\$30,000
Network Switches, interface and Misc Cables (Redundant for PCC and BCC)	\$15,000 EACH	2	\$30,000		\$30,000				\$0				\$0	\$30,000
Revision per Segment (Redundant for PCC and BCC)	\$65,000 EACH	1	\$65,000		\$65,000	1	\$65,000		\$65,000	1	\$65,000		\$65,000	\$195,000
SUBTOTAL			\$265,000	\$0	\$265,000		\$65,000.00	\$0.00	\$65,000.00		\$65,000	\$0	\$65,000	\$395,000