

**WEST CONTRA COSTA HIGH-CAPACITY TRANSIT STUDY
TASK NUMBER 13.2:
REFINED PRELIMINARY SCREENING COST ESTIMATE**

**PRELIMINARY ESTIMATE OF
PROBABLE CONSTRUCTION COST
(AN OPINION OF PROBABLE CONSTRUCTION COST)
BASED ON
DRAFT TECHNICAL MEMORANDUM (TM) #11
ALTERNATIVES REFINEMENT DATED NOV. 2016**

**Owner
WEST CONTRA COSTA TRANSPORTATION ADVISORY COMMITTEE
(WCCTAC)**

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Date: 03/24/2017 Final

1165 WCCTAC HCTS-Alts Cost Estimate 20170324 Final

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TASK ORDER 13.2: REFINED PRELIMINARY SCREENING COST ESTIMATE
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PREAMBLE (BASIS OF ESTIMATE)**

Date: 03/24/2017 Final

1.0 Outline

1.1 The preliminary conceptual construction cost estimate, which represents our opinion of probable construction costs, is comprised of the following integral parts:

- A) Preamble
- B) Summary
- C) Cost Detail Estimates

1.2 The estimate is part of Task 13.2 for preliminary screening of alternatives to determine which alternatives should be advanced to project development.

2.0 Basis of Estimate:

2.1 The estimate has been prepared based on the following information:

Revised Draft Technical Memorandum #8 - Preliminary Alternatives dated October 2015 prepared by WSP/Parsons Brinckerhoff with Kimley-Horn and RL Banks.

Draft Technical Memorandum #11 Alternatives Refinement dated November 2016

TM #11 Appendix A

TM #11 Appendix B

Updated Estimates of Vehicle Requirement for Final Alternatives dated 12/15/2016

SCC_Workbook_Rev_14

TM 13_cost Estimates_Outlines_v01

Meeting at WCCTAC's Office on 11/3/2016

Clarifications from designers/planners via emails and telephone calls.

Incorporate of relevant comments from the team on the preliminary draft.

2.2 The estimate is considered as Class 4 Estimate by AACE Estimate Classification for Alternatives 1, 2 and 3, and Class 5 Estimate for Alternatives 6A & 6B, which represent the most likely cost scenario at this early stage of project development. Class 4 is based on limited information with project definition from 1 to 15% complete. Class 5 is based on limited information with project definition from 0 to 2%. Expected accuracy ranges for Class 4 estimate are -15% to -30% on the lower end and +20 to +50% on the higher end; expected accuracy range for Class 5 estimate are -20% to -50% on the lower end and +30 to +100% on the higher end

The above classification is per AACEI Recommended Practice 18R-97: Cost Estimate Classification System. Typical range of accuracies for the 5 estimate classes based on the above Recommended Practice is illustrated below:

March 1, 2016

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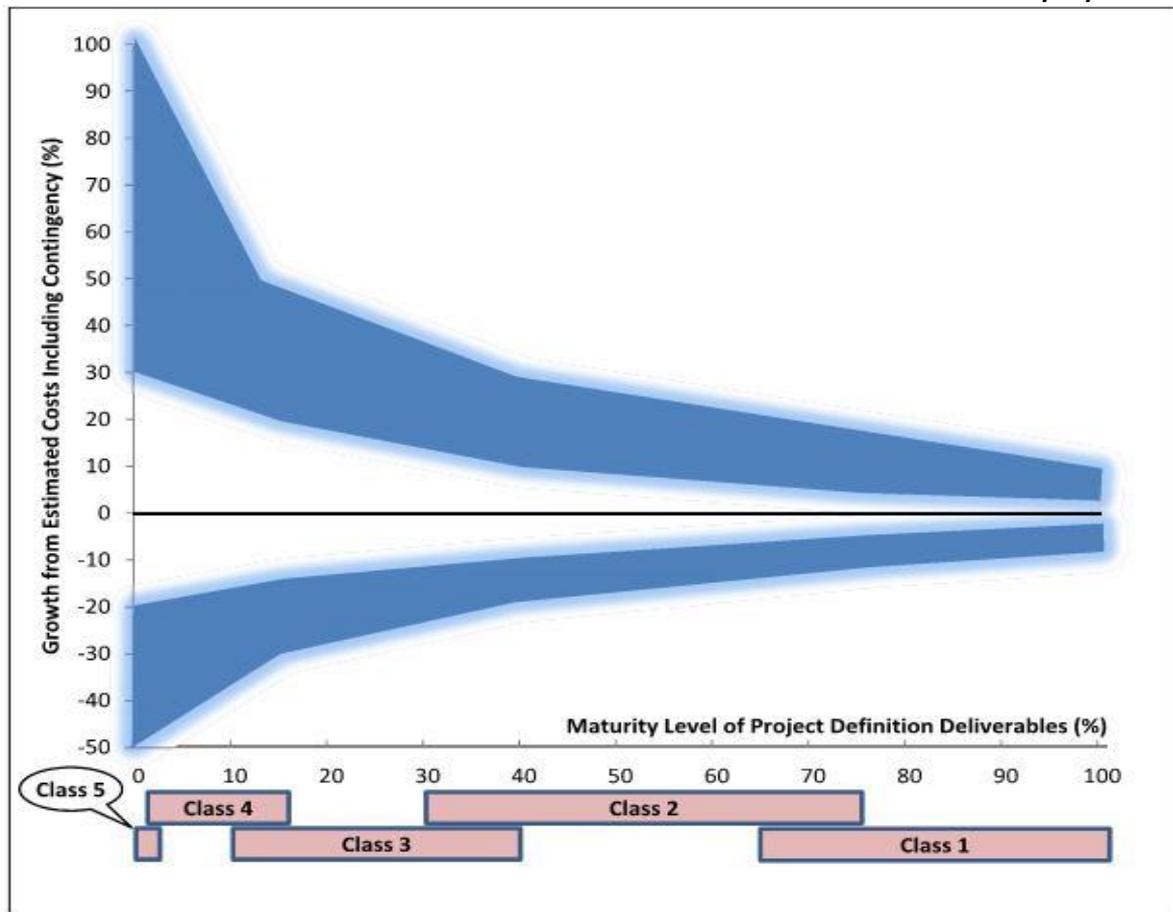


Figure 1 – Example of the Variability in Accuracy Ranges for a Process Industry Estimate

3.0 Scope

3.1 The general major scope of work in this estimate, per the information listed above, is for five refined alternatives including one for express bus, two for BRT and two for BART, as below:

Alt 1: Express Bus

Alt 2: San Pablo Avenue/ Macdonald Avenue BRT

Alt 3: 23rd Street BRT

Alt 4: Regional Intermodal Transit Center + Fare Subsidy Pilot Program

Note: Capital cost estimates were provided by the City of Hercules; fare subsidy involves operation costs and are not part of these capital cost estimate.

Alt 6A: BART Extension from Richmond Station to Hercules - Rumrill Boulevard Alignment

Alt 6B: BART Extension from Richmond Station to Hercules - Richmond Parkway Alignment

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The scope of work would be phased as follows:

Short-term improvements (1-5 years)

Medium-term improvements (5-15 years)

Long-term improvements (15+ years)

Assumed the following scope:

Parking structures assumed to be 500 spaces per location

Note: The projected parking demand exceeds the 500 space parking garage included in the cost estimates. The actual number of spaces to be provided would be based on further study and agreement reached between the local jurisdiction and the transit operator.

Surface parking lots are assumed to be 300 spaces per location

Parking spaces assumed to be 350 square feet each

Note: Parking space assumptions will need to be refined once ridership is available

Roadway improvements include allowance for repair of (E) sub base (30% of total roadway)

3.2 Items specifically excluded from the estimate:

Cost escalation from 2017 dollars (base year);

Finance charges

Scope of work outside of West Contra Costa HCT Project limit is excluded except where specifically noted in the cost estimate

Support facilities

Sea level rise mitigation work

Additional negotiation cost with UPRR and BNSF

Roadway improvements for "mixed flow" roadway

Abatement of contaminated soils or hazmat, if any

Unanticipated or unusual market conditions

It is assumed that the above items, if needed, are included elsewhere in the owner's overall project budget.

3.3 All costs are base year costs in 2017 dollars. No cost escalation to YOE is included as there are no project schedules available for the escalation/projection calculation. 2040 Service costs are shown in 2017 dollars.

4.0 Assumptions and Qualifications

4.1 The estimate is based on estimated prices current as of January 2017, with a minimum of four responsible and responsive bids under a competitive bidding environment for a fixed price lump sum contract (a fair market condition).

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Note: Experience indicates that fewer bidders may result in higher bids, and conversely more bidders may result in more competitive bids. Therefore it is important to obtain as many bids as possible.

- 4.2 The estimate is based on all work to be performed during normal working hours.
- 4.3 Allowances have been used for items which are required but are not able to be defined at this time.
- 4.4 The unit prices used in the direct cost section are composite unit prices which include costs for material including tax, labor, equipment and subcontractor's/supplier's mark-ups.
- 4.5 Items potentially affecting the cost estimate, but which are not included in this estimate, may include, but are not limited to, the following:
 - Modifications to the scope of work included in this estimate.
 - Unforeseen sub-surface conditions.
 - Unforeseen structural upgrade requirements.
 - 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 three different sources.
 - Any other non-competitive bid situations.
- 4.6 The estimate has been prepared using accepted practices and it represents our opinion of probable construction costs. We make no other warranties, either expressed or implied, and are not responsible for the interpretation by others of the contents herein the cost estimate. It should also 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.
- 4.7 Please note that the estimate has been based on very preliminary and limited information and it only serves as a general guideline for preliminary screening of alternatives. All cost data presented in this estimate are preliminary and conceptual in nature. More specific and detailed studies in the future should be conducted as the design and planning progress.

5 Basis for Pricing

In pricing the estimate, we have made references to the following sources for cost data:

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Historical cost data, escalated to 2017 costs

2016 RS Means Construction Cost Data by RS Means (general use for building up unit costs)

2016 National Construction Estimator by Craftsman (general use for building up unit costs)

Construction Economics in Engineering-News-Record (ENR) (for material costs and building market trends)

Walker's Building Estimator's Reference Book by Frank R. Walker Company (for general references)

Based on the above cost sources, our analysis of the project specific requirements and our judgment of the current market conditions, we have arrived at the unit costs specifically for this project.

6.0 Abbreviations used in the estimate:

CY = cubic yard

EA = each

GSF = Gross Square Area

LF = linear foot

LS = lump sum

NIC = Not in Contract (Excluded from the Estimate)

SF = square foot

TC = Transit Center

7.0 Components for short-, medium- and long-term improvements for each alternative are as below:

Express Bus

Short-term:

More frequent service

New service to Berkeley, Emeryville and Oakland

Bus priority improvements, e.g. signals, queue jumps

Medium-term:

All short-improvements (above)

Expanded parking at Richmond Parkway and Hercules Transit Centers

Long-term:

All short- and medium-term improvements (above)

Freeway ramp improvements at Richmond Parkway and Hercules Transit Centers

New Express Bus-BRT transit center at Macdonald and I-80

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BRT

Short-term:

- Bus priority improvements, e.g. signals, queue jumps
- Extend Rapid Bus improvements to Richmond Parkway
- Bus only lanes in some locations

Medium-term:

- All short-improvements (above)
- Expanded parking at Richmond Parkway and Hercules Transit Centers
- Continued implementation of bus-only lanes
- Extend Rapid Bus service to Hercules Transit Center

Long-term:

- All short- and medium-term improvements (above)
- New Express Bus-BRT transit center at MacDonald and I-80
- Bus-only lanes between 23rd Street and Richmond Parkway Transit Center
- Extend Rapid Bus service to Hercules Intermodal Transit Center

BART

Short-term:

- Preliminary engineering design and environmental review to select alignment and potential station locations
- Early right-of-way acquisition (with environmental clearance)

Medium- and long-term:

- Final design and construction

ESTIMATED PROJECT COST BASE YEAR 2017

WCCTAC HCT Alternatives Cost Estimate					
Alternative #	Name	Short-term (1-5 Years)	Medium-term (5-15 Years)	Long-term (15+ Years)	TOTAL
Alternative 1	Express Bus	\$ 11,000,000	\$ 90,000,000	\$ 141,000,000	\$ 242,000,000
Alternative 2	San Pablo Avenue/ Macdonald Avenue BRT	\$ 3,000,000	\$ 180,000,000	\$ 60,000,000	\$ 243,000,000
Alternative 3	23rd Street BRT	\$ 17,000,000	\$ 99,000,000	\$ 63,000,000	\$ 179,000,000
Alternative 4	UPRR Corridor Commuter Rail: A) Fare Subsidy Pilot Program* B) Completion of Hercules Regional Intermodal TC which is under construction**	\$ -	\$ 68,600,000	\$ -	\$ 68,600,000
Alternative 5	UPRR BNSF Corridor Commuter Rail	Eliminated - Not Carried Forward			
Alternative 6A	BART Extension from Richmond Station to Hercules - Rumrill Boulevard Alignment	\$ 56,000,000	\$ 74,000,000	\$ 3,452,000,000	\$ 3,582,000,000
Alternative 6B	BART Extension from Richmond Station to Hercules - Richmond Parkway Alignment	\$ 69,000,000	\$ 92,000,000	\$ 3,995,000,000	\$ 4,156,000,000
Alternative 7.1	BART Extension from del Norte Station to Hercules	Eliminated - Not Carried Forward			
Alternative 7.2	BART DMU Extension from del Norte Station to Hercules	Eliminated - Not Carried Forward			

* Fare subsidy involves operating costs and are not part of these capital cost estimates.

** Capital cost estimate is per TIGER 2016 Application for Hercules Intermodal Transit Center as provided by the City of Hercules.

Please see attached Preamble (Basis of Estimate), Estimate Summaries and Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

ESTIMATED PROJECT COST BASE YEAR 2017

Note:

- 1 All estimated costs are in 2017 dollars (base year); no cost escalation is included
- 2 Parking structures assumed to be 500 spaces per location
- 3 Surface parking lots are assumed to be 300 spaces per location
- 4 Parking spaces assumed to be 350 square feet each
- 5 Roadway improvements include allowance for repair of (E) sub base (30% of total roadway
- 6 Finance charges are excluded
- 7 Scope of work outside of West Contra Costa HCT Project limit is excluded except where
- 8 specifically noted in the cost estimate
- 9 Exclude support facilities
- 10 Exclude sea level rise mitigation work
- 11 Exclude additional negotiation cost with UPRR and BNSF
- 12 No roadway improvements for "mixed flow" roadway
- 13 Abatement of contaminated soils or hazmat, if any, is excluded
- 14 Included an allowance of \$10 million for land acquisition for widening an elevated portion of I-80 for
the transit center at Macdonald/I-80 (Alt #1)
- 15 Included an allowance of \$2 million for business impacts for Alt #2 and \$2.5 million for Alt #3

SCC	ITEMS	SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)				
		5%	10%	30%	Base Year Total \$ (2017)	5%	10%	30%	Base Year Total \$ (2017)	5%	10%	30%	Base Year Total \$ (2017)			
		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	
	DIRECT CONSTRUCTION COST															
10	Guideway	-	-	-	-	-	-	-	-	-	-	48,060,000	2,403,000	5,046,300	16,652,790	72,162,090
20	Stations	-	-	-	-	-	31,040,000	1,552,000	3,259,200	10,755,360	46,606,560	1,140,000	57,000	119,700	395,010	1,711,710
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Sitework and Special Conditions	-	-	-	-	-	10,000,000	500,000	1,050,000	3,465,000	15,015,000	6,156,000	307,800	646,380	2,133,054	9,243,234
50	Systems	2,000,000	100,000	210,000	693,000	3,003,000	300,000	15,000	31,500	103,950	450,450	300,000	15,000	31,500	103,950	450,450
A	SUBTOTAL - DIRECT CONSTRUCTION COST	2,000,000	100,000	210,000	693,000	3,003,000	41,340,000	2,067,000	4,340,700	14,324,310	62,072,010	55,656,000	2,782,800	5,843,880	19,284,804	83,567,484
	ALLOWANCE															
60	ROW, Land, Existing Improvements	-	N/A	N/A	-	-	-	N/A	N/A	-	-	19,455,000	N/A	N/A	9,727,500	29,182,500
70	Vehicles, includes markups	6,000,000	N/A	N/A	1,200,000	7,200,000	6,000,000	N/A	N/A	1,200,000	7,200,000	-	N/A	N/A	-	-
80	Professional Services (% of Direct Construction Cost "A"): 40%	800,000	N/A	N/A	80,000	880,000	16,536,000	N/A	N/A	1,653,600	18,189,600	22,262,400	N/A	N/A	2,226,240	24,488,640
B	SUBTOTAL - ALLOWANCE	6,800,000	-	-	1,280,000	8,080,000	22,536,000	-	-	2,853,600	25,389,600	41,717,400	-	-	11,953,740	53,671,140
90	Unallocated Contingency (3.5%)	308,000	N/A	N/A	-	308,000	2,235,660	N/A	N/A	-	2,235,660	3,408,069	N/A	N/A	-	3,408,069
100	Finance Charges - Excluded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	SUBTOTAL - UNALLOCATED CONTINGENCY	308,000	-	-	-	308,000	2,235,660	-	-	-	2,235,660	3,408,069	-	-	-	3,408,069
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	9,108,000	100,000	210,000	1,973,000	11,391,000	66,111,660	2,067,000	4,340,700	17,177,910	89,697,270	100,781,469	2,782,800	5,843,880	31,238,544	140,646,693
	Rounded-off to nearest \$100,000					11,000,000					90,000,000				141,000,000	

Please see attached Preamble (Basis of Estimate), and Estimate Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

SCC	ITEMS	SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)					
		5%	10%	30%	Base Year Total \$ (2017)	5%	10%	30%	Base Year Total \$ (2017)	5%	10%	30%	Base Year Total \$ (2017)				
		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)		
	DIRECT CONSTRUCTION COST																
10	Guideway	-	-	-	-	-	25,437,000	1,271,850	2,670,885	8,813,921	38,193,656	5,852,000	292,600	614,460	2,027,718	8,786,778	
20	Stations	-	-	-	-	-	3,878,000	193,900	407,190	1,343,727	5,822,817	4,558,000	227,900	478,590	1,579,347	6,843,837	
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	Sitework and Special Conditions	-	-	-	-	-	17,200,600	860,030	1,806,063	5,960,008	25,826,701	9,024,280	451,214	947,549	3,126,913	13,549,956	
50	Systems	1,475,000	73,750	154,875	511,088	2,214,713	12,365,000	618,250	1,298,325	4,284,473	18,566,048	6,347,000	317,350	666,435	2,199,236	9,530,021	
A	SUBTOTAL - DIRECT CONSTRUCTION COST	1,475,000	73,750	154,875	511,088	2,214,713	58,880,600	2,944,030	6,182,463	20,402,129	88,409,222	25,781,280	1,289,064	2,707,034	8,933,214	38,710,592	
	ALLOWANCE																
60	ROW, Land, Existing Improvements	-	N/A	N/A	-	-	1,090,000	N/A	N/A	545,000	1,635,000	2,577,000	N/A	N/A	1,288,500	3,865,500	
70	Vehicles, includes markups	-	N/A	N/A	-	-	48,000,000	N/A	N/A	9,600,000	57,600,000	3,000,000	N/A	N/A	600,000	3,600,000	
80	Professional Services (% of Direct Construction Cost "A"): 40%	590,000	N/A	N/A	59,000	649,000	23,552,240	N/A	N/A	2,355,224	25,907,464	10,312,512	N/A	N/A	1,031,251	11,343,763	
B	SUBTOTAL - ALLOWANCE	590,000	-	-	59,000	649,000	72,642,240	-	-	12,500,224	85,142,464	15,889,512	-	-	2,919,751	18,809,263	
90	Unallocated Contingency (5%)	103,250	N/A	N/A	-	103,250	6,576,142	N/A	N/A	-	6,576,142	2,083,540	N/A	N/A	-	2,083,540	
100	Finance Charges - Excluded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C	SUBTOTAL - UNALLOCATED CONTINGENCY	103,250	-	-	-	103,250	6,576,142	-	-	-	6,576,142	2,083,540	-	-	-	2,083,540	
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	2,168,250	73,750	154,875	570,088	2,966,963	138,098,982	2,944,030	6,182,463	32,902,353	180,127,828	43,754,332	1,289,064	2,707,034	11,852,965	59,603,395	
	Rounded-off to nearest \$100,000					3,000,000					180,000,000				60,000,000		

Note: Estimated capital cost for the Macdonald Avenue Improvement included above (including 8 each specialized BRT buses for a total of \$12 million)

27,320,000

Please see attached Preamble (Basis of Estimate), and Estimate Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

SCC	ITEMS	SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)				
		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)
10	Guideway	7,140,000	357,000	749,700	2,474,010	10,720,710	16,505,000	825,250	1,733,025	5,718,983	24,782,258	6,273,000	313,650	658,665	2,173,595	9,418,910
20	Stations	350,000	17,500	36,750	121,275	525,525	3,038,000	151,900	318,990	1,052,667	4,561,557	2,184,000	109,200	229,320	756,756	3,279,276
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Sitework and Special Conditions	-	-	-	-	-	9,724,000	486,200	1,021,020	3,369,366	14,600,586	4,186,000	209,300	439,530	1,450,449	6,285,279
50	Systems	725,000	36,250	76,125	251,213	1,088,588	575,000	28,750	60,375	199,238	863,363	17,060,000	853,000	1,791,300	5,911,290	25,615,590
A	SUBTOTAL - DIRECT CONSTRUCTION COST	8,215,000	410,750	862,575	2,846,498	12,334,823	29,842,000	1,492,100	3,133,410	10,340,254	44,807,764	29,703,000	1,485,150	3,118,815	10,292,090	44,599,055
60	ROW, Land, Existing Improvements	-	N/A	N/A	-	-	748,000	N/A	N/A	374,000	1,122,000	2,322,000	N/A	N/A	1,161,000	3,483,000
70	Vehicles, includes markups	-	N/A	N/A	-	-	30,000,000	N/A	N/A	6,000,000	36,000,000	-	N/A	N/A	-	-
80	Professional Services (% of Direct Construction Cost "A"): 40%	3,286,000	N/A	N/A	328,600	3,614,600	11,936,800	N/A	N/A	1,193,680	13,130,480	11,881,200	N/A	N/A	1,188,120	13,069,320
B	SUBTOTAL - ALLOWANCE	3,286,000	-	-	328,600	3,614,600	42,684,800	-	-	7,567,680	50,252,480	14,203,200	-	-	2,349,120	16,552,320
90	Unallocated Contingency (5%)	575,050	N/A	N/A	-	575,050	3,626,340	N/A	N/A	-	3,626,340	2,195,310	N/A	N/A	-	2,195,310
100	Finance Charges - Excluded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	SUBTOTAL - UNALLOCATED CONTINGENCY	575,050	-	-	-	575,050	3,626,340	-	-	-	3,626,340	2,195,310	-	-	-	2,195,310
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	12,076,050	410,750	862,575	3,175,098	16,524,473	76,153,140	1,492,100	3,133,410	17,907,934	98,686,584	46,101,510	1,485,150	3,118,815	12,641,210	63,346,685
	Rounded-off to nearest \$100,000					17,000,000					99,000,000				63,000,000	

Please see attached Preamble (Basis of Estimate), and Estimate Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

SCC	ITEMS	N/A					N/A					N/A						
		SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)						
		5%	10%	30%	Base Year Total \$ (2017)		5%	10%	30%	Base Year Total \$ (2017)		5%	10%	30%	Base Year Total \$ (2017)			
Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)			Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)			Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)			
	DIRECT CONSTRUCTION COST																	
10	Guideway	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	Stations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Sitework and Special Conditions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	Systems	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A	SUBTOTAL - DIRECT CONSTRUCTION COST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	ALLOWANCE																	
60	ROW, Land, Existing Improvements	N/A	N/A	-	-	-	N/A	N/A	-	-	-	N/A	N/A	-	-	-	-	-
70	Vehicles, includes markups	N/A	N/A	-	-	-	N/A	N/A	-	-	-	N/A	N/A	-	-	-	-	-
80	Professional Services (% of Direct Construction Cost "A"): 40%	N/A	N/A	-	-	-	N/A	N/A	-	-	-	N/A	N/A	-	-	-	-	-
B	SUBTOTAL - ALLOWANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	Unallocated Contingency (5%)		N/A	N/A		-		N/A	N/A		-		N/A	N/A		-		-
100	Finance Charges - Excluded		-	-		-		-	-		-		-	-		-		-
C	SUBTOTAL - UNALLOCATED CONTINGENCY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rounded-off to nearest \$100,000					-					-							-

ESTIMATE SUMMARY ALTERNATIVE 6A - BART EXTENSION FROM RICHMOND STATION TO HERCULES - RUMRILL BOULEVARD ALIGNMENT

SCC	ITEMS	SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)				
		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (40%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (40%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (40%) (Direct Construction Cost only)	Base Year Total \$ (2017)
	DIRECT CONSTRUCTION COST															
10	Guideway	-	-	-	-	-	-	-	-	-	-	1,144,000,000	57,200,000	120,120,000	528,528,000	1,849,848,000
20	Stations	-	-	-	-	-	-	-	-	-	-	319,000,000	15,950,000	33,495,000	147,378,000	515,823,000
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Sitework and Special Conditions	-	-	-	-	-	-	-	-	-	-	33,600,000	1,680,000	3,528,000	15,523,200	54,331,200
50	Systems	-	-	-	-	-	-	-	-	-	-	136,000,000	6,800,000	14,280,000	62,832,000	219,912,000
A	SUBTOTAL - DIRECT CONSTRUCTION COST	-	-	-	-	-	-	-	-	-	-	1,632,600,000	81,630,000	171,423,000	754,261,200	2,639,914,200
	ALLOWANCE															
60	ROW, Land, Existing Improvements	-	N/A	N/A	-	-	-	N/A	N/A	-	-	229,178,500	N/A	N/A	114,589,250	343,767,750
70	Vehicles, includes markups	-	N/A	N/A	-	-	-	N/A	N/A	-	-	180,000,000	N/A	N/A	36,000,000	216,000,000
80	Professional Services (% of Direct Construction Cost "A"): Short term-3% up to programmatic EIR; Medium term-4% for PE; Long term-8% for final design	49,000,000	N/A	N/A	4,900,000	53,900,000	65,300,000	N/A	N/A	6,530,000	71,830,000	130,608,000	N/A	N/A	13,060,800	143,668,800
B	SUBTOTAL - ALLOWANCE	49,000,000	-	-	4,900,000	53,900,000	65,300,000	-	-	6,530,000	71,830,000	539,786,500	-	-	163,650,050	703,436,550
90	Unallocated Contingency (5%)	1,715,000	N/A	N/A	-	1,715,000	2,285,500	N/A	N/A	-	2,285,500	108,619,325	N/A	N/A	-	108,619,325
100	Finance Charges - Excluded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	SUBTOTAL - UNALLOCATED CONTINGENCY	1,715,000	-	-	-	1,715,000	2,285,500	-	-	-	2,285,500	108,619,325	-	-	-	108,619,325
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	50,715,000	-	-	4,900,000	55,615,000	67,585,500	-	-	6,530,000	74,115,500	2,281,005,825	81,630,000	171,423,000	917,911,250	3,451,970,075
	Rounded-off to nearest \$100,000					56,000,000					74,000,000					3,452,000,000

Please see attached Preamble (Basis of Estimate), and Estimate Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

ESTIMATE SUMMARY ALTERNATIVE 6B - BART EXTENSION FROM RICHMOND STATION TO HERCULES - Richmond Parkway Alignment

SCC	ITEMS	SHORT-TERM (1-5 YEARS)					MEDIUM-TERM (5-15 YEARS)					LONG-TERM (15+ YEARS)				
		Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)	Subtotal Direct Construction Cost \$	Contractor OH & Profit \$ (5%)	Contractor General Conditions \$ (10%)	Contingency \$ (30%) (Direct Construction Cost only)	Base Year Total \$ (2017)
	DIRECT CONSTRUCTION COST															
10	Guideway	-	-	-	-	-	-	-	-	-	-	1,495,000,000	74,750,000	156,975,000	518,017,500	2,244,742,500
20	Stations	-	-	-	-	-	-	-	-	-	-	377,000,000	18,850,000	39,585,000	130,630,500	566,065,500
30	Support Facilities - Not used	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	Sitework and Special Conditions	-	-	-	-	-	-	-	-	-	-	40,000,000	2,000,000	4,200,000	13,860,000	60,060,000
50	Systems	-	-	-	-	-	-	-	-	-	-	105,600,000	5,280,000	11,088,000	36,590,400	158,558,400
A	SUBTOTAL - DIRECT CONSTRUCTION COST	-	-	-	-	-	-	-	-	-	-	2,017,600,000	100,880,000	211,848,000	699,098,400	3,029,426,400
	ALLOWANCE															
60	ROW, Land, Existing Improvements	-	N/A	N/A	-	-	-	N/A	N/A	-	-	293,132,500	N/A	N/A	146,566,250	439,698,750
70	Vehicles, includes markups	-	N/A	N/A	-	-	-	N/A	N/A	-	-	180,000,000	N/A	N/A	36,000,000	216,000,000
80	Professional Services (% of Direct Construction Cost "A"): Short term-3% up to programmatic EIR; Medium term-4% for PE; Long term-8% for final design	60,500,000	N/A	N/A	6,050,000	66,550,000	80,700,000	N/A	N/A	8,070,000	88,770,000	161,408,000	N/A	N/A	16,140,800	177,548,800
B	SUBTOTAL - ALLOWANCE	60,500,000	-	-	6,050,000	66,550,000	80,700,000	-	-	8,070,000	88,770,000	634,540,500	-	-	198,707,050	833,247,550
90	Unallocated Contingency (5%)	2,117,500	N/A	N/A	-	2,117,500	2,824,500	N/A	N/A	-	2,824,500	132,607,025	N/A	N/A	-	132,607,025
100	Finance Charges - Excluded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	SUBTOTAL - UNALLOCATED CONTINGENCY	2,117,500	-	-	-	2,117,500	2,824,500	-	-	-	2,824,500	132,607,025	-	-	-	132,607,025
A+B+C	TOTAL PROJECT ESTIMATED COST (10 - 100)	62,617,500	-	-	6,050,000	68,667,500	83,524,500	-	-	8,070,000	91,594,500	2,784,747,525	100,880,000	211,848,000	897,805,450	3,995,280,975
	Rounded-off to nearest \$100,000					69,000,000					92,000,000					3,995,000,000

Please see attached Preamble (Basis of Estimate), and Estimate Details for basis of estimate, estimate scope, assumptions, qualifications, inclusions and exclusions.

WEST CONTRA COSTA HIGH-CAPACITY TRANSIT STUDY
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 ESTIMATE DETAILS

Date: 03/24/2017 Final

ALTERNATIVE 1 - EXPRESS BUS SERVICE

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
1	10		GUIDEWAY									
2							-			-	-	-
3		L	Potential transit Center at MacDonald Avenue and I-80 (Base):						3	-	-	-
4		L	Direct access ramp, 650'x32'	20,800	SF	200	4,160,000		3	-	-	4,160,000
5		L	Freeway widening by 18 ft width each side & 400-500 ft long	18,000	SF	250	4,500,000		3	-	-	4,500,000
6		L	Grade separate pedestrian bridge, about 500 ft long	1	EA	7,500,000	7,500,000		3	-	-	7,500,000
7		L	Reconfigure express lanes	1	LS	100,000	100,000		3	-	-	100,000
8		L					-		3	-	-	-
9												
10			Note: The Hercules TC and Richmond Parkway TC each have two options listed below. The more expensive option for each location (Option 2 for Hercules TC and Option 1 for Richmond Parkway TC) is included in the cost estimate and carried forward to the overall cost summary.									
11												
12			Hercules Transit Center:									
13	10		Option 1: Tunnel access under SR-4 connecting Hercules Transit Center and I-80, per Fig 2-3				-	TM11, p.13		-	-	-
14			Transit-only tunnel under SR-4	260	LF	30,000				7,800,000	-	-
15			Portals, at both ends	2	EA	500,000				1,000,000	-	-
16			Reconfigure NB off-ramps to EB SR-4	1	EA	500,000				500,000	-	-
17			Reconfigure off-ramp to Willow Ave EB & WB	1	EA	750,000				750,000	-	-
18			New SR-4 EB on-ramp, about 900 ft, at grade	22,500	SF	100				2,250,000	-	-
19			New road from SR-4 EB to east side of transit center	8,750	SF	85				743,750	-	-
20			New road to new tunnel portal at east side of transit center	7,500	SF	85				637,500	-	-
21			Option 1: subtotal (not carried forward to Summary)							13,681,250	-	-
22										-	-	-
23	10	L	Option 2: Direct access ramp at Hercules Transit Center					TM11, p.13	3	-	-	-
24		L	Elevated freeway widening by 36 ft width & 400-500 ft long	18,000	SF	250	4,500,000		3	-	-	4,500,000
25		L	On-ramp from Sycamore Ave to I-80 SB	1	EA	5,000,000	5,000,000		3	-	-	5,000,000
26		L	Off-ramp from I-80 NB to Sycamore Ave	1	EA	5,000,000	5,000,000		3	-	-	5,000,000
27		L							3	-	-	-
28		L	Richmond Parkway Transit Center:						3	-	-	-
29	10	L	Option 1: Direct Access Express Bus/HOV Ramp to free median of I-80 and Richmond Parkway Exchange						3	-	-	-
30		L	Grade separate pedestrian bridge	1	EA	7,500,000	7,500,000		3	-	-	7,500,000
31		L	Direct access ramp, 700'x70'	49,000	SF	200	9,800,000		3	-	-	9,800,000
32										-	-	-
33	10		Option 2: Direct Access Express Bus/HOV Ramp to free median of I-80 and Richmond Parkway Exchange							-	-	-
34			Direct access ramp, 700'x70'	1	LS	9,800,000				9,800,000	-	-
35			Reconfigure express lanes	1	LS	100,000				100,000	-	-
36	60	L	Purchase land for elevated freeway widening	18,000	SF	71			3	-	-	-
37										-	-	-
38			Option 2: subtotal (not carried forward to Summary)							11,178,000	-	-
39												
40							48,060,000			-	-	48,060,000
41	20		STATIONS									
42							-					
43	20	M	At grade stations on I-80 Corridor	2	EA	156,000	312,000	TM 8, Fig 3-1, page 24	2	-	312,000	-

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Date: 03/24/2017 Final

ALTERNATIVE 1 - EXPRESS BUS SERVICE

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
44	20	M	Surface bus stops for Berkeley Destination	5	EA	56,000	280,000	TM 8, page 32	2	-	280,000	-
45	20	M	Surface bus stops for Emeryville Destination	4	EA	56,000	224,000	TM 8, page 32	2	-	224,000	-
46	20	M	Surface bus stops for Oakland Destination	4	EA	56,000	224,000	TM 8, page 32	2	-	224,000	-
47	20	L	Bus Stations at Direct Access Ramp at Richmond Parkway Transit Center	2	EA	210,000	420,000	TM 11, page 32	3	-	-	420,000
48	20	L	Bus Stations at Direct Access Ramp at potential Transit Center at Macdonald Ave & I-80	2	EA	210,000	420,000	TM 11, page 18	3	-	-	420,000
49	20	M	Parking Garage Structure at Hercules Transit Center	500	SPACES	30,000	15,000,000	TM-11 page 11; double (E) capacity; build at (E) surface parking; costs per MTC Parking Structure Report	2	-	15,000,000	-
50	20	M	Parking Garage Structure at Richmond Parkway Transit Center	500	SPACES	30,000	15,000,000	TM-11 page 13+127; build at (E) surface parking; costs per MTC Parking Structure Report	2	-	15,000,000	-
51	20	L	Elevator to Direct Access Ramp	2	EA	150,000	300,000	TM-8 page 30	3	-	-	300,000
52							-					
53												
54							32,180,000			-	31,040,000	1,140,000
55												
56												
57	30		SUPPORT FACILITIES		NIC - Excluded							
58							-					
59												
60							-					
61												
62												
63	40		SITWORK AND SPECIAL CONDITIONS									
64							-					
65	40	L	Pedestrian access from park-and-ride to direct access platform	800	LF	570	456,000	TM-8 page 30; average distance is 400 to 1,200 ft depending on where riders park	3	-	-	456,000
66	40	L	Surface Parking Lot at I-80/Macdonald Ave Interchange	100	SPACES	7,000	700,000	TM-8 page 31; costs per MTC Parking Structure Report	3	-	-	700,000
67	40	M	Other Sitework and Special Conditions, allowance	1	LS	5,000,000	5,000,000		2	-	5,000,000	-
68	40	M	Other Sitework and Special Conditions, allowance	1	LS	5,000,000	5,000,000		2	-	5,000,000	-
69	40	L	Other Sitework and Special Conditions, allowance	1	LS	5,000,000	5,000,000		3	-	-	5,000,000
70							-					
71												
72							16,156,000			-	10,000,000	6,156,000
73												
74												
75	50		SYSTEMS									
76							-					
77	50	S	Traffic control for transit priority treatment for express bus route, allow for 20 intersections	20	EA	100,000	2,000,000	TM-8 page 28	1	2,000,000	-	-
78		M	Transit signal priority at intersections related to Richmond Parkway Transit Center	3	EA	100,000	300,000	TM 11 p. 13	2	-	300,000	-
79		L	Signalized intersection at potential Macdonald Ave & I-80 Transit Center	2	EA	150,000	300,000		3	-	-	300,000
80												
81							2,600,000			2,000,000	300,000	300,000
82												
83												
84	60		ROW, LAND, EXISTING IMPROVEMENTS									
85							-					

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ALTERNATIVE 1 - EXPRESS BUS SERVICE

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
86	60	L	Option 1: Purchase land for Transit Center at I-80/Macdonald Ave Interchange, for 100 spaces - not carried forward to summary	35,000	SF	71	2,485,000	http://www.realtor.com/realestateandhomes-detail/Sandpiper-Spit_Richmond_CA_94802_M20389-97624	3	-	-	-
87	60	L	Option 2: Purchase land for Transit Center at I-80/Macdonald Ave Interchange, for 300 spaces - carried forward to summary	105,000	SF	71	7,455,000	http://www.realtor.com/realestateandhomes-detail/Sandpiper-Spit_Richmond_CA_94802_M20389-97624	3	-	-	7,455,000
88	60	L	Purchase land for freeway widening at transit center at Macdonald/I-80, PLACEHOLDER	1	ALLOW	10,000,000	10,000,000	Exact area to be further studied	3	-	-	10,000,000
89	60	L	Business impact fee	1	ALLOW	2,000,000	2,000,000	Exact area to be further studied	3	-	-	2,000,000
90							-					
91												
92							21,940,000			-	-	19,455,000
93												
94												
95	70		VEHICLES (number)									
96							-					
97	70	S	Over-the-road buses, double decker, 42 ft long, 80 passengers	6	EA	1,000,000	6,000,000	TM-8 page 31; vehicle quantity and costs per Kimley Horn	1	6,000,000	-	-
98	70	M	Over-the-road buses, double decker, 42 ft long, 80 passengers	6	EA	1,000,000	6,000,000	TM-8 page 31; vehicle quantity and costs per Kimley Horn	2	-	6,000,000	-
99	70	L	Over-the-road buses, double decker, 42 ft long, 80 passengers		None		-	TM-8 page 31; vehicle quantity and costs per Kimley Horn	3	-	-	-
100							-					
101												
102				12	ea		12,000,000			6,000,000	6,000,000	-
103												
104												
105												

WEST CONTRA COSTA HIGH-CAPACITY TRANSIT STUDY
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ALTERNATIVE 2 - SAN PABLO AVENUE/MACDONALD AVENUE BUS RAPID TRANSIT (BRT)

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
1		<u>Scope</u>	Per Fig. 4-1									
2			Median bus lanes									
3			on San Pablo Ave (El Cerrito del Norte Station to 23rd St)	9.60	Miles							
4			on San Pablo Ave (23rd St) to Richmond Parkway)	2.90	Miles							
5			on Macdonald Ave (San Pablo Ave to 21st St)	1.30	Miles							
6				13.80	Miles							
7			Equivalent to	72,900	LF							
8												
9			Mixed - flow lanes									
10			on San Pablo Ave (from 23rd St to Hercules Transit Center)	9.80	Miles							
11			on Macdonald Ave (21st St to W Cutting)	2.60	Miles							
12				12.40	Miles							
13			Equivalent to	65,500	LF							
14												
15	10		GUIDEWAY									
16												
17	10	M	Roadway improvements on San Pablo Ave (El Cerrito del Norte Station to 23rd St), 76' curb to curb, for dedicated bus lanes	50,700	LF	450	22,815,000	TM 11, p. 29 & Appendix A, Sheets 1-3	2	-	22,815,000	-
18	10	M	Roadway improvements on Macdonald Ave (San Pablo Ave to 23rd St), 64' curb to curb, for dedicated bus lanes	6,900	LF	380	2,622,000	TM 11, p. 29 & Appendix A, Sheets 13 & 14	2	-	2,622,000	-
19	10	L	Roadway improvements on San Pablo Ave (23rd St to Richmond Parkway TC), 64' curb to curb, for dedicated bus lanes	15,400	LF	380	5,852,000	Add	3	-	-	5,852,000
20												
21												
22							31,289,000			-	25,437,000	5,852,000
23												
24												
25	20		STATIONS	14,550								
26												
27	20	M	Center median BRT Station	10	EA	318,000	3,180,000	Appendix A sheets 1-3, 13 & 14	2	-	3,180,000	-
28	20	M	Curbside BRT Station with bulb out	1	EA	176,000	176,000	Appendix A sheets 4-12, 15 & 16	2	-	176,000	-
29	20	L	Curbside BRT Station	8	EA	156,000	1,248,000	Appendix A sheets 4-12, 15 & 16	3	-	-	1,248,000
30	20	L	Curbside BRT Station with bulb out	9	EA	176,000	1,584,000	Appendix A sheets 4-12, 15 & 16	3	-	-	1,584,000
31	20	M	Off street BRT station	1	EA	172,000	172,000	Appendix A sheets 1	2	-	172,000	-
32	20	L	Off street BRT station	8	EA	172,000	1,376,000	Appendix A sheets 1-3, 13 & 14	3	-	-	1,376,000
33	20	M	Terminal BRT station	1	EA	350,000	350,000	Appendix A sheets 1-3, 13 & 14	2	-	350,000	-
34	20	L	Terminal BRT station	1	EA	350,000	350,000	Appendix A sheets 1-3, 13 & 14	3	-	-	350,000
35												
36												
37							8,436,000			-	3,878,000	4,558,000
38												
39												
40	30		SUPPORT FACILITIES		NIC - Excluded							
41												
42												
43												
44												
45												
46	40		SITWORK AND SPECIAL CONDITIONS									
47												
48		M	Sitework and Special Conditions, allow	10.90	Mile	1,300,000	14,170,000	Based on AC Transit EB BRT	2	-	14,170,000	-
49		L	Sitework and Special Conditions, allow	5.77	Mile	1,300,000	7,501,000	Based on AC Transit EB BRT	3	-	-	7,501,000
50		M	Remove on-street parking	3,060.00	LF	50	153,000	Appendix A sheet 14	2	-	153,000	-

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ALTERNATIVE 2 - SAN PABLO AVENUE/MACDONALD AVENUE BUS RAPID TRANSIT (BRT)

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
51		M	Curbside parking modification, allowance	10.90	Mile	264,000	2,877,600	Based on AC Transit EB BRT	2	-	2,877,600	-
52		L	Curbside parking modification, allowance	5.77	Mile	264,000	1,523,280	Based on AC Transit EB BRT	3	-	-	1,523,280
53												
54							26,224,880			-	17,200,600	9,024,280
55												
56												
57	50		SYSTEMS									
58												
59	50	M	Systems upgrades, allow	10.90	Mile	1,100,000	11,990,000		2	-	11,990,000	-
60	50	L	Systems upgrades, allow	5.77	Mile	1,100,000	6,347,000		3	-	-	6,347,000
61	50	S	Traffic signals	3	EA	150,000	450,000	TM#11, p. 25, 26	1	450,000	-	-
62	50	S	Preferential signalization, jump queues	7	EA	75,000	525,000	TM#11, p. 25	1	525,000	-	-
63	50	S	Real-time passenger information system	1	LS	500,000	500,000	TM#11, p. 26	1	500,000	-	-
64	50	M	Preferential signalization, jump queues, allow	5	EA	75,000	375,000	TM#11, p. 25	2	-	375,000	-
65												
66												
67							20,187,000		10	1,475,000	12,365,000	6,347,000
68												
69												
70	60		ROW, LAND, EXISTING IMPROVEMENTS									
71												
72		M	ROW, Land, Existing Improvements, allow	10.90	Mile	100,000	1,090,000	Based on AC Transit EB BRT	2	-	1,090,000	-
73		L	ROW, Land, Existing Improvements, allow	5.77	Mile	100,000	577,000	Based on AC Transit EB BRT	3	-	-	577,000
74		L	Business impact fee	1	ALLOW	2,000,000	2,000,000		3	-	-	2,000,000
75												
76												
77							3,667,000			-	1,090,000	2,577,000
78												
79												
80	70		VEHICLES (number)									
81												
82	70.04	M	Specialized BRT buses	32	EA	1,500,000	48,000,000	Vehicle cost and quantity per Kimley-Horn	2	-	48,000,000	-
83	70.04	L	Specialized BRT buses	2	EA	1,500,000	3,000,000	Vehicle cost and quantity per Kimley-Horn	3	-	-	3,000,000
84												
85												
86				34	ea		51,000,000			-	48,000,000	3,000,000
87												
88												
89												

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ALTERNATIVE 2 - SAN PABLO AVENUE/MACDONALD AVENUE BUS RAPID TRANSIT (BRT)

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
90												
91			ESTIMATED COST FOR MACDONALD AVENUE IMPROVEMENT INCLUDED ABOVE									
92	10		GUIDEWAY									
93		M	Roadway improvements on Macdonald Ave (San Pablo Ave to 23r	6900	LF	380	2,622,000	TM 11, p. 29 & Appendix A, Sheets 13 &14	2	0	2,622,000	0
94												
95	40		SITWORK AND SPECIAL CONDITIONS									
96		M	Sitework and Special Conditions, allow	1.3	Mile	1,300,000	1,690,000	Based on AC Transit EB BRT	2	-	1,690,000	-
97		M	Curbside parking modification, allowance	1.3	Mile	264,000	343,200	Based on AC Transit EB BRT	2	-	343,200	-
98												
99	50		SYSTEMS									
100		M	Systems upgrades, allow	1.3	Mile	1,100,000	1,430,000		2	-	1,430,000	-
101												
102												
103	10-50	M	Direct Construction Cost				6,085,200		2	-	6,085,200	-
104			Contractor OH & Profit \$ (5%)				304,260		2		304,260	
105			Contractor General Conditions \$ (10%)				638,946		2		638,946	
106			Contingency \$ (30%) (Direct Construction Cost only)				2,108,522		2		2,108,522	
107												
108	10-50	M	Total Construction Cost				9,136,928		2	-	9,136,928	-
109												
110	60		ROW, LAND, EXISTING IMPROVEMENTS									
111	70	M	ROW, Land, Existing Improvements, allow	1.3	Mile	100,000	130,000	Based on AC Transit EB BRT	2	-	130,000	-
112												
113	70		VEHICLES (number)									
114		M	Specialized BRT buses	8	EA	1,500,000	12,000,000	Vehicle cost and quantity per Kimley-Horn	2	-	12,000,000	-
115												
116	80	M	Professional Services (40% of Direct Construction Cost)				2,434,080		2	-	2,434,080	-
117												
118	10-80		TOTAL PRIOR TO UNALLOCATED CONTINGENCY				23,701,008			-	23,701,008	-
119	90	M	Unallocated Contingency at 5%				1,185,050		2	-	1,185,050	-
120	100		Finance Charges -Excluded									
121												
122	10-100	M	TOTAL PROJECT ESTIMATED COST				27,320,138		2	-	27,320,138	-
123										ROUNDED-OFF	27,320,000	

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ALTERNATIVE 3 - 23RD STREET BUS RAPID TRANSIT (BRT)

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
1		Scope	Per Fig. 4-1									
2			Side or median bus lanes									
3			at 23rd St (Macdonald Ave to Hilltop)	10.38	Miles							
4			Equivalent to	54,800	LF							
5												
6			Mixed - flow lanes									
7			From MacDonald Avenue/23rd Street to UC Berkeley/Richmond Field station	3.22	Miles							
8			Equivalent to	17,000	LF							
9												
10			Total BRT Corridor	13.60	Miles							
11			Equivalent to	71,810	LF							
12												
13												
14	10		GUIDEWAY									
15												
16	10	M	Roadway improvements at 23rd St (Macdonald Ave to Rheem Ave), 54' curb to curb, side or median bus lanes	8,500	LF	410	3,485,000	TM 11 Fig 4-1	2	-	3,485,000	-
17	10	L	Roadway improvements at 23rd St (From Rheem Avenue to Hilltop Mall), 54' curb to curb, side or median bus lanes	15,300	LF	410	6,273,000	TM 11 Fig 4-1	3	-	-	6,273,000
18	10	M	Roadway improvements at 23rd St (From Hilltop Mall to Hercules TC), 78' curb to curb, mixed flow	31,000	LF	420	13,020,000	TM 11 Fig 4-1	2	-	13,020,000	-
19	10	S	Roadway improvements at 23rd St (From MacDonald Avenue/23rd Street to UC Berkeley/Richmond Field station), 78' curb to curb, mixed flow	17,000	LF	420	7,140,000	TM 11 Fig 4-1	1	7,140,000	-	-
20												
21												
22							29,918,000			7,140,000	16,505,000	6,273,000
23												
24												
25	20		STATIONS									
26												
27			Total per Appendix B									
28	20		Curbside BRT Station	11	EA		-	Appendix B sheets 1-14		-	-	-
29	20		Curbside BRT Station with bulb outs	15	EA		-	Appendix B sheets 1-14		-	-	-
30	20		Off street BRT station	3	EA		-	Appendix B sheets 1-14		-	-	-
31	20		Terminal BRT station	2	EA		-	Appendix B sheets 1-14		-	-	-
32	20		Please verify phase allocation									
33	20	M	Curbside BRT Station	6	EA	156,000	936,000	Appendix B sheets 1-14	2	-	936,000	-
34	20	L	Curbside BRT Station	5	EA	156,000	780,000	Appendix B sheets 1-14	3	-	-	780,000
35	20	M	Curbside BRT Station with bulb out	8	EA	176,000	1,408,000	Appendix B sheets 1-14	2	-	1,408,000	-
36	20	L	Curbside BRT Station with bulb out	7	EA	176,000	1,232,000	Appendix B sheets 1-14	3	-	-	1,232,000
37	20	M	Off street BRT station	2	EA	172,000	344,000	Appendix B sheets 1-14	2	-	344,000	-
38	20	L	Off street BRT station	1	EA	172,000	172,000	Appendix B sheets 1-14	3	-	-	172,000
39	20	S	Terminal BRT station, at Ford Point	1	EA	350,000	350,000	Appendix B sheets 1-14	1	350,000	-	-
40	20	M	Terminal BRT station, at Hercules TC	1	EA	350,000	350,000	Appendix B sheets 1-14	2	-	350,000	-
41												
42												
43							5,572,000			350,000	3,038,000	2,184,000
44												
45												
46	30		SUPPORT FACILITIES									
47			NIC - Excluded									
48												
49												

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ALTERNATIVE 3 -23RD STREET BUS RAPID TRANSIT (BRT)

Line #	SCC #	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
50												
51												
52	40		SITWORK AND SPECIAL CONDITIONS									
53							-					
54		M	Sitework and Special Conditions, allow	7.48	Mile	1,300,000	9,724,000	Based on AC Transit EB BRT	2	-	9,724,000	-
55		L	Sitework and Special Conditions, allow	3.22	Mile	1,300,000	4,186,000	Based on AC Transit EB BRT	3	-	-	4,186,000
56												
57							13,910,000			-	9,724,000	4,186,000
58												
59												
60	50		SYSTEMS									
61							-					
62		L	Systems upgrades, allow	13.60	Mile	1,100,000	14,960,000	Typically \$175 to \$200 ft	3	-	-	14,960,000
63	50	L	Preferential signalization at intersections, say 0.5 miles per intersection average	28	EA	75,000	2,100,000		3	-	-	2,100,000
64		S	UC Berkeley Field Office & Ford Point to Hilltop Mall:						1	-	-	-
65	50	S	Traffic signals	2	EA	150,000	300,000	TM#11, p. 32, 33	1	300,000	-	-
66	50	S	Preferential signalization, jump queues	3	EA	75,000	225,000	TM#11, p. 32, 33	1	225,000	-	-
67	50	S	Real-time passenger information system	1	LS	200,000	200,000	TM#11, p. 32, 33	1	200,000	-	-
68		M	Richmond Marina District to Hilltop Mall:						2	-	-	-
69	50	M	Traffic signals	1	EA	150,000	150,000	TM#11, p. 32, 33	2	-	150,000	-
70	50	M	Preferential signalization, jump queues	3	EA	75,000	225,000	TM#11, p. 32, 33	2	-	225,000	-
71	50	M	Real-time passenger information system	1	LS	200,000	200,000	TM#11, p. 32, 33	2	-	200,000	-
72							-			-	-	-
73												
74							18,360,000			725,000	575,000	17,060,000
75												
76												
77	60		ROW, LAND, EXISTING IMPROVEMENTS									
78							-					
79		M	ROW, Land, Existing Improvements, allow	7.48	Mile	100,000	748,000	Based on AC Transit EB BRT	2	-	748,000	-
80		L	ROW, Land, Existing Improvements, allow	3.22	Mile	100,000	322,000	Based on AC Transit EB BRT	3	-	-	322,000
81		L	Business impact fee	1	ALLOW	2,000,000	2,000,000		3	-	-	2,000,000
82												
83							3,070,000			-	748,000	2,322,000
84												
85												
86	70		VEHICLES (number)									
87							-					
88	70.04	M	Specialized BRT buses	20	EA	1,500,000	30,000,000	Vehicle cost and quantity per Kimley-Horn	2	-	30,000,000	-
89							-			-	-	-
90												
91							30,000,000			-	30,000,000	-
92												
93												

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ALTERNATIVE 4 - UPRR CORRIDOR COMMUTER RAIL

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1	2	3
										Short-term	Medium-term	Long-term
										\$	\$	\$
1			Note: This Alternative per TM #8 on which Preliminary Screening Estimate dated 1/11/2016 was based on has been set aside									
2												
3			The focus of the Commuter Rail Alternative is to make the best use of the existing service on the UP line by the two ideas below:									
4												
5			A) Fare Subsidy Pilot Program - Not in this capital cost estimate									
6												
7			B) To complete the Hercules Regional Intermodal Transit Center which is already in process.									
8												
9			According to TIGER 2016 Application for Hercules Intermodal Transfer Center as provided by the City of Hercules, the total project cost is \$68.6 million. This amount is included in this alternative cost estimate study.									

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ALTERNATIVE 6A—BART EXTENSION FROM RICHMOND STATION TO HERCULES - RUMRILL BOULEVARD ALIGNMENT

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
1			BART Extension from Richmond Station to Hercules - Rumrill Boulevard Alignment									
2			Richmond BART station to Contra Costa College	2.8	Mile							
3			From Contra Costa College to Richmond Parkway TC	1.8	Mile							
4			From Richmond Parkway TC to Hercules TC	3.4	Mile							
5												
6			Total	8.0	Mile							
7												
8												
9												
10	10		GUIDEWAY									
11	10	L	BART extension, elevated structure	5.6	Mile	80,000,000	448,000,000	TM 11, Fig 6-3	3	-	-	448,000,000
12	10	L	Deep bored tunnel	2.4	mile	285,000,000	684,000,000	TM 11, Fig 6-3; Assumed Road header 40' Dia dual tunnel	3	-	-	684,000,000
13	10	L	Additional tracks at Richmond BART Yard	1	LS	2,000,000	2,000,000	TM 11, Fig 6-3	3	-	-	2,000,000
14	10	L	Storage tracks at Hercules TC, terminus station	1	LS	10,000,000	10,000,000	TM 11, Fig 6-3 & p. 63	3	-	-	10,000,000
15												
16							1,144,000,000			-	-	1,144,000,000
17												
18												
19	20		STATIONS									
20	20	L	New station, elevated, at Contra Costa College	1	EA	82,000,000	82,000,000	TM 11, p. 46Based on WSX station	3	-	-	82,000,000
21	20	L	New station, underground, at Richmond Parkway TC	1	EA	125,000,000	125,000,000	TM 11 p. 54-55	3	-	-	125,000,000
22	20	L	New station, elevated, at Hercules TC	1	EA	82,000,000	82,000,000	TM 11;Based on WSX station	3	-	-	82,000,000
23	20	L	Parking structure at Hercules Transit Center, 500 spaces	500	space	30,000	15,000,000	costs per MTC Parking Structure Report	3	-	-	15,000,000
24	20	L	Parking structure at Richmond Parkway Transit Center, 500 spaces	500	space	30,000	15,000,000	costs per MTC Parking Structure Report	3	-	-	15,000,000
25												
26							319,000,000			-	-	319,000,000
27												
28												
29	30		SUPPORT FACILITIES									
30	30	L	Parking lot		None		-		3	-	-	-
31	30	L	Support facilities at Contra Costa College & Richmond Parkway Transit Center		Excluded		-		3	-	-	-
32												
33							-			-	-	-
34												
35												
36	40		SITWORK AND SPECIAL CONDITIONS									
37	40	L	Sitework at guideway	5.6	Mile	6,000,000	33,600,000		3	-	-	33,600,000
38	40	L					-			-	-	-
39	40	L					-			-	-	-
40												
41							33,600,000			-	-	33,600,000
42												
43												
44	50		SYSTEMS									
45	50	L	Systems	8.0	Mile	17,000,000	136,000,000	Based on tunnel L&S and Ventilation per PM's comment	3	-	-	136,000,000
46	50	L					-			-	-	-
47												
48							136,000,000			-	-	136,000,000
49												
50												

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ALTERNATIVE 6A—BART EXTENSION FROM RICHMOND STATION TO HERCULES - RUMRILL BOULEVARD ALIGNMENT

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
51	60		ROW, LAND, EXISTING IMPROVEMENTS					per listed price from on-line:		-	-	-
52		L	Stations				-					
53		L	Commercial (CCC)	150,000	SF	80	12,000,000	http://www.loopnet.com/Listing/20104232/3571-San-Pablo-Dam-Rd-Richmond-CA/	3			12,000,000
54		L	Transit Center (Richmond Pkwy)	200,000	SF	24	4,800,000	http://www.loopnet.com/Listing/20039896/San-Pablo-Ave-and-Crestwood-Drive-San-Pablo-CA/	3			4,800,000
55		L	Commercial (Hercules)	800,000	SF	16	12,800,000	http://www.loopnet.com/Listing/19863933/Interstate-80-Highway-4-Hercules-CA/	3			12,800,000
56		L					-					-
57		L	Maintenance Yard				-					-
58		L	Undeveloped	1,000,000	SF	16	16,000,000	http://www.loopnet.com/Listing/19863933/Interstate-80-Highway-4-Hercules-CA/	3			16,000,000
59		L					-					-
60		L	Maintenance Yard				-					-
61		L	Undeveloped	1,000,000	SF	16	16,000,000	http://www.loopnet.com/Listing/19863933/Interstate-80-Highway-4-Hercules-CA/	3			16,000,000
62		L					-					-
63		L	Aerial Trackway				-					-
64		L	Undeveloped	776,625	SF	24	18,639,000	http://www.loopnet.com/Listing/20039896/San-Pablo-Ave-and-Crestwood-Drive-San-Pablo-CA/	3			18,639,000
65		L	Industrial	206,250	SF	26	5,362,500	http://www.loopnet.com/Listing/19985873/730-San-Pablo-Ave-Pinole-CA/?LinkCode=31812	3			5,362,500
66		L	Commercial	227,250	SF	92	20,907,000	http://www.loopnet.com/Listing/19738683/1189-San-Pablo-Avenue-Pinole-CA/	3			20,907,000
67		L	Residential	176,250	SF	124	21,855,000	http://www.loopnet.com/Listing/20116305/29-31-13th-St-Richmond-CA/	3			21,855,000
68		L	Roadway r/w	969,375	SF - N/A		-		3			-
69		L	School	112,500	SF	350	39,375,000	Replace/relocated cost	3			39,375,000
70		L					-					-
71		L	Underground Trackway				-					-
72		L	Undeveloped		N/A		-		3			-
73		L	Industrial		N/A		-		3			-
74		L	Commercial	405,000	SF	92	37,260,000	http://www.loopnet.com/Listing/19738683/1189-San-Pablo-Avenue-Pinole-CA/	3			37,260,000
75		L	Residential	195,000	SF	124	24,180,000	http://www.loopnet.com/Listing/20116305/29-31-13th-St-Richmond-CA/	3			24,180,000
76		L	Roadway r/w	431,250	SF - N/A		-		3			-
77		L	School	-	N/A		-		3			-
78		L					-					-
79												
80							229,178,500					229,178,500
81												
82												
83	70		VEHICLES (number)									

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ALTERNATIVE 6A—BART EXTENSION FROM RICHMOND STATION TO HERCULES - RUMRILL BOULEVARD ALIGNMENT

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1	2	3
										Short-term	Medium-term	Long-term
										\$	\$	\$
84		L	BART cars	60	EA	3,000,000	180,000,000	Per BART new car contract for Bombardier, 5/10/2012, escalated to 2016 and adjusted for a smaller number of cars	3	-	-	180,000,000
85							-					
86												
87							180,000,000			-	-	180,000,000
88												

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ALTERNATIVE 6B—BART EXTENSION FROM RICHMOND STATION TO HERCULES -RICHMOND PARKWAY ALIGNMENT

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
1			BART Extension from Richmond Station to Hercules - Richmond Parkway Alignment									
2			Richmond BART station to Hilltop Mall	4.5	Mile							
3			From Hilltop Mall to Appian/I-80	1.8	Mile							
4			From Appian/ I-80 TC to Hercules TC	2.5	Mile							
5												
6			Total	8.8	Mile							
7												
8												
9												
10	10		GUIDEWAY									
11	10	L	BART extension, elevated structure	5.0	Mile	80,000,000	400,000,000	TM 11 Fig 6-9	3	-	-	400,000,000
12	10	L	Deep bored tunnel	3.8	mile	285,000,000	1,083,000,000	TM11 Fig 6-9; Assumed Road header 40' Dia dual tunnel	3	-	-	1,083,000,000
13	10	L	Additional tracks at Richmond BART Yard	1	LS	2,000,000	2,000,000	TM 11 Fig 6-9	3	-	-	2,000,000
14	10	L	Storage tracks at Hercules TC, terminus station	1	LS	10,000,000	10,000,000	TM 11 Fig 6-9 & p.63	3	-	-	10,000,000
15												
16							1,495,000,000			-	-	1,495,000,000
17												
18												
19	20		STATIONS									
20	20	L	New station, underground, at Hilltop Mall	1	EA	125,000,000	125,000,000	TM 11 Fig 6-9 & p. 61	3	-	-	125,000,000
21	20	L	New station, underground, at Appian/I-80	1	EA	125,000,000	125,000,000	TM 11 Fig 6-9 & p. 61	3	-	-	125,000,000
22	20	L	New station, elevated, at Hercules TC	1	EA	82,000,000	82,000,000	TM11 p. 62Based on WSX station	3	-	-	82,000,000
23	20	L	Parking structure at Hercules Transit Center, say 500 spaces	500	space	30,000	15,000,000	costs per MTC Parking Structure Report	3	-	-	15,000,000
24	20	L	Parking structure at Appian Way/I-80, say 500 spaces	500	space	30,000	15,000,000	costs per MTC Parking Structure Report	3	-	-	15,000,000
25	20	L	Parking structure at Hilltop Mall, say 500 spaces	500	space	30,000	15,000,000	costs per MTC Parking Structure Report	3	-	-	15,000,000
26												
27							377,000,000			-	-	377,000,000
28												
29												
30	30		SUPPORT FACILITIES									
31	30	L	Parking lot		None		-		3	-	-	-
32	30	L	Support facilities at Contra Costa College & Richmond Parkway Transit Center		Excluded		-		3	-	-	-
33												
34							-			-	-	-
35												
36												
37	40		SITWORK AND SPECIAL CONDITIONS									
38	40	L	Sitework at guideway	5.0	Mile	6,000,000	30,000,000		3	-	-	30,000,000
39	40	L	Re-construct or expand existing UPRR freight bridge	1	EA	10,000,000	10,000,000	TM11, p. 55	3	-	-	10,000,000
40	40	L					-					
41												
42							40,000,000			-	-	40,000,000
43												
44												
45	50	L	SYSTEMS									
46	50	L	Systems	8.8	Mile	12,000,000	105,600,000		3	-	-	105,600,000
47	50	L					-					
48												
49							105,600,000			-	-	105,600,000
50												

WEST CONTRA COSTA HIGH-CAPACITY TRANSIT STUDY
 TASK ORDER 13.2: REFINED PRELIMINARY SCREENING COST ESTIMATE
 BASED ON DRAFT TM #11 ALTERNATIVES REFINEMENT
 ESTIMATE DETAILS

Date: 03/24/2017 Final

ALTERNATIVE 6B—BART EXTENSION FROM RICHMOND STATION TO HERCULES -RICHMOND PARKWAY ALIGNMENT

Line #	Phase	Phase	Description of Work	Quantity	Unit	Unit Cost	Estimated \$	Remarks/ Notes	Phase	1 Short-term \$	2 Medium-term \$	3 Long-term \$
51												
52	60		ROW, LAND, EXISTING IMPROVEMENTS							-	-	-
53		L	Stations				-					
54		L	Commercial (Hilltop)	750,000	SF	124	93,000,000	http://www.loopnet.com/Listing/20116305/29-31-13th-St-Richmond-CA/?LinkCode=31812	3			93,000,000
55		L	Commercial (Appian)	500,000	SF	92	46,000,000	http://www.loopnet.com/Listing/19738683/1189-San-Pablo-Avenue-Pinole-CA/	3			46,000,000
56		L	Transit center (Hercules)	800,000	SF	16	12,800,000	http://www.loopnet.com/Listing/19863933/Interstate-80-Highway-4-Hercules-CA/	3			12,800,000
57		L					-					-
58		L	Maintenance Yard				-					-
59		L	Undeveloped	1,000,000	SF	16	16,000,000	http://www.loopnet.com/Listing/19863933/Interstate-80-Highway-4-Hercules-CA/	3			16,000,000
60		L					-					-
61		L	Aerial Trackway				-					-
62		L	Undeveloped	795,000	SF	24	19,080,000	http://www.loopnet.com/Listing/20039896/San-Pablo-Ave-and-Crestwood-Drive-San-Pablo-CA/	3			19,080,000
63		L	Industrial	566,250	SF	26	14,722,500	http://www.loopnet.com/Listing/19985873/730-San-Pablo-Ave-Pinole-CA/?LinkCode=31812	3			14,722,500
64		L	Commercial	56,250	SF	92	5,175,000	http://www.loopnet.com/Listing/19738683/1189-San-Pablo-Avenue-Pinole-CA/	3			5,175,000
65		L	Residential	67,500	SF	124	8,370,000	http://www.loopnet.com/Listing/20116305/29-31-13th-St-Richmond-CA/	3			8,370,000
66		L	Roadway r/w	990,000	SF - n/a		-		3			-
67		L	School	-	None		-		3			-
68		L					-					-
69		L	Underground Trackway				-					-
70		L	Undeveloped	108,750	SF	24	2,610,000	http://www.loopnet.com/Listing/20039896/San-Pablo-Ave-and-Crestwood-Drive-San-Pablo-CA/	3			2,610,000
71		L	Industrial	-	SF	26	-	http://www.loopnet.com/Listing/19985873/730-San-Pablo-Ave-Pinole-CA/?LinkCode=31812	3			-
72		L	Commercial	652,500	SF	92	60,030,000	http://www.loopnet.com/Listing/19738683/1189-San-Pablo-Avenue-Pinole-CA/	3			60,030,000
73		L	Residential	123,750	SF	124	15,345,000	http://www.loopnet.com/Listing/20116305/29-31-13th-St-Richmond-CA/	3			15,345,000
74		L	Roadway r/w	292,500	SF - n/a		-		3			-
75		L	School	-	None		-		3			-
76		L					-					-
77												
78							293,132,500					293,132,500
79												
80												
81	70		VEHICLES (number)									

