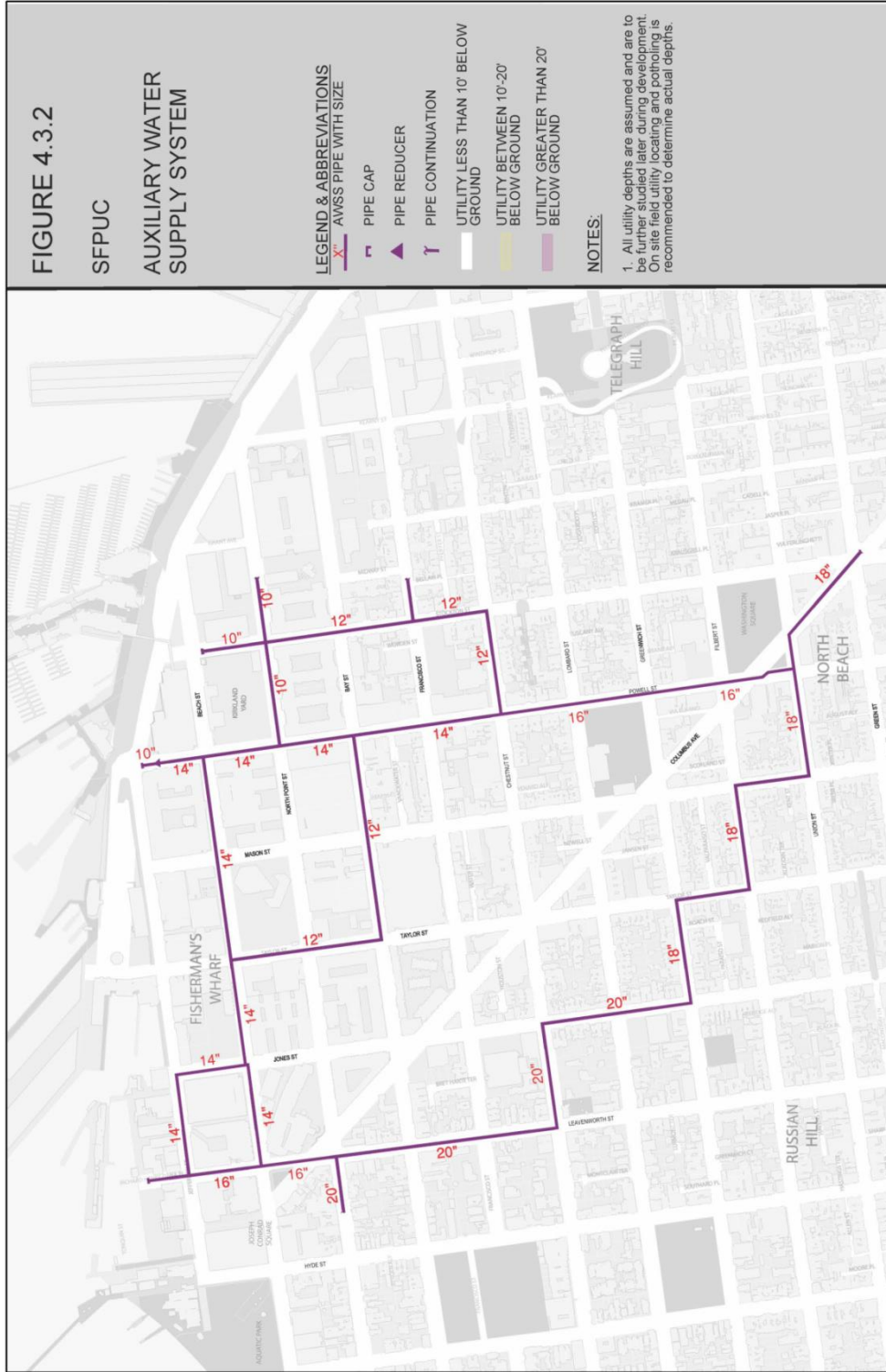


Appendix B

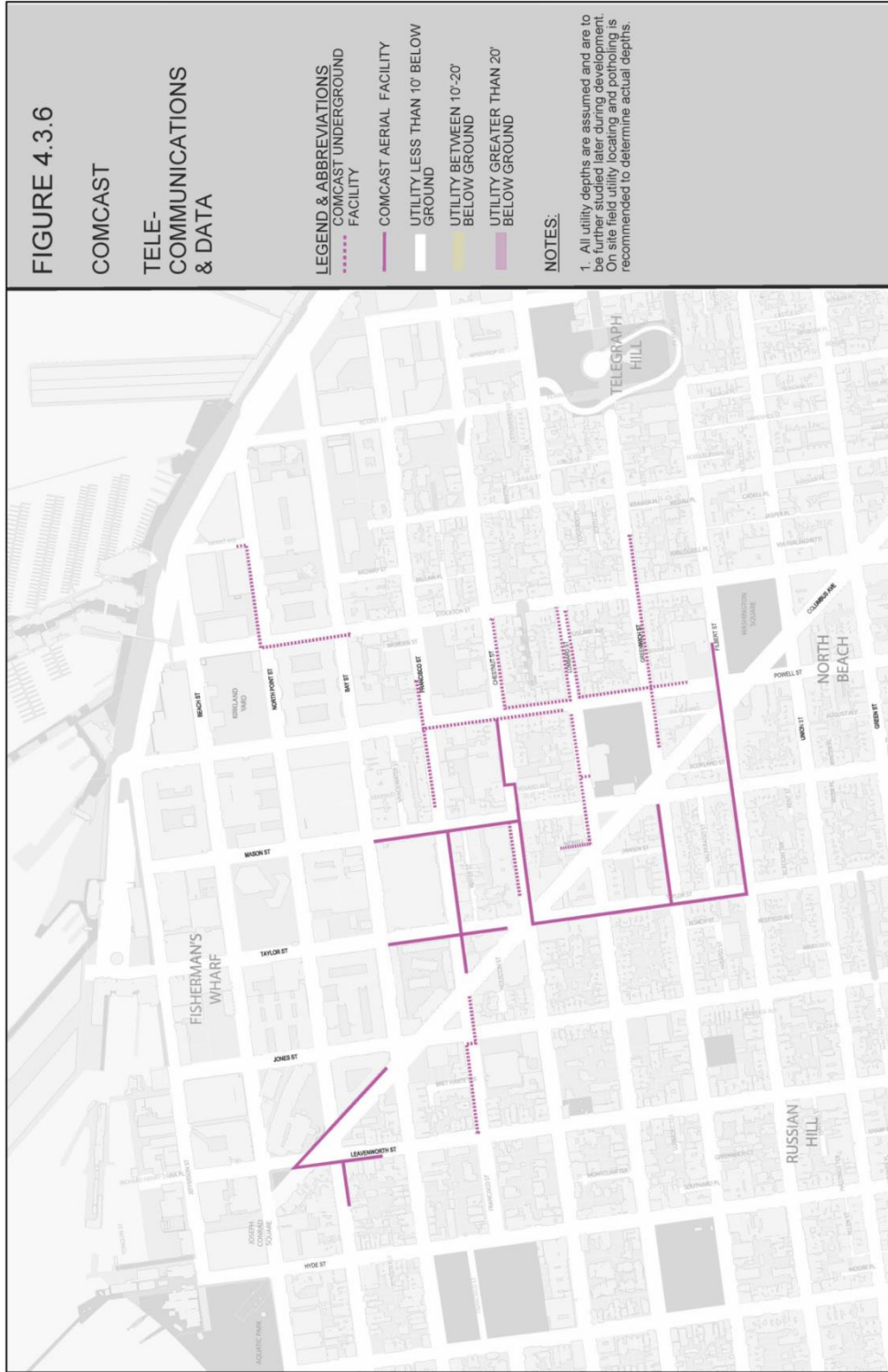
Utility Maps



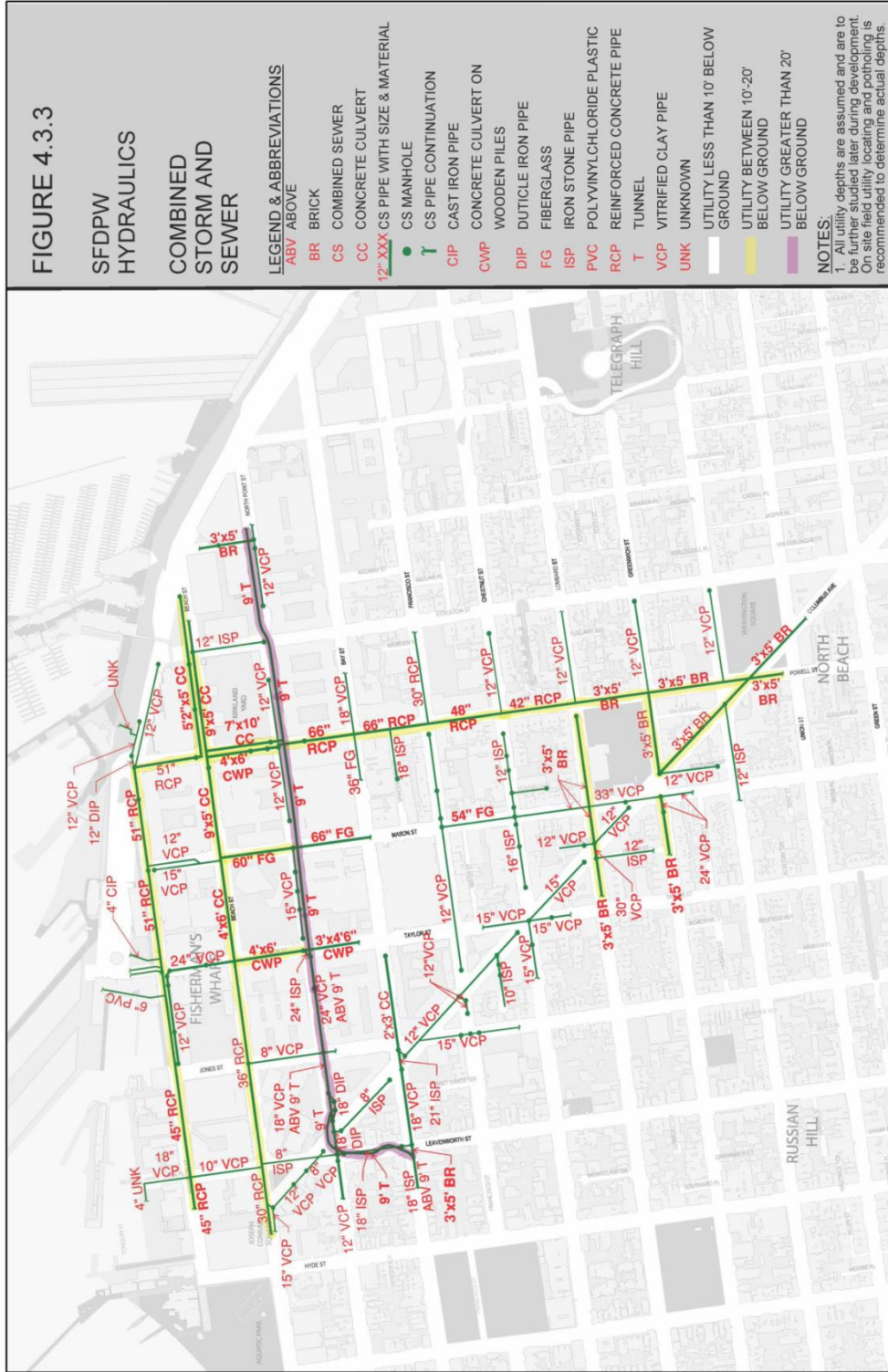
1. Auxiliary Water Supply System



2. **Comcast**



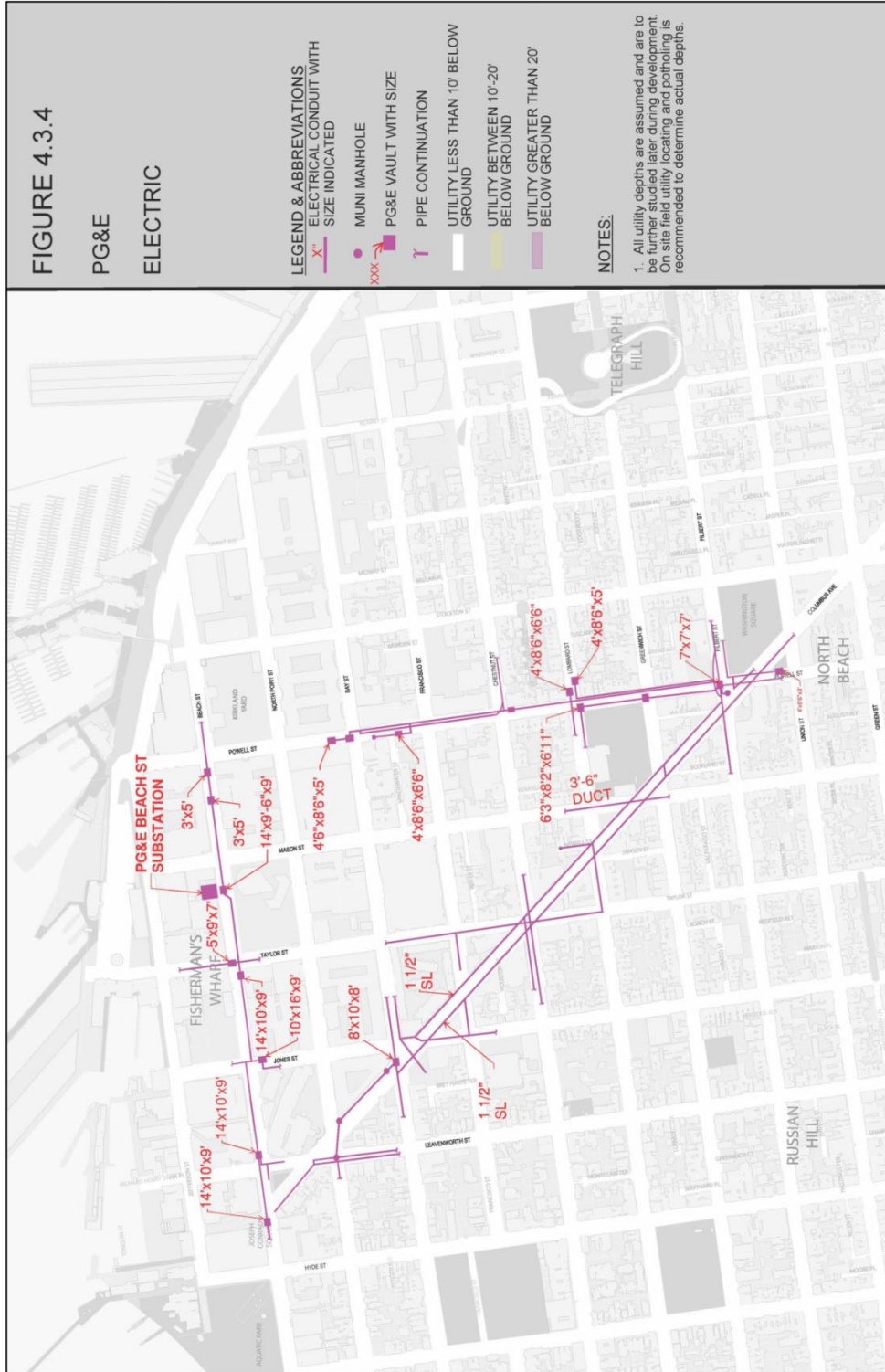
3. Combined Sewer



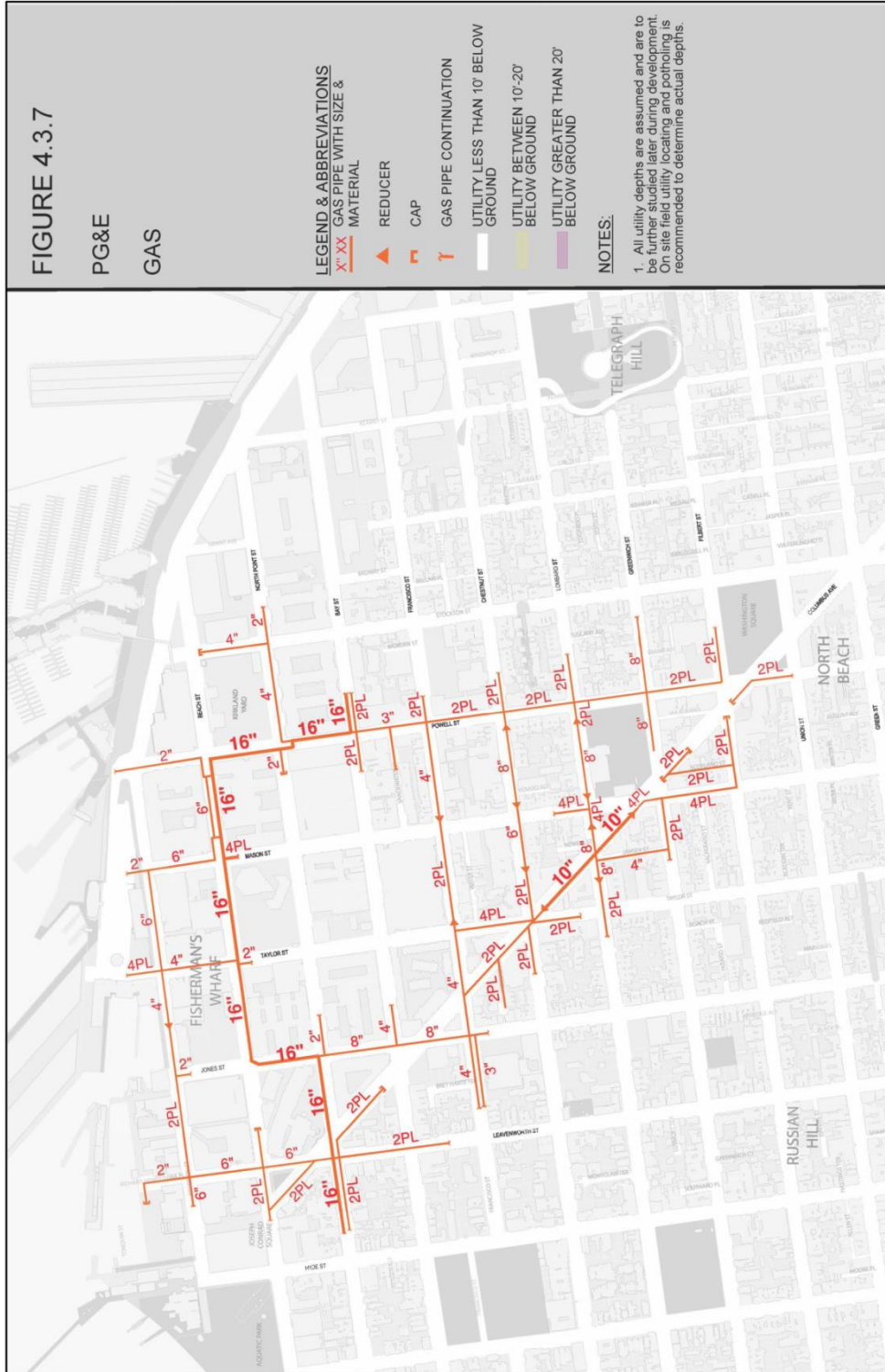
4. Low Pressure Water

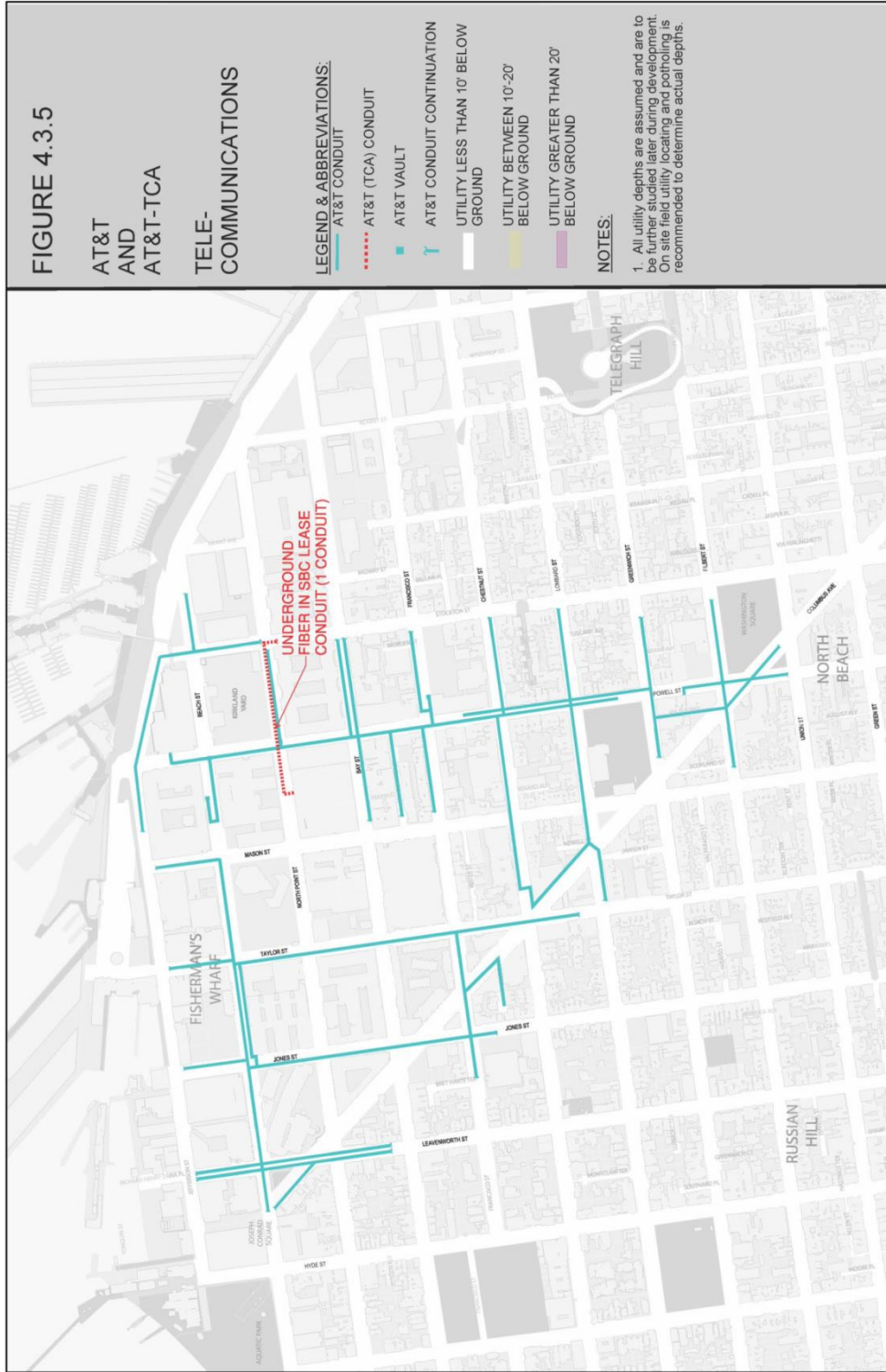


5. PG&E Electric



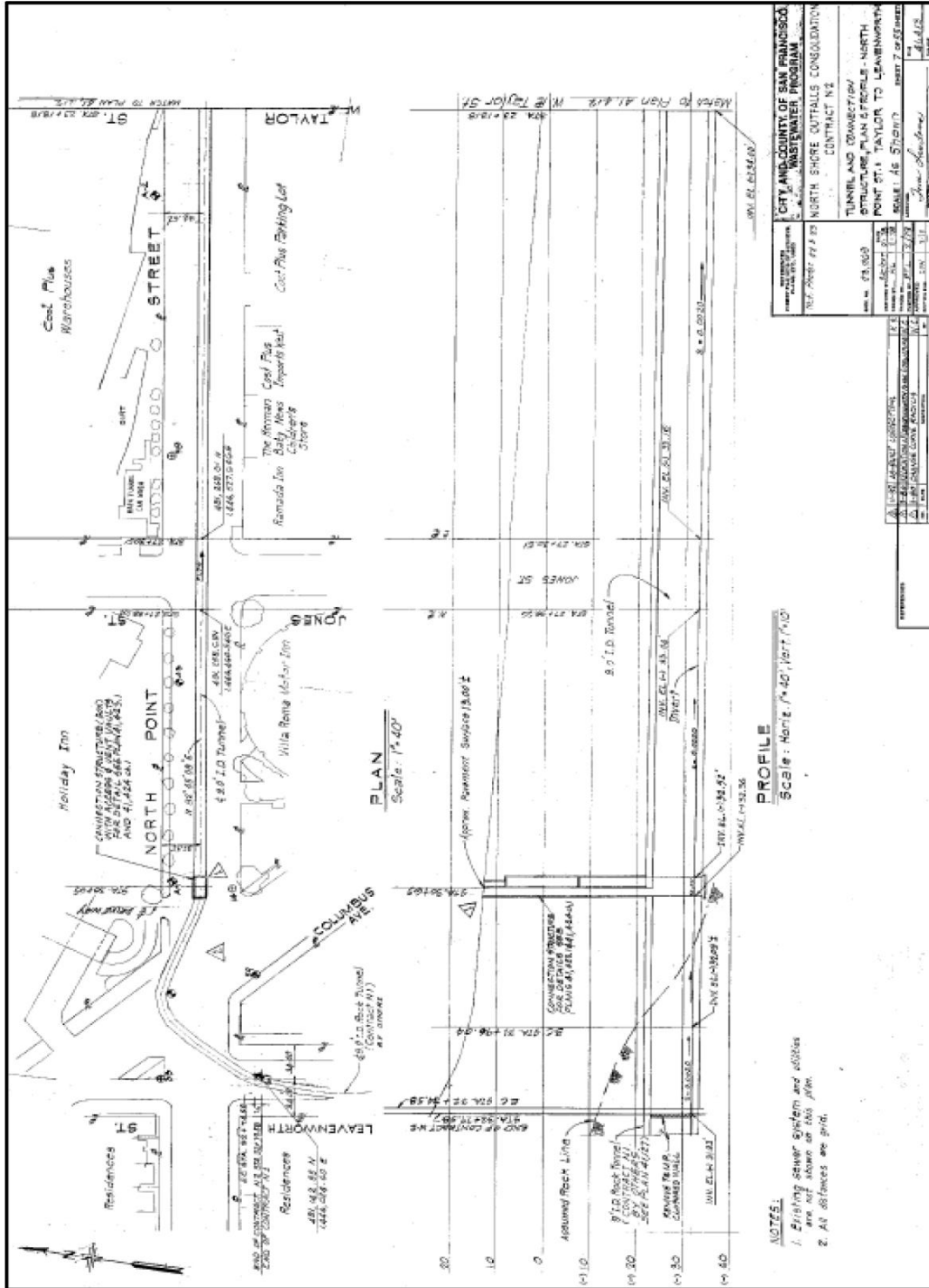
6. PG&E Gas

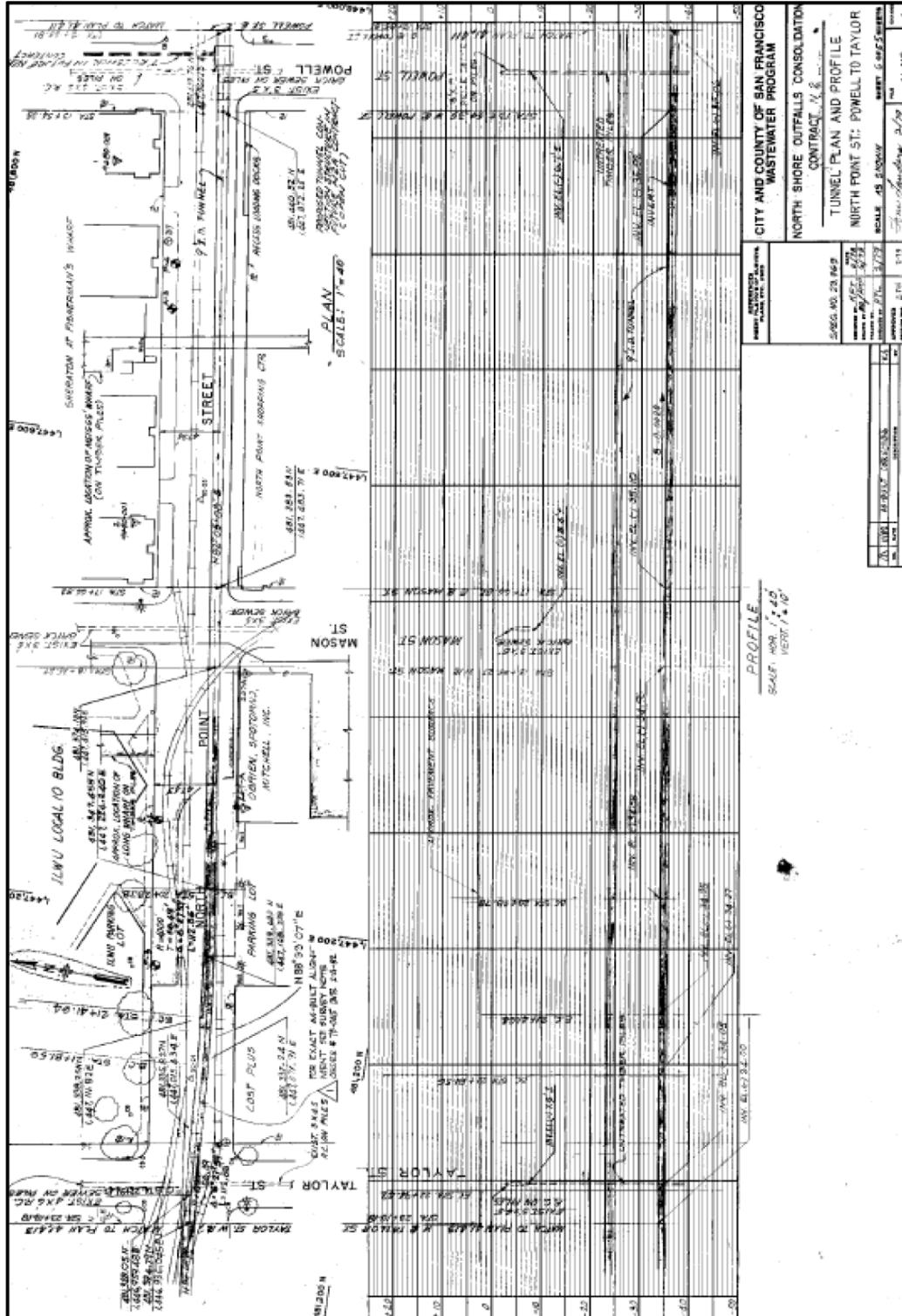


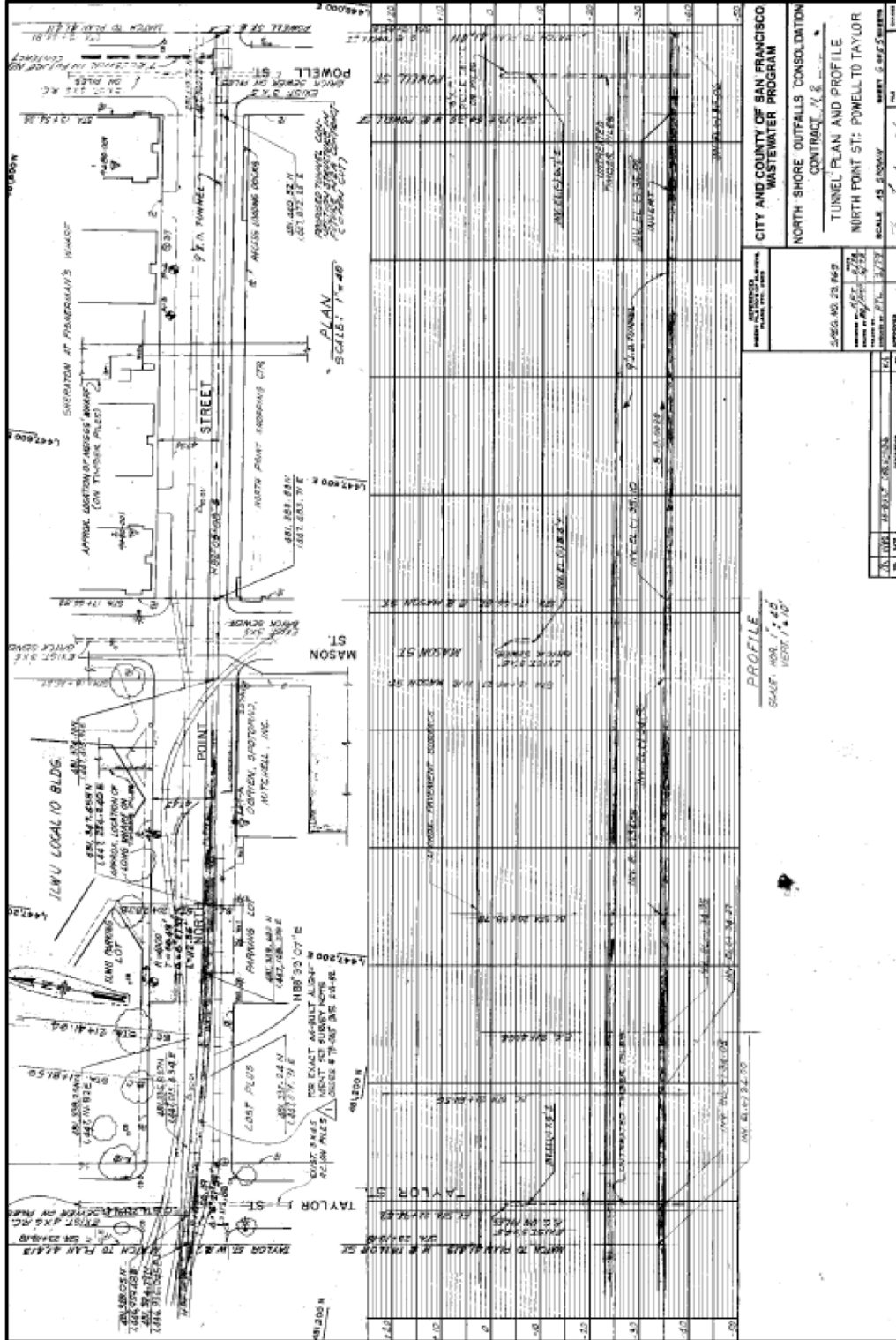


Appendix C

Combined Sewer Record Drawings







Appendix D

Conceptual General Order of Magnitude (CGOM) Cost Estimates

Definitions

<p>Standard Cost Categories for Capital Projects DEFINITIONS (Rev.12, July 31, 2009)</p>		<p>NOTE: The SCC cost breakdown is based on a traditional Design Bid Build model. If your project is Design Build, to the best of your ability, separate construction costs from design, administration, testing, etc. Put all construction costs in 10 through 50. Put design, administration, testing, etc. in <i>80 Professional Services</i>.</p>
<p>10 GUIDEWAY & TRACK ELEMENTS (route miles)</p>		<p>Include guideway and track costs for all transit modes (Heavy rail, light rail, commuter rail, BRT, rapid bus, bus, monorail, cable car, etc.) The unit of measure is route miles of guideway, regardless of width. As associated with the guideway, include costs for rough grading, excavation, and concrete base for guideway where applicable. Include all construction materials and labor regardless of whom is performing the work.</p> <p>In your written description of the scope and in supporting graphic diagrams, indicate whether busway or rail track is single, double, triple, relocated, etc. Put guideway and track elements associated with yards in <i>30 Support Facilities</i> below.</p>
10.01	Guideway: At-grade exclusive right-of-way	
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	
10.03	Guideway: At-grade in mixed traffic	
10.04	Guideway: Aerial structure	Include foundation excavation; guideway structures including caissons, columns, bridges, viaducts, cross-overs, fly-overs.
10.05	Guideway: Built-up fill	Include construction of earthen berms.
10.06	Guideway: Underground cut & cover	Include excavation, retaining walls, backfill, underground guideway structure and finishes.
10.07	Guideway: Underground tunnel	Include tunneling by means of a tunnel boring machine, drill blasting, mining, and immersed tube tunneling; tunnel structure and finishes.
10.08	Guideway: Retained cut or fill	Include excavation, retaining walls, backfill, underground guideway structure and finishes.
10.09	Track: Direct fixation	Include rails, connectors.
10.10	Track: Embedded	Include rails, ties; ballast where applicable
10.11	Track: Ballasted	Include rails, ties and ballast.
10.12	Track: Special (switches, turnouts)	Include transitional curves.
10.13	Track: Vibration and noise dampening	Include upcharge for vib/noise dampening to any track condition above.
<p>20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)</p>		<p>As associated with stations, include costs for rough grading, excavation, station structures, enclosures, finishes, equipment; mechanical and electrical components including HVAC, ventilation shafts and equipment, station power, lighting, public address/customer information system, safety systems such as fire detection and prevention, security surveillance, access control, life safety systems, etc. Include all construction materials and labor regardless of whom is performing the work.</p> <p>Put guideway and track associated with stations in <i>10 Guideway & Track Elements</i> above.</p>
20.01	At-grade station, stop, shelter, mall, terminal, platform	
20.02	Aerial station, stop, shelter, mall, terminal, platform	Include station structures including caissons, columns, platforms, superstructures, etc.
20.03	Underground station, stop, shelter, mall, terminal, platform	Include retaining walls, backfill, structure.
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	
20.05	Joint development	Per FTA's Joint Development Guidance, "Joint development is any income-producing activity with a transit nexus related to a real estate asset in which FTA has an interest. . . Joint development projects are commercial, residential, industrial, or mixed-use developments that are induced by or enhance the effectiveness of transit projects. . ." See http://www.fta.dot.gov/17973_18027_ENG_HTML.htm
20.06	Automobile parking multi-story structure	Include retaining walls, backfill, structure.
20.07	Elevators, escalators	
<p>30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS</p>		<p>As associated with support facilities, include costs for rough grading, excavation, support structures, enclosures, finishes, equipment; mechanical and electrical components including HVAC, ventilation shafts and equipment, facility power, lighting, public address system, safety systems such as fire detection and prevention, security surveillance, access control, life safety systems, etc. Include fueling stations. Include all construction materials and labor regardless of whom is performing the work.</p> <p>Where a support facility shares the structure with a station, its cost may be included with station cost. Identify this with a note.</p> <p>Except for guideway and track associated with a yard, include all guideway and track costs associated with support facilities in <i>10 Guideway & Track Elements</i> above.</p>
30.01	Administration Building: Office, sales, storage, revenue counting	
30.02	Light Maintenance Facility	Include service, inspection, and storage facilities and equipment.
30.03	Heavy Maintenance Facility	Include heavy maintenance and overhaul facilities and equipment.
30.04	Storage or Maintenance of Way Building	
30.05	Yard and Yard Track	Include yard construction, guideway and track associated with yard.



40 SITEWORK & SPECIAL CONDITIONS		Include all construction materials and labor regardless of whom is performing the work.
40.01	Demolition, Clearing, Earthwork	Include project-wide clearing, demolition and fine grading.
40.02	Site Utilities, Utility Relocation	Include all site utilities - storm, sewer, water, gas, electric.
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	Include underground storage tanks, fuel tanks, other hazardous materials and treatments, etc.
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Include other environmental mitigation not listed.
40.05	Site structures including retaining walls, sound walls	
40.06	Pedestrian / bike access and accommodation, landscaping	Include sidewalks, paths, plazas, landscape, site and station furniture, site lighting, signage, public artwork, bike facilities, permanent fencing.
40.07	Automobile, bus, van accessways including roads, parking lots	Include all on-grade paving.
40.08	Temporary Facilities and other indirect costs during construction	As a general rule and to the extent possible, appropriately allocate indirect costs among the construction costs in Categories 10 through 50. Where that is not possible, include in 40.08 <i>Temporary Facilities</i> costs for mobilization, demobilization, phasing; time and temporary construction associated with weather (heat, rain, freezing, etc.); temporary power and facilities; temporary construction, easements, and barriers for storm water pollution prevention, temporary access and to mitigate construction impacts; project and construction supervision; general conditions, overhead, profit. NOTE: Include contractor's general liability and other insurance related to construction such as builder's risk in Cats. 10 - 50, not in 80 Professional Services below.
50 SYSTEMS		Include all construction materials and labor regardless of whom is performing the work.
50.01	Train control and signals	
50.02	Traffic signals and crossing protection	Include signal prioritization at intersections.
50.03	Traction power supply: substations	
50.04	Traction power distribution: catenary and third rail	
50.05	Communications	Include passenger information systems at stations and on vehicles (real time travel information; static maps and schedules). Include equipment to allow communications among vehicles and with central control.
50.06	Fare collection system and equipment	Include fare sales and swipe machines, fare counting equipment.
50.07	Central Control	
Construction Subtotal (10 - 50)		
60 ROW, LAND, EXISTING IMPROVEMENTS		Include professional services associated with the real estate component of the project. These costs may include agency staff oversight and administration, real estate and relocation consultants, legal counsel, court expenses, insurance, etc.
60.01	Purchase or lease of real estate	If the value of right-of-way, land, and existing improvements is to be used as local match to the Federal funding of the project, include the total cost on this line item. In backup documentation, separate cost for land from cost for improvements. Identify whether items are leased, purchased or acquired through payment or for free. Include the costs for permanent surface and subsurface easements, trackage rights, etc.
60.02	Relocation of existing households and businesses	In compliance with Uniform Relocation Act.
70 VEHICLES (number)		Include professional services associated with the vehicle component of the project. These costs may include agency staff oversight and administration, vehicle consultants, design and manufacturing contractors, legal counsel, warranty and insurance costs, etc.
70.01	Light Rail	
70.02	Heavy Rail	Include light rail and streetcar rail using electric, diesel or other power supply.
70.03	Commuter Rail	Include locomotives (diesel, electric, or other), trailer cars, self-propelled multiple units (EMU electric or DMU diesel, or other power supply)
70.04	Bus	Includes "rubber-tired" buses and trolleys including new, used, historic replica, articulated, using electric, diesel, dual-power, or other power supply.
70.05	Other	Include Vans, Sedan/Station Wagon, Cable Car, People Mover, Monorail, Car/Inclined Railway, Ferry Boat, Transferred Vehicle
70.06	Non-revenue vehicles	
70.07	Spare parts	

80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		Cat. 80 applies to Cats. 10-50. Cat. 80 includes all professional, technical and management services related to the design and construction of fixed infrastructure (Cats. 10 - 50) during the preliminary engineering, final design, and construction phases of the project. This includes environmental work, design, engineering and architectural services; specialty services such as safety or security analyses; value engineering, risk assessment, cost estimating, scheduling, Before and After studies, ridership modeling and analyses, auditing, legal services, administration and management, etc. by agency staff or outside consultants.
80.01	Preliminary Engineering	
80.02	Final Design	
80.03	Project Management for Design and Construction	
80.04	Construction Administration & Management	Include professional liability insurance and other non-construction insurance on 80.05 unless insurance for the agency and its consultants is already included in other lines.
80.05	Professional Liability and other Non-Construction Insurance	
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	Include costs associated with professional services related to real estate and vehicles in Cats. 80 and 70.
80.07	Surveys, Testing, Investigation, Inspection	<i>(Note that costs for alternatives analysis and NEPA work done before FTA approval to enter preliminary engineering (PE), regardless of funding source, are not included in an FFGA and therefore, should not be included in the Standard Cost Category worksheets. For example, on one and the same grant, costs incurred prior to FTA approval to enter PE should be omitted from these worksheets whereas costs incurred after FTA approval to enter PE should be included.)</i>
80.08	Start up	Include start up and training. Include in Cats. 10 - 50 above access and protection work by agency staff or outside contractors.
Subtotal (10 - 80)		
90 UNALLOCATED CONTINGENCY		Includes unallocated contingency, project reserves. Document allocated contingencies for individual line items on the Main worksheets.
Subtotal (10 - 90)		
100 FINANCE CHARGES		Include finance charges expected to be paid by the project sponsor/grantee prior to either the completion of the project or the fulfillment of the New Starts funding commitment, whichever occurs later in time. Finance charges incurred after this date should not be included in Total Project Cost. (See FFGA Circular FTA C5200.1A Chapter III for additional information.) Derive finance charges from the New Starts project's financial plan, based on an analysis of the sources and uses of funds. The amount and type of debt financing required and revenues available determine the finance charges. By year, compute finance charges in year-of-expenditure (YOE) dollars. On the Inflation Calculation to YOE worksheet enter the finance charges for the appropriate years.
Total Project Cost (10 - 100)		

Summary of Costs - Alternative 1 Options

DESCRIPTION	GUIDEWAY LENGTH (FT)	# OF STATIONS (EA)	LOW ESTIMATE (-30%) (\$000)	POINT ESTIMATE (\$000)	HIGH ESTIMATE (+50%) (\$000)
CONSTRUCTION COSTS (SCC 10-50)					
ALTERNATIVE 1-1 (C/C)	4072	2	\$198,494	\$258,042	\$387,063
ALTERNATIVE 1-1 (SEM)	4072	2	\$236,955	\$308,042	\$462,063
ALTERNATIVE 1-2 (C/C)	3982	2	\$425,806	\$553,548	\$830,321
ALTERNATIVE 1-2 (SEM)	3982	2	\$469,412	\$610,235	\$915,353
SOFT COSTS (SCC 60-100)					
ALTERNATIVE 1-1 (C/C)	4072	2	\$114,461	\$148,800	\$223,199
ALTERNATIVE 1-1 (SEM)	4072	2	\$133,467	\$173,507	\$260,261
ALTERNATIVE 1-2 (C/C)	3982	2	\$226,426	\$294,354	\$441,531
ALTERNATIVE 1-2 (SEM)	3982	2	\$247,974	\$322,366	\$483,549
TOTAL COSTS (SCC 10-100)					
ALTERNATIVE 1-1 (C/C)	4072	2	\$312,955	\$406,841	\$610,262
ALTERNATIVE 1-1 (SEM)	4072	2	\$370,422	\$481,549	\$722,323
ALTERNATIVE 1-2 (C/C)	3982	2	\$652,232	\$847,902	\$1,271,852
ALTERNATIVE 1-2 (SEM)	3982	2	\$717,386	\$932,601	\$1,398,902

Notes:

FTA Capital Cost Database utilized for point estimate values.

Costs are in 2014 dollars, adjusted locally to San Francisco, CA.

Estimate values exclude finance charges (SCC-100).

Range values based on FTA and AACE guidelines for Probable Accuracy.

(C/C) and (SEM) designations for each option refer to the method of construction of North Beach Station [whether the station is estimated as cut-and-cover (C/C) box construction or construction by sequential excavation method (SEM)].

All deep options have bored tunnel estimated as constructed by tunnel boring machine (TBM). All shallow (surface) options have tunnel portion estimated as cut-and-cover box construction.

One cross-over was estimated for all subway station options. Adding two cross-overs before and after the underground stations adds to costs of the stations significantly (operational benefits would need to be evaluated); in addition this would be practical/feasible only for North Beach Station and the alignments under Columbus Avenue due to geometric constrains and constructability considerations.

Alternative 1-1

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 1-1			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.7712			\$627,535	\$406,841		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.7712		0	\$77,391	\$99,685	23%	15%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway	0.3282		8	\$27,171,972	\$8,918		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut and cover	Lineal Miles of Guideway	0.3506		11	\$107,955,004	\$37,846		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway	0.0924		6	\$65,864,817	\$6,088		
10.090	Track: Direct fixation	Track Miles	0.3506		19	\$3,705,543	\$1,299		
10.100	Track: Embedded	Track Miles	0.4206		9	\$3,220,175	\$1,355		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$292		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,888		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$87,700	\$175,399	68%	43%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$150,000	\$150,000		
20.031	Cut and Cover	Stations	1		10	\$150,000,000	\$150,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.7712			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.7712		0	\$15,915	\$12,274	5%	3%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.7712	Yes	12	\$2,033,937	\$1,569		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.7712	Yes	75	\$4,266,060	\$3,290		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.7712	Yes	5	\$2,299,074	\$1,773		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.7712	Yes	8	\$1,047,598	\$808		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.7712	Yes	1	\$149,423	\$115		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.7712	Yes	6	\$955,612	\$737		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.7712	Yes	21	\$5,163,485	\$3,982		
50	Systems	Track Miles	0.7712		0	\$13,882	\$10,883	4%	3%
50.010	Train control and signals	Track Miles	0.7712	Yes	26	\$2,966,502	\$2,288		
50.020	Traffic signals and crossing protection	Track Miles	0.7712	Yes	7	\$255,233	\$197		
50.030	Traction power supply: substations	Track Miles	0.7712	Yes	23	\$1,697,988	\$1,310		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.7712	Yes	13	\$3,156	\$2,465		
50.041	Catenary	Track Miles	0.7712	Yes	13	\$1,346,370	\$1,038		
50.042	Third Rail	Track Miles	0.7712	Yes	7	\$1,387,266	\$1,070		
50.043	Power Distribution and Connections	Track Miles	0.7712	Yes	4	\$462,321	\$357		
50.050	Communications	Track Miles	0.7712	Yes	23	\$2,267,613	\$1,749		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	1		0	\$334,592	\$288,042	100%	63%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.7712		0	\$18,474	\$14,247		4%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.7712	Yes	25	\$14,910,401	\$11,499		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.7712	Yes	12	\$1,727,595	\$1,332		
60.030	Services	Lineal Miles of Guideway	0.7712	Yes	23	\$1,835,836	\$1,416		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.7712	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$272,288.93		0	\$0	\$134,562	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$272,288.93	Yes	14	5%	\$17,668		
80.020	Final Design	Hard Costs	\$272,288.93	Yes	22	12%	\$33,260		
80.030	Project Management for Design and Construction	Hard Costs	\$272,288.93	Yes	32	10%	\$27,993		
80.040	Construction Administration & Management	Hard Costs	\$272,288.93	Yes	24	11%	\$31,276		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$272,288.93	Yes	16	4%	\$11,875		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$272,288.93	Yes	6	2%	\$5,620		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$272,288.93	Yes	2	0%	\$1,143		
80.080	Start up	Hard Costs	\$272,288.93	Yes	23	2%	\$4,788		
80.090	Other	Hard Costs	\$272,288.93	Yes	10	0%	\$1,338		
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$627,535	\$406,841		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$406,841		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$406,841		100%



Alternative 1-1 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 1-1 (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.7712			\$624,405		\$481,549	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.7712		0	\$77,391	\$59,685	19%	12%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.3282		8	\$27,171,972	\$8,918		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.3506		11	\$107,955,004	\$37,846		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0924		6	\$65,864,817	\$6,088		
10.090	Track: Direct fixation	Track Miles	0.3506		19	\$3,705,543	\$1,299		
10.100	Track: Embedded	Track Miles	0.4206		9	\$3,220,175	\$1,355		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$322		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,888		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$112,700	\$226,399	73%	47%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations	4			\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building - office, sales, storage, revenue counting	Lineal Miles of Guideway	0.7712			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Stitework & Special Conditions	Lineal Miles of Guideway	0.7712		0	\$15,816	\$12,274	4%	3%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.7712	Yes	12	\$2,033,937	\$1,569		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.7712	Yes	75	\$4,266,060	\$3,290		
40.030	Haz. matt, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.7712	Yes	5	\$2,299,074	\$1,773		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.7712	Yes	8	\$1,047,598	\$808		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.7712	Yes	1	\$149,423	\$115		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.7712	Yes	8	\$955,612	\$737		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.7712	Yes	21	\$5,163,485	\$3,982		
50	Systems	Track Miles	0.7712		0	\$13,862	\$10,683	3%	2%
50.010	Train control and signals	Track Miles	0.7712	Yes	26	\$2,966,502	\$2,288		
50.020	Traffic signals and crossing protection	Track Miles	0.7712	Yes	7	\$255,232	\$197		
50.030	Traction power supply: substations	Track Miles	0.7712	Yes	23	\$1,891,968	\$1,310		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.7712	Yes		\$3,196	\$2,485		
50.041	Catenary	Track Miles	0.7712	Yes	13	\$1,346,370	\$1,038		
50.042	Third Rail	Track Miles	0.7712	Yes	7	\$1,387,266	\$1,070		
50.043	Power Distribution and Connections	Track Miles	0.7712	Yes	4	\$462,321	\$357		
50.050	Communications	Track Miles	0.7712	Yes	23	\$2,267,613	\$1,749		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$32,875		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	1		0	\$399,425	\$308,042	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.7712		0	\$18,474	\$14,247		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.7712	Yes	25	\$14,910,401	\$11,499		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.7712	Yes	12	\$1,727,595	\$1,332		
60.030	Services	Lineal Miles of Guideway	0.7712	Yes	23	\$1,835,836	\$1,416		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.7712	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$322,288.93		0	49%	\$169,260	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$322,288.93	Yes	14	6%	\$20,912		
80.020	Final Design	Hard Costs	\$322,288.93	Yes	22	12%	\$39,368		
80.030	Project Management for Design and Construction	Hard Costs	\$322,288.93	Yes	32	10%	\$32,648		
80.040	Construction Administration & Management	Hard Costs	\$322,288.93	Yes	24	11%	\$37,019		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$322,288.93	Yes	16	4%	\$14,056		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$322,288.93	Yes	6	2%	\$6,652		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$322,288.93	Yes	2	0%	\$1,353		
80.080	Start up	Hard Costs	\$322,288.93	Yes	23	2%	\$5,667		
80.090	Other	Hard Costs	\$322,288.93	Yes	10	0%	\$1,584		
90	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$624,405	\$481,549		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)	Lineal Miles of Guideway	1	0	0	\$481,549	100%			
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)	Lineal Miles of Guideway	1	0	0	\$0	\$481,549	100%		



Alternative 1-2

Cost Model Compared With Project Estimate										
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014			
Reference Name:		ALT 1-2			Base Year		2014			
Project City:		San Francisco, CA								
Mode:		Light Rail Transit					Chart			
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.7542			\$1,124,289	\$847,902			
		Units	Quantity	Include This Item (select "Yes" or "No")	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	
10	Guideway & Track Elements	Lineal Miles of Guideway	0.7542			0	\$151,132	\$113,978	21%	13%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0			
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0			
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0			
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0			
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0			
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,955,004	\$14,312			
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.6216		11	\$149,268,285	\$92,784			
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0			
10.090	Track: Direct fixation	Track Miles	0.7542		19	\$3,705,543	\$2,795			
10.100	Track: Embedded	Track Miles			9	\$0	\$0			
10.110	Track: Ballasted	Track Miles			18	\$0	\$0			
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$285			
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,802			
20	Stations, Stops, Terminals, Intermodels	Stations	2			0	\$208,500	\$417,060	75%	49%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0			
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0			
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2			\$200,000	\$400,000			
20.031	Cut and Cover	Stations	2		10	\$200,000,000	\$400,000			
20.032	Bored Earth Soft Soils	Stations	0		0	\$0	\$0			
20.033	Bored Rock Hard Soils	Stations	0		0	\$0	\$0			
20.034	Unspecified	Stations	0		4	\$0	\$0			
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0			
20.070	Elevators, escalators	Number	8			\$2,133	\$17,060			
20.071	Elevators	Number	4			\$2,217,942	\$8,872			
20.072	Escalators	Number	4			\$2,047,157	\$8,189			
20.080	Passenger Overpass	Number			5	\$0	\$0			
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0			
20.100	Signage and Graphics	Stations			10	\$0	\$0			
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			0	\$0	\$0	0%	0%
30.010	Administration Building - Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.7542			\$0	\$0			
30.011	Administrative Building	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.012	Central Control Facility	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0.0000	No	0	\$0	\$0			
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0			
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0			
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0			
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0			
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.7542			0	\$15,915	\$12,003	2%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.7542	Yes	12	\$2,033,937	\$1,534			
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.7542	Yes	75	\$4,266,060	\$3,217			
40.030	Haz. mat., contain soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.7542	Yes	8	\$2,239,074	\$1,734			
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.7542	Yes	8	\$1,047,598	\$790			
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.7542	Yes	1	\$149,423	\$113			
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.7542	Yes	8	\$955,612	\$721			
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0		0	\$0	\$0			
40.071	Surface Parking Lot	Spaces			6	\$0	\$0			
40.072	Auto Access	Stations			2	\$0	\$0			
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1	Yes	21	\$5,163,485	\$3,894			
50	Systems	Track Miles	1			0	\$13,901	\$10,806	2%	1%
50.010	Train control and signals	Track Miles	1	Yes	26	\$2,966,502	\$2,237			
50.020	Traffic signals and crossing protection	Track Miles	1	Yes	7	\$255,223	\$192			
50.030	Traction power supply - substations	Track Miles	1	Yes	23	\$1,697,988	\$1,281			
50.040	Traction power distribution: catenary and third rail	Track Miles	1			\$3,196	\$2,410			
50.041	Catenary	Track Miles	1	Yes	13	\$1,346,370	\$1,015			
50.042	Third Rail	Track Miles	1	Yes	7	\$1,387,266	\$1,046			
50.043	Power Distribution and Connections	Track Miles	1	Yes	4	\$462,321	\$349			
50.050	Communications	Track Miles	1	Yes	23	\$2,267,613	\$1,710			
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675			
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1			0	\$733,596	\$663,648	100%	65%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1			0	\$18,474	\$13,932		2%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1	Yes	25	\$14,910,401	\$11,245			
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1	Yes	12	\$1,727,695	\$1,303			
60.030	Services	Lineal Miles of Guideway	1	Yes	23	\$1,835,836	\$1,385			
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1	Yes	0	\$0	\$0			
70	Vehicles	Vehicles	0			0	\$0	\$0	0%	0%
70.010	Light Rail	Vehicles			15	\$0	\$0			
70.020	Heavy Rail	Vehicles			6	\$0	\$0			
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0			
80	Professional Services	Hard Costs	\$567,479.95			0	\$49%	\$280,422	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$567,479.95	Yes	14	6%	\$36,822			
80.020	Final Design	Hard Costs	\$567,479.95	Yes	22	12%	\$69,318			
80.030	Project Management for Design and Construction	Hard Costs	\$567,479.95	Yes	32	10%	\$67,486			
80.040	Construction Administration & Management	Hard Costs	\$567,479.95	Yes	24	11%	\$65,182			
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$567,479.95	Yes	16	4%	\$24,750			
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$567,479.95	Yes	6	2%	\$11,713			
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$567,479.95	Yes	2	0%	\$2,383			
80.080	Start up	Hard Costs	\$567,479.95	Yes	23	2%	\$9,978			
80.090	Other	Hard Costs	\$567,479.95	Yes	10	0%	\$2,790			
	Subtotal (10-80)	Lineal Miles of Guideway	1			0	\$1,124,289	\$847,902		
90	Unallocated Contingency	Total Amount	1			0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			0	\$847,902	\$847,902		100%
100	Finance Charges	Total Amount	1			0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			0	\$0	\$847,902		100%



Alternative 1-2 (NBS is SEM)

Cost Model Compared With Project Estimate										
Cost Basis:		CENTRAL SUBWAY PHASE 3				Today's Date		8/25/2014		
Reference Name:		ALT 1-2 (NBS is SEM)				Base Year		2014		
Project City:		San Francisco, CA								
Mode:		Light Rail Transit								Chart
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.7542				\$1,236,699	\$932,601		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	
10	Guideway & Track Elements	Lineal Miles of Guideway	0.7542		0	\$151,132	\$113,978	19%	12%	
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0			
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0			
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			6	\$0	\$0			
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0			
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0			
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,865,004	\$14,312			
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.6216		11	\$149,269,295	\$92,784			
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0			
10.090	Track: Direct fixation	Track Miles	0.7542		19	\$3,705,543	\$2,795			
10.100	Track: Embedded	Track Miles			9	\$0	\$0			
10.110	Track: Ballasted	Track Miles			18	\$0	\$0			
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$285			
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,802			
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$236,874	\$473,748	78%	51%	
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0			
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0			
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2			\$228,344	\$456,688			
20.031	Sequential Excavation Method	Stations	2		10	\$228,343,750	\$456,688			
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0			
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0			
20.034	Unspecified	Stations			4	\$0	\$0			
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0			
20.070	Elevators, escalators	Number	8			\$2,138	\$17,060			
20.071	Elevators	Number	4		4	\$2,217,842	\$9,072			
20.072	Escalators	Number	4		5	\$2,047,157	\$8,189			
20.080	Passenger Overpass	Number			5	\$0	\$0			
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0			
20.100	Signage and Graphics	Stations			10	\$0	\$0			
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%	
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.7542			\$0	\$0			
30.011	Administrative Building	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.012	Central Control Facility	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0.0000	No	0	\$0	\$0			
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0			
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0			
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0			
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0			
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.7542		0	\$15,915	\$12,003	2%	1%	
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.7542	Yes	12	\$2,033,937	\$1,634			
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.7542	Yes	75	\$4,266,060	\$3,217			
40.030	Haz. mat., contain'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.7542	Yes	5	\$2,299,074	\$1,734			
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.7542	Yes	8	\$1,047,598	\$790			
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.7542	Yes	1	\$149,423	\$113			
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.7542	Yes	8	\$955,612	\$721			
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0			
40.071	Surface Parking Lot	Spaces			8	\$0	\$0			
40.072	Auto Access	Stations			2	\$0	\$0			
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1	Yes	21	\$5,163,485	\$3,894			
50	Systems	Track Miles	1		0	\$13,901	\$10,606	2%	1%	
50.010	Train control and signals	Track Miles	1	Yes	26	\$2,966,502	\$2,237			
50.020	Traffic signals and crossing protection	Track Miles	1	Yes	7	\$255,223	\$192			
50.030	Traction power supply - substations	Track Miles	1	Yes	23	\$1,697,908	\$1,281			
50.040	Traction power distribution - catenary and third rail	Track Miles	1			\$3,196	\$2,410			
50.041	Catenary	Track Miles	1	Yes	13	\$1,346,370	\$1,015			
50.042	Third Rail	Track Miles	1	Yes	7	\$1,387,266	\$1,046			
50.043	Power Distribution and Connections	Track Miles	1	Yes	4	\$462,921	\$349			
50.050	Communications	Track Miles	1	Yes	23	\$2,267,613	\$1,710			
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675			
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1		0	\$809,162	\$610,235	100%	65%	
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1		0	\$18,474	\$13,932		1%	
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1	Yes	25	\$14,310,401	\$11,245			
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1	Yes	12	\$1,727,955	\$1,305			
60.030	Services	Lineal Miles of Guideway	1	Yes	23	\$1,835,836	\$1,385			
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1	Yes	0	\$0	\$0			
70	Vehicles	Vehicles	0		0	\$0	\$0		0%	
70.010	Light Rail	Vehicles			15	\$0	\$0			
70.020	Heavy Rail	Vehicles			6	\$0	\$0			
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0			
80	Professional Services	Hard Costs	\$624,167.45		0	\$49	\$308,434	0%	0%	
80.010	Preliminary Engineering	Hard Costs	\$624,167.45	Yes	14	3%	\$40,500			
80.020	Final Design	Hard Costs	\$624,167.45	Yes	22	12%	\$76,243			
80.030	Project Management for Design and Construction	Hard Costs	\$624,167.45	Yes	32	10%	\$63,229			
80.040	Construction Administration & Management	Hard Costs	\$624,167.45	Yes	24	11%	\$71,693			
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$624,167.45	Yes	16	4%	\$27,222			
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$624,167.45	Yes	6	2%	\$12,883			
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$624,167.45	Yes	2	0%	\$2,621			
80.080	Start up	Hard Costs	\$624,167.45	Yes	23	2%	\$10,975			
80.090	Other	Hard Costs	\$624,167.45	Yes	10	0%	\$3,068			
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$1,236,699	\$932,601			
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0			0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$932,601			100%
100	Finance Charges	Total Amount	1		0	\$0	\$0			0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$932,601			100%



Summary of Costs - Alternative 2 Options

DESCRIPTION	GUIDEWAY LENGTH(FT)	# OF STATIONS (EA)	LOW ESTIMATE (-30%) (\$000)	POINT ESTIMATE (\$000)	HIGH ESTIMATE (+50%) (\$000)
CONSTRUCTION COSTS (SCC 10-50)					
ALTERNATIVE 2A-1 (C/C)	3602	2	\$179,269	\$233,050	\$349,575
ALTERNATIVE 2A-1 (SEM)	3602	2	\$217,731	\$283,050	\$424,575
ALTERNATIVE 2A-2 (C/C)	3611	2	\$420,967	\$547,258	\$820,886
ALTERNATIVE 2A-2 (SEM)	3611	2	\$459,429	\$597,258	\$895,886
ALTERNATIVE 2B-2 (C/C)	5382	3	\$671,614	\$873,098	\$1,309,648
ALTERNATIVE 2B-2 (SEM)	5382	3	\$710,018	\$923,023	\$1,384,535
ALTERNATIVE 2A-3 (C/C)	5270	2	\$194,362	\$252,671	\$379,007
ALTERNATIVE 2A-3 (SEM)	5270	2	\$232,824	\$302,671	\$454,007
ALTERNATIVE 2A-4 (C/C)	5279	2	\$436,061	\$566,879	\$850,319
ALTERNATIVE 2A-4 (SEM)	5279	2	\$474,522	\$616,879	\$925,319
ALTERNATIVE 2A-5 (C/C)	7420	2	\$213,817	\$277,963	\$416,944
ALTERNATIVE 2A-5 (SEM)	7420	2	\$252,279	\$327,963	\$491,944
ALTERNATIVE 2A-6 (C/C)	7429	2	\$455,516	\$592,170	\$888,256
ALTERNATIVE 2A-6 (SEM)	7429	2	\$493,977	\$642,170	\$963,256
ALTERNATIVE 2B-1 (C/C)	6909	2	\$209,193	\$271,951	\$407,927
ALTERNATIVE 2B-1 (SEM)	6909	2	\$247,655	\$321,951	\$482,927
SOFT COSTS (SCC 60-100)					
ALTERNATIVE 2A-1 (C/C)	3602	2	\$103,071	\$133,993	\$200,989
ALTERNATIVE 2A-1 (SEM)	3602	2	\$122,077	\$158,700	\$238,050
ALTERNATIVE 2A-2 (C/C)	3611	2	\$222,543	\$289,306	\$433,959
ALTERNATIVE 2A-2 (SEM)	3611	2	\$241,549	\$314,014	\$471,021
ALTERNATIVE 2B-2 (C/C)	5382	3	\$353,523	\$459,580	\$689,370
ALTERNATIVE 2B-2 (SEM)	5382	3	\$372,500	\$484,250	\$726,376
ALTERNATIVE 2A-3 (C/C)	5270	2	\$117,237	\$152,409	\$228,613
ALTERNATIVE 2A-3 (SEM)	5270	2	\$136,243	\$177,116	\$265,674
ALTERNATIVE 2A-4 (C/C)	5279	2	\$236,709	\$307,722	\$461,583
ALTERNATIVE 2A-4 (SEM)	5279	2	\$255,715	\$332,430	\$498,645
ALTERNATIVE 2A-5 (C/C)	7420	2	\$135,497	\$176,146	\$264,219
ALTERNATIVE 2A-5 (SEM)	7420	2	\$154,503	\$200,854	\$301,281
ALTERNATIVE 2A-6 (C/C)	7429	2	\$254,969	\$331,460	\$497,190
ALTERNATIVE 2A-6 (SEM)	7429	2	\$273,975	\$356,167	\$534,251
ALTERNATIVE 2B-1 (C/C)	6909	2	\$131,157	\$170,504	\$255,756
ALTERNATIVE 2B-1 (SEM)	6909	2	\$150,163	\$195,212	\$292,818
TOTAL COSTS (SCC 10-100)					
ALTERNATIVE 2A-1 (C/C)	3602	2	\$282,340	\$367,043	\$550,564
ALTERNATIVE 2A-1 (SEM)	3602	2	\$339,808	\$441,750	\$662,625
ALTERNATIVE 2A-2 (C/C)	3611	2	\$643,511	\$836,564	\$1,254,846
ALTERNATIVE 2A-2 (SEM)	3611	2	\$700,978	\$911,272	\$1,366,907
ALTERNATIVE 2B-2 (C/C)	5382	3	\$1,025,137	\$1,332,678	\$1,999,017
ALTERNATIVE 2B-2 (SEM)	5382	3	\$1,082,518	\$1,407,274	\$2,110,911
ALTERNATIVE 2A-3 (C/C)	5270	2	\$311,600	\$405,080	\$607,620
ALTERNATIVE 2A-3 (SEM)	5270	2	\$369,067	\$479,787	\$719,681
ALTERNATIVE 2A-4 (C/C)	5279	2	\$672,770	\$874,601	\$1,311,902
ALTERNATIVE 2A-4 (SEM)	5279	2	\$730,238	\$949,309	\$1,423,963
ALTERNATIVE 2A-5 (C/C)	7420	2	\$349,314	\$454,109	\$681,163
ALTERNATIVE 2A-5 (SEM)	7420	2	\$406,782	\$528,816	\$793,224
ALTERNATIVE 2A-6 (C/C)	7429	2	\$710,485	\$923,630	\$1,385,445
ALTERNATIVE 2A-6 (SEM)	7429	2	\$767,952	\$998,338	\$1,497,507
ALTERNATIVE 2B-1 (C/C)	6909	2	\$340,351	\$442,456	\$663,684
ALTERNATIVE 2B-1 (SEM)	6909	2	\$397,818	\$517,163	\$775,745

Notes:

FTA Capital Cost Database utilized for point estimate values.

Costs are in 2014 dollars, adjusted locally to San Francisco, CA.

Estimate values exclude finance charges (SCC-100).

Range values based on FTA and AACE guidelines for Probable Accuracy.

(C/C) and (SEM) designations for each option refer to the method of construction of North Beach Station [whether the station is estimated as cut-and-cover (C/C) box construction or construction by sequential excavation method (SEM)].



All deep options have bored tunnel estimated as constructed by tunnel boring machine (TBM). All shallow (surface) options have tunnel portion estimated as cut-and-cover box construction. THIRD NOTE: For options 2A-4 and 2A-6 the running tunnel under Powell Street was estimated as a shallow cut-and-cover box construction due to N2 tunnel obstruction. One cross-over was estimated for all subway station options. Adding two cross-overs before and after the underground stations adds to costs of the stations significantly (operational benefits would need to be evaluated); in addition this would be practical/feasible only for North Beach Station and the alignments under Columbus Avenue due to geometric constrains and constructability considerations.

HNTB

THIRD STREET

To Fisherman's Wharf

Alternative 2A-1

Cost Model Compared With Project Estimate													
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014						
Reference Name:		3 ALT 2A-1			Base Year		2014						
Project City:		San Francisco, CA											
Mode:		Light Rail Transit					Chart						
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.6822	Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	\$538,030	\$367,043	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.6822		0			\$54,287		\$37,034		16%	10%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19			\$0		\$0			
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3			\$0		\$0			
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.4953		8			\$27,171,972		\$13,457			
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16			\$0		\$0			
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0			\$0		\$0			
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1261		11			\$107,955,004		\$13,617			
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11			\$0		\$0			
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0608		6			\$65,864,817		\$4,004			
10.090	Track Direct fixation	Track Miles	0.1261		19			\$3,705,543		\$467			
10.100	Track Embedded	Track Miles	0.5561		9			\$3,220,175		\$1,791			
10.110	Track Ballasted	Track Miles			18			\$0		\$0			
10.120	Track Special (switches, turnouts)	Track Miles	1	Yes	12			\$378,486		\$258			
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3			\$5,041,732		\$3,439			
20	Stations, Stops, Terminals, Intermodals	Stations	2		0			\$57,700		\$176,399		75%	48%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19			\$16,869,180		\$16,869			
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5			\$0		\$0			
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1					\$150,000		\$150,000			
20.031	Cut and Cover	Stations	1		10			\$150,000,000		\$150,000			
20.032	Bored Earth Soft Soils	Stations			0			\$0		\$0			
20.033	Bored Rock Hard Soils	Stations			0			\$0		\$0			
20.034	Unspecified	Stations			4			\$0		\$0			
20.060	Automobile parking multi-story structure	Spaces			3			\$0		\$0			
20.070	Elevators, escalators	Number	4					\$2,133		\$5,330			
20.071	Elevators	Number	2		4			\$2,217,942		\$4,436			
20.072	Escalators	Number	2		5			\$2,047,157		\$4,094			
20.080	Passenger Overpass	Number			5			\$0		\$0			
20.090	Underground Interconnecting Tunnel	Number		No	0			\$0		\$0			
20.100	Signage and Graphics	Stations			10			\$0		\$0			
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0			\$0		\$0		0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.6822					\$0		\$0			
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2			\$0		\$0			
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2			\$0		\$0			
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0			\$0		\$0			
30.020	Light Maintenance Facility	Vehicles	0	Yes	7			\$0		\$0			
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17			\$0		\$0			
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5			\$0		\$0			
30.050	Yard and Yard Track	Track Miles	0	No	5			\$0		\$0			
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.6822		0			\$15,915		\$10,857		5%	3%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.6822	Yes	12			\$2,033,937		\$1,388			
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.6822	Yes	75			\$4,266,060		\$2,910			
40.030	Haz. matl, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.6822	Yes	5			\$2,299,074		\$1,568			
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.6822	Yes	8			\$1,047,598		\$715			
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.6822	Yes	1			\$149,423		\$102			
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	0.6822	Yes	8			\$955,612		\$652			
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0					\$0		\$0			
40.071	Surface Parking Lot	Spaces			8			\$0		\$0			
40.072	Auto Access	Stations			2			\$0		\$0			
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.6822	Yes	21			\$5,163,485		\$3,523			
50	Systems	Track Miles	0.6822		0			\$14,305		\$9,759		4%	3%
50.010	Train control and signals	Track Miles	0.6822	Yes	26			\$2,966,502		\$2,024			
50.020	Traffic signals and crossing protection	Track Miles	0.6822	Yes	7			\$265,223		\$174			
50.030	Traction power supply: substations	Track Miles	0.6822	Yes	23			\$1,697,988		\$1,158			
50.040	Traction power distribution: catenary and third rail	Track Miles	0.6822	Yes				\$3,196		\$2,180			
50.041	Catenary	Track Miles	0.6822	Yes	13			\$1,346,370		\$918			
50.042	Ancillary Elements	Track Miles	0.6822	Yes	7			\$1,387,266		\$946			
50.043	Power Distribution and Connections	Track Miles	0.6822	Yes	4			\$462,321		\$315			
50.050	Communications	Track Miles	0.6822	Yes	23			\$2,267,613		\$1,547			
50.060	Fare collection system and equipment	Stations	2	Yes	28			\$1,337,702		\$2,675			
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.6822		0			\$341,617		\$233,050		100%	63%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.6822		0			\$18,474		\$12,603			3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.6822	Yes	25			\$14,910,401		\$10,172			
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.6822	Yes	12			\$1,727,595		\$1,179			
60.030	Services	Lineal Miles of Guideway	0.6822	Yes	23			\$1,835,836		\$1,252			
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.6822	Yes	0			\$0		\$0			
70	Vehicles	Vehicles	0		0			\$0		\$0			0%
70.010	Light Rail	Vehicles			15			\$0		\$0			
70.020	Heavy Rail	Vehicles			6			\$0		\$0			
70.060	Non-revenue vehicles	Vehicles	0	Yes	11			\$0		\$0			
80	Professional Services	Hard Costs	\$245,652.65		0			49%		\$121,390		0%	0%
80.010	Preliminary Engineering	Hard Costs	\$245,652.65	Yes	14			6%		\$15,940			
80.020	Final Design	Hard Costs	\$245,652.65	Yes	22			12%		\$30,007			
80.030	Project Management for Design and Construction	Hard Costs	\$245,652.65	Yes	32			10%		\$24,885			
80.040	Construction Administration & Management	Hard Costs	\$245,652.65	Yes	24			11%		\$28,216			
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$245,652.65	Yes	16			4%		\$10,714			
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$245,652.65	Yes	6			2%		\$5,070			
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$245,652.65	Yes	2			0%		\$1,031			
80.080	Start up	Hard Costs	\$245,652.65	Yes	23			2%		\$4,320			
80.090	Other	Hard Costs	\$245,652.65	Yes	10			0%		\$1,208			
	Subtotal (10-80)	Lineal Miles of Guideway	1		0			\$638,030		\$367,043			
90	Unallocated Contingency	Total Amount	1		0			\$0		\$0			0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0			\$0		\$367,043			100%
100	Finance Charges	Total Amount	1		0			\$0		\$0			0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0			\$0		\$367,043			100%



Alternative 2A-1 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-1 (NBS IS SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.6822			\$647,541		\$441,760	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.6822		0	\$84,287	\$37,034	13%	8%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.4953		8	\$27,171,972	\$13,457		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,955,004	\$13,617		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$65,864,817	\$4,004		
10.090	Track, Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track, Embedded	Track Miles	0.5561		9	\$3,220,175	\$1,791		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$258		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,439		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$12,700	\$226,399	80%	51%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.6822			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.6822		0	\$15,915	\$10,857	4%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.6822	Yes	12	\$2,033,937	\$1,388		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.6822	Yes	75	\$4,266,060	\$2,910		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.6822	Yes	5	\$2,299,074	\$1,568		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.6822	Yes	8	\$1,047,598	\$715		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.6822	Yes	1	\$149,423	\$102		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.6822	Yes	8	\$955,612	\$652		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.6822	Yes	21	\$5,163,485	\$3,523		
50	Systems	Track Miles	0.6822		0	\$14,305	\$9,759	3%	2%
50.010	Train control and signals	Track Miles	0.6822	Yes	26	\$2,966,502	\$2,024		
50.020	Traffic signals and crossing protection	Track Miles	0.6822	Yes	7	\$255,223	\$174		
50.030	Traction power supply, substations	Track Miles	0.6822	Yes	23	\$1,697,968	\$1,158		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.6822			\$3,196	\$2,180		
50.041	Catenary	Track Miles	0.6822	Yes	13	\$1,346,370	\$918		
50.042	Ancillary Elements	Track Miles	0.6822	Yes	7	\$1,387,266	\$946		
50.043	Power Distribution and Connections	Track Miles	0.6822	Yes	4	\$462,321	\$315		
50.050	Communications	Track Miles	0.6822	Yes	23	\$2,267,613	\$1,547		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.6822		0	\$414,909	\$283,050	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.6822		0	\$18,474	\$12,603		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.6822	Yes	25	\$14,910,401	\$10,172		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.6822	Yes	12	\$1,727,895	\$1,173		
60.030	Services	Lineal Miles of Guideway	0.6822	Yes	23	\$1,636,636	\$1,125		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.6822	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$295,652.65		0	49%	\$146,098		0%
80.010	Preliminary Engineering	Hard Costs	\$295,652.65	Yes	14	6%	\$19,184		
80.020	Final Design	Hard Costs	\$295,652.65	Yes	22	12%	\$36,114		
80.030	Project Management for Design and Construction	Hard Costs	\$295,652.65	Yes	32	10%	\$39,950		
80.040	Construction Administration & Management	Hard Costs	\$295,652.65	Yes	24	11%	\$33,959		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$295,652.65	Yes	16	4%	\$12,894		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$295,652.65	Yes	6	2%	\$6,102		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$295,652.65	Yes	2	0%	\$1,241		
80.080	Start up	Hard Costs	\$295,652.65	Yes	23	2%	\$5,199		
80.090	Other	Hard Costs	\$295,652.65	Yes	10	0%	\$1,453		
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$647,541	\$441,760		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$441,760		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$441,760		100%



Alternative 2A-2

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-2			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.6839			\$1,223,223		\$836,564	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.6839		0	\$160,385	\$102,849	19%	12%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,955,004	\$14,312		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.5513		11	\$149,268,285	\$82,295		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track: Direct fixation	Track Miles	0.6839		19	\$3,705,543	\$2,534		
10.100	Track: Embedded	Track Miles			9	\$0	\$0		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$259		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$3,448		
20	Stations, Stops, Terminals, Intermedals	Stations	2		0	\$211,874	\$423,748	77%	51%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	2			\$203,344	\$406,688		
20.031	Sequential Excavation Method	Stations	2		10	\$203,343,750	\$406,688		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	8		3	\$2,133	\$17,060		
20.071	Elevators	Number	4		4	\$2,217,942	\$8,872		
20.072	Escalators	Number	4		5	\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.6839			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.6839		0	\$15,915	\$10,884	2%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.6839	Yes	12	\$2,033,937	\$1,391		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.6839	Yes	75	\$4,266,060	\$2,918		
40.030	Haz. mat'l, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.6839	Yes	5	\$2,299,074	\$1,572		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.6839	Yes	8	\$1,047,598	\$716		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.6839	Yes	1	\$149,423	\$102		
40.060	Pedestrian bike access and accommodation, landscaping	Lineal Miles of Guideway	0.6839	Yes	8	\$955,612	\$654		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.6839	Yes	21	\$5,163,485	\$3,531		
50	Systems	Track Miles	0.6839		0	\$14,295	\$9,777	2%	1%
50.010	Train control and signals	Track Miles	0.6839	Yes	26	\$2,966,502	\$2,029		
50.020	Traffic signals and crossing protection	Track Miles	0.6839	Yes	7	\$255,223	\$175		
50.030	Traction power supply: substations	Track Miles	0.6839	Yes	23	\$1,697,988	\$1,161		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.6839	Yes		\$3,136	\$2,186		
50.041	Catenary	Track Miles	0.6839	Yes	19	\$1,346,370	\$921		
50.042	Ancillary Elements	Track Miles	0.6839	Yes	7	\$1,387,266	\$949		
50.043	Power Distribution and Connections	Track Miles	0.6839	Yes	4	\$462,321	\$316		
50.050	Communications	Track Miles	0.6839	Yes	23	\$2,267,613	\$1,551		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.6839		0	\$800,200	\$647,268	100%	65%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.6839		0	\$18,474	\$12,634		2%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.6839	Yes	25	\$14,910,401	\$10,197		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.6839	Yes	12	\$1,727,595	\$1,182		
60.030	Services	Lineal Miles of Guideway	0.6839	Yes	23	\$1,635,836	\$1,256		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.6839	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$559,891.93		0	49%	\$276,672	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$559,891.93	Yes	14	6%	\$36,330		
80.020	Final Design	Hard Costs	\$559,891.93	Yes	22	12%	\$68,392		
80.030	Project Management for Design and Construction	Hard Costs	\$559,891.93	Yes	32	10%	\$56,718		
80.040	Construction Administration & Management	Hard Costs	\$559,891.93	Yes	24	11%	\$64,310		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$559,891.93	Yes	16	4%	\$34,419		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$559,891.93	Yes	6	2%	\$11,556		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$559,891.93	Yes	2	0%	\$2,351		
80.080	Start up	Hard Costs	\$559,891.93	Yes	23	2%	\$9,845		
80.090	Other	Hard Costs	\$559,891.93	Yes	10	0%	\$2,752		
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$1,223,223	\$836,564		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$836,564	100%	100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$836,564	100%	100%



Alternative 2A-2 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-2 (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.6839			\$1,332,460	\$911,272		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.6839		0	\$150,385	\$102,849	17%	11%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,955,004	\$14,312		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	0.5513		11	\$149,268,285	\$62,295		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track: Direct fixation	Track Miles	0.6839		19	\$3,705,543	\$2,534		
10.100	Track: Embedded	Track Miles			9	\$0	\$0		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$259		
10.140	Special Structures	Lineal Miles of Guideway		Yes	3	\$5,041,792	\$3,448		
20	Stations, Stops, Terminals, Intermodals	Stations	2		0	\$236,874	\$473,748	79%	62%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	2			\$226,344	\$456,688		
20.031	Sequential Excavation Method	Stations	2		10	\$226,343,750	\$456,688		
20.032	Bored Earth Soft Soils	Stations				\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			4	\$0	\$0		
20.034	Unspecified	Stations			3	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	8			\$2,133	\$17,060		
20.071	Elevators	Number	4		4	\$2,217,942	\$8,872		
20.072	Escalators	Number	4		5	\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.6839			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.6839		0	\$15,915	\$10,884	2%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.6839	Yes	12	\$2,033,937	\$1,391		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.6839	Yes	75	\$4,266,060	\$2,918		
40.030	Haz mat, contain'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.6839	Yes	5	\$2,299,074	\$1,572		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.6839	Yes	8	\$1,047,598	\$716		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.6839	Yes	1	\$149,423	\$102		
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	0.6839	Yes	8	\$955,612	\$654		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.6839	Yes	21	\$5,163,485	\$3,531		
50	Systems	Track Miles	0.6839		0	\$14,295	\$9,777	2%	1%
50.010	Train control and signals	Track Miles	0.6839	Yes	26	\$2,966,502	\$2,029		
50.020	Traffic signals and crossing protection	Track Miles	0.6839	Yes	7	\$255,223	\$175		
50.030	Traction power supply: substations	Track Miles	0.6839	Yes	23	\$1,697,988	\$1,161		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.6839	Yes		\$3,196	\$2,186		
50.041	Catenary	Track Miles	0.6839	Yes	13	\$1,346,370	\$921		
50.042	Ancillary Elements	Track Miles	0.6839	Yes	7	\$1,387,266	\$949		
50.043	Power Distribution and Connections	Track Miles	0.6839	Yes	4	\$462,321	\$316		
50.050	Communications	Track Miles	0.6839	Yes	23	\$2,267,613	\$1,551		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.6839		0	\$873,309	\$597,268	100%	66%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.6839		0	\$18,474	\$12,634		1%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.6839	Yes	25	\$14,910,401	\$10,197		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.6839	Yes	12	\$1,727,855	\$1,192		
60.030	Services	Lineal Miles of Guideway	0.6839	Yes	23	\$1,835,836	\$1,256		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.6839	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$609,891.93		0	49%	\$301,380		0%
80.010	Preliminary Engineering	Hard Costs	\$609,891.93	Yes	14	6%	\$39,574		
80.020	Final Design	Hard Costs	\$609,891.93	Yes	22	12%	\$74,499		
80.030	Project Management for Design and Construction	Hard Costs	\$609,891.93	Yes	32	10%	\$61,783		
80.040	Construction Administration & Management	Hard Costs	\$609,891.93	Yes	24	11%	\$70,053		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$609,891.93	Yes	16	4%	\$26,600		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$609,891.93	Yes	6	2%	\$12,588		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$609,891.93	Yes	2	0%	\$2,561		
80.080	Start up	Hard Costs	\$609,891.93	Yes	23	2%	\$10,724		
80.090	Other	Hard Costs	\$609,891.93	Yes	10	0%	\$2,998		
Subtotal (10-80)	Lineal Miles of Guideway	1	0		0	\$1,332,460	\$911,272		0%
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)	Lineal Miles of Guideway	1	0		0	\$0	\$911,272		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)	Lineal Miles of Guideway	1	0		0	\$0	\$911,272		100%



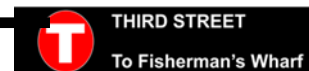
Alternative 2A-3

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date:		8/25/2014		
Reference Name:		3 ALT 2A-3			Base Year:		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.9981			\$405,848	\$405,080		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.9981		0	\$48,440	\$48,348	19%	12%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.8112		8	\$27,171,972	\$22,041		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,965,004	\$13,617		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$65,864,817	\$4,004		
10.090	Track: Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track: Embedded	Track Miles	0.8720		9	\$3,220,175	\$2,808		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$379,466	\$378		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$5,032		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$87,700	\$175,399	69%	43%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	1			\$150,000	\$150,000		
20.031	Cut and Cover	Stations	1		10	\$150,000,000	\$150,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.9981			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.9981		0	\$15,915	\$15,885	6%	4%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.9981	Yes	12	\$2,033,937	\$2,030		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.9981	Yes	75	\$4,266,060	\$4,258		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.9981	Yes	5	\$2,299,074	\$2,295		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.9981	Yes	8	\$1,047,598	\$1,046		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.9981	Yes	1	\$149,423	\$149		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.9981	Yes	8	\$955,612	\$954		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.9981	Yes	21	\$5,163,485	\$5,154		
50	Systems	Track Miles	0.9981		0	\$13,064	\$13,039	5%	3%
50.010	Train control and signals	Track Miles	0.9981	Yes	26	\$2,966,502	\$2,961		
50.020	Traffic signals and crossing protection	Track Miles	0.9981	Yes	7	\$255,223	\$255		
50.030	Traction power supply, substations	Track Miles	0.9981	Yes	23	\$1,697,968	\$1,695		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.9981			\$3,196	\$3,190		
50.041	Catenary	Track Miles	0.9981	Yes	13	\$1,346,370	\$1,344		
50.042	Ancillary Elements	Track Miles	0.9981	Yes	7	\$1,387,266	\$1,385		
50.043	Power Distribution and Connections	Track Miles	0.9981	Yes	4	\$462,321	\$461		
50.050	Communications	Track Miles	0.9981	Yes	23	\$2,267,613	\$2,263		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
Construction Subtotal (10-50)		Lineal Miles of Guideway	0.9981		0	\$283,151	\$282,671	100%	62%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.9981		0	\$18,474	\$18,439		5%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.9981	Yes	25	\$14,910,401	\$14,882		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.9981	Yes	12	\$1,727,595	\$1,724		
60.030	Services	Lineal Miles of Guideway	0.9981	Yes	23	\$1,835,836	\$1,832		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.9981	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$271,110.08		0	49%	\$133,970	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$271,110.08	Yes	14	6%	\$17,591		
80.020	Final Design	Hard Costs	\$271,110.08	Yes	22	12%	\$33,116		
80.030	Project Management for Design and Construction	Hard Costs	\$271,110.08	Yes	32	10%	\$27,464		
80.040	Construction Administration & Management	Hard Costs	\$271,110.08	Yes	24	11%	\$31,140		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$271,110.08	Yes	16	4%	\$11,624		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$271,110.08	Yes	6	2%	\$5,596		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$271,110.08	Yes	2	0%	\$1,138		
80.080	Start up	Hard Costs	\$271,110.08	Yes	23	2%	\$4,767		
80.090	Other	Hard Costs	\$271,110.08	Yes	10	0%	\$1,333		
Subtotal (10-80)		Lineal Miles of Guideway	1		0	\$405,848	\$405,080		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)		Lineal Miles of Guideway	1		0	\$0	\$405,080		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)		Lineal Miles of Guideway	1		0	\$0	\$405,080		100%



Alternative 2A-3 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 2A-3 (NBS IS SEM) San			Base Year		2014		
Project City:		Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.9981			\$480,698		\$479,787	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.9981		0	\$48,440	\$48,348	16%	10%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.8112		8	\$27,171,972	\$22,041		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,955,004	\$13,617		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$65,864,817	\$4,004		
10.090	Track, Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track, Embedded	Track Miles	0.8720		9	\$3,220,175	\$2,808		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$378		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$5,032		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$12,700	\$226,399	74%	47%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.9981			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.9981		0	\$15,915	\$15,885	5%	3%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.9981	Yes	12	\$2,033,937	\$2,030		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.9981	Yes	75	\$4,266,060	\$4,258		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.9981	Yes	5	\$2,299,074	\$2,295		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.9981	Yes	8	\$1,047,598	\$1,046		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.9981	Yes	1	\$149,423	\$149		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.9981	Yes	8	\$955,612	\$954		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.9981	Yes	21	\$5,163,485	\$5,154		
50	Systems	Track Miles	0.9981		0	\$13,064	\$13,039	4%	3%
50.010	Train control and signals	Track Miles	0.9981	Yes	26	\$2,966,502	\$2,961		
50.020	Traffic signals and crossing protection	Track Miles	0.9981	Yes	7	\$255,223	\$255		
50.030	Traction power supply, substations	Track Miles	0.9981	Yes	23	\$1,697,998	\$1,695		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.9981	Yes		\$3,196	\$3,190		
50.041	Catenary	Track Miles	0.9981	Yes	13	\$1,346,370	\$1,344		
50.042	Ancillary Elements	Track Miles	0.9981	Yes	7	\$1,387,266	\$1,385		
50.043	Power Distribution and Connections	Track Miles	0.9981	Yes	4	\$462,321	\$461		
50.050	Communications	Track Miles	0.9981	Yes	23	\$2,267,613	\$2,263		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,397,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.9981		0	\$303,246	\$302,671	100%	63%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.9981		0	\$18,474	\$18,439		4%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.9981	Yes	25	\$14,910,401	\$14,882		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.9981	Yes	12	\$1,727,895	\$1,724		
60.030	Services	Lineal Miles of Guideway	0.9981	Yes	23	\$1,636,636	\$1,632		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.9981	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$321,110.08		0	49%	\$168,677		0%
80.010	Preliminary Engineering	Hard Costs	\$321,110.08	Yes	14	6%	\$20,896		
80.020	Final Design	Hard Costs	\$321,110.08	Yes	22	12%	\$39,224		
80.030	Project Management for Design and Construction	Hard Costs	\$321,110.08	Yes	32	10%	\$32,628		
80.040	Construction Administration & Management	Hard Costs	\$321,110.08	Yes	24	11%	\$36,883		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$321,110.08	Yes	16	4%	\$14,005		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$321,110.08	Yes	6	2%	\$6,628		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$321,110.08	Yes	2	0%	\$1,348		
80.080	Start up	Hard Costs	\$321,110.08	Yes	23	2%	\$5,646		
80.090	Other	Hard Costs	\$321,110.08	Yes	10	0%	\$1,578		
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$480,698	\$479,787		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$479,787		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$479,787		100%



Alternative 2A-4

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-4			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.9998			\$874,767	\$874,601		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.9998		0	\$114,184	\$114,182	20%	13%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.3159		8	\$27,171,972	\$8,584		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,955,004	\$14,312		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	0.5513		11	\$149,268,285	\$82,295		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track, Direct fixation	Track Miles	0.6839		19	\$3,705,543	\$2,534		
10.100	Track, Embedded	Track Miles	0.3159		9	\$3,220,175	\$1,017		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$378		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$5,041		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$211,874	\$423,748	75%	48%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2			\$203,344	\$406,688		
20.031	Sequential Excavation Method	Stations	2		10	\$203,343,750	\$406,688		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	8			\$2,138	\$17,060		
20.071	Elevators	Number	4		4	\$2,217,942	\$8,872		
20.072	Escalators	Number	4		5	\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.9998			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.9998		0	\$15,915	\$15,912	3%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.9998	Yes	12	\$2,033,937	\$2,034		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.9998	Yes	75	\$4,266,060	\$4,265		
40.030	Haz. matl, contam'd soil removal/mitigation, ground water treatm	Lineal Miles of Guideway	0.9998	Yes	5	\$2,295,074	\$2,299		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.9998	Yes	8	\$1,047,598	\$1,047		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.9998	Yes	1	\$149,423	\$149		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.9998	Yes	8	\$955,612	\$955		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.9998	Yes	21	\$5,163,485	\$5,163		
50	Systems	Track Miles	0.9998		0	\$13,069	\$13,067	2%	1%
50.010	Train control and signals	Track Miles	0.9998	Yes	26	\$2,966,502	\$2,966		
50.020	Traffic signals and crossing protection	Track Miles	0.9998	Yes	7	\$255,223	\$255		
50.030	Traction power supply: substations	Track Miles	0.9998	Yes	23	\$1,697,988	\$1,698		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.9998	Yes		\$3,196	\$3,195		
50.041	Catenary	Track Miles	0.9998	Yes	13	\$1,346,370	\$1,346		
50.042	Ancillary Elements	Track Miles	0.9998	Yes	7	\$1,387,266	\$1,387		
50.043	Power Distribution and Connections	Track Miles	0.9998	Yes	4	\$462,321	\$462		
50.050	Communications	Track Miles	0.9998	Yes	23	\$2,267,613	\$2,267		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.9998		0	\$666,986	\$666,879	100%	65%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.9998		0	\$18,474	\$18,470		2%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.9998	Yes	25	\$14,910,401	\$14,908		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.9998	Yes	12	\$1,727,595	\$1,727		
60.030	Services	Lineal Miles of Guideway	0.9998	Yes	23	\$1,636,836	\$1,635		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.9998	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$685,349.36		0	49%	\$289,262	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$685,349.36	Yes	14	6%	\$37,981		
80.020	Final Design	Hard Costs	\$685,349.36	Yes	22	12%	\$71,501		
80.030	Project Management for Design and Construction	Hard Costs	\$685,349.36	Yes	32	10%	\$59,296		
80.040	Construction Administration & Management	Hard Costs	\$685,349.36	Yes	24	11%	\$67,234		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$685,349.36	Yes	16	4%	\$25,529		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$685,349.36	Yes	6	2%	\$12,081		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$685,349.36	Yes	2	0%	\$2,458		
80.080	Start up	Hard Costs	\$685,349.36	Yes	23	2%	\$10,293		
80.090	Other	Hard Costs	\$685,349.36	Yes	10	0%	\$2,877		
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$874,767	\$874,601		0%
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$874,601		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$874,601		100%



Alternative 2A-4 (NBS is SEM)

Cost Model Compared With Project Estimate										
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014			
Reference Name:		3 ALT 2A-4 (NBS is SEM)			Base Year		2014			
Project City:		San Francisco, CA								
Mode:		Light Rail Transit					Chart			
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.9998			\$949,489	\$949,309			
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (\$'000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	
10	Guideway & Track Elements	Lineal Miles of Guideway	0.9998			0	\$114,184	\$114,162	19%	12%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway				19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway				3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway	0.3159			8	\$27,171,972	\$6,584		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway				16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway				0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1326			11	\$107,955,004	\$14,312		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.5513			11	\$149,268,285	\$82,295		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway				6	\$0	\$0		
10.090	Track: Direct fixation	Track Miles	0.6839			19	\$3,705,543	\$2,534		
10.100	Track: Embedded	Track Miles	0.3159			9	\$3,220,175	\$1,017		
10.110	Track: Ballasted	Track Miles				18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$378			
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$5,041			
20	Stations, Stops, Terminals, Intermedals	Stations	2			0	\$236,874	\$473,748	77%	50%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations				19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations				5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2				\$228,344	\$456,688		
20.031	Sequential Excavation Method	Stations	2			10	\$228,343,750	\$456,688		
20.032	Bored Earth Soft Soils	Stations				0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations				0	\$0	\$0		
20.034	Unspecified	Stations				4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces				3	\$0	\$0		
20.070	Elevators, escalators	Number	8				\$2,133	\$17,060		
20.071	Elevators	Number	4	Yes	17		\$2,217,942	\$9,872		
20.072	Escalators	Number	4	Yes	5		\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number				5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0		\$0	\$0		
20.100	Signage and Graphics	Stations				10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.9998				\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2		\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2		\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0		\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7		\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17		\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5		\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5		\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.9998			0	\$15,915	\$15,912	3%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.9998	Yes	12		\$2,033,937	\$2,034		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.9998	Yes	75		\$4,266,060	\$4,265		
40.030	Haz. mat'l, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.9998	Yes	5		\$2,299,074	\$2,299		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.9998	Yes	8		\$1,047,598	\$1,047		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.9998	Yes	1		\$149,423	\$149		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	0.9998	Yes	8		\$955,612	\$955		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0				\$0	\$0		
40.071	Surface Parking Lot	Spaces				8	\$0	\$0		
40.072	Auto Access	Stations				2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0.9998	Yes	21		\$5,163,485	\$5,163		
50	Systems	Track Miles	0.9998			0	\$13,069	\$13,057	2%	1%
50.010	Train control and signals	Track Miles	0.9998	Yes	26		\$2,966,502	\$2,966		
50.020	Traffic signals and crossing protection	Track Miles	0.9998	Yes	7		\$255,223	\$255		
50.030	Traction power supply: substations	Track Miles	0.9998	Yes	23		\$1,697,988	\$1,698		
50.040	Traction power distribution: catenary and third rail	Track Miles	0.9998				\$3,196	\$3,195		
50.041	Catenary	Track Miles	0.9998	Yes	13		\$1,346,370	\$1,346		
50.042	Ancillary Elements	Track Miles	0.9998	Yes	7		\$1,387,266	\$1,387		
50.043	Power Distribution and Connections	Track Miles	0.9998	Yes	4		\$462,321	\$462		
50.050	Communications	Track Miles	0.9998	Yes	23		\$2,267,613	\$2,267		
50.060	Fare collection system and equipment	Stations	2	Yes	28		\$1,337,702	\$2,675		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0.9998			0	\$616,996	\$616,879	100%	65%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0.9998			0	\$18,474	\$18,470		2%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0.9998	Yes	25		\$14,910,401	\$14,908		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0.9998	Yes	12		\$1,727,595	\$1,727		
60.030	Services	Lineal Miles of Guideway	0.9998	Yes	23		\$1,835,836	\$1,835		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0.9998	Yes	0		\$0	\$0		
70	Vehicles	Vehicles	0			0	\$0	\$0		0%
70.010	Light Rail	Vehicles				15	\$0	\$0		
70.020	Heavy Rail	Vehicles				6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11		\$0	\$0		
80	Professional Services	Hard Costs	\$635,349.36			0	49%	\$313,960	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$635,349.36	Yes	14		6%	\$41,226		
80.020	Final Design	Hard Costs	\$635,349.36	Yes	22		12%	\$77,609		
80.030	Project Management for Design and Construction	Hard Costs	\$635,349.36	Yes	32		10%	\$64,361		
80.040	Construction Administration & Management	Hard Costs	\$635,349.36	Yes	24		11%	\$72,978		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$635,349.36	Yes	16		4%	\$27,710		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$635,349.36	Yes	6		2%	\$13,113		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$635,349.36	Yes	2		0%	\$2,668		
80.080	Start up	Hard Costs	\$635,349.36	Yes	23		2%	\$11,172		
80.090	Other	Hard Costs	\$635,349.36	Yes	10		0%	\$3,123		
	Subtotal (10-90)	Lineal Miles of Guideway	1			0	\$949,489	\$949,309		
90	Unallocated Contingency	Total Amount	1			0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			0	\$949,309	\$949,309	100%	100%
100	Finance Charges	Total Amount	1			0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			0	\$0	\$949,309	100%	100%



Alternative 2A-5

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-5			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.4053			\$323,139	\$454,109		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.4053		0	\$44,781	\$62,930	23%	14%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway	1.2184		8	\$27,171,972	\$33,106		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,955,004	\$13,617		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$68,864,817	\$4,004		
10.090	Track: Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track: Embedded	Track Miles	1.2792		9	\$3,220,175	\$4,119		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$532		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$7,085		
20	Stations, Stops, Terminals, Intermodals	Stations	2		0	\$87,700	\$175,399	63%	39%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$150,000	\$150,000		
20.031	Cut and Cover	Stations	1		10	\$150,000,000	\$150,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.4053			\$0	\$0		
30.011	Administration Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.4053		0	\$15,915	\$22,366	8%	5%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.4053	Yes	12	\$2,033,937	\$2,858		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.4053	Yes	75	\$4,266,060	\$5,995		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.4053	Yes	5	\$2,299,074	\$3,231		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.4053	Yes	8	\$1,047,598	\$1,472		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.4053	Yes	1	\$149,423	\$210		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.4053	Yes	8	\$955,612	\$1,343		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.4053	Yes	21	\$5,163,485	\$7,266		
50	Systems	Track Miles	1.4053		0	\$12,287	\$17,287	6%	4%
50.010	Train control and signals	Track Miles	1.4053	Yes	26	\$2,966,502	\$4,169		
50.020	Traffic signals and crossing protection	Track Miles	1.4053	Yes	7	\$255,223	\$359		
50.030	Traction power supply: substations	Track Miles	1.4053	Yes	23	\$1,697,988	\$2,386		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.4053	Yes		\$3,196	\$4,491		
50.041	Catenary	Track Miles	1.4053	Yes	13	\$1,346,370	\$1,892		
50.042	Ancillary Elements	Track Miles	1.4053	Yes	7	\$1,367,266	\$1,950		
50.043	Power Distribution and Connections	Track Miles	1.4053	Yes	4	\$462,321	\$650		
50.050	Communications	Track Miles	1.4053	Yes	23	\$2,267,613	\$3,187		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.4053		0	\$18,474	\$28,961	100%	61%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.4053	Yes	25	\$14,910,401	\$20,954		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.4053	Yes	12	\$1,727,595	\$2,428		
60.030	Services	Lineal Miles of Guideway	1.4053	Yes	23	\$1,835,836	\$2,580		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.4053	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0	0%	0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles			11	\$0	\$0		
80	Professional Services	Hard Costs	\$303,923.91		0	\$9%	\$160,185	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$303,923.91	Yes	14	6%	\$19,721		
80.020	Final Design	Hard Costs	\$303,923.91	Yes	22	12%	\$37,125		
80.030	Project Management for Design and Construction	Hard Costs	\$303,923.91	Yes	32	10%	\$30,788		
80.040	Construction Administration & Management	Hard Costs	\$303,923.91	Yes	24	11%	\$34,909		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$303,923.91	Yes	16	4%	\$13,255		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$303,923.91	Yes	6	2%	\$6,273		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$303,923.91	Yes	2	0%	\$1,276		
80.080	Start up	Hard Costs	\$303,923.91	Yes	23	2%	\$5,344		
80.090	Other	Hard Costs	\$303,923.91	Yes	10	0%	\$1,494		
	Subtotal (10-80)	Lineal Miles of Guideway	1		0	\$323,139	\$454,109		
90	Unallocated Contingency	Total Amount	1			\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1		0	\$0	\$454,109		100%
100	Finance Charges	Total Amount	1			\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1		0	\$0	\$454,109		100%



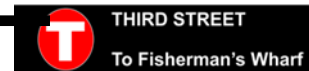
Alternative 2A-5 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-5 (NBS IS SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.4053			\$376.301		\$828.816	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.4053		0	\$44.781	\$62.930	19%	12%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway	1.2184		8	\$27,171,972	\$33,106		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,955,004	\$13,617		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$65,864,817	\$4,004		
10.090	Track: Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track: Embedded	Track Miles	1.2792		9	\$3,220,175	\$4,119		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$532		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$7,086		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$12,700	\$228,399	69%	43%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations				\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			4	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.4053			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.4053		0	\$15,915	\$22,366	7%	4%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.4053	Yes	12	\$2,033,937	\$2,858		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.4053	Yes	75	\$4,266,060	\$5,995		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.4053	Yes	5	\$2,299,074	\$3,231		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.4053	Yes	8	\$1,047,598	\$1,472		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.4053	Yes	1	\$149,423	\$210		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.4053	Yes	8	\$955,612	\$1,343		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.4053	Yes	21	\$5,163,485	\$7,256		
50	Systems	Track Miles	1.4053		0	\$12,287	\$17,267	5%	3%
50.010	Train control and signals	Track Miles	1.4053	Yes	26	\$2,966,502	\$4,169		
50.020	Traffic signals and crossing protection	Track Miles	1.4053	Yes	7	\$255,223	\$359		
50.030	Traction power supply: substations	Track Miles	1.4053	Yes	23	\$1,697,968	\$2,386		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.4053			\$3,196	\$4,491		
50.041	Catenary	Track Miles	1.4053	Yes	13	\$1,346,370	\$1,892		
50.042	Ancillary Elements	Track Miles	1.4053	Yes	7	\$1,387,266	\$1,950		
50.043	Power Distribution and Connections	Track Miles	1.4053	Yes	4	\$462,321	\$650		
50.050	Communications	Track Miles	1.4053	Yes	23	\$2,267,613	\$3,187		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,397,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.4053		0	\$233,375	\$327,963	100%	62%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.4053		0	\$18,474	\$26,961		5%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.4053	Yes	25	\$14,910,401	\$20,954		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.4053	Yes	12	\$1,727,895	\$2,428		
60.030	Services	Lineal Miles of Guideway	1.4053	Yes	23	\$1,636,636	\$2,580		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.4053	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$353,923.91		0	49%	\$174,892		0%
80.010	Preliminary Engineering	Hard Costs	\$353,923.91	Yes	14	6%	\$22,965		
80.020	Final Design	Hard Costs	\$353,923.91	Yes	22	12%	\$43,232		
80.030	Project Management for Design and Construction	Hard Costs	\$353,923.91	Yes	32	10%	\$36,853		
80.040	Construction Administration & Management	Hard Costs	\$353,923.91	Yes	24	11%	\$40,652		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$353,923.91	Yes	16	4%	\$15,436		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$353,923.91	Yes	6	2%	\$7,305		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$353,923.91	Yes	2	0%	\$1,486		
80.080	Start up	Hard Costs	\$353,923.91	Yes	23	2%	\$6,223		
80.090	Other	Hard Costs	\$353,923.91	Yes	10	0%	\$1,740		
Subtotal (10-80)		Lineal Miles of Guideway	1		0	\$376.301	\$828.816		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)		Lineal Miles of Guideway	1		0	\$0	\$828.816		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)		Lineal Miles of Guideway	1		0	\$0	\$828.816		100%



Alternative 2A-6

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date:		8/25/2014		
Reference Name:		3 ALT 2A-6			Base Year:		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.4070			\$656,450	\$923,630		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.4070			\$91,503	\$128,745	22%	14%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.7231		8	\$27,171,972	\$19,648		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,965,004	\$14,312		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	0.5513		11	\$149,268,285	\$82,295		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track, Direct fixation	Track Miles	0.6639		19	\$3,705,543	\$2,534		
10.100	Track, Embedded	Track Miles	0.7231		9	\$3,220,175	\$2,329		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	1	Yes	12	\$379,466	\$533		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$7,094		
20	Stations, Stops, Terminals, Intermodels	Stations	2			\$211,874	\$423,748	72%	46%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2			\$203,344	\$406,688		
20.031	Sequential Excavation Method	Stations	2		10	\$203,343,750	\$406,688		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	8			\$2,133	\$17,060		
20.071	Elevators	Number	4			\$2,217,942	\$8,872		
20.072	Escalators	Number	4			\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.4070			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.4070			\$15,915	\$22,393	4%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.4070	Yes	12	\$2,033,937	\$2,862		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.4070	Yes	75	\$4,266,060	\$6,002		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.4070	Yes	5	\$2,299,074	\$3,235		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.4070	Yes	8	\$1,047,598	\$1,474		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.4070	Yes	1	\$149,423	\$210		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.4070	Yes	8	\$955,612	\$1,345		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.4070	Yes	21	\$5,163,485	\$7,265		
50	Systems	Track Miles	1.4070			\$12,285	\$17,285	3%	2%
50.010	Train control and signals	Track Miles	1.4070	Yes	26	\$2,966,502	\$4,174		
50.020	Traffic signals and crossing protection	Track Miles	1.4070	Yes	7	\$255,223	\$359		
50.030	Traction power supply: substations	Track Miles	1.4070	Yes	23	\$1,697,968	\$2,389		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.4070			\$3,196	\$4,497		
50.041	Catenary	Track Miles	1.4070	Yes	13	\$1,346,370	\$1,894		
50.042	Ancillary Elements	Track Miles	1.4070	Yes	7	\$1,387,266	\$1,952		
50.043	Power Distribution and Connections	Track Miles	1.4070	Yes	4	\$462,321	\$650		
50.050	Communications	Track Miles	1.4070	Yes	23	\$2,267,613	\$3,191		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
	Construction Subtotal (10-50)	Lineal Miles of Guideway	1.4070			\$420,872	\$592,170	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.4070			\$18,474	\$25,993		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.4070	Yes	25	\$14,910,401	\$20,979		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.4070	Yes	12	\$1,727,595	\$2,431		
60.030	Services	Lineal Miles of Guideway	1.4070	Yes	23	\$1,835,836	\$2,593		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.4070	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0			\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$618,163.19			0	\$905,467	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$618,163.19	Yes	14	6%	\$40,111		
80.020	Final Design	Hard Costs	\$618,163.19	Yes	22	12%	\$75,509		
80.030	Project Management for Design and Construction	Hard Costs	\$618,163.19	Yes	32	10%	\$62,620		
80.040	Construction Administration & Management	Hard Costs	\$618,163.19	Yes	24	11%	\$71,003		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$618,163.19	Yes	16	4%	\$26,960		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$618,163.19	Yes	6	2%	\$12,759		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$618,163.19	Yes	2	0%	\$2,596		
80.080	Start up	Hard Costs	\$618,163.19	Yes	23	2%	\$10,870		
80.090	Other	Hard Costs	\$618,163.19	Yes	10	0%	\$3,039		
	Subtotal (10-80)	Lineal Miles of Guideway	1			\$656,450	\$923,630		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			0	\$923,630		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			0	\$923,630		100%



Alternative 2A-6 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2A-6 (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.4070			\$709,547	\$998,338		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.4070		0	\$91,503	\$128,745	20%	13%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	0.7231		8	\$27,171,972	\$19,648		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1326		11	\$107,955,004	\$14,312		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	0.5513		11	\$149,268,285	\$82,295		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track, Direct fixation	Track Miles	0.6839		19	\$3,705,543	\$2,534		
10.100	Track, Embedded	Track Miles	0.7231		9	\$3,220,175	\$2,329		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	1	Yes	12	\$370,486	\$533		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$7,094		
20	Stations, Stops, Terminals, Intermodels	Stations	2		0	\$236,874	\$473,748	74%	47%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	2			\$226,344	\$456,688		
20.031	Sequential Excavation Method	Stations	2		10	\$226,343,750	\$456,688		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	8			\$2,133	\$17,060		
20.071	Elevators	Number	4		4	\$2,217,942	\$8,872		
20.072	Escalators	Number	4		5	\$2,047,157	\$8,189		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.4070			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.4070		0	\$15,915	\$22,393	3%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.4070	Yes	12	\$2,033,937	\$2,862		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.4070	Yes	75	\$4,266,060	\$6,002		
40.030	Haz. mat'l, contain's soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.4070	Yes	5	\$2,239,074	\$3,235		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.4070	Yes	8	\$1,047,598	\$1,474		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.4070	Yes	1	\$149,423	\$210		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.4070	Yes	8	\$955,612	\$1,345		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.4070	Yes	21	\$5,163,485	\$7,265		
50	Systems	Track Miles	1.4070		0	\$12,285	\$17,285	3%	2%
50.010	Train control and signals	Track Miles	1.4070	Yes	26	\$2,966,502	\$4,174		
50.020	Traffic signals and crossing protection	Track Miles	1.4070	Yes	7	\$265,293	\$359		
50.030	Traction power supply: substations	Track Miles	1.4070	Yes	23	\$1,637,988	\$2,389		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.4070	Yes		\$3,196	\$4,497		
50.041	Catenary	Track Miles	1.4070	Yes	13	\$1,346,370	\$1,894		
50.042	Ancillary Elements	Track Miles	1.4070	Yes	7	\$1,387,266	\$1,952		
50.043	Power Distribution and Connections	Track Miles	1.4070	Yes	4	\$462,321	\$650		
50.050	Communications	Track Miles	1.4070	Yes	23	\$2,267,613	\$3,191		
50.060	Fare collection system and equipment	Stations	2	Yes	26	\$1,337,702	\$2,675		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.4070		0	\$456,409	\$642,170	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.4070		0	\$18,474	\$26,993		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.4070	Yes	25	\$14,910,401	\$20,979		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.4070	Yes	12	\$1,727,595	\$2,431		
60.030	Services	Lineal Miles of Guideway	1.4070	Yes	23	\$1,835,636	\$2,583		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.4070	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0	0%	0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$668,163.19		0	4%	\$30,175	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$668,163.19	Yes	14	6%	\$43,355		
80.020	Final Design	Hard Costs	\$668,163.19	Yes	22	12%	\$81,617		
80.030	Project Management for Design and Construction	Hard Costs	\$668,163.19	Yes	32	10%	\$67,685		
80.040	Construction Administration & Management	Hard Costs	\$668,163.19	Yes	24	11%	\$76,747		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$668,163.19	Yes	16	4%	\$29,141		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$668,163.19	Yes	6	2%	\$13,791		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$668,163.19	Yes	2	0%	\$2,806		
80.080	Start up	Hard Costs	\$668,163.19	Yes	23	2%	\$11,749		
80.090	Other	Hard Costs	\$668,163.19	Yes	10	0%	\$3,284		
Subtotal (10-80)	Lineal Miles of Guideway	1	0		\$709,547	\$998,338			
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)	Lineal Miles of Guideway	1	0		\$709,547	\$998,338			
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)	Lineal Miles of Guideway	1	0		\$0	\$998,338			100%



Alternative 2B-1

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date:		8/25/2014		
Reference Name:		3 ALT 2B-1			Base Year:		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1,3085			\$338,134	\$442,456		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1,3085			\$45,444	\$59,465	22%	13%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	1,1216		8	\$27,171,972	\$30,476		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0,1261		11	\$107,955,004	\$13,617		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0,0608		6	\$65,864,817	\$4,004		
10.090	Track: Direct fixation	Track Miles	0,1261		19	\$3,705,543	\$467		
10.100	Track: Embedded	Track Miles	1,1824		9	\$3,220,175	\$3,807		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,466	\$495		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$6,317		
20	Stations, Stops, Terminals, Intermodals	Stations	2			\$87,700	\$175,398	64%	40%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations	1		5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	1			\$150,000	\$150,000		
20.031	Cut and Cover	Stations	1		10	\$150,000,000	\$150,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$5,530		
20.071	Elevators	Number	2			\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1,3085			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1,3085			\$15,915	\$20,825	8%	5%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1,3085	Yes	12	\$2,033,937	\$2,661		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1,3085	Yes	75	\$4,266,060	\$5,582		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1,3085	Yes	5	\$2,299,074	\$3,008		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1,3085	Yes	8	\$1,047,598	\$1,371		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1,3085	Yes	1	\$149,423	\$196		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1,3085	Yes	8	\$955,612	\$1,250		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1,3085	Yes	21	\$5,163,485	\$6,757		
50	Systems	Track Miles	1,3085			\$12,428	\$16,262	6%	4%
50.010	Train control and signals	Track Miles	1,3085	Yes	26	\$2,966,502	\$3,882		
50.020	Traffic signals and crossing protection	Track Miles	1,3085	Yes	7	\$255,223	\$334		
50.030	Traction power supply: substations	Track Miles	1,3085	Yes	23	\$1,697,988	\$2,222		
50.040	Traction power distribution: catenary and third rail	Track Miles	1,3085			\$3,196	\$4,182		
50.041	Catenary	Track Miles	1,3085	Yes	13	\$1,346,370	\$1,762		
50.042	Ancillary Elements	Track Miles	1,3085	Yes	7	\$1,387,066	\$1,815		
50.043	Power Distribution and Connections	Track Miles	1,3085	Yes	4	\$462,321	\$605		
50.050	Communications	Track Miles	1,3085	Yes	23	\$2,267,613	\$2,967		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$2,675		
	Construction Subtotal (10-50)	Lineal Miles of Guideway	1,3085			\$207,831	\$271,951	100%	61%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1,3085			\$18,474	\$24,173		5%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1,3085	Yes	25	\$14,910,401	\$19,511		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1,3085	Yes	12	\$1,727,595	\$2,261		
60.030	Services	Lineal Miles of Guideway	1,3085	Yes	23	\$1,835,836	\$2,402		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1,3085	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0			\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			5	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$296,124.90			\$0	\$146,331	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$296,124.90	Yes	14	6%	\$19,215		
80.020	Final Design	Hard Costs	\$296,124.90	Yes	22	12%	\$36,172		
80.030	Project Management for Design and Construction	Hard Costs	\$296,124.90	Yes	32	10%	\$29,998		
80.040	Construction Administration & Management	Hard Costs	\$296,124.90	Yes	24	11%	\$34,013		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$296,124.90	Yes	16	4%	\$12,915		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$296,124.90	Yes	6	2%	\$5,112		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$296,124.90	Yes	2	0%	\$1,243		
80.080	Start up	Hard Costs	\$296,124.90	Yes	23	2%	\$5,207		
80.090	Other	Hard Costs	\$296,124.90	Yes	10	0%	\$1,456		
	Subtotal (10-80)	Lineal Miles of Guideway	1			\$0	\$338,134		
90	Unallocated Contingency	Total Amount	1			\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			\$0	\$442,456		100%
100	Finance Charges	Total Amount	1			\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			\$0	\$442,456		100%



Alternative 2B-1 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2B-1 (NBS IS SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.0085			\$395,227	\$617,163		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.0085	0		\$45,444	\$59,465	18%	11%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	1.1216		8	\$27,171,972	\$30,476		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1261		11	\$107,955,004	\$13,617		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.0608		6	\$65,864,817	\$4,004		
10.090	Track Direct fixation	Track Miles	0.1261		19	\$3,705,543	\$467		
10.100	Track Embedded	Track Miles	1.1824		9	\$3,220,175	\$3,807		
10.110	Track Ballasted	Track Miles			18	\$0	\$0		
10.120	Track Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$495		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$6,597		
20	Stations, Stops, Terminals, Intermodels	Stations	2	0		\$112,700	\$226,399	70%	44%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	1		19	\$16,869,180	\$16,869		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations	1		5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1		10	\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4		4	\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Storage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0	0		\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.3085			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Streets & Special Conditions	Lineal Miles of Guideway	1.3085	0		\$15,915	\$20,825	6%	4%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.3085	Yes	12	\$2,033,937	\$2,661		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.3085	Yes	75	\$4,266,060	\$5,582		
40.030	Haz. matl, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.3085	Yes	5	\$2,299,074	\$3,008		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.3085	Yes	8	\$1,047,598	\$1,371		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.3085	Yes	1	\$149,423	\$196		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.3085	Yes	6	\$955,612	\$1,250		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.3085	Yes	21	\$5,163,495	\$6,767		
50	Systems	Track Miles	1.3085	0		\$12,425	\$16,262	5%	3%
50.010	Train control and signals	Track Miles	1.3085	Yes	26	\$2,966,502	\$3,882		
50.020	Traffic signals and crossing protection	Track Miles	1.3085	Yes	7	\$255,223	\$334		
50.030	Traction power supply: substations	Track Miles	1.3085	Yes	23	\$1,697,988	\$2,222		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.3085	Yes		\$3,196	\$4,182		
50.041	Catenary	Track Miles	1.3085	Yes	13	\$1,346,370	\$1,762		
50.042	Ancillary Elements	Track Miles	1.3085	Yes	7	\$1,387,266	\$1,815		
50.043	Power Distribution and Connections	Track Miles	1.3085	Yes	4	\$462,321	\$605		
50.050	Communications	Track Miles	1.3085	Yes	23	\$2,267,613	\$2,967		
50.060	Fare collection system and equipment	Stations	2	Yes	28	\$1,337,702	\$1,755		
60	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.3085	0		\$246,042	\$321,561	100%	62%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.3085	0		\$18,474	\$24,173		6%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.3085	Yes	25	\$14,910,401	\$19,511		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.3085	Yes	12	\$1,727,595	\$2,261		
60.030	Services	Lineal Miles of Guideway	1.3085	Yes	23	\$1,835,836	\$2,402		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.3085	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0	0		\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$346,124.90	0		49%	\$171,039	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$346,124.90	Yes	14	6%	\$22,459		
80.020	Final Design	Hard Costs	\$346,124.90	Yes	22	12%	\$42,280		
80.030	Project Management for Design and Construction	Hard Costs	\$346,124.90	Yes	32	10%	\$36,063		
80.040	Construction Administration & Management	Hard Costs	\$346,124.90	Yes	24	11%	\$39,757		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$346,124.90	Yes	16	4%	\$15,096		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$346,124.90	Yes	6	2%	\$7,144		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$346,124.90	Yes	2	0%	\$1,453		
80.080	Start up	Hard Costs	\$346,124.90	Yes	23	2%	\$6,086		
80.090	Other	Hard Costs	\$346,124.90	Yes	10	0%	\$1,701		
Subtotal (10-80)		Lineal Miles of Guideway	1	0		\$395,227	\$617,163		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
Subtotal (10-90)		Lineal Miles of Guideway	1	0		\$0	\$617,163		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
Total Project Costs (10-100)		Lineal Miles of Guideway	1	0		\$0	\$617,163		100%



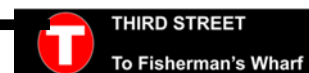
Alternative 2B-2

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2B-2			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.0193			\$1,307,421		\$1,332,678	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.0193			\$150,334	\$153,238	18%	11%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1989		11	\$107,955,004	\$21,468		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.8205		11	\$149,268,285	\$122,468		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track: Direct fixation	Track Miles	1.0193		19	\$3,705,543	\$3,777		
10.100	Track: Embedded	Track Miles			9	\$0	\$0		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$366		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	0	\$5,041,732	\$5,159		
20	Stations, Stops, Terminals, Intermodals	Stations	9			\$229,680	\$683,411	79%	82%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	3			\$221,150	\$663,450		
20.031	Cut and Cover	Stations	3		10	\$221,150,000	\$663,450		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	12			\$2,133	\$25,591		
20.071	Elevators	Number	4			\$2,217,942	\$13,308		
20.072	Escalators	Number	6			\$2,047,157	\$12,283		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.0193			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.0193			\$15,915	\$16,223	2%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.0193	Yes	12	\$2,033,937	\$2,073		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.0193	Yes	75	\$4,266,060	\$4,348		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.0193	Yes	5	\$2,299,074	\$2,343		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.0193	Yes	8	\$1,047,598	\$1,068		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.0193	Yes	1	\$149,423	\$152		
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	1.0193	Yes	8	\$955,612	\$974		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0		8	\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.0193	Yes	21	\$5,163,485	\$5,263		
50	Systems	Track Miles	1.0193			\$14,320	\$14,597	2%	1%
50.010	Train control and signals	Track Miles	1.0193	Yes	26	\$2,966,502	\$3,024		
50.020	Traffic signals and crossing protection	Track Miles	1.0193	Yes	7	\$255,223	\$260		
50.030	Traction power supply: substations	Track Miles	1.0193	Yes	23	\$1,697,988	\$1,731		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.0193			\$3,196	\$3,258		
50.041	Catenary	Track Miles	1.0193	Yes	13	\$1,346,370	\$1,372		
50.042	Ancillary Elements	Track Miles	1.0193	Yes	7	\$1,307,266	\$1,414		
50.043	Power Distribution and Connections	Track Miles	1.0193	Yes	4	\$462,321	\$471		
50.050	Communications	Track Miles	1.0193	Yes	23	\$2,267,613	\$2,311		
50.060	Fare collection system and equipment	Stations	3	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.0193			\$856,551	\$873,098	100%	66%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.0193			\$18,474	\$18,831		1%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.0193	Yes	25	\$14,910,401	\$15,198		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.0193	Yes	12	\$1,727,595	\$1,761		
60.030	Services	Lineal Miles of Guideway	1.0193	Yes	23	\$1,835,836	\$1,871		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.0193	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0			\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$891,929.14			0	\$440,749	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$891,929.14	Yes	14	6%	\$57,874		
80.020	Final Design	Hard Costs	\$891,929.14	Yes	22	12%	\$108,950		
80.030	Project Management for Design and Construction	Hard Costs	\$891,929.14	Yes	32	10%	\$90,353		
80.040	Construction Administration & Management	Hard Costs	\$891,929.14	Yes	24	11%	\$102,449		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$891,929.14	Yes	16	4%	\$38,900		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$891,929.14	Yes	6	2%	\$18,409		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$891,929.14	Yes	2	0%	\$3,745		
80.080	Start up	Hard Costs	\$891,929.14	Yes	23	2%	\$18,683		
80.090	Other	Hard Costs	\$891,929.14	Yes	10	0%	\$4,384		
	Subtotal (10-80)	Lineal Miles of Guideway	1			0	\$1,307,421	\$1,332,678	
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			0	\$1,332,678	100%	
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			0	\$1,332,678	100%	



Alternative 2B-2 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE			Today's Date		8/25/2014		
Reference Name:		3 ALT 2B-2 (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1,0193			\$1,380,603		\$1,407,274	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1,0193			\$150,334	\$153,238	17%	11%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1989		11	\$107,955,004	\$21,468		
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway	0.8205		11	\$149,268,285	\$122,468		
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track: Direct fixation	Track Miles	1.0193		19	\$3,705,543	\$3,777		
10.100	Track: Embedded	Track Miles			9	\$0	\$0		
10.110	Track: Ballasted	Track Miles			18	\$0	\$0		
10.120	Track: Special (switches, turnouts)	Track Miles	1	Yes	12	\$378,486	\$366		
10.140	Special Structures	Lineal Miles of Guideway	1	Yes	3	\$5,041,732	\$5,139		
20	Stations, Stops, Terminals, Intermodals	Stations	9			\$246,322	\$739,866	80%	63%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	3			\$237,792	\$713,375		
20.031	Sequential Excavation Method & Cut and Cover	Stations	3		10	\$237,791,667	\$713,375		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	12			\$2,133	\$25,591		
20.071	Elevators	Number	4			\$2,217,942	\$13,308		
20.072	Escalators	Number	6			\$2,047,157	\$12,283		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0			\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.0193			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1,0193			\$15,915	\$16,223	2%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.0193	Yes	12	\$2,033,937	\$2,073		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.0193	Yes	75	\$4,266,060	\$4,348		
40.030	Haz. mat., contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.0193	Yes	5	\$2,299,074	\$2,343		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.0193	Yes	8	\$1,047,598	\$1,068		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.0193	Yes	1	\$149,423	\$152		
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	1.0193	Yes	8	\$955,612	\$974		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0		8	\$0	\$0		
40.071	Surface Parking Lot	Spaces	0		8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.0193	Yes	21	\$5,163,485	\$5,263		
50	Systems	Track Miles	1,0193			\$14,320	\$14,597	2%	1%
50.010	Train control and signals	Track Miles	1.0193	Yes	26	\$2,966,502	\$3,024		
50.020	Traffic signals and crossing protection	Track Miles	1.0193	Yes	7	\$255,223	\$260		
50.030	Traction power supply: substations	Track Miles	1.0193	Yes	23	\$1,697,988	\$1,731		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.0193			\$3,196	\$3,258		
50.041	Catenary	Track Miles	1.0193	Yes	13	\$1,346,370	\$1,372		
50.042	Ancillary Elements	Track Miles	1.0193	Yes	7	\$1,307,266	\$1,414		
50.043	Power Distribution and Connections	Track Miles	1.0193	Yes	4	\$462,321	\$471		
50.050	Communications	Track Miles	1.0193	Yes	23	\$2,267,613	\$2,311		
50.060	Fare collection system and equipment	Stations	3	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1,0193			\$905,530	\$923,023	100%	66%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1,0193			\$18,474	\$18,831		1%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.0193	Yes	25	\$14,910,401	\$15,198		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.0193	Yes	12	\$1,727,595	\$1,761		
60.030	Services	Lineal Miles of Guideway	1.0193	Yes	23	\$1,835,836	\$1,871		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.0193	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0			\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$941,854.14			\$0	\$465,420	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$941,854.14	Yes	14	6%	\$61,114		
80.020	Final Design	Hard Costs	\$941,854.14	Yes	22	12%	\$115,049		
80.030	Project Management for Design and Construction	Hard Costs	\$941,854.14	Yes	32	10%	\$95,411		
80.040	Construction Administration & Management	Hard Costs	\$941,854.14	Yes	24	11%	\$108,183		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$941,854.14	Yes	16	4%	\$41,078		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$941,854.14	Yes	6	2%	\$19,440		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$941,854.14	Yes	2	0%	\$3,955		
80.080	Start up	Hard Costs	\$941,854.14	Yes	23	2%	\$18,561		
80.090	Other	Hard Costs	\$941,854.14	Yes	10	0%	\$4,630		
	Subtotal (10-90)	Lineal Miles of Guideway	1			\$0	\$1,407,274		
90	Unallocated Contingency	Total Amount	1		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	1			\$0	\$1,407,274		100%
100	Finance Charges	Total Amount	1		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	1			\$0	\$1,407,274		100%



Summary of Costs - Alternative 3 Options

DESCRIPTION	GUIDEWAY LENGTH (FT)	# OF STATIONS (EA)	LOW ESTIMATE (-30%) (\$000)	POINT ESTIMATE (\$000)	HIGH ESTIMATE (+50%) (\$000)
CONSTRUCTION COSTS (SCC 10-50)					
ALTERNATIVE 3-1 (C/C)	8472	3	\$232,410	\$302,133	\$453,199
ALTERNATIVE 3-1 (SEM)	8472	3	\$270,871	\$352,133	\$528,199
ALTERNATIVE 3-2A (C/C)	8530	3	\$536,533	\$697,493	\$1,046,240
ALTERNATIVE 3-2A (SEM)	8530	3	\$563,416	\$732,441	\$1,098,661
ALTERNATIVE 3-2B (C/C)	8427	3	\$534,594	\$694,972	\$1,042,458
ALTERNATIVE 3-2B (SEM)	8427	3	\$561,476	\$729,919	\$1,094,879
SOFT COSTS (SCC 60-100)					
ALTERNATIVE 3-1 (C/C)	8472	3	\$148,915	\$193,589	\$290,384
ALTERNATIVE 3-1 (SEM)	8472	3	\$167,921	\$218,297	\$327,446
ALTERNATIVE 3-2A (C/C)	8530	3	\$299,432	\$389,261	\$583,892
ALTERNATIVE 3-2A (SEM)	8530	3	\$312,716	\$406,531	\$609,796
ALTERNATIVE 3-2B (C/C)	8427	3	\$298,059	\$387,477	\$581,215
ALTERNATIVE 3-2B (SEM)	8427	3	\$311,343	\$404,746	\$607,119
TOTAL COSTS (SCC 10-100)					
ALTERNATIVE 3-1 (C/C)	8472	3	\$381,325	\$495,722	\$743,583
ALTERNATIVE 3-1 (SEM)	8472	3	\$438,792	\$570,430	\$855,644
ALTERNATIVE 3-2A (C/C)	8530	3	\$835,965	\$1,086,754	\$1,630,131
ALTERNATIVE 3-2A (SEM)	8530	3	\$876,132	\$1,138,971	\$1,708,457
ALTERNATIVE 3-2B (C/C)	8427	3	\$832,653	\$1,082,448	\$1,623,673
ALTERNATIVE 3-2B (SEM)	8427	3	\$872,819	\$1,134,665	\$1,701,998

Notes:

FTA Capital Cost Database utilized for point estimate values.

Costs are in 2014 dollars, adjusted locally to San Francisco, CA.

Estimate values exclude finance charges (SCC-100).

Range values based on FTA and AACE guidelines for Probable Accuracy.

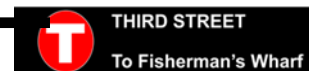
(C/C) and (SEM) designations for each option refer to the method of construction of North Beach Station [whether the station is estimated as cut-and-cover (C/C) box construction or construction by sequential excavation method (SEM)].

All deep options have bored tunnel estimated as constructed by tunnel boring machine (TBM). All shallow (surface) options have tunnel portion estimated as cut-and-cover box construction.

One cross-over was estimated for North Beach Station.

Alternative 3-1

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 3-1			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.6045			\$308,949		\$495,722	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.6045		0	\$39,871	\$63,654	21%	13%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway	19			\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway	3			\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	1.0489			\$17,661,782	\$18,525		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway	16			\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway	0			\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.4455			\$70,170,752	\$31,258		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	11			\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.1102			\$42,812,131	\$4,719		
10.090	Track, Direct fixation	Track Miles	0.4455			\$2,408,603	\$1,073		
10.100	Track, Embedded	Track Miles	1.1591			\$2,093,114	\$2,426		
10.110	Track, Ballasted	Track Miles	18			\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	2	Yes		\$246,016	\$395		
10.140	Special Structures	Lineal Miles of Guideway	2	Yes		\$3,277,126	\$5,258		
20	Stations, Stops, Terminals, Intermodels	Stations	3		0	\$64,080	\$192,289	64%	39%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	2			\$16,869,180	\$33,738		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations	1			\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$150,000	\$150,000		
20.031	Cut and Cover	Stations	1			\$150,000,000	\$150,000		
20.032	Bored Earth Soft Soils	Stations	0			\$0	\$0		
20.033	Bored Rock Hard Soils	Stations	0			\$0	\$0		
20.034	Unspecified	Stations	4			\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces	3			\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2			\$2,217,942	\$4,436		
20.072	Escalators	Number	2			\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number	5			\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number	0	No		\$0	\$0		
20.100	Signage and Graphics	Stations	10			\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.6045			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.6045		0	\$15,915	\$25,537	8%	5%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.6045	Yes	12	\$2,033,937	\$3,264		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.6045	Yes	75	\$4,266,060	\$6,845		
40.030	Haz. mat., contain'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.6045	Yes	5	\$2,299,074	\$3,689		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.6045	Yes	8	\$1,047,598	\$1,681		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.6045	Yes	1	\$149,423	\$240		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.6045	Yes	8	\$955,612	\$1,533		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces	8			\$0	\$0		
40.072	Auto Access	Stations	2			\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.6045	Yes	21	\$5,163,485	\$8,286		
50	Systems	Track Miles	1.6045		0	\$12,884	\$20,674	7%	4%
50.010	Train control and signals	Track Miles	1.6045	Yes	26	\$2,966,502	\$4,760		
50.020	Traffic signals and crossing protection	Track Miles	1.6045	Yes	7	\$255,223	\$410		
50.030	Traction power supply, substations	Track Miles	1.6045	Yes	23	\$1,697,968	\$2,724		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.6045	Yes	1	\$3,196	\$5,128		
50.041	Catenary	Track Miles	1.6045	Yes	13	\$1,346,370	\$2,160		
50.042	Ancillary Elements	Track Miles	1.6045	Yes	7	\$1,387,266	\$2,226		
50.043	Power Distribution and Connections	Track Miles	1.6045	Yes	4	\$462,321	\$742		
50.050	Communications	Track Miles	1.6045	Yes	23	\$2,267,613	\$3,638		
50.060	Fare collection system and equipment	Stations	3.0000	Yes	28	\$1,397,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.6045		0	\$188,298	\$302,133	100%	61%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.6045		0	\$18,474	\$29,642		6%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.6045	Yes	25	\$14,910,401	\$23,924		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.6045	Yes	12	\$1,727,895	\$2,772		
60.030	Services	Lineal Miles of Guideway	1.6045	Yes	23	\$1,636,636	\$2,946		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.6045	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles	15			\$0	\$0		
70.020	Heavy Rail	Vehicles	6			\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$331,774.68		0	49%	\$163,947		0%
80.010	Preliminary Engineering	Hard Costs	\$331,774.68	Yes	14	6%	\$21,528		
80.020	Final Design	Hard Costs	\$331,774.68	Yes	22	12%	\$40,527		
80.030	Project Management for Design and Construction	Hard Costs	\$331,774.68	Yes	32	10%	\$33,668		
80.040	Construction Administration & Management	Hard Costs	\$331,774.68	Yes	24	11%	\$30,108		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$331,774.68	Yes	16	4%	\$14,470		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$331,774.68	Yes	6	2%	\$6,848		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$331,774.68	Yes	2	0%	\$1,393		
80.080	Start up	Hard Costs	\$331,774.68	Yes	23	2%	\$5,834		
80.090	Other	Hard Costs	\$331,774.68	Yes	10	0%	\$1,631		
	Subtotal (10-80)	Lineal Miles of Guideway	2		0	\$308,949	\$495,722		
90	Unallocated Contingency	Total Amount	2		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	2		0	\$0	\$495,722		100%
100	Finance Charges	Total Amount	2		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2		0	\$0	\$495,722		100%



Alternative 3-1 (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 3-1 (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.6045			\$355,509	\$670,430		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.6045		0	\$39,671	\$63,654	18%	11%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	1.0499		8	\$17,661,782	\$18,525		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.4455		11	\$70,170,752	\$31,258		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	0.1102		6	\$42,812,131	\$4,719		
10.090	Track, Direct fixation	Track Miles	0.4455		19	\$2,408,603	\$1,073		
10.100	Track, Embedded	Track Miles	1.1591		9	\$2,093,114	\$2,426		
10.110	Track, Ballasted	Track Miles			18	\$0	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	2	Yes	12	\$246,016	\$395		
10.140	Special Structures	Lineal Miles of Guideway		Yes	3	\$3,277,126	\$5,258		
20	Stations, Stops, Terminals, Intermodels	Stations	3		0	\$80,766	\$242,268	69%	42%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	2		19	\$16,869,180	\$33,738		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$200,000	\$200,000		
20.031	Sequential Excavation Method	Stations	1		10	\$200,000,000	\$200,000		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530		
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436		
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.6045			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.6045		0	\$15,915	\$26,537	7%	4%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.6045	Yes	12	\$2,033,937	\$3,264		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.6045	Yes	75	\$4,266,060	\$6,845		
40.030	Haz. mat., contain'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.6045	Yes	5	\$2,299,074	\$3,689		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.6045	Yes	8	\$1,047,598	\$1,681		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.6045	Yes	1	\$149,423	\$240		
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	1.6045	Yes	8	\$955,612	\$1,533		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces	0		8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.6045	Yes	21	\$5,163,485	\$8,285		
50	Systems	Track Miles	1.6045		0	\$12,884	\$20,674	6%	4%
50.010	Train control and signals	Track Miles	1.6045	Yes	26	\$2,966,502	\$4,760		
50.020	Traffic signals and crossing protection	Track Miles	1.6045	Yes	7	\$255,223	\$410		
50.030	Traction power supply: substations	Track Miles	1.6045	Yes	23	\$1,697,988	\$2,724		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.6045	Yes		\$3,196	\$5,128		
50.041	Catenary	Track Miles	1.6045	Yes	13	\$1,346,370	\$2,160		
50.042	Ancillary Elements	Track Miles	1.6045	Yes	7	\$1,387,266	\$2,226		
50.043	Power Distribution and Connections	Track Miles	1.6045	Yes	4	\$462,321	\$742		
50.050	Communications	Track Miles	1.6045	Yes	23	\$2,267,613	\$3,638		
50.060	Fare collection system and equipment	Stations	3.0000	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.6045		0	\$219,459	\$352,133	100%	62%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.6045		0	\$18,474	\$29,642		5%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.6045	Yes	25	\$14,910,401	\$23,924		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.6045	Yes	12	\$1,727,595	\$2,772		
60.030	Services	Lineal Miles of Guideway	1.6045	Yes	23	\$1,835,836	\$2,946		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.6045	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$381,774.68		0	49%	\$188,666	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$381,774.68	Yes	14	6%	\$24,772		
80.020	Final Design	Hard Costs	\$381,774.68	Yes	22	12%	\$46,634		
80.030	Project Management for Design and Construction	Hard Costs	\$381,774.68	Yes	32	10%	\$38,674		
80.040	Construction Administration & Management	Hard Costs	\$381,774.68	Yes	24	11%	\$43,851		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$381,774.68	Yes	16	4%	\$16,651		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$381,774.68	Yes	6	2%	\$7,860		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$381,774.68	Yes	2	0%	\$1,603		
80.080	Start up	Hard Costs	\$381,774.68	Yes	23	2%	\$8,713		
80.090	Other	Hard Costs	\$381,774.68	Yes	10	0%	\$1,877		
	Subtotal (10-80)	Lineal Miles of Guideway	2		0	\$355,509	\$670,430		
90	Unallocated Contingency	Total Amount	2		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	2		0	\$0	\$670,430		100%
100	Finance Charges	Total Amount	2		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2		0	\$0	\$670,430		100%



Alternative 3-2A

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 3-2A			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.6155			\$672,692		\$1,086,754	
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.6155		0	\$99,861	\$160,989	23%	15%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1989		11	\$70,170,752	\$13,954		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	1.4167		11	\$97,024,385	\$137,451		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track Direct fixation	Track Miles	1.6155		19	\$2,408,603	\$3,891		
10.100	Track Embedded	Track Miles			9	\$0	\$0		
10.110	Track Ballasted	Track Miles			18	\$0	\$0		
10.120	Track Special (switches, turnouts)	Track Miles	2	Yes	12	\$246,016	\$397		
10.140	Special Structures	Lineal Miles of Guideway	2	Yes	3	\$3,277,126	\$5,294		
20	Stations, Stops, Terminals, Intermodels	Stations	3		0	\$183,338	\$490,006	70%	46%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	3			\$154,805	\$464,415		
20.031	Cut and Cover	Stations	3		10	\$154,805,000	\$464,415		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	12			\$2,133	\$25,591		
20.071	Elevators	Number	6		4	\$2,217,942	\$13,308		
20.072	Escalators	Number	6		5	\$2,047,157	\$12,283		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.6155			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.6155		0	\$15,915	\$25,711	4%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.6155	Yes	12	\$2,033,937	\$3,286		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.6155	Yes	75	\$4,266,060	\$6,892		
40.030	Haz. matl, contain'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.6155	Yes	5	\$2,299,074	\$3,714		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.6155	Yes	8	\$1,047,598	\$1,692		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.6155	Yes	1	\$149,423	\$241		
40.060	Pedestrian/ bike access and accommodation, landscaping	Lineal Miles of Guideway	1.6155	Yes	8	\$955,612	\$1,544		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.6155	Yes	21	\$5,163,485	\$8,342		
50	Systems	Track Miles	1.6155		0	\$12,867	\$20,788	3%	2%
50.010	Train control and signals	Track Miles	1.6155	Yes	26	\$2,966,502	\$4,792		
50.020	Traffic signals and crossing protection	Track Miles	1.6155	Yes	7	\$255,223	\$412		
50.030	Traction power supply, substations	Track Miles	1.6155	Yes	23	\$1,697,988	\$2,743		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.6155	Yes		\$3,136	\$5,163		
50.041	Catenary	Track Miles	1.6155	Yes	13	\$1,346,970	\$2,175		
50.042	Ancillary Elements	Track Miles	1.6155	Yes	7	\$1,387,266	\$2,241		
50.043	Power Distribution and Connections	Track Miles	1.6155	Yes	4	\$462,321	\$747		
50.050	Communications	Track Miles	1.6155	Yes	23	\$2,267,613	\$3,663		
50.060	Fare collection system and equipment	Stations	3	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.6155		0	\$431,743	\$697,493	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.6155		0	\$18,474	\$29,845		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.6155	Yes	25	\$14,910,401	\$24,088		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.6155	Yes	12	\$1,727,595	\$2,791		
60.030	Services	Lineal Miles of Guideway	1.6155	Yes	23	\$1,835,836	\$2,966		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.6155	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$727,338.25		0	49%	\$359,416	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$727,338.25	Yes	14	6%	\$47,195		
80.020	Final Design	Hard Costs	\$727,338.25	Yes	22	12%	\$88,845		
80.030	Project Management for Design and Construction	Hard Costs	\$727,338.25	Yes	32	10%	\$73,680		
80.040	Construction Administration & Management	Hard Costs	\$727,338.25	Yes	24	11%	\$83,544		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$727,338.25	Yes	16	4%	\$31,722		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$727,338.25	Yes	6	2%	\$15,012		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$727,338.25	Yes	2	0%	\$3,054		
80.080	Start up	Hard Costs	\$727,338.25	Yes	23	2%	\$12,789		
80.090	Other	Hard Costs	\$727,338.25	Yes	10	0%	\$3,575		
	Subtotal (10-80)	Lineal Miles of Guideway	2		0	\$672,692	\$1,086,754		
90	Unallocated Contingency	Total Amount	2		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	2		0	\$0	\$1,086,754		100%
100	Finance Charges	Total Amount	2		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2		0	\$0	\$1,086,754		100%



Alternative 3-2A (NBS is SEM)

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 3-2A (NBS is SEM)			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit			Chart				
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.6155			\$705.014	\$1,138.971		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.6155		0	\$99,551	\$160,989	22%	14%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1989		11	\$70,170,752	\$13,954		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	1.4167		11	\$97,024,365	\$137,451		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track, Direct fixation	Track Miles	1.6155		19	\$2,408,603	\$3,891		
10.100	Track, Embedded	Track Miles			9	\$0	\$0		
10.110	Track, Ballasted	Track Miles			18	\$3	\$0		
10.120	Track, Special (switches, turnouts)	Track Miles	2	Yes	12	\$246,016	\$597		
10.140	Special Structures	Lineal Miles of Guideway	2	Yes	3	\$3,277,126	\$5,294		
20	Stations, Stops, Terminals, Intermodels	Stations	3		0	\$174,964	\$524,853	72%	46%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	3			\$166,454	\$499,363		
20.031	Sequential Excavation Method & Cut and Cover	Stations	3		10	\$166,454,167	\$499,363		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	12			\$2,133	\$25,591		
20.071	Elevators	Number	6		4	\$2,217,942	\$13,308		
20.072	Escalators	Number	6		5	\$2,047,157	\$12,283		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.6155			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.6155		0	\$15,915	\$26,711	4%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.6155	Yes	12	\$2,033,937	\$3,286		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.6155	Yes	75	\$4,266,060	\$6,892		
40.030	Haz. mat'l, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.6155	Yes	5	\$2,299,074	\$3,714		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.6155	Yes	8	\$1,047,598	\$1,692		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.6155	Yes	1	\$149,423	\$241		
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.6155	Yes	8	\$955,612	\$1,544		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces			8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.6155	Yes	21	\$5,163,485	\$8,342		
50	Systems	Track Miles	1.6155		0	\$12,867	\$20,788	3%	2%
50.010	Train control and signals	Track Miles	1.6155	Yes	26	\$2,966,502	\$4,792		
50.020	Traffic signals and crossing protection	Track Miles	1.6155	Yes	7	\$255,223	\$412		
50.030	Traction power supply: substations	Track Miles	1.6155	Yes	23	\$1,697,988	\$2,743		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.6155	Yes		\$3,196	\$5,163		
50.041	Catenary	Track Miles	1.6155	Yes	19	\$1,346,370	\$2,175		
50.042	Ancillary Elements	Track Miles	1.6155	Yes	7	\$1,387,266	\$2,241		
50.043	Power Distribution and Connections	Track Miles	1.6155	Yes	4	\$462,321	\$747		
50.050	Communications	Track Miles	1.6155	Yes	29	\$2,267,613	\$3,663		
50.060	Fare collection system and equipment	Stations	3	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-60)	Lineal Miles of Guideway	1.6155		0	\$453,375	\$732,441	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.6155		0	\$18,474	\$29,845		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.6155	Yes	26	\$14,910,401	\$24,088		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.6155	Yes	12	\$1,727,595	\$2,791		
60.030	Services	Lineal Miles of Guideway	1.6155	Yes	23	\$1,835,836	\$2,966		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.6155	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$762,285.75		0	49%	\$376,685	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$762,285.75	Yes	14	6%	\$49,462		
80.020	Final Design	Hard Costs	\$762,285.75	Yes	22	12%	\$93,114		
80.030	Project Management for Design and Construction	Hard Costs	\$762,285.75	Yes	32	10%	\$77,220		
80.040	Construction Administration & Management	Hard Costs	\$762,285.75	Yes	24	11%	\$87,558		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$762,285.75	Yes	16	4%	\$33,246		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$762,285.75	Yes	6	2%	\$15,733		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$762,285.75	Yes	2	0%	\$3,201		
80.080	Start up	Hard Costs	\$762,285.75	Yes	23	2%	\$13,404		
80.090	Other	Hard Costs	\$762,285.75	Yes	10	0%	\$3,747		
	Subtotal (10-80)	Lineal Miles of Guideway	2		0	\$705.014	\$1,138.971		
90	Unallocated Contingency	Total Amount	2		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	2		0	\$0	\$1,138.971		100%
100	Finance Charges	Total Amount	2		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2		0	\$0	\$1,138.971		100%



Alternative 3-2B

Cost Model Compared With Project Estimate									
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014		
Reference Name:		ALT 3-2B			Base Year		2014		
Project City:		San Francisco, CA							
Mode:		Light Rail Transit					Chart		
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.9960			\$678,216	\$1,082,448		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.9960		0	\$99,610	\$158,980	23%	15%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0		
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0		
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0		
10.040	Guideway, Aerial structure	Lineal Miles of Guideway			16	\$0	\$0		
10.050	Guideway, Built-up fill	Lineal Miles of Guideway			0	\$0	\$0		
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1989		11	\$70,170,752	\$13,954		
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	1.9972		11	\$97,024,385	\$135,559		
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0		
10.090	Track Direct fixation	Track Miles	1.9960		19	\$2,408,603	\$3,844		
10.100	Track Embedded	Track Miles			9	\$0	\$0		
10.110	Track Ballasted	Track Miles			18	\$0	\$0		
10.120	Track Special (switches, turnouts)	Track Miles	2	Yes	12	\$246,016	\$393		
10.140	Special Structures	Lineal Miles of Guideway	2	Yes	3	\$3,277,126	\$5,230		
20	Stations, Stops, Terminals, Intermodels	Stations	3		0	\$163,335	\$490,006	71%	45%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations			19	\$0	\$0		
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations			5	\$0	\$0		
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	3			\$154,805	\$464,415		
20.031	Cut and Cover	Stations	3		10	\$154,805,000	\$464,415		
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0		
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0		
20.034	Unspecified	Stations			4	\$0	\$0		
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0		
20.070	Elevators, escalators	Number	12			\$2,133	\$25,591		
20.071	Elevators	Number	6		4	\$2,217,942	\$13,308		
20.072	Escalators	Number	6		5	\$2,047,157	\$12,283		
20.080	Passenger Overpass	Number			5	\$0	\$0		
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0		
20.100	Signage and Graphics	Stations			10	\$0	\$0		
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.9960			\$0	\$0		
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2	\$0	\$0		
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0	\$0	\$0		
30.020	Light Maintenance Facility	Vehicles	0	Yes	7	\$0	\$0		
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17	\$0	\$0		
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0		
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0		
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.9960		0	\$15,915	\$25,401	4%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.9960	Yes	12	\$2,033,937	\$3,246		
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.9960	Yes	75	\$4,266,060	\$6,809		
40.030	Haz. matl, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.9960	Yes	5	\$2,299,074	\$3,669		
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.9960	Yes	8	\$1,047,598	\$1,672		
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.9960	Yes	1	\$149,423	\$238		
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	1.9960	Yes	8	\$955,612	\$1,525		
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0		
40.071	Surface Parking Lot	Spaces	0		8	\$0	\$0		
40.072	Auto Access	Stations			2	\$0	\$0		
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.9960	Yes	21	\$5,163,485	\$8,241		
50	Systems	Track Miles	1.9960		0	\$12,898	\$20,585	3%	2%
50.010	Train control and signals	Track Miles	1.9960	Yes	26	\$2,966,502	\$4,735		
50.020	Traffic signals and crossing protection	Track Miles	1.9960	Yes	7	\$255,223	\$407		
50.030	Traction power supply: substations	Track Miles	1.9960	Yes	23	\$1,697,988	\$2,710		
50.040	Traction power distribution: catenary and third rail	Track Miles	1.9960			\$3,196	\$5,101		
50.041	Catenary	Track Miles	1.9960	Yes	19	\$1,345,370	\$2,149		
50.042	Ancillary Elements	Track Miles	1.9960	Yes	7	\$1,387,266	\$2,214		
50.043	Power Distribution and Connections	Track Miles	1.9960	Yes	4	\$462,321	\$738		
50.050	Communications	Track Miles	1.9960	Yes	23	\$2,267,613	\$3,619		
50.060	Fare collection system and equipment	Stations	3.0000	Yes	28	\$1,337,702	\$4,013		
	Construction Subtotal (10-50)	Lineal Miles of Guideway	1.9960		0	\$435,440	\$694,972	100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.9960		0	\$18,474	\$29,485		3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.9960	Yes	25	\$14,910,401	\$23,797		
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.9960	Yes	12	\$1,727,595	\$2,757		
60.030	Services	Lineal Miles of Guideway	1.9960	Yes	23	\$1,835,836	\$2,930		
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.9960	Yes	0	\$0	\$0		
70	Vehicles	Vehicles	0		0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0		
70.020	Heavy Rail	Vehicles			6	\$0	\$0		
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0		
80	Professional Services	Hard Costs	\$724,456.42		0	49%	\$357,992	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$724,456.42	Yes	14	6%	\$47,008		
80.020	Final Design	Hard Costs	\$724,456.42	Yes	22	12%	\$88,493		
80.030	Project Management for Design and Construction	Hard Costs	\$724,456.42	Yes	32	10%	\$73,388		
80.040	Construction Administration & Management	Hard Costs	\$724,456.42	Yes	24	11%	\$83,213		
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$724,456.42	Yes	16	4%	\$31,596		
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$724,456.42	Yes	6	2%	\$14,953		
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$724,456.42	Yes	2	0%	\$3,042		
80.080	Start up	Hard Costs	\$724,456.42	Yes	23	2%	\$12,739		
80.090	Other	Hard Costs	\$724,456.42	Yes	10	0%	\$3,561		
	Subtotal (10-80)	Lineal Miles of Guideway	2		0	\$678,216	\$1,082,448		
90	Unallocated Contingency	Total Amount	2		0	\$0	\$0		0%
	Subtotal (10-90)	Lineal Miles of Guideway	2		0	\$0	\$1,082,448		100%
100	Finance Charges	Total Amount	2		0	\$0	\$0		0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2		0	\$0	\$1,082,448		100%



SFMTA T-Third LRT/Central Subway Phase 3 – Task 4: Constructability Analysis

Alternative 3-2B (NBS is SEM)

Cost Model Compared With Project Estimate											
Cost Basis:		CENTRAL SUBWAY PHASE 3		Today's Date		8/25/2014					
Reference Name:		ALT 3-2B (NBS is SEM)		Base Year		2014					
Project City:		San Francisco, CA									
Mode:		Light Rail Transit		Chart							
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	1.9960	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	\$710,933	\$1,134,665		
								Total Cost (a) (\$000)		Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	1.9960	0	0	0	\$99,610	\$168,980		22%	14%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway		19			\$0	\$0			
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway		3			\$0	\$0			
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway		8			\$0	\$0			
10.040	Guideway, Aerial structure	Lineal Miles of Guideway		16			\$0	\$0			
10.050	Guideway, Built-up fill	Lineal Miles of Guideway		0			\$0	\$0			
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	0.1989	11			\$70,170,752	\$13,954			
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	1.3972	11			\$97,024,365	\$135,559			
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway		6			\$0	\$0			
10.090	Track Direct fixation	Track Miles	1.9960	19			\$2,408,603	\$3,844			
10.100	Track Embedded	Track Miles		9			\$0	\$0			
10.110	Track Ballasted	Track Miles		18			\$0	\$0			
10.120	Track Special (switches, turnouts)	Track Miles	2	Yes	12		\$246,016	\$393			
10.140	Special Structures	Lineal Miles of Guideway	2	Yes	3		\$3,277,126	\$5,230			
20	Stations, Stops, Terminals, Intermodels	Stations	3	0	0	0	\$174,984	\$824,983		72%	46%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations		19			\$0	\$0			
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations		5			\$0	\$0			
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	3				\$166,454	\$499,363			
20.031	Sequential Excavation Method & Cut and Cover	Stations	3	10			\$166,454,167	\$499,363			
20.032	Bored Earth Soft Soils	Stations		0			\$0	\$0			
20.033	Bored Rock Hard Soils	Stations		0			\$0	\$0			
20.034	Unspecified	Stations		4			\$0	\$0			
20.060	Automobile parking multi-story structure	Spaces		3			\$0	\$0			
20.070	Elevators, escalators	Number	12				\$2,130	\$25,591			
20.071	Elevators	Number	6	4			\$2,217,942	\$13,308			
20.072	Escalators	Number	6	5			\$2,047,157	\$12,283			
20.080	Passenger Overpass	Number		5			\$0	\$0			
20.090	Underground Interconnecting Tunnel	Number		No	0		\$0	\$0			
20.100	Signage and Graphics	Stations		10			\$0	\$0			
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0	0	0	0	\$0	\$0		0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	1.9960				\$0	\$0			
30.011	Administrative Building	Lineal Miles of Guideway	0	No	2		\$0	\$0			
30.012	Central Control Facility	Lineal Miles of Guideway	0	No	2		\$0	\$0			
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0	No	0		\$0	\$0			
30.020	Light Maintenance Facility	Vehicles	0	Yes	7		\$0	\$0			
30.030	Heavy Maintenance Facility	Vehicles	0	Yes	17		\$0	\$0			
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5		\$0	\$0			
30.050	Yard and Yard Track	Track Miles	0	No	5		\$0	\$0			
40	Sitework & Special Conditions	Lineal Miles of Guideway	1.9960	0	0	0	\$15,915	\$25,401		3%	2%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	1.9960	Yes	12		\$2,033,937	\$3,246			
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	1.9960	Yes	75		\$4,266,060	\$6,809			
40.030	Haz. mat, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	1.9960	Yes	5		\$2,299,074	\$3,669			
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	1.9960	Yes	8		\$1,047,598	\$1,672			
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	1.9960	Yes	1		\$149,423	\$238			
40.060	Pedestrian / bike access and accommodation, landscaping	Lineal Miles of Guideway	1.9960	Yes	8		\$955,612	\$1,525			
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0				\$0	\$0			
40.071	Surface Parking Lot	Spaces		8			\$0	\$0			
40.072	Auto Access	Stations		2			\$0	\$0			
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	1.9960	Yes	21		\$5,163,485	\$8,241			
50	Systems	Track Miles	1.9960	0	0	0	\$12,898	\$20,585		3%	2%
50.010	Train control and signals	Track Miles	1.9960	Yes	26		\$2,966,502	\$4,735			
50.020	Traffic signals and crossing protection	Track Miles	1.9960	Yes	7		\$265,223	\$407			
50.030	Traction power supply: substations	Track Miles	1.9960	Yes	23		\$1,697,988	\$2,710			
50.040	Traction power distribution: catenary and third rail	Track Miles	1.9960	Yes			\$3,196	\$5,101			
50.041	Catenary	Track Miles	1.9960	Yes	13		\$1,346,370	\$2,149			
50.042	Ancillary Elements	Track Miles	1.9960	Yes	7		\$1,387,266	\$2,214			
50.043	Power Distribution and Connections	Track Miles	1.9960	Yes	4		\$462,321	\$736			
50.050	Communications	Track Miles	1.9960	Yes	23		\$2,267,613	\$3,619			
50.060	Fare collection system and equipment	Stations	3.0000	Yes	28		\$1,937,702	\$4,013			
	Construction Subtotal (10-50)	Lineal Miles of Guideway	1.9960	0	0	0	\$467,336	\$729,519		100%	64%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	1.9960	0	0	0	\$18,474	\$29,485		3%	3%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	1.9960	Yes	25		\$14,910,401	\$23,797			
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	1.9960	Yes	12		\$1,727,595	\$2,757			
60.030	Services	Lineal Miles of Guideway	1.9960	Yes	23		\$1,835,836	\$2,930			
60.040	Other Real Estate Costs	Lineal Miles of Guideway	1.9960	Yes	0		\$0	\$0			
70	Vehicles	Vehicles	0	0	0	0	\$0	\$0		0%	0%
70.010	Light Rail	Vehicles		15			\$0	\$0			
70.020	Heavy Rail	Vehicles		6			\$0	\$0			
70.060	Non-revenue vehicles	Vehicles	0	Yes	11		\$0	\$0			
80	Professional Services	Hard Costs	\$759,403.92	0	49%	0	\$376,261	\$597,143		0%	0%
80.010	Preliminary Engineering	Hard Costs	\$759,403.92	Yes	14		6%	\$49,275			
80.020	Final Design	Hard Costs	\$759,403.92	Yes	22		12%	\$92,762			
80.030	Project Management for Design and Construction	Hard Costs	\$759,403.92	Yes	32		10%	\$76,928			
80.040	Construction Administration & Management	Hard Costs	\$759,403.92	Yes	24		11%	\$87,227			
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$759,403.92	Yes	16		4%	\$33,120			
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$759,403.92	Yes	6		2%	\$15,674			
80.070	Surveys, Testing, Investigation, inspection	Hard Costs	\$759,403.92	Yes	2		0%	\$3,189			
80.080	Start up	Hard Costs	\$759,403.92	Yes	23		2%	\$13,353			
80.090	Other	Hard Costs	\$759,403.92	Yes	10		0%	\$3,733			
	Subtotal (10-80)	Lineal Miles of Guideway	2	0	0	0	\$710,933	\$1,134,665			
90	Unallocated Contingency	Total Amount	2	0	0	0	\$0	\$0		0%	0%
	Subtotal (10-90)	Lineal Miles of Guideway	2	0	0	0	\$0	\$1,134,665		100%	100%
100	Finance Charges	Total Amount	2	0	0	0	\$0	\$0		0%	0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	2	0	0	0	\$0	\$1,134,665		100%	100%

Summary of Costs - Alternative 4 Options

DESCRIPTION	GUIDEWAY LENGTH (FT)	# OF STATIONS (EA)	LOW ESTIMATE (-30%) (\$000)	POINT ESTIMATE (\$000)	HIGH ESTIMATE (+50%) (\$000)
CONSTRUCTION COSTS (SCC 10-50)					
ALTERNATIVE 4-1 (C/C)	650	1	\$175,014	\$227,519	\$341,278
ALTERNATIVE 4-1 (SEM)	650	1	\$255,850	\$332,605	\$498,907
SOFT COSTS (SCC 60-100)					
ALTERNATIVE 4-1 (C/C)	650	1	\$89,098	\$115,827	\$173,741
ALTERNATIVE 4-1 (SEM)	650	1	\$129,043	\$167,756	\$251,633
TOTAL COSTS (SCC 10-100)					
ALTERNATIVE 4-1 (C/C)	650	1	\$264,112	\$343,346	\$515,019
ALTERNATIVE 4-1 (SEM)	650	1	\$384,892	\$500,360	\$750,540

Notes:

FTA Capital Cost Database utilized for point estimate values.

Costs are in 2014 dollars, adjusted locally to San Francisco, CA.

Estimate values exclude finance charges (SCC-100).

Range values based on FTA and AACE guidelines for Probable Accuracy.

(C/C) and (SEM) designations for each option refer to the method of construction of North Beach Station [whether the station is estimated as cut--and-cover (C/C) box construction or construction by sequential excavation method (SEM)].

One cross-over was estimated for North Beach Station.

HNTB

THIRD STREET

To Fisherman's Wharf

Alternative 4-1

Cost Model Compared With Project Estimate								
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014	
Reference Name:		ALT 4-1			Base Year		2014	
Project City:		San Francisco, CA						
Mode:		Light Rail Transit			Chart			
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.1231	0	\$2,789,024	\$343,346		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (\$)(000)	Base Year Dollars Percentage of Construction Cost
								Base Year Dollars Percentage of Total Project Cost
10	Guideway & Track Elements	Lineal Miles of Guideway	0.1231	0	\$117,081	\$14,413	6%	4%
10.010	Guideway: At-grade exclusive right-of-way	Lineal Miles of Guideway			19	\$0	\$0	
10.020	Guideway: At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway			3	\$0	\$0	
10.030	Guideway: At-grade in mixed traffic	Lineal Miles of Guideway			8	\$0	\$0	
10.040	Guideway: Aerial structure	Lineal Miles of Guideway			16	\$0	\$0	
10.050	Guideway: Built-up fill	Lineal Miles of Guideway			0	\$0	\$0	
10.060	Guideway: Underground cut & cover	Lineal Miles of Guideway	0.1231		11	\$107,956,004	\$13,290	
10.070	Guideway: Underground tunnel	Lineal Miles of Guideway			11	\$0	\$0	
10.080	Guideway: Retained cut or fill	Lineal Miles of Guideway			6	\$0	\$0	
10.090	Track: Direct fixation	Track Miles	0.1231		19	\$3,705,543	\$456	
10.100	Track: Embedded	Track Miles			9	\$0	\$0	
10.110	Track: Ballasted	Track Miles			12	\$0	\$0	
10.120	Track: Special (switches, turnouts)	Track Miles	0	Yes	18	\$378,486	\$47	
10.140	Special Structures	Lineal Miles of Guideway	0	Yes	3	\$5,041,752	\$521	
20	Stations, Stops, Terminals, Intermodels	Stations	1	0	\$208,630	\$208,630	92%	61%
20.010	At-Grade Station, Stop, Shelter, Mail, Terminal, Platform	Stations			19	\$0	\$0	
20.020	Aerial station, stop, shelter, mail, terminal, platform	Stations			5	\$0	\$0	
20.030	Underground station, stop, shelter, mail, terminal, platform	Stations	1		1	\$200,000	\$200,000	
20.031	Cut and Cover	Stations	1		10	\$200,000,000	\$200,000	
20.032	Bored Earth Soft Soils	Stations			0	\$0	\$0	
20.033	Bored Rock Hard Soils	Stations			0	\$0	\$0	
20.034	Unspecified	Stations			4	\$0	\$0	
20.060	Automobile parking multi-story structure	Spaces			3	\$0	\$0	
20.070	Elevators, escalators	Number	4			\$2,133	\$3,530	
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436	
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094	
20.080	Passenger Overpass	Number			5	\$0	\$0	
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0	
20.100	Signage and Graphics	Stations			10	\$0	\$0	
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0	0	\$0	\$0	0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.1231			\$0	\$0	
30.011	Administrative Building	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0	
30.012	Central Control Facility	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0	
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0.0000	No	0	\$0	\$0	
30.020	Light Maintenance Facility	Vehicles	0	No	7	\$0	\$0	
30.030	Heavy Maintenance Facility	Vehicles	0	No	17	\$0	\$0	
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0	
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0	
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.1231	0	\$15,915	\$1,959	1%	1%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.1231	Yes	12	\$2,033,937	\$250	
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.1231	Yes	75	\$4,266,060	\$525	
40.030	Haz. mat'l, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.1231	Yes	5	\$2,299,074	\$283	
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.1231	Yes	8	\$1,047,598	\$129	
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.1231	Yes	1	\$149,423	\$18	
40.060	Pedestrian /bike access and accommodation, landscaping	Lineal Miles of Guideway	0.1231	Yes	8	\$955,612	\$119	
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0	
40.071	Surface Parking Lot	Spaces			8	\$0	\$0	
40.072	Auto Access	Stations			2	\$0	\$0	
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0	Yes	21	\$5,163,485	\$636	
50	Systems	Track Miles	0.1231	0	\$21,250	\$2,616	1%	1%
50.010	Train control and signals	Track Miles	0.1231	Yes	26	\$2,966,502	\$365	
50.020	Traffic signals and crossing protection	Track Miles	0.1231	Yes	7	\$265,223	\$33	
50.030	Traction power supply: substations	Track Miles	0.1231	Yes	23	\$1,697,968	\$209	
50.040	Traction power distribution: catenary and third rail	Track Miles	0.1231	Yes		\$3,196	\$393	
50.041	Catenary	Track Miles	0.1231	Yes	19	\$1,346,370	\$166	
50.042	Ancillary Elements	Track Miles	0.1231	Yes	7	\$1,387,266	\$171	
50.043	Power Distribution and Connections	Track Miles	0.1231	Yes	4	\$462,321	\$57	
50.050	Communications	Track Miles	0.1231	Yes	23	\$2,267,613	\$279	
50.060	Fare collection system and equipment	Stations	1.0000	Yes	28	\$1,337,702	\$1,338	
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0	0	\$1,848,152	\$227,519	100%	66%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0	0	\$18,474	\$2,274		1%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0	Yes	25	\$14,910,401	\$1,836	
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0	Yes	12	\$1,727,595	\$213	
60.030	Services	Lineal Miles of Guideway	0	Yes	23	\$1,835,836	\$226	
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0	Yes	0	\$0	\$0	
70	Vehicles	Vehicles	0	0	\$0	\$0		0%
70.010	Light Rail	Vehicles			15	\$0	\$0	
70.020	Heavy Rail	Vehicles			6	\$0	\$0	
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0	
80	Professional Services	Hard Costs	\$229,792.99	0	49%	\$113,563	0%	0%
80.010	Preliminary Engineering	Hard Costs	\$229,792.99	Yes	14	6%	\$14,911	
80.020	Final Design	Hard Costs	\$229,792.99	Yes	22	12%	\$28,070	
80.030	Project Management for Design and Construction	Hard Costs	\$229,792.99	Yes	32	10%	\$23,278	
80.040	Construction Administration & Management	Hard Costs	\$229,792.99	Yes	24	11%	\$28,394	
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$229,792.99	Yes	16	4%	\$10,022	
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$229,792.99	Yes	6	2%	\$4,743	
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$229,792.99	Yes	2	0%	\$965	
80.080	Start up	Hard Costs	\$229,792.99	Yes	23	2%	\$4,041	
80.090	Other	Hard Costs	\$229,792.99	Yes	10	0%	\$1,130	
	Subtotal (10-80)	Lineal Miles of Guideway	0	0	\$2,789,024	\$343,346		
90	Unallocated Contingency	Total Amount	0		0	\$0	\$0	0%
	Subtotal (10-90)	Lineal Miles of Guideway	0	0	0	\$343,346		100%
100	Finance Charges	Total Amount	0		0	\$0	\$0	0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	0	0	0	\$343,346		100%



Alternative 4-1 (NBS is SEM)

Cost Model Compared With Project Estimate										
Cost Basis:		CENTRAL SUBWAY PHASE 3			Today's Date		8/25/2014			
Reference Name:		ALT 4-1 (SEM)			Base Year		2014			
Project City:		San Francisco, CA								
Mode:		Light Rail Transit					Chart			
0.00	TOTAL PROJECT COSTS	Lineal Miles of Guideway	0.1231			\$4,064,464		\$500,360		
		Units	Quantity	Include This Item (select 'Yes' or 'No')	Sample Size	Unit Cost (\$)	Total Cost (a) (\$000)		Base Year Dollars Percentage of Construction Cost	
									Base Year Dollars Percentage of Total Project Cost	
10	Guideway & Track Elements	Lineal Miles of Guideway	0.1231		0	\$168,394	\$18,499		6%	4%
10.010	Guideway, At-grade exclusive right-of-way	Lineal Miles of Guideway	13			\$0	\$0			
10.020	Guideway, At-grade semi-exclusive (allows cross-traffic)	Lineal Miles of Guideway	3			\$0	\$0			
10.030	Guideway, At-grade in mixed traffic	Lineal Miles of Guideway	8			\$0	\$0			
10.040	Guideway, Aerial structure	Lineal Miles of Guideway	16			\$0	\$0			
10.050	Guideway, Built-up fill	Lineal Miles of Guideway	0			\$0	\$0			
10.060	Guideway, Underground cut & cover	Lineal Miles of Guideway	11			\$0	\$0			
10.070	Guideway, Underground tunnel	Lineal Miles of Guideway	0.1231		11	\$149,266,285	\$18,376			
10.080	Guideway, Retained cut or fill	Lineal Miles of Guideway	6			\$0	\$0			
10.090	Track Direct fixation	Track Miles	0.1231		19	\$3,705,543	\$456			
10.100	Track Embedded	Track Miles			9	\$0	\$0			
10.110	Track Ballasted	Track Miles			16	\$0	\$0			
10.120	Track Special (switches, turnouts)	Track Miles	0	Yes	12	\$378,486	\$47			
10.140	Special Structures	Lineal Miles of Guideway	0	Yes	3	\$5,041,732	\$521			
20	Stations, Stops, Terminals, Intermodels	Stations	1		0	\$308,530	\$308,530		93%	62%
20.010	At-Grade Station, Stop, Shelter, Mall, Terminal, Platform	Stations	19			\$0	\$0			
20.020	Aerial station, stop, shelter, mall, terminal, platform	Stations	5			\$0	\$0			
20.030	Underground station, stop, shelter, mall, terminal, platform	Stations	1			\$300,000	\$300,000			
20.031	Cut and Cover or SEM	Stations	1		10	\$300,000,000	\$300,000			
20.032	Bored Earth Soft Soils	Stations	0			\$0	\$0			
20.033	Bored Rock Hard Soils	Stations	0			\$0	\$0			
20.034	Unspecified	Stations	4			\$0	\$0			
20.060	Automobile parking multi-story structure	Spaces	3			\$0	\$0			
20.070	Elevators, escalators	Number	4			\$2,133	\$8,530			
20.071	Elevators	Number	2		4	\$2,217,942	\$4,436			
20.072	Escalators	Number	2		5	\$2,047,157	\$4,094			
20.080	Passenger Overpass	Number			5	\$0	\$0			
20.090	Underground Interconnecting Tunnel	Number		No	0	\$0	\$0			
20.100	Signage and Graphics	Stations			10	\$0	\$0			
30	Support Facilities: Yards, Shops, Admin. Bldgs	Vehicles	0		0	\$0	\$0		0%	0%
30.010	Administration Building: Office, sales, storage, revenue counting	Lineal Miles of Guideway	0.1231			\$0	\$0			
30.011	Administrative Building	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.012	Central Control Facility	Lineal Miles of Guideway	0.0000	No	2	\$0	\$0			
30.013	Central Revenue Counting Facility	Lineal Miles of Guideway	0.0000	No	0	\$0	\$0			
30.020	Light Maintenance Facility	Vehicles	0	No	7	\$0	\$0			
30.030	Heavy Maintenance Facility	Vehicles	0	No	17	\$0	\$0			
30.040	Storage or Maintenance of Way Building	Lineal Miles of Guideway	0	No	5	\$0	\$0			
30.050	Yard and Yard Track	Track Miles	0	No	5	\$0	\$0			
40	Sitework & Special Conditions	Lineal Miles of Guideway	0.1231		0	\$15,915	\$1,959		1%	0%
40.010	Demolition, Clearing, Earthwork	Lineal Miles of Guideway	0.1231	Yes	12	\$2,033,937	\$250			
40.020	Site Utilities, Utility Relocation	Lineal Miles of Guideway	0.1231	Yes	75	\$4,266,060	\$525			
40.030	Haz. matl, contam'd soil removal/mitigation, ground water treatment	Lineal Miles of Guideway	0.1231	Yes	5	\$2,299,074	\$283			
40.040	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Lineal Miles of Guideway	0.1231	Yes	8	\$1,047,598	\$129			
40.050	Site structures including retaining walls, sound walls	Lineal Miles of Guideway	0.1231	Yes	1	\$149,423	\$18			
40.060	Pedestrian/bike access and accommodation, landscaping	Lineal Miles of Guideway	0.1231	Yes	8	\$955,612	\$119			
40.070	Automobile, bus, van accessways including roads, parking lots	Spaces	0			\$0	\$0			
40.071	Surface Parking Lot	Spaces	0		8	\$0	\$0			
40.072	Auto Access	Stations	2			\$0	\$0			
40.080	Temporary Facilities and other indirect costs during construction	Lineal Miles of Guideway	0	Yes	21	\$5,163,485	\$636			
50	Systems	Track Miles	0.1231		0	\$21,250	\$2,616		1%	1%
50.010	Train control and signals	Track Miles	0.1231	Yes	26	\$2,966,502	\$365			
50.020	Traffic signals and crossing protection	Track Miles	0.1231	Yes	7	\$265,223	\$33			
50.030	Traction power supply: substations	Track Miles	0.1231	Yes	23	\$1,697,988	\$209			
50.040	Traction power distribution: catenary and third rail	Track Miles	0.1231	Yes		\$3,196	\$393			
50.041	Catenary	Track Miles	0.1231	Yes	13	\$1,346,370	\$166			
50.042	Ancillary Elements	Track Miles	0.1231	Yes	7	\$1,387,266	\$171			
50.043	Power Distribution and Connections	Track Miles	0.1231	Yes	4	\$462,321	\$57			
50.050	Communications	Track Miles	0.1231	Yes	23	\$2,267,613	\$279			
50.060	Fare collection system and equipment	Stations	1.0000	Yes	28	\$1,337,702	\$1,338			
	Construction Subtotal (10-60)	Lineal Miles of Guideway	0		0	\$2,701,773	\$332,605		100%	66%
60	Row, Land, Existing Improvements	Lineal Miles of Guideway	0		0	\$18,474	\$2,274			0%
60.010	Purchase or lease of real estate	Lineal Miles of Guideway	0	Yes	25	\$14,910,401	\$1,836			
60.020	Relocation of existing households and businesses	Lineal Miles of Guideway	0	Yes	12	\$1,727,595	\$213			
60.030	Services	Lineal Miles of Guideway	0	Yes	23	\$1,835,836	\$226			
60.040	Other Real Estate Costs	Lineal Miles of Guideway	0	Yes	0	\$0	\$0			
70	Vehicles	Vehicles	0		0	\$0	\$0			0%
70.010	Light Rail	Vehicles	0		15	\$0	\$0			
70.020	Heavy Rail	Vehicles	0		6	\$0	\$0			
70.060	Non-revenue vehicles	Vehicles	0	Yes	11	\$0	\$0			
80	Professional Services	Hard Costs	\$334,878.91		0	49%	\$165,481			0%
80.010	Preliminary Engineering	Hard Costs	\$334,878.91	Yes	14	6%	\$21,729			
80.020	Final Design	Hard Costs	\$334,878.91	Yes	22	12%	\$40,906			
80.030	Project Management for Design and Construction	Hard Costs	\$334,878.91	Yes	32	10%	\$33,924			
80.040	Construction Administration & Management	Hard Costs	\$334,878.91	Yes	24	11%	\$36,465			
80.050	Professional Liability and other Non-Construction Insurance	Hard Costs	\$334,878.91	Yes	16	4%	\$14,605			
80.060	Legal, Permits, Review Fees by other agencies, cities, etc.	Hard Costs	\$334,878.91	Yes	6	2%	\$6,912			
80.070	Surveys, Testing, Investigation, Inspection	Hard Costs	\$334,878.91	Yes	2	0%	\$1,406			
80.080	Start up	Hard Costs	\$334,878.91	Yes	23	2%	\$5,888			
80.090	Other	Hard Costs	\$334,878.91	Yes	10	0%	\$1,646			
	Subtotal (10-80)	Lineal Miles of Guideway	0		0	\$4,064,464	\$500,360			
90	Unallocated Contingency	Total Amount	0		0	\$0	\$0			0%
	Subtotal (10-90)	Lineal Miles of Guideway	0		0	\$0	\$500,360			100%
100	Finance Charges	Total Amount	0		0	\$0	\$0			0%
	Total Project Costs (10-100)	Lineal Miles of Guideway	0		0	\$0	\$500,360			100%

