JPB Board of Directors
Meeting of January 7, 2021

Correspondence as of January 6, 2021

#	Subject
1	Caltrain Board Meeting Item 12.a 5-Year Tasi Contract Extension
2	Caltrain Quiet Zone Application

From:	Roland Lebrun
To:	Board (@caltrain.com)
Cc:	SFCTA Board Secretary; VTA Board Secretary; MTC Info; CHSRA Board; cacsecretary [@caltrain.com]; Caltrain, Bac (@caltrain.com); SFCTA CAC
Subject:	Caltrain Board meeting item 12.a 5-year TASI contract extension
Date:	Wednesday, January 6, 2021 5:12:01 AM
Attachments:	2011+Caltrain+TASI+Agreement.pdf Stadler EMU Procurement Price Forms.pdf

Dear Chair Pine and Board members,

Further to Ms. Bouchard's March 2017 letter to TASI (attached) which ignored the September 1 2011 Board resolution to award a 5-year contract followed by five one-year extensions, please modify the current staff recommendation for a third 5-year contract extension to five one-year extensions for the following reasons:

1) It is unclear why SamTrans are proposing a $1/2B+ 5-year (100% of Measure RR!) **single-source bundled evergreen contract** extension to 2027 given that the JPB is currently engaging Howard Permutt on recommendations for a new governance structure.

2) **The execution of this contract extension should be the responsibility of the new administration, not SamTrans**.

3) **The next administration's top priority should be to unbundle this evergreen contract**, starting with establishing specific cost ranges for the following categories:

- Administration/Safety

Why should Caltrain have to pay for Administration twice (SamTrans and TASI)? What are the opportunities for streamlining/consolidation including bringing this function in-house under the new administration?

- **Operations**

Why is SamTrans proposing to bundle rail and train operations?
While there is sufficient overlap between rail operations and Maintenance of Way to justify awarding a bundled rail O&M contract to TASI or some other entity, it is unclear why train operations should be bundled with the same contract when ACE, Capitol Corridor and Metrolink operate primarily as UPRR and/or BNSF tenants (they do not own the rails they operate on).
Of more serious concern, **train operations should be a net source of revenue** (trackage rights, rolling stock availability payments/leasing to a Train Operating Company (TOC), etc.) **not an operating expense**.

As an example, the JPB was approached by a private company in 2015 but **this**

unsolicited proposal was never referred to the Board for consideration:

. Verbal presentation to the LPMG: "***Finance and operate trains at a significantly lower cost***": https://www.youtube.com/watch?t=5463&v=3TNFWZrzUw4

. Promotional video: https://youtu.be/BTYUBsu6KQg

. CNBC interview: "***We can bring new trains in two years (2018) to run on freight infrastructure or public railroads***" https://www.cnbc.com/video/2015/06/03/czech-company-to-bring-euro-style-trains-to-us.html

. Testimonials (**Stanford and others**): https://leoexpress-california.herokuapp.com/#testimonials.

Last but not least, **private operators are always incentivized to increase revenues (profits) through increased ridership, not increased fares** and could provide valuable input on schedules and train configurations (Leo Express' fleet includes five Stadler FLIRT EMUs financed with private capital). **A private operator would also never settle for a less than a 100% ticket checking target** vs the SamTrans/TASI 50% proposal.

- **Maintenance of Equipment**

Once again, why is rolling stock maintenance bundled into a single contract when the optimal solution is to entrust maintenance to the manufacturer (**superior service AT A LOWER COST**)? Specifically, **why did SamTrans staff ignore the Stadler proposal included with their response to the EMU RFP** (attached)?

Please refer the above proposals to Howard Permutt for further analysis and eventual recommendation to the Board on how to proceed with this contract.

Thank You.

Roland Lebrun.

CC

SFCTA Commissioners

VTA Board of Directors

MTC Commissioners

CHSRA Board of Directors

Caltrain CAC

Caltrain BAC

SFCTA CAC

VTA CAC

March 16, 2017

C. Scott Perry, President
TransitAmerica Services, Inc.
600 S. Riverside Road
St. Joseph, MO 64507

Subject: Side Letter to Amendment No. 4 to Rail Operations Agreement between TASI and JPB

Dear Scott:

The Peninsula Corridor Joint Powers Board ("JPB") is pleased to have reached agreement with TransitAmerica Services, Inc. ("TASI") on the amendment by which the JPB has exercised the five one year option terms to extend the Agreement for the Provision of Rail Operations, Maintenance, and Support Services for Caltrain. The next five years will present new opportunities to change, expand and enhance the Peninsula Commute Services provided under the Agreement. In conjunction with the JPB and TASI executing the Amendment to extend the Agreement, this letter describes these opportunities and expresses the commitment of the parties to address them during the 5-year extension period under the Agreement.

1. TASI will provide construction support services for the Peninsula Corridor Electrification Project under terms that provide for the hiring of adequate support staff for the duration of this project in a manner that minimizes 13c exposure.

2. TASI will take on the responsibility of office traction power system supervision also known as power direction, which positions will be located in the Caltrain control center.

3. JPB will work with TASI over the coming year to determine TASI's competence and capability to safely and efficiently perform the maintenance of the traction power system with the intention of offering TASI this work if satisfactory demonstration is made in this regard.

4. TASI will assume the maintenance of elements of the PTC system as agreed to by JPB and TASI. It is anticipated this work will include basic inspection, maintenance and troubleshooting, among other things.

5. It is anticipated that opportunities for maintenance of way work as well as construction support services will arise in the next 5 years related to the California High Speed Rail Authority Blended System Project.

In addition to the items listed above, the JPB will explore opportunities for Herzog Technologies (a) to assist the JPB with its Lick to Gilroy Positive Train Control ("PTC") project and (2) to provide secondary support services related to back office, configuration management or

specialized PTC services. In any of these cases, the opportunities will be subject to appropriate procurement/selection processes and contract methodologies.

The JPB looks forward to the contractual partnership with TASI during the extension period of this Agreement.

Sincerely,

Michelle Bouchard
Chief Operating Officer, Rail

cc: Jim Hartnett
Al Landes
Jeff Davison
Joan Cassman

I acknowledge the terms of this letter.

Title: President

Date: 3-17-17

STADLER

EMU PROCUREMENT PRICE FORMS

Price Evaluation Form (PEF)		
Line #	**Item**	**Amount**
1	Base Bid (from **Base Bid TOTAL** in sheet "Base Bid")	$ 618'141'134
2	Option Cars (from **Option Cars TOTAL** in sheet "Option Cars")	$ 413'738'000
3	Option MSA1 including Year 0 (from **Option MSA1** in sheet "Maintenance Option Summary")	n.a.
4	Option MSA2 (from **Option MSA2** in sheet "Maintenance Option Summary")	n.a.
5	Option MSA3 from **Option MSA3** in sheet "Maintenance Option Summary")	n.a.
6	**PEF Evaluated TOTAL**	$ 1'031'879'134

Line #	Base Bid: 16 Trainsets (96 EMUs)					
	Qty*	Car Type	Car Type**	Unit		Subtotal ($)
	[1]	[2]	Note	[3]		[5] = [1]x[4]
	Trainset Configuration, 6 cars					
1	1	Car "B"	Cab Car B motorized	Each	$ 6'174'000	$ 6'174'000
2	1	Car "C"	Bicycle car	Each	$ 3'170'000	$ 3'170'000
3	1	Car "D"	Passenger Car motorized	Each	$ 4'907'000	$ 4'907'000
4	1	Car "E"	Bathroom Car motorized	Each	$ 5'101'000	$ 5'101'000
5	1	Car "F"	Bicycle car	Each	$ 3'170'000	$ 3'170'000
6	1	Car "A"	Cab Car A motorized	Each	$ 5'972'000	$ 5'972'000
					Unit Cost, 6-car Trainset	$ 28'494'000
	16				**Base Bid Trainsets Sub-Total**	**$ 455'904'000**
7		EMU Support		(from **TOTAL** on sheet "EMU Support")		**$ 162'237'134**
8					**Base Bid TOTAL** (enter on Line 1 tab "PEF")	**$ 618'141'134**

* Enter the quantity for each type of car in a 6-car trainset.

** Enter the 'generic' car type (i.e. Cab or Coach) of the car with the bathroom in the Car Type column

For Reference:

	High Level Doors	(from **TOTAL** on sheet "High Level	**$ 914'000**
	Bathroom, w/Lift if necessary	(from **TOTAL** on sheet "Bathroom	**$ 15'937'000**

EMU Support		
Line #	**Description**	**Amount ($)**
1	System Support (from **TOTAL** on sheet "System Support")	$ 96'880'000
2	Spare Parts (from **TOTAL** on sheet "Spare Parts")	$ 27'405'610
3	Special Tools (from **TOTAL** on sheet "Special Tools")	$ 192'080
4	Test Equipment (from **TOTAL** on sheet "Test Equipment")	$ 803'780
5	Mock-Ups (from **TOTAL** on sheet "Mock-Ups")	$ 8'230'000
6	Performance Bonds	$ 28'485'664
7	Extra Work (estimated quantities) (from **TOTAL** on sheet "Extra Work")	$ 240'000
8	**TOTAL** (enter on line EMU Support on sheet "Base Bid")	**$ 162'237'134**

System Support (See "Definitions" sheet for further information)				
Line #	**Qty**	**Description**	**Unit**	**Amount ($)**
1	1	Management	Lump Sum	$ 5'530'000
2	1	Engineering	Lump Sum	$ 64'050'000
3	1	Testing	Lump Sum	$ 12'740'000
4	1	Training	Lump Sum	$ 720'000
5	1	Manuals	Lump Sum	$ 1'480'000
6	1	Field Support	Lump Sum	incl in vehicle price
7	1	Warranty	Lump Sum	$ 12'360'000
8	**TOTAL** (enter on Line 1 on sheet "EMU Support")			$ **96'880'000**

Spare Parts					
Seq. #	**Qty**	**Item**	**Unit***		**Amount ($)**
[1]	**[2]**	**[3]**	**[4]**		**[6] = [2] x [5]**
		Carbody and Interior Design (TS, Section 3)			
3.01	4.00	Anti-climbers left	Each	$ 1'720	$ 6'878
3.01	4.00	Anti-climbers right	Each	$ 1'720	$ 6'878
3.02	2.00	End bonnets (Cab end)	Each	$ 37'053	$ 74'105
3.03	3.00	End bonnets (Non cab end)	Each	$ 2'189	$ 6'568
3.04	2.00	Pilot	Each	$ 84	$ 168
3.05	5.00	Horn	Each	$ 606	$ 3'032
3.06	5.00	Bell	Each	$ 1'684	$ 8'421
3.07	70.00	Windshield wiper blades	Each	$ 126	$ 8'842
3.08	5.00	Windshield washer assemblies, complete (wiper, motor, arm, spray nozzle, tubing, etc)	Each	$ 2'536	$ 12'682
3.09	6.00	Between-Car barriers	Each	$ 17'600	$ 105'600
3.10	1.0	Stanchions and grab rails	Trainset	$ 40'421	$ 40'421
3.11	1.0	Passenger seat shells (all types)	Trainset	$ 265'263	$ 265'263
3.12	2.0	Seat cushions	Trainset	$ 83'368	$ 166'737
3.13	2.0	Seat backs	Trainset	$ 106'105	$ 212'211
3.14	2.0	Headrests	Trainset	$ 113'684	$ 227'368
3.15	1.0	Flip Seats	Trainset	$ 32'067	$ 32'067
3.16	2.0	Flip seat mechanisms	Trainset	$ 9'432	$ 18'863
3.17	2.0	Leaning Cushions, Back cushion Flip seat	Trainset	$ 7'074	$ 14'147
3.18	1.0	Work table	Trainset	$ 178'112	$ 178'112
3.19	2.0	Graphics, Technical pictograms internal / external	Trainset	$ 33'684	$ 67'368
3.20	12.0	Door Thresholds (side) Step plate profile	Each	$ 589	$ 7'074
3.21	4.0	Door Thresholds (end) Step plate profile	Each	$ 589	$ 2'358
3.22	1.0	Threshold markings	Trainset	$ 14'316	$ 14'316
3.23	0.5	Exterior doorway steps Sliding step lower deck	Trainset	$ 307'200	$ 153'600
3.24	1.0	Doorway step retraction mechanism (complete) Sliding step middle deck	Trainset	$ 307'200	$ 307'200
3.25	0.5	Bridgeplate/Ramp	Trainset	$ 6'737	$ 3'368

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
3.26	1.0	Platform edge gap fillers	Trainset	$ 12'632	$ 12'632
3.27	3.0	Interior lift (complete) (platform, motor, operating mechanism, etc)	Each	$ 56'589	$ 169'768
3.28	2.0	Flushing Toilet Vacuum module	Each	$ 8'926	$ 17'853
3.29	2.0	Wash Basin	Each	$ 1'263	$ 2'526
3.30	4.0	Restroom Mirror	Each	$ 808	$ 3'234
3.31	4.0	Waste Retention Tank	Each	$ 9'600	$ 38'400
3.32	4.0	Fresh Water Tank	Each	$ 11'958	$ 47'832
3.33	6.0	Hand dryer	Each	$ 1'768	$ 10'611
3.34	6.0	Paper towel dispenser	Each	$ 505	$ 3'032
3.35	2.0	Baby changing table	Each	$ 1'684	$ 3'368
3.36	8.0	Soap Dispenser	Each	$ 606	$ 4'851
3.37	8.0	Toilet paper dispenser	Each	$ 421	$ 3'368
3.38	6.0	Restroom exhaust fan	Each	$ 472	$ 2'829
3.39	6.0	Restroom door locks	Each	$ 2'206	$ 13'238
3.40	0.75	Interior linings, walls, and ceilings, all types	Trainset	$ 782'275	$ 586'707
3.41	0.75	Floor Panels	Trainset	$ 810'567	$ 607'925
3.42	0.75	Floor Covering	Trainset	$ 30'316	$ 22'737
3.43	1.25	Bicycle racks, Bicycle holder band	Trainset	$ 40'421	$ 50'526
3.44	0.75	Overhead Luggage Racks	Trainset	$ 210'526	$ 157'895
3.45	0.75	Windshields Separation shields (only end cars)	Trainset	$ 2'333	$ 1'749
3.46	0.75	Side door windows	Trainset	$ 42'038	$ 31'528
3.47	0.75	End door windows	Trainset	$ 8'488	$ 6'366
3.48	0.5	Passenger & cab area side and end windows	Trainset	$ 185'263	$ 92'632
3.49	1.25	Glazing Strips (all types) Rubber profiles for windows	Trainset	$ 43'789	$ 54'737
3.50	1.25	Equipment Locker Doors, Inventory locker doors	Trainset	$ 2'863	$ 3'579
3.51	1.25	Access covers	Trainset	$ 3'032	$ 3'789
3.52	1.25	Door locks	Trainset	$ 26'105	$ 32'632
3.53	1.25	Crew Keys (50pcs)	Trainset	$ 2'526	$ 3'158
3.54	1.25	Operator keys (50pcs)	Trainset	$ 2'526	$ 3'158
3.55	1.25	Maintenance keys (50pcs)	Trainset	$ 2'526	$ 3'158

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
3.56	3.00	Emergency Ladder	Each	$ 421	$ 1'263
3.57	4.00	Cab door panels and hangers/hinges, Cab door cpl. Inside	Each	$ 10'105	$ 40'421
3.58	4.00	End door panels and hangers/hinges, Sliding door cpl. Inside	Each	$ 8'421	$ 33'684
3.59	7.00	Cab door roller shade	Each	$ 421	$ 2'947
3.60	4.00	Operator's Seat	Each	$ 2'442	$ 9'768
3.61	5.00	Operator's footrest	Each	$ 5'558	$ 27'789
3.62	3.00	Cab auxiliary seat	Each	$ 1'347	$ 4'042
3.63	5.00	Windscreens	Each	$ 13'474	$ 67'368
3.64	1.75	Advertising card and system map frames	Trainset	$ 15'495	$ 27'116
3.65	5.00	Fire extinguishers	Each	$ 303	$ 1'516
3.66	7.00	Smoke detectors	Each	$ 1'263	$ 8'842
3.67	8.00	Prybar	Each	$ 51	$ 404
3.68	9.00	Emergency Tools	Each	$ 589	$ 5'305
3.69	6.00	Climbing steps to upper deck/under deck	Each	$ 11'102	$ 66'614
3.70	1.75	Grab handles	Trainset	$ 25'263	$ 44'211
3.71	1.50	Equipment covers, exterior and interior, each type	Trainset	$ 487'687	$ 731'530
3.72	0.75	Insulation	Trainset	$ 151'579	$ 113'684
3.73	0.75	Any special adhesive, tape, caulking, etc	Trainset	$ 3'368	$ 2'526
3.74	1.75	Misc Door hardware (air grills, hinges, etc…)	Trainset	$ 33'684	$ 58'947
3.75	1.5	CEM components, not existing	Trainset	$ -	$ -
3.76	0.75	Lifting lugs, not existing	Trainset	$ -	$ -
		Trucks and Suspensions (TS, Section 4)			
4.01	0.5	Trucks complete ready to install under car	Trainset	$ 4'042'105	$ 2'021'053
4.02	0.5	Truck frames	Trainset	$ 1'010'526	$ 505'263
4.03	0.5	Primary suspension assemblies	Trainset	$ 32'202	$ 16'101
4.04	0.5	Secondary suspension assemblies	Trainset	$ 26'105	$ 13'053
4.05	1.5	Wheel and axle sets, with gear box, half coupling and journal bearings, not existing	Trainset	$ -	$ -
	1.5	Motor wheel set with gear box, brake disc and bearings	Trainset	$ 1'482'105	$ 2'223'158

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
	1.5	Trailer wheel set with brake disc and bearings	Trainset	$ 485'053	$ 727'579
4.06	0.5	Truck axles (machined)	Trainset	$ 107'789	$ 53'895
4.07	2.25	Load weight transducer assemblies, complete, Air spring system Motor/Trailer bogie	Trainset	$ 66'695	$ 150'063
4.08	1.75	Air Spring leveling valves	Trainset	$ 5'659	$ 9'903
4.09	1.75	Shock absorbers, all	Trainset	$ 20'211	$ 35'368
4.10	1.75	Shock insulating material (elastomeric suspension material)	Trainset	$ 6'063	$ 10'611
4.11	2.25	Bearings	Trainset	$ 745'122	$ 1'676'524
4.12	2.25	Journal boxes	Trainset	$ 36'783	$ 82'762
4.13	2.25	Springs	Trainset	$ 11'453	$ 25'768
4.14	2.25	Leveling valves	Trainset	$ 16'168	$ 36'379
4.15	26.00	Wheels	Each	$ 2'122	$ 55'175
4.16	8.00	Hub to tire shunts, not existing	Each	$ -	$ -
4.17	2.50	Resilient wheel elastomeric elements, not existing	Trainset	$ -	$ -
		Couplers, Drawbars and Draft Gear (TS, Section 5)			
5.01	0.5	Coupler complete, Front coupler	Trainset	$ 231'579	$ 115'789
5.02	1.00	Draft gear assemblies, could not be identified	Trainset	$ -	$ -
5.03	2.25	Automatic release energy absorption devices, complete, not existing	Trainset	$ -	$ -
5.04	0.50	Yokes, Deformation hose	Trainset	$ 1'684	$ 842
5.05	1.25	Yoke pins, Guide horn	Trainset	$ -	$ -
5.06	0.50	Centering devices, frontcoupler	Trainset	$ 1'684	$ 842
5.07	0.50	Radial drawbar carrier assemblies, not existing	Trainset	$ -	$ -
5.08	1.00	Mechanical coupler head assemblies, need clarification	Trainset	$ -	$ -
5.09	0.50	Mechanical coupler heads, shock protection	Trainset	$ 5'053	$ 2'526
5.10	2.00	Electrical coupler assemblies, complete, need clarification	Trainset	$ -	$ -
5.11	2.50	Electrical coupler contacts	Trainset	$ 9'263	$ 23'158
5.12	1.00	Electrical connection assemblies, Handdosensatz	Trainset	$ 1'684	$ 1'684
5.13	1.50	Pneumatic coupler assemblies, short coupler half	Trainset	$ 160'000	$ 240'000

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
5.14	1.00	Coupling and isolation relays and switches,	Trainset	$ 842	$ 842
5.15	2.00	Drawbar stops elastomeric stop cushions with integral wear plates, not existing	Trainset	$ -	$ -
5.16	1.00	Electric contact insulation block,	Trainset	$ 3'368	$ 3'368
5.17	1.00	Electrical head covers,	Trainset	$ 11'284	$ 11'284
5.18	2.00	Electrical head cover gaskets, Covering hood	Trainset	$ 20'211	$ 40'421
5.19	1.50	Pneumatic hoses	Trainset	$ 4'211	$ 6'316
5.20	1.00	Non cab end intercar jumper assemblies, Revisionkit coupler	Trainset	$ 10'105	$ 10'105
5.21	1.00	Coupler Adapter	Trainset	$ 18'526	$ 18'526
5.22	1.00	Drum switch, need clarification	Trainset	$ -	$ -
5.23	1.00	Non cab end drawbar assembly, not existing	Trainset	$ -	$ -
		Cab Layout and Vehicle Controls (TS, Section 6)			
6.01	2.0	Operator consoles, complete with switches, displays, lights, etc. and including Train Operator's displays	Each	$ 53'895	$ 107'789
6.02	5.00	Train Operator's display, Diagnostic display	Each	$ 10'105	$ 50'526
6.03	4.00	Master Controller Group, complete	Each	$ 13'979	$ 55'916
6.04	4.0	Pneumatic Brake Handle	Each	$ 13'979	$ 55'916
6.05	8.0	Coat hooks	Each	$ 25	$ 202
6.06	5.00	Cab air diffusers	Each	$ 842	$ 4'211
6.07	4.0	Visors	Each	$ 926	$ 3'705
6.08	2.00	Cab lights, all types	Trainset	$ 8'421	$ 16'842
6.09	5.00	Emergency kit	Each	$ 202	$ 1'011
6.10	3.00	Refrigerator	Each	$ 2'021	$ 6'063
6.11	4.0	Waste receptacle	Each	$ 5'558	$ 22'232
6.12	4.00	Alerter, complete	Each	$ 17'684	$ 70'737
6.13	7.00	Speedometer	Each	$ 15'158	$ 106'105
6.14	2.00	Cab switches, pushbuttons, controls, meters, gauges, indicators, lamps, LEDs, lenses, audible alarms	Trainset	$ 53'895	$ 107'789
6.15	5.00	Odometer	Each	$ 421	$ 2'105

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
6.16	0.5	Printed Circuit Boards, all types, not posssible - only electrical equipment units installed (black box)	Trainset	$ -	$ -
		Trainlines and Networks (TS, Section 7)			
7.01	4.00	Train network controllers, complete	Each	$ 320'000	$ 1'280'000
7.02	4.00	Car network controllers (if separate assembly), not existing	Each	$ -	$ -
7.03	0.5	Printed Circuit Boards, all types, only electrical equipment units installed (black box)	Trainset	$ -	$ -
7.04	1.00	Network switches	Trainset	$ 20'211	$ 20'211
7.05	1.00	Network routers	Trainset	$ 7'411	$ 7'411
7.06	1.00	Network gateways	Trainset	$ 9'432	$ 9'432
7.07	4.00	Passenger wifi radio	Each	$ 5'895	$ 23'579
7.08	4.00	Passenger wifi- access points	Each	$ 1'684	$ 6'737
7.09	3.00	Passenger wifi WIMAX antenna	Each	$ 842	$ 2'526
		Monitoring, Diagnostics and Event Recorder (TS, Section 8)			
8.01	5.00	Monitoring and diagnostic logic (CDS) not yet defined	Each	$ -	$ -
8.02	4.00	Event recorder assemblies, complete not yet defined	Each	$ -	$ -
8.03	0.5	Printed circuit boards, all types, only electrical equipment units installed (black box)	Trainset	$ -	$ -
		Primary and Auxiliary Electric System (TS, Section 9)			
9.01	4.00	Pantograph Assembly, complete	Each	$ 12'665	$ 50'661
9.02	7.00	Pantograph collector head	Each	$ 5'726	$ 40'084
9.03	40.00	Pantograph carbon strips	Each	$ 421	$ 16'842
9.04	2.00	Pantograph roof insulators	Trainset	$ 40'421	$ 80'842
9.05	3.00	Pantograph air hoses (if pneumatic)	Trainset	$ 1'347	$ 4'042
9.06	5.00	Pantograph/VCB auxiliary air compressor	Each	$ 7'074	$ 35'368
9.07	2.00	Surge arrestor	Trainset	$ 10'442	$ 20'884
9.08	5.00	VCB, Vacum Circuit Breaker	Each	$ 18'526	$ 92'632
9.09	5.00	Grounding switch	Each	$ 18'526	$ 92'632
9.10	1.50	Roof Bushings	Trainset	$ 57'528	$ 86'291
9.11	6.0	25kV intercar jumper assembly	Each	$ 4'379	$ 26'274

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
9.12	6.0	25kV primary cable assembly (complete)	Each	$ 5'389	$ 32'337
9.13	7.00	Primary current transducer (if not part of HT cable assembly)	Each	$ 2'274	$ 15'916
9.14	9.00	Primary line voltage transducer	Each	$ 19'368	$ 174'316
9.15	16.00	Ground brush assemblies, complete	Each	$ 606	$ 9'701
9.16	25.00	Ground brushes. Only as assembly available	Each	$ 505	$ 12'632
9.17	25.00	Ground brush springs	Each	$ 34	$ 842
9.18	25.00	Ground brush contact rings or plates	Each	$ 674	$ 16'842
9.19	4.0	Auxiliary power supply unit (complete), Auxiliary module	Each	$ 30'316	$ 121'263
9.20	2.00	APS converter power semiconductor heatsink assemblies,2-phase module	Each	$ 32'337	$ 64'674
9.21	2.00	APS inverter power semiconductor heatsink assemblies, 3-phase module	Each	$ 41'263	$ 82'526
9.22	5.00	Inverter/Converter control logic assemblies, Main control unit	Each	$ 20'211	$ 101'053
9.23	4.0	Low Voltage Power Supply unit	Each	$ 2'122	$ 8'488
9.24	2.00	LVPS power semiconductor heatsink assemblies, Line Input module	Each	$ 25'263	$ 50'526
9.25	5.00	LVPS control logic assemblies, Pre charge module	Each	$ 4'211	$ 21'053
9.26	0.5	Printed Circuit Boards, all types, only electrical equipment units installed (black box)	Trainset	$ -	$ -
9.27	1.50	Input filters with charging apparatus, all type	Trainset	$ 47'158	$ 70'737
9.28	10.00	APS cooling fans, not existing	Each	$ -	$ -
9.29	40.00	Air filters, not existing	Each	$ -	$ -
9.30	2.00	Auxiliary contactors	Trainset	$ 64'000	$ 128'000
9.31	14.00	480V Circuit Breakers	Each	$ 842	$ 11'789
9.32	1.00	110V Convenience Outlets	Trainset	$ 2'526	$ 2'526
9.33	4.00	Battery box assemblies including sliding trays	Each	$ 8'421	$ 33'684
9.34	8.0	Battery sets, complete	Each	$ 16'000	$ 128'000
9.35	8.0	Battery over temperature assembles	Each	$ 337	$ 2'695
9.36	8.0	Battery water filling system valves	Each	$ 168	$ 1'347

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
9.37	8.0	Battery water filling system hoses	Each	$ 253	$ 2'021
9.38	12.0	Battery Circuit Breaker	Each	$ 227	$ 2'728
9.39	8.00	Shop power connector	Each	$ 707	$ 5'659
9.40	7.00	Circuit breaker panels	Each	$ 472	$ 3'301
9.41	50.00	Main fuses	Each	$ 25	$ 1'263
9.42	50.00	Auxiliary fuses	Each	$ 20	$ 1'011
9.43	2.00	Control relays	Trainset	$ 102'956	$ 205'912
		Propulsion System (TS, Section 10)			
10.01	2.0	Propulsion equipment, complete	Each	$ 673'684	$ 1'347'368
10.02	4.0	Vehicle Control Unit	Each	$ 138'947	$ 555'789
10.03	4.0	Traction Control Unit (if separate), Drive and Brake unit	Each	$ 10'442	$ 41'768
10.04	5.00	Inverter and converter electronic control unit (if separate), not existing	Each	$ -	$ -
10.05	2.00	Propulsion inverter heatsink assemblies, complete, Cooling Unit	Each	$ 5'895	$ 11'789
10.06	2.00	Propulsion converter heatsink assemblies, complete (if separate), Axial-/Radial ventilation	Each	$ 9'263	$ 18'526
10.07	2.00	Rheostatic chopper heatsink assembly (if separate), not existing	Each	$ -	$ -
10.08	1.50	Power semiconductors, only electrical equipment units installed (black box)	Trainset	$ -	$ -
10.09	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -
10.10	4.00	Propulsion heat exchanger (if water cooled), Converter cooling water pump	Each	$ 2'865	$ 11'459
10.11	2.00	Main transformer complete	Each	$ 202'105	$ 404'211
10.12	4.0	Transformer oil pump with motor	Each	$ 12'632	$ 50'526
10.13	2.00	Transformer heat exchanger	Each	$ 4'211	$ 8'421
10.14	7.00	Transformer cooling fan	Each	$ 3'874	$ 27'116
10.15	2.00	Line isolation and charging contactors	Trainset	$ 40'421	$ 80'842
10.16	1.00	Arc chute assemblies, not existing as assembly	Trainset	$ -	$ -

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
10.17	2.50	Contact tips, all, need clarification	Trainset	$ -	$ -
10.18	4.00	Short Circuit switch, not existing	Each	$ -	$ -
10.19	3.00	Filter capacitors, part of the converter modules not availabel (black box)	Each	$ -	$ -
10.20	2.00	Filter Inductors, part of the converter modules not availabel (black box)	Each	$ -	$ -
10.21	9.00	Propulsion cooling fans	Each	$ 15'158	$ 136'421
10.22	3.00	Braking resistor complete	Each	$ 10'105	$ 30'316
10.23	1.75	Control relays, not existing	Trainset	$ -	$ -
10.24	7.00	Traction motor complete with coupling half installed	Each	$ 42'105	$ 294'737
10.25	4.00	Traction motor electrical disconnects, not existing	Each	$ -	$ -
10.26	7.00	Flexible coupling assemblies, complete, not existing	Each	$ -	$ -
10.27	7.00	Gear unit, complete with coupling half	Each	$ 42'105	$ 294'737
10.28	2.50	Propulsion speed sensors with associated cables and connectors	Trainset	$ 31'326	$ 78'316
		Friction Brake System (TS, Section 11)			
11.01	5.00	Friction brake electronic control (BCU) each, processor unit	Each	$ 6'077	$ 30'383
11.02	5.00	Pneumatic Control Unit (PCU), need clarification	Each	$ -	$ -
11.03	1.50	Friction brake speed sensors with associated cables and connectors. not existing	Trainset	$ -	$ -
11.04	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -
11.05	9.00	Disc brake units,	Each	$ 5'895	$ 53'053
11.06	9.00	Disc brake unit with parking brake	Each	$ 7'579	$ 68'211
11.07	9.00	Brake pads	Each	$ 185	$ 1'667
11.08	9.00	Brake discs, Wheel brake disc	Each	$ 2'526	$ 22'737
11.09	7.00	Track brake assembly complete, Magnetic Track Brake	Each	$ 14'821	$ 103'747
11.10	2.00	Sand Box	Each	$ 5'895	$ 11'789
11.11	4.00	Sand distribution nozzles	Each	$ 926	$ 3'705
11.12	4.00	Pneumatic brake operating manifold, complete	Each	$ 26'358	$ 105'432

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
11.13	5.00	Emergency Brake Valves	Each	$ 4'042	$ 20'211
11.14	1.50	All normally controlled valves and cocks for brake system, to be defined during engineering phase	Trainset	$ -	$ -
11.15	1.25	All brake system magnet valves and pressure switches, to be defined during engineering phase	Trainset	$ -	$ -
11.16	1.00	Parking brake equipment, complete (equipment which is independent of service friction brake equipment), to be defined during engineering phase	Trainset	$ -	$ -
11.17	7.00	Air compressor unit assemblies	Each	$ 75'789	$ 530'526
11.18	5.00	Compressor control assemblies	Each	$ 32'000	$ 160'000
11.19	5.00	Compressor motor assemblies	Each	$ 13'474	$ 67'368
11.20	25.00	Air compressor oil filters, if used	Each	$ 101	$ 2'526
11.21	5.00	Air dryer assemblies	Each	$ 10'105	$ 50'526
11.22	7.00	Automatic drain valve assemblies	Each	$ 143	$ 1'002
11.23	6.00	Drain valve heater assemblies	Each	$ 40	$ 243
11.24	30.00	Intake filter assemblies	Each	$ 463	$ 13'895
11.25	2.00	Control relays, all types, to be defined during engineering phase	Trainset	$ -	$ -
Side Doors and Door Control System (TS, Section 12)					
12.01	2.00	Door operator assemblies, Door drive	Trainset	$ 404'211	$ 808'421
12.02	0.50	Door panel assemblies	Trainset	$ 145'516	$ 72'758
12.03	2.00	Door panel weather seals	Trainset	$ 32'337	$ 64'674
12.04	0.50	Door hangers, tracks and mounting	Trainset	$ 294'737	$ 147'368
12.05	2.00	Limit switches or sensors	Trainset	$ 26'105	$ 52'211
12.06	2.00	Door operator electric motors	Trainset	$ 43'789	$ 87'579
12.07	1.00	Door controller electronic units	Trainset	$ 114'526	$ 114'526
12.08	1.00	Door control station assembly, Door controller	Trainset	$ 105'095	$ 105'095
12.09	1.00	Door control station pushbuttons, buzzers and indicators	Trainset	$ 32'337	$ 32'337
12.10	3.00	Crew key switches	Trainset	$ 16'842	$ 50'526
12.11	0.5	Printed circuit boards or modules, all types, only electrical equipment units installed (black box)	Trainset	$ -	$ -

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
12.12	1.00	Manual releases	Trainset	$ 25'263	$ 25'263
12.13	1.00	Manual locks and cutout switches	Trainset	$ 28'295	$ 28'295
12.14	1.25	Visual and audible warning signal assemblies, to be defined during engineering phase	Trainset	$ -	$ -
12.15	1.50	Control relays, to be defined during engineering phase	Trainset	$ -	$ -
12.16	1.50	Guard lights, complete, to be defined during engineering phase	Trainset	$ -	$ -
12.17	1.50	Fault lights, to be defined during engineering phase	Trainset	$ -	$ -
12.18	1.50	Electric motor brushes, if used, not existing	Trainset	$ -	$ -
12.19	1.00	Circuit breakers, bypass switches and annunciators not provided as part of the Door Operator Control Panel, to be defined during engineering phase	Trainset	$ -	$ -
12.20	9.00	Automatic passenger counter control unit	Each	$ 6'063	$ 54'568
12.21	1.0	APC sensors	Trainset	$ 64'674	$ 64'674
12.22	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -
		HVAC System (TS, Section 13)			
13.01	6.0	Air conditioning each, complete	Each	$ 67'368	$ 404'211
13.02	9.00	Motor blower assemblies	Each	$ 4'547	$ 40'926
13.03	4.00	Overhead heating assemblies, to be defined during engineering phase	Each	$ -	$ -
13.04	0.50	Floor heating assemblies	Trainset	$ 1'830'400	$ 915'200
13.05	4.00	Cab heating assemblies	Each	$ 5'053	$ 20'211
13.06	4.00	Evaporator coil assemblies, not existing	Each	$ -	$ -
13.07	4.00	Evaporator drain assemblies, not existing	Each	$ -	$ -
13.08	5.00	Refrigerant compressors not existing	Each	$ -	$ -
13.09	3.00	Condenser coil assemblies, not existing	Each	$ -	$ -
13.10	5.00	Condenser fan assemblies, not existing	Each	$ -	$ -
13.11	5.00	Overhead heat control (modulating) devices), not existing	Each	$ -	$ -
13.12	5.00	HVAC controller	Each	$ 3'032	$ 15'158

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
13.13	1.00	Temperature sensor assemblies	Trainset	$ 1'684	$ 1'684
13.14	2.00	Temperature control relays, all	Trainset	$ 1'347	$ 2'695
13.15	2.00	Heating/ventilation contactors, all included in 9.30	Trainset	$ -	$ -
13.16	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -
13.17	0.50	Transition ducts, needs clarification	Trainset	$ -	$ -
13.18	0.50	Passenger compartment air diffusers, not existing	Trainset	$ -	$ -
13.19	2.00	Cab air diffuser	Each	$ 51	$ 101
13.20	3.00	Water eliminators	Each	$ 168	$ 505
13.21	12.00	Air filters	Trainset	$ 13'474	$ 161'684
13.22	1.00	Evaporator solenoid valves	Trainset	$ 2'526	$ 2'526
13.23	1.00	Evaporator expansion valves	Trainset	$ 2'526	$ 2'526
13.24	0.50	Filter-drier assemblies	Trainset	$ 3'368	$ 1'684
13.25	0.50	Vibration eliminators	Trainset	$ 5'053	$ 2'526
13.26	9.00	Pressure relief devices	Each	$ 505	$ 4'547
13.27	0.50	Refrigerant tubing	Trainset	$ 9'263	$ 4'632
13.28	1.00	Low, high and modulating pressure switches, if used	Trainset	$ 135	$ 135
13.29	0.50	Schrader valve fittings, if used	Trainset	$ 118	$ 59
13.30	1.00	Thermistors and comparator sensors, all	Trainset	$ 2'526	$ 2'526
13.31	1.00	Air flow switches, all	Trainset	$ 13'474	$ 13'474
13.32	1.00	All refrigerant valves and solenoids	Trainset	$ 10'105	$ 10'105
13.33	1.00	Service valve caps, not existing	Trainset	$ -	$ -
13.34	1.00	Air Filtration System, is part of the HVAC	Trainset	$ -	$ -
13.35	5.00	Fresh air intake damper motor, not existing	Each	$ 421	$ 2'105
13.36	2.00	Refrigerant, needs clarification	Trainset	$ 2'526	$ 5'053
Passenger Information and Communications System (TS, Section 14)					
14.01	6.0	Communication Control Units (CCUs)	Each	$ 20'884	$ 125'305
14.02	6.0	Audio control head console complete	Each	$ 10'442	$ 62'653
14.03	6.0	Cab PA/IC microphone assemblies	Each	$ 2'021	$ 12'126
14.04	6.0	Passenger emergency intercom station, complete	Each	$ 2'021	$ 12'126
14.05	6.0	Conductors PA/IC control station, complete	Each	$ 8'421	$ 50'526

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
14.06	4.0	Power amplifiers and preamplifiers	Each	$ 3'200	$ 12'800
14.07	1.50	Speakers interior and exterior	Trainset	$ 16'842	$ 25'263
14.08	5.00	Train-on-board radio	Each	$ 5'389	$ 26'947
14.09	5.00	Radio microphone	Each	$ 842	$ 4'211
14.10	5.00	Radio speaker	Each	$ 421	$ 2'105
14.11	1.00	Interior Information displays	Trainset	$ 161'684	$ 161'684
14.12	1.00	Exterior Destination Signs	Trainset	$ 111'158	$ 111'158
14.13	1.00	Train number signs	Trainset	$ 23'579	$ 23'579
14.14	1.00	Front view cameras	Trainset	$ 3'368	$ 3'368
14.15	1.00	Rear view cameras	Trainset	$ 10'105	$ 10'105
14.16	1.00	CCTV Cameras (all types)	Trainset	$ 47'158	$ 47'158
14.17	1.00	CCTV Controller	Trainset	$ 20'211	$ 20'211
14.18	5.00	Network video recorder	Each	$ 6'063	$ 30'316
14.19	3.00	NVR non volatile memory storage unit	Trainset	$ 25'263	$ 75'789
14.20	0.50	Wifi modem	Trainset	$ 20'211	$ 10'105
14.21	0.50	All antennas (Wifi, GPS, Cellular, Voice)	Trainset	$ 8'421	$ 4'211
14.22	1.50	Network switches	Trainset	$ 20'211	$ 30'316
14.23	1.50	Network routers	Trainset	$ 7'242	$ 10'863
14.24	1.50	Trainline encoders/decoders, not existing	Trainset	$ -	$ -
14.25	1.50	AAS pushbuttons, buzzers and indicators	Trainset	$ 25'263	$ 37'895
14.26	1.00	Power supplies	Trainset	$ 3'368	$ 3'368
14.27	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -
		Lighting System (TS, Section 15)			
15.01	1.00	Main interior lighting fixtures, complete, Ceiling system with lights	Trainset	$ 336'842	$ 336'842
15.02	2.00	Lenses for all interior/exterior lights and indicators	Trainset	$ 20'211	$ 40'421
15.03	1.00	LED power supply/driver module	Trainset	$ 25'263	$ 25'263
15.04	1.00	LED board only electrical equipment units installed (black box)	Trainset	$ -	$ -

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
15.05	1.00	Emergency lights independent power source, not existing	Trainset	$ -	$ -
15.06	1.00	Cab console light fixtures	Trainset	$ 1'011	$ 1'011
15.07	1.00	Light Assemblies (headlight, auxiliary, marker, platform, exterior)	Trainset	$ 42'105	$ 42'105
15.08	0.5	Printed Circuit Boards, all types only electrical equipment units installed (black box)	Trainset	$ -	$ -

Seq. #	Qty	Item	Unit*		Amount ($)
[1]	[2]	[3]	[4]		[6] = [2] x [5]
Positive Train Control System (TS, Section 17)					
17.01	4.0	On Board Computer	Each	$ 72'120	$ 288'480
17.02	4.0	Database and directives server	Each	$ 56'400	$ 225'600
17.03	4.0	Communications management unit	Each	$ 44'400	$ 177'600
17.04	1.00	Central display units	Trainset	$ 45'360	$ 45'360
17.05	1.00	Power supplies	Trainset	$ -	$ -
17.06	1.00	Speed sensors	Trainset	$ -	$ -
17.07	5.00	Transponder interrogator	Each	$ 11'340	$ 56'700
17.08	5.00	Check transponder	Each	$ 11'340	$ 56'700
17.09	5.00	GPS receiver	Each	$ -	$ -
17.10	0.50	GPS Antenna	Trainset	$ 3'240	$ 1'620
17.11	2.0	Data radio	Each	$ 19'320	$ 38'640
17.12	3.0	PTC Modem	Each	$ 840	$ 2'520
17.13	1.00	Cellular antenna,	Trainset	$ -	$ -
17.14	1.00	220MHz Antenna	Trainset	$ -	$ -
17.15	4.00	On board printer	Each	$ 1'920	$ 7'680
17.16	0.5	Printed Circuit Boards, all types	Trainset	$ 113'400	$ 56'700
		TOTAL (enter on Line 2 on sheet "EMU Support")		**$**	**27'405'610**

*Where the "Unit" column references "Trainset", the quantity and composition of the spare parts will be determined when the

Special Tools					
Seq. #	Qty/Trainset	Item	Unit	Unit Price ($)	
[1]	[2]	[3]	[4]	[5]	
Carbody and Interior Design(TS, Section 3)					
3.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS3.	Trainset	18620	$ 18'620
Trucks and Suspensions (TS, Section 4)					
4.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS4	Trainset	44800	$ 44'800
Couplers, Drawbars and Draft Gear (TS, Section 5)					
5.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS5	Trainset	38500	$ 38'500
Cab Layout and Vehicle Controls (TS, Section 6)					
6.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS6	Trainset	560	$ 560
Trainlines and Networks (TS, Section 7)					
7.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS7	Trainset	n.a.	n.a.
Monitoring, Diagnostics and Event Recorder (TS, Section 8)					
8.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS8	Trainset	n.a.	n.a.
Primary and Auxiliary Electric System (TS, Section 9)					
9.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS9	Trainset	n.a.	n.a.
Propulsion System (TS, Section 10)					

10.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS10	Trainset	n.a.	**n.a.**
Friction Brake System (TS, Section 11)					
11.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS11	Trainset	26600	**$ 26'600**
Side Doors and Door Control System (TS, Section 12)					
12.1	2	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS12	Trainset	9100	**$ 18'200**
HVAC System (TS, Section 13)					
13.1	2	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS13	Trainset	22400	**$ 44'800**
Passenger Information and Communications System (TS, Section 14)					
14.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS14	Trainset	n.a.	**n.a.**
Lighting System (TS, Section 15)					
15.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS15	Trainset	n.a.	**n.a.**
Positive Train Control System (TS, Section 17)					
17.1	1	If applicable, all special tools, gauges, templates necessary to maintain, replace, disassemble, assemble and inspect systems, parts or components identified in TS17	Trainset	n.a.	**n.a.**
				TOTAL (enter on Line 3 on sheet "EMU Support")	**$ 192'080**

Test Equipment					
Seq. #	**Quantity**	**Item**	**Unit**	**Unit Price ($)**	
[1]	**[2]**	**[3]**	**[4]**	**[5]**	
Test Program (TS, Section 19)					
19.1	1	Instrumentation set consisting of dedicated instruments, gauges and instrumentation assemblies to perform every test specified in TS 19 and other technical specification sections	Set	50'000	**$ 50'000**
In Service Support (TS, Section 23)					
23.1	1	Portable Test Unit set consisting of 20 units	Set	300'000	**$ 300'000**
23.2	1	Bench Test Equipment set consisting of one BTE per system (incl in 23.1)	Set	incl	**incl**
23.3	1	Data Workstation set (e.g. MDS/CCTV/APC/SLDT/AAS) consisting of one workstation assembly	Set	100'000	**$ 100'000**
23.4	1	Technical Library Documentation set consisting of one workstation assembly	Set	78'780	**$ 78'780**
23.5	1	System Level Dynamic Tester (SLDT) set consisting of one SLDT assembly	Set	75'000	**$ 75'000**
23.6	1	Set of data analytical tools (e.g. Network traffic and data analysis equipment, Event Recorder data analysis tool, NVR hard disk interface adapter, Track transponder Code generator, etc) necessary to analyze the data identified in relevant technical specification sections.	Set	incl	**incl**
23.7	1	Set of gauges and special tools and test and inspection equipment to support the training program.	Set	incl	**incl**
23.8	1	Set of Automatic Part and Device Identification Equipment (20 scanners and 4 printers)	Set	200'000	**$ 200'000**
				TOTAL (enter on Line 4 on sheet "EMU Support")	**$ 803'780**

Mock-Ups				
Line #	**Qty**	**Description**	**Unit**	**Amount ($)**
1	1	Public Mock-ups, complete	Lump Sum	incl
2	1	Production Mock-up, complete	Lump Sum	incl
3		**TOTAL** (enter on Line 5 on sheet "EMU Support")		**$ 8'230'000**

Extra Work Hourly Rates				
Line #	**Description**	**Units (hrs)**	**Hourly Rate ($)**	**Total ($)**
[1]	**[2]**	**[3]**	**[4]**	**[5]=[3]x[4]**
1	Engineering Labor	1000	$ 160.00	$ 160'000
2	Shop Labor	1000	$ 80.00	$ 80'000
3	**TOTAL** (enter on Line 7 on sheet "EMU Support")			$ 240'000

Line #	Option Cars (96 EMUs)					
	Qty*	Car Type	Car Type**	Unit		Subtotal ($)
	[1]	[2]	Note	[3]		[5] = [1]x[4]
1	8	Car "B"	Cab Car B motorized	Each	$ 6'577'000	$ 52'616'000
2	17	Car "C" and Car "F"	Bicycle car	Each	$ 3'386'000	$ 57'562'000
3	8	Car "D"	Passenger Car motorized	Each	$ 5'231'000	$ 41'848'000
4	8	Car "E"	Bathroom Car motorized	Each	$ 5'437'000	$ 43'496'000
5	47	Car "H"	Passenger Car non-motorized	Each	$ 3'560'000	$ 167'320'000
6	8	Car "A"	Cab Car A motorized	Each	$ 6'362'000	$ 50'896'000
7	96	**Option Cars TOTAL** (enter on Line 2 on sheet "PEF")				$ 413'738'000

* For price evaluation purposes, the 96 option cars are to include 16 cab cars, 17 cars with bikes, 8 cars with bathrooms, and

** Enter the 'generic' car type (i.e. Cab or Coach) of the car with the bathroom in the Car Type column

Option 1: No price adjustment on above prices !

Option 2: Prices are subject to the adjustment set forth in Section 1.10.1.2

Additionally the following "one off" cost for re-mobilization and project managment will apply for the 1st order of Option 2 cars

$	5'300'000

Bathroom Detailed Price				
Bathrooms	**Material**	**Labor**	**Quantity**	**Total***
Bathroom (1 per Trainset)	$ 125'000	$ 21'000	16	$ 2'336'000
Interior Lift (if necessary) - 12 per Trainset, 16 total	$ 52'000	$ 11'000	192	$ 12'096'000
			Subtotal	**$ 14'432'000**

Other	**Total***
Engineering	$ -
Bathroom	$ 436'000
Interior Lift	$ 1'069'000
	$ -
	$ -
	$ -
Testing	incl. in Labor
Other	n.a.
Other Costs, Sub-Total	$ 1'505'000
TOTAL (enter on line Bathroom on sheet "Base Bid")	**$ 15'937'000**

Notes

* The above costs are to be all-inclusive with OH & Profit

** List the subcontractor; add more lines if more than one.

High Level Doors Detailed Price				
Item	**Material**	**Labor**	**Total***	
Door operators/controls - 4 per car	$ 82'000	$ 61'000	$ 143'000	
Door panels - 4 per car	incl	incl	incl	
Thresholds, frames - 4 per car	$ 21'000	incl	$ 21'000	
Retractable step	$ 47'000	incl	$ 47'000	[list other items, as may be required]
			$ -	
			$ -	
			$ -	
		Subtotal	**$ 211'000**	
Other		**Labor**	**Total***	
Engineering***		703000	$ 703'000	
Subcontract, *{firm name}***		n.a.	n.a.	
			$ -	[list other items, as may be required]
			$ -	
			$ -	
			$ -	
Testing		incl. in Labor	incl. in Labor	
Other		n.a.	n.a.	
		Other Costs, Sub-Total	$ 703'000	
		TOTAL (enter on line High Level Doors on sheet "Base Bid"	**$ 914'000**	

* Above costs are to be all-inclusive with OH & profit.

** List the subcontractor; add more lines if more than one.

*** It is very difficult to segregate Engineering cost / effort for the 4 doors only, as the additional 4 doors have an impact on many areas ot the design of EMU`s (arrangement of traction system, door drive system, retractable step, design of body, etc.)

From:	White, Dustin
To:	Board (@caltrain.com)
Subject:	Caltrain Quiet Zone Application
Date:	Wednesday, January 6, 2021 9:33:32 AM
Attachments:	image001.png image005.png

Dear Caltrain Board Members,

In response to a public request, I am investigating the creation of a Quiet Zone covering the following two Caltrain crossings in San Francisco:

- 754749Y (16th Street)
- 922712X (Mission Bay Blvd)

I am hoping you can connect me to the appropriate staff at Caltrain who can assist with gathering information to support the application (e.g. collision history, details of existing supplemental safety measures at these crossings).

Many Thanks,

Dustin White
Senior Transportation Planner
SFMTA
415.646.2353
SFMTA.com