



**Richmond Metropolitan Transportation
Authority (RMTA)**

All Electronic Tolling ITS & Civil Elements

ADDENDUM-03

Revised Ancillary Equipment Lists

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1 Summary of Changes (original ITB pages referenced):

- A. Invitation to Bid (IB-4) – Ancillary Equipment list changes:
 - a. Gantry Area Ancillary Equipment - list revised
 - b. Roadside Cabinets Ancillary Equipment - list revised
 - c. Shelter Ancillary Equipment - list revised
 - d. Additional Services Estimated Equipment – no major changes

2 Revised sheets

ROADSIDE CABINETS ESTIMATED ANCILLARY EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Disconnect Switch, 240VAC, 30 Amp, Fused, VH221NDSGL	Schneider Electric	4	EA
2	5 1/2" (3RU) Black Rack Panel, 102-1824	Rack Solutions	2	EA
3	#6 AWG THHN, Black Insulation,	NNC	50	LF
4	#6 AWG THHN, White Insulation,	NNC	50	LF
5	#6 AWG THHN, Green Insulation,	NNC	50	LF
6	#8 AWG THHN, BLACK Insulation	NNC	50	LF
7	#8 AWG THHN, WHITE Insulation	NNC	50	LF
8	#8 AWG THHN, GREEN Insulation	NNC	50	LF
9	Dist Block, 3-P, 175Amp, 4 output per pole, Input @2-14, Output #4 -14AWG	Marathon 1423970	2	EA
10	Dist Block, 1-P, 175Amp, 4 output per pole, Input @2-14, Output #4 -14AWG	Marathon 1421970	2	EA
11	Surge Suppressor Panel Guard, IG3240RC3	Intermatic	2	EA
12	3/4" PVC Sched 80 Conduit, 10 Foot Length	Cantex	2	EA
13	3/4" PVC Sched 80 Conduit 90 Degree Elbow	Cantex	2	EA
14	#2 AWG Bare Tinned Copper Wire, Concentric 36-7561-01 250FT Reel	Thermoweld	30	LF
15	30AMP Type H Fuses for VH221NDSGL Disconnect Switch (2 Pk)	Essential Electric	5	EA
16	Cabinet Ground Bar Kit, Sq D PK18GTACP	Schneider Electric	2	EA
17	Anchor "J" Bolts, 3/4"-10 x 18" Length, Galvanized, w/Nut & Washer 21Y477	Grainger	20	EA
18	Pickup, transport, off-load and set/install both roadside cabinets (one NB and one SB) to the designated site beside the gantry pad on the Cabinet PAD. Set cabinet on Contractor installed "J" anchor bolts (priced above) and secure in place. Cabinet shall be completely level and all MFGR instructions for installation shall be followed. Cabinet anchors to be set when concrete is poured with cabinet base template.	Contractor	1	LS
19	Wire the HVAC to each cabinet per drawings which will included procurement of the parts and assembly of the panel with Marathon distribution blocks and the Intermatic SPD. This shall also include the installation of the fused disconnect switch on each cabinet and internal AC wiring for both HVAC units per the drawings.	Contractor	1	LS

GANTRY AREA ESTIMATED EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	#2 AWG BARE TINNED COPPER Wire, Concentric, 100FT Reel 36-7561-01	Thermoweld	4	EA
2	3/4" x 10 Ft Copper or Copper Clad Steel Ground Rods F4P GR-34X10C	City Elect Supply	12	EA
3	Exothermic Weld One Shots for connections to ground ring GT1181VPlus	nVent Erico	22	EA
4	#2 AWG XHHW, Black Insulation, SIMpull #112987	NNC	1000	LF
5	#2 AWG XHHW, White Insulation, SIMpull #218107	NNC	500	LF
6	#6AWG XHHW, Green Insulation, SIMpull, #553230	NNC	1500	LF
7	#1/0 AWG XHHW, Black Insulation, SIMpull, #113001	NNC	1500	LF
8	#8 AWG XHHW, Green Insulation, SIMpull, #952739	NNC	250	LF
9	Conduit, 3" Trade size, PVC Sched 80, 10Ft length AE53DA42	Cantex	60	EA
10	Conduit 3" - 90 degree Elbow PVC Sched 80	Cantex	24	EA
11	Conduit 3" - 45 degree elbow PVC Sched 80	Cantex	9	EA
12	Conduit 3" Female Adapter PVC Sched 80 to GRC	Elliot Electric	11	EA
13	Conduit 4" Trade size, PVC Sched 80 10 FT length A53EA42	Cantex	24	EA
14	Conduit 4" - 90 degree Elbow PVC Sched 80	Cantex	11	EA
15	Conduit 4" - 45 degree Elbow PVC Sched 80	Cantex	3	EA
16	Conduit 4" Female Adapter PVC Sched 80 to GRC	Cantex	6	EA
17	Conduit 2" Trade Size, PVC Coated Rigid Galvanized Steel	Calbond	4	LF
18	Conduit 2" - 90 degree Elbow PVC Sched 80	Cantex	5	EA
19	Conduit 2" - 45 degree Elbow PVC Sched 80	Cantex	1	EA
20	Conduit 2" Female Adapter PVC Sched 80 to GRC	Cantex	7	EA
21	Conduit 2" Trade Size, PVC Sched 80, 10 Ft Length A53CA12	Cantex	40	EA
22	Hand Hole 48"x48"x48", Polymer Concrete w/Cover, T22, PG4848BA48	Quazite	2	EA
23	Hand Hole 24"x36"x36", Polymer Concrete w/Cover, T22 PG2436BA36 JB-S3	Quazite	3	EA
24	Hand Hole 24"x36"x24", Polymer Concrete w/Cover, T22, PG2436BA24 JB-23	Quazite	8	EA
25	Hand Hole 13"x24"x24", Polymer Concrete w/Cover, T22, PG1324Z87612 JB-	Quazite	2	EA
26	Hand Hole 30"x48"x36", Polymer Concrete w/Cover, T22 PG3048BA36	Quazite	1	EA
27	AIR TERMINAL, 2" TAPER, 18" LENGTH, COPPER 38-7231-10	Thermoweld	10	EA
28	AIR TERMINAL ADHESIVE BASE, FOR 1/2 TERMINAL, 38-7242-21	Thermoweld	10	EA
29	M1 Structural Adhesive/Sealant 10.1 oz tube 38-7547-00	Thermoweld	4	EA
30	Stamped Adhesive Cable Clip, for full size cable, tinned, 38-7549-11 (100 min	Thermoweld	64	EA
31	Cable Gland, NYLON, MNPT 1/2", 0.39 to 0.55" cable, Gray 2HYA5	Grainger	6	EA
32	3/4" PVC Sched 80 Conduit, 10 Foot Length	Cantex	2	EA
33	3/4" PVC Sched 80 Conduit 90 Degree Elbow	Cantex	2	EA
34	1" Rigid Galvanized Steel Conduit, Threaded, 10ft length	Allied Tube & Conduit	22	EA
35	1' Rigid Galvanized Steel Conduit 90 degree elbows	Allied Tube & Conduit	2	EA
36	RACO 233 4Square box, 2 1/2" deep, 8-1" KO	Grainger	3	EA
37	1" Galvanized Conduit Sealing Lock Nut RACO 1204	Grainger	10	EA
38	#12 AWG Copper THHN, Black insulation,	NNC	250	LF
39	#12 AWG Copper THHN, White insulation,	NNC	250	LF
40	#12 AWG Copper THHN, Green insulation,	NNC	250	LF
41	Miscellaneous Hardware (Nuts, bolts, fasteners, stainless steel banding, clam	Various	1	LOT

SHELTER ESTIMATED ANCILLARY EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Cable Tray Bonding Strap Kit	Chatsworth Products	6	EA
2	Conduit, 1" Trade, EMT, 10 Ft length	Allied Tube & Conduit	5	EA
3	Shelter Load Center, SE QO124M200P, 24/36 ckt Schneider Electric	Zoro	1	EA
4	Breaker, Single Pole, 70Amp, QO 170 Schneider Electric	SimplyBreakers.com	2	EA
5	Breaker, Dual Pole, 30 Amps, 240VAC, QO 230 Schneider Electric	SimplyBreakers.com	5	EA
6	Breaker, Single Pole, 15 Amp, QO 115 Schneider Electric	SimplyBreakers.com	9	EA
7	Breaker, Dual Pole, 20 Amps, 240VAC, QO 220 Schneider Electric	SimplyBreakers.com	1	EA
8	Breaker, Single Pole, 30Amp, QO 130 Schneider Electric	SimplyBreakers.com	1	EA
9	Breaker, Single Pole, 20 Amp, QO 120 Schneider Electric	SimplyBreakers.com	4	EA
10	Ladder Rack, Telco, 12" Wide, 10ft Length, black PN 11252-712	Chatsworth Products	4	EA
11	Ladder Rack Corner Bracket, 15" Length, black PN 11959-715	Chatsworth Products	3	EA
12	Ladder Rack Junction Splice Kit, black, PN 11298-701	Chatsworth Products	3	EA
13	Ladder Rack Ceiling Kit 5/8" Rod (5/8-11), PN 11310-003	Chatsworth Products	12	EA
14	Ceiling 5/8-11 Nuts for Rods, SS pk of 10	McMaster-Carr	2	EA
15	Ladder Rack ceiling mount rack for 1 1/2" rack PN 11408-003	Chatsworth Products	20	EA
16	Ladder Rack Wall Bracket Support for 15" LR 11421-715 (Mod for No J bolts)	Chatsworth Products	4	EA
17	Master Ground Buss Bar, 4" x 20" x 1/4" with standoffs PN 40158-020	Chatsworth Products	1	EA
18	Conduit 1 1/4" EMT Compression Coupling	Southwire	10	EA
19	Conduit, 1 1/4" Trade Size EMT, 10 Ft length Allied Tube & Conduit	Gordon Electric	3	EA
20	Conduit, 1 1/4" EMT 90 Degree Elbow	Gordon Electric	2	EA
21	GFCI Outlets, 20 Amp, 2097TRRWCCD4, Weatherproof	Legrand	2	EA
22	Light Switch, Dimmer, Illumatech IP710-040-D0Z	Leviton	1	EA
23	Conduit Bodies Type LB, 2", Threaded, coated iron, LB200M	Thomas & Betts	7	EA
24	PLT-13142, 11,500 Lumen 80Watt LED Flood Light 120-277V	1000bulbs.com	3	EA
25	PLT-80033 8840 Lumen 65Watt LED Light fixture ceiling mount	1000bulbs.com	6	EA
26	LEDD-10005 LED Emergency BACKUP driver 20 Watt 90 minute	1000bulbs.com	2	EA
27	PLTS-50289 LED EXIT Sign, RED Letters, single or double face 90 Min Emerg	1000bulbs.com	1	EA
28	PLT-90381 Surface Mount Kit for PLT-80033	1000bulbs.com	6	EA
29	#2 AWG 2 Hole Compression Lug, 1" space, 40162-907	Chatsworth Products	6	EA
30	#6 AWG 2 Hole Compression Lug, 5/8" space 40162-901	Chatsworth Products	10	EA
31	RACO 5320 Single Gang Weatherproof Box	Gordon Electric	2	EA
32	RACO 5180 Dual Gang Cover	Gordon Electric	2	EA
33	RACO 2913 - 3/4" EMT Compression Fittings	Grainger	6	EA
34	RACO 2915 - 1 1/4" EMT Compression Fittings	Grainger	8	EA
35	RACO 857 - Dual Switch Plates	Zoro	1	EA
36	RACO 233 4Square deep box with 8 Ea 1" KO	Gordon Electric	6	EA
37	Leviton 2310 - L5-20R Outlet	All Data Supply	3	EA
38	Bolt, 18-8 stainless, 3/8-24 x 2 1/2" 92198A361 (PK of 10)	McMaster-Carr	1	EA
39	Nut, 18-8 stainless, 3/8-24, hex head, 92673A128 (PK of 25)	McMaster-Carr	1	EA
40	Washer, Lock, 18-8 stainless, 3/8", 91007A641 (PK of 25)	McMaster-Carr	1	EA
41	#3/0 AWG XHHW, Black Insulation, SIMpull #113027 (GENSET PWR OUT)	NNC	150	LF
42	#3/0 AWG XHHW, White Insulation, SIMpull #553880 (GENSET PWR OUT)	NNC	75	LF
43	#4 AWG XHHW, Green Insulation, SIMpull #558627	NNC	75	LF
44	Disconnect Switch (UTIL Service & Generator) VH224DSGL Schneider Electric	Essential Electric	2	EA
45	Disconnect Switch, 240VAC, 30 Amp, Fused, VH221NDSGL ((BLDG HVAC))	Schneider Electric	2	EA
46	3/4" Conduit Body, Type LB LB27CG-TB	Thomas & Betts	1	EA
47	3/4" Conduit, EMT, 10 Ft length	Allied Tube & Conduit	2	EA

SHELTER ESTIMATED ANCILLARY EQUIPMENT LIST (PG 2)

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
48	3/4" Conduit, PVC Sched 80, 10 Ft length,	Cantex	3	EA
49	3/4" Conduit, PVC Sched 80, 90 Deg elbow	Cantex	4	EA
50	3/4" Conduit, EMT, 90 Deg Elbow	Allied Tube & Conduit	2	EA
51	3/4" Conduit, Rigid Galvanized Steel, 10 Ft Length	Allied Tube & Conduit	1	EA
52	3/4" PVC Coupling to RMC	Allied Tube & Conduit	1	EA
53	#12 AWG Copper THHN, Black insulation,	NNC	250	LF
54	#12 AWG Copper THHN, White insulation,	NNC	250	LF
55	#12 AWG Copper THHN, Green insulation,	NNC	250	LF
56	30AMP Type H Fuses for VH221NDSGL Disconnect Switch (2 Pk)	Essential Electric	3	EA
57	Stamped Adhesive Cable Clip, for full size cable, tinned, 38-7549-11	Thermoweld	36	EA
58	AIR TERMINAL, 2" TAPER, 18" LENGTH, COPPER 38-7231-10	Thermoweld	4	EA
59	AIR TERMINAL ADHESIVE BASE, FOR 1/2 TERMINAL, 38-7242-21	Thermoweld	4	EA
60	M1 Structural Adhesive/Sealant 10.1 oz tube 38-7547-00	Thermoweld	2	EA
61	Exothermic Weld One Shots for connections to ground ring GT1181VPlus	nVent Erico	28	EA
62	3/4" x 10 Ft Copper or Copper Clad Steel Ground Rods F4P GR-34X10C	City Elect Supply	9	EA
63	Ethernet, CAT6, Direct Bury, Shielded, PN 6ESCMXBLK 500ft reel	TrueCable	1	EA
64	CAT6 RJ-45 Punchdown, Keystone Jack, White PN 6EPD90CMPTWHT	TrueCable	2	EA
65	Dual Jack, Single Gang Wall Plate for Keystone Jacks PN 2PFPWHT	TrueCable	1	EA
66	Network/Server Cabinets, 45" Depth, 30" Width, 48RU SR48UBDPWD	Eaton/Tripplite	4	EA
67	Server Cable Vertical Cable Mgmt, SCRCABLERINGVRT	Eaton/Tripplite	4	EA
68	1.9kW Single-Phase 120V Basic PDU, 14 NEMA 5-15/20R Outlets, NEMA L5-20P, 15 Ft cord, PDUV20	Eaton/Tripplite	4	EA
69	EDS G509-T 9G-port full Gigabit managed Ethernet switch, High Temp	Moxa	6	EA
70	SFP-1GLXLC-T Fiber Optic Module, 10km max	Moxa	4	EA
71	SFP-1GSXLC-T Fiber Optic Module, 550m max	Moxa	8	EA
72	Belden 3108A 22AWG 3 Pair EIA RS485 comm cable	Wire&Cable YW	50	LF
73	Belden 1 pair, shielded, 24AWG #9841	NNC	100	LF
74	Conduit, 1" EMT 90 deg Elbow	Allied Tube & Conduit	5	EA
75	Conduit, 1" EMT Couplings, Compression	Grainger	5	EA
76	3/8"-16 x 1/2" Stainless Steel 18-8 Hex Head, Full Thread bolt, Box 25	Fastenere	1	EA
77	3/8-16 Finished Hex nut, Stainless steel 18-8, box 50	Fastenere	1	EA
78	3/8 Medium Split Lock Washer Stainless Steel 18-8	Fastenere	1	EA
79	1/4-20 x 1/2" Stainless Steel Hex Head Full thread bolt, box 25	Fastenere	1	EA
80	1/4-20 Finished Hex nut, Stainless Steel, 18-8, box of 100	Fastenere	1	EA
81	1/4" Medium Split Lock Washer, Stainless steel 18-8 box of 100	Fastenere	1	EA
82	1 1/4" EMT Conduit 90 Degree Elbow	Allied Tube & Conduit	2	EA
83	Off-Load, Place and install 50KW Emergency Diesel Generator (CAT), Fill or have filled the 24Hr runtime sub-base fuel tank (est 137 gal), and provide personnel to be present for start-up test. The 50 KW Generator shall use the #3/0 AWG wiring (listed above) along with the #12 AWG wiring for the generator heater and battery charger, the ATS start signal and the E-Stop switch (both #14ga wire pairs) and one CAT 6 Ethernet cable. The generator shall be wired to the generator disconnect switch (VH222DSGL) and then into the ATS. The ATS shall also be wired to the Utility Power Disconnect switch and the Utility Meter. The ATS shall be wired to the building load center. The Contractor shall test all connections prior to the start of the generator to ensure there are no wiring errors.	Contractor	1	LS

SHELTER ESTIMATED ANCILLARY EQUIPMENT LIST (PG 3)

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
84	Trench an estimated 170 feet of 13" wide x 31" deep (estimated) for power conduit. This would be used for four 3" trade size Sched 80 PVC conduit configured as 2 over 2 and back filled trench with sand & clean fill per drawings. This would be a run of 145 feet and a second run of 25 feet with hand holes installed as per drawings.	Contractor	1	LS
85	Trench an estimated 170 feet of 17" wide x 40" deep (estimated) for Communication conduit. This would be used for two 2" trade size Sched 80 PVC conduit configured as 2 over 2 (and 1 - 4" and 1 - 3" trade size) and back filled trench with sand & clean fill per drawings. This would be a run of 145 feet and a second run of 25 feet with hand holes installed as per drawings.	Contractor	1	LS
86	The Contractor shall install a ground ring around the AET Shelter and around both Gantry Foundations as shown on the drawings. The Ground Rings shall be made from #2 AWG Bare Tinned Copper wire and shall be exothermic welded to a 3/4" x 10 Copper or Copper Clad Ground rod every twenty feet. Electrical bonding shall be made from the AET Shelter Main Ground Bar, Generator, Roadside cabinets, and Gantry steel to the associated ground rings (see drawings). All Shelter and Gantry lightning protection components and conductors shall be exothermic welded to the associated ground ring. All conductors from the lightning protection devices to the ground ring shall use the #2 AWG Bare Tinned Copper wire and all conductors shall be exothermic welded for all interconnections.	Contractor	2	LS

ADDITIONAL SERVICES ESTIMATED ANCILLARY EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Directional Bore from SB Gantry Roadside Cabinet to the Forest Hill Ave Comm Shack and install a minimum of 2" HDPE SDR11 Conduit. Pull in three MAX-CELL cloth inner-duct with pull strings installed. ESTIMATE 1950 FEET.	Contractor	1	LS
2	Install 50/125 um OM4 Multimode Corning six fiber cable from AET Shelter Comm Hand hole near the guard rail/drive entry all the way to the Forest Hill Ave Comm Shack This will include using Corning UNICAM LC Connectors on all fiber optic cable ends. The 50/125 um fiber optic cable shall be pulled into the 2" conduit from the 30"x48" hand hole near the guard rail/drive way into the AET shelter using provided conduit and innerduct. This cable will be terminated on a fiber optic patch panel in the AET Shelter. Estimate 2315 feet of fiber optic cable to be pulled (Path from AET Shelter, via 30x48" handhole to and over gantry to the SB roadside cabinet and then pulled into the directionally bored conduit/innerduct. The fiber optic cable shall be one continuous pull with no splice points.	Contractor	1	LS