

Attachment 7

Monroe and US-74 ITS Equipment List

Monroe Expressway Intelligent Transportation System (ITS) - Equipment to be Maintained by RTCS Contractor

LD System Element	Provider	Make/Model (see Note 4)	Unit	Qty	Includes, but not limited to:
A. CCTV Camera w/Lowering device	Constructor	Pelco Spectra-Dome IV SE, CLS CDP6-16HDA, CoreTec VOX-7401	EA	8	Camera, encoder, cabling, 336 cabinet, surge protection unit, power supply, power drop from meter, lowering device, decoder at TMC
B. CCTV Camera	Constructor	Pelco Spectra-Dome IV SE, CoreTec VOX-7401	EA	17	Camera, encoder, cabling, 336 cabinet, surge protection unit, power supply, power drop from meter, decoder at MRTMC
C. Front Access Color DMS	Constructor	Daktronics Vanguard VF 2420-RGB	EA	7	27x110 pixel DMS, enclosure, mini-controller, controller, 332 cabinet, UPS, power supply, power drop from vault
D. Front Access Monochrome DMS	Constructor	Daktronics Vanguard VF 2420-A	EA	2	27x90 pixel DMS, enclosure, mini-controller, controller, 332 cabinet, UPS, power supply, power drop from meter
E. Walk-in Monochrome DMS	Constructor	Daktronics Vanguard VF 2000-A	EA	1	27x90 pixel DMS, enclosure, mini-controller, controller, 332 cabinet, UPS, power supply, power drop from meter
F. Roadway Weather Information System	Constructor	Vaisala SSI Road Weather Station	EA	1	See Section 13 of the ITS Scope of Work within the RFP for description of sensors and equipment; power drop from meter
G. Ramp Inductive Loop Detector Station	Constructor	2070 Controller, OASIS software	EA	32	2 6'x6' loops, lead-in cable, conduit and boxes, 1 2070 controller, OASIS software, 1 x 336, power supply, power drop from meter
H. Mainline Inductive Loop Detector Station	Constructor	2070 Controller, OASIS software	EA	15	8 6'x6' loops (2 per lane, 2 lanes per direction), lead-in cable, conduit and boxes, 1 2070 controller, OASIS software, 1 x 336, power supply, power drop from meter
I. Ramp Microwave Radar Detector Station	Constructor	ISS RTMS G4 or Wavertronix HS (See Note 7)	EA	0	1 sensor, RS-232/485 cable, 1 x 336 or NEMA 4 cabinet, power supply, power drop from meter
J. Mainline Microwave Radar Detector Station	Constructor	ISS RTMS G4 or Wavertronix HS (See Note 7)	EA	0	2 sensors, RS-232/485 cable, 1 x 336 cabinet, 1 x NEMA 4 cabinet, power supply, power drop from meter
K. Trunkline Conduit System	Constructor	n/a	MI	21,59	4x2" conduit, junction boxes, 2 x 72-fiber SMFO cable incl. stored cable
L. Drop Conduit System	Constructor	Gator Patch	MI	2,12	1x2" conduit, junction boxes, 1 x 6-fiber SMFO pre-terminated drop cable at most devices, incl. stored cable
M. 1G Ethernet ITS Routing Switches	Constructor	Cisco ME 3600X	EA	3	Located in selected Toll Zone Vaults; includes 19" equipment rack and interconnect center
N. 100Mb Ethernet ITS Edge Switches	Constructor	RuggedCom HS900	EA	70	Located in cabinets for A thru H above
O. Ethernet Radio Nodes	Constructor	n/a	EA	2	Ethernet radio, antenna, cabling; located at west end of project
P. Electronic Wrong-Way Sign	Constructor	n/a	EA	14	Communications to sign, power drop
Q. Leased Line ITS pipe	NCTA/NCDOT	n/a	LS	1	RTCS contract responsible for coordinating maintenance with leased-line provider

*** Priority defined by subsystem to which it belongs

Notes:

1. Specific product make & models are not known at this time. Refer to project RFP for ITS Scope of Work for specifications/requirements
2. Refer to draft project ITS plans by RK&K (dated 10-14-2015) for device locations and project ITS layout
3. List does not include equipment to be provided by RTCS contractor or infrastructure supporting RTCS equipment
4. Make & model currently used on Triangle Expressway; provided for informational purposes only; may not be present on this project
5. Assume quantities could change +/- 15%
6. RTCS contractor maintains power drop from device to the meter, power company from meter to ROW
7. At this time Microwave Radar Detection is not planned to be deployed for project

US 74 Express Lanes Intelligent Transportation System (ITS) - Equipment to be Maintained by RTCS Contractor

LD System Element	Provider	Resp/Repair Priority	Notes:	Unit	Qty	Includes, but not limited to:
A1. Express Lanes Color DMS modules (for Open/Closed)	Constructor	Priority 1	See Note 1	EA	2	24x192 pixel (20mm pitch) DMS mid on static sign, controller, 332 cabinet, UPS, power supply
A2. Express Lanes Color DMS modules (for Toll Rates)	Constructor	Part of RTCS VTMS	n/a	EA	2	24x192 pixel (20mm pitch) DMS mid on static sign, controller, 332 cabinet, UPS, power supply
B. Express Lanes Color DMS (full size)	Constructor	Priority 1	See Note 1	EA	3	96x288 pixel (20mm pitch) DMS, enclosure, mini-controller, controller, 332 cabinet, UPS, power supply
C. Express Lanes Inductive Loop Detection Station (1 lane)	Constructor	Priority 1	n/a	EA	3	2 6'x6' loops, lead-in cable, conduit and boxes, 1 2070 controller, OASIS software, 1 x 336 cabinet, power supply, power drop from meter
D. Express Lanes Inductive Loop Detection Station (2 lane)	Constructor	Priority 1	n/a	EA	12	4 6'x6' loops (2 per lane), lead-in cable, conduit and boxes, 1 2070 controller, OASIS software, 1 x 336 cabinet, power supply, power drop from meter
E. GP Lane Microwave Radar Detection Station (1 sensor)	Constructor	Priority 2	n/a	EA	5	1 microwave radar sensor, 1 control module, 1 terminal server, 1 336 cabinet, power supply, power drop from meter
F. GP Lane Microwave Radar Detection Station (2 sensors)	Constructor	Priority 2	n/a	EA	17	2 microwave radar sensors, 1 control module, 1 terminal server, 1 336 cabinet, power supply, power drop from meter
G. Express Lanes PTZ CCTV Camera	Constructor	Priority 2	See Note 2	EA	15	Camera, encoder, cabling, 336 cabinet, surge protection unit, power supply
H. Gate Control System	Constructor	Priority 1/2 (see Note 7)	n/a	LS	1	4 systems, each with gate controller, cabinet, power supply, UPS, total of approx. 30 gates
I. Trunkline Conduit System	Constructor	Priority 3	n/a	MI	6,0	4x1.25" (or 1.5") conduit, junction boxes, 1 x 72-fiber SMFO cable incl. stored cable
J. Drop Conduit System	Constructor	Priority 3	n/a	MI	0,6	1x1.5" conduit, junction boxes, 1 x 6-fiber SMFO pre-terminated drop cable, incl. stored cable
K. 1G Ethernet ITS Routing Switches	Constructor	Priority 2	n/a	EA	1	Located in Toll Zone cabinet
L. 1G Ethernet ITS Edge Switches	Constructor	Priority 2	n/a	EA	36	Located in cabinets for A thru H above
M. Electronic Wrong-Way Sign	Constructor	Priority 1	n/a	EA	2	Communications to sign, power drop

*** Priority defined by subsystem to which it belongs

Notes:

1. For displaying "Open/Closed" status; toll rate signs belong to RTCS VTMS system
2. Dedicated to monitoring Express Lane traffic only
3. Assume quantities could change +/- 15%
4. With exception of Toll Rate DMS modules, this list does not include other equipment to be provided by RTCS contractor or infrastructure supporting RTCS equipment
5. List does not include other ITS equipment for managing general purpose lanes, to be installed and maintained by others
6. RTCS contractor maintains power drop from device to the meter, power company from meter to ROW
7. Communications and operations are Priority 1; gate arm replacement is Priority 2

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