

SHEET NUM.										PART.				ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	CALCULATED VLC	CHECKED RJM
10	39	42	43	83		154	155	156	OFFICE CALCS	01/SAF/21	02/S>2/21	03/MPO/28	04/ENH/31	(X)								
			1											611	99114	1	EACH	<b>DRAINAGE (CONT.)</b>				
		4												611	99574	4	EACH	INLET, NO. 3 FOR SINGLE SLOPE BARRIER, TYPE D				
		3												611	99654	3	EACH	MANHOLE, NO. 3				
		2												611	99660	2	EACH	MANHOLE ADJUSTED TO GRADE				
3			1											611	99710	2	EACH	MANHOLE RECONSTRUCTED TO GRADE				
														611	99710	4	EACH	PRECAST REINFORCED CONCRETE OUTLET				
																		<b>PAVEMENT</b>				
4				2					147					301	56000	153	CY	ASPHALT CONCRETE BASE, PG64-22, (449)				
									197					304	20000	197	CY	AGGREGATE BASE				
				1					89					407	20000	90	GAL	NON-TRACKING TACK COAT				
				1										441	70500	1	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (449), (DRIVEWAYS)				
									34					442	22100	34	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (449)				
									43					442	22400	43	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (449)				
				70										452	12010	70	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC IP				
									89					452	13010	89	SY	9" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC IP				
	124													609	14000	124	FT	CURB, TYPE 2-A				
	1,592													609	26000	1,592	FT	CURB, TYPE 6				
	5													609	71000	5	SF	CONCRETE MEDIAN				
																		<b>WATER WORK</b>				
	2													638	10300	2	EACH	FIRE HYDRANT EXTENDED AND ADJUSTED TO GRADE				
																		<b>LIGHTING</b>				
														202	75700	LS		CONTROL CENTER REMOVED				
							2	4						625	00480	6	EACH	CONNECTION, UNFUSED PERMANENT				
							4	6	5					625	14501	15	EACH	LIGHT POLE FOUNDATION, AS PER PLAN A, 30"x6' DEEP			153	
							2	6						625	14501	8	EACH	LIGHT POLE FOUNDATION, AS PER PLAN B, 30"x6' DEEP			153	
							1							625	15200	1	EACH	LIGHT TOWER FOUNDATION, 36" X 25' DEEP				
							1							625	21000	1	EACH	LIGHT TOWER MAINTENANCE PLATFORM, TYPE A				
								1						625	21400	1	EACH	LIGHT TOWER MAINTENANCE PLATFORM, MISC.: REMOVE PLATFORM			159	
							182							625	25014	182	FT	CONDUIT, 3/4", 725.052				
							2,052	1,298	428					625	25410	3,778	FT	CONDUIT, 2", 725.052				
								45						625	25506	45	FT	CONDUIT, 3", 725.052				
							40	463						625	25900	503	FT	CONDUIT, JACKED OR DRILLED, 2"				
							3							625	27520	3	EACH	REMOVAL OF LUMINAIRE AND REERECTION				
							2,052	1,196	428					625	29010	3,676	FT	TRENCH, 30" DEEP				
							2							625	29901	2	EACH	JUNCTION BOX, AS PER PLAN, WALL MOUNTED, 6"x6"			153	
							11	11	1					625	30530	23	EACH	PULL BOX, 725.06, SIZE 18				
								1						625	31510	1	EACH	PULL BOX REMOVED				
							20	28	6					625	32000	54	EACH	GROUND ROD				
								2						625	34000	2	EACH	POWER SERVICE				
							1							625	35020	1	EACH	RE-ERECT EXISTING LIGHT TOWER				
							2,052	1,196	428					625	36010	3,676	FT	UNDERGROUND WARNING/MARKING TAPE				
								2						625	37100	2	EACH	SERVICE TO UNDERPASS LIGHTING				
									LUMP					SPECIAL	62540000	LS		MAINTAIN EXISTING LIGHTING			153	
								1						625	75360	1	EACH	LIGHT TOWER REMOVED FOR STORAGE				
								1						625	75510	1	EACH	POWER SERVICE REMOVED				
								1						625	75540	1	EACH	LIGHT TOWER FOUNDATION REMOVED				
								1						625	75800	1	EACH	DISCONNECT CIRCUIT				
								1						630	89812	1	EACH	REMOVAL OF WOOD POLE AND DISPOSAL				
							2	3						632	70400	5	EACH	CONDUIT RISER, 2" DIAMETER				
								1						632	89300	1	EACH	WOOD POLE				
																		<b>LIGHTING ALTERNATES</b>				
							6	12	5					X	625	10481	23	EACH	LIGHT POLE, AESTHETIC, AS PER PLAN (ALTERNATE 1)		153	
							6	12	5					X	625	27550	23	EACH	LUMINAIRE, DECORATIVE (ALTERNATE 1)		153	
							14	32	10					X	625	00450	56	EACH	CONNECTION, FUSED PULL APART (ALTERNATE 1)		153	
							7	16	5					X	625	00460	28	EACH	CONNECTION, UNFUSED PULL APART (ALTERNATE 1)		153	
							6,726	5,367	1,374					X	625	23200	13,467	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE (ALTERNATE 1)		153	
							210	420	175					X	625	23400	805	FT	NO. 10 AWG POLE AND BRACKET CABLE (ALTERNATE 1)		153	
								4						X	625	27502	4	EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), ASYMMETRIC, 240V, 3000K (ALTERNATE 1)		153	
							6	12	5					X	625	10481	23	EACH	LIGHT POLE, AESTHETIC, AS PER PLAN (ALTERNATE 2)		170	
							6	12	5					X	625	27550	23	EACH	LUMINAIRE, DECORATIVE (ALTERNATE 2)		170	
							14	32	10					X	625	00450	56	EACH	CONNECTION, FUSED PULL APART (ALTERNATE 2)		153	
							13	28	10					X	625	00460	51	EACH	CONNECTION, UNFUSED PULL APART (ALTERNATE 2)		153	
							8,808	6,976	1,832					X	625	23200	17,616	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE (ALTERNATE 2)		153	
							336	672	280					X	625	23400	1,288	FT	NO. 10 AWG POLE AND BRACKET CABLE (ALTERNATE 2)		153	
								4						X	625	27502	4	EACH	LUMINAIRE, UNDERPASS, SOLID STATE (LED), ASYMMETRIC, 240V, 3000K (ALTERNATE 2)		153	

**GENERAL SUMMARY**

**MOT - 725 - 14.41**

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SHEET NUM.								PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
39	86	87	88	89	116	117	148	01/SAF/21	02/SAF/21	03/MPO/28	04/ENH/31						
<b>TRAFFIC CONTROL</b>																	
		113								113		621	00100	113	EACH	RPM	
4										4		626	00102	4	EACH	BARRIER REFLECTOR, TYPE 1, 1WAY	
14										14		626	00110	14	EACH	BARRIER REFLECTOR, TYPE 2, 1WAY	
			25							25		630	02100	25	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
			206						58	148		630	03100	206	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
			2							2		630	72321	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.31, DESIGN 6, AS PER PLAN	
			1							1		630	72331	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.31, DESIGN 10, AS PER PLAN	
			2						2			630	72420	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.116, DESIGN 2	
			1							1		630	72431	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.116, DESIGN 3, AS PER PLAN	
			1							1		630	72561	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-16.22, DESIGN 14, AS PER PLAN	
			11							11		630	75000	11	EACH	SIGN ATTACHMENT ASSEMBLY	
			1							1		630	76521	1	EACH	SPAN WIRE SIGN SUPPORT, TYPE TC-17.11, DESIGN 8, AS PER PLAN	
			1				16		16	1		630	79501	17	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN	
			220						32	188		630	80100	220	SF	SIGN, FLAT SHEET	
			1,505						1,133	372		630	80224	1,505	SF	SIGN, OVERHEAD EXTRUSHEET	
			17						9	8		630	84510	17	EACH	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	
				13			8		13	8		630	84900	21	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
			3						3			630	85100	3	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
				18			8		18	8		630	86002	26	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
			4						4			630	87100	4	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	
				14						14		630	87400	14	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
				3						3		630	87500	3	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
				6						6		630	89702	6	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL	
				1						1		630	89704	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-16.21	
				1						1		630	89804	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-15.115	
			266							266		632	30200	266	FT	MESSANGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES	
	92									92		643	01510	92	FT	DOTTED LINE, 6"	
	0.12	0.1								0.22		644	00104	0.22	MILE	EDGE LINE, 6"	
	0.14	0.1								0.24		644	00204	0.24	MILE	LANE LINE, 6"	
	1,037	1,653							1,653	1,037		644	00404	2,690	FT	CHANNELIZING LINE, 12"	
	120									120		644	00500	120	FT	STOP LINE	
	417									417		644	00631	417	FT	CROSSWALK LINE, 24", AS PER PLAN	
	165								165			644	00700	165	FT	TRANSVERSE/DIAGONAL LINE	
	4								4			644	01300	4	EACH	LANE ARROW	
	0.07	0.3							0.07	0.3		644	30030	0.37	MILE	REMOVAL OF PAVEMENT MARKING	
<b>TRAFFIC SIGNALS</b>																	
							42		42			625	00460	42	EACH	CONNECTION, UNFUSED PULL APART	
							24		24			625	00480	24	EACH	CONNECTION, UNFUSED PERMANENT	
				306		22	992		1,320			625	25410	1,320	FT	CONDUIT, 2", 725.052	
				450				450				625	25506	450	FT	CONDUIT, 3", 725.052	
				225				225				625	25606	225	FT	CONDUIT, 4", 725.052	
				284			451		735			625	25900	735	FT	CONDUIT, JACKED OR DRILLED, 3"	
				152		110		262				625	25900	262	FT	CONDUIT, JACKED OR DRILLED, 4"	
				562	536		992	1,022	992	76		625	29010	2,090	FT	TRENCH, 30" DEEP	
							8		8			625	30500	8	EACH	PULL BOX, 725.06, SIZE 1.5	
							2		2			625	30520	2	EACH	PULL BOX, 725.06, SIZE 7	
				7		1		7		1		625	30700	8	EACH	PULL BOX, 725.08, 18"	
				6				6				625	30706	6	EACH	PULL BOX, 725.08, 24"	
						5		5				625	30711	5	EACH	PULL BOX, 725.08, 32", AS PER PLAN	
				7		1		8				625	31510	8	EACH	PULL BOX REMOVED	
						1		1				625	31600	1	EACH	PULL BOX, MISC.: ADJUST TO GRADE	
				25		6	10	26	10	5		625	32000	41	EACH	GROUND ROD	
				562	536		992	1,022	992	76		625	36010	2,090	FT	UNDERGROUND WARNING/MARKING TAPE	
								1				625	39520	1	EACH	PULL BOX CLEANED	
				12				12				630	79100	12	EACH	SIGN HANGER ASSEMBLY, MAST ARM	

**GENERAL SUMMARY**

**MOT - 725 - 14.41**

CALCULATED  
VLC  
CHECKED  
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SHEET NUM.								PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
12	13	14	15	171	182		OFFICE CALCS	01/SAF/21	02/SAF/21	03/MPO/28	04/ENH/31						
<b>RETAINING WALLS (003)</b>																	
					50					50			203	20000	50	CY	EMBANKMENT
					LUMP					LUMP			503	21300	LS		UNCLASSIFIED EXCAVATION
					34,963					34,963			509	10000	34,963	LB	EPOXY COATED STEEL REINFORCEMENT
					150					150			511	46011	150	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN
					4,050					4,050			511	71200	4,050	SF	CONCRETE, MISC.: FORMLINER
					2						2		511	81300	2	EACH	CONCRETE, MISC.: AESTHETIC TEST PANEL
					202					202			516	13600	202	SF	1" PREFORMED EXPANSION JOINT FILLER
					400					400			518	20000	400	SY	PREFABRICATED GEOCOMPOSITE DRAIN
					17					17			518	21200	17	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC
					450					450			518	39800	450	FT	4" PERFORATED CORRUGATED PLASTIC PIPE
					45					45			518	39900	45	FT	4" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS
					5,190					5,190			520	10001	5,190	SF	PNEUMATICALLY PLACED CONCRETE SHOTCRETE, AS PER PLAN
				6							6		SPECIAL	53000400	6	EACH	STRUCTURES, AESTHETIC LOGO
					363					363			SPECIAL	53051100	363	EACH	RETAINING WALL, SOIL NAIL, 20' LONG, MINIMUM
					11					11			SPECIAL	53051110	11	EACH	RETAINING WALL, SOIL NAIL VERIFICATION TEST
					19					19			SPECIAL	53051120	19	EACH	RETAINING WALL, SOIL NAIL PROOF TEST
													<b>RETAINING WALLS (003) ALTERNATES</b>				
					530					530			512	10100	530	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (ALTERNATE 1)
					321					321			512	10050	321	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY) (ALTERNATE 2)
					107		102			209			512	10100	209	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) (ALTERNATE 2)
													<b>MAINTENANCE OF TRAFFIC</b>				
		80								80			614	1110	80	hour	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE
							2			2			SPECIAL	61411300	2	EACH	WORK ZONE TRAFFIC SIGNAL
							LUMP			LUMP			614	12420	LS		DETOUR SIGNING
5										5			614	12500	5	EACH	REPLACEMENT SIGN
20										20			614	12600	20	EACH	REPLACEMENT DRUM
					29					29			614	12800	29	EACH	WORK ZONE RAISED PAVEMENT MARKER
	4				0.24					4			614	18601	4	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN
					0.72					0.24			614	20110	0.24	MILE	WORK ZONE LANE LINE, CLASS I, 6", 642 PAINT
										0.72			614	22110	0.72	MILE	WORK ZONE EDGE LINE, CLASS I, 6", 642 PAINT
					401					401			614	23210	401	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 12", 642 PAINT
					12					12			614	26200	12	FT	WORK ZONE STOP LINE, CLASS I, 642 PAINT
					5					5			614	30200	5	EACH	WORK ZONE ARROW, CLASS I, 642 PAINT
										11			616	10000	11	MGAL	WATER
					2,922					2,922			642	30000	2,922	FT	REMOVAL OF PAVEMENT MARKING
					8					8			642	30020	8	EACH	REMOVAL OF PAVEMENT MARKING
													<b>INCIDENTALS</b>				
							LUMP			LUMP			614	11000	LS		MAINTAINING TRAFFIC
							15			15			619	16010	15	MNTH	FIELD OFFICE, TYPE B
							LUMP			LUMP			623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING
							LUMP			LUMP			624	10000	LS		MOBILIZATION

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SHEET NO.	REF NO.	STATION	CODE	SIDE	SIZE (IN)	630	630	630	630	630	630	630	630	630	630	630	632	630	630	630				
						SIGN, FLAT SHEET SF	GROUND MOUNTED SUPPORT, NO. 2 POST FT	GROUND MOUNTED SUPPORT, NO. 3 POST FT	SIGN, OVERHEAD EXTRUSHEET SF	RIGID OVERHEAD SIGN SUPPORT FOUNDATION EACH	SPAN WIRE SIGN SUPPORT, TYPE TC-17.11, DESIGN 8, AS PER PLAN EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.31, DESIGN 6, AS PER PLAN EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.116, DESIGN 3, AS PER PLAN EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED EACH	SIGN ATTACHMENT ASSEMBLY EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION EACH	OVERHEAD SIGN SUPPORT, TYPE 16.22, DESIGN 14, AS PER PLAN EACH	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES FT	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.31, DESIGN 10, AS PER PLAN EACH	OVERHEAD SIGN SUPPORT, TYPE TC-15.116, DESIGN 2 EACH			
92	S1	759+85	R3-5L-30	LT	60X36	15				1	1				1		266							
92	S2	759+85	R3-5a-30	LT	30X36	7.5									1									
92	S3	759+85	R3-5a-30	LT	30X36	7.5									1									
92	S4	759+85	R3-5a-30	LT	30X36	7.5									1									
93	OH-3	760+67	-	RT	108x60				45	1														
93	S24	761+37	W3-3-36	RT	36x36	9		13.5																
94	S5	769+10	M3-2-24	RT	24X12	2		15																
94		769+10	M1-5-3-30	RT	30X24	5																		
94	S6	770+29	R3-H8DF-60	RT	60X30	12.5		31																
94	S25	767+31	R6-1	RT	36x12													1						
94	S26	767+31	R6-1	RT	36x12													1						
94	S27	767+31	R5-1	RT	36x36													1						
94	S28	768+08	R6-1	RT	36x12	3		29																
94	S29	768+08	R6-1	RT	36x12	3																		
94	S30	768+08	R5-1	RT	36x36	9																		
95	S7	771+40	R2-1-30	RT	30x36	7.5		13																
95	S8	771+11	W13-3-36	LT	36x48	12								1										
95	OH-4	771+11	-	LT	108x96				72	4		1												
95	OH-5	771+11	-	LT	60x84				35															
95	OH-6	771+11	-	LT	120x96				80															
95	S9	771+04	R3-5L-30	RT	30x36	7.5									1									
95	S10	771+04	R3-5a-30	RT	30x36	7.5									1									
95	S11	771+04	R3-5a-30	RT	30x36	7.5									1									
95	S12	771+04	D1-3D-60	RT	60x42	17.5									1									
95	S13	771+04	R3-6R-30	RT	30x36	7.5									1									
95	OH-7	775+10	-	LT	120x84				70	1		1												
96	OH-8	779+73	-	LT	120x84				70	1		1												
96	S14	779+32	I-H2A-48	LT	48x24	8	25																	
96	S15	777+99	M3-4-24	LT	24x12	2		15																
96		777+99	M1-5-3-30	LT	30x24	5																		
96	S16	777+03	D6-H5-60	LT	60X42	17.5		31																
96	S17	776+88	R3-6R-30	LT	30x36	7.5				1				1		1								
96	S18	776+93	R3-5L-30	LT	30x36											1								
96	S19	776+93	R3-5A-30	LT	30x36											1								
96	S20	776+93	D1-3D-60	LT	60x42											1								
96	S21	776+93	R3-5A-30	LT	30x36											1								
99	OH-9	14+53	-	RT	348x120				290	4													1	
99	OH-10	14+53	-	LT	196x156				208															
99		14+53	E1-5P	LT	108x36				27															
100	OH-11	227+90	-	LT	192x144				192						1									
100		227+90	E1-5P	LT	108x36				27															
100	OH-12	237+65	-	RT	168x120				140	4														
100		237+66	E1-5P	RT	108x36				27														1	
100	OH-13	237+67	-	LT	204x156				221															
100		237+68	E1-5P	LT	108x36				1															
101	S22	10+71	W4-2L-48	RT	48x48	16		29																
101	S23	10+69	W4-2L-48	LT	48x48	16		29																
TOTALS CARRIED TO GENERAL SUMMARY						220.0	25	206	1505	17	1	2	1	1	11	4	1	266	3	1	2			

<b>SIGNING SUB - SUMMARY</b>	<b>MOT - 725 - 14.41</b>
CALCULATED MST CHECKED RJM	88 220

**ITEM 809 WRONG WAY DETECTION SYSTEM**

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A COMPLETE WRONG WAY DETECTION SYSTEM. THE SYSTEM SHALL DETECT THE PRESENCE OF VEHICLES TRAVELING IN THE WRONG DIRECTION ON AN EXIT RAMP. WHEN A VEHICLE TRAVELING IN THE WRONG DIRECTION IS DETECTED, WHITE LED WARNING LIGHTS IN THE SIGN SYSTEM SHALL BE ACTIVATED, A CAMERA SHALL RECORD THE EVENT AND AFTER A SECOND DETECTOR CONFIRMS THAT THE VEHICLE CONTINUED TO TRAVEL IN THE WRONG DIRECTION, ELECTRONIC NOTIFICATION SHALL BE SENT TO ODOTS TRAFFIC MANAGEMENT CENTER AUTOMATICALLY.

ALL ELEMENTS OF THE WRONG WAY SYSTEM SHALL BE PROVIDED AS A COMPLETE SYSTEM BY A SINGLE VENDOR/MANUFACTURE.

ALL ELEMENTS OF THE WRONG WAY DETECTION SYSTEM SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM OF WORK UNLESS SEPARATELY ITEMIZED. THE FOLLOWING LIST REPRESENTS AN OUTLINE OF COMPONENTS TO BE INCLUDED WITH THE SYSTEM. ITEMS NOT SPECIFICALLY LISTED BELOW, BUT REQUIRED TO PROVIDE FOR A FULLY FUNCTIONING WRONG WAY DETECTION SYSTEM SHALL ALSO BE INCLUDED:

**VEHICLE DUAL DIRECTION DETECTOR UNITS.**

- NUMBER OF UNITS FURNISHED PER SITE SHALL BE AS REQUIRED TO MEET THE FUNCTIONALITY REQUIREMENTS OF THE SYSTEM AND DETECT ALL WRONG WAY VEHICLES.
- DETECTION HARDWARE SHALL BE POWERED BY 120VAC.
- ULTRA-LOW POWERED UNITS WITH PROGRAMMABLE OUTPUTS.
- SHALL BE CAPABLE OF DETECTING INCOMING OR OUTGOING TARGETS TRAVELING BETWEEN 5 AND 100 MPH.
- SHALL BE SEALED FROM WATER INTRUSION.
- SHALL INCLUDE SELF-TESTING, STATUS LED LIGHTS AND SELF-PROTECTION FROM REVERSE POLARITY.
- SHALL UTILIZE RS232 SERIAL COMMUNICATION FOR PROGRAMMING.

**(2)-CONFIRMATION CAMERA.**

- WIDE ANGLE HDTV 1080P OUTDOOR RATED WITH CROSS-LINK ANALYSIS
- SHALL HAVE PROGRAMMABLE EVENT BASED LOGIC THAT INTEGRATES WITH THE WRONG WAY LOGIC CONTROLLER.
- IP66 RATED, NEMA 4X
- PROVIDE FOR A MINIMUM OF ONE INPUT AND ONE OUTPUT.
- PROVIDE FOR ADJUSTABLE IMAGE SETTINGS.
- USE A 1/4" PROGRESSIVE SCAN RGB CMO

(1)-AN ILLUMINATOR SHALL BE FURNISHED AND INSTALLED WHERE AMBIENT LIGHTING CONDITIONS DON'T PROVIDE SUFFICIENT LIGHT LEVELS TO OPERATE CAMERAS IN COLOR MODE.

**(1)-CELLULAR MODEM**

- WITH 5 YEARS OF MONITORING SERVICE. THE SYSTEM SHALL INCLUDE SYSTEM MONITORING, NOTIFICATIONS, AND UPDATES VIA A CELLULAR SERVICE, HOSTED/PROVIDED BY THE MANUFACTURE FOR A PERIOD OF 5 YEARS FOLLOWING THE ORIGINAL PROJECT COMPLETION DATE
- 4G LTE CELLULAR GATEWAY WITH INTEGRAL FIVE PORT 10/100 ETHERNET SWITCH WITH EXTERNAL OMNI-DIRECTION ANTENNA.
- INCLUDE INTEGRAL RS232 PORT.
- SHALL BE CAPABLE OF OVER THE AIR FIRMWARE UPDATES AND REMOTE MANAGEMENT.
- SHALL BE CAPABLE OF IPSEC VPN

**ITEM 809 WRONG WAY DETECTION SYSTEM, (CONT.)**

(4)-WIRELESS RADIO COMMUNICATION UNITS. RADIO CONTROL SHALL OPERATE ON A 900 MHZ FREQUENCY HOPPING SPREAD SPECTRUM NETWORK, WI-FI OR APPROVED EQUAL. RADIOS SHALL INTEGRATE COMMUNICATION OF SIGN CONTROL CIRCUIT TO ACTIVATE SIGNS. THE RADIO SHALL BE SYNCHRONIZED SO ALL OF THE REMOTE INDICATIONS WILL TURN ON WITHIN 120 MSEC OF EACH OTHER AND REMAIN SYNCHRONIZED THROUGH-OUT THE DURATION OF THE FLASHING CYCLE.

**LOOP DETECTOR MONITORING CARD**

- NUMBER OF CARDS FURNISHED SHALL BE SUFFICIENT TO ACCOMMODATE THE PROPOSED LOOP DETECTION NEEDS.
- SHALL WORK WITH STANDARD NEMA/170/2070 CARD RACKS.
- SHALL UTILIZE TIA232 SERIAL COMMUNICATION FOR PROGRAMMING.
- SHALL INCLUDE SELF-TESTING AND LED STATUS LIGHTS.
- PROVIDE FOR A MINIMUM OF 4 FREQUENCY SETTINGS.

(1)-WRONG WAY LOGIC CONTROLLER WITH INTEGRATED TEST FUNCTIONS.

- SHALL ANALYZE INPUTS FROM MULTIPLE SENSORS AND CAMERAS.
- PROVIDE FOR PROGRAMMABLE OUTPUTS.
- SHALL CONTAIN DRIVE RELAYS
- SHALL INCLUDE LED STATUS LIGHTS AND ON-SITE TESTING.
- PROVIDE FOR MICRO USB INTERFACE

(1)-PROGRAMMABLE SIGN CONTROLLER

- PROVIDE FOR A MINIMUM OF TWO INPUTS AND OUTPUTS
- PROGRAMMABLE INCLUDING FLASH PATTERN, DURATION AND LED INTENSITY.
- INTEGRATE WITH WIRELESS RADIOS.
- INCLUDE REAL TIME CLOCK WITH ON-BOARD BATTERY.
- PROVIDE FOR DATA LOGGING.
- PROVIDE FOR RS232 SERIAL INTERFACE

POLE MOUNTED CONTROL CABINET(S), WITH CONTROL EQUIPMENT.

(2)-WRONG WAY SIGNS R5-1A (48"X36"), 120V AC/SOLAR POWERED, WHITE LED, PERIMETER BLINKING.

(4)-WRONG WAY SIGNS R5-1A (42"X30"), SIGN FLAT SHEET.

(2)-DO NOT ENTER SIGNS R5-1 (48"X48"), 120VAC/SOLAR POWERED, WHITE LED, PERIMETER BLINKING.

SOLAR PANELS MOUNTED TO AN ALUMINUM PLATE AND BRACKET AT AN ANGLE OF 45 DEGREES-60 DEGREES TO PROVIDE MAXIMUM OUTPUT.

BATTERIES FOR LED SIGNS WITH WRITTEN TWO YEAR FULL REPLACEMENT WARRANTY.

THE SYSTEM SHALL OPERATE UNDER THE FOLLOWING CONDITIONS:

- SHALL COMPLY WITH PART 15 OF FCC.
- SHALL OPERATE FROM -4 DEGREES F TO 122 DEGREES F.
- PROGRAMMABLE FROM A WINDOWS BASED PC

(8)-HOURS OF ONSITE TRAINING.

THE SYSTEM SHALL INCLUDE AN API TO CONNECT ALL THE DATA/ALERTS/CAMERA IMAGES/VIDEO INTO THE ODOT ATMS SOFTWARE WHICH IS PROVIDED BY IBI AND IS KNOWN AS OHGO inSIGHT. THE SYSTEM SHALL SUPPORT BI-DIRECTIONAL COMMUNICATION SO EVENTS/INCIDENTS CAN BE ACKNOWLEDGED/RESOLVED.

**ITEM 809 WRONG WAY DETECTION SYSTEM, (CONT.)**

THE API SHALL MEET THE REQUIREMENTS OF THE "ATMS WRONG WAY DRIVER ALERT API" DOCUMENT PROVIDED WITH THESE PLANS. ALL WORK NEEDED TO DEVELOP AND PROVIDE A FULLY FUNCTIONAL API (LABORS, MATERIALS, ETC.) SHALL BE INCIDENTAL TO THIS ITEM.

ALL LED, PERIMETER EDGE LIT BLINKING SIGNS SHALL BE WIRELESSLY CONTROLLED AND SYNCHRONIZED VIA THE USE OF WIRELESS RADIOS. EACH SIGN SHALL BE A COMPLETE ASSEMBLY, CONSISTING OF BUT NOT LIMITED TO, SIGNAGE, SIGN MOUNTING HARDWARE, INDICATIONS AND ELECTRICAL COMPONENTS (WIRING, SOLID-STATE CIRCUIT BOARDS, ETC.). EACH SIGN SHALL BE SUPPLIED WITH ALL REQUIRED HARDWARE TO INSTALL ASSEMBLY. ALL EXPOSED HARDWARE SHALL BE ANTI-VANDAL. ASSURE ALL SIGNS MEET THE REQUIREMENTS OF C&MS 630. THE CONTROL CIRCUIT SHALL BE SEALED WATERTIGHT TO ELIMINATE DIRT CONTAMINATIONS AND ALLOW FOR SAFE HANDLING IN ALL WEATHER CONDITIONS.

SEE SOLAR POWERED LED SIGN REQUIREMENTS AND ELECTRICAL REQUIREMENTS FOR SOLAR-POWERED DEVICES FOR ADDITIONAL REQUIREMENTS.

WRONG WAY DETECTION SYSTEM MANUFACTURED/PROVIDED BY TAPCO, TRAFFIC AND PARKING CONTROL CO., INC. OR WRONG WAY DETECTION SYSTEM MANUFACTURED/PROVIDED BY TRAFFICALM SYSTEMS MEETING THE REQUIREMENTS OF THIS NOTE SHALL BE CONSIDERED ACCEPTABLE.

WARRANTY  
WARRANTY SHALL BE FIVE YEARS FROM THE DATE OF FINAL ACCEPTANCE.

MEASUREMENT  
THE DEPARTMENT WILL MEASURE THIS ITEM COMPLETE IN PLACE, INCLUDING ALL MATERIALS, TESTING, LABOR AND SOFTWARE FOR A FULLY FUNCTIONAL SYSTEM.

PAYMENT  
PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH FOR ITEM 809 WRONG WAY DETECTION SYSTEM AND INCLUDE ALL MATERIALS AND LABOR TO FURNISH AND INSTALL A COMPLETE SYSTEM AT ONE EXIT RAMP. ALL ELEMENTS OF THIS SYSTEM SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM OF WORK UNLESS SEPARATELY ITEMIZED.

ITEM 632 PEDESTAL, MISC.: PEDESTAL, 15', TRANSFORMER BASE  
THE PEDESTAL SHALL BE PER ITEM 632 AND THE DETAILS SHOWN ON SHEET 151  
PAYMENT SHALL BE PER ITEM 632.

**WRONG WAY DETECTION SYSTEM NOTES**

THESE SPECIFICATIONS, TOGETHER WITH THE ACCOMPANYING PLANS ARE INTENDED TO DESCRIBE THE TYPE, SIZE AND LOCATION OF THE PRODUCTS AND MATERIALS TO BE PROVIDED AND INSTALLED UNDER THE VARIOUS BID ITEMS RELATED TO THE WRONG WAY DETECTION SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES AND RELATED MATERIALS IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS, AS WELL AS:

- OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD)
- 2019 OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS
- STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE OHIO DEPARTMENT OF TRANSPORTATION

THESE SPECIFICATIONS SET FORTH THE MINIMUM REQUIREMENTS OF THE WRONG WAY DETECTION SYSTEM AND THE ITEMS REFERRED HEREIN.

**ITEM 809 ITS DEVICE, MISC.: RELOCATE CCTV IP-CAMERA SYSTEM, WRONG WAY**

THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING CCTV IP-CAMERA AND INSTALL IT IN THE LOCATION SHOWN ON THE PLANS. THE CONTRACTOR SHALL INSTALL THE CAMERA AND CONNECT THE ETHERNET CABLE INTO THE ODOT NETWORK SWITCH PORT, AS INFORMED BY ODOT ITS. THE CONTRACTOR SHALL CALL THE ODOT ITS LAB TO VERIFY THE CAMERA CONNECTION AND VIEWS WHILE ON SITE INSTALLING THE CAMERA. THE CONTRACTOR SHALL ADJUST THE CAMERA ORIENTATION OR LENSES AS NEEDED FOR OPTIMAL VIEWS.

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**WRONG WAY DETECTION GENERAL NOTES**

**MOT - 725 - 14.41**

