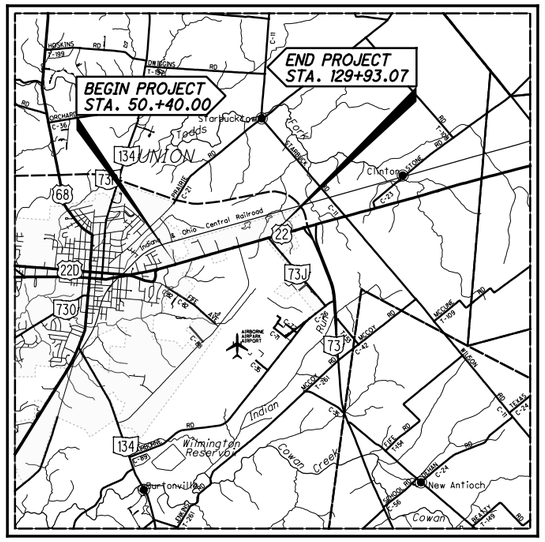


LOCATION MAP

LATITUDE: 39°27'01" LONGITUDE: -83°47'58"

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2022)	*N/A*
DESIGN YEAR ADT (2042)	*N/A*
DESIGN HOURLY VOLUME (2042)	*N/A*
DIRECTIONAL DISTRIBUTION	*N/A*
TRUCKS (24 HOUR B&C)	*N/A*
DESIGN SPEED	*40 MPH / 55 MPH*
LEGAL SPEED	*35 MPH / 50 MPH*
DESIGN FUNCTIONAL CLASSIFICATION:	*04 MINOR ARTERIAL*
NHS PROJECT	*YES*

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig
OHIO811.org Before You Dig
OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

PLAN PREPARED BY:

DESIGN AGENCY
LJB Inc. • 2500 Newmark Drive
Miamisburg, OH 45342
(937) 259-5000 tel • (937) 259-5100 fax • LJBinc.com

ENGINEERS SEAL:

STATE OF OHIO
MATTHEW A. GARDNER
E-72393
REGISTERED PROFESSIONAL ENGINEER

SIGNED: Matt Gardner
DATE: 12/01/2020

ENGINEERS SEAL:

STATE OF OHIO
LAURENCE A. SACK
E49837
REGISTERED PROFESSIONAL ENGINEER

SHEETS: 38-61
SIGNED: Laurence A. Sack
DATE: 12/01/2020

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CLI-US22-11.75 PART 1
CITY OF WILMINGTON
CLINTON COUNTY
FOR PART 2, SEE CLI-US22-10.00

INDEX OF SHEETS:

PROJECT DESCRIPTION

THIS PROJECT WILL CONSTRUCT A LOON ACCOMMODATING EASTBOUND TRAFFIC AT THE PROGRESS WAY INTERSECTION. THE SIGNAL WILL BE REPLACED AT THE INTERSECTION OF U.S. 22 WITH THE WALMART DRIVE. THE NORTHEAST RADIUS AT THE U.S. 22 AND LOWES DRIVE WILL BE IMPROVED TO ACCOMMODATE TRUCK TURNING MOVEMENTS. 1960 FEET OF SHARED USE PATH WILL BE CONSTRUCTED ALONG THE SOUTH SIDE OF U.S. 22.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	*1.19 ACRES*
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	*0.25 ACRES*
NOTICE OF INTENT EARTH DISTURBED AREA:	*1.44 ACRES*

2019 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED Tammy K Campbell
DATE 12-22-2020 *DISTRICT DEPUTY DIRECTOR*

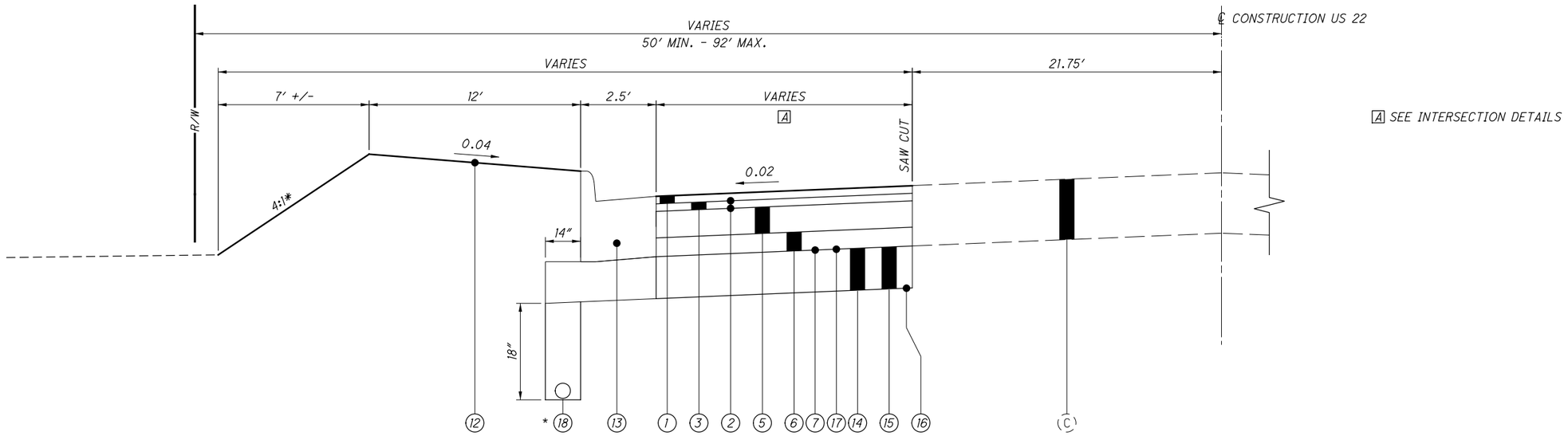
APPROVED Jack Marchbanks by DES
DATE 3/10/2021 *DIRECTOR, DEPARTMENT OF TRANSPORTATION*

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	01/17/20	RM-3.1	7/20/18	MT-97.12	1/20/17	TC-85.10	4/17/20				
BP-4.1	7/19/13	RM-4.2	4/17/20	MT-101.70	1/17/20	TC-85.20	7/20/18				
BP-5.1	1/18/19			MT-101.75	1/17/20						
BP-7.1	7/17/20	HL-30.22	4/17/20	MT-101.90	7/17/20						
				MT-105.10	1/17/20						
CB-1.1	7/19/19	MT-95.31	7/19/19	MT-110.10	7/19/13						
CB-2.1	7/20/18	MT-95.32	4/19/19								
CB-2.3	1/15/16	MT-95.41	1/17/20	TC-41.20	10/18/13						
		MT-95.45	1/17/20	TC-41.30	10/18/13						
MH-1.2	1/15/16	MT-95.50	7/21/17	TC-42.20	10/18/13						
		MT-95.60	4/19/19	TC-52.20	7/20/18						
DM-1.1	7/17/20	MT-95.61	4/19/19	TC-65.10	1/17/14						
DM-4.3	1/15/16	MT-97.10	4/19/19	TC-65.11	7/21/17						
DM-4.4	1/15/16			TC-71.10	1/19/18						
				TC-83.10	1/17/20						
				TC-83.20	7/21/17						

SUPPLEMENTAL SPECIFICATIONS		*SPECIAL PROVISIONS*
800-2019	1/15/21	
809	7/17/20	
815	4/20/18	
821	4/20/12	
832	10/19/18	
878	1/17/20	
902	7/19/19	
916	1/19/18	
921	4/20/12	

FEDERAL PROJECT NO. **E191(272)**
PID NO. **110996**
CONSTRUCTION PROJECT NO.
CLI-US22-11.75



A SEE INTERSECTION DETAILS

LOON WIDENING SECTION

STA. 115+55.67, LT. TO STA. 117+18.82, LT.

NOTE:
*ITEM 605- 6" BASE PIPE UNDERDRAIN - SEE TYPICAL FOR STA. RANGE - 202 FT CARRIED TO GENERAL SUMMARY

NOTE: THE EXISTING PAVEMENT SHALL BE SAW CUT TO LOCATE A SOUND PAVEMENT EDGE PER SEC. 203.04(E) OF THE CMS.

* SEE CROSS SECTIONS FOR GRADING

TYPICAL SECTIONS

CLI-US22-11.75

SHEET NUM.											PART.		ALT	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS	5	6	4	10	11			33			01/SAF/OT	02/SAF/OT	(X)						
																		ROADWAY	
				3							2	1		202	20010	3	EACH	HEADWALL REMOVED	
				298							108	190		202	23000	298	SY	PAVEMENT REMOVED	
				489								489		202	30000	489	SF	WALK REMOVED	
				463							56	407		202	32500	463	FT	CURB AND GUTTER REMOVED	
				156							136	20		202	35100	156	FT	PIPE REMOVED, 24" AND UNDER	
				6								6		202	35200	6	FT	PIPE REMOVED, OVER 24"	
				3							2	1		202	58100	3	EACH	CATCH BASIN REMOVED	
					1							1		202	98100	1	EACH	REMOVAL MISC.: LOWES SIGN	6
								1,350				1,350		203	10000	1,350	CY	EXCAVATION	
								322				322		203	20000	322	CY	EMBANKMENT	
972											108	864		204	10000	972	SY	SUBGRADE COMPACTION	
242											242			204	13000	242	CY	EXCAVATION OF SUBGRADE	
242												242		204	30020	242	CY	GRANULAR MATERIAL, TYPE C	
2											1	1		204	45000	2	HOUR	PROOF ROLLING	
726											726			204	50000	726	SY	GEOTEXTILE FABRIC	
				486							55	431		608	10000	486	SF	4" CONCRETE WALK	
				463							384	79		608	52000	463	SF	CURB RAMP	
												LS		878	25000	LS		INSPECTION AND COMPACTION TESTING OF UNBOUND MATERIALS	
																		EROSION CONTROL	
		10										10		601	21050	10	SY	TIED CONCRETE BLOCK MAT, TYPE 1	
	2										1	1		659	00100	2	EACH	SOIL ANALYSIS TEST	
	592				65						51	606		659	00300	657	CY	TOPSOIL	
	5,317										452	4,865		659	10000	5,317	SY	SEEDING AND MULCHING	
	267										23	244		659	14000	267	SY	REPAIR SEEDING AND MULCHING	
	267										23	244		659	15000	267	SY	INTER-SEEDING	
	0.75										0.07	0.68		659	20000	0.75	TON	COMMERCIAL FERTILIZER	
	1.21										0.2	1.01		659	31000	1.21	ACRE	LIME	
	31										3	28		659	35000	31	MGAL	WATER	
					582							582		670	00700	582	SY	DITCH EROSION PROTECTION	
												LS		832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
												LS		832	15002	LS		STORM WATER POLLUTION PREVENTION INSPECTIONS	
												LS		832	15010	LS		STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	
												40,000		832	30000	40,000	EACH	EROSION CONTROL	
																		DRAINAGE	
				1							0.5	0.5		602	20000	1	CY	CONCRETE MASONRY	
		50										50		605	13300	50	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
			202											605	14000	202	FT	6" BASE PIPE UNDERDRAINS	
		50										50		611	00510	50	FT	6" CONDUIT, TYPE F FOR UNDERDRAIN OUTLETS	
		100										100		611	00900	100	FT	6" CONDUIT, TYPE B	
		10										10		611	01100	10	FT	6" CONDUIT, TYPE C	
		50										50		611	01500	50	FT	6" CONDUIT, TYPE F	
				244								244		611	04400	244	FT	12" CONDUIT, TYPE B	
				49								49		611	04600	49	FT	12" CONDUIT, TYPE C	
				36							36			611	06100	36	FT	15" CONDUIT, TYPE C	
				124							124			611	07400	124	FT	18" CONDUIT, TYPE B	
				6								6		611	22600	6	FT	54" CONDUIT, TYPE C	
				4							2	2		611	98150	4	EACH	CATCH BASIN, NO. 3	
				2								2		611	98470	2	EACH	CATCH BASIN, NO. 2-2B	
				1							1			611	98330	1	EACH	CATCH BASIN, NO. 5 WITHOUT APRON	
				3								3		611	99574	3	EACH	MANHOLE, NO. 3	
				1								1		611	99574	1	EACH	MANHOLE, NO. 3, (84")	
		2										2		611	99710	2	EACH	PRECAST REINFORCED CONCRETE OUTLET	

CALCULATED BMG
CHECKED MAG

GENERAL SUMMARY

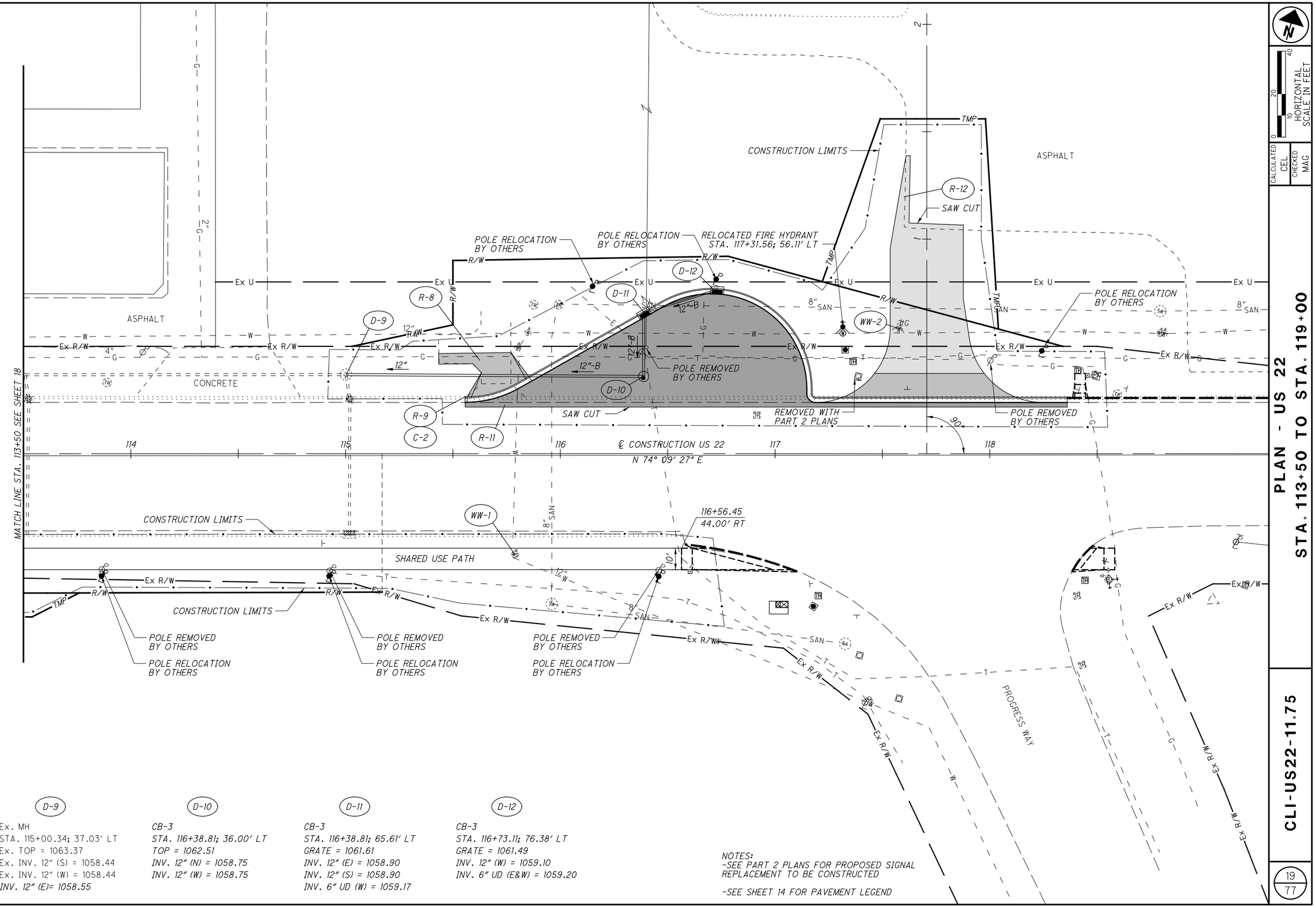
CLI-US22-11.75

REF NO.	SHEET NO.	STATION TO STATION					202 HEADWALL REMOVED EACH	202 PAVEMENT REMOVED SY	202 PAVEMENT REMOVED, ASPHALT SY	202 WALK REMOVED SF	202 CURB AND GUTTER REMOVED FT	202 PIPE REMOVED, 24" AND UNDER FT	202 PIPE REMOVED, OVER 24" FT	202 CATCH BASIN REMOVED EACH	608 4" CONCRETE WALK SF	608 CURB RAMP SF	609 COMBINATION CURB AND GUTTER, TYPE 2 FT	609 COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN FT	602 CONCRETE MASONRY CY	611 12" CONDUIT, TYPE B FT	611 12" CONDUIT, TYPE C FT	611 15" CONDUIT, TYPE C FT	611 18" CONDUIT, TYPE B FT	611 54" CONDUIT, TYPE C FT	611 CATCH BASIN, NO. 3 EACH	611 CATCH BASIN, NO. 2-2B EACH	611 CATCH BASIN, NO. 5, WITHOUT APRON EACH	611 MANHOLE, NO. 3 EACH	611 MANHOLE, NO. 3 (84") EACH
		US 22																											
R-1	14	50+46.07	LT	TO	50+55.74	LT			20																				
R-2	14	50+48.93	LT	TO	50+99.25	LT					126																		
R-3	14	50+52.00	LT	TO	50+71.15	LT	1					20																	
R-4	14	50+78.62	LT	TO	50+99.26	LT			5																				
R-5	14	50+56.34	LT	TO	51+09.25	LT				489																			
R-6	18	110+45.18 RT											6	1															
R-7	18	111+45.47	RT	TO	111+81.14	RT		29																					
R-8	19	115+43.31	LT	TO	115+83.27	LT		49																					
R-9	19	115+55.89	LT	TO	118+36.05	LT					281																		
R-10		NOT USED																											
R-11	19	115+55.67	LT	TO	118+36.05	LT			74																				
R-12	19	117+60.97	LT	TO	117+87.64	LT			13																				
R-13	20	128+61.30	RT	TO	129+82.00	RT	1					122		1															
R-14	20	128+71.34	RT	TO	129+06.35	RT					39																		
R-15	20	128+71.59	RT	TO	129+08.15	RT			106																				
R-16		NOT USED																											
R-17	20	129+75.06	RT	TO	129+79.66	RT					9																		
R-18	20	129+81.71	RT	TO	129+95.37	RT	1					14		1															
R-19	20	129+87.07	RT	TO	129+94.07	RT			1		8																		
R-20		NOT USED																											
R-21	20	129+86.89	LT	TO	129+93.96	LT			1																				
C-1	14	50+56.25	LT	TO	50+99.25	LT												113											
C-2	19	115+55.66	LT	TO	118+36.05	LT												323											
C-3	20	128+71.59	RT	TO	129+06.32	RT												38											
C-4	20	129+73.23	RT	TO	129+93.16	RT													27										
C-5		NOT USED																											
C-6	20	129+87.07	LT	TO	129+94.07	LT												7											
W-1	14	50+55.97	LT	TO	50+76.29	LT									263														
W-2	14	50+76.29	LT	TO	50+80.92	LT										79													
W-3	14	50+80.92	LT	TO	51+09.24	LT									168														
W-4	20	128+75.63	RT	TO	129+06.32	RT										244													
W-5	20	129+75.06	RT	TO	129+79.66	RT										51													
W-6	20	129+84.93	RT	TO	129+93.07	RT									55														
W-7	20	129+88.07	RT	TO	129+94.07	RT										49													
W-8	20	129+87.07	LT	TO	129+94.07	LT										40													
D-1	14	50+52.00	LT	TO	50+57.97	LT															6								
D-2	14	50+57.97	LT	TO	50+86.62	LT															33							1	
D-3	14	50+86.92 LT																		0.2									
D-4		NOT USED																											
D-5	15	96+59.23	RT	TO	96+88.00	RT																29						1	
D-6	15	96+88.00	RT	TO	97+00.00	RT																14					1		
D-7	18	110+45.00	RT	TO	110+45.18	RT																6					1		
D-8	18	110+45.18	RT	TO	110+45.87	RT																				6			1
D-9		NOT USED																											
D-10	19	115+00.18	LT	TO	116+38.81	LT															139							1	
D-11		116+38.81 LT																			30						1		
D-12	19	116+38.81	LT	TO	116+73.11	LT															36						1		
D-13	20	128+50.00	RT	TO	128+81.13	RT																	36					1	
D-14	20	128+81.13	RT	TO	129+81.44	RT																		101			1		
D-15	20	129+81.00	RT	TO	130+04.31	RT																		23			1		
D-16	20	130+04.38 RT																		0.2									
TOTALS CARRIED TO GENERAL SUMMARY							3	298		489	463	156	6	3	486	463	481	27	1	244	49	36	124	6	4	2	1	3	1

CALCULATED BMG
CHECKED MAG

SUBSUMMARY

CLI-US22-11.75



D-9
Ex. MH
STA. 115+00.34; 37.03' LT
Ex. TOP = 1063.37
Ex. INV. 12" (S) = 1058.44
Ex. INV. 12" (W) = 1058.44
INV. 12" (E)= 1058.55

D-10
CB-3
STA. 116+38.81; 36.00' LT
TOP = 1062.51
INV. 12" (N) = 1058.75
INV. 12" (W) = 1058.75

D-11
CB-3
STA. 116+38.81; 65.61' LT
GRATE = 1061.61
INV. 12" (E) = 1058.90
INV. 12" (S) = 1058.90
INV. 6" UD (W) = 1059.17

D-12
CB-3
STA. 116+73.11; 76.38' LT
GRATE = 1061.49
INV. 12" (W) = 1059.10
INV. 6" UD (E&W) = 1059.20

NOTES:
-SEE PART 2 PLANS FOR PROPOSED SIGNAL REPLACEMENT TO BE CONSTRUCTED

-SEE SHEET 14 FOR PAVEMENT LEGEND

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CEL
CHECKED MAG

PLAN - US 22
STA. 113+50 TO STA. 119+00

CLI-US22-11.75

19
77

633, CONTROLLER ITEM MISC.; CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2

IN ADDITION TO ODOT ITEM 633 AND ITEM 733, THE CONTROLLER SHALL MEET ALL CURRENT APPLICABLE NEMA TS2 STANDARDS AND THE REQUIREMENTS OF ODOT CMS ITEM 633. THE TS2 TYPE 2 CONTROLLER SHALL BE FURNISHED WITH THE MOST RECENT SOFTWARE AND PROVIDE ALL FEATURES OF THE LATEST MODEL AVAILABLE.

CONTROLLER TESTING

THE CONTRACTOR SHALL PERFORM BENCH TESTING OF THE COMPONENTS OF THIS SECTION ON THE CONTROLLER. SOFTWARE AND FIRMWARE SHALL BE LOADED ON THE SYSTEM/CONTROLLER AND CHECKED FOR CORRECT OPERATION OF TIMING PLANS, PHASING SCHEMES, PRE-EMPTS AND INTERCONNECTED OPERATION. THE SUCCESSFUL TESTING SHALL BE DEMONSTRATED TO THE ENGINEER PRIOR TO INSTALLATION IF REQUESTED.

TESTING OF COMPONENTS BY THE CONTRACTOR FOR PROPER OPERATION SHALL INCLUDE THE FOLLOWING MINIMUM REQUIREMENTS:

TEST FOR OPERATION ON MIN RECALL, MAX RECALL, NO CALL AND PROPER FLASH SEQUENCE

THE CONTRACTOR IN CASE OF MINOR PROBLEMS SHALL MAKE NECESSARY REPAIRS/CORRECTIONS. (MAJOR PROBLEMS SHALL BE IMMEDIATELY REFERRED TO THE PRIME VENDOR WHO SHALL BE RESPONSIBLE FOR RESOLVING ANY EQUIPMENT PROBLEM). THE ENGINEER SHALL ALSO BE NOTIFIED OF ANY PROBLEMS. THE CONTROLLER IS TO OPERATE, WITHOUT THE APPEARANCE OF PROBLEMS, ON MINIMUM RECALL OF ALL MINOR PHASES FOR 48 HOURS WITH FULL LOAD ON EACH OUTPUT. (NOTE THAT TESTING ALSO REQUIRES OPERATION WITH DETECTORS IN A NO CALL AND CALL TO MAXIMUM CONFIGURATION).

A WRITTEN REPORT STATING THE CABINET INTERSECTION NUMBER, DATE AND TIME OF TEST, SIGNED OFF BY THE TECHNICIAN WHO PERFORMED THE TESTS, SHALL BE SUBMITTED TO THE ENGINEER UPON SUCCESSFUL COMPLETION OF THE ABOVE TESTS.

THE CONTROLLER AND ALL RELATED COMPONENTS SHALL BE IN PERFECT WORKING ORDER AND READY FOR INSTALLATION/OPERATION AT THE SPECIFIED INTERSECTION AS A RESULT OF THE WORK DESCRIBED IN THIS ITEM. THE TEST AREA MAY BE ERECTED AT A LOCATION DETERMINED BY THE CONTRACTOR. THE COST FOR THE CONTROLLER AND CABINET TESTING SHALL BE INCLUDED IN THE PRICE OF THE CONTROLLER FURNISHED COMPLETE.

DOCUMENTATION

TWO (2) COMPLETE SET OF DOCUMENTATION SHALL BE FURNISHED WITH EACH CONTROLLER FOR EACH UNIT OF EQUIPMENT THAT INCLUDES THE FOLLOWING MATERIAL:

--USER MANUALS
--DEVICE PROGRAMMING MANUALS

--WIRING DIAGRAMS AND PARTS LISTS WHICH SHOW BOTH THE MANUFACTURERS PART NUMBER AND THE GENERIC EQUIVALENT PART OF REFERENCE NUMBER AND DESCRIPTION TO ALLOW FOR PURCHASE AT A LOCAL ELECTRONIC SUPPLY HOUSE.

--INSTALLATION AND DIAGNOSTIC MANUALS

SOFTWARE OR FIRMWARE UPDATES SHALL BE ACCOMPANIED BY COMPLETE DOCUMENTATION THAT REFERENCES AN UPGRADE VERSION, PROVIDES A LIST OF IMPROVED CAPABILITIES WITH THE UPGRADE, AND PROVIDES A LIST OF PROBLEMS RESOLVED WITH THE UPGRADE (IF APPLICABLE). ALL FUNCTIONS, FEATURES, AND CAPABILITIES NOT ADDRESSED SHALL OPERATE AS INTENDED BEFORE THE UPGRADE WAS IMPLEMENTED.

CABINET EQUIPMENT

THE CABINET EXTERIOR SHALL BE COMMERCIALLY SMOOTH AND FREE OF DEFECTS THAT WOULD IMPAIR SERVICEABILITY OR DETRACT FROM GENERAL APPEARANCE. THE CABINET SHALL BE FURNISHED FULLY EQUIPPED WITH THE FOLLOWING FEATURES READY FOR CONTROLLER INSTALLATION AS REQUIRED:

1. ALL CABINETS SHALL BE FURNISHED WITH 2 REMOVABLE SHELVES MOUNTED ON ADJUSTABLE CHANNELS. ALL MOUNTING HARDWARE SHALL BE INCLUDED.

2 THE CABINET SHALL BE NATURAL ALUMINUM OUTSIDE AND WHITE INSIDE IN ACCORDANCE WITH ODOT SECTION 514.02.

3. A DOOR ALARM/LIGHT SWITCH SHALL BE FURNISHED AND INSTALLED IN THE CABINET. A 25W INCANDESCENT LAMP SHALL BE FURNISHED AND INSTALLED WITH A 355 MM (14 INCH) MINIMUM FLEXIBLE ARM TO ILLUMINATE THE FIELD TERMINALS. THE LAMP SHALL BE WIRED TO EITHER AN ON/OFF TOGGLE SWITCH MOUNTED ON THE POWER PANEL OR TO A DOOR-ACTIVATED SWITCH MOUNTED NEAR THE TOP OF THE DOOR.

4. THE CABINET SHALL BE FURNISHED WITH LOAD SWITCHES FOR A 12-POSITION BACKBOARD TO ALLOW FOR MAXIMUM PHASE UTILIZATION FOR WHICH THE CABINET IS DESIGNED. A BRACKET EXTENDING AT LEAST HALF THE LENGTH OF THE LOAD SWITCH SHALL SUPPORT ALL LOAD SWITCHES. ALL LOAD SWITCHES SHALL BE SUPPLIED WITH INPUT AND OUTPUT LED INDICATORS MOUNTED ON THE FRONT PANEL.

5. ALL CONTROLLER AND MALFUNCTION MANAGEMENT UNIT CABLES SHALL BE OF SUFFICIENT LENGTH TO ALLOW THE UNITS TO BE PLACED ON EITHER SHELF OR ON THE TOP OF THE CABINET IN THE OPERATING MODE. CONNECTING CABLES SHALL BE SLEEVED IN A BRAIDED NYLON MESH. THE USE OF EXPOSED TIE-WRAPS OR INTERWOVEN CABLES ARE UNACCEPTABLE.

6. ALL CABINET CONFIGURATIONS SHALL BE PROVIDED WITH ENOUGH RS-485 PORT 1 COMMUNICATION CABLES TO ALLOW FULL CAPABILITIES OF THAT CABINET. EACH COMMUNICATION CABLE CONNECTOR SHALL BE A 15 PIN METAL SHELL D SUBMINIATURE TYPE WITH A SHIELDED CABLE SUITABLE FOR RS-485 COMMUNICATIONS.

7. THE CABINET SHALL BE EQUIPPED WITH A MOMENTARY PUSHBUTTON CONTACT SWITCH FOR SUBSTITUTING MANUAL OPERATION OF INTERNAL TIMING FOR AUTOMATIC INTERVAL TIMING. THE SWITCH IS TO BE MOUNTED ON A 5-FOOT MINIMUM FLEXIBLE WEATHERPROOF EXTENSION CORD IN ACCORDANCE WITH ITEM 733.03B (H).

8. THE CONTROLLER TEST PANEL SHOULD BE EQUIPPED WITH THE FOLLOWING SWITCHES (TS1) AS A MINIMUM PER ODOT ITEM 733.03:

SIGNAL SHUTDOWN SWITCH

FLASH CONTROL SWITCH (BIU#2-INPUT 3)

RUN/STOP TIME SWITCH (BIU#1-INPUT 1)

AUTOMATIC/MANUAL TRANSFER SWITCH (BIU#1-I/O 20)

COORDINATED/FREE SWITCH (BIU#2-INPUT 7)

DETECTOR TEST SWITCHES SHALL BE PROVIDED FOR EACH VEHICULAR AND PEDESTRIAN PHASE. THE SWITCHES SHALL BE CAPABLE OF PLACING MANUAL CALLS INTO THE CONTROLLER DURING ACTIVATED OPERATION. THE SWITCHES SHALL BE IN PARALLEL WITH THE VEHICULAR DETECTOR RELAY CLOSURE AND PEDESTRIAN PUSHBUTTON CIRCUITS.

1. THE CABINETS SHALL BE OF A DOOR IN DOOR TYPE WITH A #1 KEY FOR THE POLICE DOOR AND A CORBIN TYPE TUMBLE LOCK KEYED FOR A #2 KEY ON THE MAIN DOOR. A RESEALABLE POUCH SHALL BE SECURELY MOUNTED TO THE INSIDE DOOR OF THE CABINET AND SHALL BE SUFFICIENT TO ACCOMMODATE ONE COMPLETE SET OF WIRING, SIGNAL, AND TIMING PLANS.

IN ADDITION TO THE REQUIREMENTS OF ITEMS 632.10 AND 732.08, THE RACK MOUNTED AMPLIFIER SHALL BE CAPABLE OF MULTIPLE FREQUENCIES, MODES (PRESENCE/PULSE), AND LEVELS OF SENSITIVITY AS NOTED:

2. LONG PRESENCE MODE SHALL PROVIDE CONTINUOUS LOOP TRACKING WITH 8-15 MINUTE MAXIMUM HOLD TIME.

3. MEDIUM PRESENCE MODE SHALL PROVIDE CONTINUOUS LOOP TRACKING WITH 4-10 MINUTES MAXIMUM HOLD TIME.

4. PULSE MODE SHALL BE CAPABLE OF TUNING OUT A VEHICLE AFTER A 2 SECOND PERIOD SO AS TO DETECT ANY OTHER VEHICLE OCCUPYING THE REMAINDER OF THE LOOP. THE LOOP ZONE SHALL BE AT FULL SENSITIVITY WITHIN 100 MILLISECONDS.

A SIMPLE LOOP DETECTOR UNIT CHART SHALL BE INCLUDED AS PART OF THE CABINET DOCUMENTATION FOR EXISTING AND PROPOSED CABINETS THAT SHOWS EACH VEHICLE DETECTOR REFERENCE ASSIGNED TO THE RESPECTIVE INPUT CHANNEL. THE LOOP DETECTOR UNIT SHALL BE PROVIDED WITH ONE (1) SET OF WIRING DIAGRAMS AND OPERATIONAL MANUALS AND A PARTS LIST WHICH DETAILS ALL PROPRIETARY COMPONENTS AND OTHER COMPONENTS, IDENTIFYING GENERIC EQUIVALENTS IF AVAILABLE.

THE EIGHT (8) PHASE (12 POSITION) CABINETS SHALL BE GROUND MOUNTED OR POLE MOUNTED AS SPECIFIED IN THE PLANS AND FURNISHED WITH GROUND MOUNTING OR POLE MOUNTING HARDWARE. THE CABINET SHALL INCLUDE TWELVE (12) LOAD SWITCH SOCKETS, SIX (6) FLASH TRANSFER RELAY SOCKETS, ONE FLASHER SOCKET, TWO MAIN PANEL BUS INTERFACE UNITS (BIU), A 16 CHANNEL DETECTOR RACK AND A BIU WITH TWO (2) ADDITIONAL SLOTS WIRED FOR PREEMPTION DEVICES, AND ONE TYPE 16 MALFUNCTION MANAGEMENT UNIT, AS A MINIMUM.

PREEMPTION CIRCUITRY SHALL BE RACK MOUNTED ON THE TOP SHELF OF THE CONTROLLER CABINET. THE CONTRACTOR SHALL PROVIDE A CABINET PLAN SHOWING COMPONENT PLACEMENT FOR APPROVAL PRIOR TO INSTALLATION.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH INCLUDING TESTING, TRAINING, AND DOCUMENTATION OF "ITEM 633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN", COMPLETE.

633, CONTROLLER ITEM, MISC.: SPREAD SPECTRUM REPEATER

IN ADDITION TO THE REQUIREMENTS OF C&MS 633 AND 733, THE FOLLOWING REQUIREMENTS SHALL APPLY:

--INCLUDE ALL EQUIPMENT NECESSARY TO COMPLETE A FUNCTIONAL DATA INTERCONNECTION BETWEEN THE MASTER CONTROLLER AND THE LOCAL CONTROLLERS.

--PROVIDE TWO ITEM 815 SPREAD SPECTRUM RADIO, AS PER PLAN AS A PART OF THIS PAY ITEM.

--THE SPREAD SPECTRUM RADIO REPEATER MAY BE MOUNTED ON A SIGNAL POLE OR ON A LIGHT POLE LOCATED AS DIRECTED BY THE ENGINEER. THE EXACT LOCATION OF THE REPEATER AND POLE SHALL BE DETERMINED BASED ON A SITE SURVEY PROVIDED BY THE CONTRACTOR PER 815.02

--THE PROPOSED POLE SHALL SUPPORT THE SPREAD SPECTRUM RADIO REPEATER, ANTENNA(S) AND THE POWER SERVICE.

--THE SPREAD SPECTRUM RADIO REPEATER SHALL BE POLE MOUNTED IN A NEMA 4X WEATHERPROOF ENCLOSURE MEETING THE REQUIREMENTS OF ITEM 633. PROVIDE A 120 VOLT POWER SUPPLY, WORK OUTLET AND WORK LIGHT IN THE ENCLOSURE. PROVIDE LIGHTNING PROTECTION DEVICES FOR THE ANTENNA FEED LINE AND POWER LINES. ROTATE THE CABINET AWAY FROM CURB AND SIDEWALK.

--PROVIDE ALL NECESSARY SPREAD SPECTRUM RADIOS, POWER SUPPLIES, ANTENNA(S), CABLE(S), BAND PASS FILTER(S), AND ANTENNA FEED LINE(S) REQUIRED TO CONNECT THE SPREAD SPECTRUM RADIO AND ANTENNA.

--INSTALL THE SPREAD SPECTRUM RADIO, ANTENNA, AND FEED LINE PER THE SPREAD SPECTRUM RADIO MANUFACTURER'S INSTALLATION INSTRUCTIONS.

--NO FCC LICENSING PERMITS AND/OR APPLICATIONS SHOULD BE NECESSARY TO OPERATE THE RADIO INTERCONNECT SYSTEM. THE CITY SHALL NOT BE RESPONSIBLE FOR ANY RADIO LICENSING PERMITS, TYPE ACCEPTANCE AND/OR APPLICATIONS NECESSARY TO MEET FCC REGULATIONS.

ANTENNA FEED LINE WATERPROOFING

-- APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT.

--APPLY A LAYER OF BUTYL RUBBER TAPE/VAPOR WRAP OVER THE JOINT MAKING SURE THAT THERE ARE NO AIR CAVITIES OR OPENINGS IN THE WRAP. USE LINERLESS RUBBER SPLICING TAPE OR RUBBER SPLICING TAPE. DO NOT APPLY BUTYL RUBBER TAPE DIRECTLY TO THE CONNECTOR.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT WITH THE FINAL WRAP GOING UP TO MINIMIZE WATER MIGRATION.

--FOR CONNECTIONS THAT WILL BE ON OR UNDER THE GROUND, COAT JOINT WITH ELECTRICAL SEALING COMPOUND.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH "ITEM 633 CONTROLLER ITEM, MISC.: SPREAD SPECTRUM REPEATER" AND SHALL INCLUDE RADIOS, CABINET, FEED LINES, ANTENNAS, INCIDENTAL ITEMS, WIRING, TESTING, MATERIALS, LABOR AND DOCUMENTATION.

809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION EQUIPMENT IN THE LOCATIONS AND LOCAL CONTROLLERS AS SHOWN IN THE PLANS. THE PREEMPTION SHALL CONFORM TO ODOT SUPPLEMENTAL SPECIFICATION 809 AND SHALL UTILIZE COMMUNICATIONS TO IDENTIFY THE PRESENCE OF AN EMERGENCY PRIORITY VEHICLE. IT SHALL CAUSE THE TRAFFIC SIGNAL CONTROLLER TO SELECT A PRE-PROGRAMMED PREEMPTION PLAN THAT WILL DISPLAY AND HOLD THE DESIRED SIGNAL PHASE FOR THE DIRECTION OF THE EMERGENCY VEHICLE.

THE COMMUNICATIONS MEDIUM SHALL EMPLOY RADIO ACTIVATED GPS TECHNIQUES TO DETERMINE AND LOG THE PRESENCE OF THE EMERGENCY VEHICLE. THE SYSTEM SHALL DETECT THE PRESENCE OF THE VEHICLE THROUGH AN EMITTING DEVICE LOCATED ON THE EMERGENCY VEHICLE. THE SYSTEM SHALL ACTIVATE THE PREEMPTION SEQUENCE BY APPLYING A SIGNAL TO ONE OF THE CONTROLLER'S PREEMPT DISCRETE INPUTS. THE SYSTEM SHALL BE COMPLETELY COMPATIBLE WITH THE CONTROLLER.

THE EQUIPMENT SHALL BE SHELF OR RACK MOUNTED AND EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET. SUPPLY EQUIPMENT COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED. THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND RECEIVING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE EMERGENCY VEHICLE AT LEAST 2000 FEET FROM THE INTERSECTION IN AN 80DB-A NOISE ENVIRONMENT.

ALL PREEMPTION PLANS SHOULD BE PROGRAMMED TO PREVENT THE YELLOW TRAP, UNLESS AS DIRECTED BY THE DISTRICT TRAFFIC ENGINEER. YELLOW TRAP PREVENT WILL FORCE THE TRANSITION THROUGH YELLOW CHANGE AND RED CLEARANCE FOR RESOLUTION OF YELLOW TRAP IF ANY PHASE OPPOSING THE PREEMPTION CLEARANCE PHASE(S) IS ACTIVE AND DISPLAYING A GREEN OR FLASHING YELLOW ARROW INDICATION WHEN THE PREEMPTION PLAN IS ACTIVATED AND THE PREEMPTION CLEARANCE PHASE(S) ARE GREEN.

SUPPLY EACH INTERSECTION SHOWN IN THE PLANS WITH THE FOLLOWING COMPONENTS, EACH BID SEPARATELY:

1. PREEMPT RECEIVING UNIT.
2. PREEMPT DETECTOR CABLE.
3. PREEMPT PHASE SELECTOR ASSEMBLY AND INTERFACE WIRING PANEL.
4. CONFIRMATION LIGHT.

AS PART OF THE RADIO ACTIVATED GPS SYSTEM, THE CONTRACTOR SHALL SUPPLY THE CITY (AT COSTS INCIDENTAL TO THE SYSTEM) WITH THE EMITTERS, TRANSMITTERS, SWITCHES, WIRING AND ALL REQUIRED VEHICLE EQUIPMENT FOR FOUR EMERGENCY VEHICLES PER INTERSECTION. THE CITY SHALL BE RESPONSIBLE FOR INSTALLING VEHICLE EQUIPMENT.

THE CITY SHALL BE SUPPLIED WITH SOFTWARE REQUIRED TO CALIBRATE, LOG, AND OPERATE THE SYSTEM. TWO (2) OPERATING AND INSTRUCTION MANUALS SHALL BE SUPPLIED WITH THE SOFTWARE.

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THE CONTRACTOR SHALL THOROUGHLY TEST THE INSTALLED SYSTEM. AS A MINIMUM, THE CONTRACTOR SHALL VERIFY THAT ALL CONNECTIONS ARE PROPERLY MADE TO THE CONTROLLER CABINETS. THE CONTRACTOR SHALL CHECK THAT THE RANGE SETTING IS PROPER FOR EACH INTERSECTION. THE CONTRACTOR SHALL DETERMINE THAT ALL PHASE SELECTORS ARE SELECTING THE PROPER PHASE AND TIMING ACCURATELY. THE CONTRACTOR SHALL VERIFY THAT ALL VEHICLE EMITTERS ARE BEING PROPERLY DETECTED.

THE CONTRACTOR SHALL PROVIDE TRAINING FOR UP TO FIFTEEN (15) PERSONS IN THE OPERATION OF THE SYSTEM. IT SHALL BE PROVIDED WITHIN 48 HOURS OF THE INSTALLATION OF THE SYSTEM. IT SHALL CONSIST OF HANDS-ON INSTRUCTION FOR A MINIMUM OF SIXTEEN (16) HOURS. THE CONTRACTOR SHALL PROVIDE TRAINING FOR UP TO FOUR (4) PERSONS IN THE INSTALLATION AND MAINTENANCE OF THE SYSTEM. IT SHALL CONSIST OF A MINIMUM OF EIGHT (8) HOURS OF INSTRUCTION. TRAINING SHALL BE SUPPLIED WITHIN SEVEN (7) DAYS OF THE INSTALLATION OF THE SYSTEM. ALL TRAINING SHALL BE HELD IN A CITY SUPPLIED LOCATION. TRAINING SHALL BE CONDUCTED BY SOMEONE WHO HAS PERFORMED THIS WITHIN THE LAST YEAR AND DOES IT ON A REGULAR BASIS. THE COST OF TRAINING, INCLUDING COURSE MATERIAL, TRAVEL SUBSISTENCE AND RELATED COSTS, SHALL BE ENTIRELY BORNE BY THE CONTRACTOR AND SHALL BE INCIDENTAL TO THE PREEMPTION EQUIPMENT.

PAYMENT FOR ITEM 809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PREEMPTION IN PLACE AND FULLY OPERATIONAL AS SHOWN IN THE PLANS, EXCEPT FOR THOSE ITEMS BID SEPARATELY.

809 PREEMPT RECEIVING UNIT

RECEIVING UNITS SHALL CONSIST OF A LIGHTWEIGHT, WEATHERPROOF AND DIRECTIONAL ASSEMBLY. EACH RECEIVING UNIT SHALL BE 360 DEGREE ADJUSTABLE. THE RECEIVING UNIT SHALL BE CAPABLE OF SENDING THE PROPER ELECTRICAL SIGNAL TO THE TRAFFIC SIGNAL CONTROLLER VIA THE PREEMPTION DETECTOR CABLE. RECEIVING UNITS SHALL BE SUPPLIED WITH MAST ARM MOUNTING HARDWARE AS SHOWN IN THE PLANS.

FURNISH PREEMPTION RECEIVING UNITS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER***19/32S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 809 PREEMPTION RECEIVING UNIT SHALL BE AT THE CONTRACT UNIT FOR EACH RECEIVING UNIT IN PLACE, COMPLETELY INSTALLED AT THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

809 PREEMPT DETECTOR CABLE

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION DETECTOR HOME RUN CABLE IN THE LOCATIONS SHOWN IN THE PLANS. IT SHALL CONNECT THE PREEMPT RECEIVING UNITS TO THE PHASE SELECTORS IN THE LOCAL CONTROLLER CABINET.

PREEMPTION DETECTOR CABLE SHALL CONFORM TO ODOT SPECIFICATION 632. ONLY ONE EXTERNAL SPLICE SHALL BE PERMITTED BETWEEN PREEMPTION RECEIVER UNIT AND CONTROLLER CABINET. THIS SPLICE SHALL MEET THE REQUIREMENTS OF C&MS 632.23 USING A WATERPROOF EPOXY SPLICE KIT. THE CABLE SHALL BE APPROVED FOR BOTH OVERHEAD AND UNDERGROUND USE. THE JACKET SHALL WITHSTAND EXPOSURE TO SUNLIGHT AND ATMOSPHERIC TEMPERATURES AND STRESSES REASONABLY EXPECTED IN NORMAL INSTALLATIONS.

PAYMENT FOR ITEM 809 PREEMPT DETECTOR CABLE SHALL BE MADE AT THE CONTRACT UNIT PRICE PER FOOT FOR THE CABLE FURNISHED, IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

809 PREEMPT PHASE SELECTOR

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT PHASE SELECTORS INCLUDING WIRING INTERFACE PANELS IN THE LOCAL CONTROLLER CABINET AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT PHASE SELECTORS COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

THIS ITEM SHALL INCLUDE THE EXTRA CABINET SPACE NECESSARY TO BE LOCATED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS. THE PHASE SELECTORS SHALL CONSIST OF A MODULE OR MODULES THAT WILL PROVIDE THE NECESSARY INPUTS TO THE CONTROLLER. PHASE SELECTORS SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF CHANNELS TO PROVIDE PREEMPTION FOR ALL APPROACHES TO THE INTERSECTION SEPARATELY. POWER SHALL BE OBTAINED FROM THE PHASE SELECTOR OR PHASE SELECTOR POWER SUPPLY AND NOT FROM THE LOCAL CONTROLLER TIMER.

THE PHASE SELECTORS SHALL HAVE FRONT PANEL INDICATORS FOR ACTIVE PREEMPT CHANNEL STATUS. IT SHALL HAVE TEST SWITCHES TO ACTIVATE ALL PREEMPT CHANNELS.

FURNISH PREEMPT PHASE SELECTORS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 809 PREEMPT PHASE SELECTOR SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PHASE SELECTOR IN PLACE, COMPLETELY INSTALLED IN THE LOCAL CONTROLLER SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

809 PREEMPT CONFIRMATION LIGHT

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT CONFIRMATION LIGHTS INCLUDING HARDWARE AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT CONFIRMATION LIGHT COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

A CONFIRMATION LIGHT SHALL BE SUPPLIED FOR EACH INTERSECTION TO INDICATE THAT THE EMERGENCY VEHICLE HAS ACHIEVED CONTROL OF THE TRAFFIC SIGNAL.

THE CONFIRMATION LIGHT SHALL BE A WEATHER TIGHT LIGHTING FIXTURE. IT SHALL BE SUPPLIED WITH A CLEAR GLOBE, LED LAMP AND MOUNTING HARDWARE TO ATTACH TO THE TRAFFIC SIGNAL MAST ARM. THE CONFIRMATION LIGHT SHALL BE POWERED BY A LOAD SWITCH IN THE TRAFFIC SIGNAL CONTROLLER. SIGNAL CABLE CONFORMING TO 732.19 SHALL BE USED FOR CONFIRMATION LIGHTS. A MINIMUM OF 4-CONDUCTOR CABLE SHALL BE USED

WITH THE GREEN WIRE SERVING AS THE SAFETY GROUND CONDUCTOR.

PAYMENT FOR ITEM 809 PREEMPT CONFIRMATION LIGHT, SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH LIGHT IN PLACE, COMPLETELY INSTALLED IN THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

633, UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 633:

PROVIDE THE GENERATOR INTERFACE AS DETAILED IN THESE PLANS.

PAYMENT FOR "ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN" WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH POWER SUPPLY IN PLACE, WIRED, TESTED AND ACCEPTED.

815, SPREAD SPECTRUM RADIO, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 815 AND 915, THE FOLLOWING REQUIREMENTS SHALL APPLY:

--PROVIDE AND INSTALL RADIO INTERCONNECT EQUIPMENT, INCLUDING SPREAD SPECTRUM RADIO, ANTENNA, MOUNTING HARDWARE, CABLING, AND INTERFACE DEVICES.

--ESTABLISH COMMUNICATIONS BETWEEN ADJACENT INTERSECTIONS AND THE MASTER CONTROLLER IN THE DAVIDS DRIVE AND ROMBACH AVENUE CONTROLLER CABINET.

--PROVIDE A BANDPASS FILTER WITH A MINIMUM OF 30 DB ATTENUATION OF INTERFERING SIGNALS.

--PERFORM THE SITE ANALYSIS AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 815. SUBMIT THE RESULTS TO THE ENGINEER.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER ANTENNA FEED LINE JOINTS.

--APPLY A LAYER OF BUTYL RUBBER TAPE/VAPOR WRAP OVER THE JOINT MAKING SURE THAT THERE ARE NO AIR CAVITIES OR OPENINGS IN THE WRAP. USE LINERLESS RUBBER SPLICING TAPE OR RUBBER SPLICING TAPE. DO NOT APPLY BUTYL RUBBER TAPE DIRECTLY TO THE CONNECTOR.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT WITH THE FINAL WRAP GOING UP TO MINIMIZE WATER MIGRATION.

--FOR CONNECTIONS THAT WILL BE ON OR UNDER THE GROUND, COAT JOINT WITH ELECTRICAL SEALING COMPOUND.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH OF "ITEM 815 SPREAD SPECTRUM RADIO, AS PER PLAN", COMPLETE AND ACCEPTED.

815, SPREAD SPECTRUM RADIO, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 815 AND 915, THE FOLLOWING REQUIREMENTS SHALL APPLY:

--PROVIDE AND INSTALL RADIO INTERCONNECT EQUIPMENT, INCLUDING SPREAD SPECTRUM RADIO, ANTENNA, MOUNTING HARDWARE, CABLING, AND INTERFACE DEVICES.

--ESTABLISH COMMUNICATIONS BETWEEN ADJACENT INTERSECTIONS AND THE MASTER CONTROLLER IN THE DAVIDS DRIVE AND ROMBACH AVENUE CONTROLLER CABINET.

--PROVIDE A BANDPASS FILTER WITH A MINIMUM OF 30 DB ATTENUATION OF INTERFERING SIGNALS.

--PERFORM THE SITE ANALYSIS AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 815. SUBMIT THE RESULTS TO THE ENGINEER.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER ANTENNA FEED LINE JOINTS.

--APPLY A LAYER OF BUTYL RUBBER TAPE/VAPOR WRAP OVER THE JOINT MAKING SURE THAT THERE ARE NO AIR CAVITIES OR OPENINGS IN THE WRAP. USE LINERLESS RUBBER SPLICING TAPE OR RUBBER SPLICING TAPE. DO NOT APPLY BUTYL RUBBER TAPE DIRECTLY TO THE CONNECTOR.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT WITH THE FINAL WRAP GOING UP TO MINIMIZE WATER MIGRATION.

--FOR CONNECTIONS THAT WILL BE ON OR UNDER THE GROUND, COAT JOINT WITH ELECTRICAL SEALING COMPOUND.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH OF "ITEM 815 SPREAD SPECTRUM RADIO, AS PER PLAN", COMPLETE AND ACCEPTED.

632, REUSE OF VEHICULAR SIGNAL HEAD

UPON CONSTRUCTING THE PROPOSED TRAFFIC CONTROL AT THE LOWES DRIVE INTERSECTION, MOVE THE THREE-SECTION SIGNAL HEAD FOR THE SOUTHBOUND THROUGH MOVEMENT (SIGNAL HEAD 4A IN CLI-US22-10.00 PLANS) SO THAT IT IS 8 FEET FROM THE SUPPORT. ADJUST DETECTION ZONES AS SHOWN ON SHEET 44 OF THIS PLAN SET, PROGRAMMING THEM AS SHOWN IN THE FOLLOWING TABLE.

THE FOLLOWING QUANTITY IS FORWARDED TO THE GENERAL SUMMARY:

REUSE OF VEHICULAR SIGNAL HEAD, AS PER PLAN 1 EACH

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC)	EXTENSION PROGRAMMED IN CONTROLLER (SEC)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
ZS1	SB LT	PRESENCE	4	-	-	-	CALL/EXTEND PHASE 4	15
ZS2	SB THRU	PRESENCE	4	10	-	4	CALL/EXTEND PHASE 4	30
ZS3	SB LT	PRESENCE	7	-	-	-	CALL/EXTEND PHASE 7	15

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SHEET NUM.									PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
45	48	49	50						01/SAF/OT							
															TRAFFIC SIGNALS	
			17						17		625	25408	17	FT	CONDUIT, 2", 725.051	
			52						52		625	25504	52	FT	CONDUIT, 3", 725.051	
			26						26		625	25604	26	FT	CONDUIT, 4", 725.051	
			279						279		625	25901	279	FT	CONDUIT, JACKED OR DRILLED, AS PER PLAN, 4", 725.04	43
			69						69		625	29000	69	FT	TRENCH	
		3							3		625	30700	3	EACH	PULL BOX, 725.08, 18"	
		1							1		625	30706	1	EACH	PULL BOX, 725.08, 24"	
		2							2		625	31510	2	EACH	PULL BOX REMOVED	
		7							7		625	32000	7	EACH	GROUND ROD	
	7								7		630	79101	7	EACH	SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN	43
	4								4		630	79500	4	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
	45								45		630	80100	45	SF	SIGN, FLAT SHEET	
	2								2		630	80510	2	EACH	SIGN, STREET NAME	
	4								4		630	87400	4	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
	4								4		630	87500	4	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
	4								4		632	05007	4	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	43
	4								4		632	05087	4	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	43
	4								4		632	20731	4	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	43
	8								8		632	25000	8	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
	4								4		632	25010	4	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	
	2								2		632	26000	2	EACH	PEDESTRIAN PUSHBUTTON	
			769						769		632	40500	769	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	
			914						914		632	40700	914	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
	4								4		632	64010	4	EACH	SIGNAL SUPPORT FOUNDATION	
	2								2		632	64020	2	EACH	PEDESTAL FOUNDATION	
			390						390		632	65200	390	FT	LOOP DETECTOR LEAD-IN CABLE	
			25						25		632	67200	25	FT	POWER CABLE, 2 CONDUCTOR, NO. 8 AWG	
			109						109		632	69400	109	FT	SERVICE CABLE, 2 CONDUCTOR, NO. 8 AWG	
	1								1		632	70001	1	EACH	POWER SERVICE, AS PER PLAN	43
			1						1		632	70400	1	EACH	CONDUIT RISER, 2" DIAMETER	
																43
		1							1		632	80303	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 3, AS PER PLAN	43
	2								2		632	80503	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 11, AS PER PLAN	43
	1								1		632	80621	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN	43
	2								2		632	89901	2	EACH	PEDESTAL, 8', TRANSFORMER BASE, AS PER PLAN	43
		1							1		632	90100	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	
		1							1		633	99000	1	EACH	CONTROLLER ITEM, MISC.: CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2	44
		1							1		633	67100	1	EACH	CABINET FOUNDATION	
		1							1		633	67200	1	EACH	CONTROLLER WORK PAD	
		1							1		809	69201	1	EACH	EMERGENCY VEHICLE PREEMPTION, AS PER PLAN	44-45
		4							4		809	69210	4	EACH	PREEMPT RECEIVING UNIT	
		520							520		809	69220	520	FT	PREEMPT DETECTOR CABLE	
		1							1		809	69230	1	EACH	PREEMPT PHASE SELECTOR	
		4							4		809	69240	4	EACH	PREEMPT CONFIRMATION LIGHT	
		1							1		633	74001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN	43
		1							1		815	30001	1	EACH	SPREAD SPECTRUM RADIO, AS PER PLAN	45
		2							2		809	69000	2	EACH	ADVANCE RADAR DETECTION	
		4							4		809	69100	4	EACH	STOP LINE RADAR DETECTION	
1									1		632	90201	1	EACH	REUSE OF VEHICULAR SIGNAL HEAD, AS PER PLAN	45

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TRAFFIC SIGNAL GENERAL SUMMARY

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LEGEND

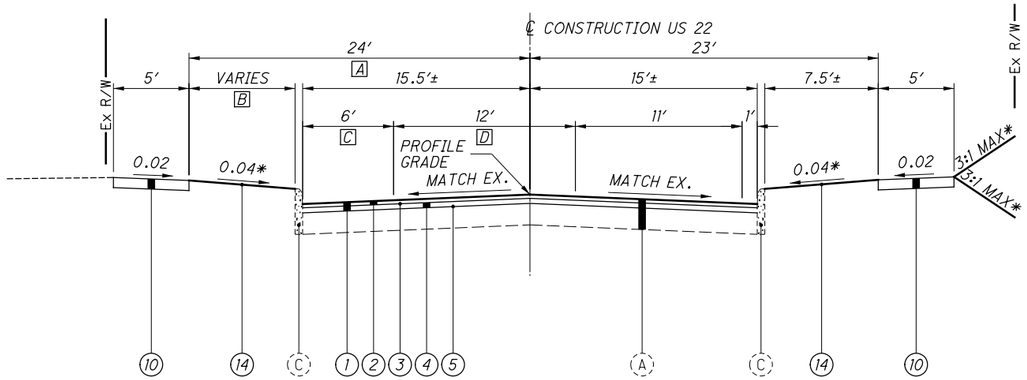
1. ITEM 254 - 3 ¼" PAVEMENT PLANING, ASPHALT CONCRETE
2. ITEM 442 - 1 ½" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (448)
3. ITEM 407 - NON-TRACKING TACK COAT (APPLIED AT 0.055 GAL/SY)
4. ITEM 442 - 1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (448)
5. ITEM 407 - NON-TRACKING TACK COAT (APPLIED AT 0.085 GAL/SY)
6. NOT USED
7. ITEM 301 - 8" ASPHALT CONCRETE BASE, PG64-22 (APPLY TWO 4" LIFTS WITH TACK COAT BETWEEN EACH LIFT)
8. ITEM 304 - 6" AGGREGATE BASE
9. ITEM 204 - SUBGRADE COMPACTION
10. ITEM 608 - 4" CONCRETE WALK
11. ITEM 441 - 1" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
12. ITEM 441 - 2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448), PG64-22
13. ITEM 304 - 8" AGGREGATE BASE (APPLY IN TWO EQUAL COURSES)
14. ITEM 659 - SEEDING AND MULCHING
15. NOT USED
16. NOT USED
17. ITEM 609 - CURB, TYPE 6
18. ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 2
19. ITEM 204 - EXCAVATION OF SUBGRADE, 12" DEEP
20. ITEM 204 - GRANULAR MATERIAL, TYPE C (12" THICKNESS)
21. ITEM 204 - GEOTEXTILE FABRIC
22. ITEM 452 - 8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P

[A] 22.5' FROM STA. 19+75.00 TO STA. 20+15.00
22.5' TO 22', STA. 20+15.00 TO STA. 20+25.00
22' FROM STA. 20+25.00 TO STA, 22+50.00
22' TO 22.5', STA. 22+50.00 TO STA. 22+60.00
22.5' FROM STA. 22+60.00 TO STA. 23+54.45

[B] 6.5'± FROM STA. 19+75.00 TO STA. 20+15.00
6.5'± TO 6'±, STA. 20+15.00 TO STA. 20+25.00
6'± FROM STA. 20+25.00 TO STA. 22+50.00
6'± TO 6.5'± STA. 22+50.00 TO STA. 22+60.00
6.5'± FROM STA. 22+60.00 TO STA. 23+54.45
8'± FROM STA. 24+11.84 TO STA. 29+00.00

[C] 3.25'± TO 6', STA. 19+75.00 TO STA. 20+14.43

[D] 13.5'± TO 12', STA. 19+75.00 TO STA. 29+00.00



ROMBACH AVENUE MILL & OVERLAY SECTION
STA. 19+75.00 TO STA. 29+00.00

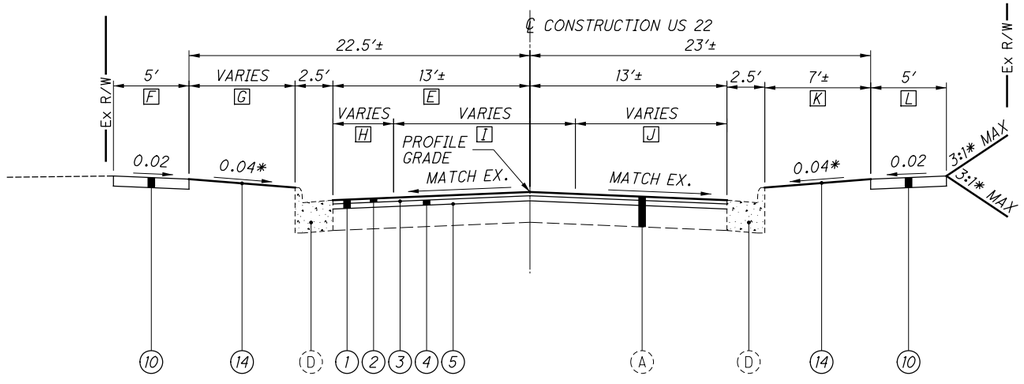
[E] 12.5'± TO 13.5'±, STA. 18+90.00 TO STA. 19+75.00

[F] 4.42' TO 5', STA. 19+11.54 TO STA. 19+40.00

[G] 7.5'± TO 7'±, STA. 19+11.54 TO STA. 19+40.00
7'± TO 6.5'±, STA. 19+40.00 TO STA. 19+75.00

[H] 0' TO 3.18', STA. 19+10.89 TO STA. 19+75.00

[I] 12.5'± TO 13', STA. 18+90.00 TO STA. 18+93.98
13' TO 13.7'±, STA. 18+93.98 TO STA. 19+10.89
13.7'± FROM STA. 19+10.89 TO STA. 19+68.97
13.7'± TO 13.5'±, STA. 19+68.97 TO STA. 19+75.00



ROMBACH AVENUE MILL & OVERLAY SECTION
STA. 18+90.00 TO STA. 19+75.00

(A) EXISTING PAVEMENT:
STA. 18+80.00 TO STA. 29+00.00
10 ¼" ASPHALT, 16" AGGREGATE

STA. 29+00.00 TO STA. 116+56.82
10 ½" ASPHALT, 7 ½" AGGREGATE

STA. 119+75.00 TO STA. 129+00.00
10 ½" ASPHALT, 6" AGGREGATE

STA. 129+00.00 TO STA. 134+40.00
6" ASPHALT, 6" CONCRETE, 4" AGGREGATE

STA. 134+40.00 TO STA. 162+10.00
11" ASPHALT, 6" AGGREGATE

STA. 162+10.00 TO STA. 174+00.00
6" ASPHALT, 6" CONCRETE, 4" AGGREGATE

EAST SIDE DRIVE
10 ½" ASPHALT, 7 ½" AGGREGATE

(B) 1 ½" ASPHALT, 8" AGGREGATE

(C) BARRIER CURB

(D) 2 ½' CURB AND GUTTER

(E) CONCRETE WALK

[J] 13.5'± TO 10', STA. 18+90.00 TO STA. 19+69.00
10' FROM STA. 19+69.00 TO STA. 19+75.00

[K] 8'± TO 7'±, STA. 19+03.83 TO STA. 19+20.00

[L] 3.79' TO 5', STA. 19+03.83 TO STA. 19+20.00

NOTE: THE EXISTING PAVEMENT SHALL BE SAW CUT TO LOCATE A SOUND PAVEMENT EDGE PER SEC. 203.04(E) OF THE CMS.

* SEE CROSS SECTIONS FOR GRADING

TYPICAL SECTIONS

CLI-US22-10.00

1. REMOVE EXISTING GUARDRAIL FROM STA. 121+42.38 TO STA. 122+95.39.
2. CONSTRUCT PAVEMENT FOR MAINTAINING TRAFFIC, CLASS A FROM STA. 119+75.11 TO STA. 129+00.00
3. INSTALL PROPOSED GUARDRAIL, TYPE MGS AS SHOWN IN SECTION A-A.

PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

CONSTRUCTION TO BE COMPLETED BY OTHERS IN SPRING OF 2020

EXISTING DRUMS AT LOON ARE TO REMAIN IN PLACE FOR THE DURATION OF CLI-US22-10.00 CONSTRUCTION WITH THE EXCEPTION OF PAVEMENT PLANING OPERATIONS.

TO 73 | 22 | 3 | NORTH TO INTERSTATE 71

WEST 22 3

ONLY

COVER

+99 +10 +47

AA TYPE T

ROUNDED END SECTION

GUARDRAIL TYPE MGS

AA TYPE T

ROUNDED END SECTION

BC EW EW BC

ROMBACH AVENUE

115 120 125

8' R 8' R

MATCH LINE STA. 114+50 SEE SHEET 17

MATCH LINE STA. 127+50 SEE THIS SHEET

BC EW EW BC

EAST WEST 73

STOP HERE ON RED

COVER

PROGRESS WAY

EAST 3 22 EAST

COVER

℄ CONST. US 22

DO NOT PASS

℄ CONSTRUCTION US. 22

40′ WORK ZONE 18.5′ 11′ 11′ 11′ 2′ 2′ WORK ZONE

1′ 2′ 1′ 2′

WORK ZONE EDGE LINE (WHITE)

WORK ZONE EDGE LINE (WHITE)

WORK ZONE CENTER LINE (SOLID / DASH) (YELLOW)

SECTION A-A

MATCH LINE STA. 127+50 SEE THIS SHEET

USE CROSSWALK

+87

℄ CONST. US 22

ROAD WORK AHEAD

500 FT

W20-1-36
W16-2aP-24
STA. 134+10

NO ENGINE BRAKE

WEST 22 3

130 135 140

ROMBACH AVENUE

CROSSWALK USE

SPEED LIMIT 50

JCT 73

ONLY TWO WAY

FOR LEGEND SEE SHEET 9.

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED CEL
CHECKED MAG

MAINTENANCE OF TRAFFIC PHASE 1
STA. 114+50 TO STA. 140+50

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SHEET NUM.												PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS	7	8	38	39	40	41	44	45	46	127	132	03/SC2/PV	04/STR/PV	05/SC2/PV							
																				ROADWAY	
														LS		201	11000	LS		CLEARING AND GRUBBING	
		266	251	286	751	397								1,951		202	23000	1,951	SY	PAVEMENT REMOVED	
			9,238	5,852	955	126								16,171		202	30000	16,171	SF	WALK REMOVED	
			599	425	237	76								1,337		202	32000	1,337	FT	CURB REMOVED	
			264	492	843	936								2,535		202	32500	2,535	FT	CURB AND GUTTER REMOVED	
			219	60	159	297								735		202	35100	735	FT	PIPE REMOVED, 24" AND UNDER	
				12	72	12								96		202	35200	96	FT	PIPE REMOVED, OVER 24"	
			7	1	7	5								20		202	58000	20	EACH	MANHOLE REMOVED	
			8	2	4	4								18		202	58100	18	EACH	CATCH BASIN REMOVED	
			3	4	6	11								24		202	58200	24	EACH	INLET REMOVED	
			42											42		202	98200	42	FT	REMOVAL MISC.: LANDSCAPE WALL	8
										1407	35			1,442		203	10000	1,442	CY	EXCAVATION	
										863	44			907		203	20000	907	CY	EMBANKMENT	
4,096														4,096		204	10000	4,096	SY	SUBGRADE COMPACTION	
2,513														2,513		204	13000	2,513	CY	EXCAVATION OF SUBGRADE	
2,513														2,513		204	30020	2,513	CY	GRANULAR MATERIAL, TYPE C	
7,538														7,538		204	50000	7,538	SY	GEOTEXTILE FABRIC	
							19,288							19,288		608	10000	19,288	SF	4" CONCRETE WALK	
							7,693							7,693		608	52000	7,693	SF	CURB RAMP	
														LS		878	25000	LS		INSPECTION AND COMPACTION TESTING OF UNBOUND MATERIALS	
																				EROSION CONTROL	
		20												20		601	21050	20	SY	TIED CONCRETE BLOCK MAT, TYPE 1	
	2													2		659	00100	2	EACH	SOIL ANALYSIS TEST	
	1,901													1,901		659	00300	1,901	CY	TOPSOIL	
	15,861													15,861		659	10000	15,861	SY	SEEDING AND MULCHING	
	793													793		659	14000	793	SY	REPAIR SEEDING AND MULCHING	
	793													793		659	15000	793	SY	INTER-SEEDING	
	2.21													2.21		654	11000	2.21	TON	COMMERCIAL FERTILIZER	
	3.28													3.28		659	31000	3.28	ACRE	LIME	
	90													90		659	35000	90	MGAL	WATER	
														LS		832	15000	LS		STORM WATER POLLUTION PREVENTION PLAN	
														LS		832	15002	LS		STORM WATER POLLUTION PREVENTION INSPECTIONS	
														LS		832	15010	LS		STORM WATER POLLUTION PREVENTION INSPECTION SOFTWARE	
														200,000		832	30000	200,000	EACH	EROSION CONTROL	
																				DRAINAGE	
								1						1		602	20000	1	CY	CONCRETE MASONRY	
		100												100		605	13300	100	FT	6" UNCLASSIFIED PIPE UNDERDRAINS	
		250												250		611	00900	250	FT	6" CONDUIT, TYPE B	
		250												250		611	01100	250	FT	6" CONDUIT, TYPE C	
		200												200		611	01500	200	FT	6" CONDUIT, TYPE F	
								6						6		611	01800	6	FT	8" CONDUIT, TYPE B	
								514	242					756		611	04400	756	FT	12" CONDUIT, TYPE B	
									33					33		611	04900	33	FT	12" CONDUIT, TYPE D	
								68	61					129		611	05900	129	FT	15" CONDUIT, TYPE B	
								66						66		611	07400	66	FT	18" CONDUIT, TYPE B	
								6	54					60		611	10400	60	FT	24" CONDUIT, TYPE B	
									6					6		611	11900	6	FT	27" CONDUIT, TYPE B	
								30						30		611	13400	30	FT	30" CONDUIT, TYPE B	
								12	6					18		611	16400	18	FT	36" CONDUIT, TYPE B	
								18						18		611	19400	18	FT	42" CONDUIT, TYPE B	
								12						12		611	23800	12	FT	60" CONDUIT, TYPE B	
								8	2					10		611	98150	10	EACH	CATCH BASIN, NO. 3	

CALCULATED JRW
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GENERAL SUMMARY

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SHEET NUM.												PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS		8			42	43	45	46		182	184	03/SC2/PV	04/STR/PV	05/SC2/PV							
																				DRAINAGE	
							6	2						8		611	98180	8	EACH	CATCH BASIN, NO. 3A	
							1	1						2		611	98370	2	EACH	CATCH BASIN, NO. 6	
								4						4		611	98470	4	EACH	CATCH BASIN, NO. 2-2B	
							6	9						15		611	98840	15	EACH	INLET, NO. 2-A-6	
							5	1						6		611	98850	6	EACH	INLET, NO. 2-A-8	
							3	1						4		611	98860	4	EACH	INLET, NO. 2-A-10	
							1							1		611	98870	1	EACH	INLET, NO. 2-A-12	
							9	4						13		611	99574	13	EACH	MANHOLE, NO. 3 (48")	
							1	6						7		611	99574	7	EACH	MANHOLE, NO. 3 (60")	
							3							3		611	99574	3	EACH	MANHOLE, NO. 3 (72")	
							1							1		611	99574	1	EACH	MANHOLE, NO. 3 (90")	
		5												5		611	99710	5	EACH	PRECAST REINFORCED CONCRETE OUTLET	
																				PAVEMENT	
3,612														3,612		253	02001	3,612	CY	PAVEMENT REPAIR, AS PER PLAN	8
98,802												75,645	23,157			254	01000	98,802	SY	PAVEMENT PLANING, ASPHALT CONCRETE (T = 3.25")	
		59												59		301	46000	59	CY	ASPHALT CONCRETE BASE, PG64-22	
693					117	29								839		304	20000	839	CY	AGGREGATE BASE	
13,987												10,591	3,243	153		407	20000	13,987	GAL	NON-TRACKING TACK COAT	
78														78		441	50000	78	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
156														156		441	50300	156	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	
4,117												3,152	965			442	20000	4,117	CY	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (448)	
4,803												3,677	1,126			442	20200	4,803	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (448)	
331														331		452	10010	331	SY	6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
863					36									899		452	12010	899	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
					1911	646								2557		609	12000	2557	FT	COMBINATION CURB AND GUTTER, TYPE 2	
					1,408	452								1,860		609	26000	1,860	FT	CURB, TYPE 6	
						729								729		609	71000	729	SF	CONCRETE MEDIAN	
														LS		690	98400	LS		SPECIAL - CONSULTANT FOR CONCRETE QUALITY CONTROL	8
																				INCLUDING TESTING AND INSPECTION	
																				WATER WORK	
											30			30		202	32001	30	FT	CURB REMOVED, AS PER PLAN	182
											3			3		638	10480	3	EACH	FIRE HYDRANT REMOVED	
											80			80		SPECIAL	63820416	80	FT	4" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS (WILMINGTON)	172
											228			228		SPECIAL	63820418	228	FT	6" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS (WILMINGTON)	172
											1,957			1,957		SPECIAL	63820420	1,957	FT	8" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS (WILMINGTON)	172
											1			1		SPECIAL	63820504	1	EACH	2" GATE VALVE (WILMINGTON)	172 & 180
											1			1		SPECIAL	63820516	1	EACH	2" CUTTING IN SLEEVE (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820532	3	EACH	4" CUTTING IN SLEEVE (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820522	3	EACH	4" GATE VALVE WITH VALVE BOX (WILMINGTON)	172 & 180
											4			4		SPECIAL	63820538	4	EACH	6" GATE VALVE WITH VALVE BOX (WILMINGTON)	172 & 180
											1			1		SPECIAL	63820542	1	EACH	6" INSERTING VALVE WITH VALVE BOX (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820548	3	EACH	6" CUTTING IN SLEEVE (WILMINGTON)	172 & 180
											2			2		SPECIAL	63820554	2	EACH	8" GATE VALVE WITH VALVE BOX (WILMINGTON)	172 & 180
											1			1		SPECIAL	63820690	1	EACH	6" X 6" TAPPING SLEEVE, VALVE AND VALVE BOX (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820692	3	EACH	8" X 6" TAPPING SLEEVE, VALVE AND VALVE BOX (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820694	3	EACH	8" X 8" TAPPING SLEEVE, VALVE AND VALVE BOX (WILMINGTON)	172 & 180
											3			3		SPECIAL	63820750	3	EACH	6" FIRE HYDRANT (WILMINGTON)	177 & 178
											4			4		SPECIAL	63820754	4	EACH	FIRE HYDRANT RELOCATED (WILMINGTON)	178
											1,128			1,128		SPECIAL	63820772	1,128	FT	1" POLYETHYLENE WATER SERVICE LINE (WILMINGTON)	172 & 179
											44			44		SPECIAL	63820780	44	FT	2" POLYETHYLENE WATER SERVICE LINE (WILMINGTON)	172 & 179
											2			2		SPECIAL	63820876	2	EACH	CUT AND PLUG EXISTING 4" WATER LINE (WILMINGTON)	181
											38			38		SPECIAL	63820894	38	EACH	1" CORPORATION STOP (WILMINGTON)	172 & 179
																				SANITARY SEWER	
										100				100		611	00900	100	FT	6" CONDUIT, TYPE B, FOR SANITARY CONNECTION	
										100				100		611	01100	100	FT	6" CONDUIT, TYPE C, FOR SANITARY CONNECTION	
											25			25		611	02000	25	FT	8" CONDUIT, TYPE C	
											1			1		611	99574	1	EACH	MANHOLE, NO. 3	

CALCULATED JRW CHECKED MAG

GENERAL SUMMARY

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REF NO.	SHEET NO.	STATION TO STATION	602 CONCRETE MASONRY	611 8" CONDUIT, TYPE B	611 12" CONDUIT, TYPE B	611 15" CONDUIT, TYPE B	611 18" CONDUIT, TYPE B	611 24" CONDUIT, TYPE B	611 30" CONDUIT, TYPE B	611 36" CONDUIT, TYPE B	611 42" CONDUIT, TYPE B	611 60" CONDUIT, TYPE B	611 CATCH BASIN, NO. 3	611 CATCH BASIN, NO. 3A	611 CATCH BASIN, NO. 6	611 INLET, NO. 2-A-6	611 INLET, NO. 2-A-8	611 INLET, NO. 2-A-10	611 INLET, NO. 2-A-12	611 MANHOLE, NO. 3 (48")	611 MANHOLE, NO. 3 (60")	611 MANHOLE, NO. 3 (72")	611 MANHOLE, NO. 3 (90")
			CY	FT	FT	FT	FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
		US 22 (ROMBACH AVE)																					
D-1	49	19+70.07 RT			15									1									
D-2	49	19+70.08 RT					12													1			
D-3	49	19+70.15 LT			6									1									
D-4	49	22+31.53 LT			23								1										
D-5	49	22+32.99 RT					12													1			
D-6	49	22+35.80 RT			8												1						
D-7	50	24+14.98 LT			6								1										
D-8	50	24+15.13 RT			6		12													1			
D-9	50	25+85.45 RT			8									1									
D-10		NOT USED																					
D-11	50	25+87.86 RT					12													1			
D-12	50	25+88.24 LT			45									1									
D-13	50	26+34.64 RT			7												1						
D-14	50	27+74.84 RT			8								1										
D-15	50	27+75.04 RT			6		12													1			
D-16	50	27+75.81 LT			12								1										
D-17	51	28+47.11 LT		6	6											1							
D-18	51	29+42.34 LT			25									1									
D-19	51	29+53.02 RT			12	6	6													1			
D-20	51	29+53.59 LT			23										1								
D-21	51	30+00.39 RT			12	6														1			
D-22	51	30+01.72 RT			7											1							
D-23	51	30+04.39 LT			6														1				
D-24	52	36+85.88 RT			18																		
D-25	54	43+36.99 RT			12								1					1					
D-26	54	44+48.10 LT TO 44+88.00 LT	0.2		40								1										
D-27	54	46+37.74 RT			6	6											1						
D-28	55	49+51.89 LT			6											1							
D-29	55	49+90.44 LT			45								1										
D-30		NOT USED																					
D-31	55	50+67.63 RT			6											1							
D-32		NOT USED																					
D-33	57	60+98.26 LT			7											1							
D-34	57	60+99.33 RT			6	10										1							
D-35	57	61+60.51 LT			8								1										
D-36	57	62+38.16 RT			10													1					
D-37	57	62+53.72 LT			10													1					
D-38	57	62+88.94 LT						6				12											1
D-39	58	66+08.69 LT			12						12											1	
D-40	58	66+60.76 RT			16																		
D-41	59	66+74.72 RT			22								1									1	
D-42	59	68+47.75 LT							6	6	6											1	
D-43	59	68+50.98 LT							12								1						
D-44	59	68+51.18 RT			6					6							1						
D-45	59	72+16.96 RT			20															1			
D-46	59	72+36.25 RT			23									1									
D-47	60	74+52.80 LT							12												1		
D-48	60	77+03.69 RT				40														1			
TOTALS CARRIED TO GENERAL SUMMARY			1	6	514	68	66	6	30	12	18	12	9	6	1	6	5	3	1	9	1	3	1

CALCULATED BMG
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DRAINAGE SUBSUMMARY

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PAVEMENT LEGEND (SEE PAVEMENT REPAIR DETAIL SHEET 6)

442 - 1 ½" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (448)
407 - NON-TRACKING TACK COAT (APPLIED AT 0.055 GAL/SY)
442 - 1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (448)
407 - NON-TRACKING TACK COAT (APPLIED AT 0.085 GAL/SY)
407 - NON-TRACKING TACK COAT (APPLIED AT 0.085 GAL/SY)
301 - 8" ASPHALT CONCRETE BASE, PG64-22 (APPLY IN TWO EQUAL COURSES)
304 - 6" AGGREGATE BASE
204 - SUBGRADE COMPACTION
204 - EXCAVATION OF SUBGRADE, 12" DEEP
204 - 12" GRANULAR MATERIAL, TYPE C
204 - GEOTEXTILE FABRIC

254 - 3 ¼" PAVEMENT PLANING, ASPHALT CONCRETE
442 - 1 ½" ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446)
407 - NON-TRACKING TACK COAT (APPLIED AT 0.055 GAL/SY)
442 - 1 ¾" ASPHALT CONCRETE INTERMEDIATE COURSE, 19 MM, TYPE A (446)
407 - NON-TRACKING TACK COAT (APPLIED AT 0.085 GAL/SY)

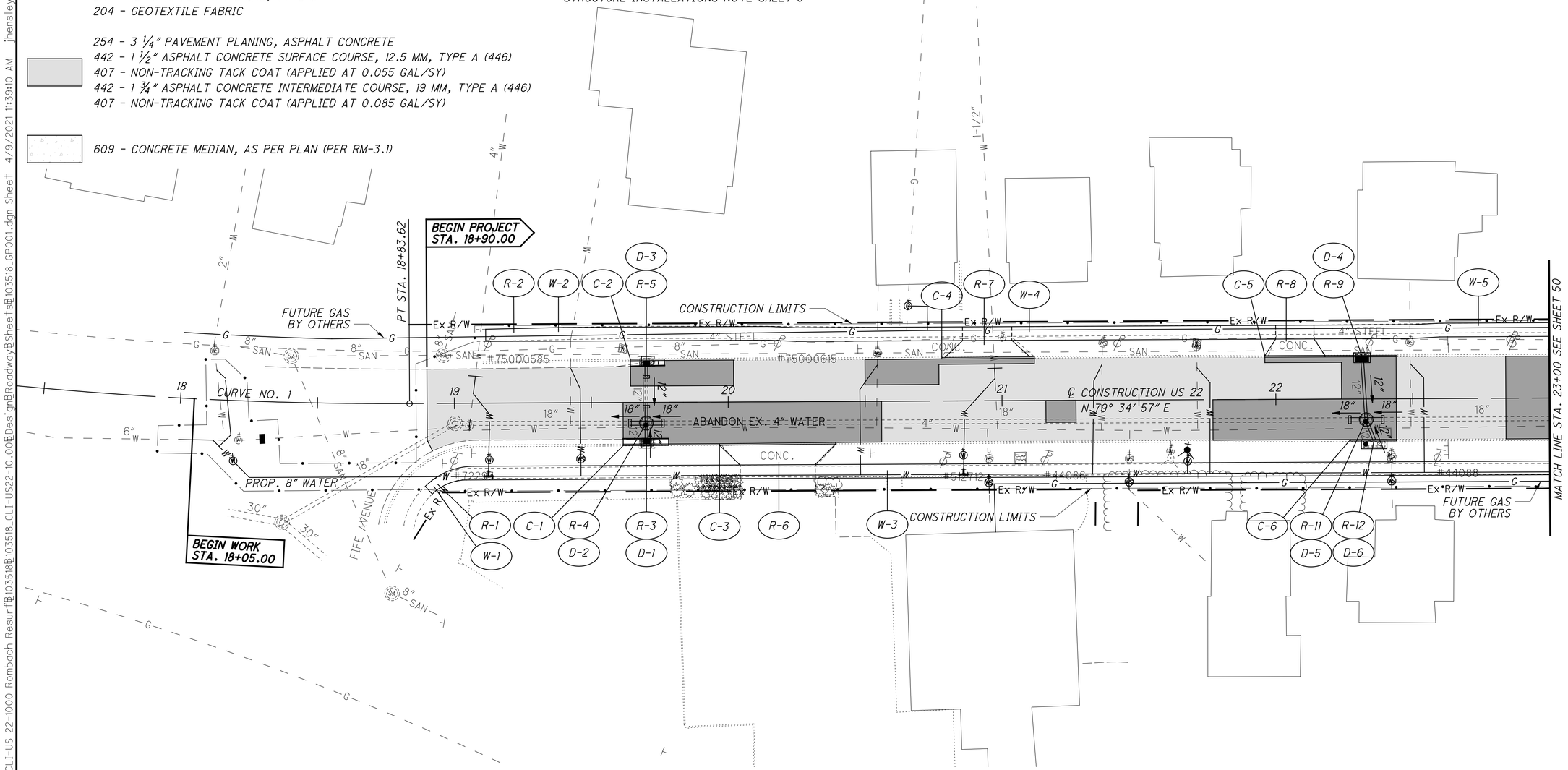
609 - CONCRETE MEDIAN, AS PER PLAN (PER RM-3.1)

DRIVEWAY PAVEMENT

RESIDENTIAL
452 - 6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P

COMMERCIAL
452 - 8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P

NOTE:
FOR PAVEMENT RESTORATION DUE TO DRAINAGE INSTALLATION SEE PAVEMENT RESTORATION FOR DRAINAGE STRUCTURE INSTALLATIONS NOTE SHEET 8



D-1
CB-3A
STA. 19+70.07; 15.22' RT
EX. GRATE = 1036.82
EX. INV. 12" N = 1031.72

D-2
MH-3 (48")
STA. 19+70.08; 7.57' RT
EX. TOP = 1037.37
EX. INV. 18" E = 1030.88
EX. INV. 18" W = 1030.88
EX. INV. 12" N = 1031.07
EX. INV. 12" S = 1031.07

D-3
CB-3A
STA. 19+70.15; 15.34' LT
EX. GRATE = 1036.87
EX. INV. 12" S = 1034.47

D-4
CB-3
STA. 22+31.53; 15.40' LT
EX. GRATE = 1043.70
EX. INV. 12" S = 1038.87

D-5
MH-3 (48")
STA. 22+32.99; 7.58' RT
EX. TOP = 1044.03
EX. INV. 18" E = 1036.01
EX. INV. 18" W = 1036.01
EX. INV. 12" N = 1036.13
EX. INV. 12" S = 1037.73

D-6
INLET-2A (8')
STA. 22+35.82; 14.86' RT
INV. GRADE = 1043.77
INV. 12" N = 1038.73

CURVE NO. 1
PI STA. 16+93.30
Δ = 15° 19' 02" (LT)
Dc = 4° 00' 00"
R = 1,432.39'
T = 192.61'
L = 382.93'
E = 12.89'
C = 381.79'
C.B. = N 87° 14' 28" E

FOR WALK DIMENSIONS SEE INTERSECTION DETAILS

HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED JRW
CHECKED MAG

PLAN - US 22
STA. 18+00 TO STA. 23+00

CLI-US22-10.00

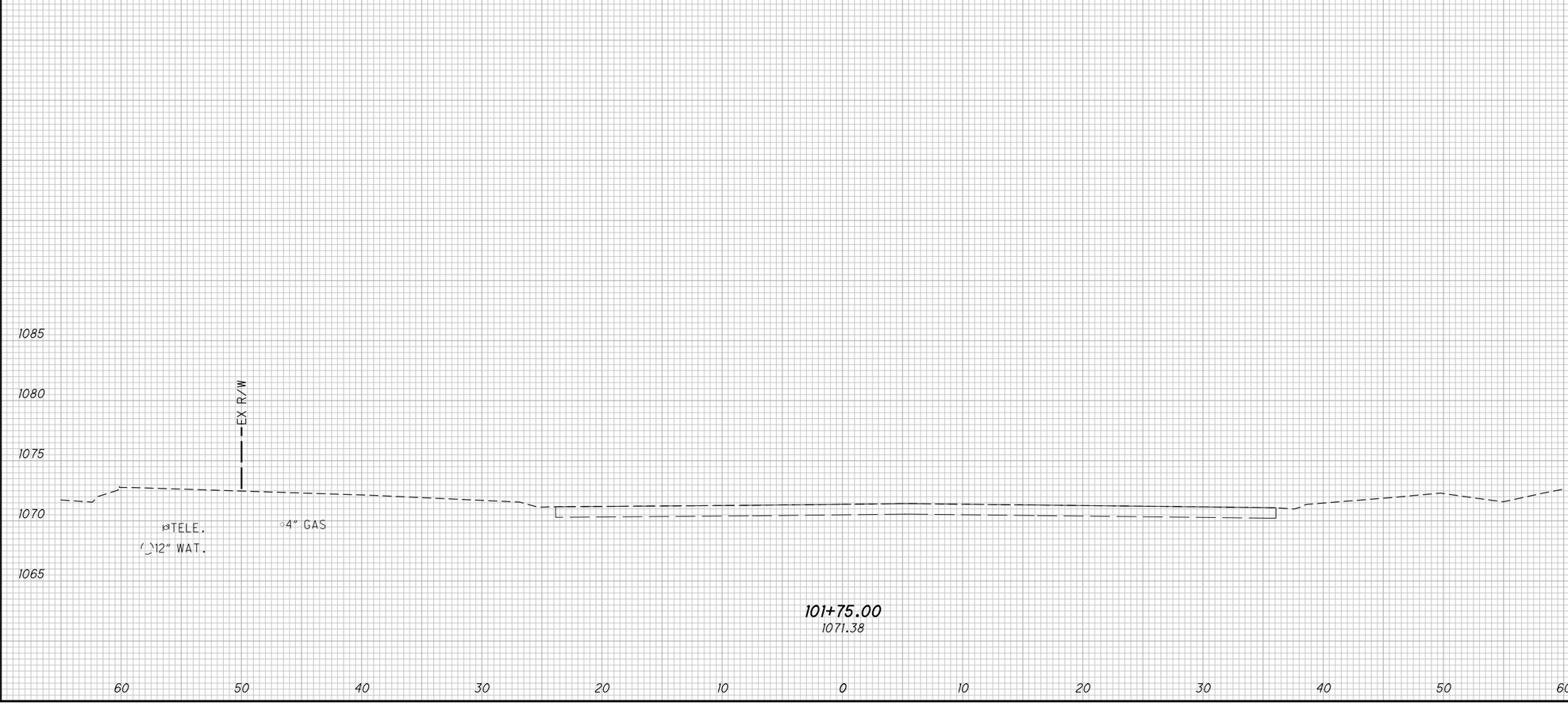
SEEDING	
END WIDTH	SQ. YDS.
.	.

TOTALS CARRIED TO GENERAL SUMMARY	
ITEM 203 - EXCAVATION	1407 CU YD
ITEM 203 - EMBANKMENT	863 CU YD
ITEM 659 - SEEDING AND MULCHING (SEE GENERAL NOTES)	

END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0		
.	.	6	0

CALCULATED JRW
CHECKED MAG

CROSS SECTIONS - US 22
STA. 101+75.00



CLI-US22-10.00

11. ALL SIGNAL HEADS SHALL BE POSITIONED SO THAT THE SIGNAL HEAD IS CORRECTLY AIMED AT APPROACHING TRAFFIC. IF PROPER ORIENTATION OF THE LED UNIT IS REQUIRED FOR OPTIMUM PERFORMANCE, AN UP ARROW, FOR CORRECT INDEXING AND ORIENTATION SHALL EXIST ON THE UNIT.

12. THE BOTTOM OF THE SIGNAL HEADS FOR THE SAME APPROACH SHALL BE WITHIN 6 INCHES OF EACH OTHER AND MOUNTED AT A MINIMUM HEIGHT OF 17 FEET AND A MAXIMUM HEIGHT OF 19 FEET (DISTANCE BETWEEN THE BOTTOM OF SIGNAL HEAD TO PAVEMENT).

PAYMENT FOR "ITEM 632 VEHICULAR SIGNAL HEAD, LED, <BY TYPE>, AS PER PLAN <WITH AND WITHOUT BACKPLATES>" SHALL BE MADE FOR COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW ATTACHMENT HARDWARE.

632, PEDESTAL, <LENGTH>, TRANSFORMER BASE, AS PER PLAN

THE EXTERIOR OF PEDESTALS SHALL BE POWDER COATED BLACK AFTER GALVANIZING IN ACCORDANCE WITH ODOT SUPPLEMENTAL SPECIFICATION 916.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR "ITEM 632 PEDESTAL, (LENGTH), TRANSFORMER BASE, AS PER PLAN", COMPLETE.

632, SIGNAL SUPPORT, TYPE TC-81.21, <BY DESIGN>, AS PER PLAN
632, SIGNAL SUPPORT, <BY TYPE>, WITH MAST ARMS TYPE TC-81.21 <BY DESIGN AND TYPE TC-81.21 <BY DESIGN>, AS PER PLAN
632, SIGNAL SUPPORT, MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13

THE EXTERIOR OF SIGNAL SUPPORTS SHALL BE POWDER COATED BLACK AFTER GALVANIZING IN ACCORDANCE WITH ODOT SUPPLEMENTAL SPECIFICATION 916.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR "ITEM 632 SIGNAL SUPPORT, TYPE TC-81.21, <BY DESIGN>, AS PER PLAN", "ITEM 632, SIGNAL SUPPORT, <BY TYPE>, WITH MAST ARMS TYPE TC-81.21 <BY DESIGN AND TYPE TC-81.21 <BY DESIGN>, AS PER PLAN", SIGNAL SUPPORT, OR 'MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13', COMPLETE.

632, COVERING OF VEHICULAR SIGNAL HEAD

COVER VEHICULAR SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING THE SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THAT THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD, TAN OR BEIGE, SO THAT IT IS CLEAR TO DRIVERS THE HEADS ARE COVERED, NOT DARK. USE A METHOD OF COVERING TO COVER ATTACHMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE ENGINEER. COVERS ARE TO BE FREE OF TEXT, PICTURES, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

632, POWER SERVICE, AS PER PLAN

POWER SERVICE SHALL BE AS PER SPECIFICATION 632 AND STANDARD CONSTRUCTION DRAWING TC-83.10 WITH THE FOLLOWING EXCEPTIONS:

1) THE METER BASE MOUNTING HEIGHT SHALL BE NO MORE THAN FIVE (5) FEET HIGH TO THE CENTER OF THE METER BASE FROM THE GROUND.
2) THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASES.
3) ALL POWER SERVICES SHALL BE METERED.
4) DISCONNECT SWITCH ENCLOSURES FURNISHED SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER.

CONTACT THE METER SECTION OF THE POWER COMPANY FOR INFORMATION REGARDING THE POWER SERVICE INSTALLATION. REQUEST AND SCHEDULE ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOK UP. PROVIDE LOAD CALCULATIONS REQUIRED BY THE POWER COMPANY. CONTACT THE POWER COMPANY FOR THE ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL IS ACCEPTED BY THE MAINTAINING AGENCY.

POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM FIRST ENERGY AT THE LOCATIONS INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

DAYTON POWER AND LIGHT
1900 DRYDEN ROAD
MORAINE, OHIO 45439
PHONE: 937-331-3900

633, CONTROLLER UNIT, TYPE TS2/A2, AS PER PLAN

IN ADDITION TO ODOT ITEM 633 AND ITEM 733, THE CONTROLLER SHALL MEET ALL CURRENT APPLICABLE NEMA TS2 STANDARDS AND THE REQUIREMENTS OF ODOT CMS ITEM 633. THE TS2 TYPE 2 CONTROLLER SHALL BE FURNISHED WITH THE MOST RECENT SOFTWARE AND PROVIDE ALL FEATURES OF THE LATEST MODEL AVAILABLE.

CONTROLLER TESTING

THE CONTRACTOR SHALL PERFORM BENCH TESTING OF THE COMPONENTS OF THIS SECTION ON THE CONTROLLER. SOFTWARE AND FIRMWARE SHALL BE LOADED ON THE SYSTEM/CONTROLLER AND CHECKED FOR CORRECT OPERATION OF TIMING PLANS, PHASING SCHEMES, PRE-EMPTS AND INTERCONNECTED OPERATION. THE SUCCESSFUL TESTING SHALL BE DEMONSTRATED TO THE ENGINEER PRIOR TO INSTALLATION IF REQUESTED.

TESTING OF COMPONENTS BY THE CONTRACTOR FOR PROPER OPERATION SHALL INCLUDE THE FOLLOWING MINIMUM REQUIREMENTS:

TEST FOR OPERATION ON MIN RECALL, MAX RECALL, NO CALL AND PROPER FLASH SEQUENCE

THE CONTRACTOR IN CASE OF MINOR PROBLEMS SHALL MAKE NECESSARY REPAIRS/CORRECTIONS. (MAJOR PROBLEMS SHALL BE IMMEDIATELY REFERRED TO THE PRIME VENDOR WHO SHALL BE RESPONSIBLE FOR RESOLVING ANY EQUIPMENT PROBLEM). THE ENGINEER SHALL ALSO BE NOTIFIED OF ANY PROBLEMS. THE CONTROLLER IS TO OPERATE, WITHOUT THE APPEARANCE OF PROBLEMS, ON MINIMUM RECALL OF ALL MINOR PHASES FOR 48 HOURS WITH FULL LOAD ON EACH OUTPUT. (NOTE THAT TESTING ALSO REQUIRES OPERATION WITH DETECTORS IN A NO CALL AND CALL TO MAXIMUM CONFIGURATION).

A WRITTEN REPORT STATING THE CABINET INTERSECTION NUMBER, DATE AND TIME OF TEST, SIGNED OFF BY THE TECHNICIAN WHO PERFORMED THE TESTS, SHALL BE SUBMITTED TO THE ENGINEER UPON SUCCESSFUL COMPLETION OF THE ABOVE TESTS.

THE CONTROLLER AND ALL RELATED COMPONENTS SHALL BE IN PERFECT WORKING ORDER AND READY FOR INSTALLATION/OPERATION AT THE SPECIFIED INTERSECTION AS A RESULT OF THE WORK DESCRIBED IN THIS ITEM. THE TEST AREA MAY BE ERECTED AT A LOCATION DETERMINED BY THE CONTRACTOR. THE COST FOR THE CONTROLLER AND CABINET TESTING SHALL BE INCLUDED IN THE PRICE OF THE CONTROLLER FURNISHED COMPLETE.

DOCUMENTATION

TWO (2) COMPLETE SET OF DOCUMENTATION SHALL BE FURNISHED WITH EACH CONTROLLER FOR EACH UNIT OF EQUIPMENT THAT INCLUDES THE FOLLOWING MATERIAL:

--USER MANUALS
--DEVICE PROGRAMMING MANUALS

--WIRING DIAGRAMS AND PARTS LISTS WHICH SHOW BOTH THE MANUFACTURERS PART NUMBER AND THE GENERIC EQUIVALENT PART OF REFERENCE NUMBER AND DESCRIPTION TO ALLOW FOR PURCHASE AT A LOCAL ELECTRONIC SUPPLY HOUSE.

--INSTALLATION AND DIAGNOSTIC MANUALS

SOFTWARE OR FIRMWARE UPDATES SHALL BE ACCOMPANIED BY COMPLETE DOCUMENTATION THAT REFERENCES AN UPGRADE VERSION, PROVIDES A LIST OF IMPROVED CAPABILITIES WITH THE UPGRADE, AND PROVIDES A LIST OF PROBLEMS RESOLVED WITH THE UPGRADE (IF APPLICABLE). ALL FUNCTIONS, FEATURES, AND CAPABILITIES NOT ADDRESSED SHALL OPERATE AS INTENDED BEFORE THE UPGRADE WAS IMPLEMENTED.

CABINET EQUIPMENT

THE CABINET EXTERIOR SHALL BE COMMERCIALLY SMOOTH AND FREE OF DEFECTS THAT WOULD IMPAIR SERVICEABILITY OR DETRACT FROM GENERAL APPEARANCE. THE CABINET SHALL BE FURNISHED FULLY EQUIPPED WITH THE FOLLOWING FEATURES READY FOR CONTROLLER INSTALLATION AS REQUIRED:

1. ALL CABINETS SHALL BE FURNISHED WITH 2 REMOVABLE SHELVES MOUNTED ON ADJUSTABLE CHANNELS. ALL MOUNTING HARDWARE SHALL BE INCLUDED.

2 THE CABINET SHALL BE NATURAL ALUMINUM OUTSIDE AND WHITE INSIDE IN ACCORDANCE WITH ODOT SECTION 514.02.

3. A DOOR ALARM/LIGHT SWITCH SHALL BE FURNISHED AND INSTALLED IN THE CABINET. A 25W INCANDESCENT LAMP SHALL BE FURNISHED AND INSTALLED WITH A 355 MM (14 INCH) MINIMUM FLEXIBLE ARM TO ILLUMINATE THE FIELD TERMINALS. THE LAMP SHALL BE WIRED TO EITHER AN ON/OFF TOGGLE SWITCH MOUNTED ON THE POWER PANEL OR TO A DOOR-ACTIVATED SWITCH MOUNTED NEAR THE TOP OF THE DOOR.

4. THE CABINET SHALL BE FURNISHED WITH LOAD SWITCHES FOR A 12-POSITION BACKBOARD TO ALLOW FOR MAXIMUM PHASE UTILIZATION FOR WHICH THE CABINET IS DESIGNED. A BRACKET EXTENDING AT LEAST HALF THE LENGTH OF THE LOAD SWITCH SHALL SUPPORT ALL LOAD SWITCHES. ALL LOAD SWITCHES SHALL BE SUPPLIED WITH INPUT AND OUTPUT LED INDICATORS MOUNTED ON THE FRONT PANEL.

5. ALL CONTROLLER AND MALFUNCTION MANAGEMENT UNIT CABLES SHALL BE OF SUFFICIENT LENGTH TO ALLOW THE UNITS TO BE PLACED ON EITHER SHELF OR ON THE TOP OF THE CABINET IN THE OPERATING MODE. CONNECTING CABLES SHALL BE SLEEVED IN A BRAIDED NYLON MESH. THE USE OF EXPOSED TIE-WRAPS OR INTERWOVEN CABLES ARE UNACCEPTABLE.

6. ALL CABINET CONFIGURATIONS SHALL BE PROVIDED WITH ENOUGH RS-485 PORT 1 COMMUNICATION CABLES TO ALLOW FULL CAPABILITIES OF THAT CABINET. EACH COMMUNICATION CABLE CONNECTOR SHALL BE A 15 PIN METAL SHELL D SUBMINIATURE TYPE WITH A SHIELDED CABLE SUITABLE FOR RS-485 COMMUNICATIONS.

7. THE CABINET SHALL BE EQUIPPED WITH A MOMENTARY PUSHBUTTON CONTACT SWITCH FOR SUBSTITUTING MANUAL OPERATION OF INTERNAL TIMING FOR AUTOMATIC INTERVAL TIMING. THE SWITCH IS TO BE MOUNTED ON A 5-FOOT MINIMUM FLEXIBLE WEATHERPROOF EXTENSION CORD IN ACCORDANCE WITH ITEM 733.03B (H).

8. THE CONTROLLER TEST PANEL SHOULD BE EQUIPPED WITH THE FOLLOWING SWITCHES (TS1) AS A MINIMUM PER ODOT ITEM 733.03:

SIGNAL SHUTDOWN SWITCH

FLASH CONTROL SWITCH (BIU#2-INPUT 3)

RUN/STOP TIME SWITCH (BIU#1-INPUT 1)

AUTOMATIC/MANUAL TRANSFER SWITCH (BIU#1-I/O 20)

COORDINATED/FREE SWITCH (BIU#2-INPUT 7)

CALCULATED TVF
CHECKED LAS

TRAFFIC SIGNAL GENERAL NOTES

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DETECTOR TEST SWITCHES SHALL BE PROVIDED FOR EACH VEHICULAR AND PEDESTRIAN PHASE. THE SWITCHES SHALL BE CAPABLE OF PLACING MANUAL CALLS INTO THE CONTROLLER DURING ACTIVATED OPERATION. THE SWITCHES SHALL BE IN PARALLEL WITH THE VEHICULAR DETECTOR RELAY CLOSURE AND PEDESTRIAN PUSHBUTTON CIRCUITS.

1. THE CABINETS SHALL BE OF A DOOR IN DOOR TYPE WITH A #1 KEY FOR THE POLICE DOOR AND A CORBIN TYPE TUMBLE LOCK KEYED FOR A #2 KEY ON THE MAIN DOOR. A RESEALABLE POUCH SHALL BE SECURELY MOUNTED TO THE INSIDE DOOR OF THE CABINET AND SHALL BE SUFFICIENT TO ACCOMMODATE ONE COMPLETE SET OF WIRING, SIGNAL, AND TIMING PLANS.

IN ADDITION TO THE REQUIREMENTS OF ITEMS 632.10 AND 732.08, THE RACK MOUNTED AMPLIFIER SHALL BE CAPABLE OF MULTIPLE FREQUENCIES, MODES (PRESENCE/PULSE), AND LEVELS OF SENSITIVITY AS NOTED:

2. LONG PRESENCE MODE SHALL PROVIDE CONTINUOUS LOOP TRACKING WITH 8-15 MINUTE MAXIMUM HOLD TIME.

3. MEDIUM PRESENCE MODE SHALL PROVIDE CONTINUOUS LOOP TRACKING WITH 4-10 MINUTES MAXIMUM HOLD TIME.

4. PULSE MODE SHALL BE CAPABLE OF TUNING OUT A VEHICLE AFTER A 2 SECOND PERIOD SO AS TO DETECT ANY OTHER VEHICLE OCCUPYING THE REMAINDER OF THE LOOP. THE LOOP ZONE SHALL BE AT FULL SENSITIVITY WITHIN 100 MILLISECONDS.

A SIMPLE LOOP DETECTOR UNIT CHART SHALL BE INCLUDED AS PART OF THE CABINET DOCUMENTATION FOR EXISTING AND PROPOSED CABINETS THAT SHOWS EACH VEHICLE DETECTOR REFERENCE ASSIGNED TO THE RESPECTIVE INPUT CHANNEL. THE LOOP DETECTOR UNIT SHALL BE PROVIDED WITH ONE (1) SET OF WIRING DIAGRAMS AND OPERATIONAL MANUALS AND A PARTS LIST WHICH DETAILS ALL PROPRIETARY COMPONENTS AND OTHER COMPONENTS, IDENTIFYING GENERIC EQUIVALENTS IF AVAILABLE.

THE EIGHT (8) PHASE (12 POSITION) CABINETS SHALL BE GROUND MOUNTED OR POLE MOUNTED AS SPECIFIED IN THE PLANS AND FURNISHED WITH GROUND MOUNTING OR POLE MOUNTING HARDWARE. THE CABINET SHALL INCLUDE TWELVE (12) LOAD SWITCH SOCKETS, SIX (6) FLASH TRANSFER RELAY SOCKETS, ONE FLASHER SOCKET, TWO MAIN PANEL BUS INTERFACE UNITS (BIU), A 16 CHANNEL DETECTOR RACK AND A BIU WITH TWO (2) ADDITIONAL SLOTS WIRED FOR PREEMPTION DEVICES, AND ONE TYPE 16 MALFUNCTION MANAGEMENT UNIT, AS A MINIMUM.

PREEMPTION CIRCUITRY SHALL BE RACK MOUNTED ON THE TOP SHELF OF THE CONTROLLER CABINET. THE CONTRACTOR SHALL PROVIDE A CABINET PLAN SHOWING COMPONENT PLACEMENT FOR APPROVAL PRIOR TO INSTALLATION.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH INCLUDING TESTING, TRAINING, AND DOCUMENTATION OF "ITEM 633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN", COMPLETE.

633, CONTROLLER ITEM, MISC.: SPREAD SPECTRUM REPEATER

IN ADDITION TO THE REQUIREMENTS OF C&MS 633 AND 733, THE FOLLOWING REQUIREMENTS SHALL APPLY:

--INCLUDE ALL EQUIPMENT NECESSARY TO COMPLETE A FUNCTIONAL DATA INTERCONNECTION BETWEEN THE MASTER CONTROLLER AND THE LOCAL CONTROLLERS.

--PROVIDE TWO ITEM 815 SPREAD SPECTRUM RADIO, AS PER PLAN AS A PART OF THIS PAY ITEM.

--THE SPREAD SPECTRUM RADIO REPEATER MAY BE MOUNTED ON A SIGNAL POLE OR ON A LIGHT POLE LOCATED AS DIRECTED BY THE ENGINEER. THE EXACT LOCATION OF THE REPEATER AND POLE SHALL BE DETERMINED BASED ON A SITE SURVEY PROVIDED BY THE CONTRACTOR PER 815.02

--THE PROPOSED POLE SHALL SUPPORT THE SPREAD SPECTRUM RADIO REPEATER, ANTENNA(S) AND THE POWER SERVICE.

--THE SPREAD SPECTRUM RADIO REPEATER SHALL BE POLE MOUNTED IN A NEMA 4X WEATHERPROOF ENCLOSURE MEETING THE REQUIREMENTS OF ITEM 633. PROVIDE A 120 VOLT POWER SUPPLY, WORK OUTLET AND WORK LIGHT IN THE ENCLOSURE. PROVIDE LIGHTNING PROTECTION DEVICES FOR THE ANTENNA FEED LINE AND POWER LINES. ROTATE THE CABINET AWAY FROM CURB AND SIDEWALK.

--PROVIDE ALL NECESSARY SPREAD SPECTRUM RADIOS, POWER SUPPLIES, ANTENNA(S), CABLE(S) AND ANTENNA FEED LINE(S) REQUIRED TO CONNECT THE SPREAD SPECTRUM RADIO AND ANTENNA.

--INSTALL THE SPREAD SPECTRUM RADIO, ANTENNA, AND FEED LINE PER THE SPREAD SPECTRUM RADIO MANUFACTURER'S INSTALLATION INSTRUCTIONS.

--NO FCC LICENSING PERMITS AND/OR APPLICATIONS SHOULD BE NECESSARY TO OPERATE THE RADIO INTERCONNECT SYSTEM. THE CITY SHALL NOT BE RESPONSIBLE FOR ANY RADIO LICENSING PERMITS, TYPE ACCEPTANCE AND/OR APPLICATIONS NECESSARY TO MEET FCC REGULATIONS.

ANTENNA FEED LINE WATERPROOFING

-- APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT.

--APPLY A LAYER OF BUTYL RUBBER TAPE/VAPOR WRAP OVER THE JOINT MAKING SURE THAT THERE ARE NO AIR CAVITIES OR OPENINGS IN THE WRAP. USE LINERLESS RUBBER SPLICING TAPE OR RUBBER SPLICING TAPE. DO NOT APPLY BUTYL RUBBER TAPE DIRECTLY TO THE CONNECTOR.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT WITH THE FINAL WRAP GOING UP TO MINIMIZE WATER MIGRATION.

--FOR CONNECTIONS THAT WILL BE ON OR UNDER THE GROUND, COAT JOINT WITH ELECTRICAL SEALING COMPOUND.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH " ITEM 633 CONTROLLER ITEM, MISC.: SPREAD SPECTRUM REPEATER" AND SHALL INCLUDE RADIOS, CABINET, FEED LINES, ANTENNAS, INCIDENTAL ITEMS, WIRING, TESTING, MATERIALS, LABOR AND DOCUMENTATION.

THE FOLLOWING CONTINGENCY ITEMS ARE FORWARDED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER:

1 EACH ITEM 625 LIGHT POLE, CONVENTIONAL, ATON51.7
1 EACH ITEM 625 LIGHT POLE FOUNDATION, 24"X 10' DEEP
1 EACH ITEM 625 GROUND ROD
1 EACH ITEM 632 POWER SERVICE, AS PER PLAN
1 EACH ITEM 633 CONTROLLER ITEM, MISC.: SPREAD SPECTRUM REPEATER

809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION EQUIPMENT IN THE LOCATIONS AND LOCAL CONTROLLERS AS SHOWN IN THE PLANS. THE PREEMPTION SHALL CONFORM TO ODOT SUPPLEMENTAL SPECIFICATION 809 AND SHALL UTILIZE COMMUNICATIONS TO IDENTIFY THE PRESENCE OF AN EMERGENCY PRIORITY VEHICLE. IT SHALL CAUSE THE TRAFFIC SIGNAL CONTROLLER TO SELECT A PRE-PROGRAMMED PREEMPTION PLAN THAT WILL DISPLAY AND HOLD THE DESIRED SIGNAL PHASE FOR THE DIRECTION OF THE EMERGENCY VEHICLE.

THE COMMUNICATIONS MEDIUM SHALL EMPLOY RADIO ACTIVATED GPS TECHNIQUES TO DETERMINE AND LOG THE PRESENCE OF THE EMERGENCY VEHICLE. THE SYSTEM SHALL DETECT THE PRESENCE OF THE VEHICLE THROUGH AN EMITTING DEVICE LOCATED ON THE EMERGENCY VEHICLE. THE SYSTEM SHALL ACTIVATE THE PREEMPTION SEQUENCE BY APPLYING A SIGNAL TO ONE OF THE CONTROLLER'S PREEMPT DISCRETE INPUTS. THE SYSTEM SHALL BE COMPLETELY COMPATIBLE WITH THE CONTROLLER.

THE EQUIPMENT SHALL BE SHELF OR RACK MOUNTED AND EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET. SUPPLY EQUIPMENT COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED. THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND RECEIVING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE EMERGENCY VEHICLE AT LEAST 2000 FEET FROM THE INTERSECTION IN AN 80DB-A NOISE ENVIRONMENT.

ALL PREEMPTION PLANS SHOULD BE PROGRAMMED TO PREVENT THE YELLOW TRAP, UNLESS AS DIRECTED BY THE DISTRICT TRAFFIC ENGINEER. YELLOW TRAP PREVENT WILL FORCE THE TRANSITION THROUGH YELLOW CHANGE AND RED CLEARANCE FOR RESOLUTION OF YELLOW TRAP IF ANY PHASE OPPOSING THE PREEMPTION CLEARANCE PHASE(S) IS ACTIVE AND DISPLAYING A GREEN OR FLASHING YELLOW ARROW INDICATION WHEN THE PREEMPTION PLAN IS ACTIVATED AND THE PREEMPTION CLEARANCE PHASE(S) ARE GREEN.

SUPPLY EACH INTERSECTION SHOWN IN THE PLANS WITH THE FOLLOWING COMPONENTS, EACH BID SEPARATELY:

1. PREEMPT RECEIVING UNIT.
2. PREEMPT DETECTOR CABLE.
3. PREEMPT PHASE SELECTOR ASSEMBLY AND INTERFACE WIRING PANEL.
4. CONFIRMATION LIGHT.

AS PART OF THE RADIO ACTIVATED GPS SYSTEM, THE CONTRACTOR SHALL SUPPLY THE CITY (AT COSTS INCIDENTAL TO THE SYSTEM) WITH THE EMITTERS, TRANSMITTERS, SWITCHES, WIRING AND ALL REQUIRED VEHICLE EQUIPMENT FOR FOUR EMERGENCY VEHICLES PER INTERSECTION. (32 VEHICLES) THE CITY SHALL BE RESPONSIBLE FOR INSTALLING VEHICLE EQUIPMENT.

THE CITY SHALL BE SUPPLIED WITH SOFTWARE REQUIRED TO CALIBRATE, LOG, AND OPERATE THE SYSTEM. TWO (2) OPERATING AND INSTRUCTION MANUALS SHALL BE SUPPLIED WITH THE SOFTWARE.

THE CONTRACTOR SHALL THOROUGHLY TEST THE INSTALLED SYSTEM. AS A MINIMUM, THE CONTRACTOR SHALL VERIFY THAT ALL CONNECTIONS ARE PROPERLY MADE TO THE CONTROLLER CABINETS. THE CONTRACTOR SHALL CHECK THAT THE RANGE SETTING IS PROPER FOR EACH INTERSECTION. THE CONTRACTOR SHALL DETERMINE THAT ALL PHASE SELECTORS ARE SELECTING THE PROPER PHASE AND TIMING ACCURATELY. THE CONTRACTOR SHALL VERIFY THAT ALL VEHICLE EMITTERS ARE BEING PROPERLY DETECTED.

THE CONTRACTOR SHALL PROVIDE TRAINING FOR UP TO FIFTEEN (15) PERSONS IN THE OPERATION OF THE SYSTEM. IT SHALL BE PROVIDED WITHIN 48 HOURS OF THE INSTALLATION OF THE SYSTEM. IT SHALL CONSIST OF HANDS-ON INSTRUCTION FOR A MINIMUM OF SIXTEEN (16) HOURS. THE CONTRACTOR SHALL PROVIDE TRAINING FOR UP TO FOUR (4) PERSONS IN THE INSTALLATION AND MAINTENANCE OF THE SYSTEM. IT SHALL CONSIST OF A MINIMUM OF EIGHT (8) HOURS OF INSTRUCTION. TRAINING SHALL BE SUPPLIED WITHIN SEVEN (7) DAYS OF THE INSTALLATION OF THE SYSTEM. ALL TRAINING SHALL BE HELD IN A CITY SUPPLIED LOCATION. TRAINING SHALL BE CONDUCTED BY SOMEONE WHO HAS PERFORMED THIS WITHIN THE LAST YEAR AND DOES IT ON A REGULAR BASIS. THE COST OF TRAINING, INCLUDING COURSE MATERIAL, TRAVEL SUBSISTENCE AND RELATED COSTS, SHALL BE ENTIRELY BORNE BY THE CONTRACTOR AND SHALL BE INCIDENTAL TO THE PREEMPTION EQUIPMENT.

PAYMENT FOR ITEM 809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PREEMPTION IN PLACE AND FULLY OPERATIONAL AS SHOWN IN THE PLANS, EXCEPT FOR THOSE ITEMS BID SEPARATELY.

CALCULATED TVF
CHECKED LAS

TRAFFIC SIGNAL GENERAL NOTES

CLI-US22-10.00

255
297

809 PREEMPT RECEIVING UNIT

RECEIVING UNITS SHALL CONSIST OF A LIGHTWEIGHT, WEATHERPROOF AND DIRECTIONAL ASSEMBLY. EACH RECEIVING UNIT SHALL BE 360 DEGREE ADJUSTABLE. THE RECEIVING UNIT SHALL BE CAPABLE OF SENDING THE PROPER ELECTRICAL SIGNAL TO THE TRAFFIC SIGNAL CONTROLLER VIA THE PREEMPTION DETECTOR CABLE. RECEIVING UNITS SHALL BE SUPPLIED WITH MAST ARM MOUNTING HARDWARE AS SHOWN IN THE PLANS.

FURNISH PREEMPTION RECEIVING UNITS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 809 PREEMPTION RECEIVING UNIT SHALL BE AT THE CONTRACT UNIT FOR EACH RECEIVING UNIT IN PLACE, COMPLETELY INSTALLED AT THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

809 PREEMPT DETECTOR CABLE

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION DETECTOR HOME RUN CABLE IN THE LOCATIONS SHOWN IN THE PLANS. IT SHALL CONNECT THE PREEMPT RECEIVING UNITS TO THE PHASE SELECTORS IN THE LOCAL CONTROLLER CABINET.

PREEMPTION DETECTOR CABLE SHALL CONFORM TO ODOT SPECIFICATION 632. ONLY ONE EXTERNAL SPLICE SHALL BE PERMITTED BETWEEN PREEMPTION RECEIVER UNIT AND CONTROLLER CABINET. THIS SPLICE SHALL MEET THE REQUIREMENTS OF C&MS 632.23 USING A WATERPROOF EPOXY SPLICE KIT. THE CABLE SHALL BE APPROVED FOR BOTH OVERHEAD AND UNDERGROUND USE. THE JACKET SHALL WITHSTAND EXPOSURE TO SUNLIGHT AND ATMOSPHERIC TEMPERATURES AND STRESSES REASONABLY EXPECTED IN NORMAL INSTALLATIONS.

PAYMENT FOR ITEM 809 PREEMPT DETECTOR CABLE SHALL BE MADE AT THE CONTRACT UNIT PRICE PER FOOT FOR THE CABLE FURNISHED, IN PLACE, ALL CONNECTIONS MADE AND WIRING COMPLETED, TESTED AND ACCEPTED.

809 PREEMPT PHASE SELECTOR

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT PHASE SELECTORS INCLUDING WIRING INTERFACE PANELS IN THE LOCAL CONTROLLER CABINET AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT PHASE SELECTORS COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

THIS ITEM SHALL INCLUDE THE EXTRA CABINET SPACE NECESSARY TO BE LOCATED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS. THE PHASE SELECTORS SHALL CONSIST OF A MODULE OR MODULES THAT WILL PROVIDE THE NECESSARY INPUTS TO THE CONTROLLER. PHASE SELECTORS SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF CHANNELS TO PROVIDE PREEMPTION FOR ALL APPROACHES TO THE INTERSECTION SEPARATELY. POWER SHALL BE OBTAINED FROM THE PHASE SELECTOR OR PHASE SELECTOR POWER SUPPLY AND NOT FROM THE LOCAL CONTROLLER TIMER.

THE PHASE SELECTORS SHALL HAVE FRONT PANEL INDICATORS FOR ACTIVE PREEMPT CHANNEL STATUS. IT SHALL HAVE TEST SWITCHES TO ACTIVATE ALL PREEMPT CHANNELS.

FURNISH PREEMPT PHASE SELECTORS WITH 60-MONTH WARRANTIES OR FOR THE MANUFACTURER**'S STANDARD WARRANTY WHICHEVER IS GREATER. ENSURE THAT THE WARRANTY PERIOD BEGINS ON THE DATE OF SHIPMENT TO THE PROJECT. ENSURE THAT EACH UNIT HAS A PERMANENT LABEL OR STAMP INDICATING THE DATE OF SHIPMENT.

PAYMENT FOR ITEM 809 PREEMPT PHASE SELECTOR SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PHASE SELECTOR IN PLACE, COMPLETELY INSTALLED IN THE LOCAL CONTROLLER SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

809 PREEMPT CONFIRMATION LIGHT

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPT CONFIRMATION LIGHTS INCLUDING HARDWARE AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT CONFIRMATION LIGHT COMPLETELY FUNCTIONAL AND OPERATIONAL AS SHOWN IN THE PLANS.

A CONFIRMATION LIGHT SHALL BE SUPPLIED FOR EACH INTERSECTION TO INDICATE THAT THE EMERGENCY VEHICLE HAS ACHIEVED CONTROL OF THE TRAFFIC SIGNAL.

THE CONFIRMATION LIGHT SHALL BE A WEATHER TIGHT LIGHTING FIXTURE. IT SHALL BE SUPPLIED WITH A CLEAR GLOBE, LED LAMP AND MOUNTING HARDWARE TO ATTACH TO THE TRAFFIC SIGNAL MAST ARM. THE CONFIRMATION LIGHT SHALL BE POWERED BY A LOAD SWITCH IN THE TRAFFIC SIGNAL CONTROLLER. SIGNAL CABLE CONFORMING TO 732.19 SHALL BE USED FOR CONFIRMATION LIGHTS. A MINIMUM OF 4-CONDUCTOR CABLE SHALL BE USED WITH THE GREEN WIRE SERVING AS THE SAFETY GROUND CONDUCTOR.

PAYMENT FOR ITEM 809 PREEMPT CONFIRMATION LIGHT, SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH LIGHT IN PLACE, COMPLETELY INSTALLED IN THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

633, UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 633:

PROVIDE THE GENERATOR INTERFACE AS DETAILED IN THESE PLANS.

PAYMENT FOR "ITEM 633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN" WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH POWER SUPPLY IN PLACE, WIRED, TESTED AND ACCEPTED.

815, SPREAD SPECTRUM RADIO, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 815 AND 915, THE FOLLOWING REQUIREMENTS SHALL APPLY:

--PROVIDE AND INSTALL RADIO INTERCONNECT EQUIPMENT, INCLUDING SPREAD SPECTRUM RADIO, ANTENNA, MOUNTING HARDWARE, CABLING, AND INTERFACE DEVICES.

--ESTABLISH COMMUNICATIONS BETWEEN ADJACENT INTERSECTIONS AND THE MASTER CONTROLLER IN THE DAVIDS DRIVE AND ROMBACH AVENUE CONTROLLER CABINET.

--PROVIDE A BANDPASS FILTER WITH A MINIMUM OF 30 DB ATTENUATION OF INTERFERING SIGNALS.

--PERFORM THE SITE ANALYSIS AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 815. SUBMIT THE RESULTS TO THE ENGINEER.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER ANTENNA FEED LINE JOINTS.

--APPLY A LAYER OF BUTYL RUBBER TAPE/VAPOR WRAP OVER THE JOINT MAKING SURE THAT THERE ARE NO AIR CAVITIES OR OPENINGS IN THE WRAP. USE LINERLESS RUBBER SPLICING TAPE OR RUBBER SPLICING TAPE. DO NOT APPLY BUTYL RUBBER TAPE DIRECTLY TO THE CONNECTOR.

--APPLY TWO WRAPS OF PREMIUM UV RESISTANT ELECTRICAL TAPE OVER THE JOINT WITH THE FINAL WRAP GOING UP TO MINIMIZE WATER MIGRATION.

--FOR CONNECTIONS THAT WILL BE ON OR UNDER THE GROUND, COAT JOINT WITH ELECTRICAL SEALING COMPOUND.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH OF "ITEM 815 SPREAD SPECTRUM RADIO, AS PER PLAN", COMPLETE AND ACCEPTED.

SHEET NUM.												PART.		ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
253	255	259	260	261	262	263	264	265	266	267	268	06/SAF/OT	05/S>2/PV						
																		TRAFFIC SIGNALS	
	1											1		625	10490	1	EACH	LIGHT POLE, CONVENTIONAL ,ATON51.7	
	1											1		625	14200	1	EACH	LIGHT POLE FOUNDATION, 24" X 10' DEEP	
				25			36			36	24	105	16	625	25408	121	FT	CONDUIT, 2", 725.051	
				434			229			416	232	1,166	145	625	25504	1,311	FT	CONDUIT, 3", 725.051	
				26						32	39	97		625	25600	97	FT	CONDUIT, 4", 725.04	
				50			50			72	48	188	32	625	25604	220	FT	CONDUIT, 4", 725.051	
				674			585			270	523	1,776	276	625	25901	2,052	FT	CONDUIT, JACKED OR DRILLED, AS PER PLAN, 4", 725.04	253
				485			254			480	295	1,353	161	625	29000	1,514	FT	TRENCH	
			7			6			9			19	3	625	30700	22	EACH	PULL BOX, 725.08, 18"	
			1						1			2		625	30701	2	EACH	PULL BOX, 725.08, 18", AS PER PLAN	253
			2			1			2			5		625	30706	5	EACH	PULL BOX, 725.08, 24"	
						2						1	1	625	30707	2	EACH	PULL BOX, 725.08, 24", AS PER PLAN	253
			3			2			7			12		625	31510	12	EACH	PULL BOX REMOVED	
	1		12		12				15			33	7	625	32000	40	EACH	GROUND ROD	
		16			14			20				46	4	630	79101	50	EACH	SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN	253
								4				4		630	79500	4	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
		57			58			97				184	28	630	80100	212	SF	SIGN, FLAT SHEET	
		9			8			8				23	2	630	80510	25	EACH	SIGN, STREET NAME	
		6						10				16		630	87400	16	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
		4						1				5		630	87500	5	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
		13			12			15				32	8	632	05007	40	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	253
		5			6			5				14	2	632	05087	16	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	253
		10			15			12				30	7	632	20731	37	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	254
		18			18			18				44	10	632	25000	54	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
		10			15			12				30	7	632	25010	37	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	
		5			8			6				15	4	632	26000	19	EACH	PEDESTRIAN PUSHBUTTON	
				6						4	3	13		632	27004	13	EACH	LOOP DETECTOR UNIT	
				3,291			3,917			2,321	1,760	9,087	2,202	632	40700	11,289	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
		6			5			6				15	2	632	64010	17	EACH	SIGNAL SUPPORT FOUNDATION	
		4			5			7				12	4	632	64020	16	EACH	PEDESTAL FOUNDATION	
				2,064			1,454			2,319	1,343	6,396	784	632	65200	7,180	FT	LOOP DETECTOR LEAD-IN CABLE	
				10			10			5	5	25	5	632	67200	30	FT	POWER CABLE, 2 CONDUCTOR, NO. 8 AWG	
				229			228			107	190	691	63	632	69400	754	FT	SERVICE CABLE, 2 CONDUCTOR, NO. 8 AWG	
	1	2				2			2			6	1	632	70001	7	EACH	POWER SERVICE, AS PER PLAN	254
				2			2			1	1	5	1	632	70400	6	EACH	CONDUIT RISER, 2" DIAMETER	
					1								1	632	75093	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21 DESIGN 12 POLE, WITH MAST ARMS TC-81.21 DESIGN 11	254
																		AND DESIGN 1, AS PER PLAN	
					1								1	632	75204	1	EACH	SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 7 POLE, WITH MAST ARMS TC-81.21 DESIGN 13	
																		AND DESIGN 1, AS PER PLAN	
								1				1		632	75411	1	EACH	SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 8 POLE, WITH MAST ARMS TC-81.21 DESIGN 13	254
																		AND DESIGN 11, AS PER PLAN	
																			254
		1										1		632	80103	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 1, AS PER PLAN	254
		1		1				1				2		632	80203	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN	254
					1							1		632	80503	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 11, AS PER PLAN	254
								1				1		632	80603	1	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 12, AS PER PLAN	254
		2			1			2				5		632	80621	5	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN	254
		2			1			1				4		632	80700	4	EACH	SIGNAL SUPPORT, MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE,	254
																		WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13	
		4			5			8				13	4	632	89901	17	EACH	PEDESTAL, 8', TRANSFORMER BASE, AS PER PLAN	254
4			2			1			2			9		632	90100	9	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	
			2			2			2			5	1	633	99000	6	EACH	CONTROLLER ITEM MISC.: CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2	254
			1									1		633	45000	1	EACH	GPS (GLOBAL POSITIONING SYSTEM) CLOCK ASSEMBLY	
			2			2			2			5	1	633	67100	6	EACH	CABINET FOUNDATION	
			2			2			2			5	1	633	67200	6	EACH	CONTROLLER WORK PAD	

CALCULATED TVF
CHECKED LAS

TRAFFIC SIGNAL GENERAL SUMMARY

CLI-US22-10.00

257
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Q:\City of Wilmington\0116432A.00 - CLI-US 22-1000 Rombach Resurf\103518\103518_CLI-US22-10.00\Design\Signals\Sheets\103518_CGS01.dgn Sheet 1/19/2021 1:44:11 PM mgardner

SHEET NUM.												PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
253	255	259	260	261	262	263	264	265	266	267	268	06/SAF/OT	05/S>2/PV	05/NHS/PV						
																			TRAFFIC SIGNALS CONT.	
			1										1		809	69201	1	EACH	EMERGENCY VEHICLE PREEMPTION, AS PER PLAN	255
			8			8			14				30		809	69210	30	EACH	PREEMPT RECEIVING UNIT	256
			1,576			1,733			2,676				5,985		809	69220	5,985	FT	PREEMPT DETECTOR CABLE	256
			2			2			4				8		809	69230	8	EACH	PREEMPT PHASE SELECTOR	256
			8			8			14				30		809	69240	30	EACH	PREEMPT CONFIRMATION LIGHT	256
			2			2			2			5	1		633	74001	6	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN	256
	1											1			633	99000	1	EACH	CONTROLLER ITEM, MISC.:SPREAD SPECTRUM REPEATER	256
			2			2			4			7	1		815	30001	8	EACH	SPREAD SPECTRUM RADIO, AS PER PLAN	256
			4			4			11			17	2		809	69000	19	EACH	ADVANCE RADAR DETECTION	
			7			8			12			23	4		809	69100	27	EACH	STOP LINE RADAR DETECTION	
				1,576			1,733			2,013	663		5,985		632	40500	5,985	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	

CALCULATED TVF
CHECKED LAS

TRAFFIC SIGNAL GENERAL SUMMARY

CLI-US22-10.00

258
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Q:\City of Wilmington\01164324.00 - CLI-US 22-1000 Rombach Resurf\103518\103518_CLI-US22-10.00\Design\Signals\Sheets\103518_CG001.dgn Sheet 2/23/2021 2:56:19 PM Isack

REF NO.	SHEET NO.	STATION TO STATION				630 SIGN, FLAT SHEET	630 SIGN, STREET NAME	630 REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	630 SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN	632 VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	632 VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	632 COVERING OF VEHICULAR SIGNAL HEAD	632 COVERING OF PEDESTRIAN SIGNAL HEAD	632 PEDESTRIAN PUSHBUTTON	632 SIGNAL SUPPORT FOUNDATION	632 PEDESTAL FOUNDATION	632 PEDESTAL, 8', TRANSFORMER BASE, AS PER PLAN	632 POWER SERVICE, AS PER PLAN	632 [illegible]	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 1, AS PER PLAN	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN	632 SIGNAL SUPPORT, MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN	
			TO			SF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
		ROMBACH & OAK																									
SP-1	271	37+02	52' LT			7.5	1			2	3			3			1								1	
SP-2	271	36+84	70' RT				1			1	2		1	2	1	1	1							1			
SP-3	271	37+93	31' LT			11.3	2			3	5		1	5	1	1	1								1		
PB-1	271	37+01	48' LT																								
PB-2	271	36+93	72' RT																								
PB-3	271	37+80	31' LT																								
PB-4	271	39+06	48' RT																								
PS-1	271	36+91	38' LT										2		2	1		1	1								
CABINET	271	36+84	70' RT																	1							
		ROMBACH & LOWES																									
SP-1	275	49+75	46' LT			26.3	3		6	7	1	3	1	4	1		1								1		
SP-2	275	49+95	56' RT				1			1	1	1	1	2	1		1						1				
SP-3	275	50+60	55' RT			7.5	1	2		2	1	1	1	2	1		1								1		
PB-1	275	49+72	46' LT																								
PB-2	275	49+99	56' RT																								
PB-3	275	50+69	52' LT																								
PB-4	275	50+55	55' RT																								
PB-5	275	48+58	29' LT																								
PB-6	275	52+35	41' RT																								
PS-1	275	49+65	38' LT										1		1	1		1	1								
PS-1	275	49+64	45' RT										1		1	1		1	1								
PS-2	275	50+65	54' LT			3.8		2					1		1			1	1								
CABINET	275	49+67	47' LT																	1							
TOTALS CARRIED TO GENERAL SUMMARY						57	9	4	6	16	13	5	10	18	10	5	6	4	4	2		1	1	2	2		

CALCULATED TVF
CHECKED LAS

TRAFFIC SIGNAL SUBSUMMARY

CLI-US22-10.00

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TRAFFIC SIGNAL SUBSUMMARY

CALCULATED TVF
CHECKED LAS

REF NO.	SHEET NO.	STATION TO STATION				625 GROUND ROD EACH	625 PULL BOX, 725.08, 18" EACH	625 PULL BOX, 725.08, 18", AS PER PLAN EACH	625 PULL BOX, 725.08, 24" EACH	633 CABINET FOUNDATION EACH	633 CONTROLLER WORK PAD EACH	809 PREEMPTION, AS PER PLAN EACH	809 PREEMPTION RECEIVING UNIT EACH	809 PREEMPTION DETECTOR CABLE FT	809 PREEMPTION PHASE SELECTOR EACH	809 PREEMPTION CONFIRMATION LIGHT, AS PER PLAN EACH	633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN EACH	633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN EACH	809 ADVANCE RADAR DETECTION EACH	809 STOP-BAR RADAR DETECTION EACH	815 SPREAD SPECTRUM RADIO, AS PER PLAN EACH	625 PULL BOX REMOVED EACH	632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION EACH	633 EACH	633 GPS (GLOBAL POSITIONING SYSTEM) CLOCK ASSEMBLY EACH	
			TO																							
		ROMBACH & OAK																								
SP-1	271	37+02	52' LT			1													2							
SP-2	271	36+84	70' RT			1														1						
SP-3	271	37+93	31' LT			1														2						
PB-1	271	37+01	48' LT				1																			
PB-2	271	36+93	72' RT						1																	
PB-3	271	37+80	31' LT				1																			
PB-4	271	39+06	48' RT				1																			
PS-1	271	36+91	38' LT			1																				
CABINET	271	36+84	70' RT			1				1	1		4	958	1	4	1	1			1		1		1	
		ROMBACH & LOWES																								
SP-1	275	49+75	46' LT			1													1	2						
SP-2	275	49+95	56' RT			1														1						
SP-3	275	50+60	55' RT			1													1							
PB-1	275	49+72	46' LT						1																	
PB-2	275	49+99	56' RT					1																		
PB-3	275	50+69	52' LT				1																			
PB-4	275	50+55	55' RT				1																			
PB-5	275	48+58	29' LT				1																			
PB-6	275	52+35	41' RT				1																			
PS-1	275	49+65	38' LT			1																				
PS-2	275	49+64	45' RT			1																				
PS-3	275	50+65	54' LT			1														1						
CABINET	275	49+67	47' LT			1				1	1	1	4	618	1	4	1	1			1		1		1	
	275	49+93	56' RT																			1				
	275	50+81	42' LT																			1				
	275	49+19	38' LT																			1				
TOTALS CARRIED TO GENERAL SUMMARY						12	7	1	2	2	2	1	8	1576	2	8	2	2	4	7	2	3	2		1	

CLI-US22-10.00

260
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REF NO.	SHEET NO.	STATION TO STATION	625 GROUND ROD EACH	630 SIGN, FLAT SHEET SF	630 SIGN, STREET NAME EACH	630 SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN EACH	632 VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN EACH	632 VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN EACH	632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN EACH	632 COVERING OF VEHICULAR SIGNAL HEAD EACH	632 COVERING OF PEDESTRIAN SIGNAL HEAD EACH	632 PEDESTRIAN PUSHBUTTON EACH	632 SIGNAL SUPPORT FOUNDATION EACH	632 PEDESTAL FOUNDATION EACH	632 PEDESTAL, 8', TRANSFORMER BASE, AS PER PLAN EACH	632 SIGNAL SUPPORT, TYPE TC-81.21 DESIGN 12 POLE, WITH MAST ARMS TC-81.21 DESIGN 11 AND DESIGN 1, AS PER PLAN EACH	632 SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 7 POLE, WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 1, AS PER PLAN EACH	632 SIGNAL SUPPORT, MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13 EACH	632 EACH	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 11, AS PER PLAN EACH	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN EACH		
		TO																						
		ROMBACH & WILMINGTON PLAZA																						
		(100% LOCAL FUNDS)																						
SP-1	279	58+48 32' LT	1	13.8	1	2	4	1	1	5	1		1				1							
SP-2	279	58+66 51' RT	1	13.8	1	2	4	1	1	5	1		1					1						
PB-1	279	58+44 38' LT																						
PB-2	279	57+89 55' RT																						
PB-3	279	59+24 30' LT																						
PB-4	279	58+94 52' RT																						
PS-1	279	57+72 32' LT	1						1		1	1		1	1									
PS-2	279	57+84 54' RT	1						2		2	1		1	1									
PS-3	279	59+33 32' LT	1						1		1	1		1	1									
PS-4	279	59+21 51' RT	1						1		1	1		1	1									
CABINET	279	58+42 32' LT	1																					
		ROMBACH & CARRIE																						
SP-1	283	71+07 51' LT	1	7.5	2	3	1	1	2	2	2	1	1								1			
SP-2	283	72+32 51' LT	1	7.5	1	2	1	1	2	2	2	1	1									1		
SP-3	283	72+32 44' RT	1	15.0	3	5	2	2	2	4	2	1	1						1					
PB-1	283	71+20 59' LT																						
PB-2	283	71+37 45' RT																						
PB-3	283	72+06 51' LT																						
PB-4	283	72+46 47' RT																						
PS-1	283	71+08 31' RT	1						2		2	1		1	1									
CABINET	283	71+28 60' LT	1																					
TOTALS CARRIED TO GENERAL SUMMARY			12	58	8	14	12	6	15	18	15	8	5	5	5	1	1	1		1	1			

CALCULATED TVF CHECKED LAS

TRAFFIC SIGNAL SUBSUMMARY

CLI-US22-10.00

262
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REF NO.	SHEET NO.	STATION TO STATION	625 PULL BOX, 725.08, 18" EACH	625 PULL BOX, 725.08, 24" EACH	625 PULL BOX, 725.08, 24", AS PER PLAN EACH	633 CABINET FOUNDATION EACH	633 CONTROLLER WORK PAD EACH	809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN EACH	809 PREEMPTION RECEIVING UNIT EACH	809 PREEMPTION DETECTOR CABLE FT	809 PREEMPTION PHASE SELECTOR EACH	809 PREEMPTION CONFIRMATION LIGHT, EACH	633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN EACH	633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN EACH	809 ADVANCE RADAR DETECTION EACH	809 STOP-BAR RADAR DETECTION EACH	815 SPREAD SPECTRUM RADIO, AS PER PLAN EACH	632 POWER SERVICE, AS PER PLAN EACH	625 PULL BOX REMOVED EACH	632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION EACH
		TO																		
		ROMBACH & WILMINGTON PLAZA																		
		(100% LOCAL FUNDS)																		
SP-1	279	58+48 32' LT													1	2		1		
SP-2	279	58+66 51' RT													1	2				
PB-1	279	58+44 38' LT			1															
PB-2	279	57+89 55' RT	1																	
PB-3	279	59+24 30' LT	1																	
PB-4	279	58+94 52' RT	1																	
PS-1	279	57+72 32' LT																		
PS-2	279	57+84 54' RT																		
PS-3	279	59+33 32' LT																		
PS-4	279	59+21 51' RT																		
CABINET	279	58+42 32' LT				1	1		4	728	1	4	1	1			1			
		ROMBACH & CARRIE																		
SP-1	283	71+07 51' LT													1	1		1		
SP-2	283	72+32 51' LT														1				
SP-3	283	72+33 30' RT													1	2				
PB-1	283	71+20 59' LT		1	1															
PB-2	283	71+37 45' RT	1																	
PB-3	283	72+06 51' LT	1																	
PB-4	283	72+46 47' RT	1																	
PS-1	283	71+08 31' RT																		
CABINET	283	71+28 60' LT				1	1		4	1005	1	4	1	1			1			1	1
	283	71+25 43' LT																	1	
	283	72+15 32' RT																	1	
TOTALS CARRIED TO GENERAL SUMMARY			6	1	2	2	2		8	1733	2	8	2	2	4	8	2	2	2	1

CALCULATED TVF CHECKED LAS

TRAFFIC SIGNAL SUBSUMMARY

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REF NO.	SHEET NO.	STATION TO STATION				630 SIGN, FLAT SHEET	630 SIGN, STREET NAME	630 REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED	630 SIGN HANGER ASSEMBLY, MAST ARM, AS PER PLAN	632 VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	632 VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	632 COVERING OF VEHICULAR SIGNAL HEAD	632 COVERING OF PEDESTRIAN SIGNAL HEAD	632 PEDESTRIAN PUSHBUTTON	632 SIGNAL SUPPORT FOUNDATION	632 PEDESTAL FOUNDATION	632 PEDESTAL, 8', TRANSFORMER BASE, AS PER PLAN	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 12, AS PER PLAN	632 SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 13, AS PER PLAN	632	632 SIGNAL SUPPORT, MISC.:SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 11 POLE, WITH MAST ARMS TC-81.21 DESIGN 14 AND DESIGN 13	632 SIGNAL SUPPORT, TYPE TC-12.30 DESIGN 8 POLE, WITH MAST ARMS TC-81.21 DESIGN 13 AND DESIGN 11, AS PER PLAN
				TO		SF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
		ROMBACH & DAVIDS/FAIRWAY																								
SP-1	287	95+96	57' LT			7.5	1		3		2	1	1	1	2	1		1					1			
SP-2	287	95+73	57' RT			13.5	1				2	2			2			1				1				
SP-3	287	96+55	56' LT				1				1	1	1	1	2	1		1			1					
SP-4	287	96+80	56' RT			7.5	1				2	1	1	1	2	1		1					1			
PB-1	287	95+89	43' LT																							
PB-2	287	95+69	51' RT																							
PB-3	287	96+61	42' LT																							
PB-4	287	96+72	56' RT																							
PB-5	287	94+65	39' LT																							
PB-6	287	98+35	38' RT																							
PS-1	287	95+73	44' LT											1		1	1		1	1						
PS-2	287	95+53	46' RT											2		2	1		1	1						
PS-3	287	96+75	44' LT											1		1	1		1	1						
PS-4	287	96+93	49' LT											1		1	1		1	1						
CABINET	287	96+44	56' RT																	1						
		ROMBACH & PROGRESS																								
SP-1	291	117+34	49' LT			35.3	3	1	7	2	4	7			7			1								1
SP-2	291	117+19	71' RT			39.3	1			2	9	3	2		5			1							1	
PB-1	291	117+22	66' RT																							
PB-2	291	118+46	58' RT																							
PB-3	291	117+51	40' LT																							
PB-4	291	118+36	37' LT																							
PB-5	291	116+09	33' LT																							
PB-6	291	118+03	170' RT																							
PS-1	291	116+62	54' RT											1		1			1	1						
PS-2	291	118+59	42' RT											2		2	1		1	1						
PS-3	291	118+47	37' LT											1		1	1		1	1						
CABINET	291	117+06	70' LT																							
TOTALS CARRIED TO GENERAL SUMMARY						103.0	8	1	10	4	20	15	5	12	20	12	6	6	7	8	1	1	2		1	1

TRAFFIC SIGNAL SUBSUMMARY

CALCULATED TVF
CHECKED LAS

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REF NO.	SHEET NO.	STATION TO STATION			625 GROUND ROD EACH	625 PULL BOX, 725.08, 18" EACH	625 PULL BOX, 725.08, 18", AS PER PLAN EACH	625 PULL BOX, 725.08, 24" EACH	632 POWER SERVICE, AS PER PLAN EACH	633 CABINET FOUNDATION EACH	633 CONTROLLER WORK PAD EACH	809 EMERGENCY VEHICLE PREEMPTION, AS PER PLAN EACH	809 PREEMPTION RECEIVING UNIT EACH	809 PREEMPTION DETECTOR CABLE FT	809 PREEMPTION PHASE SELECTOR EACH	809 PREEMPTION CONFIRMATION LIGHT EACH	633 CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN EACH	633 UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN EACH	809 ADVANCE RADAR DETECTION EACH	809 STOP-BAR RADAR DETECTION EACH	815 SPREAD SPECTRUM RADIO, AS PER PLAN EACH	625 PULL BOX REMOVED EACH	632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION EACH		
			TO																							
		ROMBACH & DAVIDS/FAIRWAY																								
SP-1	287	95+96	57' LT		1															1	1					
SP-2	287	95+73	57' RT		1																1					
SP-3	287	96+55	56' LT		1																1					
SP-4	287	96+80	56' RT		1															1	1					
PB-1	287	95+89	43' LT			1																				
PB-2	287	95+69	51' RT			1																				
PB-3	287	96+61	42' LT					1																		
PB-4	287	96+72	56' RT			1																				
PB-5	287	94+65	39' LT			1																				
PB-6	287	98+35	38' RT			1																				
PS-1	287	95+73	44' LT		1																					
PS-2	287	95+53	46' RT		1																					
PS-3	287	96+75	44' LT		1																					
PS-4	287	96+93	49' RT		1																					
CABINET	287	96+44	56' RT		1				1	1	1		4	995	1	4	1	1				1		1		
	287	95+64	43' LT																				1			
	287	95+94	59' LT																				1			
	287	95+92	44' LT																				1			
	287	96+44	58' RT																				1			
		ROMBACH & PROGRESS																								
SP-1	291	117+34	49' LT		1															1	1					
SP-2	291	117+19	71' RT		1															2	3					
PB-1	291	117+22	66' RT					1																		
PB-2	291	118+46	58' RT			1																				
PB-3	291	117+51	40' LT			1																				
PB-4	291	118+36	37' LT				1																			
PB-5	291	116+09	33' LT			1																				
PB-6	291	118+03	170' RT			1																				
PS-1	291	116+62	54' RT		1																					
PS-2	291	118+59	42' RT		1																					
PS-3	291	118+47	37' LT		1																					
CABINET	291	117+06	70' LT		1				1	1	1		4	663	1	4	1	1				1		1		
	291	118+41	66' RT																				1			
	291	118+43	98' RT																				1			
	291	118+60	28' LT																				1			
		ROMBACH & SR 73 SB RAMPS																								
SP-1	295	142+90	60' LT																	1						
SP-2	295	142+85	69' RT																	1						
SP-3	295	143+90	53' LT																	1	1					
SP-4	295	143+88	58' RT										3	385	1	3					1	1				
		ROMBACH & SR 73 NB RAMPS																								
SP-1	296	151+60	69' LT																		1					
SP-2	296	151+58	53' RT										3	633	1	3				1	1	1				
SP-3	296	152+56	69' LT																	1						
SP-4	296	151+58	53' RT																	1						
TOTALS CARRIED TO GENERAL SUMMARY					15	9	1	2	2	2	2		14	2676	4	14	2	2	11	12	4	7	2			

CALCULATED TVF
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TRAFFIC SIGNAL SUBSUMMARY

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