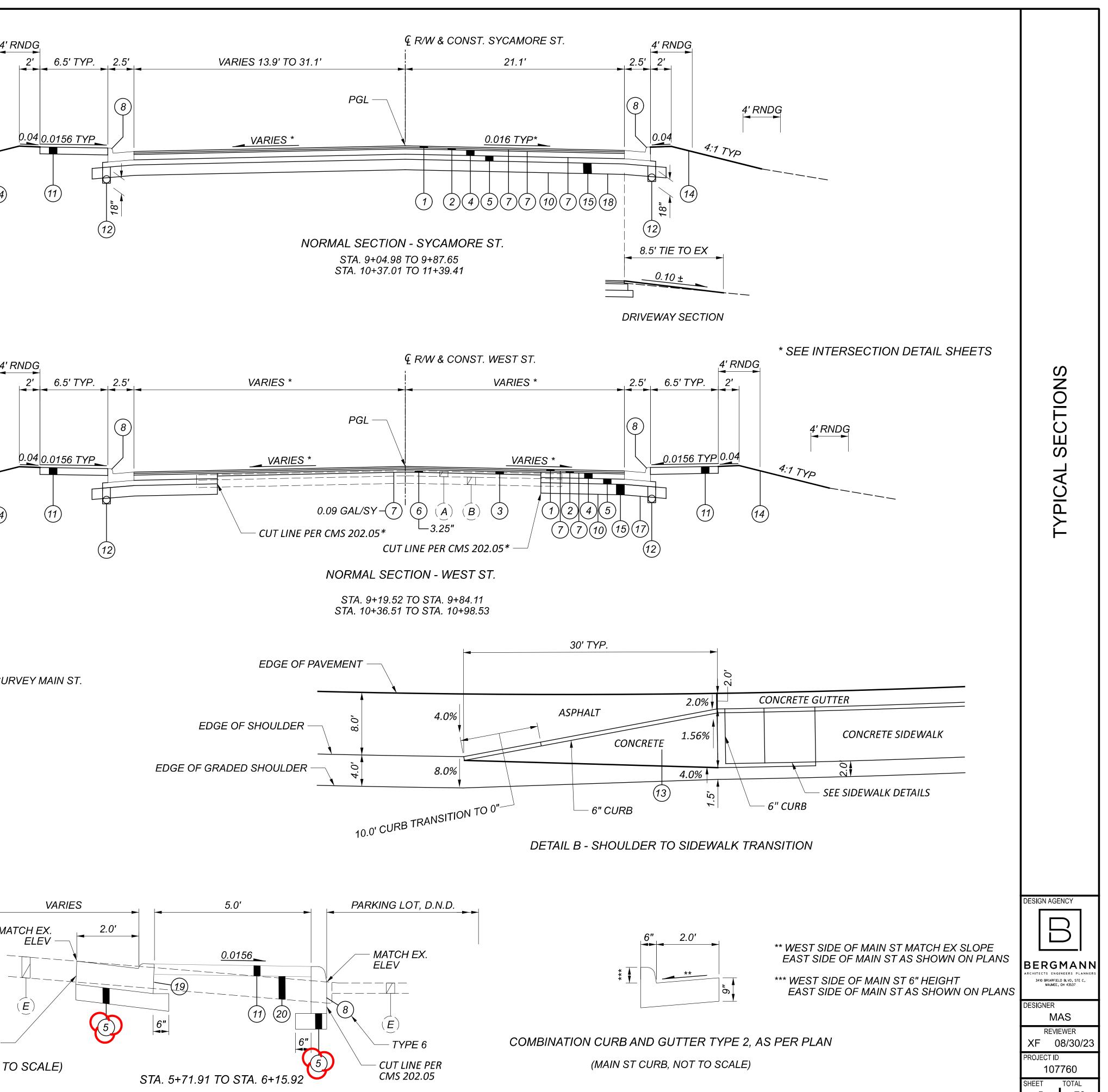


-01.08 65 -SR R UT



		SHEET NUM.				PA	RT.		ITEM	GRAND				
					59		01/SAF/21	02/STR/22	ITEM	EXT	TOTAL	UNIT	DESCRIPTION	
							\sim						TRAFFIC SIGNALS	
				(96 274		274	96	625	25304 25504	96	FT FT	CONDUIT, 1-1/2", 725.051 CONDUIT, 3", 725.051	
					274		266		62 625	25604	266	FT	CONDUIT, 4", 725.051	
					6	YY	6	YY	625	30706	6	EACH	PULL BOX, 725.08, 24"	
					621		525	96	625	29002	621	FT	TRENCH, 24" DEEP	
										05000			VELUCULAR CLONAL LIEAR, (LER), 2 CECTION, 421 LENG, 4 MAAY, ROUVCARRONIATE, RUACK MUTU RACKRUATE, 4E VEAR MARRA	
					<u> </u>		4		632 632	05006 05086	4	EACH EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, BLACK, WITH BACKPLATE, 15 YEAR WARRAN VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, BLACK, WITH BACKPLATE, 15 YEAR WARRAN	
					2		2		632	20731	2	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	
					1			1	632	64020	1	EACH	PEDESTAL FOUNDATION	
					1			1	632	89700	1	EACH	PEDESTAL, 11'	
					9		9		632	25000	q	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
					2		2		632	25010	2	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD	
					2		2		632	26000	2	EACH	PEDESTRIAN PUSHBUTTON	
		_			4		4		632	64010	4	EACH	SIGNAL SUPPORT FOUNDATION	
					431		431		632	40200	431	FT	SIGNAL CABLE, 2 CONDUCTOR, NO. 14 AWG	
		1	1		2,327	<u> </u>	2,327		632	40700	2,327	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
					45		45		632	69200	45	FT	POWER CABLE, 2 CONDUCTOR, NO. 4 AWG	
					27		27		632	69900	27	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 4 AWG	
					1		1		632	70001	1	EACH	POWER SERVICE, AS PER PLAN	
					4		4		632	79141	4	EACH	COMBINATION SIGNAL SUPPORT, TYPE TC-81.22, DESIGN 13, AS PER PLAN	
					1		1		632	90100	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	
					1		1		633	65521	1	EACH	CABINET, TYPE 332, AS PER PLAN	
					1		1		633	74001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), AS PER PLAN, 1000 WATT	
					1		1		633	67100	1	EACH	CABINET FOUNDATION	
					1		1		633	67200	1	EACH	CONTROLLER WORK PAD	
					2		2		809	69001	2	EACH	ADVANCE RADAR DETECTION, AS PER PLAN	
					4		4		809	69101	4	EACH	STOP LINE RADAR DETECTION, AS PER PLAN	
					1		1		809	69123	1	EACH	ATC CONTROLLER, AS PER PLAN	
					1		1		819	10000	1	EACH	RAILROAD PREEMPTION INTERFACE, (LOCATE ON SIGNAL POLE ADJ. TO CONTROLLER)	
					2		1	1	828	00100	2	EACH	LED BLANKOUT SIGN (NO LEFT TURN, 24"X24"X5.5")	
					1		1		828	00100	1	EACH	LED BLANKOUT SIGN (NO RIGHT TURN, 24"X24"X5.5")	
					1			1	828	00100	1	EACH	LED BLANKOUT SIGN (NO TURNS TRAIN, 24"X30"X5.5")	
		_												
					8		8		625	00450	8	EACH	LIGHTING	
					6		6		625	00450 00480	8 6	EACH	CONNECTION, FUSED PULL APART CONNECTION, UNFUSED PERMANENT	
					4		4		625	18201	4	EACH	BRACKET ARM, 15', AS PER PLAN	
1002					1,275		1,275		625	23200	1,275	FT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	
					484		484		625	23400	484	FT	NO. 10 AWG POLE AND BRACKET CABLE	
									625	26253		EACH	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), AS PER PLAN	
ad to					203	Y Y	203	XX	632	62810	203	FT	INTERCONNECT CABLE, MISC.: 6 PAIR, NO. 19 AWG, SOLID REA (PE-39)	
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		3410 BRIARFIELD BLVD, STE C, MAUMEE, OH 43537
		DESIGNER
		SJR
		REVIEWER
		LAW 08/30/23 PROJECT ID
		107760
		SHEET TOTAL
		54 72

<i>T</i>	
IN Di	HIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND ISTALLING A WAVETRONIX SMARTSENSOR ADVANCE ETECTION UNIT (MODEL SS-200E). THE DETECTION UNIT HALL INCLUDE THE FOLLOWING:
	POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
	ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRA NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR
3.	CONTACT CLOSURE TO THE TRAFFIC CONTROLLER. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MA ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY
4.	THE MANUFACTURER. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5.	THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6.	A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MINIMUM 7 FEET).
7.	THE POWER SUPPLY AND COMMUNICATION MODULES SHA BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.
8.	THE CONTRACTOR SHALL INSTALL THE RADAR DETECTION PRIOR TO MILLING/DISABLING EXISTING LOOPS.
9.	THE INSTALLATION SHALL INCLUDE ALL CONTROLLER PROGRAMMING FOR COMPLETE INSTALLATION, WHICH INCLUDES MODIFICATIONS FOR REMOVAL OF EXISTING DETECTION.
PL U C C N	AYMENT FOR ITEM 809 ADVANCE RADAR DETECTION, AS PER AN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EAC NIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED ABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDU ONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER ECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL ETECTION SYSTEM.
И	ORK INSPECTION
Τŀ	HE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AI STRICT TRAFFIC ENGINEER WITH 72-HOUR NOTICE OF ANY GNAL WORK TO BE PERFORMED AT THE INTERSECTION SITE

809 STOP-LINE RADAR DETECTION, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR MATRIX DETECTION UNIT. THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

- CLOSURE TO THE TRAFFIC CONTROLLER.
- THE MANUFACTURER.
- IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
- ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
- ETHERNET CABLE (MINIMUM 7 FEET).
- INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.
- PRIOR TO MILLING/DISABLING EXISTING LOOPS.
- 9. THE INSTALLATION SHALL INCLUDE ALL CONTROLLER PROGRAMMING FOR COMPLETE INSTALLATION, WHICH INCLUDES MODIFICATIONS FOR REMOVAL OF EXISTING DETECTION.

PAYMENT FOR ITEM 809 STOP-LINE RADAR DETECTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT AND CONNECTIONS TESTED AND ACCEPTED.

632 INTERCONNECT CABLE MISC.: 6 PAIR, NO. 19 AWG, SOLID REA (PE-39)

IN ADDITION TO THE REQUIREMENTS OF 632.23, THIS ITEM SHALL CONSIST OF PROVIDING AND INSTALLING 6 PAIR, NO. 19 AWG INTERCONNECT CABLE FROM THE TRAFFIC SIGNAL CONTROLLER TO THE RAILROAD BUNGALOW. THE CONTRACTOR SHALL ROUTE THE RAILROAD INTERCONNECT CABLE FROM THE TRAFFIC SIGNAL CONTROLLER UNIT TO THE PULLBOX PB-6 IDENTIFIED ON THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE RAILROAD TO HAVE THE CABLE ROUTED/PULLED INTO THE RAILROAD BUNGALOW AND CONNECTED TO RAILROAD EQUIPMENT.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE PER FOOT OF CABLE INSTALLED AND SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS, INSTALLED COMPLETE, TESTED AND ACCEPTED.

PUT

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.

2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT

3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY

4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND

5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE

6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND

7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE

8. THE CONTRACTOR SHALL INSTALL THE RADAR DETECTION

828 LED BLANKOUT SIGN (TURN PROHIBITION)

THE CONTRACTOR SHALL PROVIDE AND INSTALL A SOLID FILLED RED SYMBOL, SOLID FILLED WHITE ARROW NO RIGHT TURN SYMBOL, AND A NO LEFT TURN SYMBOL SIGN ON THE TRAFFIC SIGNAL MAST ARM AT THE LOCATIONS INDICATED ON THE PLANS. THE SYMBOL SIGN SHALL BE A WEATHER TIGHT NEMA ENCLOSURE. THE FOLLOWING SPECIFICATIONS SHALL APPLY:

VOLTAGE: 120V ILLUMINTATED: LED SYMBOL HEIGHT: 20.0" CABINET SIZE: 30"H x 24"W x 5.5"D FINISH: BLACK WARRANTY: 5 YEARS

THE SIGNS SHALL BE WIRED TO ACTIVATE DURING THE RAILROAD PREEMPTION PHASES AND REMAIN ON FOR THE ENTIRE RAILROAD PREEMPTION CYCLE.

THE MAST ARM MOUNTING BRACKET SHALL BE SUPPLIED BY THE SIGN MANUFACTURER AND INSTALLED BY THE CONTRACTOR. THE SIGN SHALL BE ACTIVATED (ON) WHEN THE CONTROLLER RECEIVES A RAILROAD PREEMPTION CALL. THE REMAINING TIME THE SIGN SHALL BE BLANK OR (OFF).

PAYMENT FOR THE ABOVE ITEM SHALL BE PAID AT THE UNIT PRICE BID PER EACH FOR ITEM 828, LED BLANKOUT SIGN, LED BLANKOUT SIGN. COMPLETE WHICH PRICE SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, MOUNTING HARDWARE FOR RIGID MOUNTING INCLUDING THE POWER CABLE AND ALL INCIDENTALS TO COMPLETE THE WORK.

819 RAILROAD PREEMPTION INTERFACE

INSTALL A RAILROAD PREEMPTION INTERFACE PANEL PER TC-86-10. BASED UPON TC-86.10, THE PROCESSOR INTERFACE IS REQUIRED FOR THIS PROJECT, INSTALL A INDICATOR PANEL PER CMS 819.09 ON PROPOSED SIGNAL POLE SP-2 ADJACENT TO THE TRAFFIC SIGNAL CONTROLLER. THE INDICATOR PANEL SHALL BE FACING THE TRAFFIC SIGNAL CABINET. MOUNT THE INDICATOR PANEL NO LESS THAN TEN FEET ABOVE THE ROADWAY LEVEL. ALSO, LOCATE THE INDICATORS SO AS TO PROVIDE A MINIMAL VISIBILITY TO ROADWAY USER AT OR APPROACHING THE INTERSECTION.

THE CONTRACTOR SHALL SCHEDULE A FINAL FIELD TEST, PRIOR TO THE 10-DAY SIGNAL BURN TEST, WITH THE ORDC, THEIR REPRESENTATIVE AND A REPRESENTATIVE FROM THE RAILROAD. THE FINAL FIELD TEST SHALL INCLUDE CHECKING THAT THE SIGNAL IS CONNECTED TO THE RAILROAD CONTROLLER AND **OPERATES PER THE PLANS DURING A PREEMPTION CALL.**

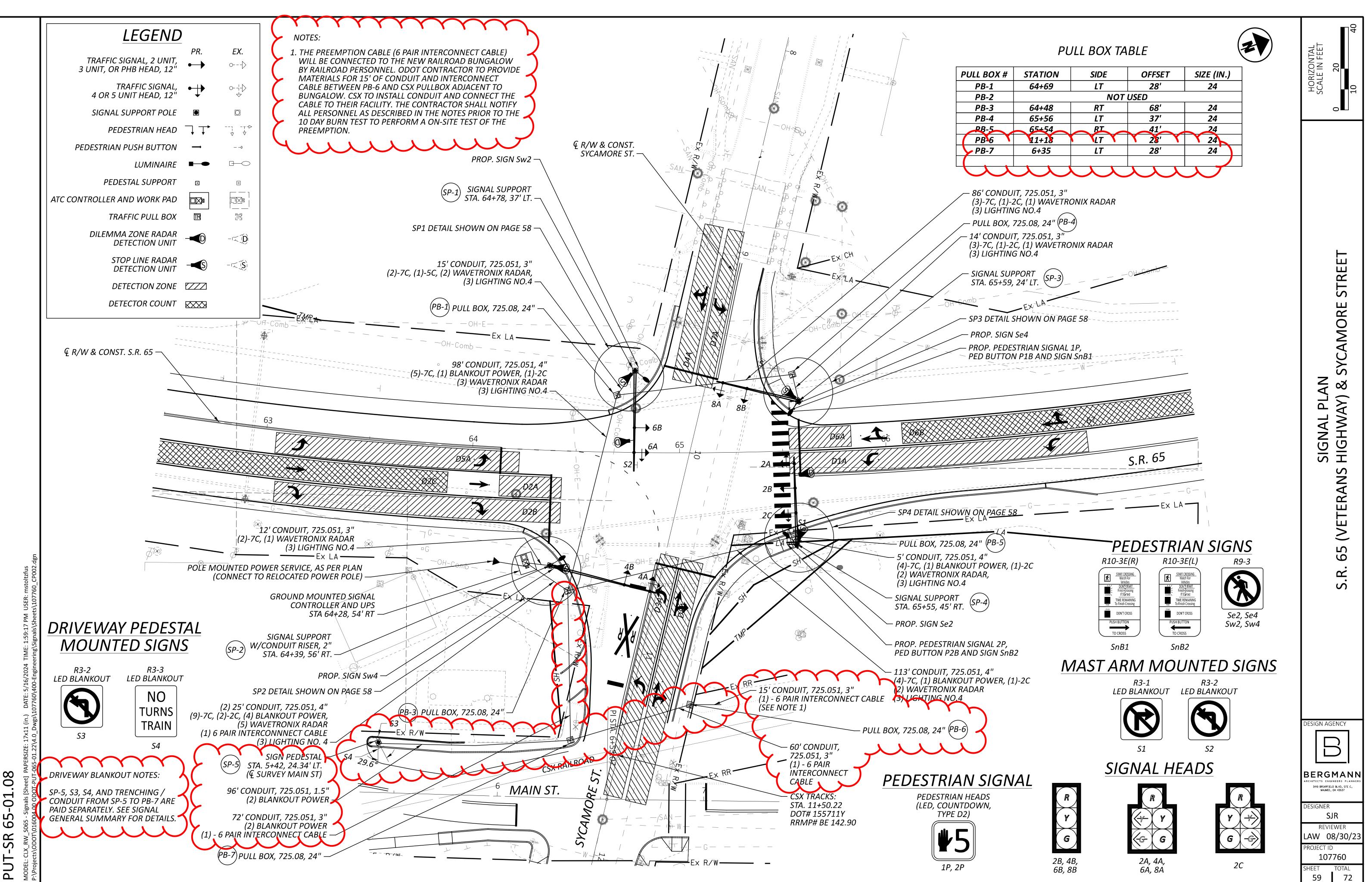
CONTACTS: OHIO RAIL DEVELOPMENT COMMISSION (ORDC) ALLEN BELL PHONE: (614) 301-3548 EMAIL: Allen.Bell@dot.ohio.gov

CSX RAILROAD REPRESENTATIVE BRAD ARMSTRONG EMAIL: brad armstrong@csx.com

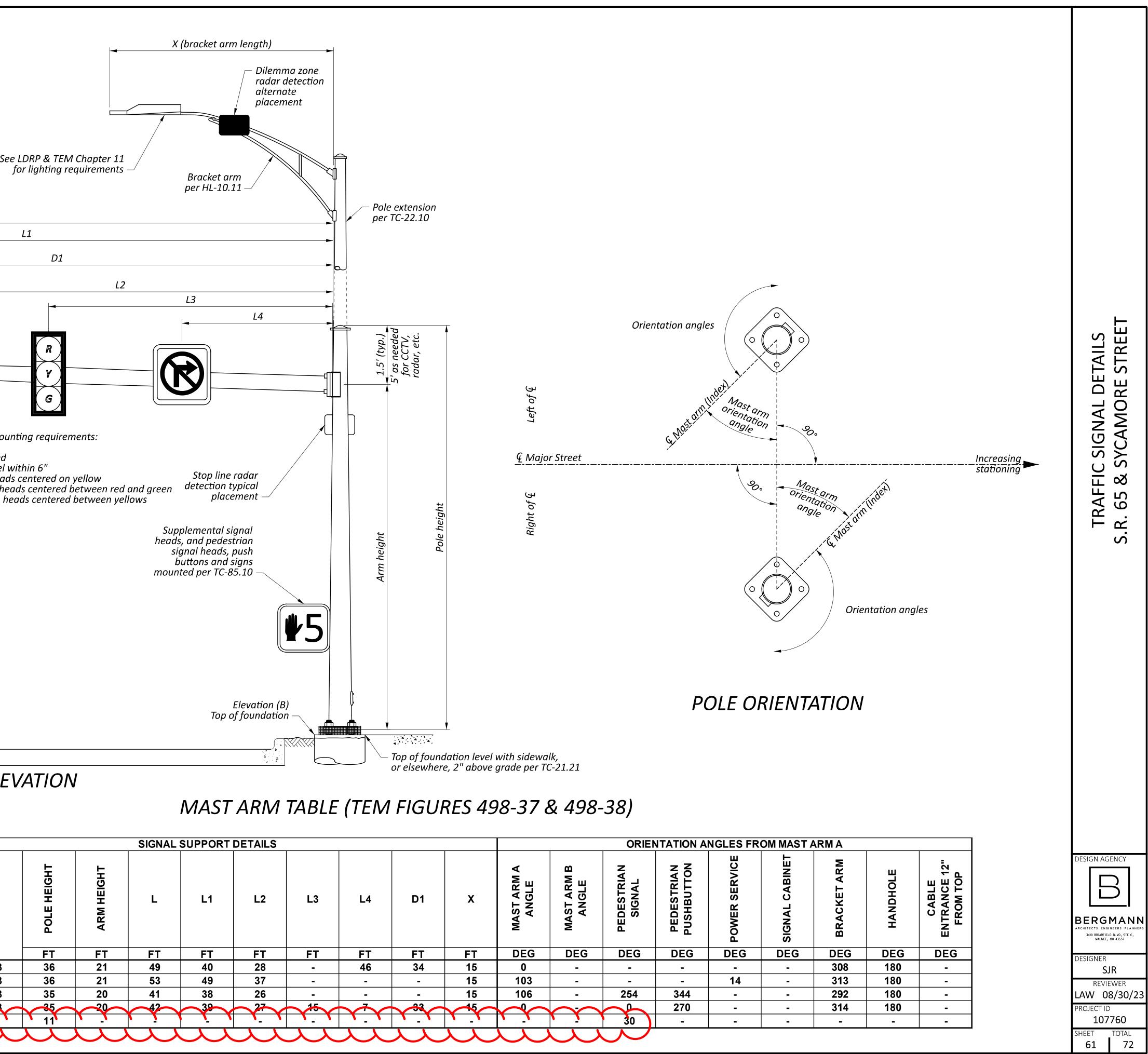
PAYMENT FOR ALL MATERIALS AND COST FOR THIS ITEM SHALL BE COMPLETE AND INCLUDED IN ITEM 819-RAILROAD PREEMPTION INTERFACE, 1 EACH.

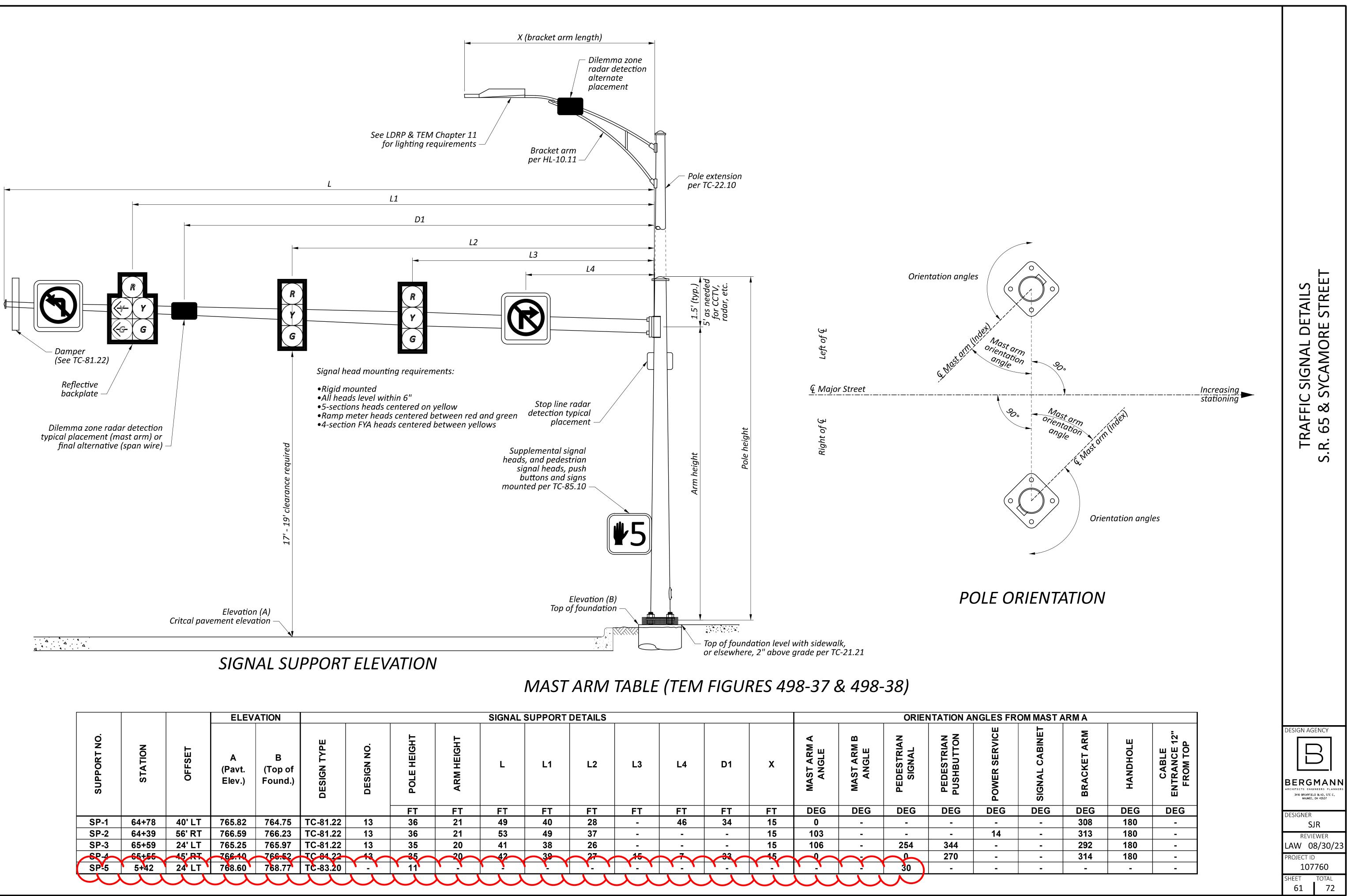
633 UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	
IN ADDITION TO THE REQUIREMENTS OF C&MS 633 AND 733, POLE ATTACHMENT HARDWARE WILL BE INCLUDED FOR POLE- MOUNTED CABINETS, AND A CABINET RISER (8-INCH MINIMUM) AND ANCHOR BOLTS WILL BE PROVIDED FOR BASE-MOUNTED CABINETS. BEFORE PERFORMING THE WORK, THE CONTRACTOR, THE DISTRICT TRAFFIC ENGINEER AND THE PROJECT ENGINEER WILL PERFORM A SITE INSPECTION TO ESTABLISH THE LOCATION OF THE UPS CABINET AND FOUNDATION.	
THE UPS CABINET SHALL INCLUDE A GENERATOR POWER PANEL WITH A HEAVY-DUTY POWER RELAY VERSUS THE LINE VOLTAGE GENERATOR SWITCH. THE GENERATOR INLET SHALL BE A RECESSED PANEL WITH A DOOR THAT IS FLUSH WITH THE EXTERNAL SIDE OF THE UPS CABINET. IT SHALL INCLUDE A RECESSED PLUG, AUTOMATIC TRANSFER SWITCH AND A DOOR THAT SECURELY CLOSES OVER THE POWER CORD.	
THE CABINET SHALL HAVE A DOOR STOP MECHANISM AND THERMOSTATICALLY CONTROLLED FAN.	OTES ET
THE CABINET SHALL INCLUDE A BATTERY BALANCING DEVICE THAT REGULATES THE BATTERIES AND OPTIMIZES PERFORMANCE.	ERAL N(
THE UPS FURNISHED SHALL BE AN ALPHA MANUFACTURED UNIT AND LISTED ON THE TRAFFIC AUTHORIZED PRODUCTS (TAP) LIST.	GENER/ AMORE (
AFTER FOUR (4) HOURS OF BATTERY RUNTIME, THE SYSTEM SHALL BE PROGRAMMED TO SWITCH THE INTERSECTION FROM FULL OPERATION TO CONTROLLER AUTOMATIC FLASH OPERATION THROUGH THE MONITOR. THE CONTROLLER SHALL BE PROGRAMMED SO THAT FLASH OPERATION SHALL BEGIN ONCE THE INTERSECTION RUNS MINOR STREET GREEN (TYP. PH. 4 &8), ALL-RED CLEARANCE, AND THEN FLASH OPERATION.	RAFFIC SIGNAL GE S.R. 65 & SYCAMO
THE UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2-HOUR TIMER, AND LOW BATTERY SHALL BE WIRED INTO THE TRAFFIC SIGNAL CABINET BACK PANEL OR THROUGH THE CONTROLLER WITH A C11 TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER.	TR
THIS ITEM SHALL INCLUDE A RED LED STATUS INDICATOR LAMP TO ALLOW MAINTENANCE PERSONNEL AND LAW ENFORCEMENT TO QUICKLY ASSESS WHETHER A TRAFFIC SIGNAL CABINET IS BEING POWERED BY A UPS. THE LED HOUSING SHALL BE NEMA 4X, IP65 OR IP66, RATED FOR OUTDOOR USE AND BE TAMPER/ SHATTER RESISTANT. IT SHALL BE A DOMED ENCLOSURE CONTAINING A RED LENS WITH LED THAT IS VISIBLE FROM 100 FOOT MINIMUM. THE ENCLOSURE AND LED MODULE SHOULD BE PLACED ON THE SIDE OF THE UPS CABINET FACING TOWARDS THE MAINLINE ROADWAY AND SEALED FROM WATER INTRUSION. IT SHOULD BE WIRED USING MINIMUM 20GA STRANDED, INSULATED HOOKUP WIRE TO THE STATUS RELAY OUTPUTS OF THE UPS. THE WIRES SHALL BE TERMINATED BY LUGS AT THE DISPLAY END AND PERMANENTLY LABELED "BACKUP POWER STATUS DISPLAY," WITH WIRE POLARITY INDICATED. THE RED LED SHALL ONLY ILLUMINATE TO INDICATE THE CABINET IS OPERATING UNDER UPS BACKUP POWER (THE "BACKUP"	DESIGN AGENCY
OPERATING CONDITION). THIS ITEM INCLUDES PROGRAMMING THE UPS STATUS RELAY OUTPUTS TO PRODUCE THE LAMP STATUS DISPLAYS. THESE STATUS DISPLAYS WILL BE SOLID 100% DUTY CYCLE (NOT FLASHING) DISPLAYS. THE OPERATING VOLTAGE OF THE LED LAMP SHALL BE 120V AC UNLESS OTHERWISE INDICATED.	BERGMANN Architects engineers planners 3410 Briarfield BLVD, ste c, Maumee, oh 43537
	DESIGNER SJR REVIEWER LAW 08/30/23
	LAVV 08/30/23 PROJECT ID 107760 SHEET TOTAL

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			ELEVATION					ORIENTATION ANGLE												
SUPPORT NO.	STATION	OFFSET	A (Pavt. Elev.)	B (Top of Found.)	DESIGN TYPE	DESIGN NO.	POLE HEIGHT	ARM HEIGHT	L	L1	L2	L3	L4	D1	x	MAST ARM A ANGLE	MAST ARM B ANGLE	PEDESTRIAN SIGNAL	PEDESTRIAN PUSHBUTTON	
							FT	FT	FT	FT	FT	FT	FT	FT	FT	DEG	DEG	DEG	DEG	D
SP-1	64+78	40' LT	765.82	764.75	TC-81.22	13	36	21	49	40	28	-	46	34	15	0	-	-	-	
SP-2	64+39	56' RT	766.59	766.23	TC-81.22	13	36	21	53	49	37	-	-	-	15	103	-	-	-	1
SP-3	65+59	24' LT	765.25	765.97	TC-81.22	13	35	20	41	38	26	-	-	-	15	106	-	254	344	
SP-4	65+55	45' RT	766.10	766.52	TC 81 22	13	35	20	42	39	27	15		33	15				270	
SP-5	5+42	24' LT	768.60	768.77	TC-83.20	-	11		-	-	-	-		-	· - /	· -		30	-	
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