ITEM 632 VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK

ITEM 632 VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. *SIGNAL HEADS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC WITH VISORS AS SPECIFIED AND MEET ITE SPECIFICATIONS.*
2. *PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.*
3. *ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET FITTING SHALL BE FERROUS METAL.*
4. *PIPE SPACERS AND FITTINGS SHOULD BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM AND HAVE A BLACK FINISH, INCLUDING MAST ARM ATTACHMENT STEEL CABLES.*
5. *THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.*
6. *ALL SIGNAL HEADS AND SIGNS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH YELLOW LENS LOCATED IN FRONT OF THE MAST ARM.*
7. *ALUMINUM BACKPLATES SHALL BE IN ACCORDANCE WITH THE C&MS AND INCLUDE A FLUORESCENT YELLOW REFLECTIVE BORDER.*
8. *THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF C&MS 732.04-C. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.*
9. *SIGNAL HEADS SHALL HAVE A MINIMUM WALL THICKNESS OF 0.117 INCHES.*
10. *SIGNAL HEADS SHALL INCLUDE CUTAWAY TYPE VISORS UNLESS OTHERWISE SPECIFIED IN THE PLANS.*
11. *APPLY A BEAD OF SILICONE TO THE SIGNAL HEAD, WASHER, AND ENTRANCE ADAPTER SERRATIONS TO PREVENT WATER INTRUSION. ALSO, FILL THE SPACE BETWEEN CONCENTRIC SERRATION RINGS ON THE TOP OF THE SIGNAL HEAD TO COMPLETELY EXCLUDE WATER FROM THE SPACE BETWEEN THE CONCENTRIC RINGS.*
12. *BALANCE ADJUSTERS SHALL NOT BE USED ON RIGID MOUNTED HEADS OR TETHERED HEADS.*
13. *ALL SIGNAL HEADS SHALL BE FIELD LOCATED AND APPROVED BY THE ENGINEER BEFORE FINAL WIRING.*

PAYMENT FOR ITEM 632 VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK AND ITEM 632 VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK SHALL BE MADE FOR COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW ATTACHMENT HARDWARE.

ITEM 632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732 THE FOLLOWING SHALL APPLY:

1. *SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.*
2. *PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.*
3. *PIPE, SPACERS AND FITTINGS SHALL BE CONSTRUCTED OF GALVANIZED STEEL AND PAINTED BLACK.*
4. *THE PEDESTRIAN SIGNAL HEAD SHALL BE OF THE LED COUNTDOWN TYPE.*
5. *NEW ATTACHMENT HARDWARE AND FITTINGS SHALL BE USED.*
6. *THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF C&MS 732.04. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.*

PAYMENT FOR ITEM 632 PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN SHALL BE MADE FOR THE NUMBER OF COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS AND NEW ATTACHMENT HARDWARE.

ITEM 632 ACCESSIBLE PEDESTRIAN PUSHBUTTON, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632, 732, OMUTCD, AND PROWAG, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. *THE PUSHBUTTON ASSEMBLY SHALL BE BLACK.*
2. *THE PUSHBUTTON SHALL SOUND A PERCUSSIVE TONE WHEN ACTUATED. THE CONTRACTOR SHALL HAVE THE CITY APPROVE THE DECIBELS (DB) LEVELS OF EACH BUTTON.*
3. *THE CONTRACTOR SHALL PROVIDE ANY MISCELLANEOUS WIRE, CONNECTIONS, MATERIAL, ETC. TO MAKE A FULLY OPERATIONAL ACCESSIBLE PEDESTRIAN PUSHBUTTON AND LISTED ON ODOT TAP LIST. THIS WORK SHALL BE INCIDENTAL TO ITEM 632 ACCESSIBLE PEDESTRIAN PUSHBUTTON.*

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PAYMENT FOR ITEM 632 ACCESSIBLE PEDESTRIAN PUSHBUTTON, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MISC. CABLE, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 INTERCONNECT, MISC.: SPREAD SPECTRUM RADIO UNIT

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 815 AND 906, THE SPREAD SPECTRUM RADIO UNIT SHALL BE LIST ON ODOT'S APPROVED PRODUCT LIST. THE WIRELESS TRANSCEIVER SHALL BE 900 MHZ AND SHALL HAVE A RANGE OF 60 MILES.

THIS ITEM OF WORK SHALL INCLUDE FURNISHING AND INSTALLING ALL NECESSARY MOUNTING HARDWARE, CABLES, CONNECTORS, ATTACHMENT ASSEMBLIES, BRACKETS, ETC.

RADIO UNIT SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
US 30 EAST BOUND RAMP AND WASHINGTON STREET (US 127)
WASHINGTON STREET (US 127) AND BONNEWITZ AVENUE

THE CONTRACTOR SHALL PROVIDE THE CITY, IN WRITING, THE RADIO MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION, AND DATE OF MANUFACTURE FOR ALL UNITS TO BE USED PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.

PAYMENT FOR ITEM 632 INTERCONNECT, MISC.: SPREAD SPECTRUM RADIO UNIT, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 SIGNAL SUPPORT FOUNDATION, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 TRAFFIC SIGNAL EQUIPMENT, THE SIGNAL SUPPORT FOUNDATIONS SHALL BE INSTALLED PER 632.14 AND HAVE A FINISHED ELEVATION FLUSH TO THE SIDEWALK (WHERE APPLICABLE) WHEN WITHIN 6" OF THE SIDEWALK.

PRIOR TO ORDERING THE SIGNAL SUPPORTS, THE CONTRACTOR SHALL CONTACT OUPS TO HAVE ALL THE UTILITIES LOCATED IN THE FIELD. THEN, THE CONTRACTOR SHALL MEET THE PROJECT ENGINEER TO LOCATE THE PROPOSED SUPPORT LOCATIONS TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES, THE PROJECT ENGINEER SHALL PROVIDE GUIDANCE AS TO THE RELOCATION OF THE SUPPORTS.

DUE TO THE FURTHER POSSIBILITY OF CONFLICT WITH EXISTING OR PROPOSED UNDERGROUND OBSTRUCTIONS (INCLUDING THE POSSIBILITY OF UNRECORDED OBSTRUCTIONS) WHICH COULD AFFECT THE LOCATION OF THE FOUNDATION FOR THIS ITEM, AND CONSEQUENTLY, THE DESIGN OF THE SUPPORT AND/OR ARMS, THE CONTRACTOR SHALL NOT PLACE FINAL ORDERS FOR THE ITEM UNTIL THE FOUNDATIONS HAVE BEEN CLEARED OF CONFLICTS BY INSTALLING, AT FINAL GRADE, OR POTHOLING THE FOUNDATION AND THE CONTRACTOR HAS RECEIVED, FROM ENGINEER, WRITTEN NOTICE TO PROCEED WITH THE ORDERS FOR THE ITEM.

IF ANY FOUNDATION LOCATIONS MUST BE ADJUSTED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER, ODOT AND MAINTAINING AGENCY, WHO WILL DETERMINE THE REVISED LOCATION AND IF NEEDED, THE SUPPORT DESIGN. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DETERMINING THE REVISED DESIGN. THE ENGINEER WILL INFORM THE CONTRACTOR OF ANY CHANGES NECESSARY AND AUTHORIZE THE CONTRACTOR TO ORDER THE SUPPORT.

THE CONTRACTOR SHALL, WHEN DEVELOPING THE PROGRESS SCHEDULE, AND THOSE OF SUBCONTRACTORS, ENSURE THAT THE FOUNDATIONS ARE INSTALLED AT THE EARLIEST TIME AS IS FEASIBLE AND PRACTICAL, AND SHALL INCLUDE SUFFICIENT TIME IN THE PROGRESS SCHEDULE FOR ORDERING, MANUFACTURING, DELIVERY, AND INSTALLATION OF THE SUPPORT ITEMS AFTER THE FOUNDATIONS ARE IN PLACE.

A 3" CONDUIT ELL IN LIEU OF A STANDARD 2" CONDUIT ELL SHALL BE INSTALLED IN EACH SIGNAL SUPPORT FOUNDATION AS REQUIRED BY ODOT SCD TC-21.21. SEE THE POLE ORIENTATION DIAGRAM FOR THE RESPECTIVE TRAFFIC SIGNAL PLAN FOR FURTHER INFORMATION.

ITEM 632 SIGNAL SUPPORT FOUNDATION, AS PER PLAN (CONTINUED)

NO PAYMENTS FOR DELIVERED MATERIALS FOR THE FOUNDATION OR SUPPORT ITEMS SHALL BE MADE UNTIL THE FOUNDATIONS ARE IN PLACE, AND IF CHANGES IN THE DESIGN OF THIS ITEM ARE REQUIRED, NO PAYMENT SHALL BE MADE FOR THE ITEMS MANUFACTURED TO THE ORIGINAL DESIGN.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE AND ACCEPTED.

ITEM 632 POWER SERVICE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732 AND SCD TC-83.10, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. *THE DISCONNECT SWITCH SHALL BE LOCATED ON THE CONTROLLER CABINET.*
2. *DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH CMS ITEM 632, POWER SERVICE, AS PER PLAN, 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.*
3. *THE CONTRACTOR SHALL CONTACT AEP, CITY AND ODOT FOR INFORMATION REGARDING THE POWER SERVICE INSTALLATION PRIOR TO ORDERING POLES AND CABINET. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120/240 VOLTS. (120 VOLTS FOR THE SIGNAL AND 120 VOLTS FOR THE LIGHTING).*

PAYMENT FOR ITEM 632 POWER SERVICE, AS PER PLAN, FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE AT THE CONTRACT EACH BID PRICE AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED TO COMPLETE THIS ITEM OF WORK.

ITEM 632 SIGNAL SUPPORT, TYPE TC-81.22, DESIGN (X), AS PER PLAN

ITEM 632 COMBINATION SIGNAL SUPPORT, TYPE TC-81.22, DESIGN (X), AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ODOT SPECIFICATIONS 632 AND 732 AND SCD TC-81.22 AND TC-85.20 AND THESE PLANS, THE SIGNAL SUPPORTS SHALL BE FURNISHED AND INSTALLED TO MEET THE FOLLOWING ADDITIONAL REQUIREMENTS:

A. *ALL SIGNAL SUPPORT POLES, MAST ARMS, BRACKET ARMS, END CAPS, HANDHOLE COVERS, ETC. ASSOCIATED WITH THE INSTALLATION OF THIS ITEM SHALL BE GALVANIZED WITH BLACK FINISH, PER ODOT SUPPLEMENTAL SPEC 916.*

B. *THE SIGNAL SUPPORT POLES AND MAST ARMS SHALL BE WRAPPED TO PROTECT THE FINISH DURING SHIPPING, UNLOADING AND INSTALLATION. THE CONTRACTOR IS TOTALLY RESPONSIBLE TO PROVIDE ADEQUATE PROTECTION FOR THE FINISH OF THE ARMS. IF THE FINISH IS DAMAGED DURING HANDLING, THE CONTRACTOR SHALL REPAIR THE FINISH PER THE MANUFACTURER'S RECOMMENDATIONS.*

C. *A 3" CONDUIT ELL IN LIEU OF A STANDARD 2" CONDUIT ELL SHALL BE INSTALLED IN EACH SIGNAL SUPPORT FOUNDATION AS REQUIRED BY ODOT SCD TC-21.21. SEE THE POLE ORIENTATION DIAGRAM FOR THE RESPECTIVE TRAFFIC SIGNAL PLAN FOR FURTHER INFORMATION.*

D. *ALL HOLES FOR SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS SHALL BE FIELD DRILLED AND INCLUDE A RUBBER GROMMET WHERE NECESSARY.*

E. *PROVIDE THREE (3) HANDHOLES. ONE AT THE BASE OF THE POLE, ONE FOR THE MAST ARM, AND ONE FOR THE BRACKET ARM.*

F. *PROVIDE 2" THREADED BLIND HALF COUPLE, WITH PLUG, 180 DEGREES FROM BRACKET ARM 2' FROM TOP OF POLE.*

TRAFFIC SIGNAL NOTES

VAN BONNEWITZ AVENUE SIGNAL

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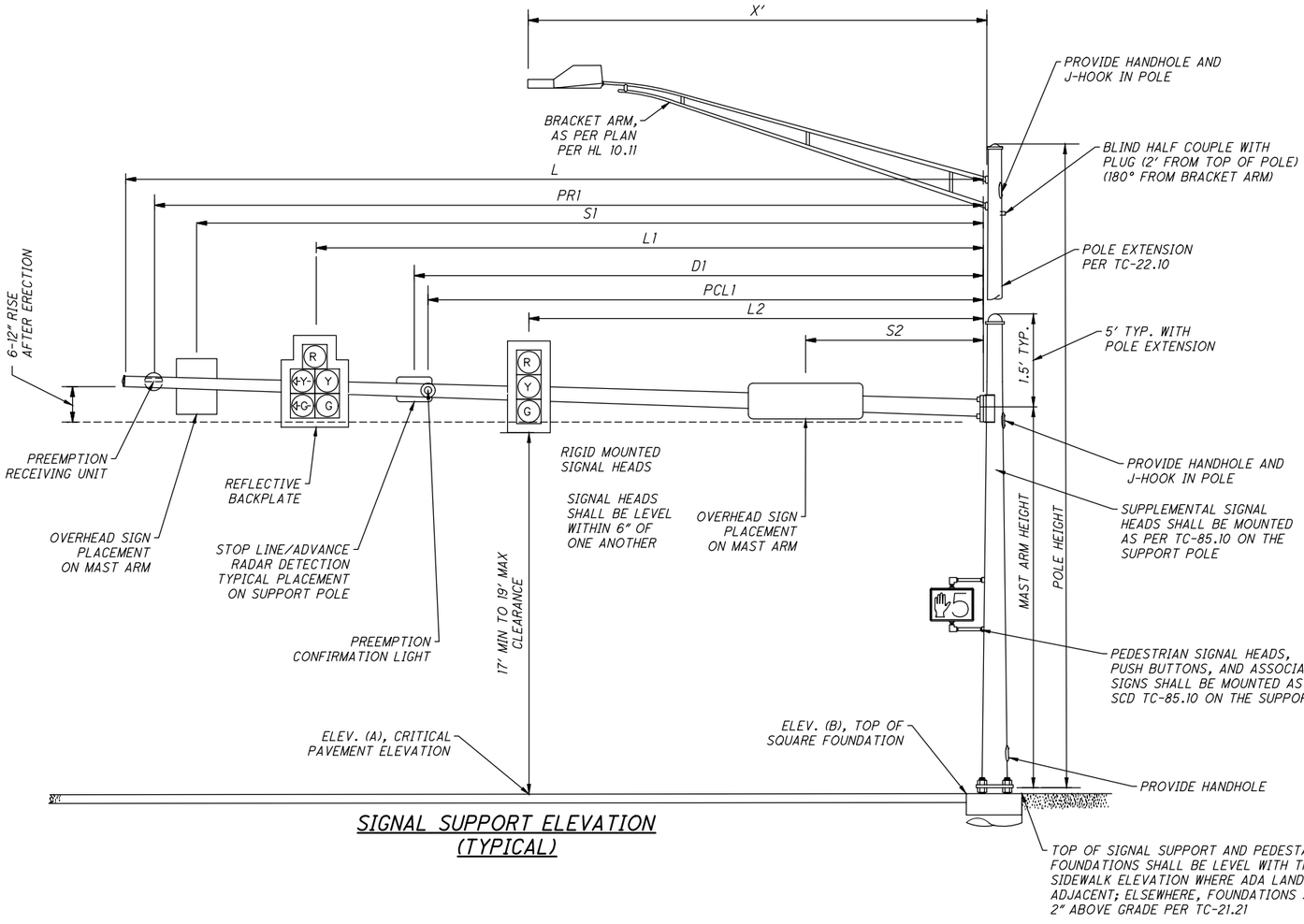
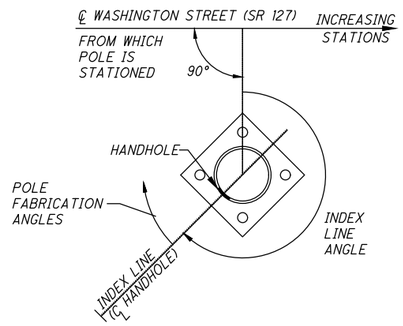
DESIGN AGENCY
CHOICE ONE ENGINEERING

DESIGNER	BMW
REVIEWER	AJH 2-5-2026
PROJECT ID	120039
SHEET	P.17
TOTAL	27



SIGNAL SUPPORT ELEVATION (TYPICAL)

PEDESTRIAN POLE ORIENTATION DETAIL



PEDESTAL POLE DATA								
POLE NUMBER	STATION	OFFSET (FEET) AND SIDE	POLE HEIGHT (FT.)	INDEX LINE ANGLE (DEG.)	ANGLES (DEG) FROM INDEX LINE (ALL ANGLES MEASURES CLOCKWISE ↻)			
					SIGNAL CONDUIT ELL	PEDESTRIAN SIGNAL		PEDESTRIAN PUSHBUTTON
PS-1	33+06.71	29.71' LT	10.7'	10	115	80		80
PS-2	32+56.63	60.30' LT	10.7'	65	235	295		295
PS-3	31+80.26	52.41' LT	10.7'	130	10	50		50
PS-4	31+71.96	43.97' LT	10.7'	140	45	310		310
PS-5	33+07.85	23.80' RT	10.7'	180	40	90		90
PS-6	32+78.76	44.30' RT	10.7'	300	255	60		60
Ex. PS-1	32+11.94	44.14' RT	8'	60	260	300		300

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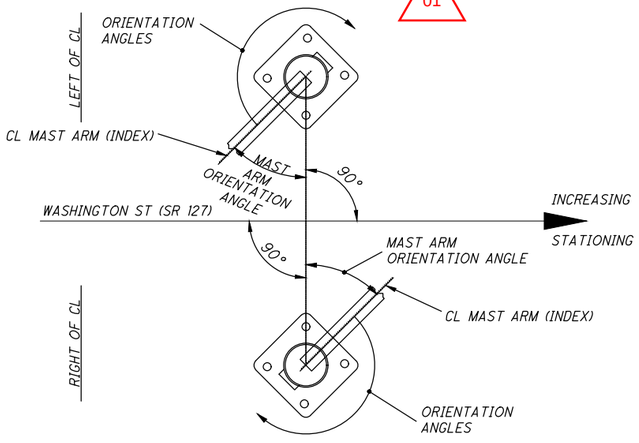

MAST ARM TABLE

SUPPORT NO.	STATION	OFFSET	ELEVATION		SIGNAL SUPPORT DETAILS						SIGNAL SUPPORT DETAILS												ORIENTATION ANGLES FROM MAST ARM A								
			A (PAVEMENT ELEVATION)	B (TOP OF FOUNDATION)	DESIGN TYPE	MAST ARM DESIGN NO.	POLE HEIGHT	MAST ARM ATTACHMENT HEIGHT	LUMINAIRE MOUNTING HEIGHT	LUMINAIRE BRACKET ARM ATTACHMENT HEIGHT	L	L1	L2	L3	S1	S2	S3	D1	D2	PR1	PCL1	X	MAST ARM A ANGLE	PEDESTRIAN SIGNAL	PEDESTRIAN BUTTON	SIGNAL CONDUIT ELL	BRACKET ARM	BASE HANDHOLE	MAST ARM HANDHOLE	BRACKET ARM HANDHOLE	INTERCONNECT RADIO
			FT				FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG	DEG
SP-1	32+81.65	43.32' LT	768.82	769.61	TC-81.22	12	34.5	19.5	40	33.5	43	39.5	29.5	-	10	-	-	35.5	-	41	34.5	15	90	-	-	35	300	180	180	180	-
SP-2	31+49.83	39.65' LT	769.51	770.12	TC-81.22	12	35	20	40.5	34	48	33.5	21.5	-	39	12	-	-	-	45.5	27	15	0	-	-	45	330	180	180	180	275
SP-3	32+75.00	63.99' RT	768.89	769.38	TC-81.22	*14	34.5	19.5	40	33.5	66	58	46	-	63.5	35	-	46.5	25	60.5	53.5	15	0	-	-	0	270	180	180	180	-
SP-4	31+64.05	26.25' RT	768.80	769.69	TC-81.22	13	21	19.5	-	-	59	55.5	45.5	-	35	-	-	0	-	57.5	50.5	-	90	0	0	0	-	180	180	-	-

*MECHANICAL DAMPER FOR TC-81.22 MAST ARM (GREATER THAN 59' IN LENGTH) INCLUDED AND PAID UNDER ITEM 632 SIGNAL SUPPORT.

HORIZONTAL SCALE IN FEET
0 5 10 20

TRAFFIC SIGNAL PLAN

VAN BONNEWITZ AVENUE SIGNAL

DESIGN AGENCY
CHOICE ONE ENGINEERING

DESIGNER BMW
REVIEWER AJH 2-5-2026
PROJECT ID 120039
SHEET P.22 | TOTAL 27

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