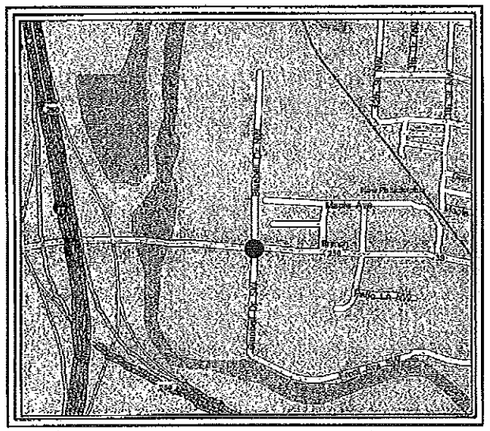
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
TUS-39-13.04

CITY OF NEW PHILADELPHIA
TUSCARAWAS COUNTY



LOCATION MAP

SCALE 0 — 1 MILE
0 1000 2000 3000 4000 5000

LATITUDE: 40° 29' 35" N
LONGITUDE: 81° 28' 20" W

PORTION TO BE IMPROVED
STATE ROUTES (39)
U.S. ROUTES (250)
OTHER ROADS

INDEX OF SHEETS

TITLE SHEET — 1
SCHEMATIC PLAN — 2
GENERAL SUMMARY — 3-4
INTERSECTION IMPROVEMENT SUB SUMMARY — 5
INTERSECTION IMPROVEMENT PLAN — 6
TRAFFIC CONTROL PLANS & DETAILS — 7-10
TRAFFIC CONTROL ESTIMATED QUANTITIES — 11-12
TRAFFIC SIGNAL NOTES & DETAILS — 13-19
TRAFFIC SIGNAL PLANS & DETAILS — 20-23

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE UPGRADE OF THE TRAFFIC SIGNAL AT THE INTERSECTION OF W. HIGH AVE. (S.R. 39) AND BLUEBELL DRIVE IN THE CITY OF NEW PHILADELPHIA.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA = N/A
ESTIMATED CONTRACTOR EARTH DISTURBED AREA = N/A
NOTICE OF INTENT EARTH DISTURBED AREA = N/A

2016 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND 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 _____
Date 7/12/18 Mayor, City of New Philadelphia

Approved _____
Date 7-11-2018 Service Director, City of New Philadelphia

Approved _____
Date 9/26/18 District Deputy Director

Approved _____
Date 8-15-18 Director, Department of Transportation

DESIGN DESIGNATION

	S.R. 39		BLUEBELL DR.	
	WEST LEG	EAST LEG	NORTH LEG	SOUTH LEG
CURRENT A.D.T. (2018)	17840	17420	11970	5610
DESIGN YEAR A.D.T. (2038)	19940	19490	12160	5790
D.H.V. (2038)	1950	1910	1180	440
D	52%	50%	53%	88%
T	4.0%	3.0%	3.0%	3.0%
DESIGN SPEED	40 MPH		30 MPH	
LEGAL SPEED	35 MPH		25 MPH	
DESIGN FUNCTIONAL CLASSIFICATION: ARTERIALS (URBAN)				
DESIGN EXCEPTIONS: NONE				

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL 2 WORKING DAYS BEFORE YOU DIG
OHIO Utilities Protection SERVICE
Call Before You Dig
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS PROTECTIVE SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:
TMS Engineers, Inc.
2112 EAST PARKWAY SOUTH #7
TWINSBURG, OHIO 44087
(330) 666-6402 (330) 666-6417 FAX

STATE OF OHIO — MICHAEL WILLIAM SCHWEIGKART E-86982 — PROFESSIONAL ENGINEER
SIGNATURE DATE 7/6/18

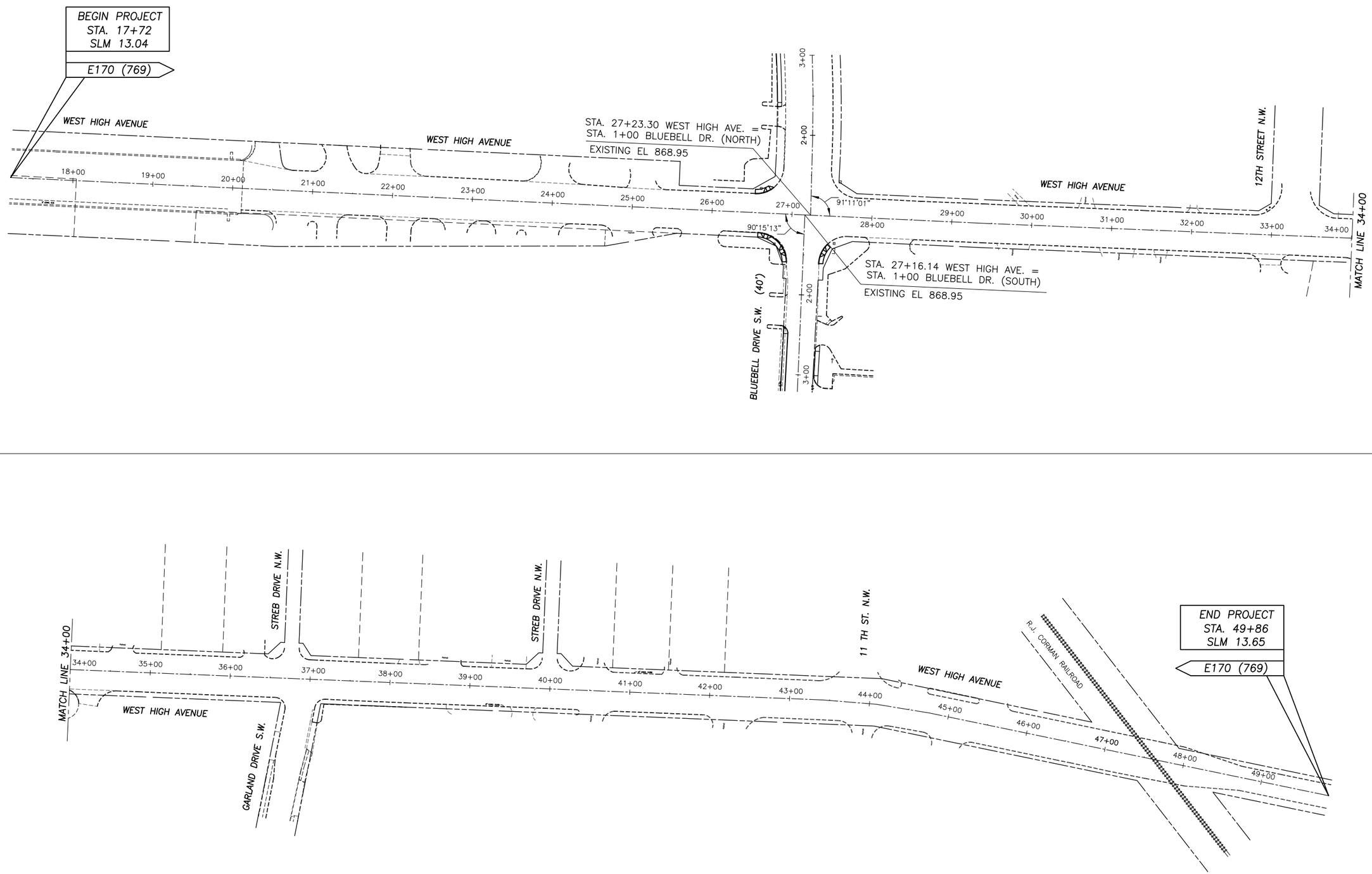
STANDARD ODOT CONSTRUCTION DRAWINGS

BP-5.1	07-20-18	TC-21.20	07-20-18	TC-71.10	01-19-18	MT-95.31	07-21-17
BP-7.1	07-20-18	TC-41.20	10-18-13	TC-81.21	07-20-18	MT-95.32	07-21-17
HL-30.11	07-20-18	TC-41.40	10-18-13	TC-83.10	01-19-18	MT-97.10	07-18-14
HL-30.21	01-17-14	TC-42.20	10-18-13	TC-83.20	07-21-17	MT-105.10	07-19-13
HL-30.22	01-17-14	TC-52.10	10-18-13	TC-85.10	07-21-17		
		TC-52.20	07-20-18	TC-85.20	07-20-18		
DM-4.3	01-15-16						
DM-4.4	01-15-16						

SUPPLEMENTAL SPECIFICATIONS	
NUMBER	DATE
800	07-20-18
815	04-20-18
816	07-20-18
821	04-20-12
906	10-15-10
907	01-20-12
921	04-20-12

FEDERAL PROJECT NO. E170(769)
PID NO. 103899
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
TUS-39-13.04

Z:\Projects (U)\2017\17-082 City of New Philadelphia - Design Services 1 - :06pm Plotted By : gpt
TUS - SR 39-13.04
180567 PID - 103899
Dist 11 11/8/2018
Contract Proposal Available @
www.contracts.dot.state.oh.us/home



PID NO. 103899

CALCULATED JAT
CHECKED MWS

HORIZONTAL SCALE IN FEET
0 30 60 120

SCHEMATIC PLAN
W. HIGH AVE. & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 2 SCHEMATIC.dwg - May 22, 2018-10:28:39am Plotted By : gat

SHEET NUM.												PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
5		11		12	13	14		21				01/SAE/PV						
																	ROADWAY	
109												109	202	32000	109	FT	CURB REMOVED	
16												16	203	10000	16	CY	EXCAVATION	
328												328	608	10000	328	SF	4" CONCRETE WALK	
188												188	608	52000	188	SF	CURB RAMP	
																	EROSION CONTROL	
												1,000	832	30000	1,000	EACH	EROSION CONTROL	
																	PAVEMENT	
80												80	609	12000	80	FT	COMBINATION CURB AND GUTTER, TYPE 2	
																	LIGHTING	
						40						40	611	00400	40	FT	4" CONDUIT, TYPE E	
								79				79	625	25400	79	FT	CONDUIT, 2", 725.04	
								18				18	625	25600	18	FT	CONDUIT, 4", 725.04	
								234				234	625	25902	234	FT	CONDUIT, JACKED OR DRILLED, 725.04 3"	
								97				97	625	29000	97	FT	TRENCH	
								3				3	625	30700	3	EACH	PULL BOX, 725.08, 18"	
								1				1	625	30706	1	EACH	PULL BOX, 725.08, 24"	
								5				5	625	31510	5	EACH	PULL BOX REMOVED	
								5				5	625	32000	5	EACH	GROUND ROD	
								1				1	625	32001	1	EACH	GROUND ROD, AS PER PLAN	14
								97				97	625	36000	97	FT	PLASTIC CAUTION TAPE	
																	TRAFFIC CONTROL	
				159				26				185	630	03100	185	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
								8				8	630	79100	8	EACH	SIGN HANGER ASSEMBLY, MAST ARM	
				1				2				3	630	79500	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
				81.8				25				106.8	630	80100	106.8	SF	SIGN, FLAT SHEET	
				2								2	630	85000	2	EACH	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE	
				2								2	630	86002	2	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
								6				6	630	87100	6	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	
		100										100	642	30000	100	FT	REMOVAL OF PAVEMENT MARKING	
		1										1	642	30020	1	EACH	REMOVAL OF PAVEMENT MARKING	
		0.88										0.88	642	30030	0.88	MILE	REMOVAL OF PAVEMENT MARKING	
		0.57										0.57	644	00204	0.57	MILE	LANE LINE, 6"	
		0.9										0.9	644	00300	0.9	MILE	CENTER LINE	
		532										532	644	00404	532	FT	CHANNELIZING LINE, 12"	
		149										149	644	00500	149	FT	STOP LINE	
		206										206	644	00600	206	FT	CROSSWALK LINE	
		187										187	644	00700	187	FT	TRANSVERSE/DIAGONAL LINE	
		1										1	644	01000	1	EACH	RAILROAD SYMBOL MARKING	
		20										20	644	01300	20	EACH	LANE ARROW	
		319										319	644	01510	319	FT	DOTTED LINE, 6"	

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL SUMMARY

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- New Philadelphia\Stage 3 Plans\Sht 03.dwg 03-Jul-18 10:59 AM

SHEET NUM. 5	11	12	13	14	16	21	PART. 01/SAE/PV	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
												TRAFFIC SIGNALS	
						4	4	632	05007	4	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	15
						5	5	632	05087	5	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	15
						4	4	632	20731	4	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	15
						9	9	632	25001	9	EACH	COVERING OF VEHICULAR SIGNAL HEAD, AS PER PLAN	14
						4	4	632	26001	4	EACH	PEDESTRIAN PUSHBUTTON, AS PER PLAN	15
						710	710	632	40300	710	FT	SIGNAL CABLE, 3 CONDUCTOR, NO. 14 AWG	
						804	804	632	40500	804	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	
						713	713	632	40700	713	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
						4	4	632	64010	4	EACH	SIGNAL SUPPORT FOUNDATION	
						1	1	632	64020	1	EACH	PEDESTAL FOUNDATION	
						510	510	632	65200	510	FT	LOOP DETECTOR LEAD-IN CABLE	
						74	74	632	68300	74	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG	
						1	1	632	70001	1	EACH	POWER SERVICE, AS PER PLAN	13
						1	1	632	70400	1	EACH	CONDUIT RISER, 2" DIAMETER	
						2	2	632	80203	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN	15
						2	2	632	80303	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 3, AS PER PLAN	15
						1	1	632	89900	1	EACH	PEDESTAL, 8', TRANSFORMER BASE	
						1	1	632	90101	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	14
						6	6	632	90400	6	EACH	SIGNALIZATION, MISC.:CAMERA MOUNTING BRACKET ASSEMBLY, MAST ARM MOUNT 37"	
						1	1	633	01581	1	EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN	16
						1	1	633	67100	1	EACH	CABINET FOUNDATION	
						1	1	633	67200	1	EACH	CONTROLLER WORK PAD	
					1		1	633	67301	1	EACH	PREEMPTION, AS PER PLAN	16
						4	4	633	67311	4	EACH	PREEMPTION RECEIVING UNIT, AS PER PLAN	16
						710	710	633	67321	710	FT	PREEMPTION DETECTOR CABLE, AS PER PLAN	16
						1	1	633	67351	1	EACH	PREEMPTION PHASE SELECTOR, AS PER PLAN	15
						4	4	633	67401	4	EACH	PREEMPTION CONFIRMATION LIGHT, AS PER PLAN	16
						1	1	633	75001	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	15
						1	1	815	30001	1	EACH	SPREAD SPECTRUM RADIO, AS PER PLAN	17
						1	1	816	30000	1	EACH	VIDEO DETECTION SYSTEM	
												MAINTENANCE OF TRAFFIC	
							100	614	11110	100	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
												INCIDENTALS	
			LS				LS	614	11000	LS		MAINTAINING TRAFFIC	13
							LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
							LS	624	10000	LS		MOBILIZATION	

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL SUMMARY

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- New Philadelphia\Stage 3 Plans\Sht 04.dwg 03-Jul-18 10:49 AM

SHEET NUMBER										ITEM	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		6												
													ROADWAY	
		109								202	109	FT	CURB REMOVED	
		16								203	16	CU YD	EXCAVATION	
		328								608	328	SQ FT	4" CONCRETE WALK	
		188								608	188	SQ FT	CURB RAMP	
		80								609	80	FT	COMBINATION CURB AND GUTTER, TYPE 2	

NOTE:
ALL TOTALS CARRIED TO GENERAL SUMMARY.

HORIZONTAL SCALE IN FEET
0 10 20 40

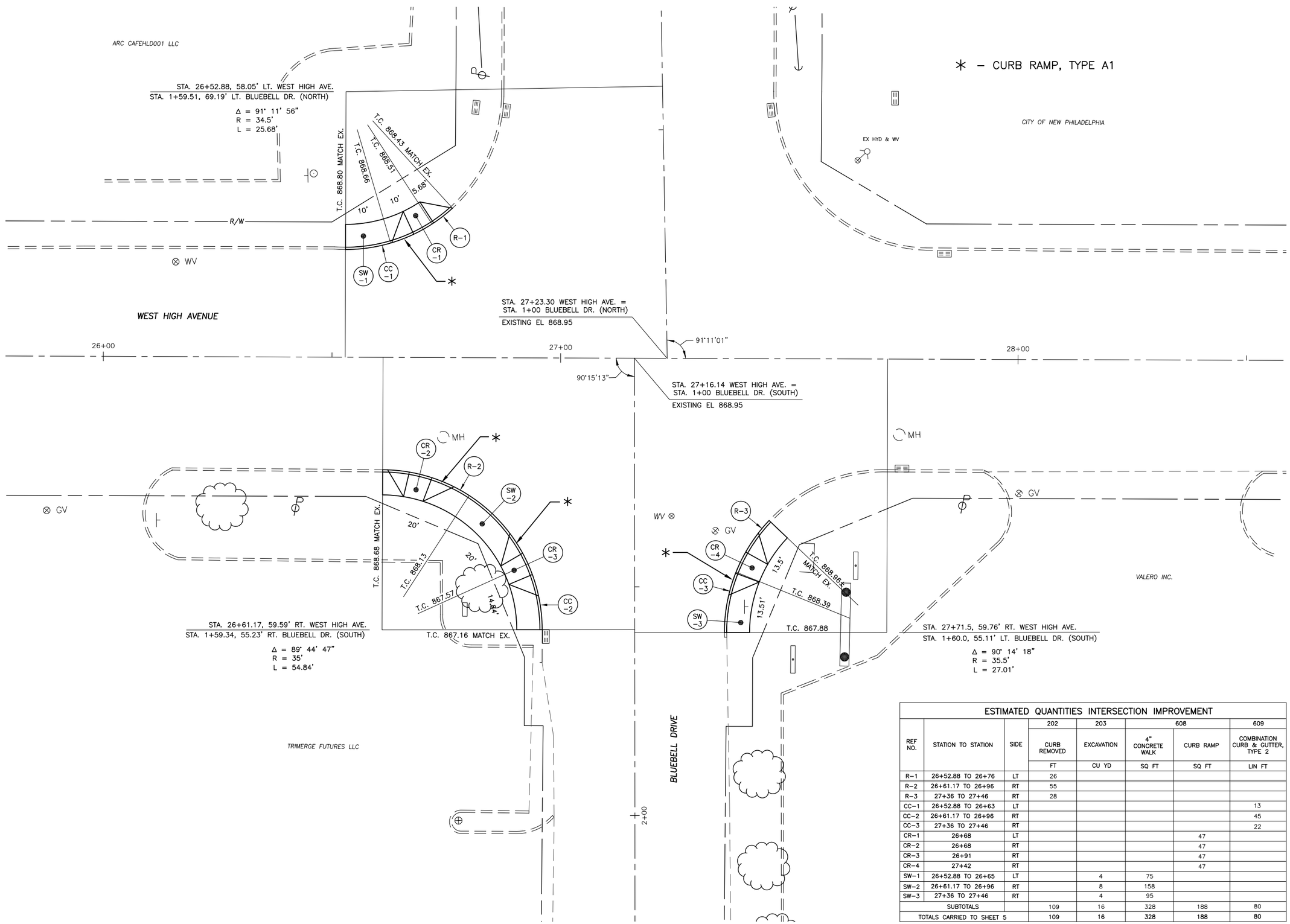
PID NO. 103899

CALCULATED JAT
CHECKED MWS

INTERSECTION IMPROVEMENT SUB SUMMARY
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- 1608_Tus-39-1304 Intersection Detail & Sub Sum (sheets 5 & 6).dwg - Jul 03, 2018-9:24:42am Plotted By: gst



ESTIMATED QUANTITIES INTERSECTION IMPROVEMENT

REF NO.	STATION TO STATION	SIDE	202 CURB REMOVED	203 EXCAVATION	608 4" CONCRETE WALK	608 CURB RAMP	609 COMBINATION CURB & GUTTER, TYPE 2
			FT	CU YD	SQ FT	SQ FT	LIN FT
R-1	26+52.88 TO 26+76	LT	26				
R-2	26+61.17 TO 26+96	RT	55				
R-3	27+36 TO 27+46	RT	28				
CC-1	26+52.88 TO 26+63	LT					13
CC-2	26+61.17 TO 26+96	RT					45
CC-3	27+36 TO 27+46	RT					22
CR-1	26+68	LT				47	
CR-2	26+68	RT				47	
CR-3	26+91	RT				47	
CR-4	27+42	RT				47	
SW-1	26+52.88 TO 26+65	LT		4	75		
SW-2	26+61.17 TO 26+96	RT		8	158		
SW-3	27+36 TO 27+46	RT		4	95		
SUBTOTALS			109	16	328	188	80
TOTALS CARRIED TO SHEET 5			109	16	328	188	80

N

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 103899

CALCULATED JAT
CHECKED MWS

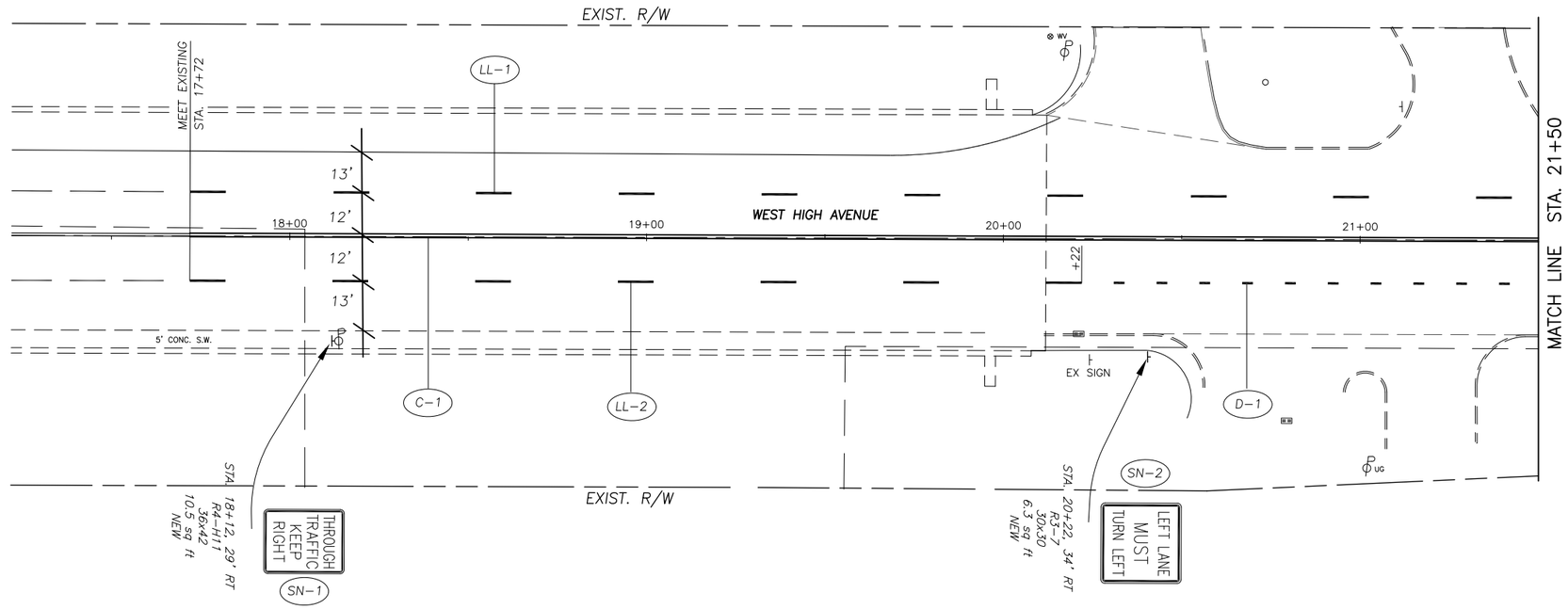
INTERSECTION IMPROVEMENT PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- 1608_Tus-39-1304 Intersection Detail & Sub Sum (sheets 5 & 6).dwg - May 22, 2018-10:35:48am Plotted By : gat

PAVEMENT MARKING LEGEND
PROPOSED:
(C) – CENTER LINE, DOUBLE, SOLID
(CB) – CENTER LINE, SOLID, BROKEN
(CH) – CHANNELIZING LINE, 12"
(D) – DOTTED LINE, 6"
(S) – STOP LINE
(CW) – CROSSWALK LINE
(TY) – TRANSVERSE LINE, YELLOW
(LA) – LANE ARROW
(LL) – LANE LINE, 6"
(R) – RAILROAD SYMBOL

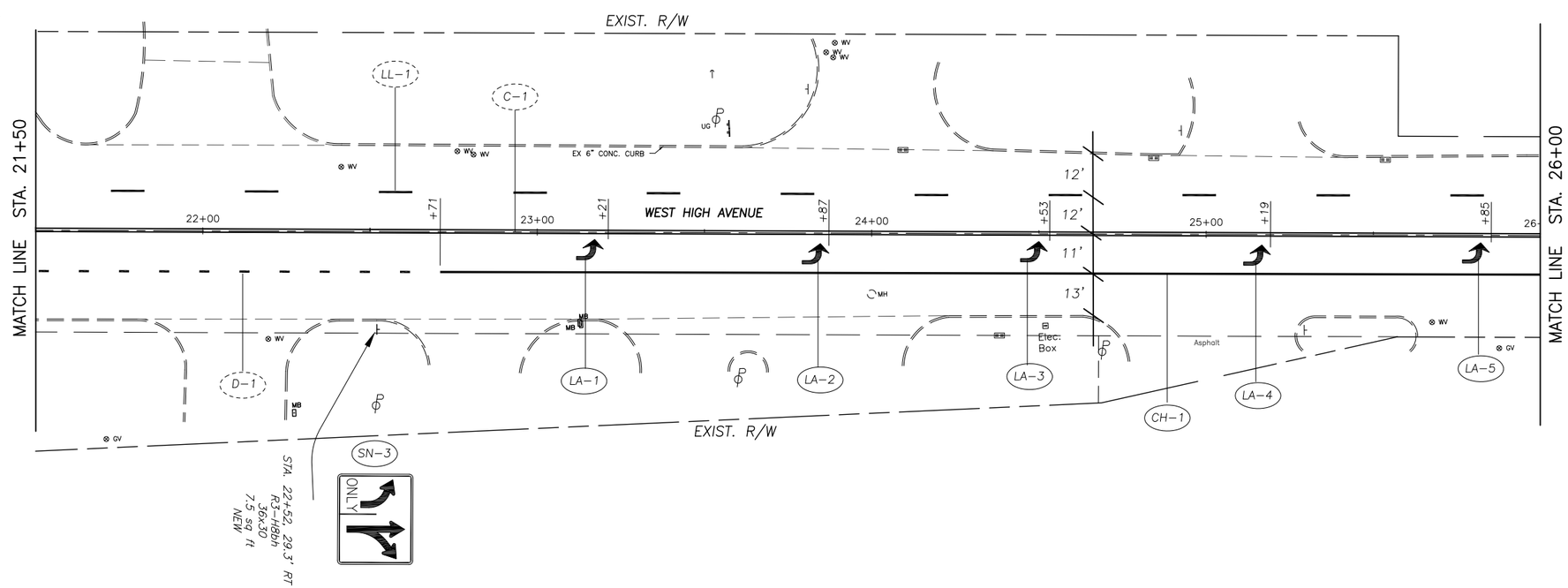
SEE SHEET 11 FOR PAVEMENT MARKING SUB-SUMMARY SHEET



R-1

NOTE:

REMOVE LANE LINE FROM STA. 20+22, RT TO STA. 26+61, RT = .12 MILE



N

HORIZONTAL SCALE IN FEET 0 10 20 40

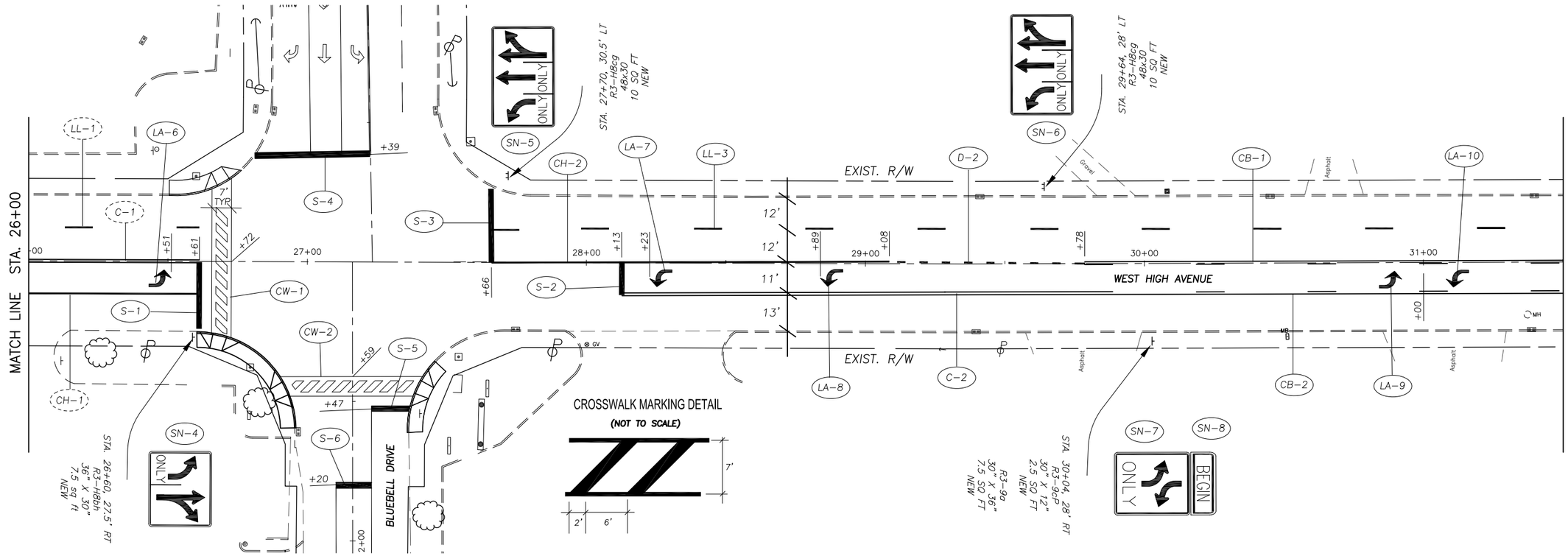
PID NO. 103899

CALCULATED JAT
CHECKED MWS

TRAFFIC CONTROL PLAN
HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

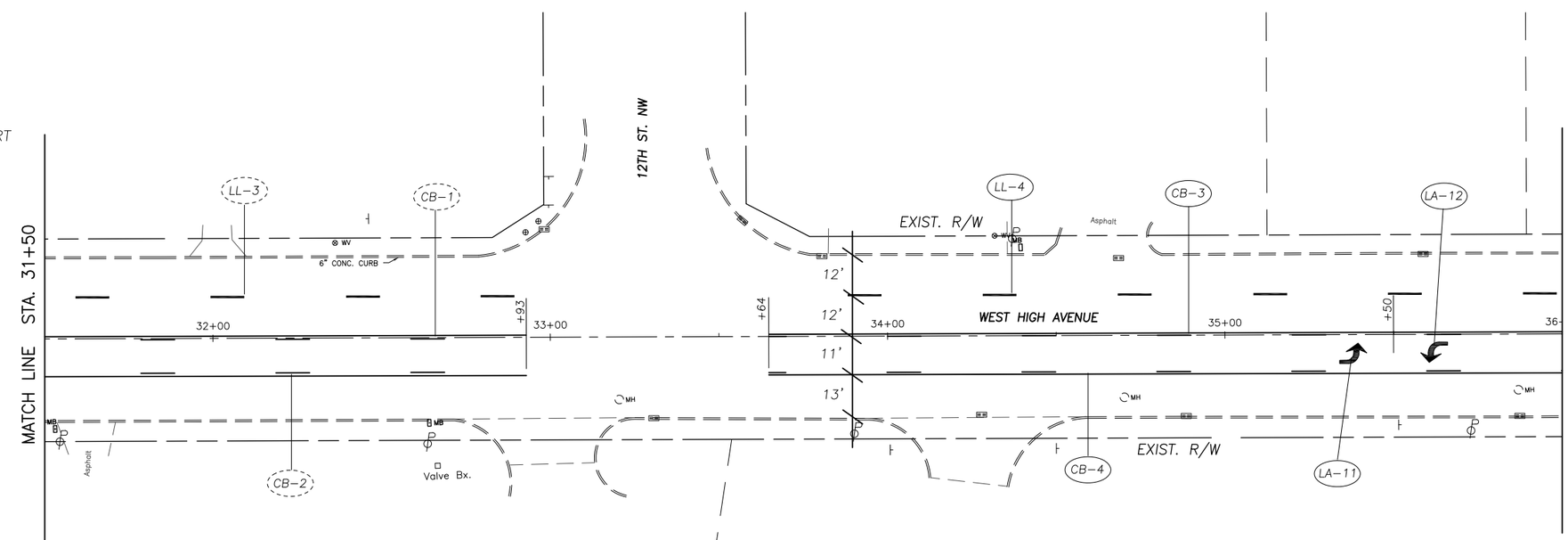
Z:\Projects (U)\2017\17-062 City of New Philadelphia – Design Services – TUS-39-13.04 PID 103899 W. High & Bluebell – Stage 1 & 2– 1608_W High Ave Site Plan (marking plans 7-10).dwg – Jul 03, 2018-9:39:23am Plotted By : gat



NOTE:

REMOVE CENTER LINE FROM STA. 27+66, RT TO STA. 47+67, RT = .38 MILE

REMOVE LANE LINE FROM STA. 27+66, RT TO STA. 47+67, RT = .38 MILE



N

HORIZONTAL SCALE IN FEET 0 10 20 40

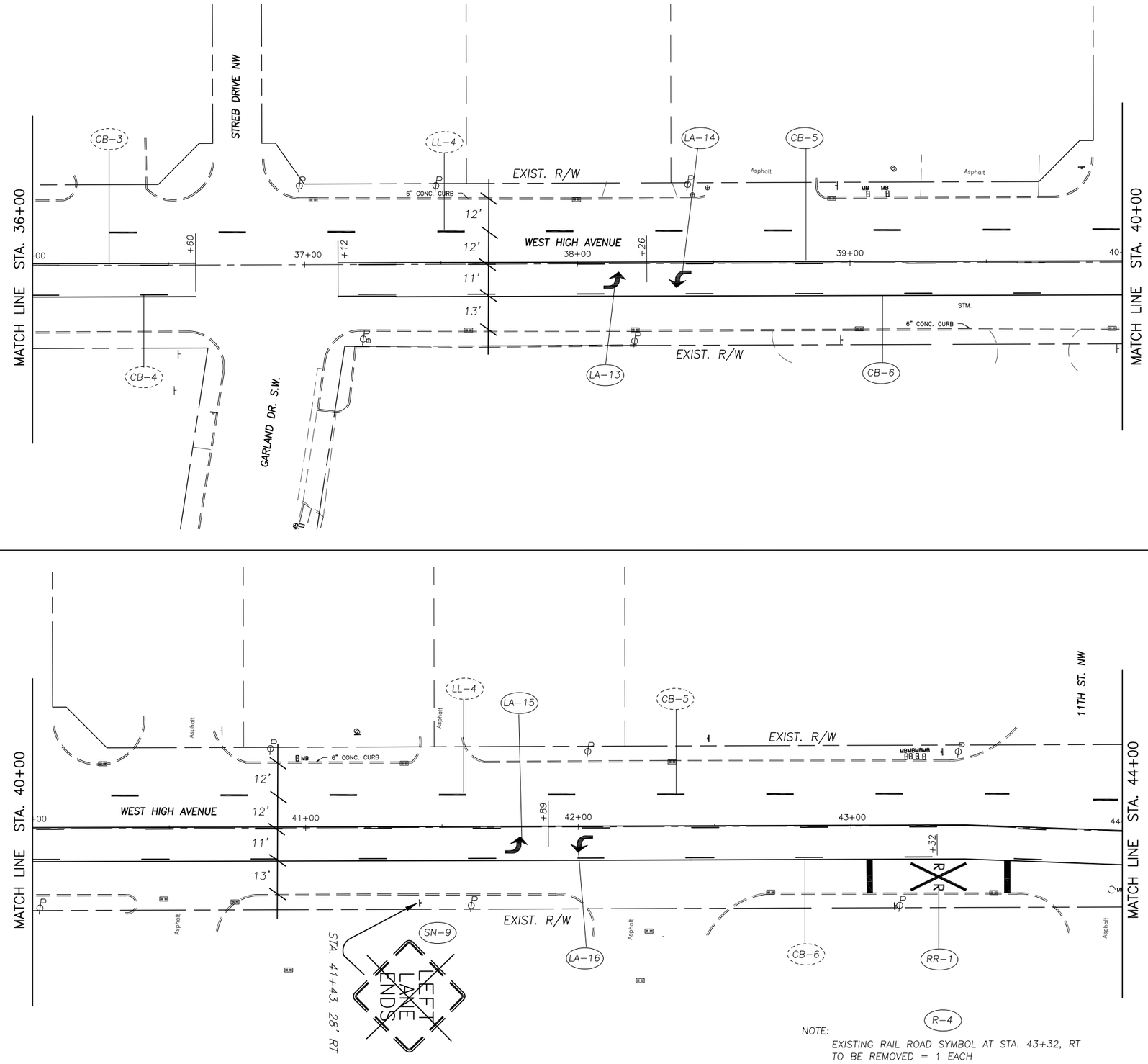
PID NO. 103899

CALCULATED JAT
CHECKED MWS

TRAFFIC CONTROL PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- 1608_W High Ave Site Plan (marking plans 7-10).dwg - May 22, 2018-10:51:50am Plotted By : gat



NOTE:
EXISTING RAIL ROAD SYMBOL AT STA. 43+32, RT
TO BE REMOVED = 1 EACH

HORIZONTAL SCALE IN FEET
0 10 20 40

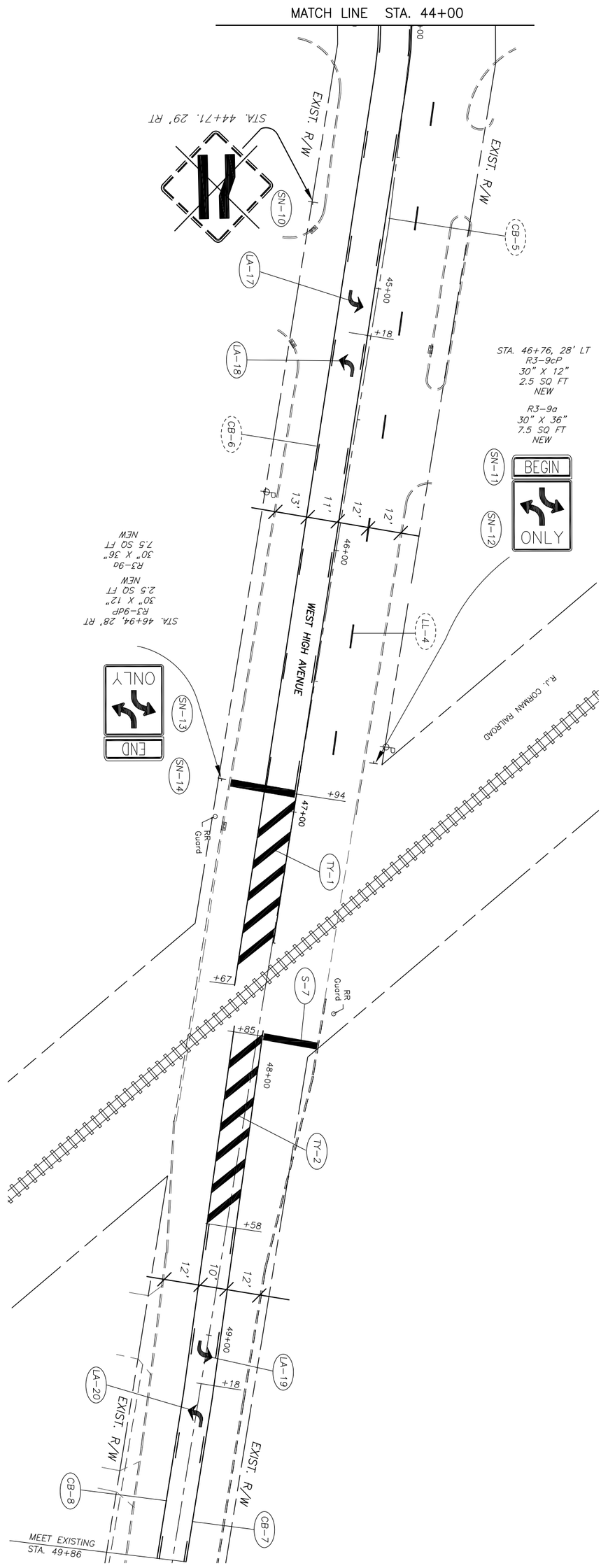
PID NO. 103899

CALCULATED JAT
CHECKED MWS

TRAFFIC CONTROL PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- 1608_W High Ave Site Plan (marking plans 7-10).dwg - May 22, 2018-10:52:56am Plotted By : gat



NOTE:
REMOVE EXIST. TRANSVERSE LINES FROM STA. 47+85, LT/RT TO STA. 48+70, LT/RT = 100 FEET

R-5

10/23	TUS-39-13.04	TRAFFIC CONTROL PLAN W. HIGH AVE & BLUEBELL DRIVE	CALCULATED JAT CHECKED MWS	PID NO. 103899	0 10 20 40 HORIZONTAL SCALE IN FEET	N

SHEET NO.	REFERENCE NO.	LOCATION	STATION FROM	STATION TO	SIDE	644 LANE LINE, 6"	CENTER LINE, DOUBLE SOLID	CENTER LINE, BROKEN AND SOLID, DOUBLE		CHANNELIZING LINE, 12"	STOP LINE	TRANSVERSE/ DIAGONAL LINE, YELLOW		CROSSWALK LINE	LANE ARROW	DOTTED LINE, 6"	RAILROAD SYMBOL MARKING		642 REMOVAL OF PAVEMENT MARKING	REMOVAL OF PAVEMENT MARKING	REMOVAL OF PAVEMENT MARKING	
						MILE	MILE	MILE		FOOT	FOOT	FOOT		FOOT	EACH	FOOT	EACH		MILE	EACH	FOOT	
7, 8	C1	WEST HIGH AVENUE	17+72.00	26+61.00	LT/RT		0.17															
8	C2	WEST HIGH AVENUE	28+13.00	29+78.00	RT		0.03															
8	CB1	WEST HIGH AVENUE	29+78.00	32+93.00	LT/RT			0.06														
8	CB2	WEST HIGH AVENUE	29+78.00	32+93.00	RT			0.06														
8, 9	CB3	WEST HIGH AVENUE	33+64.00	36+60.00	LT/RT			0.06														
8,9	CB4	WEST HIGH AVENUE	33+64.00	36+60.00	RT			0.06														
9, 10	CB5	WEST HIGH AVENUE	37+12.00	47+67.00	LT/RT			0.2														
9, 10	CB6	WEST HIGH AVENUE	37+12.00	47+67.00	RT			0.2														
10	CB7	WEST HIGH AVENUE	47+85.00	49+68.00	LT/RT			0.03														
10	CB8	WEST HIGH AVENUE	47+85.00	49+68.00	RT			0.03														
7, 8	LL1	WEST HIGH AVENUE	17+72.00	26+61.00	LT	0.17																
7	LL2	WEST HIGH AVENUE	17+72.00	20+22.00	RT	0.05																
8	LL3	WEST HIGH AVENUE	27+66.00	32+93.00	LT	0.1																
8,9,10	LL4	WEST HIGH AVENUE	33+64.00	46+94.00	LT	0.25																
7	D1	WEST HIGH AVENUE	20+22.00	22+71.00	RT											249						
8	D2	WEST HIGH AVENUE	29+08.00	29+78.00	LT/RT											70						
7	CH1	WEST HIGH AVENUE	22+71.00	26+61.00	RT					390												
8	CH2	WEST HIGH AVENUE	27+66.00	29+08.00	LT/RT					142												
10	TY1	WEST HIGH AVENUE	46+94.00	47+67.00	RT							85										
10	TY2	WEST HIGH AVENUE	47+85.00	48+58.00	RT							102										
8	S1	WEST HIGH AVENUE	26+61.00	26+61.00	RT						25											
8	S2	WEST HIGH AVENUE	28+13.00	28+13.00	RT						12											
8	S3	WEST HIGH AVENUE	27+66.00	27+66.00	LT						25											
8	S4	BLUEBELL DRIVE	03+39.00	03+39.00	LT						41											
8	S5	BLUEBELL DRIVE	02+47.00	02+47.00	RT						13											
8	S6	BLUEBELL DRIVE	02+20.00	02+20.00	LT/RT						13											
10	S7	WEST HIGH AVENUE	47+85.00	47+85.00	LT						20											
8	CW1	WEST HIGH AVENUE	26+65.00	26+72.00	LT/RT									111								
8	CW2	BLUEBELL DRIVE	02+52.00	02+59.00	LT/RT									95								
7	LA1	WEST HIGH AVENUE	23+21.00		RT										1							
7	LA2	WEST HIGH AVENUE	23+87.00		RT										1							
7	LA3	WEST HIGH AVENUE	24+53.00		RT										1							
7	LA4	WEST HIGH AVENUE	25+19.00		RT										1							
7	LA5	WEST HIGH AVENUE	25+85.00		RT										1							
8	LA6	WEST HIGH AVENUE	26+51.00		RT										1							
8	LA7	WEST HIGH AVENUE	28+23.00		RT										1							
8	LA8	WEST HIGH AVENUE	28+89.00		RT										1							
8	LA9	WEST HIGH AVENUE	30+95.00		RT										1							
8	LA10	WEST HIGH AVENUE	31+05.00		RT										1							
8	LA11	WEST HIGH AVENUE	35+45.00		RT										1							
8	LA12	WEST HIGH AVENUE	35+55.00		RT										1							
9	LA13	WEST HIGH AVENUE	38+21.00		RT										1							
9	LA14	WEST HIGH AVENUE	38+31.00		RT										1							
9	LA15	WEST HIGH AVENUE	41+84.00		RT										1							
9	LA16	WEST HIGH AVENUE	41+94.00		RT										1							
10	LA17	WEST HIGH AVENUE	45+13.00		RT										1							
10	LA18	WEST HIGH AVENUE	45+23.00		RT										1							
10	LA19	WEST HIGH AVENUE	49+13.00		LT/RT										1							
10	LA20	WEST HIGH AVENUE	49+23.00		LT/RT										1							
9	RR1	WEST HIGH AVENUE	43+32.00		RT												1					
7, 8	R1	WEST HIGH AVENUE	20+22.00	26+61.00	RT														0.12			
8,9,10	R2	WEST HIGH AVENUE	27+66.00	47+67.00	LT/RT														0.38			
8,9,10	R3	WEST HIGH AVENUE	27+66.00	47+67.00	RT														0.38			
9	R4	WEST HIGH AVENUE	43+32.00		RT															1		
10	R5	WEST HIGH AVENUE	47+85.00	48+70.00	LT/RT																100	
TOTALS CARRIED TO GENERAL SUMMARY						0.57	0.20	0.7		532	149	187		206	20	319	1.00	-	0.88	1.00	100	

CALCULATED JAT
CHECKED MWS

PAVEMENT MARKING ESTIMATED QUANTITIES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- New Philadelphia\Stage 3 Plans\Sht 11.dwg 03-Jul-18 10:28 AM

SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIDE	CODE	SIZE (INCHES)	630 REMOVAL OF GROUND MOUNTED SIGN AND STORAGE	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL			SIGN, FLAT SHEET	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	GROUND MOUNTED SUPPORT, NO. 3 POST						
							EACH	EACH			SQ FT	EACH	FOOT						
7	SN-1	WEST HIGH AVENUE	18+12.00	RT	R4-H11	36 X 42					10.5	1							
7	SN-2	WEST HIGH AVENUE	20+22.00	RT	R3-7	30 X 30					6.3		13						
7	SN-3	WEST HIGH AVENUE	22+52.00	RT	R3-H8bh	36 X 30					7.5		26						
8	SN-4	WEST HIGH AVENUE	26+60.00	RT	R3-H8bh	36 X 30					7.5		26						
8	SN-5	WEST HIGH AVENUE	27+70.00	LT	R3-H8cg	48 X 30					10.0		26						
8	SN-6	WEST HIGH AVENUE	29+64.00	LT	R3-H8cg	48 X 30					10.0		26						
8	SN-7	WEST HIGH AVENUE	30+04.00	RT	R3-9a	30 X 36					7.5		14						
8	SN-8	WEST HIGH AVENUE	30+04.00	RT	R3-9cP	30 X 12					2.5		"						
9	SN-9	WEST HIGH AVENUE	41+43.00	RT	REMOVAL		1	1											
10	SN-10	WEST HIGH AVENUE	44+71.00	RT	REMOVAL		1	1											
10	SN-11	WEST HIGH AVENUE	46+76.00	LT	R3-9cP	30 X 12					2.5		14						
10	SN-12	WEST HIGH AVENUE	46+76.00	LT	R3-9a	30 X 36					7.5		"						
10	SN-13	WEST HIGH AVENUE	46+94.00	RT	R3-9a	30 X 36					7.5		14						
10	SN-14	WEST HIGH AVENUE	46+94.00	RT	R3-9dP	30 X 12					2.5		"						
TOTALS CARRIED TO GENERAL SUMMARY							2	2			81.8	1	159			-	-	-	

CALCULATED JAT
CHECKED MWS

SIGNING ESTIMATED QUANTITIES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- New Philadelphia\Stage 3 Plans\Sht 12.dwg 22-May-18 11:02 AM

CONSTRUCTION AND MATERIAL SPECIFICATIONS

WHERE IN ANY CASE THE PLANS AND SPECIFICATIONS DO NOT ENTIRELY COVER MATERIALS AND/ OR WORKMANSHIP, THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS, CURRENT THEREOF, SHALL APPLY AND BE IN FORCE. THROUGHOUT THE PLANS THE REFERENCE TO SPECIFIC ODOT ITEM NUMBERS ARE INDICATED. MATERIAL AND WORKMANSHIP SHALL ALSO CONFORM TO THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS OF THE CITY OF NEW PHILADELPHIA ENGINEER. WHERE CONFLICTS OCCUR IN THE ABOVE, THE CITY OF NEW PHILADELPHIA ENGINEER SHALL DETERMINE THE GOVERNING AUTHORITY. ANY DEFECTS IN THE CONSTRUCTION INCLUDING MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE OWNER.

UTILITIES

ANY AND ALL WORK REQUIRED FOR REMOVAL, RELOCATION AND/ OR NEW CONSTRUCTION OF FACILITIES FOR PRIVATE UTILITIES WILL BE DONE AND AT THE EXPENSE OF THE RESPECTIVE OWNERS UNLESS OTHERWISE NOTED ON THE PLANS. THE PROCEDURE AS OUTLINED IN THE OHIO REVISED CODE SECTION 153.64, REGARDING UTILITY IDENTIFICATION SHALL BE FOLLOWED NAMELY, THE OWNER WILL NOTIFY THE OWNERS OF UNDERGROUND UTILITY FACILITIES OF THE IMPEDING PROJECT. THE CONTRACTOR MUST NOTIFY THE UNDERGROUND UTILITY PROTECTION SERVICE AND INDIVIDUAL UTILITY 48 HOURS PRIOR TO COMMENCING WORK. THE UNDERGROUND UTILITY OWNER MUST STAKE, MARK OR OTHERWISE DESIGNATE THE LOCATION OF ITS FACILITY. THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS HAVE BEEN OBTAINED BY DILIGENT FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS.

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

CITY OF NEW PHILADELPHIA
150 EAST HIGH AVE.
NEW PHILADELPHIA, OHIO 44663
(330) 364-4491

DOMINION ENERGY OHIO
ATTN: KEVIN BIRT (330) 664-2541
320 SPRINGSIDE DRIVE
AKRON, OHIO 44333

AEP OHIO POWER COMPANY
ATTN: KATHY MOSSBARGER, (330) 438-7061
P.O. BOX 24400
CANTON, OHIO 44701

CALL OHIO UTILITIES PROTECTION SERVICE
TWO (2) WORKING DAYS BEFORE YOU DIG
TOLL FREE NO. 1-800-362-2764
(NON-MEMBERS MUST BE CALLED DIRECTLY)

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

PRECAUTION AGAINST UTILITY DAMAGE

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS, AT NO EXPENSE TO THE OWNER TO AVOID DAMAGE TO THE EXISTING UNDERGROUND UTILITY LINES DURING THE INSTALLATION OF THE PROPOSED IMPROVEMENT. IT MAT BE NECESSARY TO CHANGE THE ALIGNMENT OF THE FLOW LINE ELEVATION OF PROPOSED SEWER DUE TO VARIOUS EXISTING UTILITY LINES. THE CONTRACTOR SHALL MAKE INVESTIGATIONS TO DETERMINE THE LOCATIONS OF EXISTING UTILITY LINES PRIOR TO THE INSTALLATION OF THE PROPOSED IMPROVEMENTS. SUCH INVESTIGATIONS SHALL BE AT NO COST TO THE OWNER.

UNDERGROUND AND OVERHEAD UTILITIES

VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE WORK LIMITS. NOTIFY ALL OVERHEAD UTILITY COMPANIES AT LEAST TWO WORKING DAYS BEFORE INSTALLING SIGNAL POLES OR SUPPORTS. TAKE SPECIAL CARE WHEN SETTING THE POLES OR SIGNAL SUPPORTS DUE TO THE CLOSE PROXIMITY OF OVERHEAD UTILITIES. INCUR COSTS FOR UTILITY VERIFICATION AND NOTIFICATION AND MAKE INCIDENTAL TO THE COST OF THE PROJECT.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 90 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION, THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATION, MAKE REPAIRS, AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. NEW EQUIPMENT, MATERIAL, AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, SIGNAL AND PEDESTRIAN SIGNAL HEADS.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

MAINTENANCE OF TRAFFIC SIGNAL INSTALLATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE NEW TRAFFIC SIGNALS FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK TO SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE PROBLEM.

IN THE EVENT NEW ELECTRICAL INSTALLATIONS ARE DAMAGED PRIOR TO ACCEPTANCE ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE.

IF POLE AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OF REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUCTED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION, THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION ON ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION AT THE LOCATIONS INDICATED AS HIS RESPONSIBILITY IN THE PLANS WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF CMS 105.15. ANY SUBSEQUENT BILLINGS TO THE STATE OR POLICE SERVICES AND MAINTENANCE SERVICES BY STATE FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE TO THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF CMS 105.15.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 6 HOURS AND SHALL NOT INCLUDE THE HOURS OF 7 AM TO 9 AM AND 3 PM TO 6 PM OR OTHER HOURS AS DIRECTED BY THE ENGINEER. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED BY OFF DUTY LAW ENFORCEMENT OFFICERS.

ANY INSTALLED VEHICULAR TRAFFIC SIGNAL HEAD WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN THE GENERAL NOTE IN THIS PLAN.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

ITEM 614 - MAINTAINING TRAFFIC

MAINTAIN A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION AT ALL TIMES.

MAINTAIN SAFE AND SATISFACTORY ACCESS TO ABUTTING PROPERTY. THE CONTRACTOR SHALL MAINTAIN ADEQUATE PEDESTRIAN WALKS AT ALL INTERSECTIONS.

DIVERT TRAFFIC FROM NORMAL CHANNELS WITH PLASTIC DRUMS, FLASHING ARROW PANELS COMPLYING WITH MT-95.31, MT-95.32 AND TRAFFIC SIGNS AND PAVEMENT MARKINGS.

FURNISH, ERECT, MAINTAIN, AND REMOVE CONSTRUCTION TRAFFIC CONTROL DEVICES USED FOR THIS PROJECT CONFORMING TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, EXCEPT AS NOTED BELOW.

FURNISH AND MAINTAIN ALL NECESSARY SAFEGUARDS, SUCH AS BARRICADES, LIGHTING, FLAGGERS, AND SUCH OTHER TRAFFIC CONTROL DEVICES AS PROVIDED IN ITEM 614, MAINTAINING TRAFFIC, SO AS TO AVOID DAMAGE AND/OR INJURY TO VEHICLES AND PERSONS USING THE ROADWAY DURING CONSTRUCTION.

RELOCATE ANY EXISTING TRAFFIC CONTROL DEVICES (SIGNS AND/OR TRAFFIC SIGNALS), LOCATED WITHIN THE WORK AREA, WHICH ARE REQUIRED FOR INTERIM OR PERMANENT TRAFFIC CONTROL, TO POINTS APPROVED BY THE ENGINEER. MAINTAIN APPROPRIATE TRAFFIC CONTROL DEVICES IN COMPLIANCE WITH THE MANUAL, AT ALL TIMES.

THE ENGINEER WILL APPROVE THE LENGTH AND DURATION OF LANE CLOSURES AND OR TRAFFIC RESTRICTIONS, WITH THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. THE ENGINEER WILL NOT PERMIT LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME. NO LANE CLOSURES WILL BE ALLOWED ON SR 39 OR BLUEBELL DRIVE BETWEEN THE HOURS OF 6-9 AM AND 4-7 PM.

PERFORM ALL WORK AND USE TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR "ITEM 614 - MAINTAINING TRAFFIC", UNLESS SEPARATELY ITEMIZED IN THE PLANS.

NOTIFICATION OF TRAFFIC RESTRICTIONS

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM THE SPECIAL HAULING PERMITS SECTION (HAULING.PERMITS@DOT.OHIO.GOV) AND THE DISTRICT PUBLIC INFORMATION OFFICE (PIO). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHALL LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, NUMBER OF LANES CLOSED, MINIMUM VERTICAL CLEARANCE, MINIMUM WIDTH OF DRIVABLE PAVEMENT, DETOUR ROUTES, IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

NOTIFICATION TIME TABLE

ITEM	DURATION OF CLOSURE	NOTICE DUE TO PERMITS & PIO
RAMP & ROAD CLOSURES	>= 2 WEEKS	21 CALENDAR DAYS PRIOR TO CLOSURE
	> 12 HOURS & <2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	< 12 HOURS	4 BUSINESS DAYS PRIOR TO CLOSURE
LANE CLOSURES & RESTRICTIONS	>= 2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	< 2 WEEKS	5 BUSINESS DAYS PRIOR TOCLOSURE
START OF CONSTRUCTION & TRAFFIC PATTERN CHANGES	N/A	14 CALENDAR DAYS PRIOR TO IMPLEMENTATION

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME TABLE

POWER SUPPLY FOR TRAFFIC SIGNALS

OBTAIN 120 VOLT ELECTRIC POWER FROM THE OHIO EDISON COMPANY AT THE LOCATIONS INDICATED ON THE PLANS. DO NOT, UNDER ANY CIRCUMSTANCES, SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS.

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL NOTES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 13.dwg - May 22, 2018-11:08:02am Plotted By : gat

GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) AND THE HL AND TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1. ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.

   a. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.

   b. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.

   c. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULLBOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.

   d. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.

   e. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.

   f. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

2. CONDUITS

   a. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.

   b. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.

   c. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

   d. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

3. WIRE FOR GROUNDING AND BONDING.

   a. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:

      i. USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.

      ii. USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.a.i ABOVE.

      iii THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.

   b. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.

4. GROUND ROD.

   a. A 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.

   b. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.

GROUNDING AND BONDING, CONTINUED

5. THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODIES AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE	YELLOW BALL	#2 DW/FDW
6	BLUE	GREEN ARROW	#2 WALK
7	WHITE/BLACK STRIPE	YELLOW ARROW	NOT USED

6 POWER SERVICE AND DISCONNECT SWITCH.

   a. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC–) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPICE.

   b. THE SERVICE NEUTRAL (AC–) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.

      i. NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC–) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS–2, FIGURE 5–4.

      ii. IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC–) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.

7. PAYMENT – ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

ITEM 632 – POWER SERVICE, AS PER PLAN

POWER SERVICE SHALL BE AS PER CMS 632.24 AND STANDARD CONSTRUCTION DRAWING TC–83.10. POWER SERVICE SHALL ALSO INCLUDE THE FOLLOWING:

1) THE CONTRACTOR SHALL MEET WITH A REPRESENTATIVE FROM THE POWER SUPPLY AGENCY TO CONFIRM HOW THE PROPOSED POWER SERVICE IS TO BE WIRED. HOOKED UP, AND ITS LOCATION.

2) DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH ITEM 632, POWER SERVICE, AS PER PLAN, SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BEA OR WILSON BOHANNON 660, WITH LOCK BODY AND SHACKLE OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER. ALL CONDUIT AND FITTINGS SHALL BE GALVANIZED STEEL AS PER CMS 725.04. CONDUIT RISERS SHALL BE 1–1/2" MINIMUM DIAMETER.

3) THE CONTRACTOR SHALL BE RESPONSIBLE FOR REQUESTING AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOKUP. THE CONTRACTOR SHALL BE REPONSIBLE FOR CONTACTING THE POWER COMPANY FOR ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLES INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120 VOLTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND PAYING OF ALL FEES RELATING TO THE POWER SERVICE CONNECTION. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL IS ACCEPTED BY THE MAINTAINING AGENCY.

4) THE POWER SERVICE SHALL INCLUDE A BYPASS STYLE METER BASE SOCKET. THE METER BASE SHALL BE 100 AMP MINIMUM AND INCLUDE A BYPASS SWITCH AND 1–1/2" HUB AT THE TOP OF THE METER BASE. THE METER BASE SOCKET SHALL BE AS MANUFACTURED BY LANDIS & GYR. MODEL # 40204–01, MILBANK MODEL U7487–RL–TG–KK, SQUARE D MODEL UHTRS101B, OR APPROVED EQUAL BY THE ENGINEER.

IN ADDITION TO THE REQUIREMENTS OF THIS NOTE, PAYMENT WILL INCLUDE ALL NECESSARY LABOR, MISCELLANEOUS HARDWARE AND EQUIPMENT REQUIRED TO PROVIDE FOR THIS ITEM WORK IN ACCORDANCE WITH SPECIFICATION 632. PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH.

ITEM 625 – GROUND ROD, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 625.16, FURNISH AND INSTALL A SEVEN (7) STRAND, NO 4, AWG COPPER WIRE FROM THE TOP OF THE GROUND ROD, AND ATTACH IT TO THE NEUTRAL BAR IN THE CABINET.

ITEM 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 SPACIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS., AND INSURE 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 THE COVER ATTACHEMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE ENGINEER. COVERS ARE TO BE FREE OF TEXT, PICTURES, OR ANY OTHER TYPE OF ADVETISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

SIGNAL ACTIVATION

PRIOR TO ACTIVATING THE NEW TRAFFIC SIGNAL TO STOP AND GO MODE AND/OR REMOVING THE EXISTING TRAFFIC SIGNAL FROM SERVICE, ALL ITEMS IN THE PROPOSED SIGNAL PLAN SHALL BE FULLY COMPLETED, (I.E VEHICLE DETECTION, PEDESTRIAN SIGNAL HEADS, ETC). IF THERE ARE CONSTRUCTABILITY ISSUES (I.E ROADWAY WIDENING, ETC.) THAT PREVENT THE SIGNAL FROM BEING COMPLETED PRIOR TO ACTIVATION IT SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER. THE DISTRICT TRAFFIC ENGINEER WILL THEN REVIEW, APPROVE OR REJECT PROPOSALS TO ACTIVATE THE TRAFFIC SIGNAL PRIOR TO COMPLETION.

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND CITY OF NEW PHILADELPHIA MANAGER AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING THE FINAL INSPECTION OF THE SIGNAL INSTALLATION. FINAL INSPECTION IS NOT CONSIDERED COMPLETE UNTIL DESIGNATED DISTRICT TRAFFIC PERSONNEL INSPECT THE TRAFFIC SIGNAL AND ISSUE WRITTEN APPROVAL. IF ISSUES ARE FOUND DURING THE FINAL INSPECTION THAT EFFECT THE SAFETY OF THE TRAVELING PUBLIC AND/OR THE EFFICIENCY OF THE INTERSECTION THE SIGNAL SHALL NOT BE ACTIVATED ON THE PROPOSED DATE. ANY PUNCH LIST ITEMS THAT ARE FOUND SHALL BE CORRECTED AND REINSPECTED BY DISTRICT TRAFFIC PERSONNEL PRIOR TO FINAL ACCEPTANCE. ODOT FORCES SHALL ONLY ASSUME DAY TO DAY MAINTENANCE OF THE TRAFFIC SIGNAL AFTER FINAL WRITTEN ACCEPTANCE HAS BEEN ISSUED.

WORK INSPECTION

THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AND CITY OF NEW PHILADELPHIA MANAGER WITH 72 HOUR NOTICE OF ANY SIGNAL WORK TO BE PERFORMED AT THE INTERSECTION SITE(S) SO THAT INSPECTION SERVICES CAN BE SUPPLIED.

UNDERDRAINS FOR PULLBOXES

REFERENCE IS MADE TO THE STANDARD CONSTRUCTION DRAWING FOR DETAILS OF DRAINING PULL BOX'S. UNDERDRAINS FOR PULLBOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED 20 FEET. THE FOLLOWING ESTIMATED QUANTITY IS CARRIED TO THE SUMMARY ON SHEET 119 FOR THIS PURPOSE.

ITEM 611 – 4" CONDUIT, TYPE E, 40 FT.

ITEM 632 – REMOVAL OF TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, SIGNAL SUPPORTS, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH CMS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF A NEW INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF NEW PHILADELPHIA IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE STORED:

CONTROLLER & CABINET
SIGNAL SUPPORTS
VEHICULAR SIGNAL HEADS
PEDESTRIAN SIGNAL HEADS

IN THE EVENT THE ITEMS STORED ON THE PROJECT FOR SALVAGE BY THE LOCAL AGENCY ARE NOT REMOVED, THE CONTRACTOR SHALL, WHEN DIRECTED BY THE ENGINEER IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL NOTES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 14.dwg - May 22, 2018-11:09:17am Plotted By : gat

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Blueball - Stage 1 & 2- Sht 15.dwg - May 22, 2018-3:20:29pm Plotted By : gat

ITEM 632 – PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, 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 CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
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–C. THE CONTRACTOR SHALL PROVIDE ODOT, 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), (COUNTDOWN), TYPE D2, 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 – PEDESTRIAN PUSHBUTTON, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.06, PROVIDE PEDESTRIAN PUSHBUTTONS WITH THE FOLLOWING FEATURES:

FURNISH PUSHBUTTONS THAT ARE RATED AS WATERPROOF AND WHICH INCORPORATE A SOLID NEOPRENE RUBBER GASKET TO SEAL ITSELF AGAINST MOISTURE.

FURNISH PUSHBUTTONS THAT ARE PRESSURE ACTIVATED AND WHICH INCORPORATE A PIEZO DRIVEN SOLID STATE SWITCH, TWO TONE ACTIVATION BEEP AND LED INDICATOR THAT MOMENTARILY FLASHES.

SEAL THE PUSHBUTTON HOUSING TO THE SIGNAL SUPPORT, PEDESTAL OR POLE WITH SILICONE.

PAYMENT FOR "ITEM 632 – PEDESTRIAN PUSHBUTTON, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH PEDESTRIAN PUSHBUTTON IN PLACE, COMPLETELY INSTALLED AT THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

DETECTION MAINTENANCE

IF VEHICLE DETECTION BECOMES UNEXPECTEDLY DISABLED. REQUIRES MODIFICATION, OR IS SCHEDULED TO BE TEMPORARILY REMOVED DURING THE CONSTRUCTION PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND CITY OF NEW PHILADELPHIA MANAGER.

IF THE LOSS OF VEHICLE DETECTION IS KNOWN PRIOR TO THE START OF CONSTRUCTION, IT SHALL BE DISCUSSED AT THE PRECONSTRUCTION MEETING. AT SUCH TIME, THE ENGINEER SHALL ADVISE THE PROJECT ENGINEER AND CONTRACTOR ON THE APPROPRIATE ACTION TO RECTIFY ANY LOSS OF VEHICLE DETECTION. THIS MAY INCLUDE PLACING THE TRAFFIC SIGNAL ON MINIMUM OR MAXIMUM RECALL, MODIFYING THE MINIMUM GREEN TIMES, AND REMOVING THE THE MALFUNCTIONING DETECTION FROM SERVICE. WHERE NON–INTRUSIVE DETECTION (VIDEO, RADAR) ALREADY EXISTS, THE CONTRACTOR SHALL INSURE THAT DETECTION IS OPERATING AND MAINTAINED BY RECONFIGURING THE DETECTION UNITS ACCORDINGLY DURING ALL CONSTRUCTION PHASES. THIS IS TO AVOID THE SIGNAL FROM MAXING OUT THE EFFECTED SIGNAL PHASE AND CREATING UNNECESSARY DELAYS.

LOCATIONS WHERE NON–INTRUSIVE DETECTION IS PROPOSED AND THE EXISTING VEHICLE DETECTION IS TO BE ABANDON, THE NON–INTRUSIVE VEHICLE DETECTION SHALL BE INSTALLED, CONFIGURED AND MADE FULLY FUNCTIONAL PRIOR TO THE EXISTING DETECTION BEING DISABLED. THE CONTRCTOR SHALL CONTINUE TO MAINTAIN AND MODIFY THE DETECTION UNTIL FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL. THIS IS TO ENSURE VEHICLE DETECTION REMAINS FULLY FUNCTIONAL THROUGHOUT CONSTRUCTION.

ITEM 632 – VEHICULAR SIGNAL HEAD, (LED), (BY TYPE), 12" LENS, 1–WAY, POLYCARBONATE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF THE ODOT CMS, THE FOLLOWING SHALL APPLY:

1. SIGNAL HEADS 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. THE ENTRANCE FITTING SHALL BE OF THE TRI–STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.
5. ALL SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH THE RED MODULE LOCATED IN FRONT OF THE MAST ARM.
6. ALUMINUM BACKPLATES SHALL BE IN ACCORDANCE WITH THE ODOT CMS AND INCLUDE A FLUORESCENT YELLOW REFLECTIVE BORDER.
7. THE LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS SHALL MEET THE REQUIREMENTS OF CMS 732.04–C. THE CONTRACTOR SHALL PROVIDE ODOT, 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.
8. SIGNAL HEADS SHALL HAVE A MINIMUM WALL THICKNESS OF 0.117 INCHES.
9. SIGNAL HEADS SHALL INCLUDE CUTAWAY TYPE VISORS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
10. 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.
11. BALANCE ADJUSTERS SHALL NOT BE USED ON ONE–WAY HEADS OR TETHERED HEADS.

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

ITEM 632 – SIGNAL SUPPORT, TYPE TC–81.21, AS PER PLAN

ATTACH ALL PEDESTRIAN SIGNAL HEADS TO THE POLES BY UTILIZING THE OPTIONAL 2–PIECE HINGED BRACKET WITH STAINLESS STEEL FASTENER AS PER TC–85.10. DO NOT USE STAINLESS STEEL BANDING.

DUE TO THE POSSIBILITY OF CONFLICT WITH EXISTING OR PROPOSED UNDERGROUND OBSTRUCTIONS (INCLUDING THE POSSIBILITY OF UNRECORDED OBSTRUCTIONS) WHICH COULD AFFECT THE LOCATION OF THE FOUNDATIONS FOR THESE ITEMS, AND CONSEQUENTLY, THE DESIGN OF THE VARIOUS SUPPORTS, AND/OR ARMS, DO NOT PLACE FINAL ORDERS FOR THESE ITEMS UNTIL THE FOUNDATIONS HAVE BEEN INSTALLED, AND WRITTEN NOTICE TO PROCEED WITH THE ORDERS FOR THESE ITEMS HAS BEEN RECEIVED, FROM THE ENGINEER,

IF ANY FOUNDATION LOCATIONS MUST BE ADJUSTED, NOTIFY THE ENGINEER, WHO WILL DETERMINE THE REVISED LOCATIONS AND IF ANY SUPPORT DESIGN CHANGES ARE NECESSARY, IN CONSULTATION WITH THE MAINTAINING AGENCY. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DETERMINING THE REVISED DESIGN. THE ENGINEER WILL SUBSEQUENTLY INFORM THE CONTRACTOR OF ANY CHANGES NECESSARY, AND AUTHORIZE HIM TO ORDER THE SUPPORTS.

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

PAYMENT FOR ACCEPTED QUANTITIES OF "ITEM 632 – SIGNAL SUPPORT, TYPE TC–81.21, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH SIGNAL SUPPORT COMPLETE AND IN PLACE.

SIGNAL SUPPORT AND PEDESTAL FOUNDATION ELEVATIONS

ELEVATIONS SHOWN IN THE PLANS FOR SIGNAL SUPPORTS AND PEDESTAL FOUNDATIONS ARE FOR COMPUTATIONAL PURPOSES ONLY. THE ACTUAL ELEVATION OF THE FOUNDATION SHALL BE IN ACCORDANCE WITH TRAFFIC SCD TC–21.20 PROVIDED THE EXISTING SLOPE IS LESS THAN 6:1.

AT LOCATIONS WHERE THE EXISTING SLOPE IS 6:1 OR GREATER, THE BURIED DEPTH OF FOUNDATION, AS SHOWN IN SCD TC–21.20 SHALL APPLY TO THE LOW SIDE OF THE SLOPE. THE TOP OF THE FOUNDATION SHALL BE SET 2 INCHES ABOVE THE EXISTING SURFACE ON THE HIGH SIDE OF THE SLOPE. THE ADDITIONAL DEPTH OF FOUNDATION NECESSARY TO MEET THESE REQUIREMENTS SHALL BE ADDED TO THE FORMED TOP.

ITEM 633 – UNINTERRUPTIBLE POWER SUPPLY (UPS), 1,000 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 UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2–HOUR TIMER, AND LOW BATTERY SHALL BE WIRED INTO THE TRAFFIC SIGNAL CABINET BACK PANEL TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER.

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 THE UPS. THE LED HOUSING SHALL BE A NEMA 4X 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 AND CENTERED ON THE TOP SERFACE OF THE UPS CABINET AND SEALED FROM WATER INTRUSION. IT SHOULD BE WIRED USING MINIMUM 20 GA 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 LABLED "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" OPERATING CONDITION). THIS ITEM INCLUDES PROGRAMING THE UPS STATUS RELAY OUTPUTS TO 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.

PAYMENT FOR "ITEM 633–UNINTERRUPTABLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN", SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH THE UPS COMPLETE IN PLACE, INCLUDING ALL CONNECTIONS MADE, WIRING COMPLETE, TESTED AND ACCEPTED.

ITEM 633 – PREEMPT PHASE SELECTOR, AS PER PLAN

FURNISH AND INSTALL 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. INCLUDE IN THIS ITEM ANY EXTRA CABINET SPACE NECESSARY TO ALLOW THE EQUIPMENT TO BE PLACED IN THE LOCAL CONTROLLER CABINETS WHERE INDICATED IN THE PLANS.

FURNISH THE PHASE SELECTORS WHICH CONSIST OF A MODULE OR MODULES THAT WILL PROVIDE THE NECESSARY INPUTS TO THE CONTROLLER, AND HAVE SUFFICIENT QUANTITIES OF CHANNELS TO PROVIDE PREEMPTION FOR ALL APPROACHES TO THE INTERSECTION SEPARATELY. OBTAIN POWER TO OPERATE THE PHASE SELECTOR FROM A SEPARATE POWER SUPPLY, NOT FROM THE LOCAL CONTROLLER TIMER.

FURNISH PHASE SELECTORS WITH FRONT PANEL INDICATORS FOR ACTIVE PREEMPT CHANNEL STATUS, AND WITH 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.

FURNISH SONEM MODEL PREEMPT PHASE SELECTORS, AS MANUFACTURED BY TRAFFIC SUPPLIES LLC, PHOENIX, ARIZONA, OR APPROVED EQUAL.

PAYMENT FOR "ITEM 633 – PREEMPT PHASE SELECTOR, AS PER PLAN" 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.

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL NOTES

TUS-39-13.04

ITEM 633 – PREEMPTION, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING PREEMPTION (PRIORITY CONTROL) EQUIPMENT IN THE LOCATIONS AND LOCAL CONTROLLERS AS SHOWN IN THE PLANS.

THE PREEMPTION SYSTEM SHALL CONFORM TO O.D.O.T. SPECIFICATION 633 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 EITHER SOUND, LIGHT OR RADIO DETECTION TECHNIQUES TO DETERMINE AND LOG THE PRESENCE OF THE EMERGENCY VEHICLE. THE SYSTEM SHALL DETECT THE PRESENCE OF THE APPROACHING 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 NEMA CONTROLLER.

THE EQUIPMENT SHALL BE SHELF MOUNTED OR RACK MOUNTED AND EASILY REMOVABLE AND REPLACEABLE WITHIN THE CABINET. THE EQUIPMENT SHALL BE SUPPLIED COMPLETELY WIRED IN THE CONTROLLER CABINET AND TESTED.

THE SYSTEM SHALL BE CAPABLE OF PREEMPTING AND ESTABLISHING PRIORITY FOR EACH APPROACH TO THE INTERSECTION. IT SHALL BE POSSIBLE TO DETECT THE APPROACHINGEMERGENCY VEHICLE UP TO 1200 FEET FROM THE INTERSECTION.

EACH INTERSECTION SHOWN IN THE PLANS SHALL BE SUPPLIED WITH THE FOLLOWING COMPONENTS:

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

SUPPLY THE CITY WITH SOFTWARE REQUIRED TO CALIBRATE, LOG AND OPERATE THE SYSTEM. PROVIDE SOFTWARE THAT IS CAPABLE OF OPERATING ON AN IBM OR IBM COMPATIBLE PERSONAL COMPUTER. SUPPLY TWO (2) OPERATING AND INSTRUCTION MANUALS WITH THE SOFTWARE.

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

IF THE PROPOSED PREEMPT SYSTEM IS NOT COMPATIBLE WITH THE EXISTING SYSTEM, PROVIDE TRAINING FOR UP TO FIFTEEN (15) PERSONS IN THE OPERATION OF THE SYSTEM. PROVIDE OPERATIONS TRAINING WITHIN 48 HOURS OF THE INSTALLATION OF THE SYSTEM. PROVIDE HANDS-ON INSTRUCTION FOR A MINIMUM OF SIXTEEN (16) HOURS. PROVIDE TRAINING FOR UP TO FOUR (4) PERSONS IN THE INSTALLATION AND MAINTENANCE OF THE SYSTEM. PROVIDE A MINIMUM OF EIGHT (8) HOURS OF INSTALLATION AND MAINTENANCE TRAINING. SUPPLY TRAINING WITHIN SEVEN (7) DAYS OF THE INSTALLATION OF THE SYSTEM. HOLD ALL TRAINING IN A CITY SUPPLIED LOCATION. CONDUCT TRAINING USING SOMEONE WHO HAS PERFORMED THIS WITHIN THE LAST YEAR AND DOES IT ON A REGULAR BASIS. BEAR ALL COSTS FOR THE TRAINING INCLUDING COURSE MATERIAL, TRAVEL SUBSISTENCE AND OTHER RELATED COSTS AND INCIDENTAL TO THE COST OF THE PREEMPTION EQUIPMENT.

PAYMENT FOR "ITEM 633 – 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.

ITEM 633 – CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN,

FURNISH A MODEL COBALT CONTROLLER WITH INTERNAL TRANSCEIVER MODULE AND ETHERNET CIRCUIT AS MANUFACTURED BY ECONOLITE.

THE CONTROLLER AND CABINET SHALL HAVE THE CAPABILITY OF OPERATING WITH A MINIMUM OF 8 ACTUATED PHASES. THE OVERLAP PROGRAMMING SHALL BE BY USE OF AN INTERCHANGEABLE PLUG-IN PRINTED CIRCUIT BOARD ASSEMBLY AS DIRECTED IN TS-1-1989. IF THE CONTROLLER DOES NOT HAVE A SOCKET FOR THE INTERCHANGEABLE PLUG-IN PRINTED CIRCUIT BOARD ASSEMBLY, THE BOARD SHALL STILL BE PROVIDED SEPARATELY. THE CABINET SHALL BE WIRED SO THAT CONTROLLER PIN CONNECTIONS ASSOCIATED WITH A GIVEN PHASE NUMBER SHALL MATCH THE PHASE NUMBER ASSIGNED TO THE SPECIFIED TRAFFIC MOVEMENT AS SHOWN ON THE PLANS. THE CONTROLLER CABINET SHALL BE KEYED TO THE STATE MASTER.

THE CONTROLLER SHALL PROVIDE DATA UPLOAD AND DOWNLOAD CAPABILITY. ALL CONTROLLER MEMORIES SHALL BE INVOLITILE AND SHALL NOT REQUIRE BATTERIES OR OTHER SOURCES OF ENERGY TO RETIAN DATA WHILE POWER IS REMOVED FROM THE CONTROLLER.

CONTROLLER CABINET SIZE SHALL COMPLY TO THE REQUIREMENTS OF NEMA TS-1 SECTION 14. THE CONTROLLER CABINET SHALL CONTAIN AN EXTERNAL 220 VOLT PLUG AND GENERATOR POWER PANEL FOR AN EMERGENCY GENERATOR HOOK-UP FOR USE DURING EXTENDED POWER OUTAGES. THE EXTERNAL PLUG AND GENERATOR POWER PANEL WIRING IS SHOWN IN THE PLAN INSERT SHEET ON SHEET 108.

THE INTERIOR SHALL BE PAINTED WHITE

INCLUDE A MANUAL PUSHBUTTON AND 10' EXTENSION CORD.

AN LED CABINET LAMP KIT WITH DOOR ACTIVATED PUSHBUTTON SHALL BE PROVIDED AND SHALL CONSIST OF TWO (2) LED LIGHT SOURCES, THE FIRST MOUNTED TO THE FAN PANEL TO ILLUMINATE THE ENTIRE CABINET. THE SECOND MOUNTED UNDERNEATH THE BOTTOM SHELF TO ILLUMINATE THE ENTIRE LOAD BAY AREA. EACH LIGHT SOURCE SHALL BE A MINIMUM OF 30" IN LENGTH AND BE LOW PROFILE SO NOT TO INTERFERE WITH THE REMOVAL OR MAINTENANCE OF ANY CABINET EQUIPMENT.

PRINTED BOARD BACK PANELS OF THE CONTROLLER CABINET SHALL NOT BE ACCEPTABLE. SOLDERED CONNECTIONS WILL BE PERMITTED FOR WIRING ON THE BACKSIDE OF THE BACK PANEL. THE CONTROLLER CABINET SHALL HAVE DETECTOR CALL BUTTONS FOR ALL PHASES INCLUDING PED MOVEMENTS, CABINET LIGHT WITH SWITCH AND AUTO FLASH SWITCH ON THE INSIDE CABINET DOOR.

THE LOAD SWITCHES SHALL PROVIDE INPUT AND OUTPUT INDICATIONS.

THE MALFUNCTION MANAGEMENT UNIT SHALL BE CAPABLE OF 16-CHANNEL OPERATION AND EXTENDED MONITORING (IN ACCORDANCE WITH CMS 733.03 SECTION A "TYPE TS-1" PART 2C) IN ADDITION TO NEMA REQUIREMENTS. THE MONITOR SHALL HAVE THE CAPABILITY OF MONITORING EACH LOAD SWITCH SEPARATELY. THE DESIGN OF THE MONITOR SHALL USE MICROPROCESSOR ARCHITECTURE AND LIQUID CRYSTAL DISPLAYS. THE MONITOR SHALL INDICATE THE EXACT LOAD SWITCH CHANNEL IN WHICH THE FAILURE OCCURRED. THE MMU SHALL HAVE AN ETHERNET PORT FOR CONNECTING TO A NETWORK. THE MMU SHALL HAVE AN EVENT LOGGING MEMORY AND SHALL BE CAPABLE OF UPLOADING REPORTS OF EVENTS OR USER SETTINGS VIA CLOSED LOOP HOST CONTROLLER OR THROUGH A NETWORK CONNECTION. A MINIMUM OF 9 EVENTS SHALL BE LOGGED. EXAMPLE OF EVENTS INCLUDE: POWER OUTAGES, CONFLICTS, CONTROLLER VOLTAGE MONITOR, ETC. EVENTS SHALL BE DISPLAYED ON THE CONFLICT MONITOR'S LIQUID CRYSTAL DISPLAY WHEN INTERROGATED.

SUBMIT A CABINET PLAN SHOWING COMPONENT PLACEMENT TO THE ENGINEER AND MAINTAINING AGENCY FOR APPROVAL.

PAYMENT FOR ACCEPTED QUANTITIES OF ITEM 633, CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN, WILL BE AT THE CONTRACT PRICE BID FOR EACH COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS, TESTED AND ACCEPTED.

ITEM 633 – PREEMPT DETECTOR CABLE, AS PER PLAN

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 633 "PREEMPTION 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.

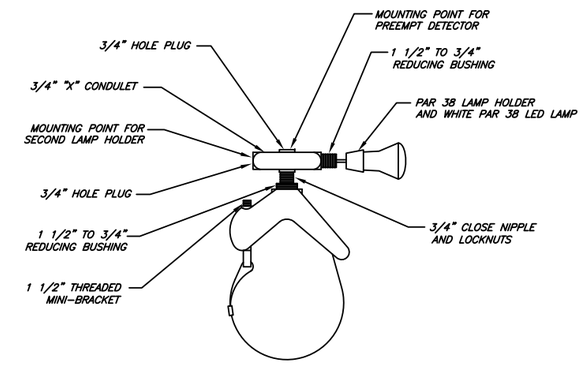
ITEM 633 – PREEMPTION CONFIRMATION LIGHT, AS PER PLAN

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.

FURNISH AND INSTALL AN OPTICOM MODEL M575 PREEMPT CONFIRMATION LIGHT, AS MANUFACTURED BY 3M CORPORATION, ST. PAUL, MINNESOTA, MOUNTING HARDWARE TO ATTACH TO THE TRAFFIC SIGNAL MAST ARM AS SHOWN BELOW, AND ALL OTHER ACCESSORIES THAT ARE NECESSARY TO MAKE THE PREEMPT CONFIRMATION LIGHT COMPLETELY FUNCTIONAL AND OPERATIONAL. POWER THE CONFIRMATION LIGHT THROUGH A LOAD SWITCH IN THE TRAFFIC SIGNAL CONTROLLER CABINET. SIGNAL CABLE CONFORMING TO 732.19 SHALL BE USED FOR CONFIRMATION LIGHTS. A MINIMUM OF 3-CONDUCTOR CABLE SHALL BE USED WITH THE GREEN WIRE SERVING AS THE SAFETY GROUND CONDUCTOR.

SUPPLY AN LED CONFIRMATION LIGHT FOR EACH DIRECTION TO INDICATE THAT THE EMERGENCY VEHICLE HAS ACHIEVED CONTROL OF THE TRAFFIC SIGNAL. LED LIGHT SHALL BE A 61927 – LED20P38S/FL AS MANUFACTURED BY GE.

PAYMENT FOR "ITEM 633 – PREEMPTION CONFIRMATION LIGHT, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH CONFIRMATION LIGHT IN PLACE, COMPLETELY INSTALLED AT THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.



CONFIRMATION LIGHT ASSEMBLY

ITEM 633 – PREEMPTION RECEIVING UNIT, AS PER PLAN

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. THE MOUNTING HARDWARE SHALL BE PAINTED BLACK.

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.

FURNISH SONEM MODEL PREEMPTION RECEIVING UNITS, AS MANUFACTURED BY TRAFFIC SUPPLIES LLC, PHOENIX, ARIZONA.

PAYMENT FOR "ITEM 633 – PREEMPTION RECEIVING UNIT, AS PER PLAN" 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.

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL NOTES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 16.dwg - May 22, 2018-11:13:16am Plotted By: gat

ITEM 815 – SPREAD SPECTRUM RADIO, AS PER PLAN

IT IS THE INTENT OF THIS PROJECT TO FURNISH AND INSTALL A RADIO (SPREAD SPECTRUM) INTERCONNECT SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL RADIO INTERCONNECT BASED UPON THE FOLLOWING SPECIFICATIONS. THIS ITEM WILL CONSIST OF PROVIDING RADIO COORDINATING UNITS, ENCLOSURE, ANTENNA, COAX CABLE, ANTENNA SUPPORTS AND ALL MISCELLANEOUS ITEMS NECESSARY TO PROVIDE A COMPLETE WORKING SYSTEM. THE CONTRACTOR SHALL INVENTORY THE EXISTING RADIO INTERCONNECT SYSTEM AND COMPLETELY MATCH SPECIFICATIONS FOR THE EXISTING SYSTEM.

COORDINATING UNITS

COORDINATING UNITS FOR THIS PROJECT SHALL INCLUDE FURNISHING AND INSTALLING SPREAD SPECTRUM RADIO MODEMS, CABLES, ANTENNAS, ENCLOSURES AND OTHER HARDWARE REQUIRED FOR 9600 BAUD RADIO DATA COMMUNICATION BETWEEN THE MASTER AND ALL LOCAL CONTROLLERS. MODEMS SHALL MEET THE FOLLOWING SPECIFICATIONS.

1. FREQUENCY BAND 902 – 928 MHZ PART 15 SPREAD SPECRUM BAND
2. FREQUENCY HOPPPING RANGE: 8 SELECTABLE ZONES EACH CONTAINING 128 FREQUENCIES FOR A TOTAL OF 1019 FREQUENCIES.
3. OPERATION HALF DUPLEX: (+/– 1.5 MHZ TX/RX SPLIT) SIMPLEX: (PEER TO PEER)
4. FREQUENCY STABILITY: +/– 0.00015 %, 11.5 PPM, –30 TO 60C (–22 TO 140F)
5. SYSTEM ADDRESSES: 65,000

DATA CHARACTERISTICS:

1. SIGNALING STANDARD: RS–232
2. CONNECTOR: DB–25 FEMALE
3. DATA PORT RATES: 1200, 2400, 9600, 19200, BPS SYNCHRONOUS
4. DATA RATE IN THE RF CHANNEL: 22.5 KBPS
5. AVERAGE AND TYPICAL LATENCY: <10 MS TYPICAL BUFFER OFF MODE
6. BYTE LENGTH: 10 OR 11 BITS INCLUDING START AND STOP BITS AND OPTIONAL PARITY
7. TRANSPARENT COMMUNICATIONS FOR ALL SYNCHRONOUS PROTOCOLS

TRANSMITTER

1. POWER OUTPUT: .1 TO 1 WATT (20–30 DBM +/– 1 DB)
2. DUTY CYCLE: CONTINUOUS
3. OUTPUT IMPEDANCES: 50 OHMS
4. SPURIOUS EMISSIONS: –60 DBC
5. HARMONIC EMISSIONS: –80 DBC
6. TRANSMITTER KEYING DATA ACTIVATED
7. MAXIMUM SWR (NO DAMAGE) INFINITE ALL PHASE ANGLES

RECEIVER

1. TYPE: DOUBLE CONVERSION SUPERHETERODYNE
2. BIT ERROR RATES: LESS THAN 10–6 AT –110 DBM
3. INTERMODULATION: 75 DB MINIMUM (EIEA)
4. DESENSITIVIZATION: 65 DB
5. SPURIOUS: 70 DB MINIMUM

PRIMARY POWER

1. VOLTAGE 13.8 VDC NOMINAL (10.5 TO 26.0 VDC OPERATING RANGE)
2. TX SUPPLY CURRENT: 400 MA
3. RX SUPPLY CURRENT: 125 MA
4. SLEEP MODE: < 30 MA
5. POWER CONNECTOR: 6 FOOT PIGTAIL INCLUDED
6. FUSE: 1.5 AMP POLYFUSE
7. REVERSE POLARITY PROTECTION DIODE ACROSS PRIMARY POWER INPUT

ENVIRONMENTAL

1. HUMIDITY: 95 % AT 40C (104F) NON–CONDENSING
2. TEMPERATURE RANGE FULL PERFORMANCE: –30 TO 60C (–22 TO 140 F)
3. TEMPERATURE RANGE TYPICAL PERFORMANCE –40 TO +70 C (–40 TO 158 F)

DIAGNOSTICS

1. RSS4: RECEIVED SIGNAL STRENGTH AVERAGED OVER 8 HOPS
2. MAIN SUPPLY VOLTAGE: 13.8 INPUT VOLTAGE
3. TEMPERATURE: INTERNAL TEMPERATURE
4. SIGNAL QUALITY: SIGNAL TO NOISE RATION
5. RADIO STATUS: GO / NO GO INDICATOR
6. 8 ZONE QUALITY LEVELS: AVAILABILITY OF DATA IN EACH FREQUENCY ZONE
7. RADIO ALARM AND STATUS INDICATORS: EXTERNAL LED'S (PWR, SYNC, TXD, RXD)
8. RADIOS SHALL BE MICROWAVE DATA SYSTEMS MDS 9810 OR APPROVED EQUAL.

DIRECTIONAL ANTENNAS SHALL MEET THE FOLLOWING SPECIFICATIONS

1. FREQUENCY RANGE: 890–960 MHZ (BROADBAND)
2. GAIN 12 DBI
3. IMPEDANCE 50 OHMS
4. VSWR < 1.5:1 MAXIMUM (1.35:1 TYPICAL)
5. POLARIZATION: HORIZONTAL OR VERTICAL
6. FRONT TO BACK RATIO: > 20 DB
7. MAXIMUM INPUT POWER: 100 WATTS
8. H–PLANE BEAMWIDTH: 48 DEGREES (HALF POWER)
9. E–PLANE BEAMWIDTH: 40 DEGREES (HALF POWER)
10. TERMINATION: DIN FEMALE
11. WIND SURVIVAL RATING: 150 MPH
12. ANTENNAS SHALL BE MOUNTED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
13. ANTENNAS SHALL BE SCALA TY–900 OR APPROVED EQUAL

OMNI–DIRECTIONAL ANTENNAS SHALL MEET THE FOLLOWING SPECIFICATIONS

1. FREQUENCY RANGE: 890–960 MHZ (BROADBAND)
2. GAIN 11 DBI
3. IMPEDANCE 50 OHMS
4. VSWR < 1.5:1
5. POLARIZATION: VERTICAL
6. MAXIMUM INPUT POWER: 500 WATTS
7. H–PLANE BEAMWIDTH: OMNI
8. E–PLANE BEAMWIDTH: 6.5 DEGREES (HALF POWER)
9. TERMINATION: DIN FEMALE
10. WIND SURVIVAL RATING: 120 MPH
11. ANTENNAS SHALL BE SCALA OGB9–900 OR APPROVED EQUAL

SURGE PROTECTORS SHALL BE PROVIDED AND SHALL BE FLANGE MOUNTED UNITS WITH DUAL N–FEMALE CONNECTORS. PROTECTORS SHALL BE DC BLOCKING AND SHALL BE RATED FOR AT LEAST 50 WATTS. MOUNTING HARDWARE SHALL BE STAINLESS STEEL. SURGE PROTECTORS SHALL BE POLYPHASE 15–50NX–C2 OR APPROVED EQUAL.

CABLING FROM ANTENNA TO SURGE PROTECTOR SHALL BE RGB. CABLE SHIELDING SHALL BE 100% FOIL AND 97% BRAIDING. CABLE SHALL HAVE NO MORE LOSS THAN 4.1DB/100 FEET AT 900 MHZ. CABLE SHALL BE SIGNAL ULTALINK TL93605 OR APPROVED EQUAL.

CABLING FROM SURGE PROTECTOR TO RADIO MODEM SHALL BE RG58. CABLE SHIELDING SHALL BE 100% FOIL AND 97% BRAIDING. CABLE SHALL HAVE NO MORE LOSS THAN 14DB/100 FEET AT 900 MHZ. CABLE SHALL BE SIGNAL ULTALINK TL92887 OR APPROVED EQUAL.

ALL CONNECTORS SHALL BE 50 OHM CRIMP TYPE. ALL CONNECTORS SHALL HAVE SILVER PLATED HOUSINGS WITH GOLD MATING PINS AND TEFLON INSULATION. N–MALE CONNECTORS SHALL BE RF INDUSTRIES RFN–1006–31 OR APPROVED EQUAL.

CONNECTORS SHALL BE WEATHERPROOFED BY A TIGHT DOUBLE WRAP OF 3M 2242 OR APPROVED EQUAL, SELF FUSING TAPE. FUSING TAPE SHALL BE PROTECTED WITH A DOUBLE WRAP OF 3M SUPER 33+ OR APPROVED EQUAL ELECTRICAL TAPE.

ALL CABLE/ CONNECTOR JUMPER ASSEMBLIES SHALL BE PURCHASED PRE–FABRICATED AFTER FINAL CABLE LENGTHS ARE MEASURED IN THE FIELD. PROPER CONNECTOR INSTALLATION, WEATHERPROOFING AND CABLE ROUTING IS CRITICAL FOR THIS PROJECT DUE TO THE RADIO EQUIPMENT'S LOW OUTPUT POWER AND HIGH FREQUENCY OF OPERATION.

A ONE WEEK TEST OF THE SYSTEM WILL BE CARRIED OUT AFTER THE PROJECT IS COMPLETED. THE SYSTEM SHALL OPERATE WITHOUT A LOSS OF COMMUNICATIONS TO ANY CONTROLLER DURING THIS WEEK. TESTING WILL BE DONE ON A RANDOM BASIS THROUGHOUT THE WEEK VIA DIRECT AND DIAL–UP CONNECTIONS. A LOSS OF COMMUNICATIONS IS DEFINED AS FOUR CONSECUTIVE UPLOADS OR DOWNLOADS TERMINATING BEFORE ALL CONTROLLER SETTINGS HAVE BEEN TRANSFERRED. IF THE SYSTEM FAILS THIS TEST, THE CONTRACTOR SHALL CORRECT ANY INSTALLATION PROBLEMS WHICH ARE CAUSING THE FAILURE. IF THE FAILURE IS CAUSED BY OTHER FACTORS SUCH AS TERRAIN, VEGETATION OR INTERFERENCE, THE CONTRACTOR SHALL INSTALL ADDITIONAL ANTENNAS OR REPEATER TO CORRECT THE PROBLEM.

THE CONTRACTOR SHALL SUPPLY A SPARE RADIO MODEM. PROVIDE ONE SPARE UNIT FOR THE PROJECT. COST FOR THE SPARE EQUIPMENT SHALL BE INCIDENTAL TO THE COST OF THE RADIO INTERCONNECT SYSTEM SUPPLIED FOR THE PROJECT.

PAYMENT FOR "ITEM 815 – SPREAD SPECTRUM RADIO, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE BID FOR EACH COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS, TESTED AND ACCEPTED.

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL GENERAL NOTES

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 17.dwg - May 22, 2018-11:14:28am Plotted By: gat

MATERIAL SPECIFICATIONS FOR BBS GENERATOR POWER PANEL EQUIPMENT

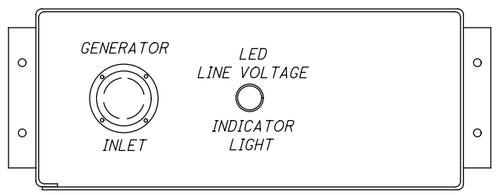
GENERATOR INLET - The inlet shall be 30 amp, 125/250V, locking, four (4) wire grounding and meet the NEMA configuration number L14-30-P 30A 125/250 V specification. The inlet shall be a Hubbell catalog #2715.

LINE VOLTAGE GENERATOR SWITCH - The switch shall be 30 amp, 125/250V AC, two (2) pole, three (3) position (On, Off, On). The switch shall be a Hubbell catalog #1388.

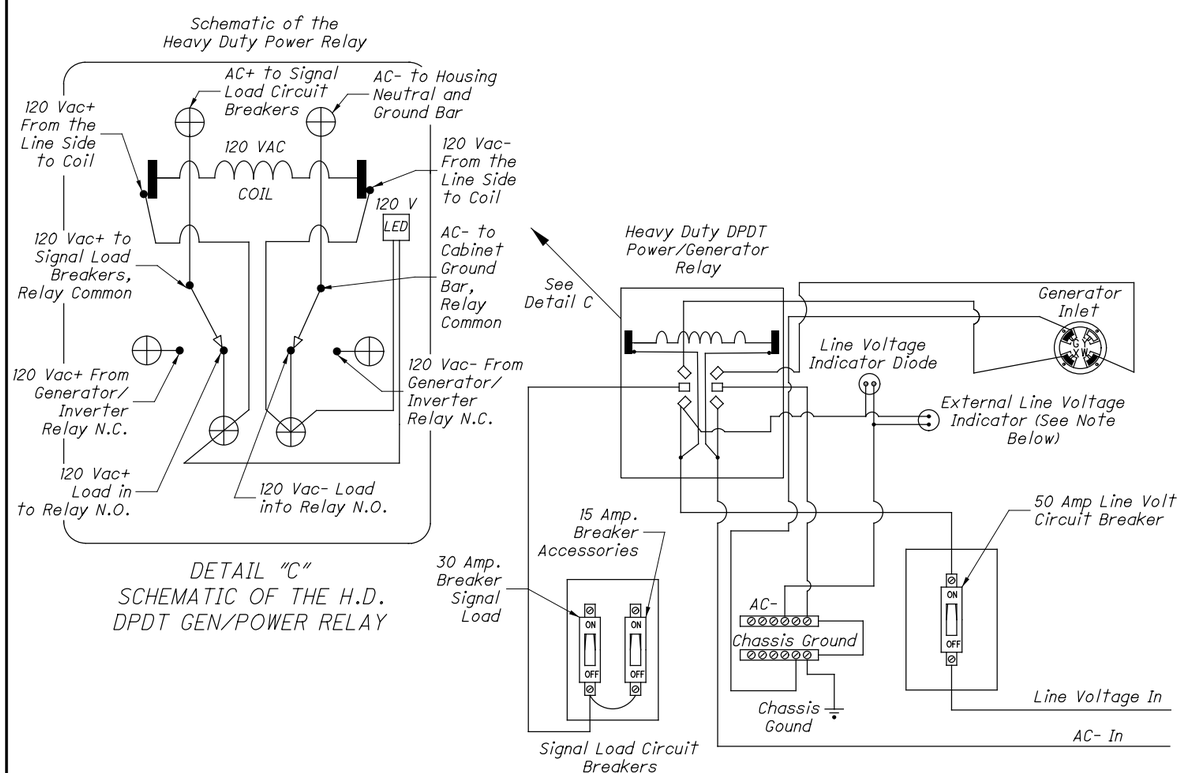
LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be 125V AC light emitting diode with a red lens.

LINE VOLTAGE CIRCUIT BREAKER - The circuit breaker shall be single pole single throw and a minimum of 30 amps. The amperage shall be increased to accomodate greater loads, if necessary. The gauge of the power cable shall be of proper size per N.E.C.

EXTERNAL LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be a 1" waterproof NEMA 4X or IP66 LED lamp with a green lens.



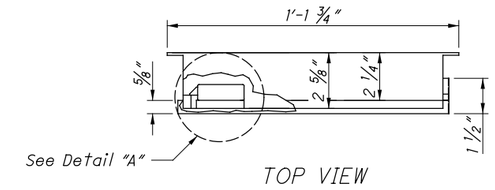
FRONT VIEW OF GENERATOR POWER PANEL



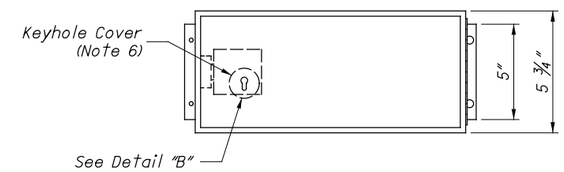
ELECTRICAL HOOKUP DETAIL FOR THE CONTROLLER CABINET GENERATOR POWER PANEL

NOTE: EXTERNAL LINE VOLTAGE INDICATOR LIGHT required when called for in the plans. EXTERNAL LINE VOLTAGE INDICATOR LIGHT shall be located on the enclosure exterior for visibility from the adjacent roadway when all cabinet and generator panel doors are closed.

GENERATOR POWER PANEL ENCLOSURE



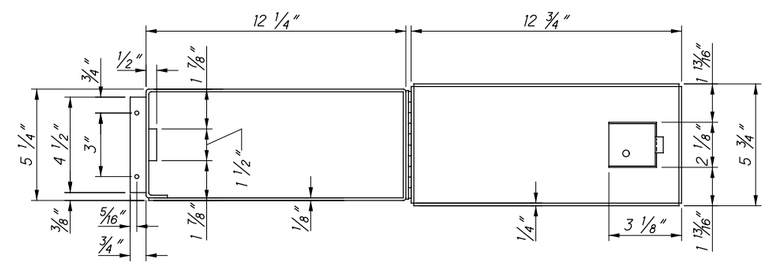
TOP VIEW



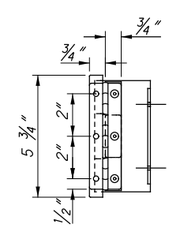
FRONT VIEW CLOSED DOOR

NOTES:

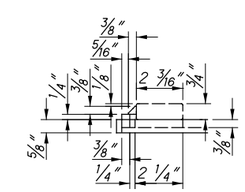
1. The enclosure shall be constructed of 1/8" thick alumimum.
2. The lock shall be the standard police door type, keyed with the standard flasher door skeleton key.
3. The door shall be sealed with a foam rubber gasket to prevent moisture from entering the enclosure.
4. The enclosure shall be mounted onto the outside of the controller cabinet with non-accessible bolts and sealed with a high quality silicon caulk at all surfaces touching the cabinet.
5. The hinge shall be of stainless steel or equivalent corrosive-resistant material.
6. Keyhole shall be covered with a movable circular aluminum or brass cover with top pivot pin.



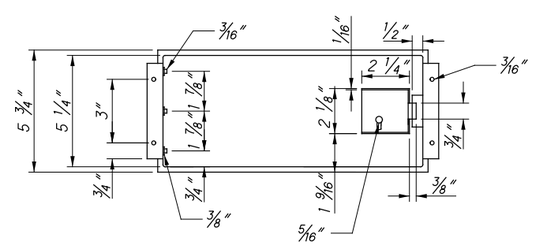
FRONT VIEW OPEN DOOR



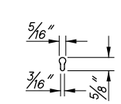
RIGHT SIDE VIEW CLOSED DOOR



DETAIL "A"



BACK VIEW CLOSED DOOR



DETAIL "B"

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

REVISION DATE 07-18-2014 | CHECKED

PIS NUMBER 203011

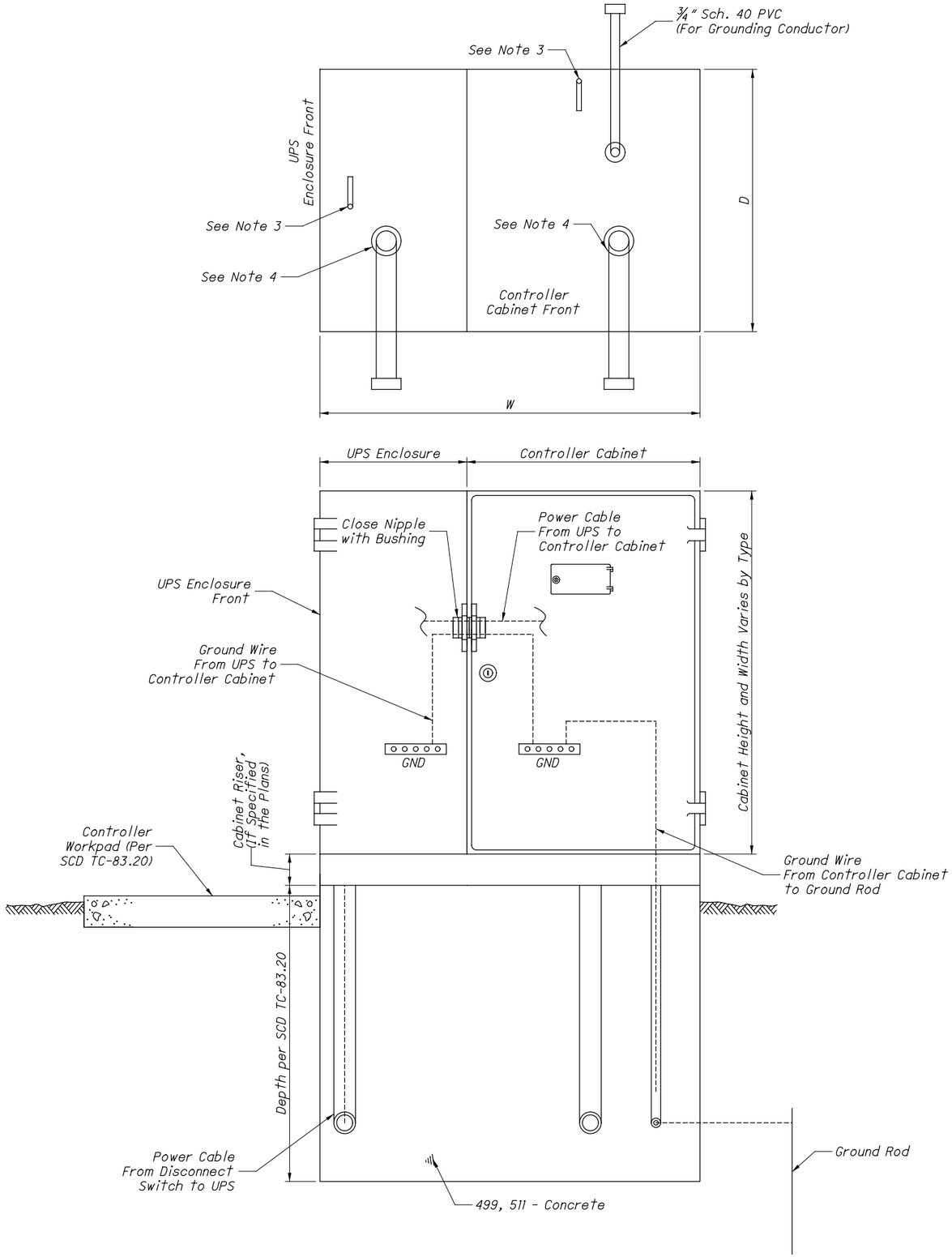
PLAN INSERT SHEET

CONTROLLER CABINET GENERATOR POWER PANEL

TUS-39-13.04

1 / 1

18 / 23



NOTES:

1. The Uninterruptible Power Supply (UPS) enclosure shall be mounted flush up against the traffic signal cabinet and sealed with silicone. The Contractor shall be responsible for providing the necessary power cable between the UPS unit and signal cabinet.

2. The UPS should be placed on the opposite side of the pull box on a 332/336 cabinet (per Standard Construction Drawing (SCD) TC-83.20). The UPS placement for a NEMA cabinet varies, placement should provide adequate access with respect to slope, guardrail spacing, etc.

3. The size, number, and location of anchor bolts shall be in accordance with the manufacturer's recommendations.

4. The size, number, and orientation of conduit ells shall be as shown in the plan, except that a ¾" schedule 40 PVC shall be installed in each foundation.

5. 1/2" preformed joint filler as per CMS 705.03 shall be used between foundations and adjacent paved areas.

6. See SCD TC-83.20 for further details.

TYPE	W (IN.)	D (IN.)	FOUNDATION CONCRETE (CU. YD.)
TS-1	60	24	1.23
TS-2	70	36	2.16
2070/170	50	36	1.54

OFFICE OF ROADWAY ENGINEERING

DESIGNED | REVIEWED

REVISION DATE 07-18-2014 | CHECKED

PIS NUMBER 208320

PLAN INSERT SHEET

UNINTERRUPTIBLE POWER SUPPLY (UPS) AND CONTROLLER CABINET FOUNDATION

TUS-39-13.04

1 / 1

19 / 23

PEDESTRIAN PUSHBUTTON SIGNS

R10-3e(L)
9" x 15"
QUANTITY = 2

R10-3e(R)
9" x 15"
QUANTITY = 2

PROPOSED SIGNS

R9-3a
18" x 18"
QTY = 2

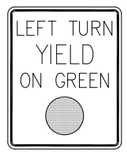
R9-3bL
18" x 12"
QTY = 2

(1)

R9-3a
18" x 18"
QTY = 2

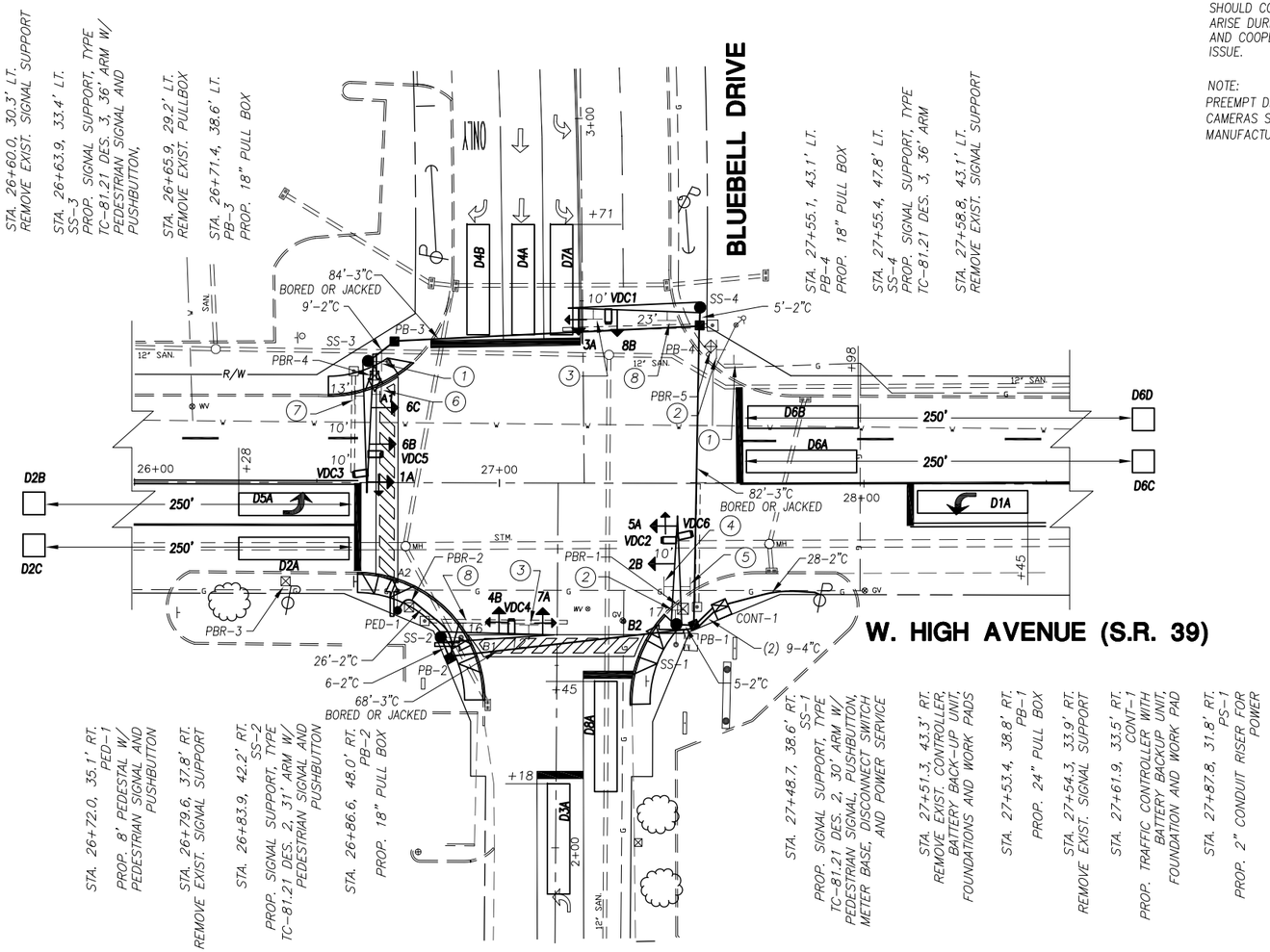
R9-3bR
18" x 12"
QTY = 2

(2)



R10-12
24" x 30"
QTY = 2

(3)



NOTE:
ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN DRAWN FROM RECORD INFORMATION AND OR FROM UTILITY COMPANY LOCATIONS, AND SHOULD BE CONSIDERED APPROXIMATE.

NOTE:
SHOULD CONFLICTS WITH OVERHEAD OR UNDERGROUND UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR MUST COORDINATE AND COOPERATE WITH THE UTILITY COMPANIES TO ALLEVIATE THE ISSUE.

NOTE:
PREEMPT DETECTORS AND VIDEO DETECTION CAMERAS SHALL BE LOCATED AS PER MANUFACTURERS RECOMMENDATION.

EXIST. STREET NAME SIGNS REMOVE & REERECT

BLUEBELL DR SW →
(4) QTY = 1

← BLUEBELL DR SW
(5) QTY = 1

BLUEBELL DR NW →
(6) QTY = 1

← BLUEBELL DR NW
(7) QTY = 1

W HIGH AVE
(8) QTY = 2

LEGEND

EXISTING		PROPOSED
	PEDESTRIAN PUSHBUTTON	
	PEDESTRIAN SIGNAL	
	SIGNAL HEAD (PLAN)	
	DETECTION AREA	D4-
	CONTROLLER CABINET	
	TRAFFIC PULL BOX	
	OVERHEAD SIGN	
	GROUND SIGN	
	SIGNAL POLE	
	VIDEO DETECTION CAMERA	

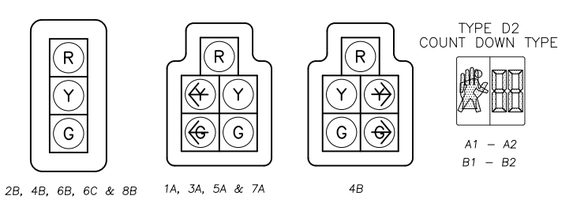
PULLBOX REMOVAL TABLE

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PBR-1	27+50.3	RT	34.6	Ex
PBR-2	26+75.2	RT	34.1	Ex
PBR-3	26+41.4	RT	27.0	Ex
PBR-4	26+60.0	LT	30.3	Ex
PBR-5	27+58.1	LT	37.5	Ex

PROPOSED PULLBOX TABLE

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	27+53.4	RT	38.8	24
PB-2	26+86.6	RT	48.0	18
PB-3	26+71.4	LT	38.6	18
PB-4	27+55.1	LT	43.1	18

PROPOSED SIGNALS



ALL HEADS ARE 12" WITH LED LAMP UNITS AND BACKPLATES.

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 103899

CALCULATED JAT
CHECKED MWS

TRAFFIC SIGNAL PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 21-Rev GL.dwg - May 22, 2018-11:16:58am Plotted By : gat

VIDEO DETECTION ZONE CHART

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY IN CONTROLLER (SEC)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
D4A	SB	PRESENCE	4	0	4	CALL 4	30′
D4B	SBRT	PRESENCE	4	8	4	CALL 4	30′
D7A	SBLT	PRESENCE	7	0	7	CALL/EXTEND 7	30′
D6A	WB	PRESENCE	6	0	6	CALL 6	30′
D6B	WB	PRESENCE	6	8	6	CALL 6	30′
D1A	WBLT	PRESENCE	1	0	1	CALL/EXTEND 1	30′
D8A	NB	PRESENCE	8	8	8	CALL 8	30′
D3A	NBLT	PRESENCE	3	0	3	CALL/EXTEND 3	30′
D2A	EB	PRESENCE	2	8	2	CALL 2	30′
D5A	EBLT	PRESENCE	5	0	5	CALL/EXTEND 5	30′
D2B	EB	PULSE	2	0	2	DILEMA ZONE	300′
D2C	EB	PULSE	2	0	2	DILEMA ZONE	300′
D6C	WB	PULSE	6	0	6	DILEMA ZONE	300′
D6D	WB	PULSE	6	0	6	DILEMA ZONE	300′

NOTE: DILEMMA ZONE SPEED THRESHOLD >30 MPH

ESTIMATED QUANTITIES
TOTALS CARRIED TO GENERAL SUMMARY

ITEM	QTY	UNIT	DESCRIPTION
611	40	FOOT	4" CONDUIT, TYPE E
625	79	FOOT	CONDUIT, 2", 725.04
625	18	FOOT	CONDUIT, 4", 725.04
625	234	FOOT	CONDUIT, JACKED OR DRILLED, 725.04, 3"
625	97	FOOT	TRENCH
625	97	FOOT	PLASTIC CAUTION TAPE
625	3	EACH	PULLBOX, 725.08, 18"
625	1	EACH	PULLBOX, 725.08, 24"
625	5	EACH	PULLBOX, REMOVED
625	5	EACH	GROUND ROD
625	1	EACH	GROUND ROD, AS PER PLAN
630	25.0	SQ FT	SIGN, FLAT SHEET
630	8	EACH	SIGN HANGER ASSEMBLY, MAST ARM
630	2	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED
630	26	FOOT	GROUND MOUNTED SUPPORT, NO. 3 POST
630	6	FOOT	REMOVAL OF OVERHEAD SIGN AND REERECTION
632	4	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY,
			POLYCARBONATE, AS PER PLAN
632	5	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY,
			POLYCARBONATE, AS PER PLAN
632	4	EACH	PEDESTRIAN SIGNAL HEAD, (LED), TYPE D2, COUNTDOWN, AS PER PLAN
632	4	EACH	PEDESTRIAN PUSHBUTTON, AS PER PLAN
632	4	EACH	SIGNAL SUPPORT FOUNDATION
632	1	EACH	PEDESTAL FOUNDATION
632	1	EACH	PEDESTAL, 8', TRANSFORMER BASE
632	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN
632	2	EACH	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 3, AS PER PLAN
632	710	FOOT	SIGNAL CABLE, 3 CONDUCTOR, NO. 14 AWG
632	804	FOOT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG
632	713	FOOT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
632	510	FOOT	LOOP DETECTOR LEAD-IN CABLE
632	1	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN
632	1	EACH	POWER SERVICE, AS PER PLAN
632	74	FOOT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG
632	1	EACH	CONDUIT RISER, 2" DIAMETER
632	9	EACH	COVERING OF VEHICULAR SIGNAL HEAD, AS PER PLAN
632	6	EACH	SIGNALIZATION MISC.: CAMERA MOUNTING BRACKET ASSEMBLY,
			MAST ARM MOUNT, 37"
633	1	EACH	UNINTERRUPTABLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN
633	1	EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN
633	1	EACH	CABINET FOUNDATION
633	1	EACH	CONTROLLER WORK PAD
633	4	EACH	PREEMPTION RECEIVING UNIT, AS PER PLAN
633	4	EACH	PREEMPTION CONFIRMATION LIGHT, AS PER PLAN
633	1	EACH	PREEMPTION PHASE SELECTOR, AS PER PLAN
633	710	FOOT	PREEMPTION DETECTOR CABLE, AS PER PLAN
815	1	EACH	SPREAD SPECTRUM RADIO, AS PER PLAN
816	1	EACH	VIDEO DETECTION SYSTEM

SIGNAL TIMING

INTERSECTION: High Avenue & Bluebell Drive
MAINTAINING AGENCY: City of New Philadelphia

START UP		
START IN:	FLASH	
TIME FOR FLASH OR ALL RED:	7	
FIRST PHASE(S):	2	6
COLOR DISPLAYED:	G	

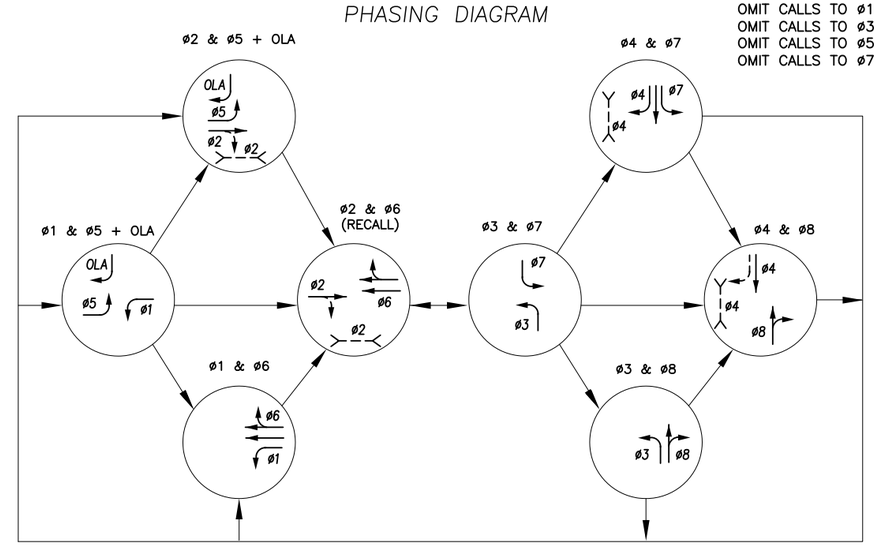
DUAL ENTRY:	Yes	PHASES:	2,4,6,8	
REST IN RED:	RING 1	-	RING 2	-
OVERLAP	A	B	C	D
PHASES	5	-	-	-

INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		WB L	EB	NB L	SB	EB L	WB	SB L	NB
MINIMUM GREEN (INITIAL)	(SEC.)	7	20	7	8	7	20	7	10
ADDED INITIAL	*(SEC./ACTUATION)	-	2.3	-	-	-	1.8	-	-
MAXIMUM INITIAL	*(SEC.)	-	28	-	-	-	28	-	-
PASSAGE TIME (PRESET GAP)	(SEC.)	2.5	6.5	2.5	4.0	2.5	6.5	2.5	4.0
TIME BEFORE REDUCTION	*(SEC.)	-	-	-	-	-	-	-	-
MINIMUM GAP	*(SEC.)	-	-	-	-	-	-	-	-
TIME TO REDUCE	*(SEC.)	-	-	-	-	-	-	-	-
MAXIMUM GREEN I	(SEC.)	15	40	15	25	15	40	15	25
MAXIMUM GREEN II	(SEC.)	15	40	15	25	15	40	15	25
YELLOW CHANGE	(SEC.)	3.2	4.1	3.0	3.3	3.2	4.1	3.0	3.3
ALL RED CLEARANCE	(SEC.)	1.7	1.0	2.3	1.0	1.7	1.0	2.3	1.0
WALK	(SEC.)	-	9	-	8	-	-	-	-
PEDESTRIAN CLEARANCE	(SEC.)	-	13	-	13	-	-	-	-
RECALL — MAXIMUM	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
RECALL — MINIMUM	(ON/OFF)	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
RECALL — PEDESTRIAN	(ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
MEMORY	(ON/OFF)	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF

*VOLUME DENSITY CONTROLS

PHASING DIAGRAM

OMIT CALLS TO ø1 DURING ø2 GREEN
OMIT CALLS TO ø3 DURING ø4 GREEN
OMIT CALLS TO ø5 DURING ø6 GREEN
OMIT CALLS TO ø7 DURING ø8 GREEN



OLA = OVERLAP A = OVERLAP WITH ø5

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 103899

CALCULATED JAT
CHECKED MWS

SIGNAL DETAIL PLAN
W. HIGH AVE. & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 22.dwg - May 22, 2018-3:24:28pm Plotted By: gat

PREEMPT CHANNELS

CHANNEL 1 = ø4 (SOUTHBOUND ONLY) CHANNEL 3 = ø6 (WESTBOUND ONLY)
CHANNEL 2 = ø8 (NORTHBOUND ONLY) CHANNEL 4 = ø2 (EASTBOUND ONLY)

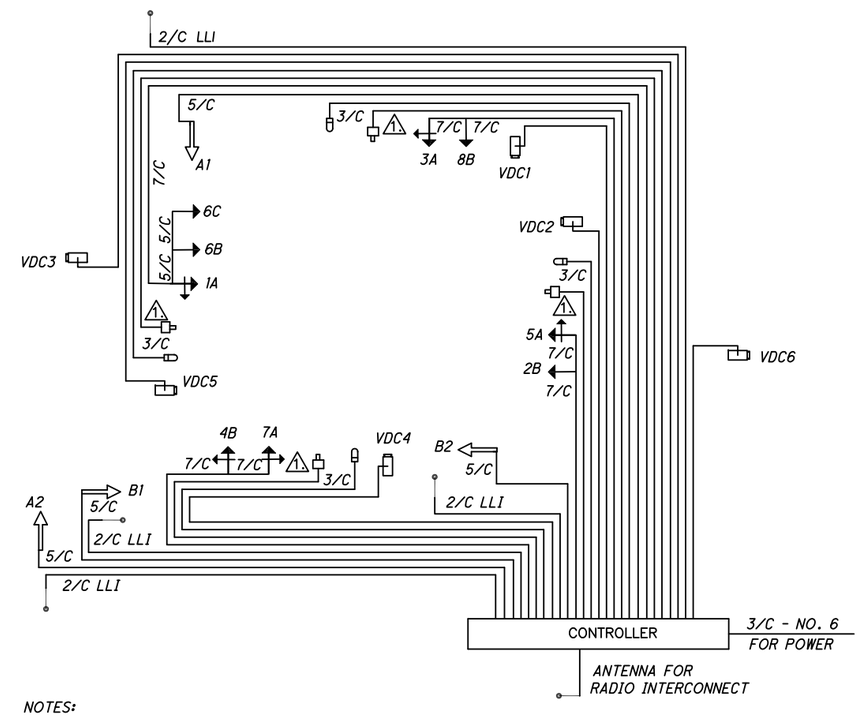
PREEMPT NOTES:

1. ACTIVE WALK INDICATIONS SHALL IMMEDIATELY GO TO "DON'T WALK" UPON RECEIVING PREEMPTION SIGNAL.
2. IF PHASE ACTIVE CONFLICTS WITH PREEMPT PHASE CALLED, IT SHALL IMMEDIATELY TIME ITS YELLOW AND ALL RED CLEARANCES.
3. IF ACTIVE PHASE = THE PREEMPT PHASE, THEN THE PHASE SHALL HOLD FOR THE DURATION OF THE PREEMPT SIGNAL.
4. AFTER RELEASE FROM PREEMPT, YELLOW AND ALL RED CLEARANCE SHALL BE DISPLAYED AND RETURN PHASE SHALL BE ø2 & ø6.
5. IF PREEMPT PHASE = RETURN PHASE ø2 & ø6 THEN YELLOW AND ALL RED CLEARANCE AFTER PREEMPT SHALL NOT BE DISPLAYED.

FIELD WIRING HOOK-UP CHART

SIGNAL HEAD	INDICATION	TERMINAL	FLASH	SIGNAL HEAD	INDICATION	TERMINAL	FLASH
1A (WB)	R	ø6 R	Y	3A (NB)	R	ø8 R	R
	Y	ø6 Y			Y	ø8 Y	
	G	ø6 G			G	ø8 G	
	←Y	ø1 Y			←Y	ø3 Y	
	←G	ø1 G			←G	ø3 G	
6B (WB)	R	ø6 R	Y	8B (NB)	R	ø8 R	R
	Y	ø6 Y			Y	ø8 Y	
	G	ø6 G			G	ø8 G	
6C (WB)	R	ø6 R	Y	7A (SB)	R	ø4 R	R
	Y	ø6 Y			Y	ø4 Y	
	G	ø6 G			G	ø4 G	
5A (EB)	R	ø2 R	Y		←Y	ø7 Y	
	Y	ø2 Y			←G	ø7 G	
	G	ø2 G		4B (SB)	R	ø4 R	R
	←Y	ø5 Y			Y	ø4 Y	
	←G	ø5 G			G	ø4 G	
2B (EB)	R	ø2 R	Y		→Y	OLA	
	Y	ø2 Y			→G	OLA	
	G	ø2 G		A1-A2 (WEST)	DW	ø4 DW	OUT
B1-B2 (SOUTH)	DW	ø2 DW	OUT		W	4 W	
	W	ø2 W					

WIRING DIAGRAM



NOTES:

ALL PUSHBUTTON(S) SHALL BE WIRED WITH 2 CONDUCTOR LOOP LEAD-IN CABLE (2/C LLI). CONTRACTOR SHALL HOOK-UP THE DRAIN WIRE TO THE CONTROLLER GROUND.

SYMBOL

= PREEMPT DETECTOR
= CONFIRMATION LIGHT
= PREEMPT DETECTOR CABLE
= VIDEO DETECTION CAMERA

HORIZONTAL SCALE IN FEET 0 10 20 40

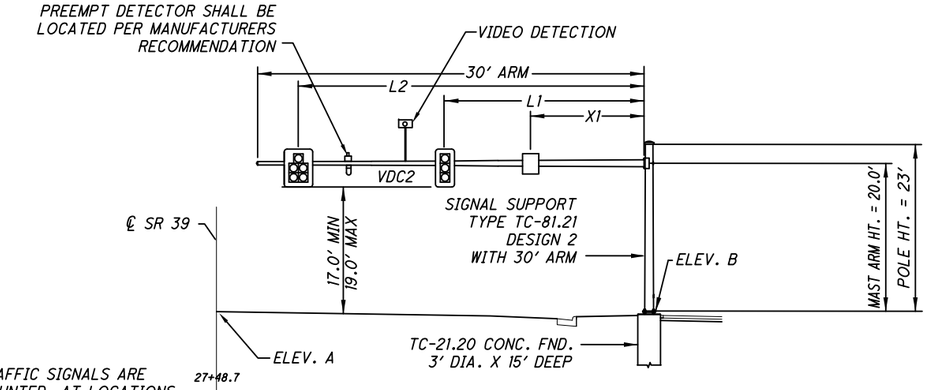
PID NO. 103899

CALCULATED JAT
CHECKED MWS

SIGNAL DETAIL PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

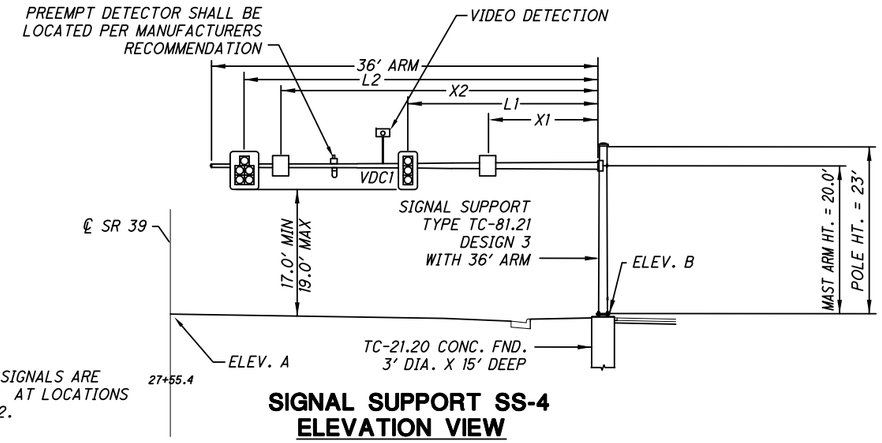
Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 23.dwg - May 22, 2018-11:19:42am Plotted By : gat



NOTES:
1. TRAFFIC SIGNALS ARE MOUNTED AT LOCATIONS L1 AND L2.

SIGNAL SUPPORT SS-1
ELEVATION VIEW

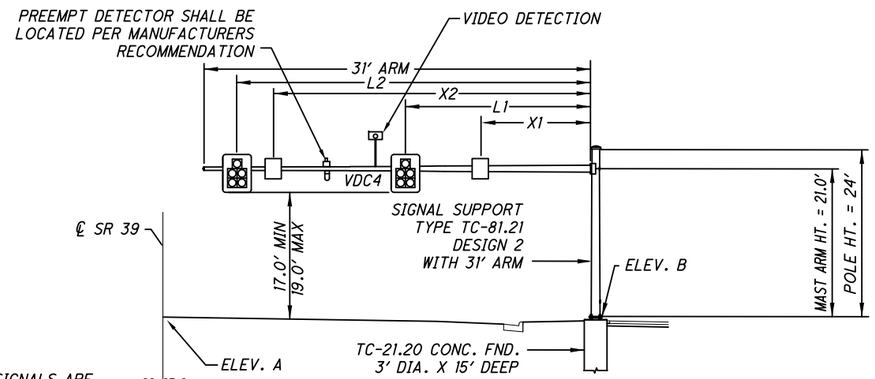
STA 27+48.7, 38.6' RT
LOOKING EAST



NOTES:
1. TRAFFIC SIGNALS ARE MOUNTED AT LOCATIONS L1 AND L2.

SIGNAL SUPPORT SS-4
ELEVATION VIEW

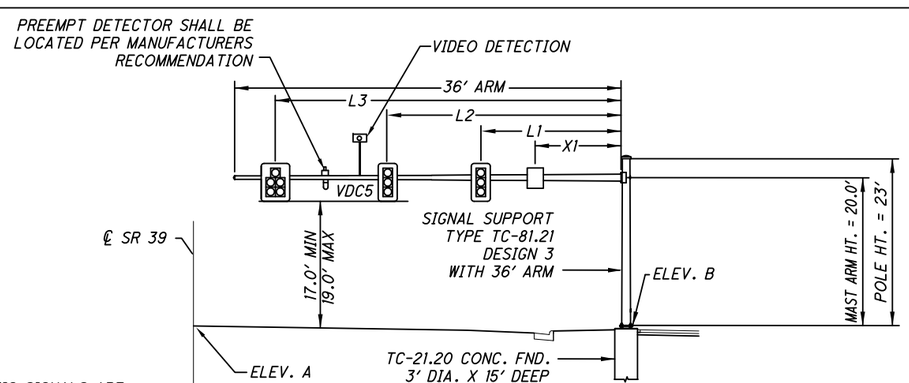
STA 27+55.4, 47.8' LT
LOOKING NORTH



NOTES:
1. TRAFFIC SIGNALS ARE MOUNTED AT LOCATIONS L1 AND L2.

SIGNAL SUPPORT SS-2
ELEVATION VIEW

STA 26+83.9, 42.2' RT
LOOKING SOUTH

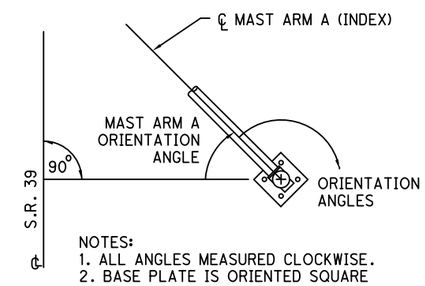


NOTES:
1. TRAFFIC SIGNALS ARE MOUNTED AT LOCATIONS L1 AND L2.

SIGNAL SUPPORT SS-3
ELEVATION VIEW

STA 26+63.9, 33.4' LT
LOOKING WEST

ORIENTATION ANGLES



NOTES:
1. ALL ANGLES MEASURED CLOCKWISE.
2. BASE PLATE IS ORIENTED SQUARE TO MAST ARM A (LARGEST ARM) EVEN IF SUPPORT HAS TWO MAST ARMS.

SUPPORT NO.	SIGNAL SUPPORT: POLE DESIGN NO. TC-81.21	POLE DESIGN NO.	ARM HEIGHT (FT)	POLE HEIGHT (FT)	FOUNDATION STATION	FOUNDATION OFFSET	L (FT.)	L 1 (FT.)	L 2 (FT.)	L 3 (FT.)	L 4 (FT.)	X 1 (FT.)	X 2 (FT.)	ELEVATION A	ELEVATION B	MAST ARM A ANGLE (DEG.)	ORIENTATION ANGLES (DEG.) FROM MAST ARM "A": POWER SERVICE	PEDESTRIAN SIGNALS	PEDESTRIAN PUSHBUTTONS	SIGNAL HEAD	HANDHOLE
SS-1	2		21	22.5	27+48.7	38.6'R	30	17	27	--	--	9	--	868.95	869.29	0	180	180	180		180
SS-2	2		22	23.5	26+83.9	42.2'R	31	16	28	--	--	8	25	868.95	867.88	90	--	90	0		180
SS-3	3		21	22.5	26+63.9	33.4'L	36	13	23	33	--	7	--	868.95	868.86	0	--	270	270		180
SS-4	3		21	22.5	27+55.4	47.8'L	36	23	33	--	--	12	30	868.95	868.89	90	--	--	--		180
PED-1				8	26+72.0	35.1'R											--	270	0		180

N

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 103899

CALCULATED JAT
CHECKED MWS

SIGNAL DETAIL PLAN
W. HIGH AVE & BLUEBELL DRIVE

TUS-39-13.04

Z:\Projects (U)\2017\17-062 City of New Philadelphia - Design Services - TUS-39-13.04 PID 103899 W. High & Bluebell - Stage 1 & 2- Sht 24.dwg - May 22, 2018-11:20:37am Plotted By : gat