



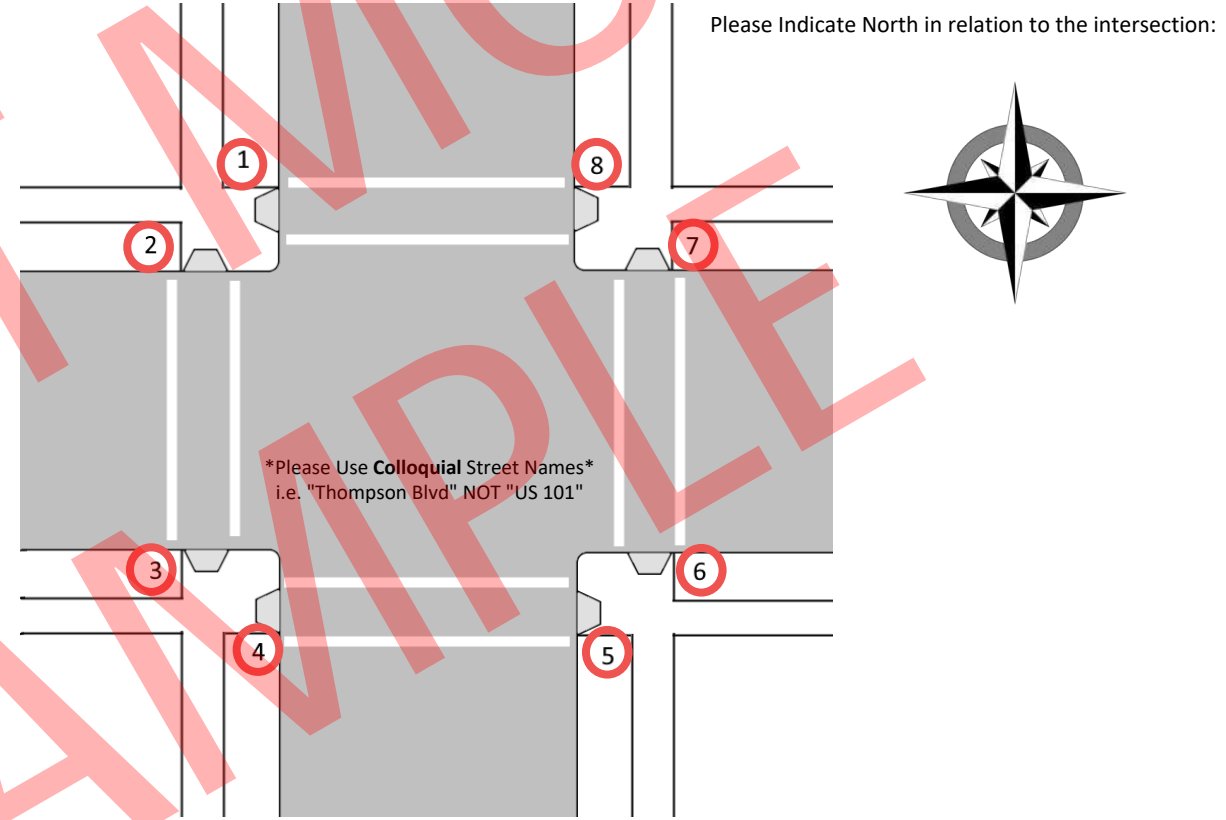
Accessible Pedestrian Signals: Intersection Planning Sheet

Project City/County: _____
 Project State: _____
 Intersection: _____ @ _____
 # of APS to be Installed: _____
 Purchase Order#: _____

Guardian Wave Guardian Guardian Mini Beacon BBU WiAAPS

Station Color: _____ Actuator Color: _____
 Station Size: _____ Sign Legend: _____
 Sign Film Grade: _____ Braille on Sign: _____
 Programmed Messages: _____

Station #	Arrow Direction	Ped Phase	Walk Cycle Msg:	
			Verbal	Tone
1		6		
2		4		
3		4		
4		2		
5		2		
6		8		
7		8		
8		6		



Notes:

- All stations programmed with factory default MUTCD settings unless noted otherwise.
- **GENERIC VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS" on extended press, and "WALK SIGN IS ON TO CROSS" or Percussive Tone on walk cycle for all stations.
- **CUSTOM VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS [Street Name] AT [Street Name]" on extended press, and "[Street Name], WALK SIGN IS ON TO CROSS [Street Name]" or Percussive Tone on walk cycle for all stations.

Customer Notes:

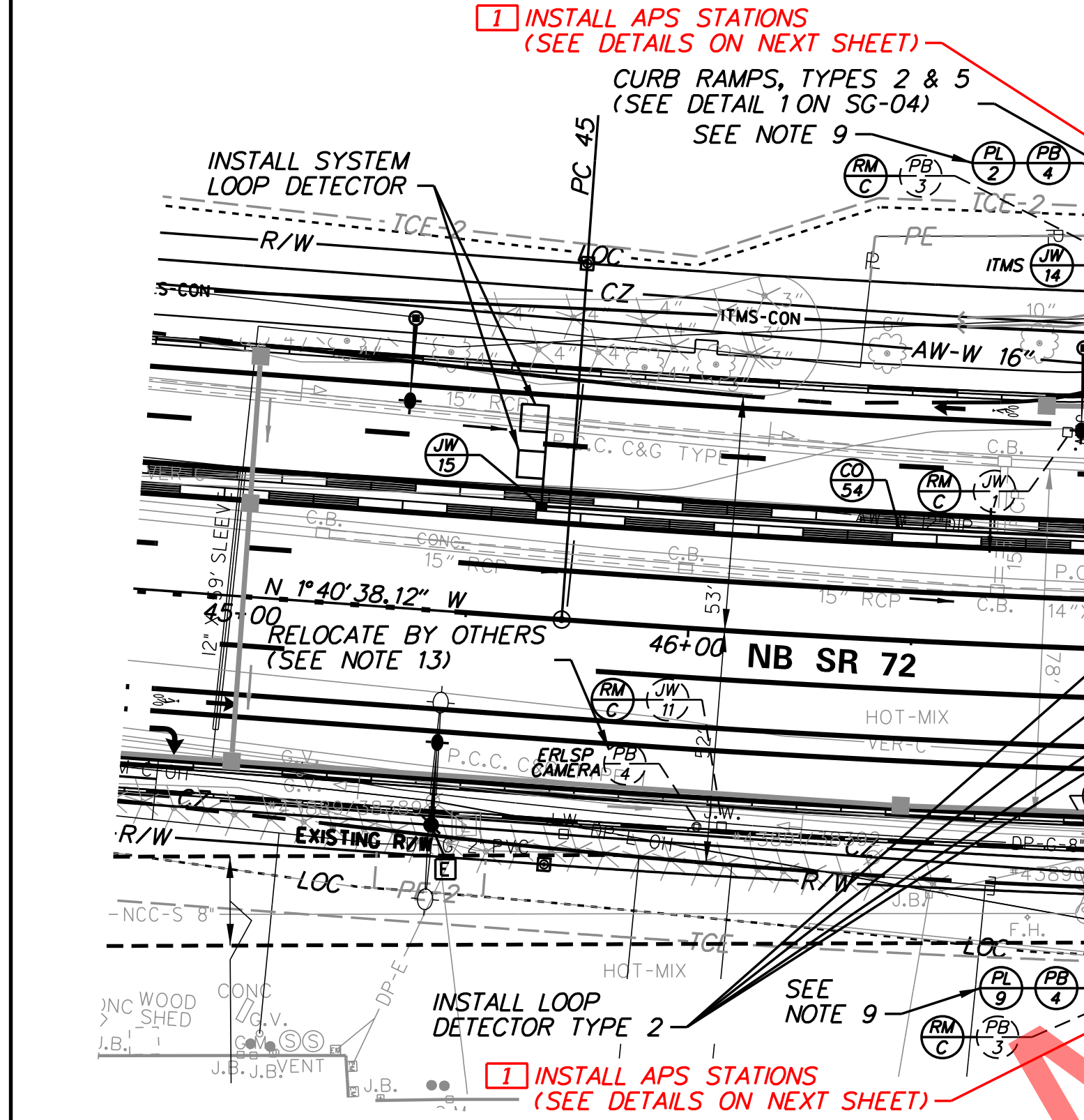
~~• Per MUTCD 4E.10: Pedestrian stations with <10' separation will use CUSTOM message for the walk cycle.~~
~~• Pedestrian stations with > 10' of separation will utilize a PERCUSSIVE (TONE) for the walk cycle.~~

Please include **NIGHT MODE** instructions on all future orders via *Signal Construction* and *Signal Maintenance*.

CONDUIT RUN SCHEDULE

CO#	NO. OF CONDUITS	SIZE	LENGTH	B/T/O	AMOUNT AND TYPE OF CABLE/ WIRE
32*	1	4.0 IN	XX FT	-	EX. (1) FIBER OPTIC, SINGLE-MODE, 48 CT., EX. (1) FIBER OPTIC, SINGLE-MODE, 24 CT.
35**	1	2.0 IN	11 FT	T	(1) 2" B.U.F. W/GROUND - LINE SIDE
36**	1	2.0 IN	6 FT	T	(1) 2" B.U.F. W/GROUND - LOAD SIDE
37**	1	2.0 IN	34 FT	T	(1) 2" B.U.F. W/GROUND - LOAD SIDE
38	1	4.0 IN	29 FT	T	FIBER OPTIC CABLES, BLUETOOTH CABLES
39	3	4.0 IN	6 FT	T	(3) 9/14, (8) 5/14, (3) 4/18, (2) 4/14, (20) 2/14, FIBER OPTIC CABLES, (3) #6 GROUND
40	1	3.0 IN	10 FT	T	(1) 9/14, (1) 4/18, RR W/FI CABLE, (1) #6 GROUND
41	1	4.0 IN	31 FT	B	(1) 9/14, (4) 5/14, (1) 4/18, (8) 2/14, (1) #6 GROUND
42	1	2.5 IN	9 FT	T	(2) 5/14, (1) #6 GROUND
43	1	4.0 IN	70 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (8) 2/14, (1) #6 GROUND
44	1	4.0 IN	250 FT	T	(2) 2/14, (1) #6 GROUND
45	1	4.0 IN	75 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (4) 2/14, (1) #6 GROUND
46	1	2.5 IN	8 FT	T	(2) 5/14, (1) #6 GROUND
47	2	4.0 IN	105 FT	B	(2) 9/14, (4) 5/14, (2) 4/18, (10) 2/14, (2) #6 GROUND
48	1	3.0 IN	36 FT	T	(1) 9/14, (1) 4/18, (1) #6 GROUND
49	1	4.0 IN	78 FT	B	(4) 2/14, (1) #6 GROUND
50	1	4.0 IN	99 FT	T	(2) 2/14, (1) #6 GROUND
51	1	3.0 IN	16 FT	T	(1) 9/14, (1) 4/18, (1) #6 GROUND
52	1	2.5 IN	15 FT	T	(2) 5/14, (1) #6 GROUND
53	1	4.0 IN	89 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (1) #6 GROUND
54	1	4.0 IN	167 FT	T	(2) 2/14, (1) #6 GROUND
56	1	4.0 IN	81 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (6) 2/14, (1) #6 GROUND
57	1	3.0 IN	16 FT	T	(1) 9/14, (1) 4/18, (1) #6 GROUND
58	1	4.0 IN	33 FT	T	(2) 5/14, (1) #6 GROUND
59	1	2.5 IN	15 FT	T	(2) 5/14, (1) #6 GROUND
60	2	4.0 IN	83 FT	B	(2) 9/14, (4) 5/14, (2) 4/18, (6) 2/14, (2) #6 GROUND
61	1	4.0 IN	90 FT	T	(2) 2/14, (1) #6 GROUND
62	1	4.0 IN	280 FT	B	FIBER OPTIC CABLES
63	2	4.0 IN	432 FT	T	FIBER OPTIC CABLES, (2) 4/14, (1) #6 GROUND
64	2	4.0 IN	77 FT	B	FIBER OPTIC CABLES, (2) 4/14, (1) #6 GROUND
65	2	4.0 IN	94 FT	T	FIBER OPTIC CABLES, (2) 4/14, (1) #6 GROUND
66	1	3.0 IN	5 FT	T	FIBER OPTIC CABLES, CCTV CAMERA CABLES, BLUETOOTH CABLES

* DENOTES EXISTING CONDUIT
 ** PROPOSED GALVANIZED STEEL CONDUIT
 *** ALL CABLES ARE NEW UNLESS OTHERWISE NOTED



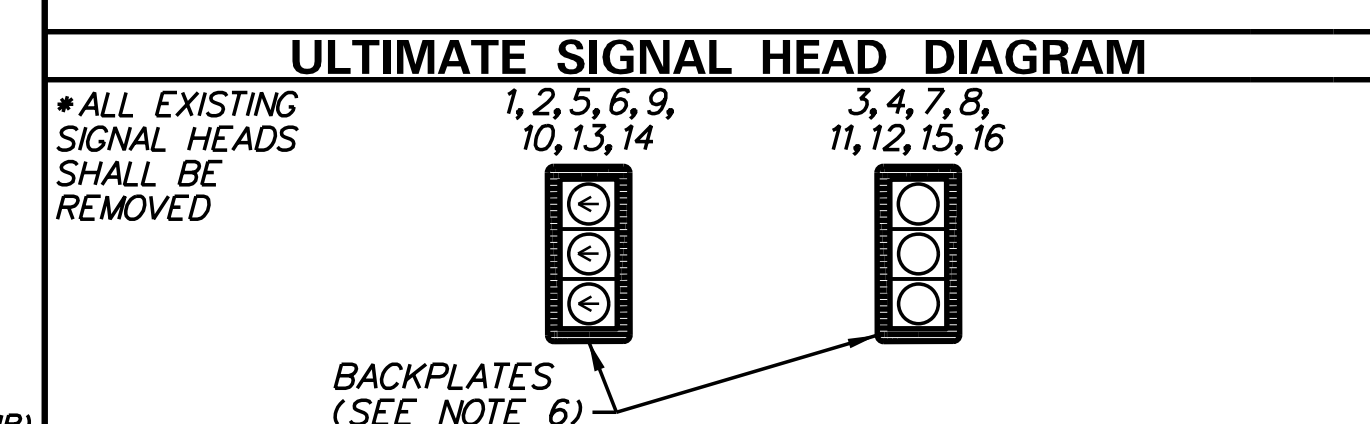
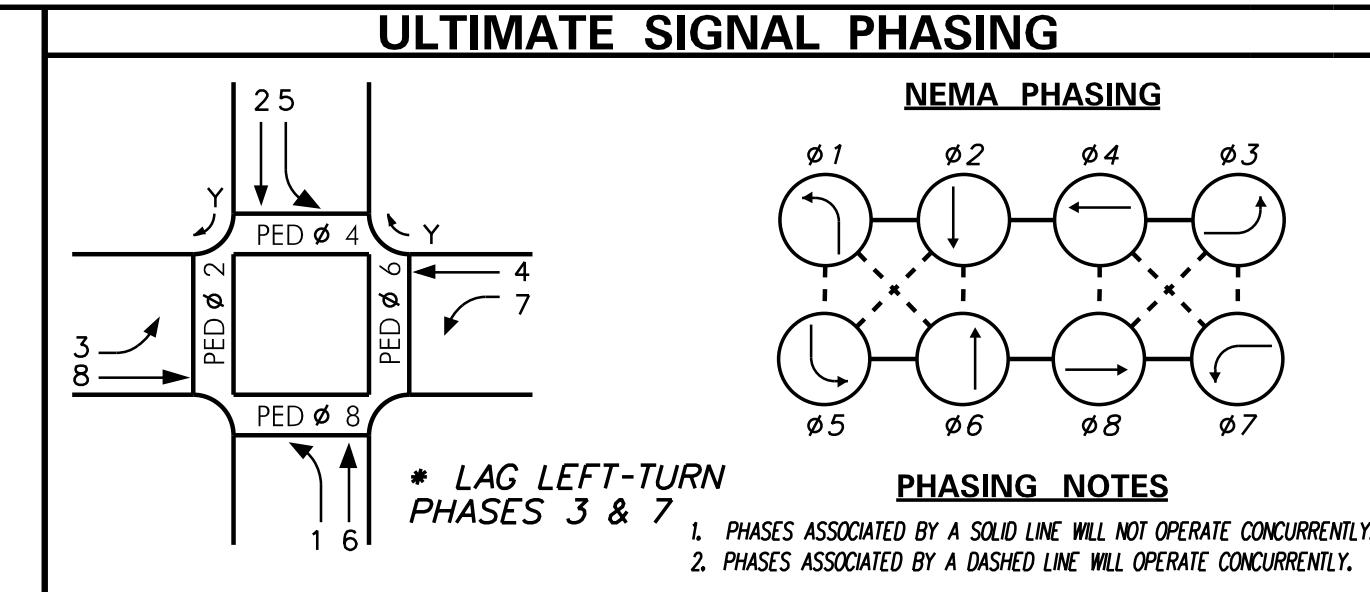
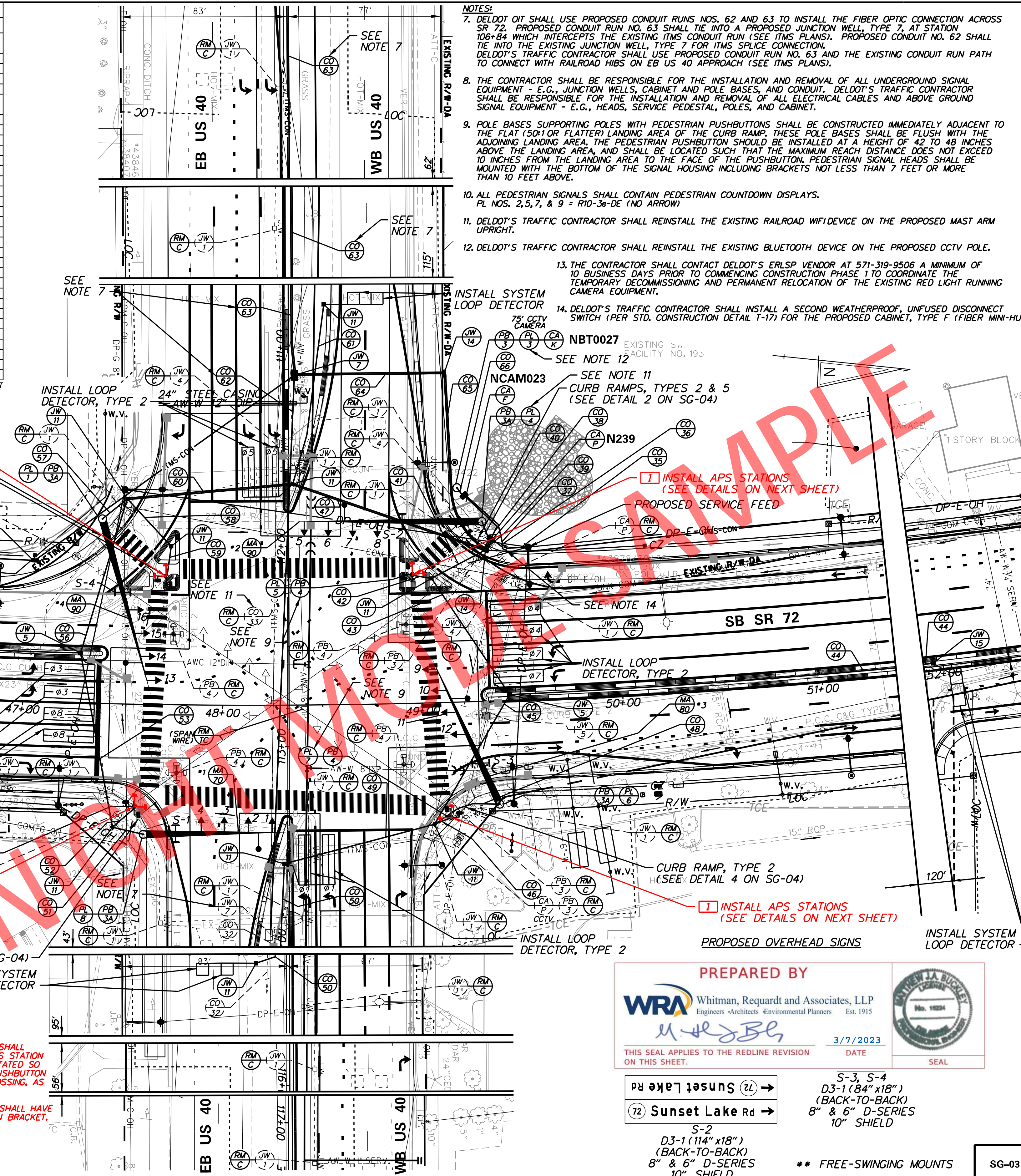
MAST ARM SCHEDULE

MA#	HEIGHT OF POLE	LENGTH OF ARM	# OF HEADS	# OPTICOM RECEIVERS	SF OF PR. SIGNING	ARM MOUNT HEIGHT
1	21'-6"	70 FT	4	1	14.25 SF	20'-0"
2	21'-6"	90 FT	4	1	14.25 SF	20'-0"
3	21'-6"	80 FT	4	1	10.50 SF	20'-0"
4	21'-6"	90 FT	4	1	10.50 SF	18'-0"

*FIELD ADJUST AS REQUIRED

PROPOSED POLE SCHEDULE

NO.	TYPE	STATION	OFFSET
1	90' MAST ARM W/ TYPE 3A BASE	47+36.8	92.2' LT.
2	PEDESTRIAN POLE W/ TYPE 4 BASE	47+70.5	64.1' LT.
3	CCTV CAMERA POLE W/ TYPE 3 BASE	49+19.7	107.1' LT.
4	90' MAST ARM W/ TYPE 3A BASE	49+31.8	89.8' LT.
5	PEDESTRIAN POLE W/ TYPE 4 BASE	48+95.4	64.4' LT.
6	80' MAST ARM W/ TYPE 3A BASE	49+37.2	51.6' RT.
7	PEDESTRIAN POLE W/ TYPE 4 BASE	49+12.7	57.4' RT.
8	70' MAST ARM W/ TYPE 3A BASE	47+61.3	64.9' RT.
9	PEDESTRIAN POLE W/ TYPE 4 BASE	47+56.7	51.1' RT.



LEGEND

EXISTING SYMBOL	PROPOSED SYMBOL
JUNCTION WELL	J.W.
LOOP DETECTOR, TYPE 1	[Symbol]
LOOP DETECTOR, TYPE 2	[Symbol]
LUMINAIRE	[Symbol]
MAST ARM	[Symbol]
MICROWAVE DETECTION	[Symbol]
OPTICOM RECEIVER	[Symbol]
OVERHEAD SIGNING	[Symbol]
PEDESTRIAN POLE/BASE	[Symbol]
PEDESTRIAN PUSHBUTTON	[Symbol]
PEDESTRIAN SIGNAL HEAD	[Symbol]
RIGHT-OF-WAY	R/W
SERVICE PEDESTAL	[Symbol]
SIGNAL CABINET	[Symbol]
SIGNAL HEAD	[Symbol]
SIGNAL POLE/BASE	[Symbol]
SPAN INSULATOR	[Symbol]
SPAN WIRE	XX
UTILITY POLE	[Symbol]
VIDEO DETECTION	[Symbol]

GENERAL SIGNAL NOTES

- PROPOSED LOOP DETECTORS: TYPE #2 - 6" x 25" - TO BE INSTALLED ON US 40 LEFT-TURN MOVEMENTS AND SR 72 THROUGH AND LEFT-TURN MOVEMENTS. SYSTEM - 6" x 6" - TO BE INSTALLED IN US 40 AND SR 72 RECEIVING LANES, AS SHOWN.
- ALL SIGNAL EQUIPMENT REMOVED FROM A PROJECT IS TO BE RETURNED TO DELDOT TRAFFIC - DOVER, DELAWARE.
- POLE BASES, CABINET BASE AND CONDUIT JUNCTION WELLS ARE TO BE REMOVED IN ACCORDANCE WITH SECTION 211 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY ENGINEER. EXISTING CONDUIT IS TO BE ABANDONED.
- ALL CONDUITS SHALL BE SCHEDULE 80 PVC WHEN INSTALLED BY TRENCHING AND SCHEDULE 80 HDPE WHEN INSTALLED BY BORING, UNLESS OTHERWISE NOTED.
- ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY AND/OR THE APPROPRIATE UTILITY PRIOR TO THE BEGINNING OF CONSTRUCTION FOR THE UTILITY MARKOUTS. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN UTILITIES AND TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY DELDOT TRAFFIC IMMEDIATELY BEFORE CONSTRUCTION.
- DELDOT TRAFFIC SHALL INSTALL BACKPLATES ON SIGNAL HEADS 1-16.

PREPARED BY
WRA Whitman, Reardon and Associates, LLP
 Engineers • Architects • Environmental Planners Est. 1915
 M.J.B.
 THIS SEAL APPLIES TO THE REDLINE REVISION ON THIS SHEET.
 3/7/2023 DATE
 SEAL

S-3, S-4
 D3-1 (84" x 18") (BACK-TO-BACK)
 8" & 6" D-SERIES
 10" SHIELD

S-2
 D3-1 (114" x 18") (BACK-TO-BACK)
 8" & 6" D-SERIES
 10" SHIELD

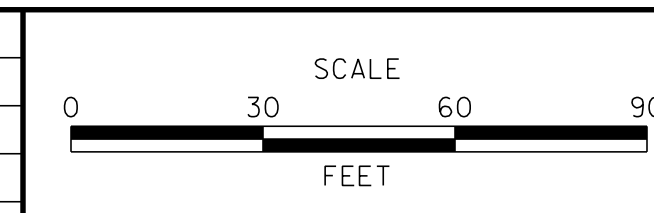
** FREE-SWINGING MOUNTS

RECOMMENDED _____ DATE: _____
 RECOMMENDED _____ DATE: _____
 RECOMMENDED _____ DATE: 9/7/2017
 APPROVED TRAFFIC ENGINEER _____ DATE: 9/7/2017
 APPROVED FOR INSTALLATION CHIEF TRAFFIC ENGINEER _____ DATE: 9/7/2017



ADDENDUM / REVISIONS

1. INSTALLED APS STATIONS AND PEDESTRIAN WARNING SIGNS. B. WALKER (WRA) 02-2023 (P.O. #65506/443055)



US 40 / SR 72 INTERSECTION IMPROVEMENTS

CONTRACT	T200411901
COUNTY	NEW CASTLE
PERMIT NO.	N239, NBT0027, & NCAM023
DESIGNED BY:	D.W.C. (WRA)
CHECKED BY:	M.J.B. (WRA)

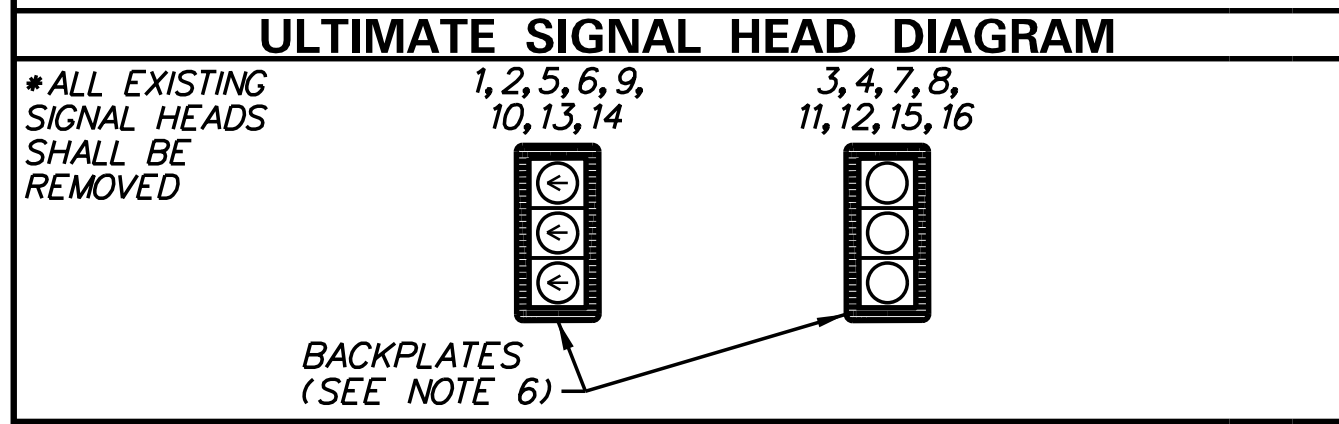
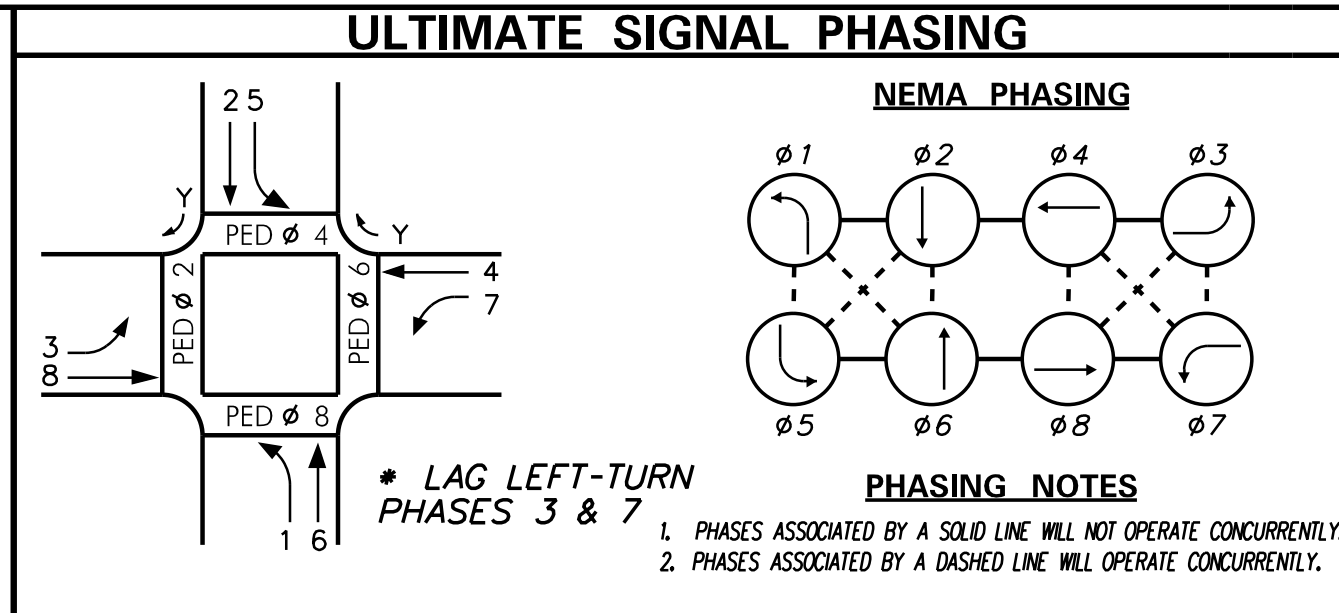
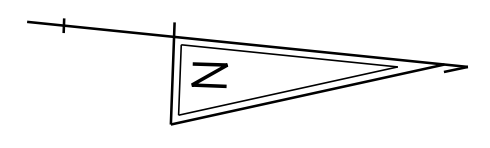
SHEET NO.	174
TOTAL SHTS.	179

C:\Users\mwalker\OneDrive - Whitman Reardon & Associates, LLP\Desktop\redline_S003_4072.dgn 2/21/2023 12:59:16 PM

CO#	# OF CONDUITS	SIZE	LENGTH	B/T/O	AMOUNT AND TYPE OF CABLE/ WIRE
32*	1	4.0 IN	XX FT	-	EX. (1) FIBER OPTIC, SINGLE-MODE, 48 CT., EX. (1) FIBER OPTIC, SINGLE-MODE, 24 CT.
35**	1	2.0 IN	11 FT	T	(1) 2" B U.F. W/GROUND - LINE SIDE
36**	1	2.0 IN	6 FT	T	(1) 2" B U.F. W/GROUND - LOAD SIDE
37**	1	2.0 IN	34 FT	T	(1) 2" B U.F. W/GROUND - LOAD SIDE
38	1	4.0 IN	29 FT	T	FIBER OPTIC CABLES, BLUETOOTH CABLES
39	3	4.0 IN	6 FT	T	(3) 9/14, (8) 5/14, (3) 4/18, (2) 4/14, (20) 2/14, FIBER OPTIC CABLES, (3) *6 GROUND
40	1	3.0 IN	10 FT	T	(1) 9/14, (1) 4/18, RR W/CABLE, (1) *6 GROUND
41	1	4.0 IN	31 FT	B	(1) 9/14, (4) 5/14, (1) 4/18, (8) 2/14, (1) *6 GROUND
42	1	2.5 IN	9 FT	T	(2) 5/14, (1) *6 GROUND
43	1	4.0 IN	70 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (8) 2/14, (1) *6 GROUND
44	1	4.0 IN	250 FT	T	(2) 2/14, (1) *6 GROUND
45	1	4.0 IN	75 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (4) 2/14, (1) *6 GROUND
46	1	2.5 IN	8 FT	T	(2) 5/14, (1) *6 GROUND
47	2	4.0 IN	105 FT	B	(2) 9/14, (4) 5/14, (2) 4/18, (10) 2/14, (2) *6 GROUND
48	1	3.0 IN	36 FT	T	(1) 9/14, (1) 4/18, (1) *6 GROUND
49	1	4.0 IN	78 FT	B	(4) 2/14, (1) *6 GROUND
50	1	4.0 IN	99 FT	T	(2) 2/14, (1) *6 GROUND
51	1	3.0 IN	16 FT	T	(1) 9/14, (1) 4/18, (1) *6 GROUND
52	1	2.5 IN	15 FT	T	(2) 5/14, (1) *6 GROUND
53	1	4.0 IN	89 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (1) *6 GROUND
54	1	4.0 IN	167 FT	T	(2) 2/14, (1) *6 GROUND
56	1	4.0 IN	81 FT	B	(1) 9/14, (2) 5/14, (1) 4/18, (6) 2/14, (1) *6 GROUND
57	1	3.0 IN	16 FT	T	(1) 9/14, (1) 4/18, (1) *6 GROUND
58	1	4.0 IN	33 FT	T	(2) 5/14, (1) *6 GROUND
59	1	2.5 IN	15 FT	T	(2) 5/14, (1) *6 GROUND
60	2	4.0 IN	83 FT	B	(2) 9/14, (4) 5/14, (2) 4/18, (6) 2/14, (2) *6 GROUND
61	1	4.0 IN	90 FT	T	(2) 2/14, (1) *6 GROUND
62	1	4.0 IN	280 FT	B	FIBER OPTIC CABLES
63	2	4.0 IN	432 FT	T	FIBER OPTIC CABLES, (2) 4/14, (1) *6 GROUND
64	2	4.0 IN	77 FT	B	FIBER OPTIC CABLES, (2) 4/14, (1) *6 GROUND
65	2	4.0 IN	94 FT	T	FIBER OPTIC CABLES, (2) 4/14, (1) *6 GROUND
66	1	3.0 IN	5 FT	T	FIBER OPTIC CABLES, CCTV CAMERA CABLES, BLUETOOTH CABLES

* DENOTES EXISTING CONDUIT
 ** PROPOSED GALVANIZED STEEL CONDUIT
 *** ALL CABLES ARE NEW UNLESS OTHERWISE NOTED

- NOTES:**
- DEDOT OIT SHALL USE PROPOSED CONDUIT RUNS NOS. 62 AND 63 TO INSTALL THE FIBER OPTIC CONNECTION ACROSS SR 72. PROPOSED CONDUIT RUN NO. 63 SHALL TIE INTO A PROPOSED JUNCTION WELL, TYPE 7, AT STATION 106+84 WHICH INTERCEPTS THE EXISTING ITMS CONDUIT RUN (SEE ITMS PLANS). PROPOSED CONDUIT NO. 62 SHALL TIE INTO THE EXISTING JUNCTION WELL, TYPE 7 FOR ITMS SPLICE CONNECTION. DEDOT'S TRAFFIC CONTRACTOR SHALL USE PROPOSED CONDUIT RUN NO. 63 AND THE EXISTING CONDUIT RUN PATH TO CONNECT WITH RAILROAD HIBS ON EB US 40 APPROACH (SEE ITMS PLANS).
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND REMOVAL OF ALL UNDERGROUND SIGNAL EQUIPMENT - E.G., JUNCTION WELLS, CABINET AND POLE BASES, AND CONDUIT. DEDOT'S TRAFFIC CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND REMOVAL OF ALL ELECTRICAL CABLES AND ABOVE GROUND SIGNAL EQUIPMENT - E.G., HEADS, SERVICE PEDESTAL, POLES, AND CABINET.
 - POLE BASES SUPPORTING POLES WITH PEDESTRIAN PUSHBUTTONS SHALL BE CONSTRUCTED IMMEDIATELY ADJACENT TO THE FLAT (50:1 OR FLATTER) LANDING AREA OF THE CURB RAMP. THESE POLE BASES SHALL BE FLUSH WITH THE ADJOINING LANDING AREA. THE PEDESTRIAN PUSHBUTTON SHOULD BE INSTALLED AT A HEIGHT OF 42 TO 48 INCHES ABOVE THE LANDING AREA, AND SHALL BE LOCATED SUCH THAT THE MAXIMUM REACH DISTANCE DOES NOT EXCEED 10 INCHES FROM THE LANDING AREA TO THE FACE OF THE PUSHBUTTON. PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED WITH THE BOTTOM OF THE SIGNAL HOUSING INCLUDING BRACKETS NOT LESS THAN 7 FEET OR MORE THAN 10 FEET ABOVE.
 - ALL PEDESTRIAN SIGNALS SHALL CONTAIN PEDESTRIAN COUNTDOWN DISPLAYS. PL NOS. 2, 5, 7, & 9 = R10-3e-DE (NO ARROW)
 - DEDOT'S TRAFFIC CONTRACTOR SHALL REINSTALL THE EXISTING RAILROAD WIFI DEVICE ON THE PROPOSED MAST ARM UPRIGHT.
 - DEDOT'S TRAFFIC CONTRACTOR SHALL REINSTALL THE EXISTING BLUETOOTH DEVICE ON THE PROPOSED CCTV POLE.
 - THE CONTRACTOR SHALL CONTACT DEDOT'S ERLSP VENDOR AT 571-319-9506 A MINIMUM OF 10 BUSINESS DAYS PRIOR TO COMMENCING CONSTRUCTION PHASE 1 TO COORDINATE THE TEMPORARY DECOMMISSIONING AND PERMANENT RELOCATION OF THE EXISTING RED LIGHT RUNNING CAMERA EQUIPMENT.
 - DEDOT'S TRAFFIC CONTRACTOR SHALL INSTALL A SECOND WEATHERPROOF, UNFUSED DISCONNECT SWITCH (PER STD. CONSTRUCTION DETAIL T-17) FOR THE PROPOSED CABINET, TYPE F (FIBER MINI-HUB).
 - THE TRAFFIC CONTRACTOR SHALL INSTALL THE PROPOSED APS STATION WITH THE PUSHBUTTON ROTATED SO THAT THE FACE OF THE PUSHBUTTON IS PARALLEL WITH THE CROSSING, AS SHOWN.
 - THE PROPOSED ASSEMBLY SHALL HAVE AN APS STATION EXTENSION BRACKET.



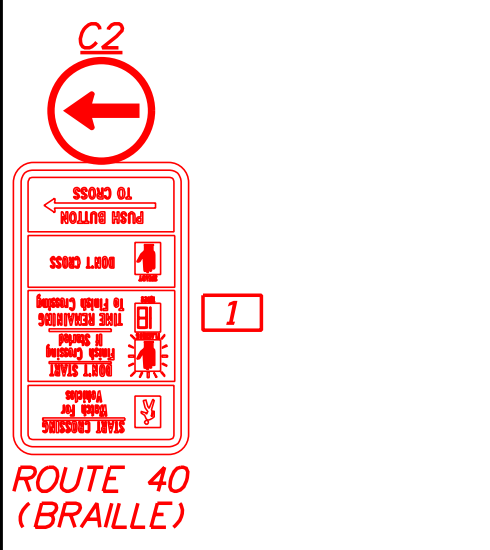
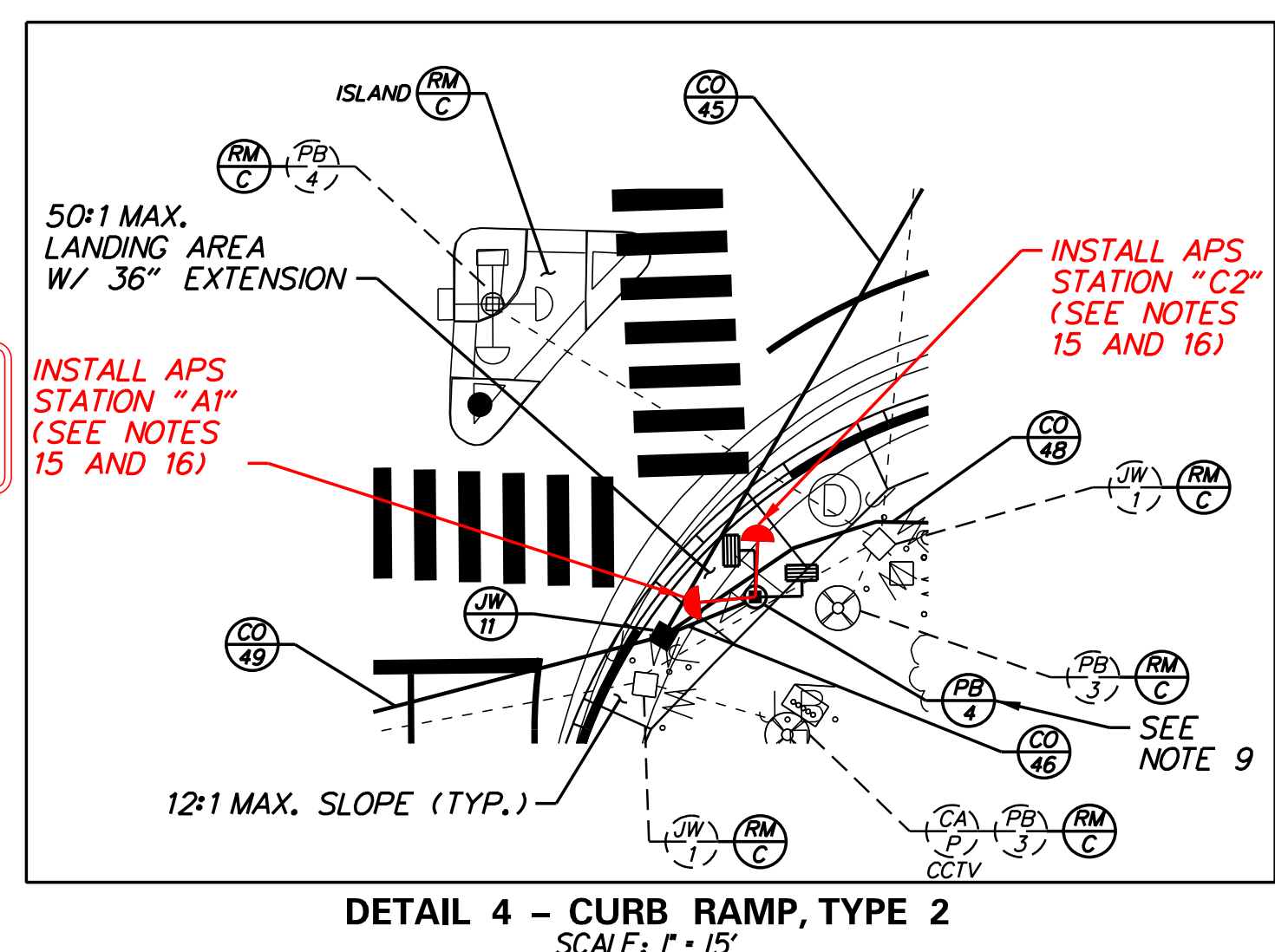
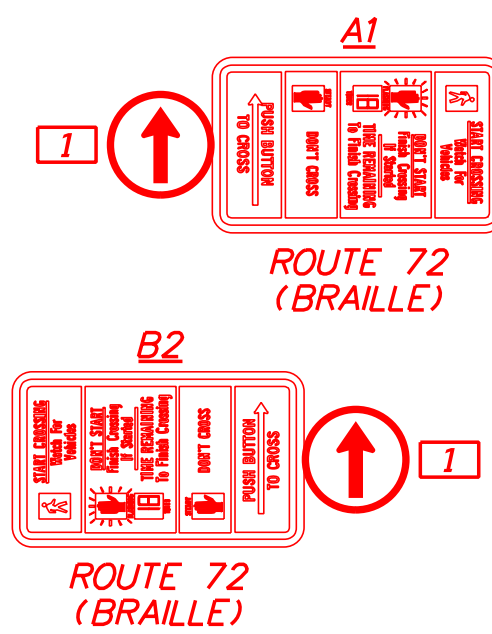
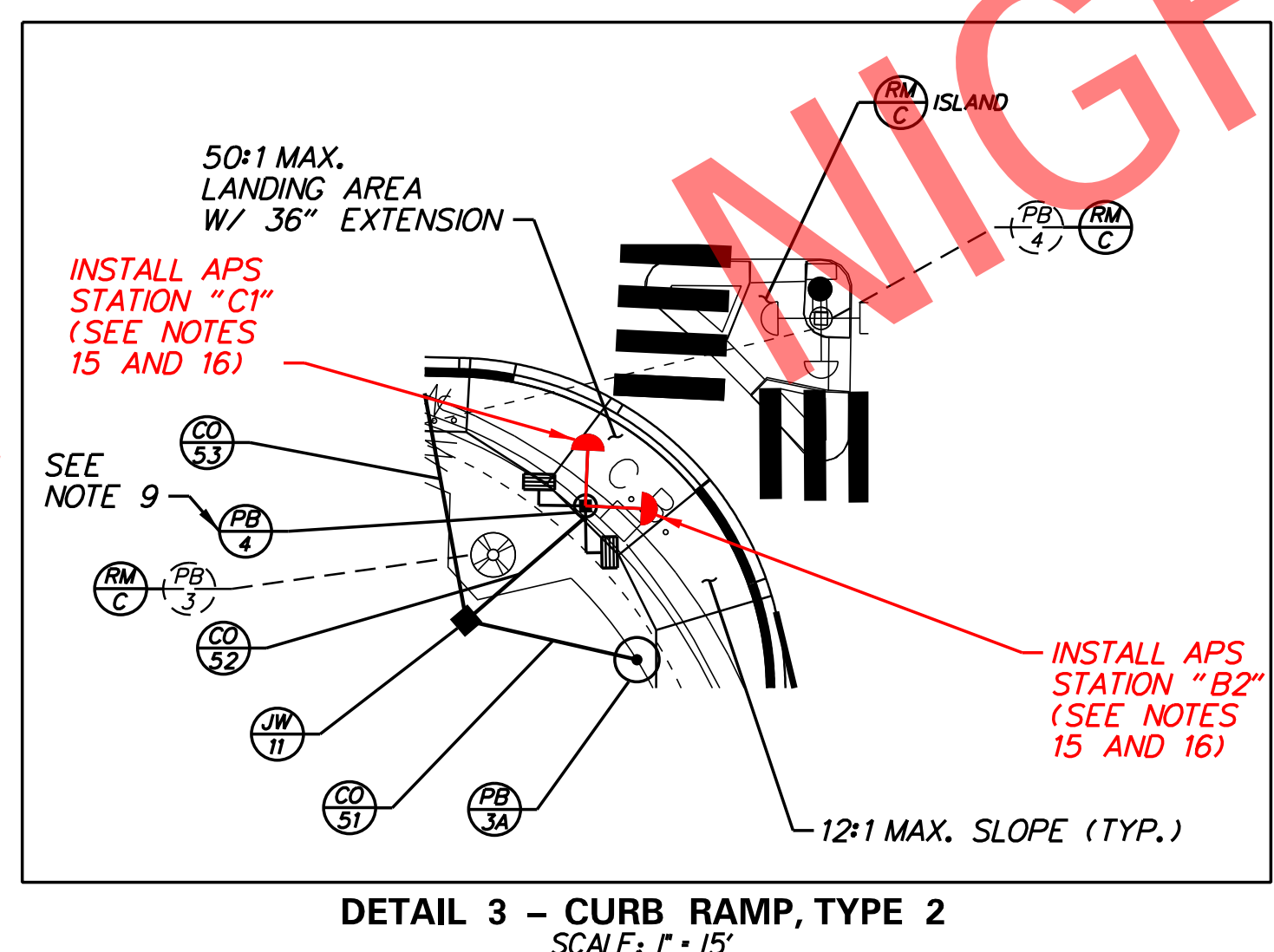
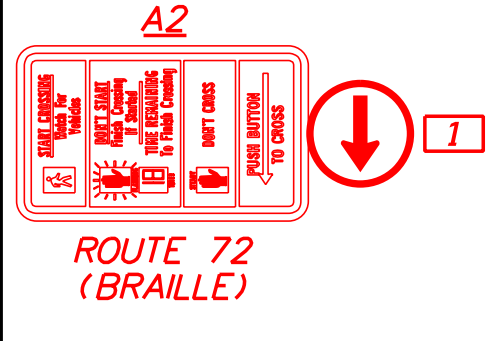
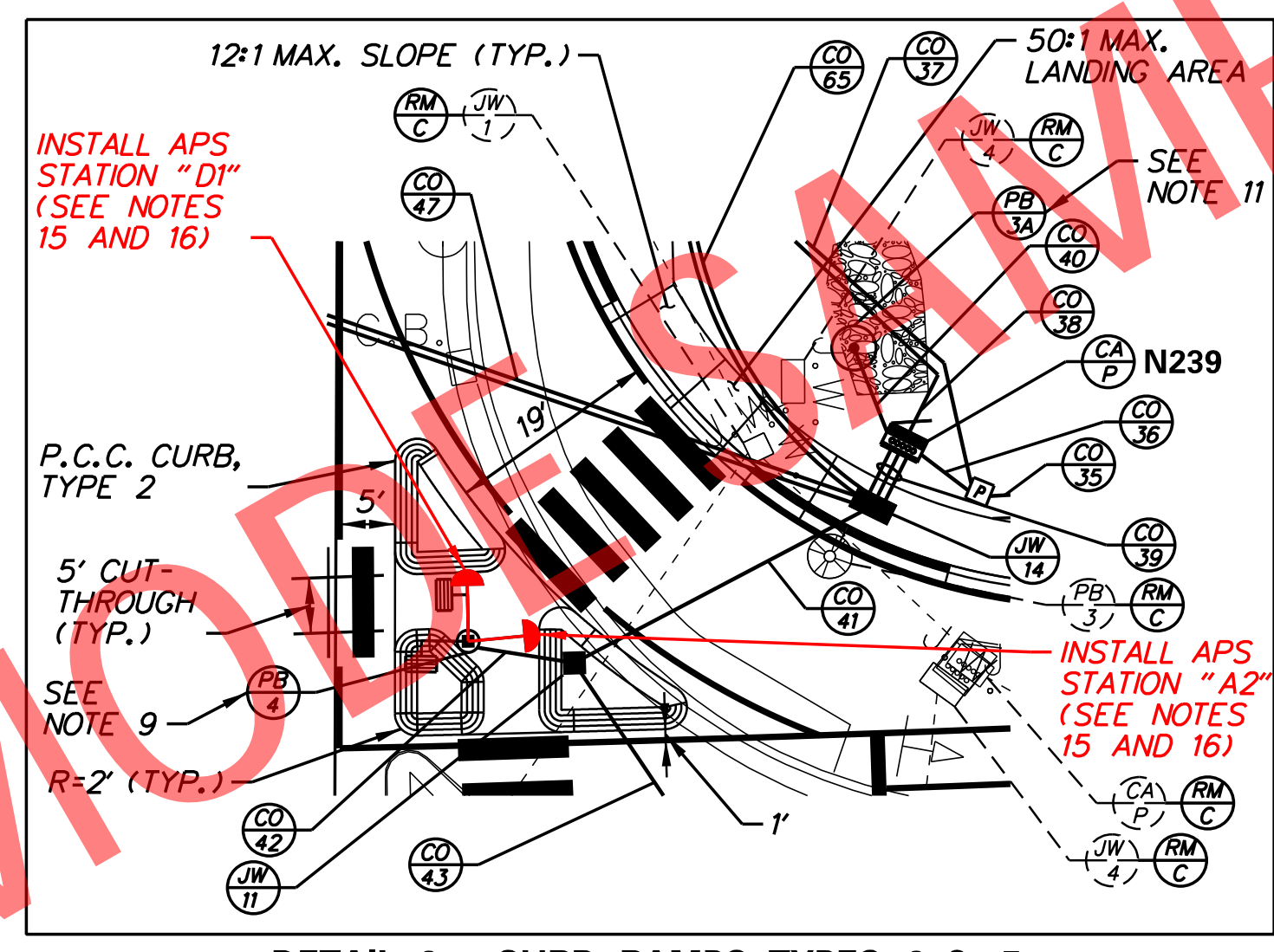
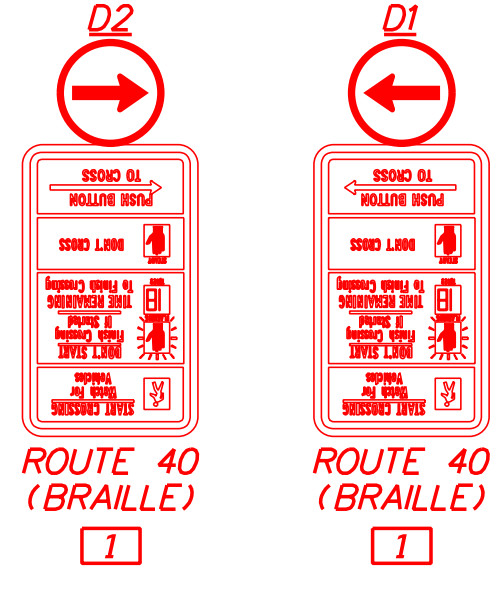
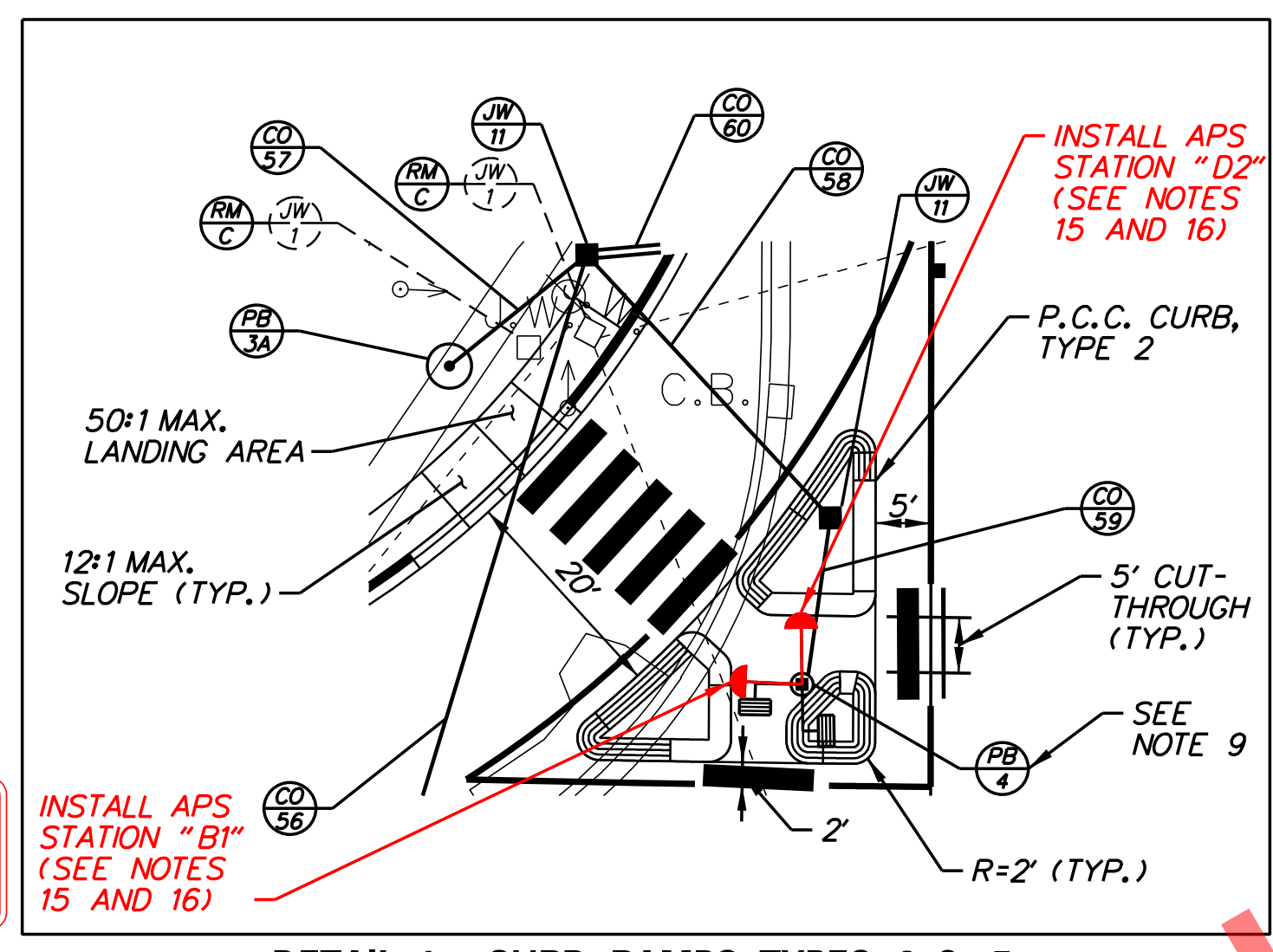
PREPARED BY
WRA Whitman, Reardon and Associates, LLP
 Engineers - Architects - Environmental Planners Est. 1915
 Signature: M. J. B. DATE: 3/7/2023
 THIS SEAL APPLIES TO THE REDLINE REVISION ON THIS SHEET. SEAL

LEGEND

(AB)	ABANDON	(OH)	EXISTING OVERHEAD RUN IDENTIFIER (* OF OVERHEAD RUN)
(CA)	EXISTING CABINET IDENTIFIER (TYPE OF CABINET)	(OP)	PROPOSED OVERHEAD RUN IDENTIFIER (* OF OVERHEAD RUN)
(CB)	PROPOSED CABINET IDENTIFIER (TYPE OF CABINET)	(PB)	EXISTING POLE BASE IDENTIFIER (TYPE OF POLE BASE)
(CO)	EXISTING CONDUIT RUN IDENTIFIER (* OF CONDUIT RUN)	(PB)	PROPOSED POLE BASE IDENTIFIER (TYPE OF POLE BASE)
(CP)	PROPOSED CONDUIT RUN IDENTIFIER (* OF CONDUIT RUN)	(PL)	EXISTING POLE IDENTIFIER (* OF POLE)
(JW)	EXISTING JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	(PL)	PROPOSED POLE IDENTIFIER (* OF POLE)
(JW)	PROPOSED JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	(RM)	REMOVE BY CONTRACTOR
(MA)	EXISTING MAST ARM IDENTIFIER (LENGTH OF ARM)	(RM)	REMOVE BY OTHERS
(MA)	PROPOSED MAST ARM IDENTIFIER (LENGTH OF ARM)	(RM)	REMOVE BY TRAFFIC CONTRACTOR

	EXISTING SYMBOL	PROPOSED SYMBOL
JUNCTION WELL	J.W.	■
LOOP DETECTOR, TYPE 1	□	□
LOOP DETECTOR, TYPE 2	□	□
LUMINAIRE	○	○
MAST ARM	→	→
MICROWAVE DETECTION	◀	◀
OPTICOM RECEIVER	○	○
OVERHEAD SIGNING	+	+
PEDESTRIAN POLE/BASE	⊕	⊕
PEDESTRIAN PUSHBUTTON	→	→
PEDESTRIAN SIGNAL HEAD	→	→
RIGHT-OF-WAY	---	--- R/W ---
SERVICE PEDESTAL	□	□
SIGNAL CABINET	□	□
SIGNAL HEAD	→	→
SIGNAL POLE/BASE	⊕	⊕
SPAN INSULATOR	◇	◇
SPAN WIRE	— XX —	— XX —
UTILITY POLE	⊕	⊕
VIDEO DETECTION	◀	◀

- GENERAL SIGNAL NOTES**
- PROPOSED LOOP DETECTORS: TYPE #2 - 6' x 25' - TO BE INSTALLED ON US 40 LEFT-TURN MOVEMENTS AND SR 72 THROUGH AND LEFT-TURN MOVEMENTS. SYSTEM - 6' x 6' - TO BE INSTALLED IN US 40 AND SR 72 RECEIVING LANES, AS SHOWN.
 - ALL SIGNAL EQUIPMENT REMOVED FROM A PROJECT IS TO BE RETURNED TO DEDOT TRAFFIC - DOVER, DELAWARE.
 - POLE BASES, CABINET BASE AND CONDUIT JUNCTION WELLS ARE TO BE REMOVED IN ACCORDANCE WITH SECTION 211 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY ENGINEER. EXISTING CONDUIT IS TO BE ABANDONED.
 - ALL CONDUITS SHALL BE SCHEDULE 80 PVC WHEN INSTALLED BY TRENCHING AND SCHEDULE 80 HDPE WHEN INSTALLED BY BORING, UNLESS OTHERWISE NOTED.
 - ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY, AND/OR THE APPROPRIATE UTILITY PRIOR TO THE BEGINNING OF CONSTRUCTION FOR THE UTILITY MARKOUTS. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY DEDOT TRAFFIC IMMEDIATELY BEFORE CONSTRUCTION.
 - DEDOT TRAFFIC SHALL INSTALL BACKPLATES ON SIGNAL HEADS 1-16.



RECOMMENDED _____ DATE: _____ ADDENDUM / REVISIONS _____
 RECOMMENDED _____ DATE: _____
 RECOMMENDED _____ DATE: 9/7/2017
 APPROVED TRAFFIC ENGINEER _____ DATE: 9/7/2017
 APPROVED FOR INSTALLATION CHIEF TRAFFIC ENGINEER _____ DATE: 9/7/2017



INSTALLED APS STATIONS AND PEDESTRIAN WARNING SIGNS.
 B. WALKER (WRA) 02-2023
 (P.O. #65506/443055)

US 40 / SR 72 INTERSECTION IMPROVEMENTS

CONTRACT T200411901
 COUNTY NEW CASTLE
 PERMIT NO. N239, NBT027, & NCAM023
 DESIGNED BY: D.W.C. (WRA)
 CHECKED BY: M.J.B. (WRA)

SIGNAL PLAN US 40 (PULASKI HWY) SR 72 (WRANGLE HILL RD / SUNSET LAKE RD)
 SHEET NO. 175
 TOTAL SHTS. 179

C:\Users\bwalker\OneDrive - Whitman Reardon & Associates, LLP\Desktop\redline_S004_4072.dgn 2/21/2023 7:52:24 AM



Accessible Pedestrian Signals: Intersection Planning Sheet

Project City/County: _____

Project State: _____

Intersection: _____ @ _____

of APS to be Installed: _____

Purchase Order#: _____

Guardian Wave Guardian Guardian Mini Beacon BBU WiAAPS

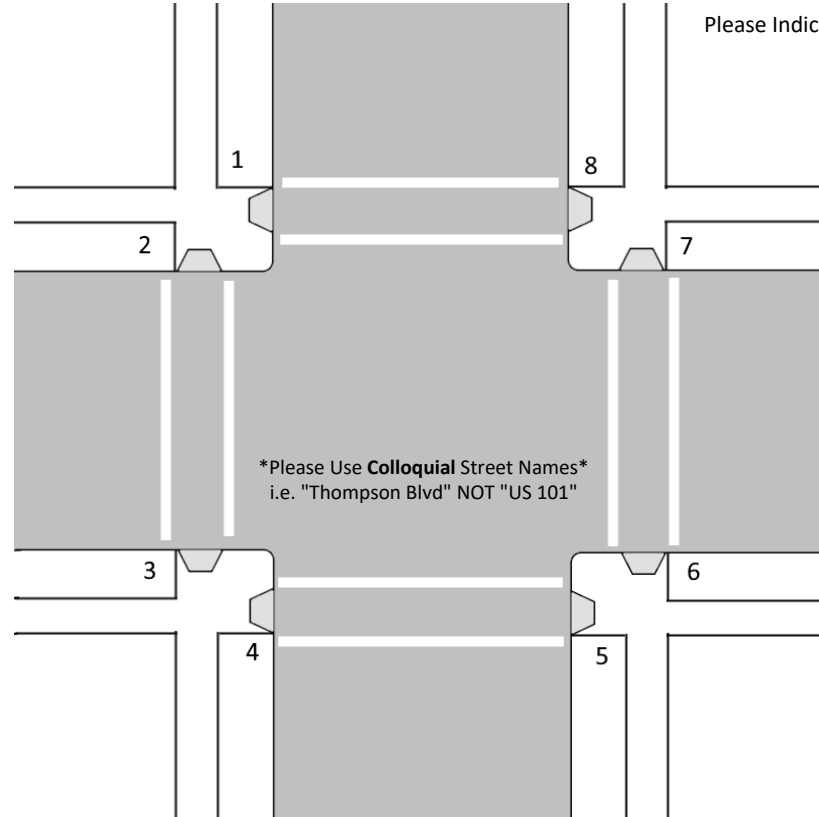
Station Color: _____ Actuator Color: _____

Station Size: _____ Sign Legend: _____

Sign Film Grade: _____ Braille on Sign: _____

Programmed Messages: _____

Station #	Arrow Direction	Ped Phase	Walk Cycle Msg:	
			Verbal	Tone
1				
2				
3				
4				
5				
6				
7				
8				



Please Indicate North in relation to the intersection:



Notes:

- **All stations programmed with factory default MUTCD settings unless noted otherwise.**
- **GENERIC VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS" on extended press, and "WALK SIGN IS ON TO CROSS" or Percussive Tone on walk cycle for all stations.
- **CUSTOM VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS [Street Name] AT [Street Name]" on extended press, and "[Street Name], WALK SIGN IS ON TO CROSS [Street Name]" or Percussive Tone on walk cycle for all stations.
- Per MUTCD 4E.10: Pedestrian stations with <10' separation will use CUSTOM message for the walk cycle. Pedestrian stations with >10' of separation will utilize a PERCUSSIVE (TONE) for the walk cycle.

Customer Notes:

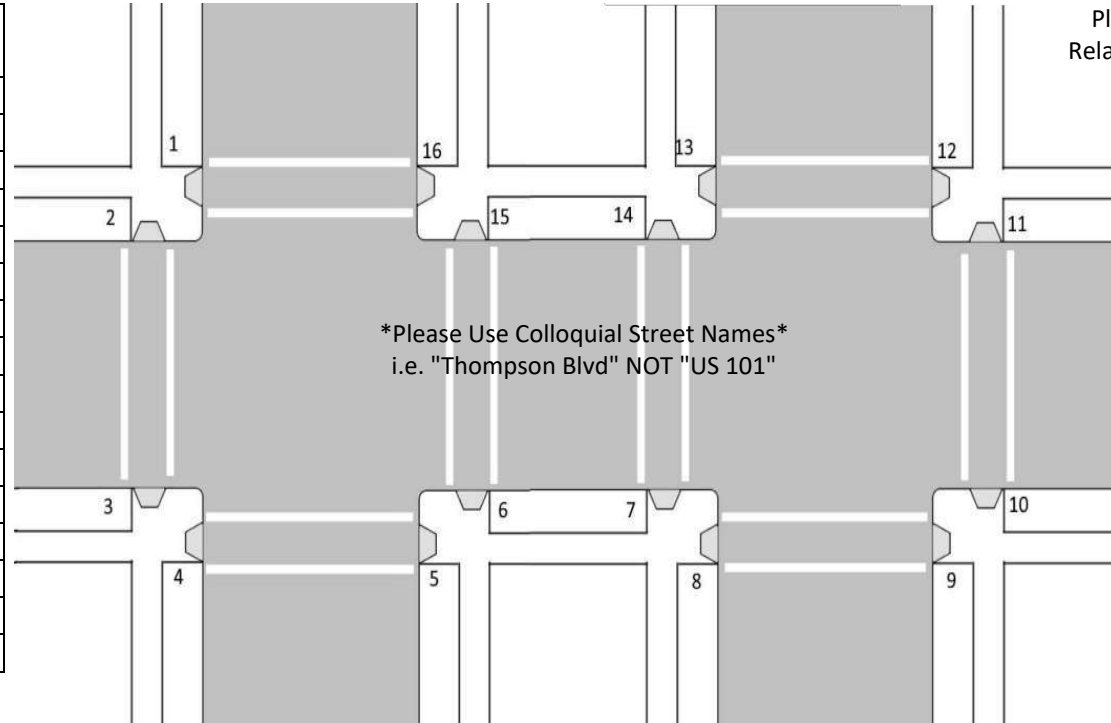


Project City/County: _____
 Project State: _____
 Intersection: _____ @ _____
 # of APS to be Installed: _____
 Purchase Order#: _____

Guardian Wave Guardian Guardian Mini Beacon BBU WiAAPS

Station Color: _____ Actuator Color: _____
 Station Size: _____ Sign Legend: _____
 Sign Film Grade: _____ Braille on Sign: _____
 Programmed Messages: _____

Stn #	Dir of Arrow	Ped Phase	Walk Cycle Msg:	
			Verbal	Tone
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				



Please Indicate North in Relation to the Intersection:



NOTES:

- All stations programmed with factory default MUTCD settings unless noted otherwise.
- **GENERIC VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS" on extended press, and "WALK SIGN IS ON TO CROSS" or Percussive Tone on walk cycle for all stations.
- **CUSTOM VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS [Street Name] AT [Street Name]" on extended press, and "[Street Name], WALK SIGN IS ON TO CROSS [Street Name]" or Percussive Tone on walk cycle for all stations.
- Per MUTCD 4E.10: Pedestrian stations with <10' separation will use CUSTOM message for the walk cycle. Pedestrian stations with >10' of separation will utilize a PERCUSSIVE (TONE) for the walk cycle.

Customer Notes:



Project City/County: _____

Project State: _____

Intersection: _____ @ _____

of APS to be Installed: _____

Purchase Order#: _____

Guardian Wave Guardian Guardian Mini Beacon BBU WiAAPS

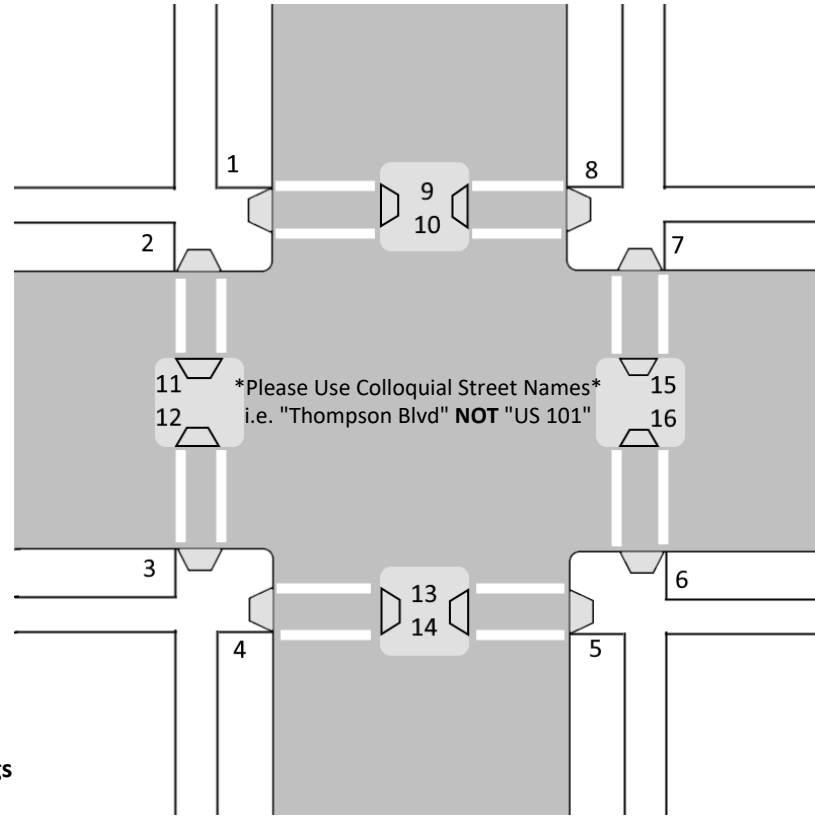
Station Color: _____ Actuator Color: _____

Station Size: _____ Sign Legend: _____

Sign Film Grade: _____ Braille on Sign: _____

Programmed Messages: _____

Station #	Arrow Direction	Ped Phase	Walk Cycle Msg:	
			Verbal	Tone
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				



Please Indicate North in Relation to the Intersection:



NOTES:

- All stations programmed with factory default MUTCD settings unless noted otherwise.
- **GENERIC VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS" on extended press, and "WALK SIGN IS ON TO CROSS" or Percussive Tone on walk cycle for all stations.
- **CUSTOM VOICE MESSAGES** consist of "WAIT" on press, "WAIT TO CROSS [Street Name] AT [Street Name]" on extended press, and "[Street Name], WALK SIGN IS ON TO CROSS [Street Name]" or Percussive Tone on walk cycle for all stations.
- **Per MUTCD 4E.10:** Pedestrian stations with <10' separation will use CUSTOM message for the walk cycle. Pedestrian stations with >10' of separation will utilize a PERCUSSIVE (TONE) for the walk cycle.

Customer Notes:

**DELAWARE DEPARTMENT OF TRANSPORTATION
INTERIM GUIDELINES FOR THE INSTALLATION OF
ACCESSIBLE PEDESTRIAN SIGNALS
DECEMBER 11, 2007**

I. INTRODUCTION

A. Background

The Transportation Equity Act for the 21st Century (TEA-21) directs that pedestrian safety considerations, including the installation of accessible traffic signals, where appropriate, be included in new transportation plans and projects [Sec. 1202(g)(2)]. The bill was signed into law by the President on June 9, 1998.

The Americans with Disabilities Act (ADA) requires access to the public right-of-way for people with disabilities. Access to traffic and signal information is an important feature of accessible sidewalks and street crossings for pedestrians who have vision impairments. While most intersections pose little difficulty for independent travelers who are blind or have low vision, there are some situations in which the information provided by an accessible pedestrian signal is necessary for independent and safe crossing.

An Accessible Pedestrian Signal (APS) is a device that is used in conjunction with pedestrian signals that communicates pedestrian signal information in nonvisual formats such as audible tones, verbal messages, and/or vibrating surfaces. APS let pedestrians who are blind or visually impaired know when the WALK interval begins and terminates. Pedestrians who know when the crossing interval begins will be able to start a crossing before turning cars enter the intersection and can complete a crossing with less delay. Audible signals can also provide directional guidance, which is particularly useful at non-perpendicular intersections and at wide multi-lane crossings.

B. Purpose and Scope

These interim guidelines provide the Delaware Department of Transportation (DelDOT) with a process to evaluate and prioritize APS installations when they are requested. These interim guidelines describe a process in which an intersection must first meet basic conditions in order to be considered for APS. If APS should be considered, an intersection must be evaluated to determine the need relative to other locations where APS has been requested. The scores received in the evaluation determine this relative need and can be used to develop a prioritized list of intersections to be funded. The goal is that all requests for APS installation receive a fair and equal assessment and that funds are expended in the most effective manner.

It should be noted that these guidelines apply only at locations where APS is requested. This approach is being taken due to potential changes resulting from comments on the Revised Draft Guidelines for Accessible Public Rights-of-Way (PROWAG). Additional guidelines concerning the installation of APS at new intersections or intersections that are undergoing improvements will be developed following finalization of PROWAG by the federal government.

II. GUIDELINES

The following is the procedure for determining whether APS installations should be considered at intersections. Three basic conditions should be met (as determined by DelDOT Traffic) for APS to be considered:

- 1) APS must be requested
- 2) Intersections must be signalized
- 3) Retrofitting the signal to include APS must be feasible¹

For APS to be considered “requested,” the “Request for the Installation of Accessible Pedestrian Signals Form” (see Appendix A) must be completed and submitted to DelDOT. This form is available on DelDOT’s website and in hard copy from DelDOT’s Public Relations office. A blind or visually impaired person also has the option of calling DelDOT Public Relations office at 1-800-652-5600 to give the information verbally so that it can be transcribed onto the form for DelDOT’s records. The requestor should be a blind or visually impaired individual or a person or agency filing on his or her behalf.

If these three conditions are met, there are three cases that may be encountered, as discussed below. These cases apply to the specific crossing that is being requested. If it is determined that APS should be installed at the specific crossing that is being requested, APS should be installed at all signalized pedestrian crossings at the intersection to the maximum extent feasible.¹

Case 1 – The crossing for which APS is being requested is equipped with pedestrian signals and there are no current improvements proposed to the pedestrian signal, perform an evaluation using the “Accessible Pedestrian Signal Evaluation Form” (see Appendix B). The evaluation form will determine the priority of the APS installation relative to other intersections for which APS has been requested. The scores received in the evaluation will be used to develop a prioritized list of intersections to be funded.

Case 2 – If there are plans for the installation of new pedestrian signals or plans for improvements to existing pedestrian signals on the crossing for which APS is being requested, revise the plans to include APS to the maximum extent feasible¹. In this case, the intersection need not be evaluated.

Case 3 – If there is no pedestrian signal and no plans for them, conduct a traffic engineering study to determine if pedestrian signals are warranted. If warranted, include the appropriate

¹ From the Draft Public Rights-of-Way Accessibility Guidelines, “the phrase ‘to the maximum extent feasible’ applies to the occasional case where the nature of an existing facility makes it virtually impossible to comply fully with applicable accessibility standards through a planned alteration. In these circumstances, the alteration shall provide the maximum physical accessibility feasible. Any altered features of the facility that can be made accessible shall be made accessible.”

“Existing conditions (e.g., underlying terrain, right-of-way availability, underground structures, adjacent developed facilities, drainage, the presence of a notable natural or historic feature) may limit choices in an alterations project. In determining the maximum feasible accessibility that can be achieved for pedestrians with disabilities within a given alterations project, covered entities may consider constructability limits commensurate with those of the project as a whole.”

APS when the pedestrian signals are installed to the maximum extent feasible¹. In this case, the intersection need not be evaluated using the “Accessible Pedestrian Signal Evaluation Form” (see Appendix B). If a pedestrian signal is not warranted, do not install APS.

III. INTERSECTION EVALUATION

A. Overview of Procedure

If the three basic requirements are met and there are no current improvements proposed by DelDOT to the existing pedestrian signal (Case 1), an evaluation shall be performed during a site visit to derive a score for each crossing where APS is being requested. The evaluation team should include the requesting blind or visually impaired person or their representative, DelDOT’s ADA Coordinator, and a representative from DelDOT Traffic. If necessary at complex intersections, a certified orientation and mobility specialist may be included on the evaluation team.

The evaluation should be performed during the time of day when the requesting blind or visually impaired person typically crosses the intersection and/or when crossing the intersection would be most difficult. During the intersection visit, the evaluation team should thoroughly discuss all possible solutions to address the crossing needs of the requesting blind or visually impaired person. These discussions should include, but not be limited to, minor intersection improvements, installation of new crosswalks, installation of pedestrian signals with APS on crossings for which APS are not being requested, consideration of the needs of other potential blind or visually impaired individuals, and consideration of the intersection’s characteristics after improvements are made. In addition, if APS are to be installed at nearby signalized intersections, it is important that signals from one intersection cannot be heard at other intersections.

At any point deemed appropriate by DelDOT or the requestor, an intersection may be reevaluated to account for changes that would influence the evaluation score and hence the ranking on the prioritized list. Similarly, if more than a year elapses between the intersection’s evaluation and the design or installation of the APS system, DelDOT Traffic should ensure that there is a continued need for the APS. For example, the requesting blind or visually impaired person may have relocated since submitting the request.

B. Evaluation Factors and Rating Methodology

The following factors and rating methodology and the “Accessible Pedestrian Signal Evaluation Form” (see Appendix B) should be used to evaluate intersections for which APS installation has been requested (Case 1 only). The evaluation should be performed for the specific crossing(s) where APS is being requested. Some factors are more important than others, and the evaluation process allows the evaluation team to distinguish and account for this distinction through the use of the point system. The highest total points per requested crossing (north, south, east or west) will be used as the overall intersection score.

The evaluation will determine the specific needs of the requesting blind or visually impaired person and allow DelDOT to prioritize installations because funding is limited.

Following is a summary of the factors used in the evaluation process:

1. Configuration of Intersection: The number of approaches to an intersection and the geometric design (offset, skewed, etc.) can affect the ability of the blind or visually impaired pedestrian to cross the roadway safely. The blind or visually impaired pedestrian listens for the traffic going straight through the intersection that is close and parallel with the crosswalk being traversed to guide his or her passage across the roadway. Accordingly, when an intersection's configuration is skewed, offset, or does not have straight through movements (as is the case in a three-legged intersection), a crossing can become more difficult for the blind or visually impaired pedestrian.

2. Width of Crossing: Wider streets are more difficult for the blind/visually impaired pedestrian to safely cross. Points are assigned on the basis of the width of the crossing. Crossing width is measured from the curb at the embarkation point to the curb at the destination point including perpendicular ramp areas. Islands and medians should be included in the total crossing distance even if they are equipped with separate pedestrian pushbuttons. Efforts should be made to permit blind/visually impaired pedestrians to cross in one continuous movement. Divided streets with or without a pedestrian pushbutton in the median should be handled as a single crossing, with the width measured across the entire street.

3. Pedestrian Crashes: Past pedestrian crash experience at the intersection can be used as an indicator of potential safety. Accordingly, the higher the occurrence of crashes, the higher number of points given.

4. Posted Speed Limit or 85th Percentile Speed on Street to Be Crossed: The speed of approaching traffic reflects the capability of approaching drivers to stop for pedestrians clearing the intersection as the traffic signals and pedestrian signals change. Points are assigned on the basis of the posted speed limit or 85th percentile speed on the street to be crossed. To determine 85th percentile speeds, free flow speeds should be measured on the roadway approach to the pedestrian crossing. More points are assigned for higher speeds.

5. Traffic Volumes/Queues: The volume of traffic and queues on the street parallel to the crossing may help or hinder the capability of a blind/visually impaired pedestrian to cross the street. Optimal crossing conditions occur at locations with a moderate but steady flow of traffic through the intersection with a minimum of turning movements. Traffic volumes and queues that are light or erratic make it difficult for the pedestrian to pick up audible clues as to whether the light is red or green. Accordingly, more points are assigned for shorter queues on the roadway parallel to the crossing. Traffic volumes and queues should be collected during the time of day when the requesting blind or visually impaired person typically crosses the intersection and/or when crossing the intersection would be most difficult. Off-peak periods on weekdays from 9 AM to 3 PM and on weekends from 7 AM to 6 PM should be considered when assessing queues and traffic volumes. In resort areas or other special areas, off-peak season traffic volumes should be considered.

6. Right-Turn Operations: Heavy right-turn volumes from the street parallel to the pedestrian crossing may hinder the capability of a blind/visually impaired pedestrian to cross the street. Accordingly, points are assigned for higher right-turn volumes.

7. Free Right-Turn Operations: Free flow right-turn lanes (i.e. right-turns that are channelized and do not operate under signal control) hinder the capability of a blind or visually impaired

pedestrian to cross the street. Special care must be taken when installing APS to mitigate the problems associated with this condition. Accordingly, points are assigned if this condition impacts the crossing.

8. Special Signal Conditions: Certain signals operations including the presence of a lead pedestrian phase, an exclusive pedestrian phase, a mid-block exclusive pedestrian signal, or split phasing may hinder the capability of a blind or visually impaired pedestrian to cross the street. Accordingly, points are assigned if any of these conditions impact the crossing.

9. Proximity of Intersection to Key Facilities: APS should be considered at intersections that are close to facilities that attract or generate significant amounts of pedestrian traffic. APS would improve the safety and mobility of the blind or visually impaired pedestrian and make these facilities more accessible. Examples are medical, educational, social, recreational, commercial, shopping, public, governmental facilities, and transit stops. Pedestrian demand is based in part on how close the intersection is to these facilities; i.e., the closer a facility, the more the demand. Likewise, points are assigned based on the closeness of these facilities to the intersection; i.e., the closer a facility, the more the points. In the case of multiple facilities, points should be assigned using the closest facility to the proposed APS site.

10. Other Special Traffic and Mobility Conditions: This factor is intended to provide the evaluation team an opportunity to add 15 points based on special conditions not adequately covered by previous factors or based on special needs of the requesting party (e.g. disabled pedestrian generators in close proximity to the crossing).

IV. FUNDING PROCESS

At intersections where APS is installed under Cases 2 and 3, funding for APS will be included in the cost of the pedestrian signal project or capital project.

Intersections where APS is requested and approved and there are no current improvements proposed (Case 1) are generally funded on a “first come, first served” basis as funds are available. If funds are not available, the approved intersections are put on hold or carried over to the next funding cycle (typically a fiscal year). The new funds are distributed first to the carried over intersections based on the priority established by the Overall Intersection Score. If funds still remain after being distributed to the prioritized list, further requests for APS retrofit installations are once again funded, designed, and scheduled for implementation on a first come, first served basis until the funds are depleted. This basic process is repeated year after year.

It should also be noted that some traffic signals cannot be retrofitted with APS without major intersection modifications. If APS cannot be implemented by DelDOT Traffic’s on-call contractors due to right-of-way impacts, utility relocations, drainage improvements, or extensive geometric modifications required to install APS, the project may be forwarded to the Project Development Pipeline.

Appendix A

REQUEST FOR THE INSTALLATION OF ACCESSIBLE PEDESTRIAN SIGNALS FORM

Requesting Party's Name:

(Blind or visually impaired pedestrian)

Address: _____ City: _____

State: _____ Zip Code: _____

Telephone (Home): _____ Telephone (Work): _____

I request that the Delaware Department of Transportation install Accessible Pedestrian Signals (APS) to cross the **NORTH** **SOUTH** **EAST** **WEST** (check all that apply) side of _____ (Route Number/Street Name) where it crosses _____ (Route Number/Street Name) in _____ (city, town, or county).

Please describe the difficulty you have in crossing:

Please call DelDOT at 1-302-760-2048 with questions, or to seek assistance in filling out the form and/or mail form to:

DelDOT ADA Title II/Section 504 Coordinator

**ATTN: Tom Nickel
P.O. Box 778**

Dover, DE 19903

E-mail: DOT.ADASupport@delaware.gov

For Office Use Only

Date Received: _____ Received by: _____

Appendix B

ACCESSIBLE PEDESTRIAN SIGNAL EVALUATION FORM

Location:							
Date:		Day:		Time of Day:			
Weather Conditions:							
Evaluation Team Members:							
Specific Needs of Requesting Party:							
REQUESTED APS CROSSINGS - Check all that apply (Evaluation of other crossings may be performed, but the scores should not be used when ranking intersections)				INTERSECTION LEGS			
				North	South	East	West
EVALUATION FACTOR				POINTS			
1. Configuration of Intersection				North	South	East	West
<u>Configuration</u>		<u>Points</u>		<u>Comments:</u>			
(Points should be assigned to legs of the intersection affected by the configuration)							
4-leg right angle intersection		2					
3-leg tee intersection		4					
3 or 4-leg skewed intersection		6					
4-leg offset intersection		8					
Other complex or multiple leg intersections		10					
2. Width of Crossing				North	South	East	West
<u>Width (feet)</u>		<u>Points</u>		<u>Comments:</u>			
(Points should be assigned to all legs of the intersection)							
40 or less		2					
41 to 52		4					
53 to 68		6					
69 to 78		8					
79 or more		10					
3. Pedestrian Crashes				North	South	East	West
<u>Crashes / 5 Years</u>		<u>Points</u>		<u>Comments:</u>			
(Points should be assigned to all legs of the intersection)							
1		2					
2		4					
3		6					
4		8					
5 or more		10					

4. Posted Speed Limit (or 85th %ile Speed) on Street to be Crossed			North	South	East	West
<u>Speed (mph)</u>	<u>Points</u>	<u>Comments:</u>				
0 to 25	1					
26 to 30	2					
31 to 35	3					
36 to 40	4					
41 or more	5					
5. Traffic Volumes/Queues			North	South	East	West
<u>Queues on Parallel Street</u>	<u>Points</u>	<u>Comments:</u>				
(Queues should be measured during the time of day when the requesting blind or visually impaired person typically crosses the intersection and/or when crossing the intersection would be most difficult.)						
> 2 vehicle queue per cycle	2					
2 vehicle queue per cycle	4					
1 vehicle queue per cycle	6					
Average < 1 vehicle per cycle	8					
0 vehicles per any 5 minute period	10					
6. Right Turn Operations			North	South	East	West
Assign points for peak hour right-turn volumes from the street parallel with the pedestrian crossing.						
<u>Volume (vph)</u>	<u>Points</u>	<u>Comments:</u>				
20 to 40	2					
41 to 60	4					
61 to 80	6					
81 to 100	8					
> 100	10					
7. Free Right Turn Operations			North	South	East	West
If there is a free flow right-turn lane (i.e. right turn that is channelized and does not operate under signal control) that impacts the crossing, assign 5 points.						
<u>Comments:</u>						
8. Special Signal Conditions			North	South	East	West
If there are lead pedestrian phases, exclusive pedestrian phases, mid-block exclusive pedestrian signals, or split phasing that impact the crossing, assign 15 points.						
<u>Comments:</u>						

9. Proximity of Intersection to Key Facilities			North	South	East	West
<u>Proximity to Facility</u> <u>Points</u> <u>Comments:</u> 1201 ft to 2400 ft 2 801 ft to 1200 ft 4 401 ft to 800 ft 6 Less than 400 ft 8 At the Facility 10						
10. Other Special Traffic and Mobility Conditions			North	South	East	West
If special traffic and mobility conditions do exist, assign up to 15 points. <u>Comments:</u>						
TOTAL POINTS			North	South	East	West
OVERALL INTERSECTION SCORE (Highest Total Points By Approach)						
Additional Comments by Evaluation Team:						