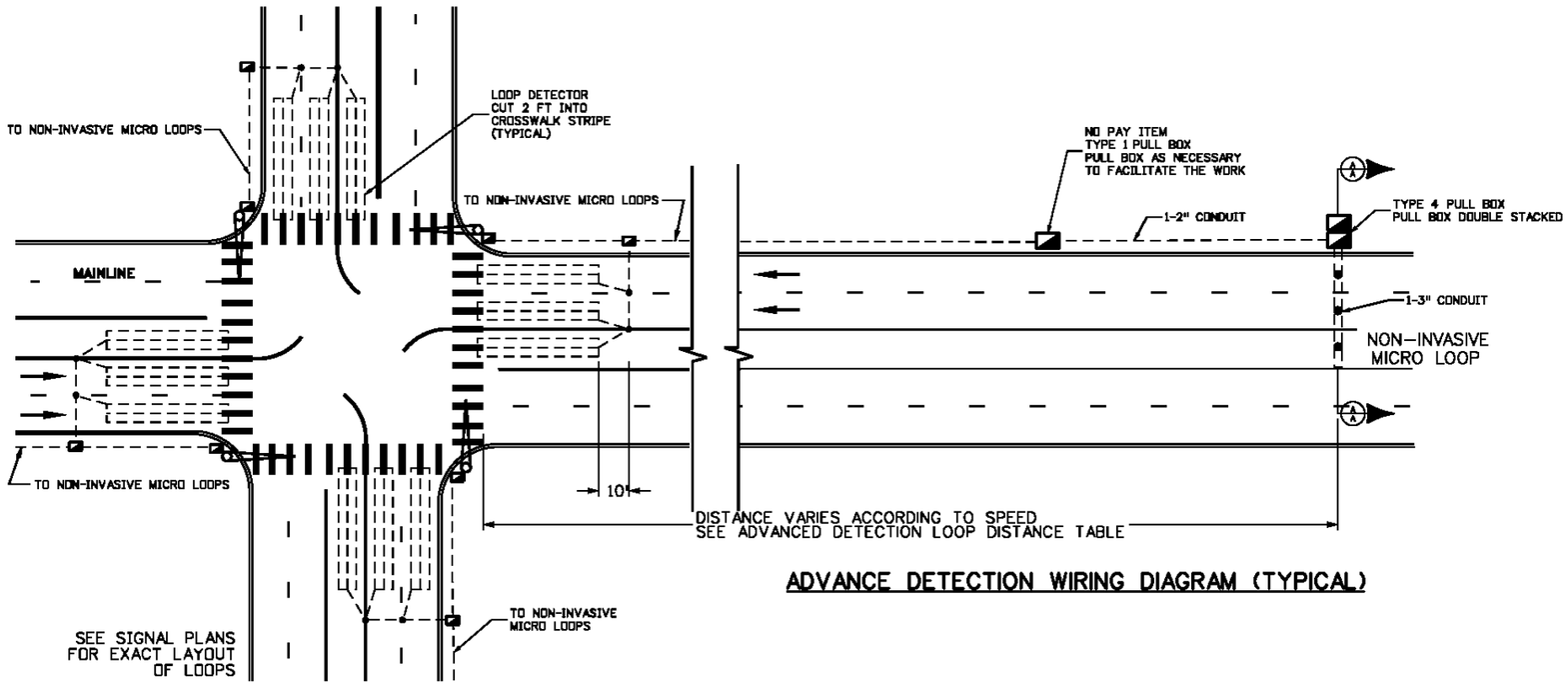


ADVANCE DETECTION WIRING DIAGRAM (TYPICAL)

ADVANCED DETECTION LOOP DISTANCE TABLE

APPROACH SPEED		DISTANCE FROM INTERSECTION
MPH	KM/HR	FEET
35	56	254
40	64	284
45	72	327
50	80	353
55	88	386

LEGEND

CONTROLLER AND CABINET.....

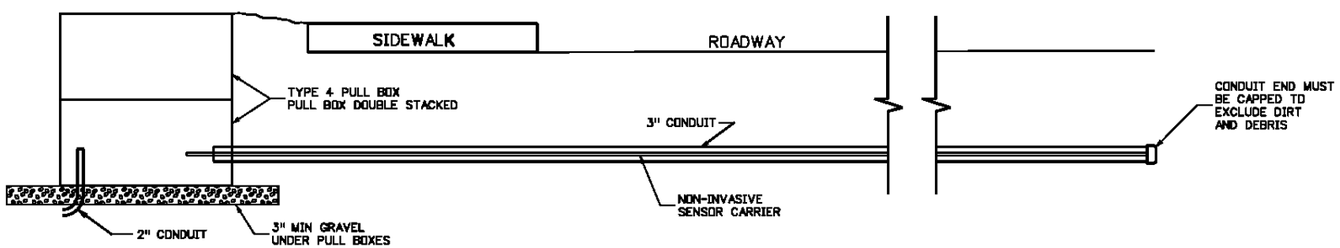
ELECTRICAL CONDUIT AND PULL BOX...

LOOP DETECTOR.....

PULLBOX (SPECIAL).....

MICRO DETECTOR.....

INTERSECTION DETECTOR WIRING DIAGRAM (TYPICAL)



SECTION A-A

TYPICAL DETAIL
NON-INVASIVE MICRODETECTOR
(DILEMMA ZONE)

NOTES

1. ALL PULL BOXES ARE NOT TO BE PAID FOR SEPERATELY, BUT SHALL BE INCLUDED IN THE COST OF THE CONDUIT. EXCEPT FOR WHERE CALLED OUT IN THE PLANS.
2. ALL PULL BOXES PLACED FOR THE "ADVANCED DETECTIN WIRING" SHALL BE PLACED APPROXIMATELY EVERY 100 FT AND SHALL BE INCLUDED IN THE COST OF THE CONDUIT.
3. FOR LAYOUT OF LOOP DETECTORS AND CONDUIT, THE CONTRACTOR SHALL NOTIFY CDOT REGION 6 TRAFFIC SIGNAL SHOP JEFF LANCASTER, (303) 757-9511, TWO WORKING DAYS IN ADVANCE.
4. SEE PLANS FOR ACTUAL LANE CONFIGURATIONS

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TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS

Issued By: Traffic & Safety Engineering Branch July 31, 2019

STANDARD PLAN NO.
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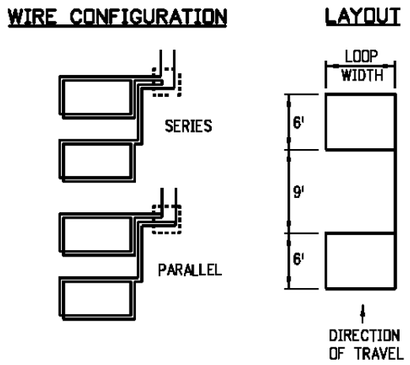
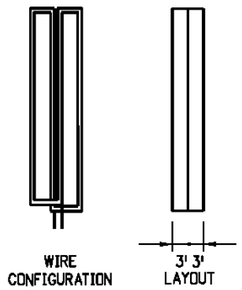
LOOP INSTALLATION PROCEDURE

1. CUT SLOTS IN PAVEMENT TO 3 IN MINIMUM DEPTH.
2. CLEAN AND DRY SLOTS WITH OIL-FREE COMPRESSED AIR.
3. ONE CONTINUOUS LENGTH OF 14/1C, RHW, USE, XLPE, RHWN OR THWN WIRE SHALL BE USED FOR EACH LOOP FROM SIGNAL BASE OR PULL BOX AROUND THE LOOP WITH THE NUMBER OF TURNS SPECIFIED AND BACK TO THE SIGNAL BASE OR PULL BOX. LOOP WIRE SHALL BE DUCT TYPE.
4. SPLICE LEAD-IN IN FIRST PULL BOX ON THE SIDE OF THE ROADWAY.
5. USE A BLUNT, NON-METALLIC INSTRUMENT TO PUSH WIRE INTO SLOT. DO NOT COIL LEADS.
6. CONNECT DETECTOR AND TEST LOOP.
7. INSTALL LOOPS BEFORE FINAL LIF OF ASPHALT ON MILL AND FILL PROJECTS.
8. SEAL SLOTS AS SPECIFIED.



STANDARD LOOP

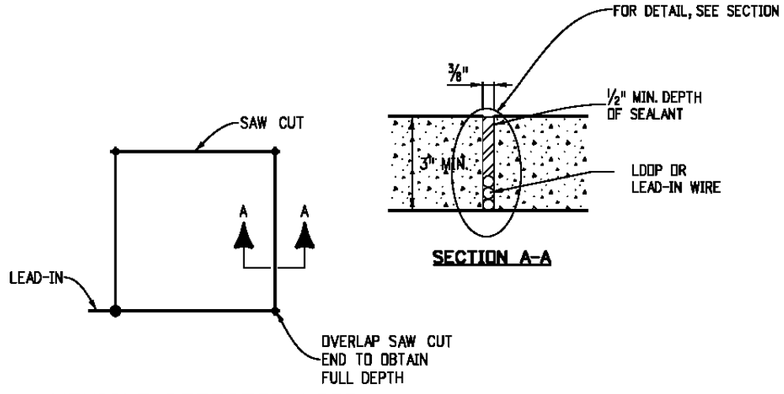


DUAL LOOP

STANDARD LOOP - WIRING AND CONNECTION TABLE

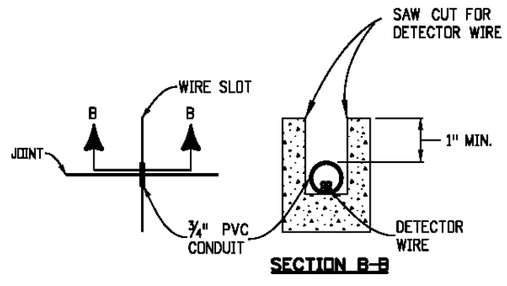
NO. OF LOOPS	WIDTH OF LOOP (FEET)									
	6	8	10	12	14	16	18	20	24-36	40+
1	4	3	3	3	3	3	3	3	2	2
2	3S	3S	3S	3P	2S	2S	2S	2S	2S	2P
3	3S	3S	2S	2S	3SP	3SP	3SP	3SP	2SP	2P
4	3SP	3SP	3SP	2SP	3SP	3SP	3SP	2SP	2SP	2SP

TURNS PER LOOP AND TYPE CONNECTION
(S = SERIES, P = PARALLEL)



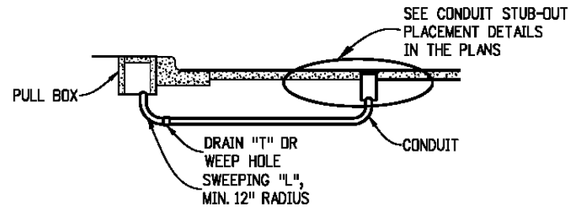
VEHICLE DETECTOR LOOP SAW CUT DETAILS

(FOR USE WITH VINYL TUBING ENCASED LOOP DETECTOR WIRE)



DETECTOR WIRE ACROSS BRIDGE JOINTS

DUAL LOOPS SHALL BE OF THE SIZE SHOWN UNLESS OTHERWISE ON THE PLANS.



LOOP DETECTOR LEAD-IN

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TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS

Issued By: Traffic & Safety Engineering Branch July 31, 2019

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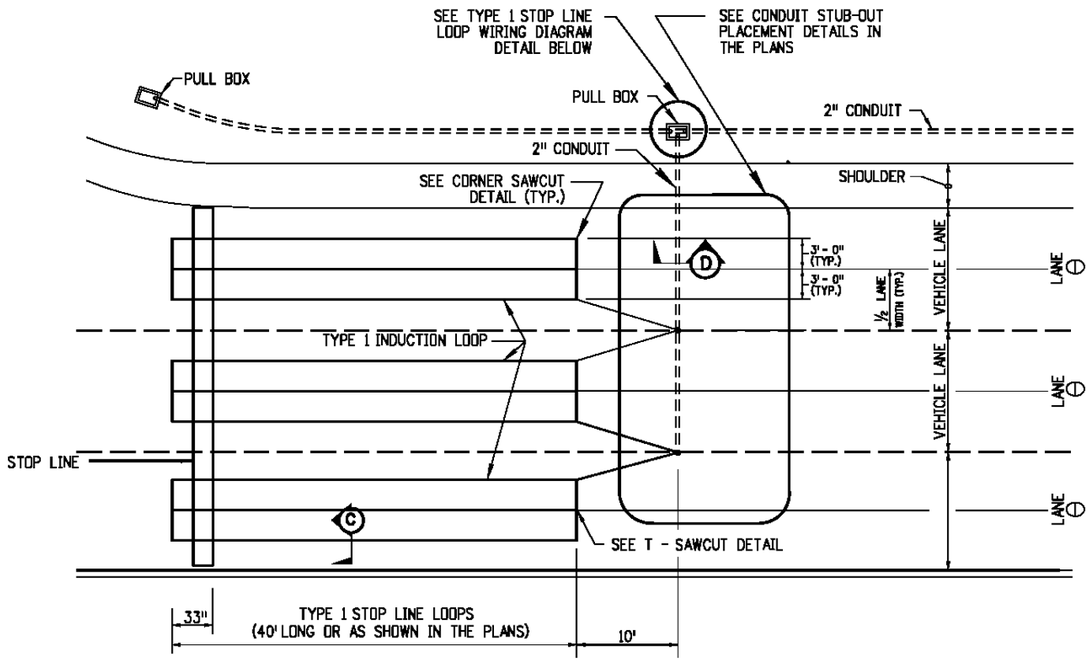
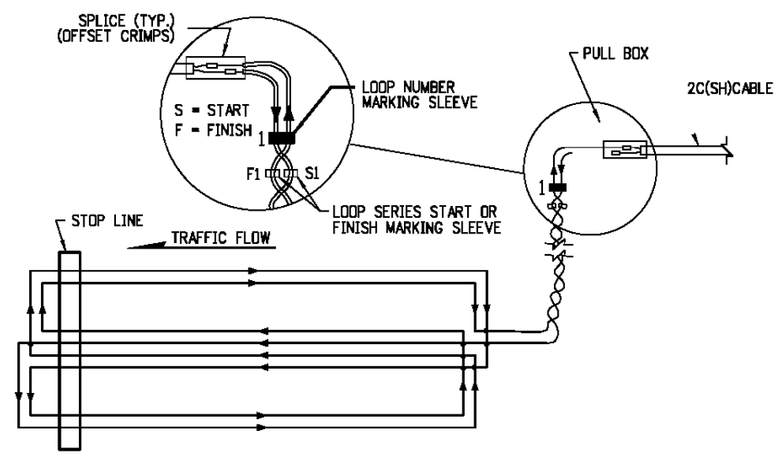
TYPE 1 INDUCTION LOOP



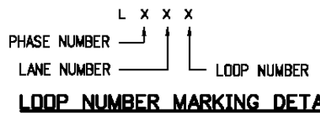
TYPE 1 STOP LINE LOOPS - PLAN VIEW

NOTES

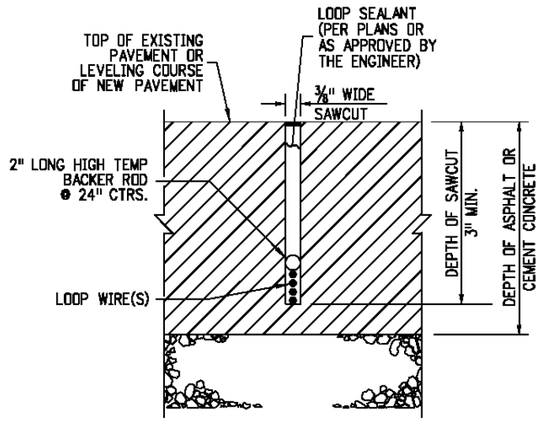
1. TWIST LEAD-IN CABLES ALL THE WAY TO PULL BOX.
2. SPLICE LEAD-IN IN FIRST PULL BOX ON SIDE OF THE ROADWAY.



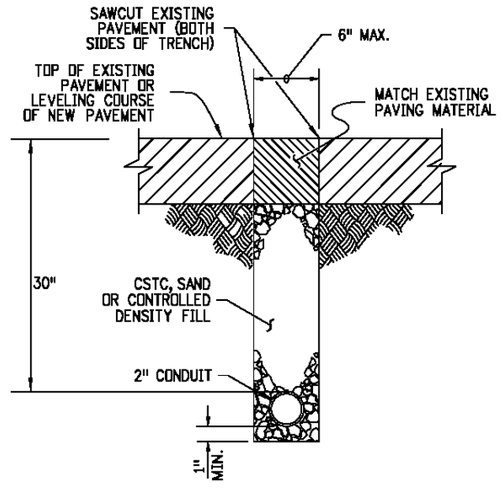
TYPE 1 STOP LINE LOOP WIRING DIAGRAM



LOOP NUMBER MARKING DETAIL



SECTION C-C



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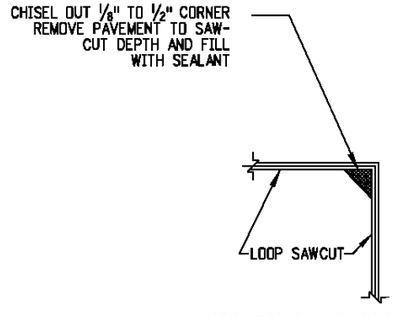
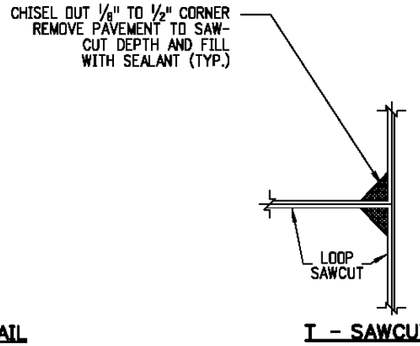


CORNER SAWCUT DETAIL



T - SAWCUT DETAIL

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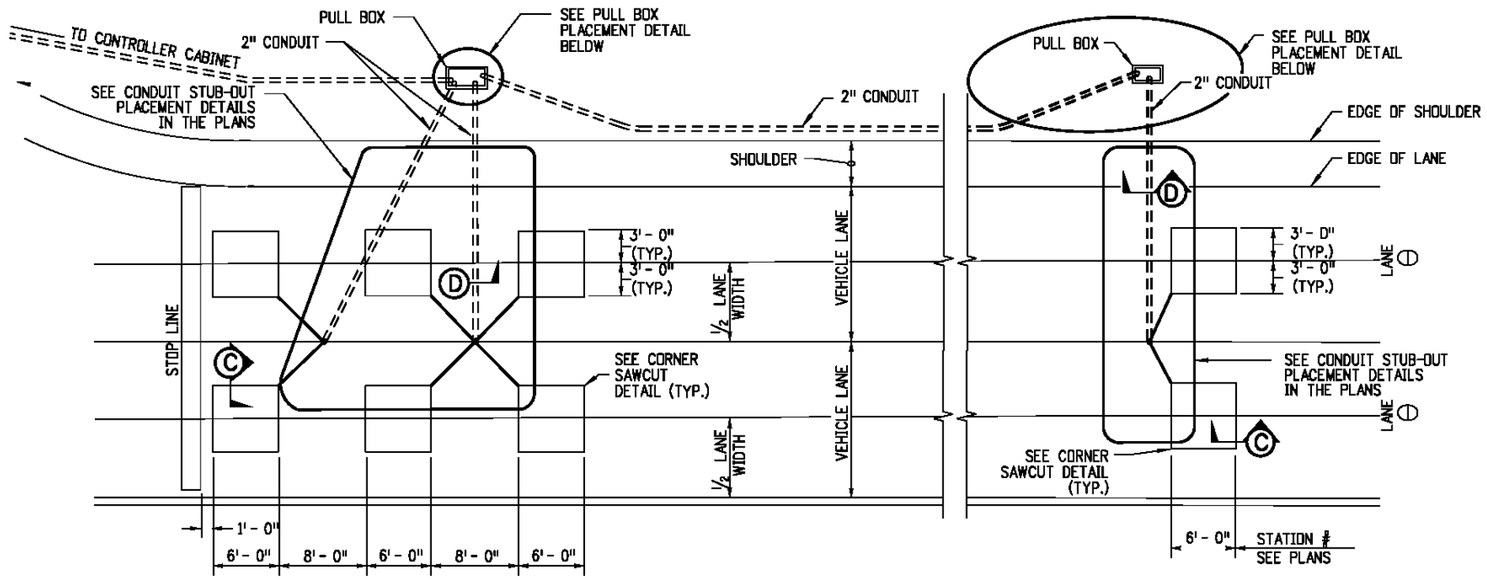
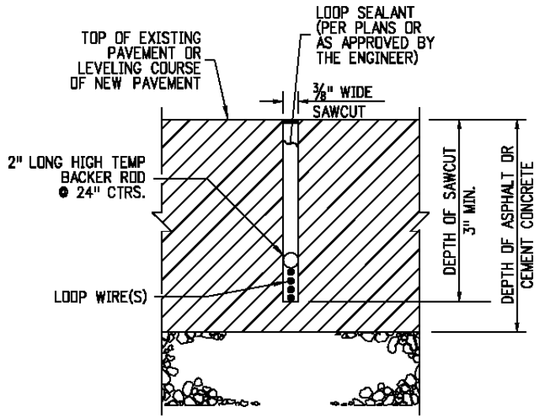


TYPE 2 STOP LINE LOOPS

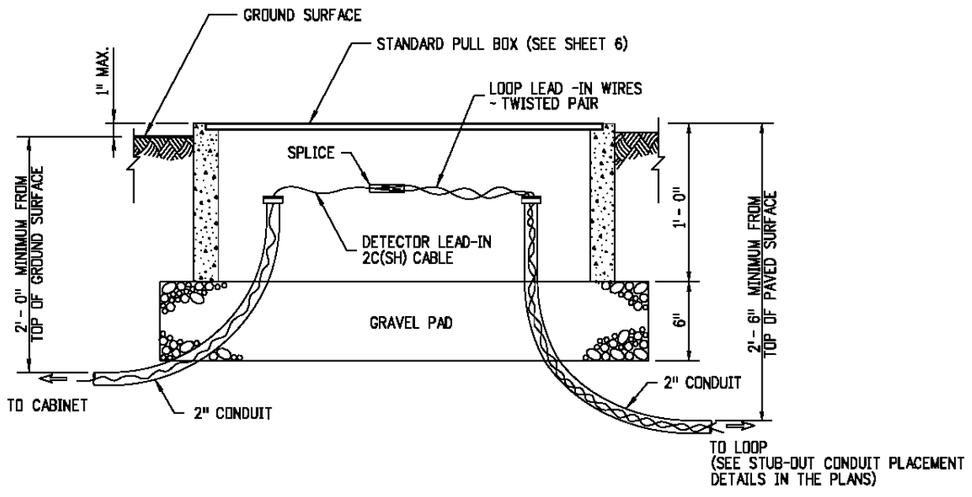
TYPE 2 ADVANCE LOOPS

NOTES

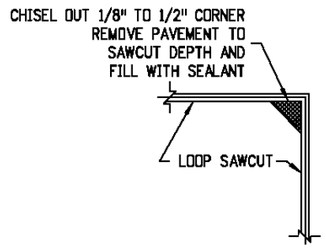
1. ALL OF THE LOOP LEAD-IN WIRES SHALL RETURN TO THE PULL BOX.



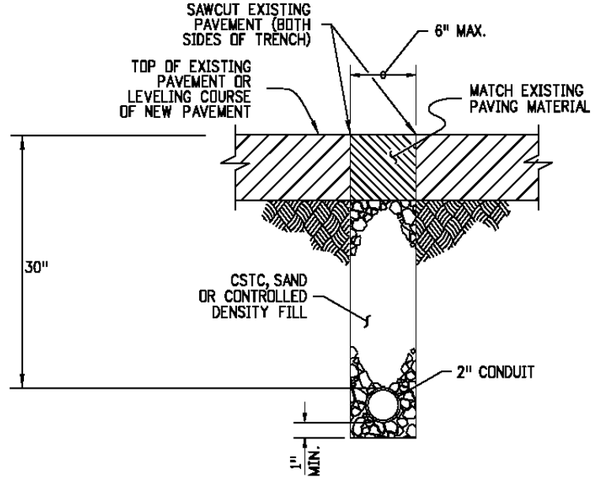
SECTION C-C



PULL BOX PLACEMENT DETAIL



CORNER SAWCUT DETAIL



SECTION D-D

TYPE 2 INDUCTION LOOPS (FOR CONVENTIONAL HIGHWAYS)

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TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS	STANDARD PLAN NO.
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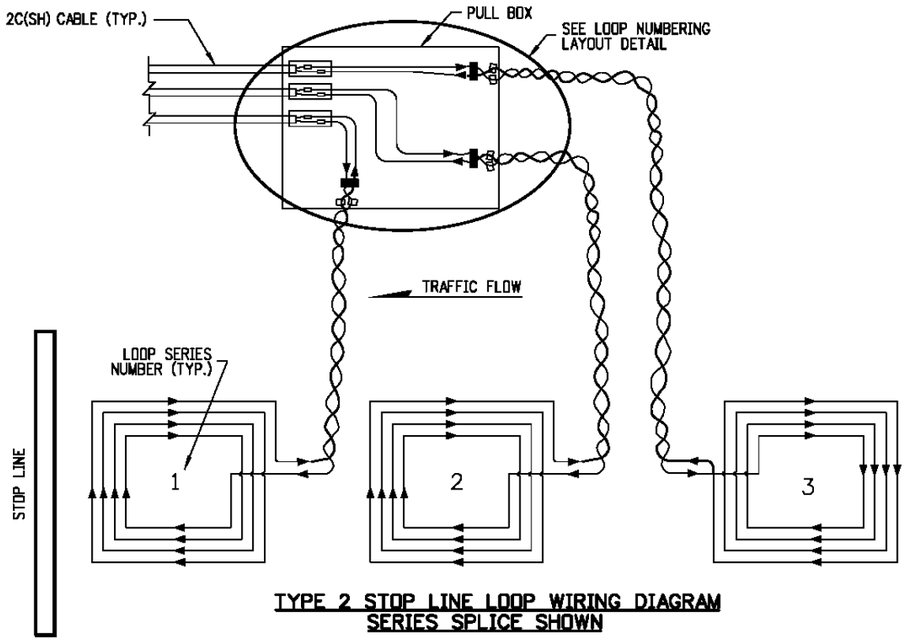
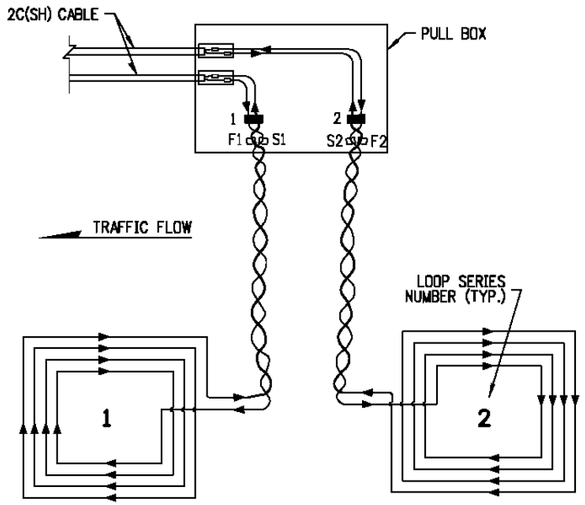
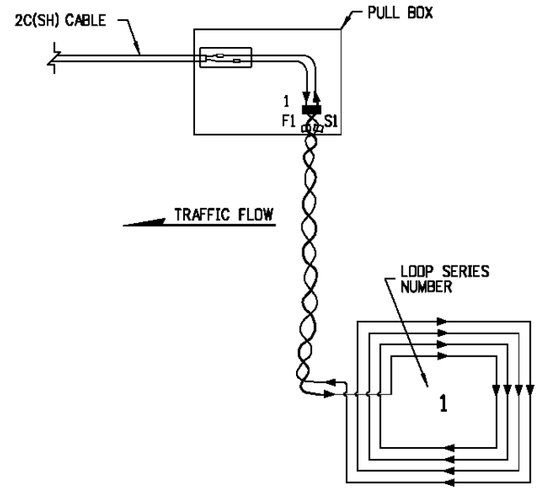


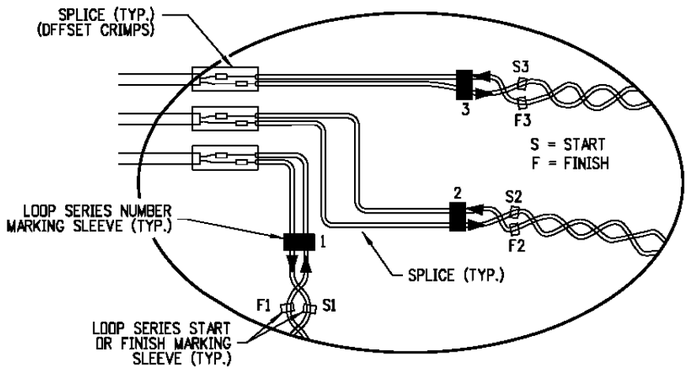
TYPE 2 STOP LINE LOOP WIRING DIAGRAM
SERIES SPLICE SHOWN



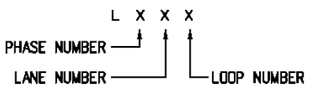
TYPE 2 SAMPLING LOOP WIRING DIAGRAM
SERIES SPLICE SHOWN



TYPE 2 ADVANCE LOOP WIRING DIAGRAM



LOOP NUMBERING LAYOUT DETAIL



LOOP NUMBER MARKING DETAIL

NOTES

1. FOR WIRING AND CONDUIT LAYOUT, SEE CONDUIT STUB-OUT PLACEMENT DETAIL IN PLANS.
2. SPLICE LEAD-IN IN FIRST PULL BOX ON THE SIDE OF THE ROADWAY.

TYPE 2 INDUCTION LOOP

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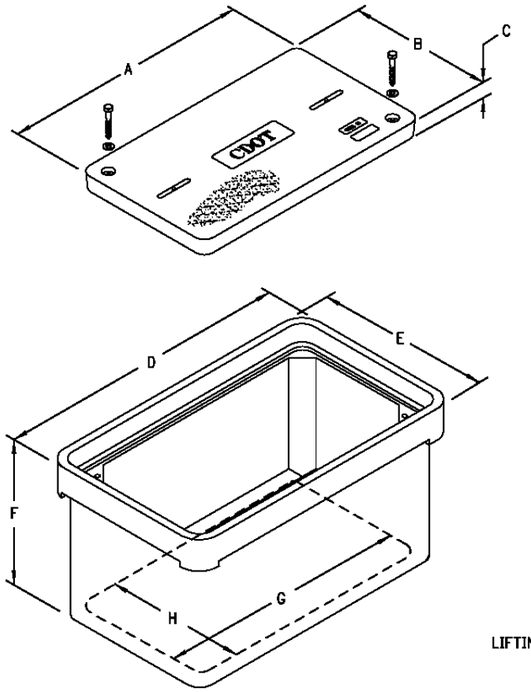
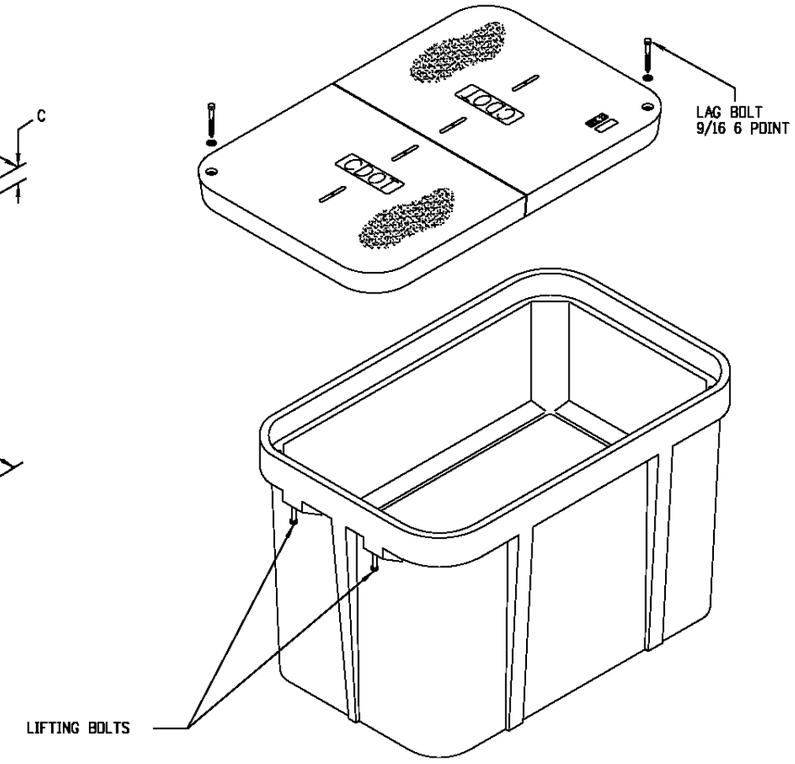


TYPE 1, 2, and 3



TYPES 4 AND 5

NOTES

1. PULL BOXES, PULL BOX COVERS AND EXTENSIONS SHALL BE MADE OF FIBERGLASS REINFORCED POLYMER CONCRETE. PULL BOXES SHALL BE VERIFIED BY A 3RD PARTY NATIONALLY-RECOGNIZED INDEPENDENT TESTING LABORATORY AS MEETING ALL TEST PROVISIONS OF THE LATEST ANSI/SCTE 77 SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY, TIER 22 RATING. CERTIFICATION DOCUMENTS SHALL BE SUBMITTED WITH MATERIAL SUBMITTALS. THE PULL BOX SHALL HAVE A DETACHABLE COVER WITH A SKID-RESISTANT SURFACE AND HAVE THE WORDS "CDOT TRAFFIC" OR "CDOT COMM" CAST INTO THE SURFACE. PAINTING THE WORDS SHALL NOT BE ACCEPTED. MARKINGS SHOWING THE TIER 22 RATING MUST BE LABELED OR STENCILED ON THE INSIDE AND OUTSIDE OF THE BOX AND ON THE UNDER SIDE OF THE COVER. THE COVER SHALL BE ATTACHED TO THE PULL BOX BODY BY MEANS OF A MINIMUM ⅜ - 7 UNIFIED NATIONAL COURSE (UNC) STAINLESS STEEL PENTA HEAD BOLTS AND SHALL HAVE TWO LIFT SLOTS TO AID IN THE REMOVAL OF THE LID.
2. PULL SLOTS SHALL BE RATED FOR A MINIMUM PULL OUT OF 3,000 POUNDS.
3. TYPE 4 AND 5 PULL BOX COVERS SHALL BE A TWO-PIECE COVER.
4. MAGNESIUM CHLORIDE TESTS SHOULD BE PERFORMED IN ACCORDANCE WITH THE LATEST ANSI/SCTE 77 SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY, TIER 22 RATING.
5. PULL BOXES SHALL HAVE A CONCRETE APRON SLOPED AWAY FROM PULL BOX OPENING. THE COST OF THE CONCRETE APRON SHALL BE PAID FOR AS PART OF THE PULL BOX ITEM.

TABLE OF DIMENSIONS (MINIMUMS)

TYPE	DESCRIPTION	DIMENSIONS (IN.)							
		A	B	C	D	E	F	G	H
1	PULL BOX - (11" X 18" X 12")	18⅛	11¼	1¾	20¼	13⅜	12	15¾	8⅞
2	PULL BOX - (13" X 24" X 12")	23¼	13¾	2	25	15½	12	19¼	9¾
3	PULL BOX - (17" X 30" X 12")	30½	17½	2	32¼	19¼	12	26½	13½
4	PULL BOX - (24" X 36" X 24")	35⅝	24	3	37⅝	26	24	30⅛	18½
5	PULL BOX - (30" X 48" X 24")	47⅝	30	3	49⅝	32⅛	24	45⅝	28⅛

STANDARD PULL BOXES

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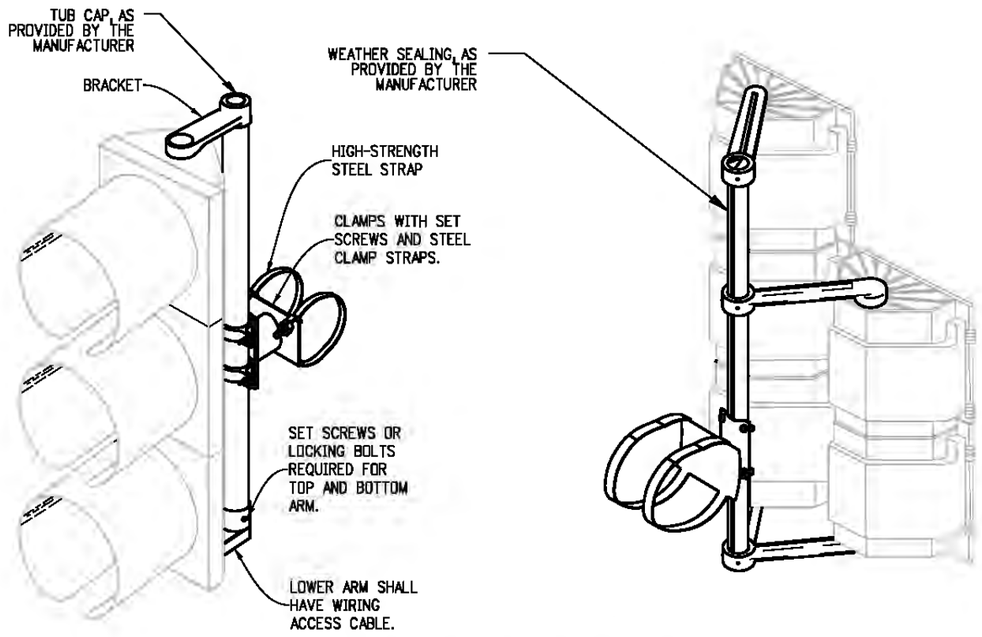
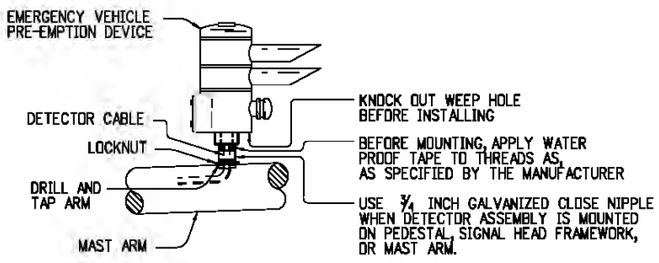


ASTRO-TYPE MOUNTING BRACKET



EMERGENCY VEHICLE PRE-EMPTION DEVICE MOUNTING DETAIL

NOTES

1. SIGNAL HEAD CONFIGURATIONS SHALL BE AS SHOWN ON PLANS.
2. INSTALL MOUNTING BRACKETS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
3. USE ASTRO-TYPE MOUNTING BRACKETS FOR MOUNTING EXCEPT FOR LIGHTED SIGNS, ON MAST ARMS, SEE STANDARD PLAN 5-614-20, USING ¾ INCH WIDE BANDING.
4. LIGHTED STREET NAME SIGNS SHALL UTILIZE ASTRO-TYPE DESIGNED FOR THE REQUIRED DESIGN LOADING AND BE FREE-SWINGING TO REDUCE WIND LOADING EFFECT.
5. THE GASKET INSIDE THE TOP HEAD MOUNT SHOULD BE INSIDE THE HEAD.
6. THE INSIDE OF THE VISOR IS TO BE POWDER COATED BLACK MOUNTING BRACKETS OVERHEAD SIGNS.
7. CABLE SUPPORT BRACKET AND SAFETY CABLE FROM MAST ARM TO HEAD SHALL BE PROVIDED.

MAST-ARM MOUNTING BRACKETS

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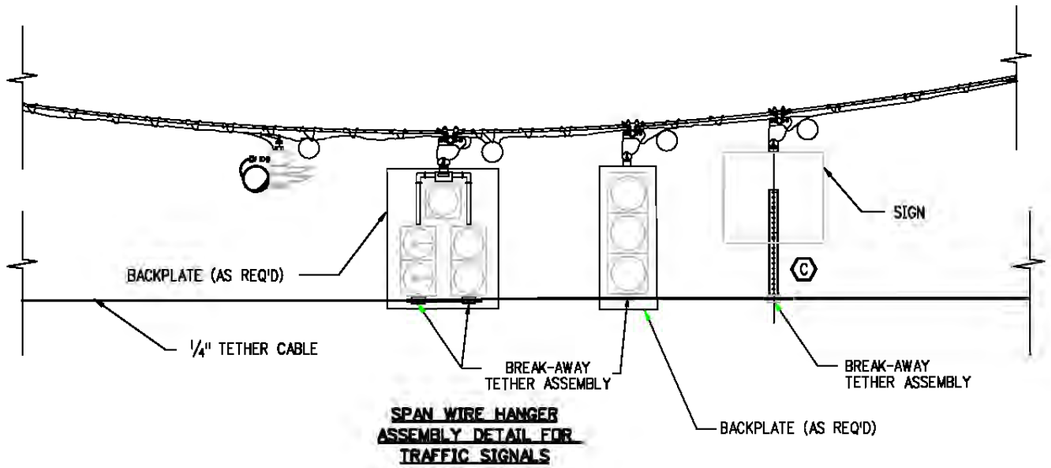
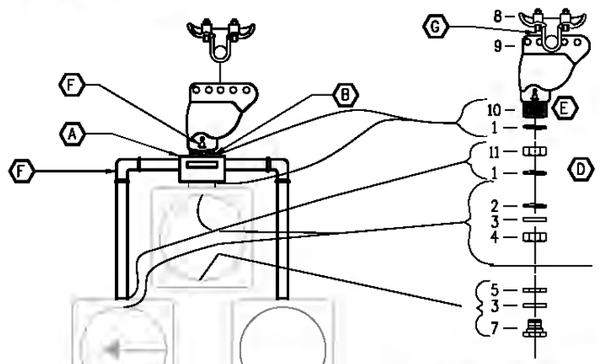
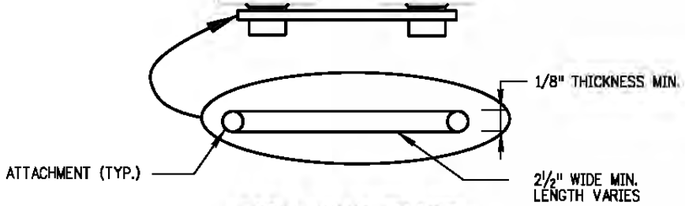


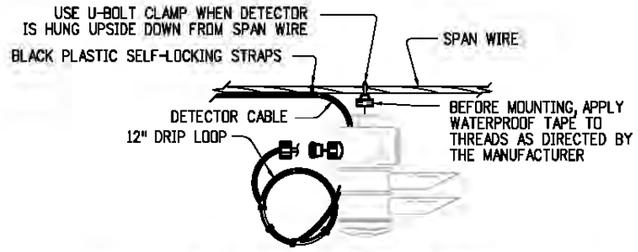
SPAN WIRE HANGER ASSEMBLY DETAIL FOR TRAFFIC SIGNALS



DIRECT ASSEMBLY DETAIL



BREAK-AWAY TETHER ASSEMBLY DETAIL



SPAN WIRE MOUNTING DETAIL FOR EMERGENCY VEHICLE PRE-EMPTION DEVICE

LEGEND

(A) TOP BRACKET CENTER HUB SHALL BE MINIMUM 3.5 INCH SQUARE AND 3 INCHES DEEP OR EQUAL VOLUME. SERRATION CAST IN HUB, TABBED OR SERRATED LOCKRING, OPENINGS SHALL BE THREADED.

(B) NIPPLE LENGTH DEPENDS ON SPAN HEIGHT.

(C) SIGN SUPPORT BRACKET ASSEMBLY SHALL UTILIZE SPAN WIRE CLAMP ADJUSTMENT AND BE ADJUSTABLE TO ACCOMMODATE VARYING SPAN HEIGHT. TETHER SUPPORT BAR SHALL BE ATTACHED TO THE SIGN USING A MINIMUM OF TWO (2), 5/16 INCH BOLTS, SPACED A MINIMUM OF 6 INCHES APART.

(D) APPLY SILICONE CAULK BETWEEN OR AROUND SERRATED LOCKRING AND HOUSING.

(E) ALL THREAD

(F) SETSCREW (SQUARE OR ALLEN) ON ALL FITTINGS.

(G) INSTALL STAINLESS STEEL WASHER ON THE INSIDE OF THE COTTER PIN. COTTER PIN AND WASHER SHALL BE ON THE SIDE OF THE HANGER AWAY FROM THE SIGNAL CABLES.

ITEM DESCRIPTION FOR ASSEMBLY DETAIL

1 - SERRATED TABBED LOCKRING, ALUMINUM (TAB MUST BE FULL WIDTH OF RING)

2 - GASKET, NEOPRENE

3 - WASHER, STEEL

4 - HEX NUT, STEEL

5 - CONDUIT LOCKNUT, STEEL

6 - BUSHING PLASTIC (ONLY IN JUNCTION BOX OR NIPPLED DOWN TRAFFIC SIGNAL)

7 - OCTAGONAL CAP, ALUMINUM

8 - SPAN WIRE CLAMP

9 - WIRE OUTLET BODY, STEEL, FEMALE ONLY

10 - NIPPLE, STEEL

11 - HEX NUT, STEEL, NOTCHED WITH SETSCREWS

SPAN WIRE MOUNTING BRACKET DETAILS

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TRAFFIC LOOP AND MISCELLANEOUS SIGNAL DETAILS

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