COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Matthew G. Bevin
Governor

Greg Thomas
Secretary

May 14, 2018

CALL NO. 110
CONTRACT ID NO. 184210
ADDENDUM # 1

Subject: WOLFE COUNTY, HSIP 0151 (089)
Letting May 25, 2018

(1)Revised – General Summary – Page 49 of 95
(2)Added – Traffic Loop Summary – Page 51(a) of 95
(2)Revised – Proposal Bid Items – Pages 95-95(a) of 95
(3)Added – Special Note – Pages 1-10 of 10

Proposal revisions are available at http://transportation.ky.gov/Construction-Procurement/.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

Rachel Mills

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mr
Enclosures

GENERAL SUMMARY

ITEM CODE	ITEM	UNIT					PROJECT TOTAL
981	SLOTTED DRAIN PIPE-15 IN	L.F.					120
1875	STANDARD HEADER CURB	L.F.					400
2555	CONCRETE CLASS B	CU. YD.					25
2562	TEMPORARY SIGNS	S.F.					350
2569	DEMOBILIZATION	L.S.					1
2650	MAINTAIN & CONTROL TRAFFIC (3)	L.S.					1
2671	PORTABLE CHANGEABLE MESSAGE SIGN	EACH					4
2676	MOBILIZATION FOR MILL & TEXT	L.S.					1
2726	STAKING (5)	L.S.					1
2775	ARROW PANEL	EACH					3
3262	CLEAN PIPE STRUCTURE (6)	EACH					1
4792	CONDUIT- 1 IN (2)	L.F.					50
4811	ELECTRICAL JUNCTION BOX TYPE B (2)	EACH					3
4820	TRENCHING AND BACKFILLING (2)	L.F.					60
4850	CABLE-NO. 14/1 PAIR (2)	L.F.					1705
4953	TEMP. RELOCATION OF SIGNAL HEAD (1)	EACH					10
6549	PAVE STRIPING - TEMP REM TAPE - B	L.F.					350
6550	PAVE STRIPING - TEMP REM TYPE - W	L.F.					350
6551	PAVE STRIPING - TEMP REM TYPE - Y	L.F.					350
6554	PAVE STRIPING-DUR TY 1-4 IN W	L.F.					1500
6555	PAVE STRIPING-DUR TY 1-4 IN Y	L.F.					800
6568	PAVE MARKING-THERMO STOP BAR-24IN	L.F.					113
6573	PAVE MARKING-THERMO STR ARROW	EACH					18
6574	PAVE MARKING-THERMO CURV ARROW	EACH					30
6600	REMOVE PAVEMENT MARKER TYPE V	EACH					35
10020NS	FUEL ADJUSTMENT	DOLLAR					303
20453ES835	PREFORMED QUADROPOLE LOOPS (2)	L.F.					510
22664EN	WATER BLASTING EXISTING STRIPE	L.F.					2000

(1) CONTRACTOR SHALL COORDINATE AND OBTAIN APPROVAL FROM THE DISTRICT TRAFFIC ENGINEER PRIOR TO RELOCATING SIGNAL HEADS. THIS ITEM INCLUDES WORK FOR PUTTING THE SIGNAL HEAD BACK TO ITS ORIGINAL POSITION.

(2) CONTRACTOR SHALL COORDINATE AND OBTAIN APPROVAL FROM THE DISTRICT TRAFFIC ENGINEER PRIOR TO INSTALLATION OF TRAFFIC LOOPS. SEE TRAFFIC LOOP SUMMARY FOR ADDITIONAL BID ITEMS.

(3) MILLING AND CONCRETE INLAY WORK SHALL BE LIMITED TO ONE LANE AT A TIME. THE CONTRACTOR SHALL COMPLETE THE CONCRETE INLAY ON THE SAME DAY AS THE MILLING OPERATION.

(4) ALL MATERIALS REMOVED (ROADWAY AND PAVEMENT) SHALL BE WASTED OFF THE PROJECT AT SITES SELECTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER, AND SHALL BE INCIDENTAL TO OTHER ITEMS OF WORK. THE CABINET IS NOT RESPONSIBLE FOR FINDING A WASTE SITE FOR EXCESS MATERIALS.

(5) SEE SPECIAL NOTE FOR STAKING

(6) PIPE LOCATED AT STA 111+22.95

Wolfe County
TRAFFIC LOOP SUMMARY

INTERSECTION	PREFORMED QUADRAPOLE LOOPS 20453ES835 LF	PREFORMED LOOP LEAD-IN 4894 LF	CONDUIT 1 INCH 4792 LF	PVC CONDUIT 1 1/4 INCH 24900EC LF	PVC CONDUIT 2 INCH 24901EC LF	CABLE NO. 14/1 4850 LF	JUNCTION TYPE B 4811 EA	Trenching and Backfilling 4820 LF	Loop Test 24963ED EA	NOTES
KY 15 SPUR MT PKWY	102	70	10	50		225	1	20	1	1 - 6X30 STOP BAR (left turn)
KY 15 North	306	125	30		40	1155	1	20	3	3 - 6X30 STOP BAR
KY 15 South (To Jackson)	102	30	10	20		325	1	20	1	1 - 6X30 STOP BAR (left turn)
Total	510	225	50	70	40	1705	3	60	5	

1. Quantities are for estimating purposes only. The Contractor shall field measure and inspect items to verify quantities.
2. 2 - 1 1/4 inch conduits may be used in place of 2" conduit. Field verify conduit to match existing facilities/tie-in to poles/cabinets. specifications. Only replace existing conduit if damaged.

PROPOSAL BID ITEMS

Report Date 5/14/18

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	02020		JPC PAVEMENT-6 IN/24	2,030.00	SQYD		$	
0020	02060		PCC PAVEMENT DIAMOND GRINDING	2,030.00	SQYD		$	
0030	02677		ASPHALT PAVE MILLING & TEXTURING	670.00	TON		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0040	01875		STANDARD HEADER CURB	400.00	LF		$	
0050	02555		CONCRETE-CLASS B	25.00	CUYD		$	
0060	02562		TEMPORARY SIGNS	350.00	SQFT		$	
0070	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0080	02671		PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH		$	
0090	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0100	02726		STAKING	1.00	LS		$	
0110	02775		ARROW PANEL	3.00	EACH		$	
0120	04792		CONDUIT-1 IN (REVISED: 5-14-18)	50.00	LF		$	
0130	04811		ELECTRICAL JUNCTION BOX TYPE B	3.00	EACH		$	
0140	04820		TRENCHING AND BACKFILLING (REVISED: 5-14-18)	60.00	LF		$	
0150	04850		CABLE-NO. 14/1 PAIR (REVISED: 5-14-18)	1,705.00	LF		$	
0155	04894		PREFORMED LOOP/LEAD-IN (ADDED: 5-14-18)	225.00	LF		$	
0160	04953		TEMP RELOCATION OF SIGNAL HEAD	10.00	EACH		$	
0170	06549		PAVE STRIPING-TEMP REM TAPE-B	350.00	LF		$	
0180	06550		PAVE STRIPING-TEMP REM TAPE-W	350.00	LF		$	
0190	06551		PAVE STRIPING-TEMP REM TAPE-Y	350.00	LF		$	
0200	06554		PAVE STRIPING-DUR TY 1-4 IN W	1,500.00	LF		$	
0210	06555		PAVE STRIPING-DUR TY 1-4 IN Y	800.00	LF		$	
0220	06568		PAVE MARKING-THERMO STOP BAR-24IN	113.00	LF		$	
0230	06573		PAVE MARKING-THERMO STR ARROW	18.00	EACH		$	
0240	06574		PAVE MARKING-THERMO CURV ARROW	30.00	EACH		$	
0250	06600		REMOVE PAVEMENT MARKER TYPE V	35.00	EACH		$	
0260	10020NS		FUEL ADJUSTMENT	303.00	DOLL	$1.00	$	$303.00
0270	20453ES835		PREFORMED QUADRAPOLE LOOPS (REVISED: 5-14-18)	510.00	LF		$	
0280	22664EN		WATER BLASTING EXISTING STRIPE	2,000.00	LF		$	
0282	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80 (ADDED: 5-14-18)	70.00	LF		$	
0283	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80 (ADDED: 5-14-18)	40.00	LF		$	
0285	24963ED		LOOP TEST (ADDED: 5-14-18)	5.00	EACH		$	

Section: 0003 - DRAINAGE

PROPOSAL BID ITEMS

Report Date 5/14/18

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0290	00981		SLOTTED DRAIN PIPE-15 IN	120.00	LF		$	
0300	03262		CLEAN PIPE STRUCTURE	1.00	EACH		$	

Section: 0004 - DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0310	02569		DEMOBILIZATION	1.00	LS		$	

SPECIAL NOTE FOR PREFORMED QUADRAPOLE LOOPS

1.0 DESCRIPTION. Be advised that there are existing traffic signal loop detectors within the construction limits of this project. Except as specified herein, perform all work in accordance with the Department's Standard/Supplemental Specifications, Special Provisions, Special Notes, and Standard/Sepia Drawings, current editions, and as directed by the Engineer. Article references are to the Standard Specifications. Furnish all materials, equipment, labor, and incidentals for placement of preformed quadrapole loops, preformed loops, preformed loop/lead-In, loop lead-in, conduit, junction box, wiring, and connection to the existing signal system.

1.1 PREBID REQUIREMENTS. Each Contractor submitting a bid for this work shall make a thorough inspection of the site prior to submitting his bid and shall thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a Contract is awarded. Information provided in the Plans regarding types and quantities of work is not to be taken as an accurate or complete evaluation of the materials and conditions to be encountered during construction. The bidder must make his own determinations as to the conditions encountered.

2.0 MATERIALS. Except as provided herein, provide materials according to Subsection 723.02 and Section 835. Provide for materials to be sampled and tested in accordance with the Department's Sampling Manual. Make materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in this Special Note.

2.1 Preformed Quadrapole Loops or Preformed loops. All preformed loop wire shall be 16-gauge THWN stranded copper, single conductor in a 2-4-2 configuration for Quadrapole as shown on the Quadrapole Loop detail. If it is a 6'x6' loop, the loop shall have 3 turns installed in the preformed loop. The loop shall be housed in a class A oil resistant heavy-duty reinforced rubber hose with a 250-PSI internal pressure rating. Hose for the loop assembly shall be one continuous piece. The 3/8" I.D. (5/8" O.D.) hose shall be factory assembled. Preformed loops shall be pre-wired. The loop configuration lengths shall be assembled for the specific application. Hose tee connections shall be high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing the glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. Preformed loop quadrapole loops.

Bid item 20453ES835 is used for 6'x30' loops, and bid item 20452ES835 is used for 6'x6' loops.

2.2 Preformed Loop/Lead-In. All preformed loop/lead-in (homerun) wire shall be 16-gauge THWN stranded copper, single conductor in a 2 configuration for homerun wire as shown on the quadrapole Loop detail. The homerun wire is from the junction box to the edge of the quadrapole loop. The home run shall be housed in a class A oil resistant heavy-duty reinforced rubber hose with a 250-PSI internal pressure rating. Hose for the loop and home run wire assembly shall be one continuous piece from the hose tee. The 3/8" I.D. (5/8" O.D.) hose shall be factory assembled. Homerun wires shall be pre-wired. The homerun lengths shall be assembled for the specific application. Hose tee connections shall be high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing the glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking.

2.3 Maintain and Control Traffic. See Traffic Control Plan.

2.4 Sand. Furnish natural sand meeting the requirements of Subsection 804.04.01.

2.5 Seeding. Furnish Seed Mix Type I.

2.6 Loop Saw Slot and Fill. Furnish loop sealant, backer rod, and non-shrink grout according to the Saw Slot Detail. Use if sawing into existing pavement. Usually, the preformed loops will be laid on the ground under the final concrete inlay.

2.7 Junction Boxes. Furnish junction box type B, #57 aggregate, and geotextile filter type IV according to junction box detail.

2.8 Cable No. 14/1 pair. Furnish cable that is specified in Section 835. Cable shall be ran splice free. This shall include splice kits to connect to the preformed loop/lead-in (homerun).

2.9 Conduit. Furnish and install appropriate conduit from transitions to the roadway, junction boxes and poles. See details below.

3.0 CONSTRUCTION. Except as specified herein, install and test Preformed Quadrapole Loops in accordance with Section 723 and the drawings.

3.1 Testing. The Contractor shall test all loops and cable no 14/1 pair (lead-in) according to Subsection 723.03.17 before and after concrete inlay construction. The Contractor may have to separate the loop from the lead-in to perform this test. If the loop/lead-in meets the requirement in Section 723 at the controller cabinet, the loop/lead-in shall not be replaced. If existing loops do not meet the requirements in Subsection 723.03.17, the loops shall be replaced. Replacement loops may be installed either before or after the milling process.

The Contractor shall verify that loops (both existing and replacement loops) meet the requirements per Subsection 723.03.17 before the final concrete inlay is laid. If loops do not meet the conditions of Subsection 723.03.17, the Contractor shall replace them. If replacement loops have to be reinstalled, the costs of reinstallation shall be incidental loop to the concrete inlay bid item. The Contractor shall re-splice loops to the lead-in with the proper splice as noted in the spec book.

3.2 Coordination. Notify the Engineer in writing, two (2) weeks prior to beginning any work. The Engineer will contact the District Traffic Engineer to coordinate the Department's operations with the Contractor's work. The electrical Contractor shall coordinate with the general Contractor and inspector to ensure the preformed loops are located and installed prior to placing the concrete inlays.

3.3 Connection. The Contractor shall schedule all signal loop installation to ensure the new loops are connected to the lead-in and operational within 5 calendar days of the old loops being damaged and/or disconnected. This requirement includes damage caused by any work activity associated with the project. If the new signal loops are not functioning as intended following 5 calendar days, the Department may assess Liquidated Damages at a rate of $500 per calendar day per signal location until the loops are operating at pre-construction conditions. All liquidated damages will be applied cumulatively.

3.4 Maintain and Control Traffic. See Traffic Control Plan.

3.5 Concrete inlays. The electrical Contractor shall coordinate with the concrete Contractor and the resident engineer to get preformed loops installed in a timely matter. The Contractor may have to use 1" PVC conduit in sections of the concrete inlay for transition from lane to lane so that the preformed loop/lead-in can be connected to the preformed loop. The 1" PVC conduit shall be incidental to the project. The Contractor may have to use the preformed loop to maintain detection prior to placement of the concrete inlay. The preformed loop may be attached to the top pavement as recommended by the manufacturer.

3.6 Milling. On projects involving milling and texturing of the existing pavement, install preformed loops and/or preformed loop/lead-in in the existing pavement before or after performing the milling and texturing. After milling, the remnant contents of the existing saw slot (grout, loop wires, backer rod, and/or loop sealant) may not be flush with the top of the milled portion of the surface. In such cases, clear the saw slot of loose remnant contents and refill the saw slot with natural sand. Obtain the Engineer's approval of the stabilized saw slot prior to resurfacing. The Department will not measure for separate payment clearing and stabilizing the saw slot and shall consider this work incidental to milling.

3.7 **Loop Saw Slot and Fill.** This will only be used if installed in existing concrete or in asphalt. The following is a typical step by step procedure for the installation of a loop.

1) Carefully mark the slot to be cut, perpendicular to the flow of traffic and centered in the lane.
2) Make each saw-cut 3/4-inch wide and at a depth such that the top of the backer rod is a minimum of 4 inches below the surface of asphalt/concrete pavement.
3) Drill a 1½ inch core hole at each corner and use a chisel to smooth corners to prevent sharp bends in the wire.
4) Clean ALL foreign and loose matter out of the slots and drilled cores and within 1 foot on all sides of the slots using a high pressure washer.
5) Completely dry the slots and drilled cores and within 1 foot on all sides of the slots.
6) Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a 1½ inch hole on a 45º angle to the conduit adjacent to the roadway. There will be one for each homerun.
7) Closely inspect all cuts, cores, and slots for jagged edges or protrusions prior to the placement of the wire. All jagged edges and protrusions shall be ground or re-cut and cleaned again.
8) Place the preformed loop and homerun splice-free from the termination point (cabinet or junction box) to the preformed loop.
9) Push the preformed loop and homerun into the saw slot with a blunt object such as a wooden stick. Make sure that the preformed loop and homerun is pushed fully to the bottom of the saw slot. Screwdrivers shall not be used.
10) Install duct sealant to a minimum of 1 inch deep into the cored 1½ inch hole.
11) Apply loop sealant from the bottom up and fully encapsulate the preformed loop and homerun in the saw slot. The preformed loop and homerun should not be able to move when the sealant has set.
12) Cover the encapsulated preformed loop and homerun with a continuous layer of backer rod along the entire loop and home run saw slots such that no voids are present between the loop sealant and backer rod.

13) Finish filling the saw cut with non-shrinkable grout per manufacturer's instructions. Alleviate all air pockets and refill low spaces. There shall be no concave portion to the grout in the saw slot. Any excess grout shall be cleaned from the roadway to alleviate tracking.
14) Clean up the site and dispose of all waste off the project.
15) Ensure that the grout has completely cured prior to subjecting the loop to traffic. Curing time varies with temperature and humidity.

3.8 Final Dressing, Clean Up, and Seeding. After all work is completed, clean work sites and all disturbed areas. Dispose of all waste and debris off the right of way at sites obtained by the Contractor at no additional cost to the Department. Sow all disturbed earthen areas with Seed Mix Type I.

3.9 Removal: The Contractor shall remove all existing junction boxes, wire from spans/poles/junction boxes/conduits, and conduits. The removal will be incidental to the project.

3.10 Property/roadway Damage. The Contractor shall be responsible for all damage to public and/or private property resulting from the work. Upon completion of the work, restore all disturbed highway features and private property in like kind design and materials at no additional cost to the Department.

3.11 Right-of-Way Limits. The Department has not established exact limits of Right-of-Way. Limit work activities to obvious Right-of-Way and work areas secured by the Department through Consent and Release of the adjacent property owners. Contractor is responsible for all encroachments onto private lands.

3.12 Utility Clearance. Work around and do not disturb existing utilities. The Department does not anticipate any utility impacts for loop installation. If utilities are impacted, work with associated utility companies to resolve issues.

3.13 Control. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to permit other contractors, state forces, public utility companies, and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with each other's work will be reduced to a minimum. The Contractor agrees to make no claims against the Department for additional compensation due to delays or other conditions created by the operations of such other parties. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the work in general harmony and in a satisfactory manner, and the Engineer's decision shall be final and binding upon the Contractor.

3.14 Bore and Jack. Except for situations outlined in 3.15, bore and jack will be used if the conduit is under pavement of any kind. The conduit shall be 2" rigid steel conduit under all pavement areas except for the area that the loop transition from the saw slot. The installation of conduit should follow the below detail.

3.15 Open Cut Roadway. With permission of the Engineer, roadway may be open cut if the conduit is under pavement. The conduit shall be 2" rigid steel conduit under all pavement areas except for the area that the loop transition from the saw slot. The installation of conduit should follow requirements per Section 723.

4.0 MEASUREMENT. See Subsection 723.04 for bid item notes. Additional bid items include the following:

4.1 Preformed loop quadrapole loops. Use bid note for loop wire in subsection 723.04.05.

4.2 Preformed loops. Use bid note for loop wire in subsection 723.04.05.

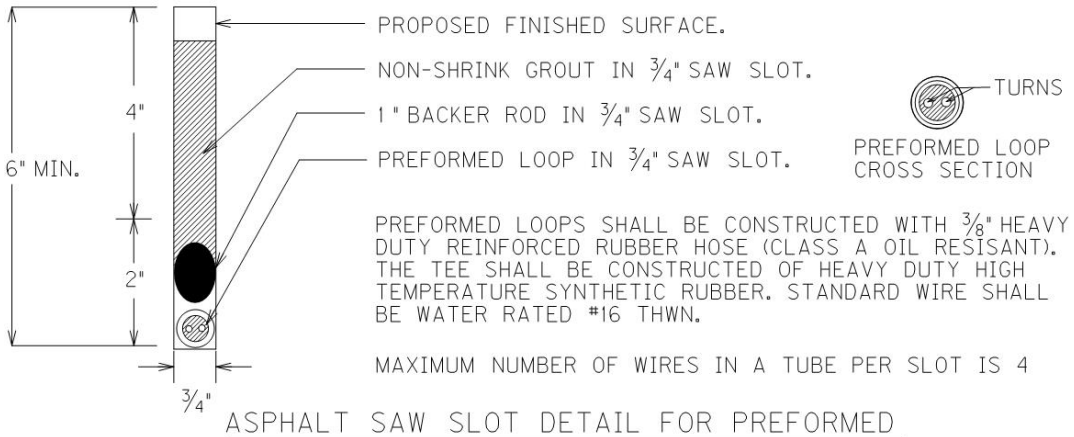
4.3 Preformed loop/lead-in. Use bid note for loop wire in subsection 723.04.05.

4.4 Loop Test. The Department will measure the quantity as each individual unit loop tested. The Department will not measure disconnection, reconnection, traffic control, re-splicing per specifications, before and after testing per note above, and any associated hardware for payment and will consider them incidental to this item of work.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities of listed items according to Subsection 723.05 in addition to the following:

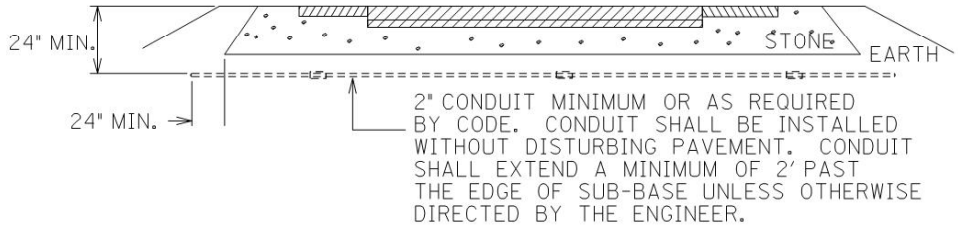
Code	Pay Item	Pay Unit
Conduit 1"	4792	Linear Foot
PVC Conduit – 1 ¼ inch – sch 80	24900EC	Linear Foot
PVC Conduit – 2 inch – sch 80	24901EC	Linear Foot
Conduit 2"	4795	Linear Foot
Preformed loop quadrapole loops	20453ES835	Linear Foot
Preformed loops	20452ES835	Linear Foot
Preformed loop/lead-in	4894	Linear Foot
Electrical Junction boxes type B	4811	Each
Loop Test	24963ED	Each
Trenching and Backfilling	4820	Linear Foot
Loop Wire	4830	Linear Foot
Cable-No. 14/1 Pair	4850	Linear Foot[1]
Loop Saw Slot and Fill	4895	Linear Foot[1]
Bore and Jack Conduit	21543EN	Linear Foot[3]
Open Cut Roadway	4821	Linear Foot[3]

The Department will consider payment as full compensation for all work required under these notes and the Standard Specifications.

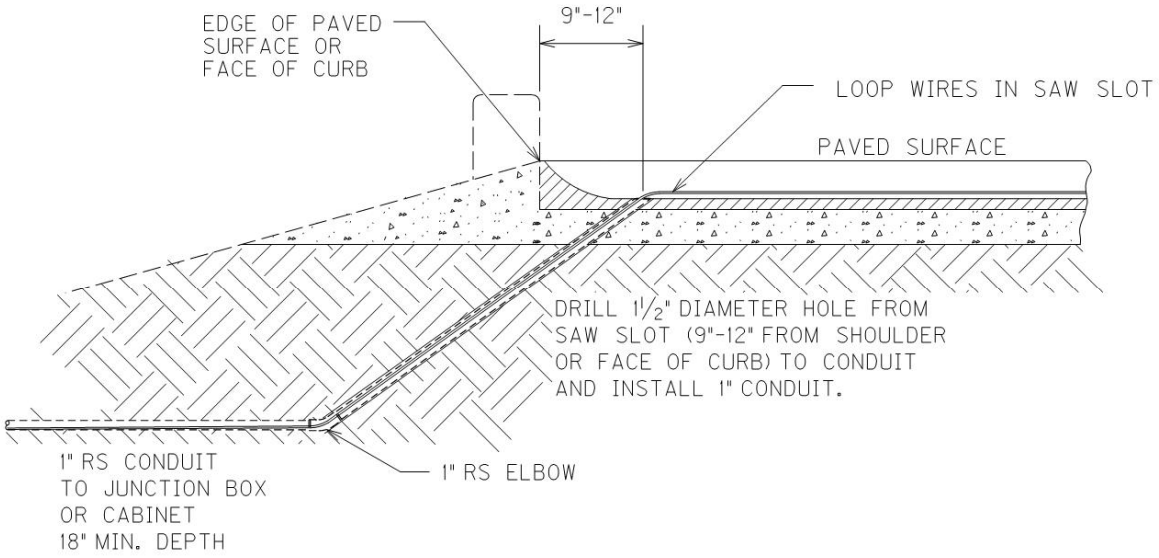


ASPHALT SAW SLOT DETAIL FOR PREFORMED

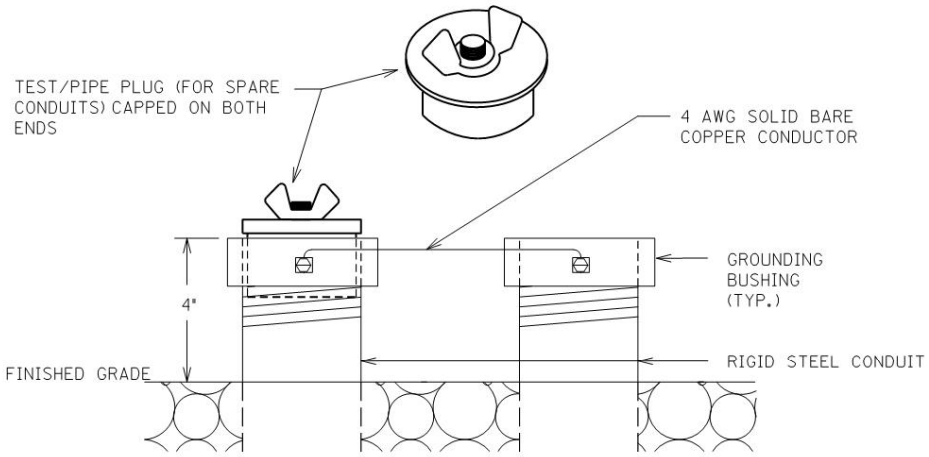
Use detail for concrete application
if concrete is four inches or less



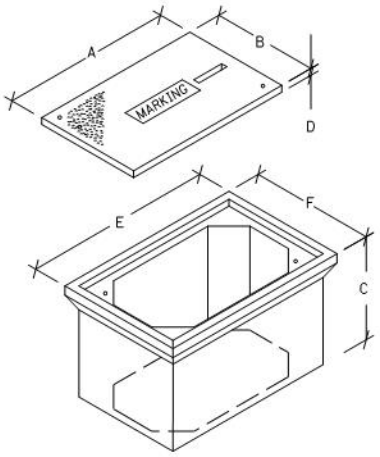
CONDUIT UNDER EXISTING PAVEMENT DETAIL



SAW SLOT EDGE OF PAVEMENT TRANSITION



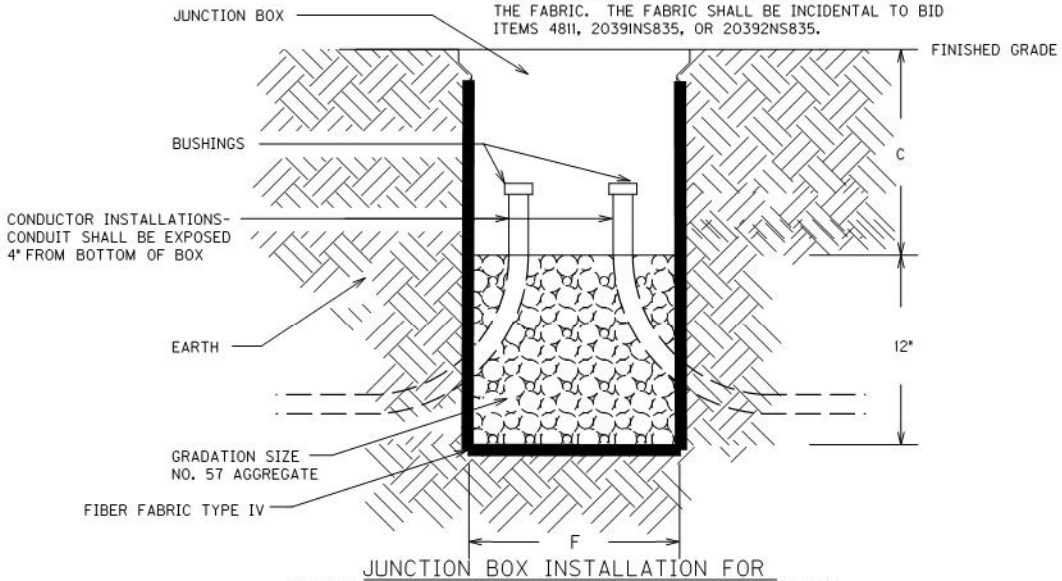
TEST/PIPE PLUG(FOR SPARE CONDUITS) AND GROUNDING DETAIL



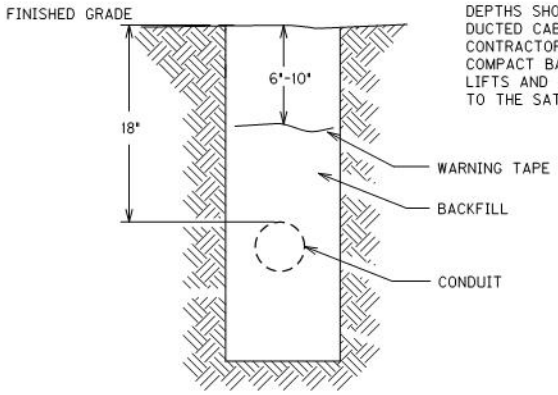
JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D	E	F
TYPE A	23"	14"	27"	2"	25"	15"
TYPE B	18"	11"	12"	1¾" *	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

* MINIMUM
NOTE: STACKABLE BOXES ARE PERMITTED

BEFORE THE INSTALLATION OF THE #57 AGGREGATE AND JUNCTION BOX, THE CONTRACTOR SHALL INSTALL GEOTEXTILE FILTER FABRIC TYPE IV IN THE HOLE. THE FABRIC SHALL EXTEND TO JUST BELOW THE LIP OF THE JUNCTION BOX AND SHALL BE CONTINUOUSLY ADHERED TO THE EXTERIOR OF THE BOX WITH ADHESIVE. ANY LOCATIONS WHERE CONDUITS ENTER THE BOX, THE FABRIC SHALL BE 'X CUT' ONLY AS MUCH AS NECESSARY TO ALLOW PASSAGE OF EACH INDIVIDUAL CONDUIT THROUGH THE FABRIC. THE FABRIC SHALL BE INCIDENTAL TO BID ITEMS 4811, 2039INS835, OR 20392NS835.



JUNCTION BOX INSTALLATION FOR
CONVENTIONAL LIGHTING OR TRAFFIC SIGNALS



DEPTHS SHOWN FOR CONDUIT AND DUCTED CABLE ARE MINIMUMS. CONTRACTOR SHALL PLACE AND COMPACT BACKFILL IN 9" MAXIMUM LIFTS AND RETORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER.

CONDUIT AND WARNING TAPE TRENCH

Preformed Quadrapole Loops
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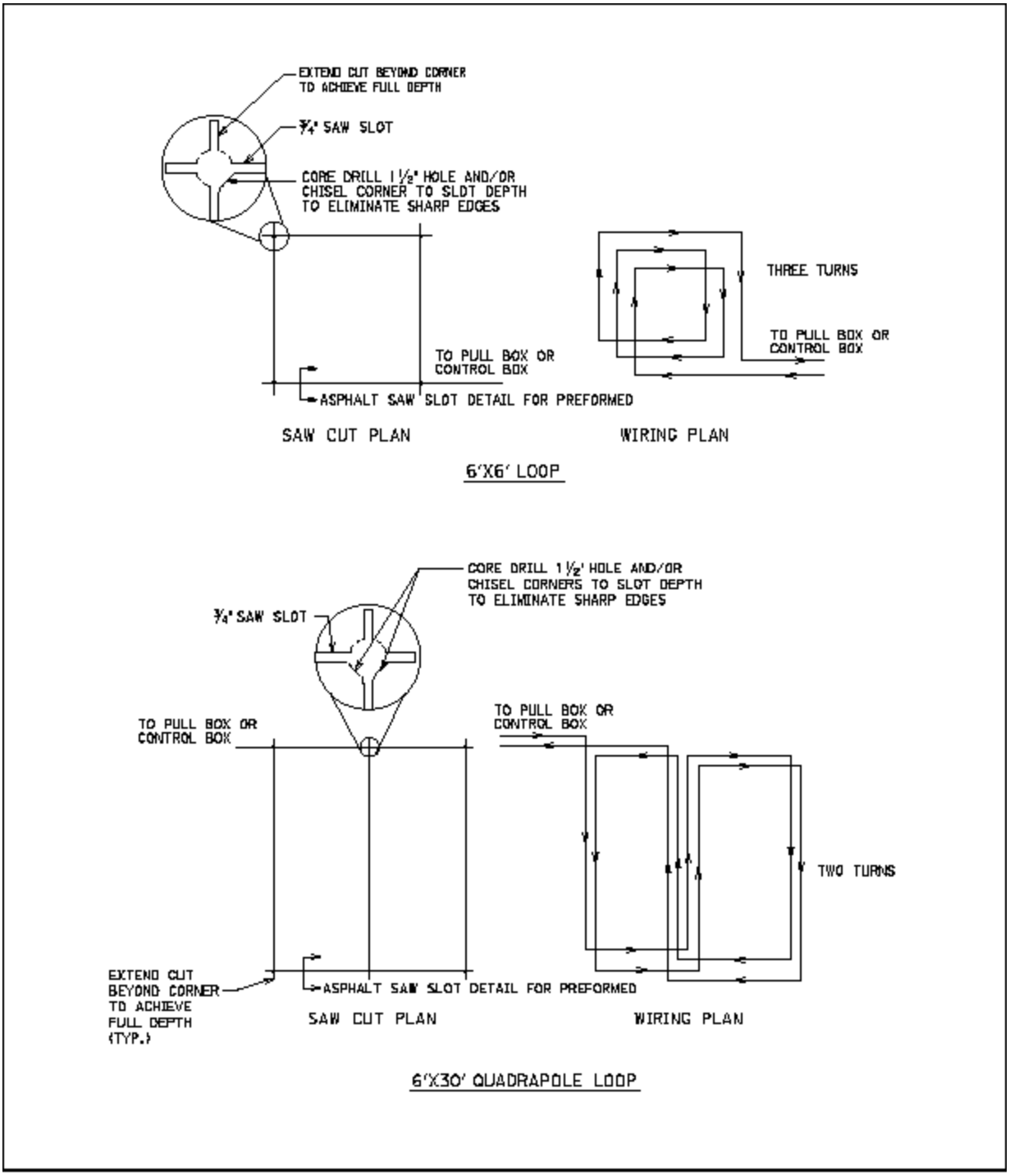
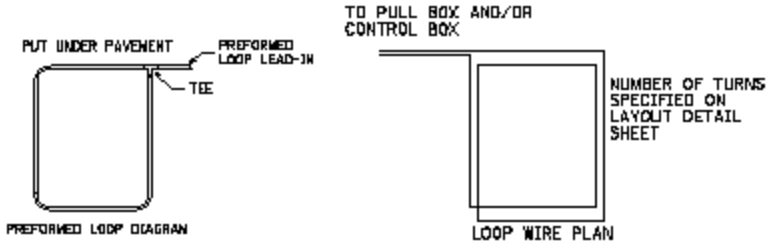


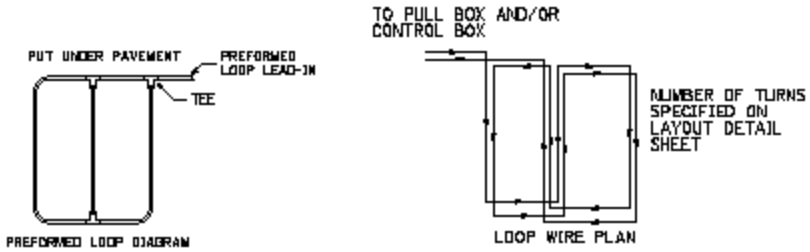
PREFORMED LOOP LEAD-IN SHALL BE TWISTED WITH THREE TO FIVE TURNS PER FOOT UNTIL TERMINATED AT FIELD CONNECTIONS IN THE CABINET OR CONNECTED TO SHIELDED CABLE.



STANDARD PREFORMED LOOP

*ALL LOOPS THAT ARE NOT QUADRAPOLES SHALL BE STANDARD AND HAVE 3 TURNS

PREFORMED LOOP LEAD-IN SHALL BE TWISTED WITH THREE TO FIVE TURNS PER FOOT UNTIL TERMINATED AT FIELD CONNECTIONS IN THE CABINET OR CONNECTED TO SHIELDED CABLE.



QUADRAPOLE PREFORMED LOOP

*ALL 6'x30' LOOPS SHALL BE QUADRAPOLE AND SHALL HAVE A 2-4-2 CONFIGURATION