Andy Beshear
GOVERNOR

TRANSPORTATION CABINET
200 Mero Street
Frankfort, Kentucky 40601

Jim Gray
SECRETARY

August 8, 2025

CALL NO. 202
CONTRACT ID NO. 251022
ADDENDUM # 2

Subject: Rockcastle County, 102GR25D022
Letting August 21, 2025

(1) Revised - Material Summary - Pages 321-329 of 390
(2) Revised - Proposal Bid Items - Pages 383-390A of 390
(3) Added - Special Notes - Pages 1-38 of 38

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, P.E.
Director
Division of Construction Procurement

RM:mr
Enclosures

MATERIAL SUMMARY

CONTRACT ID: 251022 **102GR25D022** **DE10200252522**

US-25 ADDRESS SAFETY MOBILITY AND CONGESTION WITH ACCESS MANAGEMENT ALONG US-25 FROM THE US-25/US-461 INTERSECTION TO I-75 GRADE DRAIN & SURFACE WITH BRIDGE, A DISTANCE OF .77 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1105	00003	CRUSHED STONE BASE	14,888.00	TON
1110	00020	TRAFFIC BOUND BASE	500.00	TON
1115	00190	LEVELING & WEDGING PG64-22	2,226.00	TON
1120	00210	CL4 ASPH BASE 1.50D PG76-22	827.00	TON
1125	00214	CL3 ASPH BASE 1.00D PG64-22	7,842.00	TON
1130	00219	CL4 ASPH BASE 1.00D PG76-22	589.00	TON
1135	00342	CL4 ASPH SURF 0.38A PG76-22	225.00	TON
1140	00388	CL3 ASPH SURF 0.38B PG64-22	4,693.00	TON
1145	02084	JPC PAVEMENT-8 IN	324.00	SQYD
1150	02101	CEM CONC ENT PAVEMENT-8 IN	2,900.00	SQYD
1155	02677	ASPHALT PAVE MILLING & TEXTURING	1,716.00	TON
1160	01000	PERFORATED PIPE-4 IN	5,670.00	LF
1165	01010	NON-PERFORATED PIPE-4 IN	315.00	LF
1170	01810	STANDARD CURB AND GUTTER	9,071.00	LF
1175	01875	STANDARD HEADER CURB	3,950.00	LF
1180	01891	ISLAND HEADER CURB TYPE 2	783.00	LF
1185	01939	MOUNTABLE MEDIAN TYPE 3	2,195.00	SQYD
1190	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	18.00	EACH
1195	01992	INSTALL TEMP CONC MED BARR	1,455.00	LF
1200	02014	BARRICADE-TYPE III	20.00	EACH
1205	02091	REMOVE PAVEMENT	3,570.00	SQYD
1210	02159	TEMP DITCH	2,665.00	LF
1215	02160	CLEAN TEMP DITCH	2,665.00	LF
1220	02230	EMBANKMENT IN PLACE	8,756.00	CUYD
1225	02242	WATER	200.00	MGAL
1230	02351	GUARDRAIL-STEEL W BEAM-S FACE	1,112.50	LF
1235	02369	GUARDRAIL END TREATMENT TYPE 2A	1.00	EACH
1240	02381	REMOVE GUARDRAIL	643.00	LF
1245	02383	REMOVE & RESET GUARDRAIL	150.00	LF
1250	02391	GUARDRAIL END TREATMENT TYPE 4A	1.00	EACH
1255	02429	RIGHT-OF-WAY MONUMENT TYPE 1	7.00	EACH
1260	02432	WITNESS POST	7.00	EACH
1265	02483	CHANNEL LINING CLASS II	1,680.00	TON
1270	02545	CLEARING AND GRUBBING - 12 ACRES	1.00	LS
1275	02562	TEMPORARY SIGNS	536.00	SQFT
1280	02585	EDGE KEY	136.00	LF
1285	02650	MAINTAIN & CONTROL TRAFFIC	1.00	LS
1290	02671	PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH
1295	02701	TEMP SILT FENCE	2,665.00	LF
1300	02703	SILT TRAP TYPE A	12.00	EACH
1305	02704	SILT TRAP TYPE B	12.00	EACH
1310	02705	SILT TRAP TYPE C	12.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1315	02706	CLEAN SILT TRAP TYPE A	12.00	EACH
1320	02707	CLEAN SILT TRAP TYPE B	12.00	EACH
1325	02708	CLEAN SILT TRAP TYPE C	12.00	EACH
1330	02720	SIDEWALK-4 IN CONCRETE	7,701.00	SQYD
1335	02726	STAKING	1.00	LS
1340	02900	INSTALL TEMP CRASH CUSHION	2.00	EACH
1345	05950	EROSION CONTROL BLANKET	2,704.00	SQYD
1350	05952	TEMP MULCH	12,072.00	SQYD
1355	05953	TEMP SEEDING AND PROTECTION	9,009.00	SQYD
1360	05963	INITIAL FERTILIZER	1.30	TON
1365	05964	MAINTENANCE FERTILIZER	0.80	TON
1370	05985	SEEDING AND PROTECTION	18,018.00	SQYD
1375	05990	SODDING	4,236.00	SQYD
1380	06511	PAVE STRIPING-TEMP PAINT-6 IN	51,131.00	LF
1385	06530	PAVE STRIPING REMOVAL-4 IN	55,100.00	LF
1390	06542	PAVE STRIPING-THERMO-6 IN W	17,500.00	LF
1395	06543	PAVE STRIPING-THERMO-6 IN Y	12,800.00	LF
1400	06568	PAVE MARKING-THERMO STOP BAR-24IN	125.00	LF
1405	06569	PAVE MARKING-THERMO CROSS-HATCH	1,225.00	SQFT
1410	06573	PAVE MARKING-THERMO STR ARROW	4.00	EACH
1415	06574	PAVE MARKING-THERMO CURV ARROW	25.00	EACH
1420	06575	PAVE MARKING-THERMO COMB ARROW	8.00	EACH
1425	06610	INLAID PAVEMENT MARKER-MW	148.00	EACH
1430	06612	INLAID PAVEMENT MARKER-BY	173.00	EACH
1435	08900	CRASH CUSHION TY 6 CLASS B TL2	2.00	EACH
1440	10020NS	FUEL ADJUSTMENT	20,885.00	DOLL
1445	10030NS	ASPHALT ADJUSTMENT	80,887.00	DOLL
1450	20471ES509	TEMP CONC MED BARRIER	1,470.00	LF
1455	20550ND	SAWCUT PAVEMENT	7,600.00	LF
1460	21289ED	LONGITUDINAL EDGE KEY	7,600.00	LF
1465	23607EC	PAVE MARK THERMO-LANE REDUCTION ARROW	1.00	EACH
1470	24423EC	TEMPORARY SHORING	1.00	LS
1475	24683ED	PAVE MARKING-THERMO DOTTED LANE EXTEN	310.00	LF
1480	24918ES601	CONCRETE-CLASS A	2,982.00	SQYD
1485	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
1490	00441	ENTRANCE PIPE-18 IN	73.00	LF
1495	00443	ENTRANCE PIPE-24 IN	62.00	LF
1500	00521	STORM SEWER PIPE-15 IN	73.00	LF
1505	00522	STORM SEWER PIPE-18 IN	4,081.00	LF
1510	00524	STORM SEWER PIPE-24 IN	1,160.00	LF
1515	00526	STORM SEWER PIPE-30 IN	1,631.00	LF
1520	00528	STORM SEWER PIPE-36 IN	342.00	LF
1525	00529	STORM SEWER PIPE-42 IN	505.00	LF
1530	00530	STORM SEWER PIPE-48 IN	439.00	LF
1535	00534	STORM SEWER PIPE-72 IN	89.00	LF
1540	01208	PIPE CULVERT HEADWALL-24 IN	2.00	EACH
1545	01212	PIPE CULVERT HEADWALL-36 IN	1.00	EACH
1550	01216	PIPE CULVERT HEADWALL-48 IN	1.00	EACH
1555	01371	METAL END SECTION TY 1-18 IN	2.00	EACH
1560	01373	METAL END SECTION TY 1-24 IN	2.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1565	01391	METAL END SECTION TY 3-18 IN	1.00	EACH
1570	01393	METAL END SECTION TY 3-24 IN	1.00	EACH
1575	01450	S & F BOX INLET-OUTLET-18 IN	1.00	EACH
1580	01456	CURB BOX INLET TYPE A	34.00	EACH
1585	01490	DROP BOX INLET TYPE 1	12.00	EACH
1590	01496	DROP BOX INLET TYPE 3	4.00	EACH
1595	01538	DROP BOX INLET TYPE 7	3.00	EACH
1600	01544	DROP BOX INLET TYPE 11	1.00	EACH
1605	01559	DROP BOX INLET TYPE 13G	9.00	EACH
1610	01568	DROP BOX INLET TYPE 13S	1.00	EACH
1615	01642	JUNCTION BOX-18 IN	3.00	EACH
1620	01643	JUNCTION BOX-24 IN	1.00	EACH
1625	01646	JUNCTION BOX-42 IN	2.00	EACH
1630	01649	JUNCTION BOX-60 IN	1.00	EACH
1635	01650	JUNCTION BOX - 72 IN	2.00	EACH
1640	01756	MANHOLE TYPE A	1.00	EACH
1645	01767	MANHOLE TYPE C	3.00	EACH
1650	02607	FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	11,211.00	SQYD
1655	24025EC	PIPE CULVERT HEADWALL-72 IN	1.00	EACH
1660	06406	SBM ALUM SHEET SIGNS .080 IN	1,032.00	SQFT
1665	06407	SBM ALUM SHEET SIGNS .125 IN	488.00	SQFT
1670	06410	STEEL POST TYPE 1	1,955.00	LF
1675	06490	CLASS A CONCRETE FOR SIGNS	13.75	CUYD
1680	21596ND	GMSS TYPE D	55.00	EACH
1685	24265EC	INSTALL SIGN POST REFLECTORS	22.00	EACH
1690	24631EC	BARCODE SIGN INVENTORY	270.00	EACH
1695	04811	ELECTRICAL JUNCTION BOX TYPE B	4.00	EACH
1700	04820	TRENCHING AND BACKFILLING	1,040.00	LF
1705	04844	CABLE-NO. 14/5C	2,760.00	LF
1710	04845	CABLE-NO. 14/7C	900.00	LF
1715	04886	MESSENGER-15400 LB	610.00	LF
1720	04932	INSTALL STEEL STRAIN POLE	6.00	EACH
1725	06406	SBM ALUM SHEET SIGNS .080 IN	71.70	SQFT
1730	06472	INSTALL SPAN MOUNTED SIGN	2.00	EACH
1735	20188NS835	INSTALL LED SIGNAL-3 SECTION	4.00	EACH
1740	20189NS835	INSTALL LED SIGNAL-5 SECTION	1.00	EACH
1745	20408ES835	INSTALL LED BEACON-12 IN	2.00	EACH
1750	21659NN	RELOCATE SIGNAL HEAD	8.00	EACH
1755	21743NN	INSTALL PEDESTRIAN DETECTOR	6.00	EACH
1760	23068NN	REMOVE & REINSTALL COORDINATING UNIT	1.00	EACH
1765	23157EN	TRAFFIC SIGNAL POLE BASE	31.00	CUYD
1770	23222EC	INSTALL SIGNAL PEDESTAL	6.00	EACH
1775	24525EC	ADVANCE WARNING FLASHER	1.00	EACH
1780	24528ED	TETHER WIRE	110.00	LF
1785	24601EC	INSTALL - INSTALL RRFB	6.00	EACH
1790	24900EC	PVC CONDUIT-1 1/4 IN-SCHEDULE 80	1,050.00	LF
1795	24901EC	PVC CONDUIT-2 IN-SCHEDULE 80	50.00	LF
1800	24908EC	INSTALL SIGNAL CONTROLLER-TY ATC	1.00	EACH
1805	24955ED	REMOVE SIGNAL EQUIPMENT	2.00	EACH
1810	26119EC	INSTALL RADAR PRESENCE DETECTOR TYPE A	3.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1815	04701	POLE 40 FT MTG HT	18.00	EACH
1820	04725	BRACKET 15 FT	18.00	EACH
1825	04740	POLE BASE	43.00	EACH
1830	04750	TRANSFORMER BASE	18.00	EACH
1835	04780	FUSED CONNECTOR KIT	36.00	EACH
1840	04793	CONDUIT-1 1/4 IN	160.00	LF
1845	04797	CONDUIT-3 IN	1,325.00	LF
1850	04800	MARKER	8.00	EACH
1855	04820	TRENCHING AND BACKFILLING	6,935.00	LF
1860	04821	OPEN CUT ROADWAY	545.00	LF
1865	04832	WIRE-NO. 12	3,550.00	LF
1870	04860	CABLE-NO. 8/3C DUCTED	2,250.00	LF
1875	04940	REMOVE LIGHTING	1.00	LS
1880	20391NS835	ELECTRICAL JUNCTION BOX TYPE A	22.00	EACH
1885	23778EC	WIRE-NO. 10	10,950.00	LF
1890	24589ED	LED LUMINAIRE	21.00	EACH
1895	24851EC	CABLE-NO. 10/3C DUCTED	10,385.00	LF
1900	24900EC	PVC CONDUIT-1 1/4 IN-SCHEDULE 80	7,240.00	LF
1905	02568	MOBILIZATION	1.00	LS
1910	02569	DEMOBILIZATION	1.00	LS
1915	14003	W CAP EXISTING MAIN	12.00	EACH
1920	14014	W ENCASEMENT STEEL OPEN CUT RANGE 3	75.00	LF
1925	14017	W ENCASEMENT STEEL OPEN CUT RANGE 6	260.00	LF
1930	14019	W FIRE HYDRANT ASSEMBLY	3.00	EACH
1935	14023	W FLUSHING ASSEMBLY	4.00	EACH
1940	14028	W METER 3/4 INCH	1.00	EACH
1945	14036	W PIPE DUCTILE IRON 06 INCH	305.00	LF
1950	14042	W PIPE DUCTILE IRON 24 INCH	95.00	LF
1955	14053	W PIPE DCTL IRON RSTRND JOINT 24 IN	1,020.00	LF
1960	14053	W PIPE DCTL IRON RSTRND JOINT 24 IN - w/Nitrile Gaskets	72.00	LF
1965	14059	W PIPE PVC 06 INCH	145.00	LF
1970	14077	W SERV PE/PLST LONG SIDE 1 IN	1.00	EACH
1975	14085	W SERV PE/PLST SHORT SIDE 3/4 IN	3.00	EACH
1980	14089	W TAPPING SLEEVE AND VALVE SIZE 1	5.00	EACH
1985	14090	W TAPPING SLEEVE AND VALVE SIZE 2	6.00	EACH
1990	14105	W VALVE 06 INCH	1.00	EACH
1995	15022	S ENCASEMENT STEEL OPEN CUT RANGE 3	90.00	LF
2000	15023	S ENCASEMENT STEEL OPEN CUT RANGE 4	110.00	LF
2005	15060	S FORCE MAIN PVC 06 INCH	545.00	LF
2010	15062	S FORCE MAIN PVC 10 INCH	428.00	LF
2015	15069	S FORCE MAIN TAP SLEEVE/VALVE RNG 1	2.00	EACH
2020	15070	S FORCE MAIN TAP SLEEVE/VALVE RNG 2	2.00	EACH
2025	15089	S LATERAL SHORT SIDE 04 INCH	2.00	EACH
2030	15092	S MANHOLE	18.00	EACH
2035	15093	S MANHOLE ABANDON/REMOVE	6.00	EACH
2040	15094	S MANHOLE ADJUST TO GRADE	5.00	EACH
2045	15097	S MANHOLE RECONSTRUCT INVERT	1.00	EACH
2050	15112	S PIPE PVC 08 INCH	134.00	LF
2055	15113	S PIPE PVC 10 INCH	1,258.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
2060	15155	S CAP EXISTING MAIN - CUT AND CAP	18.00	EACH
2065	15155	S CAP EXISTING MAIN - FORCE MAIN CUT AND CAP	4.00	EACH
2070	15158	S FORCE MAIN PVC RSTRND JOINT 10 INCH	108.00	LF
2075	04793	CONDUIT-1 1/4 IN	20.00	LF
2080	04820	TRENCHING AND BACKFILLING	17.00	LF
2085	04830	LOOP WIRE	1,150.00	LF
2090	04895	LOOP SAW SLOT AND FILL	200.00	LF
2095	20360ES818	WOOD POST	1.00	EACH
2100	20468EC	ELECTRICAL JUNCTION BOX-10 X 8 X 4	1.00	EACH

CONTRACT ID: 251022 **102GR25D022** **DE10204612522**

KY-461 IMPROVE KY-461 FROM US-150 TO THE EXISTING FOUR LANE APPROACH AT US-25 GRADE & DRAIN WITH ASPHALT SURFACE, A DISTANCE OF 2.72 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0005	00003	CRUSHED STONE BASE	62,777.00	TON
0010	00020	TRAFFIC BOUND BASE	138.00	TON
0015	00100	ASPHALT SEAL AGGREGATE	288.00	TON
0020	00103	ASPHALT SEAL COAT	35.00	TON
0025	00190	LEVELING & WEDGING PG64-22	3,968.00	TON
0030	00212	CL2 ASPH BASE 1.00D PG64-22	6,150.00	TON
0035	00214	CL3 ASPH BASE 1.00D PG64-22	24,855.00	TON
0040	00301	CL2 ASPH SURF 0.38D PG64-22	2,664.00	TON
0045	00307	CL2 ASPH SURF 0.38B PG64-22	171.00	TON
0050	00356	ASPHALT MATERIAL FOR TACK	68.00	TON
0055	00388	CL3 ASPH SURF 0.38B PG64-22	9,570.00	TON
0060	02676	MOBILIZATION FOR MILL & TEXT	1.00	LS
0065	02677	ASPHALT PAVE MILLING & TEXTURING	200.00	TON
0070	00071	CRUSHED AGGREGATE SIZE NO 57	933.00	TON
0075	00078	CRUSHED AGGREGATE SIZE NO 2	11.00	TON
0080	01000	PERFORATED PIPE-4 IN	5,572.00	LF
0085	01010	NON-PERFORATED PIPE-4 IN	92.00	LF
0090	01020	PERF PIPE HEADWALL TY 1-4 IN	5.00	EACH
0095	01028	PERF PIPE HEADWALL TY 3-4 IN	1.00	EACH
0100	01032	PERF PIPE HEADWALL TY 4-4 IN	4.00	EACH
0105	01810	STANDARD CURB AND GUTTER	237.00	LF
0110	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	160.00	EACH
0115	02091	REMOVE PAVEMENT	657.00	SQYD
0120	02159	TEMP DITCH	7,210.00	LF
0125	02160	CLEAN TEMP DITCH	3,605.00	LF
0130	02200	ROADWAY EXCAVATION	422,794.00	CUYD
0135	02242	WATER	754.00	MGAL
0140	02351	GUARDRAIL-STEEL W BEAM-S FACE	12,237.50	LF
0145	02360	GUARDRAIL TERMINAL SECTION NO 1	13.00	EACH
0150	02367	GUARDRAIL END TREATMENT TYPE 1	3.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0155	02369	GUARDRAIL END TREATMENT TYPE 2A	1.00	EACH
0160	02381	REMOVE GUARDRAIL	12,862.00	LF
0165	02391	GUARDRAIL END TREATMENT TYPE 4A	5.00	EACH
0170	02469	CLEAN SINKHOLE	2.00	EACH
0175	02488	CHANNEL LINING CLASS IV	5,373.00	CUYD
0180	02545	CLEARING AND GRUBBING - 84 ACRES	1.00	LS
0185	02555	CONCRETE-CLASS B	155.60	CUYD
0190	02562	TEMPORARY SIGNS	755.00	SQFT
0195	02585	EDGE KEY	134.00	LF
0200	02603	FABRIC-GEOTEXTILE CLASS 2	5,563.00	SQYD
0205	02650	MAINTAIN & CONTROL TRAFFIC	1.00	LS
0210	02653	LANE CLOSURE	1.00	EACH
0215	02671	PORTABLE CHANGEABLE MESSAGE SIGN	7.00	EACH
0220	02696	SHOULDER RUMBLE STRIPS	24,060.00	LF
0225	02701	TEMP SILT FENCE	7,210.00	LF
0230	02703	SILT TRAP TYPE A	53.00	EACH
0235	02704	SILT TRAP TYPE B	53.00	EACH
0240	02705	SILT TRAP TYPE C	53.00	EACH
0245	02706	CLEAN SILT TRAP TYPE A	53.00	EACH
0250	02707	CLEAN SILT TRAP TYPE B	53.00	EACH
0255	02708	CLEAN SILT TRAP TYPE C	53.00	EACH
0260	02726	STAKING	1.00	LS
0265	02731	REMOVE STRUCTURE	1.00	LS
0270	02775	ARROW PANEL	2.00	EACH
0275	05950	EROSION CONTROL BLANKET	7,416.00	SQYD
0280	05952	TEMP MULCH	177,600.00	SQYD
0285	05953	TEMP SEEDING AND PROTECTION	133,200.00	SQYD
0290	05963	INITIAL FERTILIZER	6.00	TON
0295	05964	MAINTENANCE FERTILIZER	10.00	TON
0300	05985	SEEDING AND PROTECTION	187,500.00	SQYD
0305	05992	AGRICULTURAL LIMESTONE	121.00	TON
0310	06511	PAVE STRIPING-TEMP PAINT-6 IN	33,372.00	LF
0315	06542	PAVE STRIPING-THERMO-6 IN W	62,329.00	LF
0320	06543	PAVE STRIPING-THERMO-6 IN Y	45,953.00	LF
0325	06546	PAVE STRIPING-THERMO-12 IN W	1,267.00	LF
0330	06568	PAVE MARKING-THERMO STOP BAR-24IN	446.00	LF
0335	06569	PAVE MARKING-THERMO CROSS-HATCH	11,332.00	SQFT
0340	06573	PAVE MARKING-THERMO STR ARROW	29.00	EACH
0345	06574	PAVE MARKING-THERMO CURV ARROW	92.00	EACH
0350	06575	PAVE MARKING-THERMO COMB ARROW	6.00	EACH
0355	06576	PAVE MARKING-THERMO ONLY	9.00	EACH
0360	06610	INLAID PAVEMENT MARKER-MW	438.00	EACH
0365	06612	INLAID PAVEMENT MARKER-BY	415.00	EACH
0370	08150	STEEL REINFORCEMENT	1,916.00	LB
0375	10020NS	FUEL ADJUSTMENT	121,818.00	DOLL
0380	10030NS	ASPHALT ADJUSTMENT	192,298.00	DOLL
0385	20191ED	OBJECT MARKER TY 3	3.00	EACH
0390	20550ND	SAWCUT PAVEMENT	32,024.00	LF
0395	21289ED	LONGITUDINAL EDGE KEY	21,365.00	LF
0400	23274EN11F	TURF REINFORCEMENT MAT 1	833.00	SQYD

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0405	23275EN11F	TURF REINFORCEMENT MAT 2	319.00	SQYD
0410	23607EC	PAVE MARK THERMO-LANE REDUCTION ARROW	3.00	EACH
0415	23791EC	PAVE STRIPING-CHEVRON MARKINGS	1,023.00	SQFT
0420	24683ED	PAVE MARKING-THERMO DOTTED LANE EXTEN	147.00	LF
0425	25078ED	THRIE BEAM GUARDRAIL TRANSITION TL-3	4.00	EACH
0430	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
0435	00440	ENTRANCE PIPE-15 IN	160.00	LF
0440	00441	ENTRANCE PIPE-18 IN	153.00	LF
0445	00443	ENTRANCE PIPE-24 IN	152.00	LF
0450	00445	ENTRANCE PIPE-30 IN	66.00	LF
0455	00461	CULVERT PIPE-15 IN	24.00	LF
0460	00462	CULVERT PIPE-18 IN	228.00	LF
0465	00464	CULVERT PIPE-24 IN	122.00	LF
0470	00466	CULVERT PIPE-30 IN	189.00	LF
0475	00468	CULVERT PIPE-36 IN	26.00	LF
0480	00469	CULVERT PIPE-42 IN	79.00	LF
0485	00471	CULVERT PIPE-54 IN	89.00	LF
0490	00473	CULVERT PIPE-66 IN	45.00	LF
0495	00521	STORM SEWER PIPE-15 IN	113.00	LF
0500	00522	STORM SEWER PIPE-18 IN	94.00	LF
0505	01210	PIPE CULVERT HEADWALL-30 IN	1.00	EACH
0510	01214	PIPE CULVERT HEADWALL-42 IN	1.00	EACH
0515	01222	PIPE CULVERT HEADWALL-66 IN	1.00	EACH
0520	01310	REMOVE PIPE	69.00	LF
0525	01433	SLOPED BOX OUTLET TYPE 1-18 IN	4.00	EACH
0530	01453	S & F BOX INLET-OUTLET-36 IN	1.00	EACH
0535	01487	CURB BOX INLET TYPE F	1.00	EACH
0540	01490	DROP BOX INLET TYPE 1	7.00	EACH
0545	01502	DROP BOX INLET TYPE 5A	2.00	EACH
0550	01514	DROP BOX INLET TYPE 5E	1.00	EACH
0555	01642	JUNCTION BOX-18 IN	1.00	EACH
0560	01643	JUNCTION BOX-24 IN	2.00	EACH
0565	01646	JUNCTION BOX-42 IN	1.00	EACH
0570	02607	FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	4,857.00	SQYD
0575	02625	REMOVE HEADWALL	15.00	EACH
0580	15007	S CIPP LINER 24 INCH	170.00	LF
0585	15128	S CIPP LINER 30 INCH	160.00	LF
0590	15130	S CIPP LINER 42 INCH	309.00	LF
0595	15132	S CIPP LINER 54 INCH	423.00	LF
0600	15134	S CIPP LINER 66 INCH	361.00	LF
0605	23970NC	RESET GRATE	1.00	EACH
0610	24026EC	PIPE CULVERT HEADWALL-54 IN	3.00	EACH
0615	24575ES610	HEADWALL - CONC SLOPED AND PAVED	13.00	EACH
0620	04811	ELECTRICAL JUNCTION BOX TYPE B	5.00	EACH
0625	04820	TRENCHING AND BACKFILLING	915.00	LF
0630	04844	CABLE-NO. 14/5C	4,605.00	LF
0635	04845	CABLE-NO. 14/7C	950.00	LF
0640	04850	CABLE-NO. 14/1 PAIR	235.00	LF
0645	04886	MESSENGER-15400 LB	1,665.00	LF
0650	04932	INSTALL STEEL STRAIN POLE	14.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0655	04953	TEMP RELOCATION OF SIGNAL HEAD	68.00	EACH
0660	20188NS835	INSTALL LED SIGNAL-3 SECTION	22.00	EACH
0665	20266ES835	INSTALL LED SIGNAL- 4 SECTION	6.00	EACH
0670	20408ES835	INSTALL LED BEACON-12 IN	2.00	EACH
0675	22939ND	INSTALL LUMINAIRE POLE	2.00	EACH
0680	23157EN	TRAFFIC SIGNAL POLE BASE	74.05	CUYD
0685	23982EC	INSTALL ANTENNA	3.00	EACH
0690	24525EC	ADVANCE WARNING FLASHER	2.00	EACH
0695	24601EC	INSTALL - SCHOOL FLASHER	2.00	EACH
0700	24900EC	PVC CONDUIT-1 1/4 IN-SCHEDULE 80	890.00	LF
0705	24901EC	PVC CONDUIT-2 IN-SCHEDULE 80	95.00	LF
0710	24908EC	INSTALL SIGNAL CONTROLLER-TY ATC	3.00	EACH
0715	24955ED	REMOVE SIGNAL EQUIPMENT	3.00	EACH
0720	24955ED	REMOVE SIGNAL EQUIPMENT	3.00	EACH
0725	26119EC	INSTALL RADAR PRESENCE DETECTOR TYPE A	12.00	EACH
0730	26120EC	INSTALL RADAR ADVANCE DETECTOR TYPE B	6.00	EACH
0735	02565	OBJECT MARKER TYPE 2	4.00	EACH
0740	06406	SBM ALUM SHEET SIGNS .080 IN	284.90	SQFT
0745	06407	SBM ALUM SHEET SIGNS .125 IN	1,187.70	SQFT
0750	06411	STEEL POST TYPE 2	2,488.60	LF
0755	06412	STEEL POST MILE MARKERS	6.00	EACH
0760	06490	CLASS A CONCRETE FOR SIGNS	5.50	CUYD
0765	21596ND	GMSS TYPE D	24.00	EACH
0770	24525EC	ADVANCE WARNING FLASHER	4.00	EACH
0775	24601EC	INSTALL - SIGN PROVIDED BY OTHERS	5.00	EACH
0780	24601EC	INSTALL - SOLAR SCHOOL FLASHER ASSEMBLY	2.00	EACH
0785	24631EC	BARCODE SIGN INVENTORY	188.00	EACH
0790	24751ED	REMOVE STORE & REINSTALL - SIGN FACE	5.00	EACH
0795	04740	POLE BASE	10.00	EACH
0800	04820	TRENCHING AND BACKFILLING	1,650.00	LF
0805	20391NS835	ELECTRICAL JUNCTION BOX TYPE A	7.00	EACH
0810	21543EN	BORE AND JACK CONDUIT	350.00	LF
0815	24901EC	PVC CONDUIT-2 IN-SCHEDULE 80	2,000.00	LF
0820	02568	MOBILIZATION	1.00	LS
0825	02569	DEMOBILIZATION	1.00	LS
0830	14001	W AIR RELEASE VALVE 3/4 INCH	1.00	EACH
0835	14003	W CAP EXISTING MAIN	22.00	EACH
0840	14008	W ENCASEMENT STEEL BORED RANGE 3	460.00	LF
0845	14009	W ENCASEMENT STEEL BORED RANGE 4	285.00	LF
0850	14010	W ENCASEMENT STEEL BORED RANGE 5	485.00	LF
0855	14011	W ENCASEMENT STEEL BORED RANGE 6	255.00	LF
0860	14016	W ENCASEMENT STEEL OPEN CUT RANGE 5	120.00	LF
0865	14019	W FIRE HYDRANT ASSEMBLY	6.00	EACH
0870	14023	W FLUSHING ASSEMBLY	9.00	EACH
0875	14042	W PIPE DUCTILE IRON 24 INCH	215.00	LF
0880	14053	W PIPE DCTL IRON RSTRND JOINT 24 IN	85.00	LF
0885	14059	W PIPE PVC 06 INCH	510.00	LF
0890	14060	W PIPE PVC 08 INCH	40.00	LF
0895	14061	W PIPE PVC 10 INCH	735.00	LF
0900	14062	W PIPE PVC 12 INCH	5,395.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0905	14085	W SERV PE/PLST SHORT SIDE 3/4 IN	4.00	EACH
0910	14089	W TAPPING SLEEVE AND VALVE SIZE 1	7.00	EACH
0915	14090	W TAPPING SLEEVE AND VALVE SIZE 2	15.00	EACH
0920	14095	W TIE-IN 08 INCH	1.00	EACH
0925	14097	W TIE-IN 12 INCH	3.00	EACH
0930	14106	W VALVE 08 INCH	1.00	EACH
0935	14108	W VALVE 12 INCH	1.00	EACH
0940	14183	W PIPE PVC RSTRND JOINT 06 INCH	510.00	LF
0945	14184	W PIPE PVC RSTRND JOINT 10 INCH	315.00	LF
0950	14185	W PIPE PVC RSTRND JOINT 12 INCH	655.00	LF
0955	14186	W PIPE DUCTILE IRON 18 INCH	150.00	LF
0960	14187	W PIPE DUCTILE IRON RSTRND JOINT 18 INCH	200.00	LF
0965	15015	S ENCASEMENT STEEL BORED RANGE 2	370.00	LF
0970	15028	S FORCE MAIN AIR RLS/VAC VLV 04 IN	1.00	EACH
0975	15059	S FORCE MAIN PVC 04 INCH	3,065.00	LF
0980	15069	S FORCE MAIN TAP SLEEVE/VALVE RNG 1	2.00	EACH
0985	15073	S FORCE MAIN TIE-IN 04 INCH	1.00	EACH
0990	15084	S FORCE MAIN VALVE GATE	2.00	EACH
0995	15119	S PUMP STATION	1.00	EACH
1000	15155	S CAP EXISTING MAIN	2.00	EACH
1005	15157	S FORCE MAIN PVC RSTRND JOINT 04 INCH	395.00	LF
1010	01643	JUNCTION BOX-24 IN	4.00	EACH
1015	02231	STRUCTURE GRANULAR BACKFILL	621.70	CUYD
1020	03299	ARMORED EDGE FOR CONCRETE	191.60	LF
1025	08002	STRUCTURE EXCAV-SOLID ROCK	360.90	CUYD
1030	08003	FOUNDATION PREPARATION	1.00	LS
1035	08020	CRUSHED AGGREGATE SLOPE PROT	228.20	TON
1040	08100	CONCRETE-CLASS A	142.10	CUYD
1045	08104	CONCRETE-CLASS AA	308.00	CUYD
1050	08150	STEEL REINFORCEMENT	12,051.00	LB
1055	08151	STEEL REINFORCEMENT-EPOXY COATED	67,245.00	LB
1060	20391NS835	ELECTRICAL JUNCTION BOX TYPE A	4.00	EACH
1065	23378EC	CONCRETE SEALING	12,073.70	SQFT
1070	23981EC	PPC I-BEAM TYPE HN 42-49	924.00	LF
1075	25028ED	RAIL SYSTEM SINGLE SLOPE - 40 IN	172.40	LF
1080	02403	REMOVE CONCRETE MASONRY	27.00	CUYD
1085	08002	STRUCTURE EXCAV-SOLID ROCK	41.00	CUYD
1090	08003	FOUNDATION PREPARATION	1.00	LS
1095	08100	CONCRETE-CLASS A	143.00	CUYD
1100	08150	STEEL REINFORCEMENT	27,568.00	LB
1105	04793	CONDUIT-1 1/4 IN	50.00	LF
1110	04795	CONDUIT-2 IN	10.00	LF
1115	04820	TRENCHING AND BACKFILLING	52.00	LF
1120	04829	PIEZOELECTRIC SENSOR	4.00	EACH
1125	04830	LOOP WIRE	2,900.00	LF
1130	04895	LOOP SAW SLOT AND FILL	600.00	LF
1135	20359NN	GALVANIZED STEEL CABINET	1.00	EACH
1140	20360ES818	WOOD POST	3.00	EACH
1145	20391NS835	ELECTRICAL JUNCTION BOX TYPE A	1.00	EACH
1150	20468EC	ELECTRICAL JUNCTION BOX-10 X 8 X 4	1.00	EACH

251022

PROPOSAL BID ITEMS

Report Date 8/7/25

251022

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	77,665.00	TON		$	
0020	00020		TRAFFIC BOUND BASE	638.00	TON		$	
0030	00100		ASPHALT SEAL AGGREGATE	288.00	TON		$	
0040	00103		ASPHALT SEAL COAT	35.00	TON		$	
0050	00190		LEVELING & WEDGING PG64-22	6,194.00	TON		$	
0060	00210		CL4 ASPH BASE 1.50D PG76-22	827.00	TON		$	
0070	00212		CL2 ASPH BASE 1.00D PG64-22	6,150.00	TON		$	
0080	00214		CL3 ASPH BASE 1.00D PG64-22	32,697.00	TON		$	
0090	00219		CL4 ASPH BASE 1.00D PG76-22	589.00	TON		$	
0100	00301		CL2 ASPH SURF 0.38D PG64-22	2,664.00	TON		$	
0110	00307		CL2 ASPH SURF 0.38B PG64-22	171.00	TON		$	
0120	00342		CL4 ASPH SURF 0.38A PG76-22	225.00	TON		$	
0130	00356		ASPHALT MATERIAL FOR TACK	68.00	TON		$	
0140	00388		CL3 ASPH SURF 0.38B PG64-22	14,263.00	TON		$	
0150	02084		JPC PAVEMENT-8 IN	324.00	SQYD		$	
0160	02101		CEM CONC ENT PAVEMENT-8 IN	2,900.00	SQYD		$	
0170	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0180	02677		ASPHALT PAVE MILLING & TEXTURING	1,916.00	TON		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0190	00071		CRUSHED AGGREGATE SIZE NO 57	933.00	TON		$	
0200	00078		CRUSHED AGGREGATE SIZE NO 2	11.00	TON		$	
0210	01000		PERFORATED PIPE-4 IN	11,242.00	LF		$	
0220	01010		NON-PERFORATED PIPE-4 IN	407.00	LF		$	
0230	01020		PERF PIPE HEADWALL TY 1-4 IN	5.00	EACH		$	
0240	01028		PERF PIPE HEADWALL TY 3-4 IN	1.00	EACH		$	
0250	01032		PERF PIPE HEADWALL TY 4-4 IN	4.00	EACH		$	
0260	01810		STANDARD CURB AND GUTTER	9,308.00	LF		$	
0270	01875		STANDARD HEADER CURB	3,950.00	LF		$	
0280	01891		ISLAND HEADER CURB TYPE 2	783.00	LF		$	
0290	01939		MOUNTABLE MEDIAN TYPE 3	2,195.00	SQYD		$	
0300	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	178.00	EACH		$	
0310	01992		INSTALL TEMP CONC MED BARR	1,455.00	LF		$	
0320	02014		BARRICADE-TYPE III	20.00	EACH		$	
0330	02091		REMOVE PAVEMENT	4,227.00	SQYD		$	
0340	02159		TEMP DITCH	9,875.00	LF		$	
0350	02160		CLEAN TEMP DITCH	6,270.00	LF		$	
0360	02200		ROADWAY EXCAVATION	422,794.00	CUYD		$	
0370	02230		EMBANKMENT IN PLACE	8,756.00	CUYD		$	
0380	02242		WATER	954.00	MGAL		$	
0390	02351		GUARDRAIL-STEEL W BEAM-S FACE	13,350.00	LF		$	

PROPOSAL BID ITEMS

251022

Page 2 of 9

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0400	02360		GUARDRAIL TERMINAL SECTION NO 1	13.00	EACH		$	
0410	02367		GUARDRAIL END TREATMENT TYPE 1	3.00	EACH		$	
0420	02369		GUARDRAIL END TREATMENT TYPE 2A	2.00	EACH		$	
0430	02381		REMOVE GUARDRAIL	13,505.00	LF		$	
0440	02383		REMOVE & RESET GUARDRAIL	150.00	LF		$	
0450	02391		GUARDRAIL END TREATMENT TYPE 4A	6.00	EACH		$	
0460	02429		RIGHT-OF-WAY MONUMENT TYPE 1	7.00	EACH		$	
0470	02432		WITNESS POST	7.00	EACH		$	
0480	02469		CLEAN SINKHOLE	2.00	EACH		$	
0490	02483		CHANNEL LINING CLASS II	1,680.00	TON		$	
0500	02488		CHANNEL LINING CLASS IV	5,373.00	CUYD		$	
0510	02545		CLEARING AND GRUBBING 12 ACRES	1.00	LS		$	
0520	02545		CLEARING AND GRUBBING 84 ACRES	1.00	LS		$	
0530	02555		CONCRETE-CLASS B	155.60	CUYD		$	
0540	02562		TEMPORARY SIGNS	1,291.00	SQFT		$	
0550	02585		EDGE KEY	270.00	LF		$	
0560	02603		FABRIC-GEOTEXTILE CLASS 2	5,563.00	SQYD		$	
0570	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0580	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0590	02653		LANE CLOSURE	1.00	EACH		$	
0600	02671		PORTABLE CHANGEABLE MESSAGE SIGN	11.00	EACH		$	
0610	02696		SHOULDER RUMBLE STRIPS	24,060.00	LF		$	
0620	02701		TEMP SILT FENCE	9,875.00	LF		$	
0630	02703		SILT TRAP TYPE A	65.00	EACH		$	
0640	02704		SILT TRAP TYPE B	65.00	EACH		$	
0650	02705		SILT TRAP TYPE C	65.00	EACH		$	
0660	02706		CLEAN SILT TRAP TYPE A	65.00	EACH		$	
0670	02707		CLEAN SILT TRAP TYPE B	65.00	EACH		$	
0680	02708		CLEAN SILT TRAP TYPE C	65.00	EACH		$	
0690	02720		SIDEWALK-4 IN CONCRETE	7,701.00	SQYD		$	
0700	02726		STAKING	1.00	LS		$	
0710	02726		STAKING	1.00	LS		$	
0720	02731		REMOVE STRUCTURE	1.00	LS		$	
0730	02775		ARROW PANEL	2.00	EACH		$	
0740	02900		INSTALL TEMP CRASH CUSHION	2.00	EACH		$	
0750	05950		EROSION CONTROL BLANKET	10,120.00	SQYD		$	
0760	05952		TEMP MULCH	189,672.00	SQYD		$	
0770	05953		TEMP SEEDING AND PROTECTION	142,209.00	SQYD		$	
0780	05963		INITIAL FERTILIZER	7.30	TON		$	
0790	05964		MAINTENANCE FERTILIZER	10.80	TON		$	
0800	05985		SEEDING AND PROTECTION	205,518.00	SQYD		$	
0810	05990		SODDING	4,236.00	SQYD		$	
0820	05992		AGRICULTURAL LIMESTONE	121.00	TON		$	
0830	06511		PAVE STRIPING-TEMP PAINT-6 IN	84,503.00	LF		$	
0840	06530		PAVE STRIPING REMOVAL-4 IN	55,100.00	LF		$	
0850	06542		PAVE STRIPING-THERMO-6 IN W	79,829.00	LF		$	
0860	06543		PAVE STRIPING-THERMO-6 IN Y	58,753.00	LF		$	
0870	06546		PAVE STRIPING-THERMO-12 IN W	1,267.00	LF		$	

PROPOSAL BID ITEMS

251022

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0880	06568		PAVE MARKING-THERMO STOP BAR-24IN	571.00	LF		$	
0890	06569		PAVE MARKING-THERMO CROSS-HATCH	12,557.00	SQFT		$	
0900	06573		PAVE MARKING-THERMO STR ARROW	33.00	EACH		$	
0910	06574		PAVE MARKING-THERMO CURV ARROW	117.00	EACH		$	
0920	06575		PAVE MARKING-THERMO COMB ARROW	14.00	EACH		$	
0930	06576		PAVE MARKING-THERMO ONLY	9.00	EACH		$	
0940	06610		INLAID PAVEMENT MARKER-MW	586.00	EACH		$	
0950	06612		INLAID PAVEMENT MARKER-BY	588.00	EACH		$	
0960	08150		STEEL REINFORCEMENT	1,916.00	LB		$	
0970	08900		CRASH CUSHION TY 6 CLASS B TL2	2.00	EACH		$	
0980	10020NS		FUEL ADJUSTMENT	142,703.00	DOLL	$1.00	$	$142,703.00
0990	10030NS		ASPHALT ADJUSTMENT	273,185.00	DOLL	$1.00	$	$273,185.00
1000	20191ED		OBJECT MARKER TY 3	3.00	EACH		$	
1010	20471ES509		TEMP CONC MED BARRIER	1,470.00	LF		$	
1020	20550ND		SAWCUT PAVEMENT	39,624.00	LF		$	
1030	21289ED		LONGITUDINAL EDGE KEY	28,965.00	LF		$	
1040	23274EN11F		TURF REINFORCEMENT MAT 1	833.00	SQYD		$	
1050	23275EN11F		TURF REINFORCEMENT MAT 2	319.00	SQYD		$	
1060	23607EC		PAVE MARK THERMO-LANE REDUCTION ARROW	4.00	EACH		$	
1070	23791EC		PAVE STRIPING-CHEVRON MARKINGS	1,023.00	SQFT		$	
1080	24423EC		TEMPORARY SHORING	1.00	LS		$	
1090	24683ED		PAVE MARKING-THERMO DOTTED LANE EXTEN	457.00	LF		$	
1100	24918ES601		CONCRETE-CLASS A	2,982.00	SQYD		$	
1110	25078ED		THRIE BEAM GUARDRAIL TRANSITION TL-3	4.00	EACH		$	
1120	26248EC		ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1130	00440		ENTRANCE PIPE-15 IN	160.00	LF		$	
1140	00441		ENTRANCE PIPE-18 IN	226.00	LF		$	
1150	00443		ENTRANCE PIPE-24 IN	214.00	LF		$	
1160	00445		ENTRANCE PIPE-30 IN	66.00	LF		$	
1170	00461		CULVERT PIPE-15 IN	24.00	LF		$	
1180	00462		CULVERT PIPE-18 IN	228.00	LF		$	
1190	00464		CULVERT PIPE-24 IN	122.00	LF		$	
1200	00466		CULVERT PIPE-30 IN	189.00	LF		$	
1210	00468		CULVERT PIPE-36 IN	26.00	LF		$	
1220	00469		CULVERT PIPE-42 IN	79.00	LF		$	
1230	00471		CULVERT PIPE-54 IN	89.00	LF		$	
1240	00473		CULVERT PIPE-66 IN	45.00	LF		$	
1250	00521		STORM SEWER PIPE-15 IN	186.00	LF		$	
1260	00522		STORM SEWER PIPE-18 IN	4,175.00	LF		$	
1270	00524		STORM SEWER PIPE-24 IN	1,160.00	LF		$	
1280	00526		STORM SEWER PIPE-30 IN	1,631.00	LF		$	
1290	00528		STORM SEWER PIPE-36 IN	342.00	LF		$	

251022

PROPOSAL BID ITEMS

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1300	00529		STORM SEWER PIPE-42 IN	505.00	LF		$	
1310	00530		STORM SEWER PIPE-48 IN	439.00	LF		$	
1320	00534		STORM SEWER PIPE-72 IN	89.00	LF		$	
1330	01208		PIPE CULVERT HEADWALL-24 IN	2.00	EACH		$	
1340	01210		PIPE CULVERT HEADWALL-30 IN	1.00	EACH		$	
1350	01212		PIPE CULVERT HEADWALL-36 IN	1.00	EACH		$	
1360	01214		PIPE CULVERT HEADWALL-42 IN	1.00	EACH		$	
1370	01216		PIPE CULVERT HEADWALL-48 IN	1.00	EACH		$	
1380	01222		PIPE CULVERT HEADWALL-66 IN	1.00	EACH		$	
1390	01310		REMOVE PIPE	69.00	LF		$	
1400	01371		METAL END SECTION TY 1-18 IN	2.00	EACH		$	
1410	01373		METAL END SECTION TY 1-24 IN	2.00	EACH		$	
1420	01391		METAL END SECTION TY 3-18 IN	1.00	EACH		$	
1430	01393		METAL END SECTION TY 3-24 IN	1.00	EACH		$	
1440	01433		SLOPED BOX OUTLET TYPE 1-18 IN	4.00	EACH		$	
1450	01450		S & F BOX INLET-OUTLET-18 IN	1.00	EACH		$	
1460	01453		S & F BOX INLET-OUTLET-36 IN	1.00	EACH		$	
1470	01456		CURB BOX INLET TYPE A	34.00	EACH		$	
1480	01487		CURB BOX INLET TYPE F	1.00	EACH		$	
1490	01490		DROP BOX INLET TYPE 1	19.00	EACH		$	
1500	01496		DROP BOX INLET TYPE 3	4.00	EACH		$	
1510	01502		DROP BOX INLET TYPE 5A	2.00	EACH		$	
1520	01514		DROP BOX INLET TYPE 5E	1.00	EACH		$	
1530	01538		DROP BOX INLET TYPE 7	3.00	EACH		$	
1540	01544		DROP BOX INLET TYPE 11	1.00	EACH		$	
1550	01559		DROP BOX INLET TYPE 13G	9.00	EACH		$	
1560	01568		DROP BOX INLET TYPE 13S	1.00	EACH		$	
1570	01642		JUNCTION BOX-18 IN	4.00	EACH		$	
1580	01643		JUNCTION BOX-24 IN	3.00	EACH		$	
1590	01646		JUNCTION BOX-42 IN	3.00	EACH		$	
1600	01649		JUNCTION BOX-60 IN	1.00	EACH		$	
1610	01650		JUNCTION BOX 72 IN	2.00	EACH		$	
1620	01756		MANHOLE TYPE A	1.00	EACH		$	
1630	01767		MANHOLE TYPE C	3.00	EACH		$	
1640	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	16,068.00	SQYD	$2.00	$	$32,136.00
1650	02625		REMOVE HEADWALL	15.00	EACH		$	
1660	15007		S CIPP LINER 24 INCH	170.00	LF		$	
1670	15128		S CIPP LINER 30 INCH	160.00	LF		$	
1680	15130		S CIPP LINER 42 INCH	309.00	LF		$	
1690	15132		S CIPP LINER 54 INCH	423.00	LF		$	
1700	15134		S CIPP LINER 66 INCH	361.00	LF		$	
1710	23970NC		RESET GRATE	1.00	EACH		$	
1720	24025EC		PIPE CULVERT HEADWALL-72 IN	1.00	EACH		$	
1730	24026EC		PIPE CULVERT HEADWALL-54 IN	3.00	EACH		$	
1740	24575ES610		HEADWALL CONC SLOPED AND PAVED	13.00	EACH		$	

Section: 0004 - BRIDGE-28990

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1750	01643		JUNCTION BOX-24 IN	4.00	EACH		$	
1760	02231		STRUCTURE GRANULAR BACKFILL	621.70	CUYD		$	
1770	03299		ARMORED EDGE FOR CONCRETE	191.60	LF		$	
1780	08002		STRUCTURE EXCAV-SOLID ROCK	360.90	CUYD		$	
1790	08003		FOUNDATION PREPARATION	1.00	LS		$	
1800	08020		CRUSHED AGGREGATE SLOPE PROT	228.20	TON		$	
1810	08100		CONCRETE-CLASS A	142.10	CUYD		$	
1820	08104		CONCRETE-CLASS AA	308.00	CUYD		$	
1830	08150		STEEL REINFORCEMENT	12,051.00	LB		$	
1840	08151		STEEL REINFORCEMENT-EPOXY COATED	67,245.00	LB		$	
1850	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	4.00	EACH		$	
1860	23378EC		CONCRETE SEALING	12,073.70	SQFT		$	
1870	23981EC		PPC I-BEAM TYPE HN 42-49	924.00	LF		$	
1880	25028ED		RAIL SYSTEM SINGLE SLOPE - 40 IN	172.40	LF		$	

Section: 0005 - BRIDGE-CULVERT 28377

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1890	02403		REMOVE CONCRETE MASONRY	27.00	CUYD		$	
1900	08002		STRUCTURE EXCAV-SOLID ROCK	41.00	CUYD		$	
1910	08003		FOUNDATION PREPARATION	1.00	LS		$	
1920	08100		CONCRETE-CLASS A	143.00	CUYD		$	
1930	08150		STEEL REINFORCEMENT	27,568.00	LB		$	

Section: 0006 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1940	15015		S ENCASEMENT STEEL BORED RANGE 2	370.00	LF		$	
1950	15022		S ENCASEMENT STEEL OPEN CUT RANGE 3	90.00	LF		$	
1960	15023		S ENCASEMENT STEEL OPEN CUT RANGE 4	110.00	LF		$	
1970	15028		S FORCE MAIN AIR RLS/VAC VLV 04 IN	1.00	EACH		$	
1980	15059		S FORCE MAIN PVC 04 INCH	3,065.00	LF		$	
1990	15060		S FORCE MAIN PVC 06 INCH	545.00	LF		$	
2000	15062		S FORCE MAIN PVC 10 INCH	428.00	LF		$	
2010	15069		S FORCE MAIN TAP SLEEVE/VALVE RNG 1	4.00	EACH		$	
2020	15070		S FORCE MAIN TAP SLEEVE/VALVE RNG 2	2.00	EACH		$	
2030	15073		S FORCE MAIN TIE-IN 04 INCH	1.00	EACH		$	
2040	15084		S FORCE MAIN VALVE GATE	2.00	EACH		$	
2050	15089		S LATERAL SHORT SIDE 04 INCH	2.00	EACH		$	
2060	15092		S MANHOLE	18.00	EACH		$	
2070	15093		S MANHOLE ABANDON/REMOVE	6.00	EACH		$	
2080	15094		S MANHOLE ADJUST TO GRADE	5.00	EACH		$	
2090	15097		S MANHOLE RECONSTRUCT INVERT	1.00	EACH		$	
2100	15112		S PIPE PVC 08 INCH	134.00	LF		$	
2110	15113		S PIPE PVC 10 INCH	1,258.00	LF		$	
2120	15119		S PUMP STATION	1.00	EACH		$	
2130	15155		S CAP EXISTING MAIN	2.00	EACH		$	

251022

PROPOSAL BID ITEMS

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2140	15155		S CAP EXISTING MAIN CUT AND CAP	18.00	EACH		$	
2150	15155		S CAP EXISTING MAIN FORCE MAIN CUT AND CAP	4.00	EACH		$	
2160	15157		S FORCE MAIN PVC RSTRND JOINT 04 INCH	395.00	LF		$	
2170	15158		S FORCE MAIN PVC RSTRND JOINT 10 INCH	108.00	LF		$	

Section: 0007 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2180	02565		OBJECT MARKER TYPE 2	4.00	EACH		$	
2190	06406		SBM ALUM SHEET SIGNS .080 IN	1,316.90	SQFT		$	
2200	06407		SBM ALUM SHEET SIGNS .125 IN	1,675.70	SQFT		$	
2210	06410		STEEL POST TYPE 1	1,955.00	LF		$	
2220	06411		STEEL POST TYPE 2	2,488.60	LF		$	
2230	06412		STEEL POST MILE MARKERS	6.00	EACH		$	
2240	06490		CLASS A CONCRETE FOR SIGNS	19.25	CUYD		$	
2250	21596ND		GMSS TYPE D	79.00	EACH		$	
2260	24265EC		INSTALL SIGN POST REFLECTORS	22.00	EACH		$	
2270	24525EC		ADVANCE WARNING FLASHER	4.00	EACH		$	
2280	24601EC		INSTALL SIGN PROVIDED BY OTHERS	5.00	EACH		$	
2290	24601EC		INSTALL SOLAR SCHOOL FLASHER ASSEMBLY	2.00	EACH		$	
2300	24631EC		BARCODE SIGN INVENTORY	458.00	EACH		$	
2310	24751ED		REMOVE STORE & REINSTALL SIGN FACE	5.00	EACH		$	

Section: 0008 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2320	04811		ELECTRICAL JUNCTION BOX TYPE B	9.00	EACH		$	
2330	04820		TRENCHING AND BACKFILLING	1,955.00	LF		$	
2340	04844		CABLE-NO. 14/5C	7,365.00	LF		$	
2350	04845		CABLE-NO. 14/7C	1,850.00	LF		$	
2360	04850		CABLE-NO. 14/1 PAIR	235.00	LF		$	
2370	04886		MESSENGER-15400 LB	2,275.00	LF		$	
2380	04932		INSTALL STEEL STRAIN POLE	20.00	EACH		$	
2390	04953		TEMP RELOCATION OF SIGNAL HEAD	68.00	EACH		$	
2400	06406		SBM ALUM SHEET SIGNS .080 IN	71.70	SQFT		$	
2410	06472		INSTALL SPAN MOUNTED SIGN	2.00	EACH		$	
2420	20188NS835		INSTALL LED SIGNAL-3 SECTION	26.00	EACH		$	
2430	20189NS835		INSTALL LED SIGNAL-5 SECTION	1.00	EACH		$	
2440	20266ES835		INSTALL LED SIGNAL- 4 SECTION	6.00	EACH		$	
2450	20408ES835		INSTALL LED BEACON-12 IN	4.00	EACH		$	
2460	21659NN		RELOCATE SIGNAL HEAD	8.00	EACH		$	
2470	21743NN		INSTALL PEDESTRIAN DETECTOR	6.00	EACH		$	
2480	22939ND		INSTALL LUMINAIRE POLE	2.00	EACH		$	

251022

PROPOSAL BID ITEMS

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2490	23068NN		REMOVE & REINSTALL COORDINATING UNIT	1.00	EACH		$	
2500	23157EN		TRAFFIC SIGNAL POLE BASE	105.05	CUYD		$	
2510	23222EC		INSTALL SIGNAL PEDESTAL	6.00	EACH		$	
2520	23982EC		INSTALL ANTENNA	3.00	EACH		$	
2530	24525EC		ADVANCE WARNING FLASHER	3.00	EACH		$	
2540	24528ED		TETHER WIRE	110.00	LF		$	
2550	24601EC		INSTALL INSTALL RRFB	6.00	EACH		$	
2560	24601EC		INSTALL SCHOOL FLASHER	2.00	EACH		$	
2570	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	1,940.00	LF		$	
2580	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	145.00	LF		$	
2590	24908EC		INSTALL SIGNAL CONTROLLER-TY ATC	4.00	EACH		$	
2600	24955ED		REMOVE SIGNAL EQUIPMENT	8.00	EACH		$	
2610	26119EC		INSTALL RADAR PRESENCE DETECTOR TYPE A	15.00	EACH		$	
2620	26120EC		INSTALL RADAR ADVANCE DETECTOR TYPE B	6.00	EACH		$	

Section: 0009 - LIGHTING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2630	04701		POLE 40 FT MTG HT	18.00	EACH		$	
2640	04725		BRACKET 15 FT	18.00	EACH		$	
2650	04740		POLE BASE	53.00	EACH		$	
2660	04750		TRANSFORMER BASE	18.00	EACH		$	
2670	04780		FUSED CONNECTOR KIT	36.00	EACH		$	
2680	04793		CONDUIT-1 1/4 IN	160.00	LF		$	
2690	04797		CONDUIT-3 IN	1,325.00	LF		$	
2700	04800		MARKER	8.00	EACH		$	
2710	04820		TRENCHING AND BACKFILLING	8,585.00	LF		$	
2720	04821		OPEN CUT ROADWAY	545.00	LF		$	
2730	04832		WIRE-NO. 12	3,550.00	LF		$	
2740	04860		CABLE-NO. 8/3C DUCTED	2,250.00	LF		$	
2750	04940		REMOVE LIGHTING	1.00	LS		$	
2760	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	29.00	EACH		$	
2770	21543EN		BORE AND JACK CONDUIT	350.00	LF		$	
2780	23778EC		WIRE-NO. 10	10,950.00	LF		$	
2790	24589ED		LED LUMINAIRE	21.00	EACH		$	
2800	24851EC		CABLE-NO. 10/3C DUCTED	10,385.00	LF		$	
2810	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	7,240.00	LF		$	
2820	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	2,000.00	LF		$	

Section: 0010 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2830	14001		W AIR RELEASE VALVE 3/4 INCH	1.00	EACH		$	

PROPOSAL BID ITEMS

251022

Page 8 of 9

Report Date 8/7/25

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2840	14003		W CAP EXISTING MAIN	34.00	EACH		$	
2850	14008		W ENCASEMENT STEEL BORED RANGE 3	460.00	LF		$	
2860	14009		W ENCASEMENT STEEL BORED RANGE 4	285.00	LF		$	
2870	14010		W ENCASEMENT STEEL BORED RANGE 5	485.00	LF		$	
2880	14011		W ENCASEMENT STEEL BORED RANGE 6	255.00	LF		$	
2890	14014		W ENCASEMENT STEEL OPEN CUT RANGE 3	75.00	LF		$	
2900	14016		W ENCASEMENT STEEL OPEN CUT RANGE 5	120.00	LF		$	
2910	14017		W ENCASEMENT STEEL OPEN CUT RANGE 6	260.00	LF		$	
2920	14019		W FIRE HYDRANT ASSEMBLY	9.00	EACH		$	
2930	14023		W FLUSHING ASSEMBLY	13.00	EACH		$	
2940	14028		W METER 3/4 INCH	1.00	EACH		$	
2950	14036		W PIPE DUCTILE IRON 06 INCH	305.00	LF		$	
2960	14042		W PIPE DUCTILE IRON 24 INCH	310.00	LF		$	
2970	14053		W PIPE DCTL IRON RSTRND JOINT 24 IN	1,105.00	LF		$	
2980	14053		W PIPE DCTL IRON RSTRND JOINT 24 IN w/Nitrile Gaskets	72.00	LF		$	
2990	14059		W PIPE PVC 06 INCH	655.00	LF		$	
3000	14060		W PIPE PVC 08 INCH	40.00	LF		$	
3010	14061		W PIPE PVC 10 INCH	735.00	LF		$	
3020	14062		W PIPE PVC 12 INCH	5,395.00	LF		$	
3030	14077		W SERV PE/PLST LONG SIDE 1 IN	1.00	EACH		$	
3040	14085		W SERV PE/PLST SHORT SIDE 3/4 IN	7.00	EACH		$	
3050	14089		W TAPPING SLEEVE AND VALVE SIZE 1	12.00	EACH		$	
3060	14090		W TAPPING SLEEVE AND VALVE SIZE 2	21.00	EACH		$	
3070	14095		W TIE-IN 08 INCH	1.00	EACH		$	
3080	14097		W TIE-IN 12 INCH	3.00	EACH		$	
3090	14105		W VALVE 06 INCH	1.00	EACH		$	
3100	14106		W VALVE 08 INCH	1.00	EACH		$	
3110	14108		W VALVE 12 INCH	1.00	EACH		$	
3120	14183		W PIPE PVC RSTRND JOINT 06 INCH	510.00	LF		$	
3130	14184		W PIPE PVC RSTRND JOINT 10 INCH	315.00	LF		$	
3140	14185		W PIPE PVC RSTRND JOINT 12 INCH	655.00	LF		$	
3150	14186		W PIPE DUCTILE IRON 18 INCH	150.00	LF		$	
3160	14187		W PIPE DUCTILE IRON RSTRND JOINT 18 INCH	200.00	LF		$	

Section: 0011 - PLANNING LOOPS (ADDED 8-8-25)

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
3161	04793		CONDUIT-1 1/4 IN	70.00	LF		$	
3162	04795		CONDUIT-2 IN	10.00	LF		$	
3163	04820		TRENCHING AND BACKFILLING	69.00	LF		$	
3164	04829		PIEZOELECTRIC SENSOR	4.00	EACH		$	
3165	04830		LOOP WIRE	4,050.00	LF		$	
3166	04895		LOOP SAW SLOT AND FILL	800.00	LF		$	
3167	20359NN		GALVANIZED STEEL CABINET	1.00	EACH		$	
3168	20360ES818		WOOD POST	4.00	EACH		$	
3169	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	1.00	EACH		$	
3171	20468EC		ELECTRICAL JUNCTION BOX-10 X 8 X 4	2.00	EACH		$	

251022

PROPOSAL BID ITEMS

Report Date 8/7/25

Section: 0012 - MOBILIZATION AND/OR DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
3170	**02568**		**MOBILIZATION**	**1.00**	**LS**		**$**	
3180	**02569**		**DEMOBILIZATION**	**1.00**	**LS**		**$**	

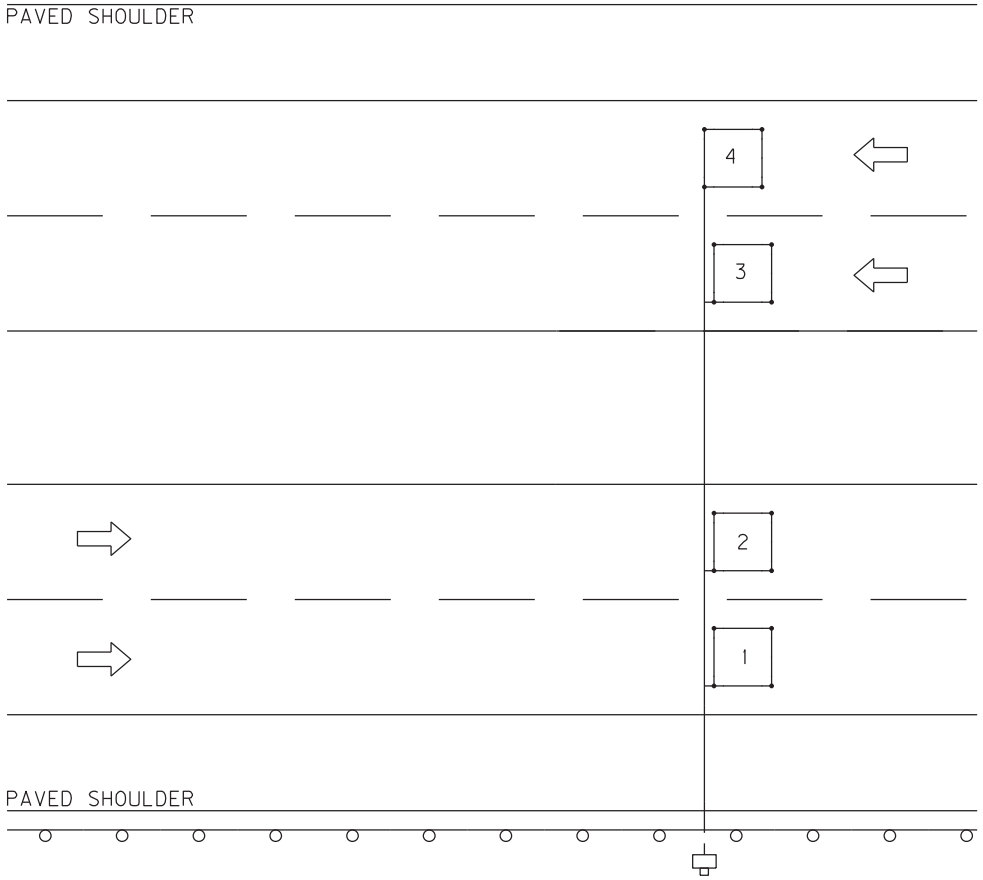
ROCKCASTLE CO. KY 461 ~m.p. 7.40
~LAT/LONG N 37.35444, W 84.36743
STATION 795

SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

ALL LOOPS SHALL BE 6'X6' SQUARE. LOOPS SHALL BE INSTALLED SPLICE-FREE TO THE CABINET. A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED AND LABELED INSIDE THE 10"x8"x4" CABINET. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS INSIDE THE 10"x8"x4" CABINET.

INSTALL ONE (1) 10"x8"x4" CABINET MOUNTED TO ONE (1) WOOD POST.

INSTALL ONE (1) 1¼" CONDUIT FROM END OF SAW SLOT TO THE 10"x8"x4" CABINET.



SCALE 3/8

ROCKCASTLE COUNTY
102GR25D022

ADDED ADDENDUM #2 8/8/2025
Contract ID: 251022
Page 1 of 38

ROCKCASTLE CO. KY 461 ~m.p. 8.57
~LAT/LONG N 37.36590, W 84.35204
STATION 794

SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

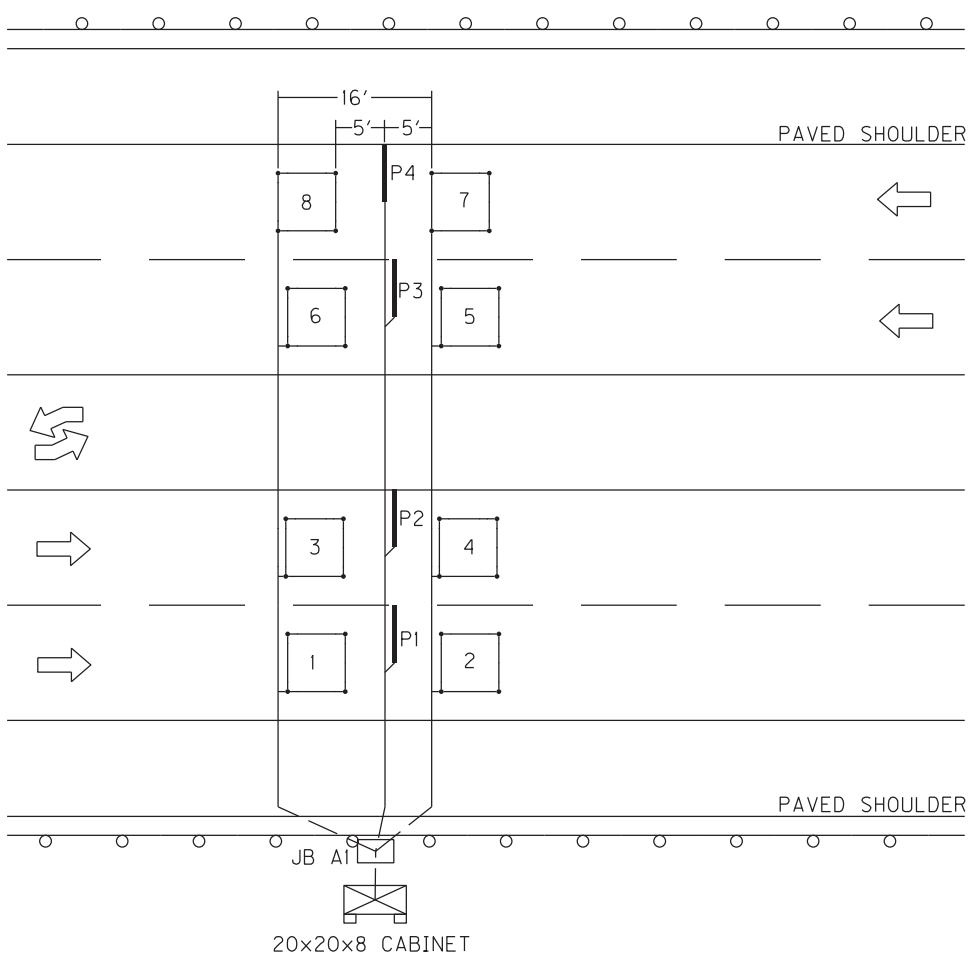
ALL LOOPS SHALL BE 6'X6' SQUARE AND SHALL BE INSTALLED 16' FROM LEADING EDGE TO LEADING EDGE AS SHOWN. PIEZOELECTRIC SENSORS (PIEZOS) SHALL BE INSTALLED 5' FROM THE EDGE OF LOOPS WITH THE EDGE OF EACH PIEZO FLUSH WITH THE EDGE OF THE CORRESPONDING DRIVING LANE. LOOPS AND PIEZOS SHALL BE INSTALLED SPLICE-FREE TO THE CABINET. BETWEEN 2' AND 3' OF WIRE FOR EACH SENSOR SHALL BE COILED AND LABELED INSIDE EACH JUNCTION BOX AND CABINET. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS AND PIEZOS INSIDE THE CABINET.

INSTALL ONE (1) TYPE A JUNCTION BOX (JB A1)

INSTALL ONE (1) 1¼" CONDUIT FROM EACH SAW SLOT TO JUNCTION BOX.

INSTALL ONE (1) 20"x20"x8" CABINET MOUNTED TO TWO (2) WOOD POSTS.

INSTALL ONE (1) 2" CONDUIT FROM JUNCTION BOX TO CABINET.



ROCKCASTLE COUNTY
102GR25D022

ADDED ADDENDUM #2 8/8/2025
Contract ID: 251022
Page 2 of 38

SCALE

ROCKCASTLE CO. US 25 ~m.p. 15.24
~LAT/LONG N 37.37078, W 84.33510
STATION 816

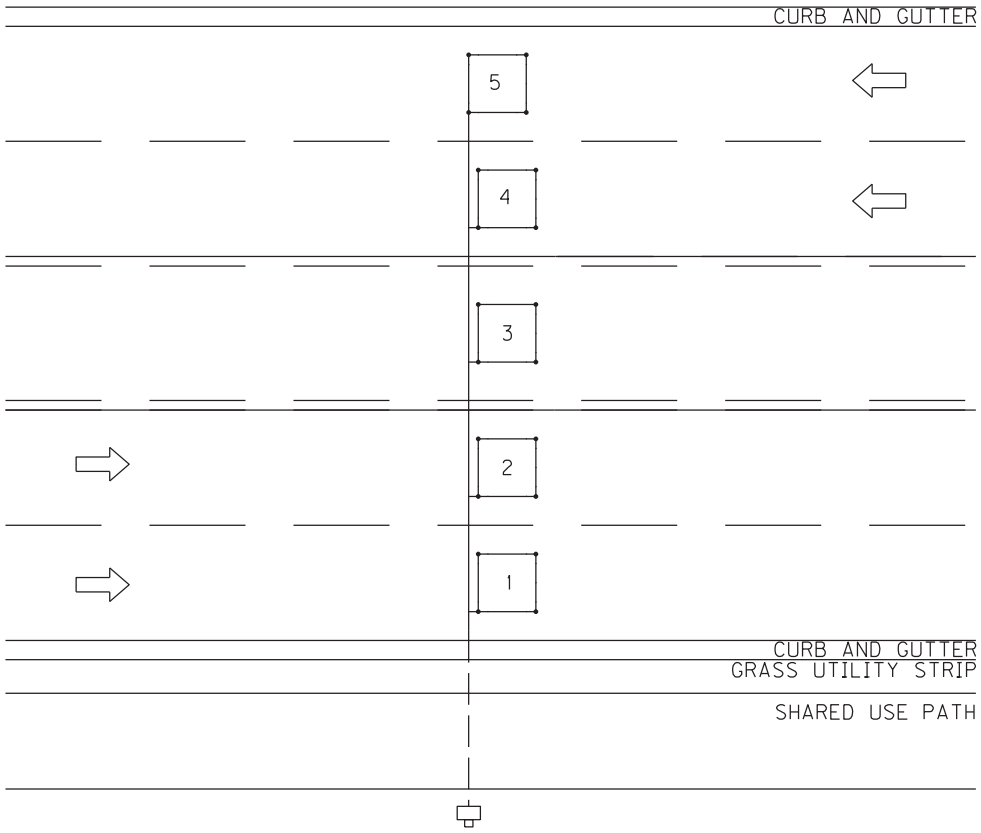
SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

ALL LOOPS SHALL BE 6'X6' SQUARE. LOOPS SHALL BE INSTALLED SPLICE-FREE TO THE CABINET. A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED AND LABELED INSIDE THE 10"x8"x4" CABINET. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS INSIDE THE 10"x8"x4" CABINET.

INSTALL ONE (1) 10"x8"x4" CABINET MOUNTED TO ONE (1) WOOD POST.

INSTALL ONE (1) 1¼" CONDUIT FROM END OF SAW SLOT TO THE 10"x8"x4" CABINET.

* *1¼" CONDUIT TO GO UNDER SHARED USE PATH SHALL BE INSTALLED PRIOR TO THE CONSTRUCTION OF THE SUP.*



SCALE 3

PERMANENT TRAFFIC DATA ACQUISITION STATIONS
ESTIMATE OF QUANTITIES

Bid Item Code	Description	Unit	Quantity
4793	CONDUIT 1 ¼ INCH	LIN FT	70
4795	CONDUIT 2 INCH	LIN FT	10
4811	ELECTRICAL JUNCTION BOX TYPE B	EACH	
4820	TRENCHING AND BACKFILLING	LIN FT	69
4821	OPEN CUT ROADWAY	LIN FT	
4829	PIEZOELECTRIC SENSOR	EACH	4
4830	LOOP WIRE	LIN FT	4050
4833	WIRE – NO. 8	LIN FT	
4834	WIRE – NO. 6	LIN FT	
4850	CABLE NO. 14/1 PAIR	LIN FT	
4871	POLE – 35’ WOODEN	EACH	
4895	LOOP SAW SLOT AND FILL	LIN FT	800
4899	ELECTRICAL SERVICE	EACH	
4960	REMOVE AND REPLACE SIDEWALK	SQYD	
20213EC	INSTALL PAD MOUNT ENCLOSURE	EACH	
20359NN	GALVANIZED STEEL CABINET	EACH	1
20360ES818	WOOD POST	EACH	4
20391NS835	ELECTRICAL JUNCTION BOX TYPE A	EACH	1
20392NS835	ELECTRICAL JUNCTION BOX TYPE C	EACH	
20468EC	ELECTRICAL JUNCTION BOX 10x8x4	EACH	2
21543EN	BORE AND JACK CONDUIT – 2 INCH	LIN FT	
23206EC	INSTALL CONTROLLER CABINET	EACH	
24963ED	LOOP TEST	EACH	

MATERIAL, INSTALLATION, AND BID ITEM NOTES FOR PERMANENT TRAFFIC DATA ACQUISITION STATIONS

1. DESCRIPTION

Except as specified in these notes, all work shall consist of furnishing and installing all materials necessary for permanent data acquisition station equipment installation(s) and shall be performed in accordance with the current editions of:

- The Contract
- Division of Planning Standard Detail Sheets
- Kentucky Transportation Cabinet, Department of Highways, *Standard Specifications for Road and Bridge Construction*
- Kentucky Transportation Cabinet, Department of Highways, Standard Drawings
- National Fire Protection Association *(NFPA) 70: National Electrical Code*
- Institute of Electrical and Electronic Engineers (IEEE), *National Electrical Safety Code*
- Federal Highway Administration, *Manual on Uniform Traffic Control Devices*
- American Association of State Highway and Transportation Officials (AASHTO), *Roadside Design Guide*.
- Standards of the utility company serving the installation, if applicable

The permanent traffic data acquisition station layout(s) indicate the extent and general arrangement of the proposed installation and are for general guidance. Any omission or commission shown or implied shall not be cause for deviation from the intent of the plans and specifications. Information shown on the plans and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusion as to the conditions encountered. The Department of Highways (Department) does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information shown. If any modifications of the plans or specifications are considered necessary by the Contractor, details of such modifications and the reasons, therefore, shall be submitted in writing to the Engineer for written approval prior to beginning such modified work.

The Contractor shall contact all utility companies and the district utility agent prior to beginning construction to insure proper clearance and shielding from existing and proposed utilities. The Contractor shall use all possible care in excavating on this project so as not to disturb any existing utilities whether shown on the plans or not shown on the plans. Any utilities disturbed or damaged by the Contractor during construction shall be replaced or repaired to original condition by the Contractor at no cost to the department. If necessary, to avoid existing utilities, the Contractor shall hand dig areas where poles or conduit cross utilities.

The Contractor shall be responsible for all damage to public and/or private property resulting from his work.

The Contractor shall inspect the project site prior to submitting a bid and shall be thoroughly familiarized with existing conditions. Submission of a bid will be considered an affirmation of this inspection having been completed. The Department will not honor any claims resulting from site conditions.

2. MATERIALS

All proposed materials shall be approved prior to being utilized. The Contractor shall submit for material approval an electronic file of descriptive literature, drawings and any requested design data for the proposed materials. After approval, no substitutions of any approved materials may be made without the written approval of the Engineer.

Materials requiring sampling shall be made available a sufficient time in advance of their use to allow for necessary testing.

2.1. Anchoring

2.1.1. Anchor and Anchor Rod

Anchor, except rock anchor, shall be expanding type, with a minimum area of 135 square inches.

Anchor rod shall be galvanized steel, double-eye, have a minimum diameter of 5/8 inches, and a minimum length of 84 inches. Minimum holding capacity shall be 15,400 lbs.

Rock anchor shall be galvanized steel, triple-eye, expanding type, with a minimum diameter of ¾ inch, a minimum 53 inches long, and a minimum tensile strength of 23,000 lb.

2.1.2. Guy Wire and Guy Guard

Guy wire shall be Class A, Zinc-coated, 3/8 inch diameter, high strength grade steel (minimum 10,800 lb.) and galvanized per ASTM A475. Guy guard shall be 8’ long, fully-rounded, yellow, and able to be securely attached to the guy wire.

2.1.3. Strandvise for Guy Wire

Strandvise for guy wire shall be 3/8 inch and rated to hold a minimum of 90% of the rated breaking strength (RBS) of the strand used.

2.2. Asphalt

Asphalt shall be a minimum CL2 Asph Surf 0.38B PG64-22 and conform to the *Standard Specifications for Road and Bridge Construction.*

2.3. Backer Rod

Backer rod shall be ½ inch diameter, closed cell polyethylene foam and shall meet or exceed the following physical properties:

- Density (average): 2.0 lbs/cu.ft. (minimum): ASTM D 1622 test method
- Tensile Strength: 50 PSI (minimum): ASTM D 1623 test method
- Compression Recovery: 90% (minimum): ASTM D 5249 test method
- Water Absorption: 0.03 gm/cc (maximum): ASTM C 1016 test method

2.4. Cabinets

2.4.1. Galvanized Steel Cabinet

Galvanized Steel Cabinet shall be constructed of 16 or 14 gauge galvanized steel and shall meet or exceed the industry standards set forth by UL 50 and NEMA 3R. The finish shall be an ANSI 61 gray polyester powder finish inside and out over the galvanized steel. Cabinet shall have minimum inside dimensions of 20 inches high by 20 inches wide by 8 inches deep.

The cabinet shall be equipped with the following:

- Drip shield top
- Seam-free sides, front, and back, to provide protection in outdoor installations against rain, sleet, and snow
- Hinged cover with 16 gauge galvanized steel continuous stainless steel pin.
- Cover fastened with captive plated steel screws, knob or latch
- Hasp and staple for padlocking
- No gaskets or knockouts
- Back panel for terminal block installation
- Post mounting hardware
- Terminal Blocks

2.4.2. Anchor Bolt for Pad Mounted Cabinet

Anchor bolt for pad mounted cabinet shall be galvanized steel with minimum dimensions of 3/8 inch by 6 inches.

2.5. Concrete

Concrete shall be Class A and conform to the *Standard Specifications for Road and Bridge Construction.*

2.6. Conduit and Conduit Fittings

Conduit and conduit fittings shall be rigid steel unless otherwise specified.

Conduit shall be zinc galvanized inside and out and conform to the NEC, UL Standard 6, and ANSI C-80.1.

Rigid Steel Conduit Fittings shall be galvanized inside and out and conform to the NEC, UL Standard 514B, and ANSI C-80.4. Intermediate Metal Conduit (IMC) will not be approved as an acceptable alternative to rigid steel conduit.

2.7. Conduit sealant

Conduit sealant shall be weather-, mold-, and mildew-resistant and chemically resistant to gasoline, oil, dilute acids and bases. Conduit sealant shall be closed cell type and shall meet or exceed the following properties:

- Cure Time — 20 minutes max.
- Density — 64.4 kg/m3; 6 lbs/ft3
- Compressive Strength (ASTM 1691) — 13.8 MPa; 330 or 300 psi

- Tensile Strength (ASTM 1623) 15.9 MPa; 270 or 250 psi
- Flexural Strength (ASTM D790) 14.5 MPa; 460 or 450 psi
- Service Temperature -20 to 200 F

2.8. Electrical Service Meter Base

Electrical service meter base shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

2.9. Electrical Service Disconnect

Electrical service disconnect shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

2.10. Flashing Arrow

Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction.*

2.11. Ground Fault Circuit Interrupter (GFCI) Receptacle

Ground Fault Circuit Interrupter Receptacle shall be 2-pole, 3-wire, 20 Amp, 125 Volt, 60 Hz, NEMA 5-20R configuration and meet or exceed the following standards and certifications:

- NEMA WD-1 and WD-6
- UL 498 and 943
- NOM 057
- ANSI C-73

This item shall include a UL listed, 4 inch x4 inch x $2^{1}/_{8}$ inch box with ¾ inch side and end knockouts and a 1½ inches deep, single-receptacle cover to house the GFCI receptacle. Box and cover shall be hot rolled, galvanized steel with a minimum thickness of 0.62 inches.

2.12. Grounding

2.12.1. Ground Rod

Ground Rod shall be composite shaft consisting of a pure copper exterior (5 mil minimum) that has been inseparably molten welded to a steel core. Ground Rod shall have a minimum diameter of 5/8 inch, a minimum length of 8 feet and shall be manufactured for the sole purpose of providing electrical grounding.

2.12.2. Ground Rod Clamp

Ground rod shall be equipped with a one piece cast copper or bronze body with a non-ferrous hexagonal head set screw and designed to accommodate a 10 AWG solid through 2 AWG stranded grounding conductor.

2.13. Grout

2.13.1. Grout for Inductive Loop Installation

Grout for inductive loop installation shall be non-shrink, shall meet the requirements of the *Standard Specifications for Road and Bridge Construction*,

and shall be included on the KYTC Division of Materials, *List of Approved Materials*.

2.13.2. Grout for Piezoelectric Sensor Installation

Grout for piezoelectric sensor installation shall be per the piezoelectric sensor manufacturer's recommendation. Grout shall be suitable for installation in both asphalt and Portland cement pavements. Grout shall have a short curing time (tack free in ten minutes; open to traffic in forty minutes; and fully cured within sixty minutes) to prevent unnecessary lane closure time and should be of sufficient consistency to prevent running when applied on road surfaces with a drainage cross slope. Particulate matter within the grout shall not separate or settle and the grout shall not shrink during the curing process.

2.14. Hardware

Except where specified otherwise, all hardware such as nuts, bolts, washers, threaded ends of fastening devices, etc. with a diameter less than 5/8 inch shall be passivated stainless steel, alloy type 316 or type 304. Stainless steel hardware shall meet ASTM F593 and F594 for corrosion resistance. All other nuts and bolts shall meet ASTM A307 and shall be galvanized.

2.14.1. Conduit Strap

Conduit strap shall be double-hole, stainless steel, and sized to support specified conduit. Conduit strap shall attach to wood pole or post with two 2 ¼ inch wood screws.

2.14.2. Mounting Strap for Pole Mount Cabinet

Mounting strap for pole mount cabinet shall be ¾ inch x 0.03 inch stainless steel; equipped with clips or buckles to securely hold strap.

2.14.3. Metal Framing Channel and Fittings

Metal framing channel shall be 1 5/8 inches wide galvanized steel that conforms to ASTM A1011 and ASTM A653. One side of the channel shall have a continuous slot with in-turned edges to accommodate toothed fittings.

Fittings shall be punch pressed from steel plates and conform to ASTM A575 and the physical requirements of ASTM A1011.

2.15. Junction Box

2.15.1. Junction Box Type A, B, or C

Junction Box Type A, B, or C shall meet or exceed ANSI/SCTE 77-2007, Tier 15. Box shall have an open bottom. A removable, non-slip cover marked "PLANNING" shall be equipped with a lifting slot and attached with a minimum of two 3/8 inch stainless steel hex bolts and washers. Type A Box shall have nominal inside dimensions of 13 inches wide by 24 inches long by 18 inches deep. Type B Box shall have nominal inside dimensions of 11 inches wide by 18 inches long by 12

inches deep. Type C Box shall have nominal inside dimensions of 24 inches wide by 36 inches long by 30 inches deep.

2.15.2. Aggregate for Junction Box Type A, B, or C

Aggregate for junction box type A, B, or C shall be gradation size no. 57 and conform to the *Standard Specifications for Road and Bridge Construction*.

2.15.3. Junction Box 10x8x4

Junction Box Type 10x8x4 shall be constructed of a UV-stabilized, nonmetallic material or non-rusting metal and be weatherproof in accordance with NEMA 4X. Box shall be equipped with an overhanging door with a continuous durable weatherproof gasket between the body and door. Door shall be hinged with screws, hinge(s) and pin(s) and shall be equipped with a padlockable latch on the side opposite the hinge(s). Junction Box 10x8x4 shall have minimum inside dimensions of 10 inches high by 8 inches wide by 4 inches deep.

2.16. Maintain and Control Traffic

Materials for the bid item Maintain and Control Traffic shall conform to the *Standard Specifications for Road and Bridge Construction,* and the KYTC Department of Highways *Standard Drawings*.

2.17. Piezoelectric Sensor

Piezoelectric sensor (piezo) shall provide a consistent level voltage output signal when a vehicle axle passes over it, shall have a shielded transmission cable attached, and shall meet the following requirements:

- Dimensions: such that sensor will fit in a ¾ inch wide by 1 inch deep saw cut. Total length shall be 6 feet unless specified otherwise.
- Output uniformity: ± 7% (maximum)
- Typical output level range: 250mV (minimum) from a wheel load of 400 lbs.
- Working temperature range: -40° to 160° F.
- Sensor life: 30 million Equivalent Single Axle Loadings (minimum)

Shielded transmission cable shall be coaxial and shall meet the following requirements:

- RG 58C/U with a high density polyethylene outer jacket rated for direct burial
- Length shall be a minimum of 100 feet. Installations may exceed 100 feet so the piezo shall be supplied with a lead-in of appropriate length so that the cable can be installed splice-free from the piezo to the cabinet.
- Soldered, water resistant connection to the sensor.

One installation bracket for every 6 inches of sensor length shall also be supplied. Piezo shall be a RoadTrax BL Class I or approved equal.

2.18. Saw Slot Sealant

Saw Slot Sealant shall be non-shrink, non-stringing, moisture cure, polyurethane

encapsulant suitable for use in both asphalt and concrete pavements. It shall provide a void-free encapsulation for detector loop cables and adequate compressive yield strength and flexibility to withstand heavy vehicular traffic and normal pavement movement.

The cured encapsulant shall meet or exceed the following:

- Hardness (Indentation): 35-65 Shore A, ASTM D2240
- Tensile Strength: 150 psi minimum, ASTM D412
- Elongation: 125% minimum 2 inch/minute pull, ASTM D412
- Tack-free Drying Time: 24 hours maximum, ASTM C679
- Complete Drying Time: 30 hours maximum, KM 64-447
- Chemical Interactions (seven day cure at room temperature, 24-hour immersion, KM 64-446):
  - Motor Oil: No effect
  - Deicing Chemicals: No effect
  - Gasoline: Slight swell
  - Hydraulic Brake Fluid: No effect
  - Calcium Chloride (5%): No effect

2.19. Seeding and Protection

Material for Seeding and Protection shall be Seed Mixture Type I and conform to the *Standard Specifications for Road and Bridge Construction*.

2.20. Signs

Materials for signs shall conform to the *Standard Specifications for Road and Bridge Construction.*

2.21. Splicing Materials

2.21.1. Electrical Tape

Electrical tape shall be a premium grade, UL-listed, all-weather, vinyl-insulating tape with a minimum thickness of 7 mil. Tape shall be flame retardant and resistant to abrasion, moisture, alkalis, acids, corrosion, and weather (including ultraviolet exposure).

2.21.2. Splice Kit

Splice kit shall be inline resin-type and rated for a minimum of 600V. Resin shall be electrical insulating-type and shall provide complete moisture and insulation resistance.

2.22. Steel Reinforcing Bar

Steel reinforcing bar shall be #5 and shall conform to the *Standard Specifications for Road and Bridge Construction.*

2.23. Terminal Block

Terminal block shall be rated for a minimum of 300 V and have a minimum of six

terminal pairs with 9/16-inch nominal spacing (center to center) for connecting loop and piezoelectric sensor wires to cable assemblies. Terminal block shall have screw type terminal strips to accommodate wire with spade-tongue ends.

2.24. Warning Tape

Warning tape shall be acid and alkali resistant formulated for direct burial. Tape shall be a minimum of 3 inches wide by 4.0 mils (nominal) thick, and shall be permanently imprinted with a minimum 1 inch black legend on a red background warning of an electric line. Tape shall meet or exceed the following industry specifications:

- American Gas Association (AGA) 72-D-56
- American Petroleum Institute (API) RP 1109
- American Public Works Association (APWA) Uniform Color Code
- Department of Transportation (DOT) Office of Pipeline Safety USAS B31.8
- Federal Gas Safety Regulations S 192-321 (e)
- General Services Administration (GSA) Public Buildings Service Guide: PBS 4-1501, Amendment 2
- National Transportation Safety Board (NTSB) PSS 73-1
- Occupational Safety and Health Administration (OSHA) 1926.956 (c) (1)

2.25. Wire and Cable

All cable and wire shall be plainly marked in accordance with the National Electrical Code (NEC).

2.25.1. Loop Wire

Loop wire shall be 14 AWG, stranded, copper, single conductor, and shall conform to the International Municipal Signal Association (IMSA) Specification No. 51-7.

2.25.2. Cable No. 14/1 Pair

Cable No. 14/1 pair loop lead-in cable shall be 14 AWG, stranded, copper paired, electrically shielded conductors, and shall conform to IMSA 19-2.

2.25.3. Grounding conductor

Grounding conductor and bonding jumper shall be solid or stranded, 4 AWG bare copper.

2.25.4. Service Entrance Conductor

Service entrance conductor shall be stranded, copper, Type USE-2, sized as required to comply with the NEC.

2.25.5. Terminal for electrical wire or cable

Terminal for electrical wires or cables shall be insulated, solderless, spade tongue terminals of correct wire and stud size. Terminal for electrical wires or cables shall be incidental to the wire or cable (including piezoelectric sensor transmission cable) to be connected to terminal strips.

2.26. Wood Post

Wood post shall be Southern Pine pretreated to conform to the American Wood Preservers' Association (AWPA) C-14 or UC4B and shall have minimum dimensions of 4 inches by 4 inches by 8 feet long (for Galvanized Steel Cabinet) or 4 feet long (for Junction Box 10x8x4), sawed on all four sides with both ends square.

2.27. Wooden Pole

Wooden pole shall be a Class IV wood pole of the length specified and shall conform to the *Standard Specifications for Road and Bridge Construction* except the pole shall be treated in accordance with AWPA P9 Type A.

3. CONSTRUCTION METHODS

The plans indicate the extent and general arrangement of the installation and are for guidance. When the Contractor deems any modifications to the plans or specifications necessary, details of such changes and the reasons shall be submitted in writing to the engineer for written approval prior to beginning the modified work.

After the project has been let and awarded, the Division of Construction shall notify the Division of Planning of the scheduled date for a Pre-Construction meeting so that prior arrangements can be made to attend. This will allow the Division of Planning an opportunity to address any concerns and answer any questions that the Contractor may have before beginning the work.

The Division of Planning Equipment Management Team (502-564-7183) shall be notified a minimum of seven days before any work pertaining to these specifications begins to allow their personnel the option to be present during installation.

Unless otherwise specified, installed materials shall be new.

Construction involving the installation of loops or piezoelectric sensors shall not be performed when the temperature of the pavement is less than 38ºF.

A final inspection will be performed by a member of the Central Office Division of Planning equipment staff after the installation is complete to verify that the installation is in compliance with the plans and specifications.

Any required corrective work shall be performed per the *Standard Specifications for Road and Bridge Construction.*

3.1. Anchoring

Furnish: Anchor, anchor rod, guy wire, strand vise, guy guard.

Anchor shall be installed in relatively dry and solid soil. Rock anchor shall be installed in solid rock. Excavate the hole at a 45° to 60° angle in line with the guy (hole size shall be slightly larger than the expanded anchor – see manufacturer's recommendation). Attach rod to anchor, install assembly into hole, and expand anchor. Backfill and tamp entire disturbed area. The effectiveness of the anchor is dependent upon the thoroughness of backfill tamping. Attach guy to strand vise on pole and anchor rod and tighten to required tension. Install guy guard on guy.

3.2. Bore and Jack Pipe – 2"

Furnish: Steel Encasement Pipe, 2"

Bore and jack pipe – 2" shall conform to the Section 706 of the *Standard Specifications for Road and Bridge Construction*.

3.3. Cleanup and Restoration

Furnish: Seed Mix Type 1 (as required); fertilizer (as required); agricultural limestone (as required); mulch or hydromulch (as required); tackifier (as required).

The Contractor shall be responsible for repairing any damage to public and/or private property resulting from his work. Upon completion of the work, restore all disturbed highway features in like kind design and materials. This shall include filling any ruts and leveling ground appropriately. Contractor shall dispose of all waste and debris off the project. Sow all disturbed earthen areas with Seed Mix Type 1 per Section 212 of the *Standard Specifications for Road and Bridge Construction*. All materials and labor necessary for cleanup and restoration shall be considered incidental to other bid items.

3.4. Conduit

Furnish: Conduit; conduit fittings; bushings (grounding where required); LB condulets (as required); weatherheads (as required); conduit straps; hardware; conduit sealant.

Conduit that may be subject to regular pressure from traffic shall be laid to a minimum depth of 24 inches below grade. Conduit that will not be subject to regular pressure from traffic shall be laid to a minimum depth of 18 inches below grade.

Conduit ends shall be reamed to remove burrs and sharp edges. Cuts shall be square and true so that the ends will butt together for the full circumference of the conduit. Tighten couplings until the ends of the conduit are brought together. Do not leave exposed threads. Damaged portions of the galvanized surfaces and untreated threads resulting from field cuts shall be painted with an Engineer-approved, rust inhibitive paint. Conduit bends shall have a radius of no less than 12 times the nominal diameter of the conduit, unless otherwise shown on the plans.

Contractor shall install a bushing (grounding bushing where required) on both ends of all conduits. Cap spare conduits on both ends with caps or conduit sealant.

Conduit openings in junction boxes and cabinets shall be waterproofed with a flexible, removable conduit sealant, working it around the wires, and extending it a minimum 1 inch into the end of the conduit.

After the conduit has been installed and prior to backfilling, the conduit installation shall be inspected and approved by the Engineer.

3.5. Electrical Service

Furnish: Meter base, service disconnect, wire, GFCI AC duplex receptacle with box and cover; conduit, conduit fittings, bushings (grounding where required); LB condulets (as required); weatherhead; conduit straps; hardware; conduit sealant; ground rod with clamp; grounding conductor.

Prior to any construction, the Contractor shall initiate a work order with the local power

company for the installation of electrical service to the site. A representative from the Division of Planning and the local power company shall be consulted prior to choosing an exact location for the pole. The Contractor shall clear the right-of-way for the electrical service drop.

Contractor shall obtain electrical inspections, memberships, meter base, service disconnect and any other requirements by the utility serving the installation and pay all fees as required.

Install meter-base and disconnect panel with a 30-ampere, fused, circuit breaker inside. Install a manufactured weatherproof hub connector to connect the conduit to the top of the meter base and service disconnect.

Install a rigid ¾ inch conduit with three 8 AWG service conductors from the cabinet, through the service disconnect to the meter base and a 1¼" conduit with three 8 AWG service conductors from the meter base to a weatherhead two feet from the top of the electrical service pole. Install conduit straps 30 inches on center and provide a drip loop where the wire enters the weatherhead. Splice electric drop with service entrance conductors at the top of the pole.

The limit of conduit incidental to "Install Electrical Service" for a pad mounted cabinet is 24 inches beyond face of service pole.

Install a 120-volt, 20-amp GFCI AC duplex receptacle with box and cover in the automatic data recorder (ADR) cabinet.

Install a ground rod with clamp. Install a grounding conductor wire from the meter base, through the disconnect panel, to the ground rod clamp. Install grounding conductor in 1-¾" conduit from service disconnect to ground rod.

After completing the installation and before the electrical service is connected, obtain a certificate of compliance from the Kentucky Department of Housing, Buildings and Construction, Electrical Inspection Division.

3.6. Flashing Arrow

Furnish: Arrow Panel

Construction of Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction.*

3.7. Galvanized Steel Cabinet

Furnish: Cabinet; wood posts; concrete; conduit fittings; metal framing channel; pipe clamp; terminal block(s); spade tongue wire terminals; wire labels; hardware.

Where right-of-way allows, locate the cabinet such that it is outside the clear zone in accordance with the *Roadside Design Guide*. Install Cabinet such that the door of the

cabinet faces the roadway.

Excavate as required and install wood posts to a depth of 36 inches and place concrete around posts as shown on the standard detail sheets. Install metal framing channel with pipe clamp between posts.

Install Cabinet on wood posts 38 inches above the finished grade as shown on the standard detail sheets. Install a unistrut between posts when two posts are specified.

Install the required number of terminal blocks on the cabinet back plate. Install a spade tongue terminal on each loop and piezo sensor wire entering the cabinet and connect wires to terminal block(s). Wiring shall be neat and orderly. Label all wires and cables inside cabinet.

Install conduit from ground to cabinet and attach to pipe clamp. Install locknuts to attach conduit to cabinet and install a conduit bushing as shown on the standard detail sheets.

3.8. Grounding

Furnish: Ground rod with clamp; grounding conductor.

At sites with electrical or solar service, all conduits, poles, and cabinets shall be bonded to ground rods and the electrical system ground to form a complete grounded system.

Install such that top of ground rod is a minimum of 3 inches below finished grade.

Grounding systems shall have a maximum 25 ohms resistance to ground. If the resistance to ground is greater than 25 ohms, two or more ground rods connected in parallel shall be installed. Adjacent ground rods shall be separated by a minimum of 6 feet.

3.9. Install Pad Mount Enclosure

Furnish: Concrete; anchor bolts with washers and nuts; conduit; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the enclosure from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site.

Where right-of-way allows, locate the enclosure such that it is outside the clear zone in accordance with the *Roadside Design Guide*.

Excavate as required, and place concrete to construct the enclosure foundation as specified on the standard detail sheets. Install enclosure on the concrete base such that the door(s) of the enclosure opens away from traffic (hinges away from traffic). Install anchor bolts, washers, and nuts to secure the enclosure to the foundation.

Install ground rod with clamp and install one ¾ inch rigid conduit from enclosure base to

ground rod. Install a grounding conductor from ground rod to enclosure base and bond to each conduit bushing in the base.

Install one ¾ inch rigid steel conduit for electrical service from the base of the enclosure to 24 inches beyond the concrete base. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with a cap, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit."

Install specified rigid steel conduit(s) into the base of the enclosure for sensor wire entry. Install one spare 2-inch conduit from the enclosure base to 2 feet beyond the concrete base. Plug spare conduit on both ends with a cap, conduit sealant or electrical tape.

The limit of all conduits incidental to "Install Pad Mount Enclosure" is 24 inches beyond the edge of the concrete base.

Wiring in enclosure shall be neat and orderly. Label all wires and cables inside enclosure. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

3.10. Install Controller Cabinet

Furnish: Mounting brackets; mounting straps; conduit; LB condulets; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; cable staples; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the cabinet from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site. Any existing holes in the cabinet not to be reused shall be covered or plugged to meet NEC requirements.

Install mounting brackets and secure cabinet to pole with mounting straps.

Install a ground rod with clamp. Install grounding conductor in 1-¾" conduit form cabinet to ground rod.

Install one ¾ inch rigid steel conduit with two lb. condulets from cabinet to electrical service disconnect box. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with cap, plumbers putty, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit".

Install specified rigid steel conduit(s) and type LB condulet(s) into the bottom of the

cabinet for sensor wire entry. The limit of conduits incidental to "Install Controller Cabinet" is 24 inches beyond the face of the pole.

Wiring in cabinet shall be neat and orderly. Label all wires and cables inside cabinet. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

3.11. Junction Box Type 10x8x4

Furnish: Junction box; wood post; conduit fittings; wire labels; hardware.

Where right-of-way allows, locate the junction box such that it is outside the clear zone in accordance with the Roadside Design Guide.

Excavate as required and install wood post(s) to a depth of 18 inches. Install junction box on wood post such that the bottom of the box is 18 inches above the finished grade as shown on the standard detail sheets. Box shall be installed with four (4) 2½ inch wood screws and washers.

Install locknuts to attach conduit to junction box and install a conduit bushing as shown on the standard detail sheets.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

3.12. Junction Box Type A, B, or C

Furnish: Junction box, No. 57 aggregate; grounding conductor

Excavate as required and place approximately 12 inches of No. 57 aggregate beneath the proposed junction box to allow for drainage. Install specified junction box type A, B, or C near the edge of pavement, flush with finished grade per the detail sheets. Where required, orient the box so that the dimensions comply with the National Electrical Code. Stub conduits with grounding bushings into junction box at its base to accommodate wires and connect grounding conductor to all grounding bushings. Backfill to existing grade, and restore disturbed area to the satisfaction of the Engineer.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

3.13. Loops - Proposed

Furnish: Wire; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for loop installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the precise layout locations on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist.

Upon completion of this meeting, the Contractor shall measure out and mark the proposed loop locations with spray paint or chalk such that the saw slots will be parallel

and perpendicular to the direction of traffic. Marked lines shall be straight and exact to the locations determined and sized as shown on the plans. Unless indicated otherwise, loops shall be 6 feet by 6 feet square and loops in the same lane shall be spaced 16 feet from leading edge to leading edge.

On resurfacing, rehabilitation, and new construction projects that include new asphalt pavement, the Contractor shall install loops prior to laying the final surface course. On projects with milling and texturing, the Contractor may install the loops prior to or after the milling operation; however, if installed prior to milling, the Contractor shall be responsible for ensuring that the loops are installed at a depth such that the milling operation will not disturb the newly installed loops. The Contractor shall correct damage caused by the milling operations to newly installed loops prior to placement of the final surface course at no additional cost to the Cabinet.

For projects that include the installation of new asphalt and piezoelectric sensors, the Contractor shall mark or otherwise reference all loops installed prior to the final surface course such that the loops can be accurately located when the piezoelectric sensors are installed after placement of the final surface course.

For projects that do not have asphalt surfacing, the Contractor shall install the loops in the surface of the pavement.

The Prime Contractor shall coordinate the installation of loops with the electrical sub-Contractor and the Engineer to ensure correct operation of the completed installation.

The following is a typical step by step procedure for the installation of a loop.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and centered in the lane.
- Make each saw-cut 3/8-inch wide and at a depth such that the top of the backer rod is a minimum of 2 inches below the surface of rigid (PCC/Concrete) pavement or 4 inches below the surface of asphalt pavement.
- Drill a 1½ inch core hole at each corner and use a chisel to smooth corners to prevent sharp bends in the wire.
- 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.
- Completely dry the slots and drilled cores and within 1 foot on all sides of the slots using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- 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.
- 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.

- Place the loop wire splice-free from the termination point (cabinet or junction box) to the loop, continue around the loop for four turns, and return to the termination point.
- Push the wire into the saw slot with a blunt object such as a wooden stick. Make sure that the loop wire is pushed fully to the bottom of the saw slot.
- Install conduit sealant to a minimum of 1" deep into the cored 1½ inch hole.
- Apply loop sealant from the bottom up and fully encapsulate the loop wires in the saw slot. The wire should not be able to move when the sealant has set.
- Cover the encapsulated loop wire 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.
- 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.
- Clean up the site and dispose of all waste off the project.
- Ensure that the grout has completely cured prior to subjecting the loop to traffic. Curing time varies with temperature and humidity.

Exceptions to installing loop wire splice-free to the junction box or cabinet may be considered on a case-by-case basis and must be pre-approved by the Engineer. If splices are allowed, they shall be located in a junction box and shall conform to the construction note for Splicing.

If loop lead-in cable (Cable No. 14/1 Pair) is specified, cable shall be installed splice free to the cabinet ensuring that extra cable is left in each junction box or cabinet. All wires and cables shall be labeled in each junction box and cabinet.

Loop inductance readings shall be between 100 and 300 microhenries. The difference of the loop inductance between two loops in the same lane shall be ±20 microhenries. Inductance loop conductors shall test free of shorts and grounds. Upon completion of the project, all loops must pass an insulation resistance test of a minimum of 100 million ohms to ground when tested with a 500 Volt direct current potential in a reasonably dry atmosphere between conductors and ground.

3.14. Loop Test

When noted on a data collection station layout sheet that there are existing inductive loops within the limits of the project, notify the Engineer in writing, a minimum of 14 calendar days prior to beginning milling operations. After milling and prior to placing asphalt inlay, conduct an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground. The Department may also conduct its own tests with its own equipment.

If the tests indicate the loop resistances are above the specified limit and the Engineer determines the system is operable, proceed with the asphalt inlay. If the test indicates the loop resistance is not within the specified limits or if the Engineer determines the system is otherwise not operable, prior to placing the asphalt inlay install and test new loop detectors according to the station layout, notes, and Detail Drawings.

The Engineer will contact and maintain liaison with the District Planning Engineer and the Division of Planning in order to coordinate any necessary work.

3.15. Maintain and Control Traffic

Furnish (all as required): Drums, traffic cones, barricades used for channelization purposes, delineators, and object markers.

Maintain and Control Traffic shall conform to the plans, the Standard Specifications for Road and Bridge Construction, and the KYTC Department of Highways Standard Drawings.

3.16. Open Cut Roadway

Furnish: Concrete, reinforcing bars.

Excavate trench by sawing and chipping away roadway to dimensions as indicated on the detail sheets. After placing conduit, install concrete and steel reinforcing bars per the *Standard Specifications for Road and Bridge Construction*. Restore any disturbed sidewalk to its original condition.

3.17. Piezoelectric Sensor

Furnish: Piezoelectric sensor and cable; sensor support brackets; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for piezoelectric sensor (piezo) installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the final layout on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist. Roadway ruts at the proposed piezo location shall not be in excess of ½ inch under a 4-foot straight edge.

Install the piezo perpendicular to traffic in the final surface course of the pavement. Locate the sensor in the lane as shown on the site layout drawing. Eleven-foot length sensors shall be centered in the lane.

The following is a typical step by step procedure for the installation of a piezo. Refer specifically to the manufacturer's instructions provided with the sensor prior to installation.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and properly positioned in the lane.

- It is strongly recommended that a ¾ inch wide diamond blade be used for cutting the slot, or that blades be ganged together to provide a single ¾ inch wide cut. The slot shall be wet cut to minimize damage to the pavement.
- Cut a slot ¾ inch wide (±1/16 inch) by 1 inch minimum deep. The slot should be a minimum of 2 inches longer than the sensor (including the lead attachment). Drop the saw blade an extra ½ inch down on both ends of the sensor. The lead out of the passive cable should be centered on the slot.
- Cut the slot for the passive cable ¼ inch wide and at a depth so that the top of the backer rod is a minimum of 2 inches below the road surface.
- Clean ALL foreign and loose matter out of the slot and within 1 foot on all sides of the slot using a high-pressure washer.
- Completely dry the slot and within 1 foot on all sides of the slot using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- 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.
- Place strips of 2-4-inch-wide tape strips on the pavement along the lengths of both sides of the sensor slot, 1/8 inch away from the slot.
- Wear clean, protective latex (or equivalent) gloves at all times when handling sensors. Visually inspect sensor to ensure it is straight. Check lead attachment and passive cable for cuts, gaps, cracks and/or bare wire. Verify that the correct sensor type and length is being installed by checking the data sheet. Verify there is sufficient cable to reach the cabinet. Piezo lead-in cable shall not be spliced.
- Test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within ±20% of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Record the sensor serial number and the test results and label “pre-installation.” This information should be stored in the counter cabinet and/or returned to Department Planning personnel.
- Lay the sensor next to the slot and ensure that it is straight and flat.
- Clean the sensor with steel wool or an emery pad and wipe with alcohol and a clean, lint-free cloth.
- Place the installation bracket clips every 6 inches along the length of the sensor.
- Bend the tip of the sensor downward at a 30° angle. Bend the lead attachment end down at a 15° angle and then 15° back up until level (forming a lazy Z).
- Place the sensor in the slot, with the brass element 3/8 inch below the road surface along the entire length. The tip of the sensor should be a minimum of 2 inches from the end of the slot and should not touch the bottom of the slot. The top of the plastic installation bracket clips should be 1/8 inch below the surface of the road. The lead attachment should not touch the bottom or sides of the slot. Ensure the sensor ends are pushed down per the manufacturer’s instructions.
- Visually inspect the length of the sensor to ensure it is at uniform depth along its length and it is level (not twisted, canted or bent).

- On the passive cable end, block the end of the slot approximately 3-5 inches beyond the end of the lead attachment area creating an adequate "dam" so that the sensor grout does not flow out.
- Use one bucket of sensor grout per piezo installation. Overfill the slot with sensor grout and allow to cure for a minimum of 10 minutes before continuing with the installation. Ensure that sensor grout fills around and beneath the sensor completely and that there is not a trough on top.
- Remove the tape along the sides of the saw slot when the adhesive starts to cure.
- Carefully remove the dam from the end of the sensor.
- Route the lead-in cable through the saw slot
- Install conduit sealant to a minimum of 1" deep into the cored 1½ inch hole.
- Cover the lead-in cable with encapsulant, backer rod, and grout.
- If necessary, after the grout has hardened, grind with an angle grinder until the profile is a 1/16-inch mound. There shall be no concave portion to the mound.
- Clean up the site and dispose of all waste off the project.
- Ensure that the sensor grout has completely cured prior to subjecting the sensor to traffic. Curing time will vary with temperature and humidity.

Upon installation, test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within ±20% of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Perform a functional test of the piezo with an oscilloscope to ensure that the sensor is generating a proper response to the passage of vehicles.

Record the sensor serial number and the test results and label "post-installation." This information should be stored in the counter cabinet and/or returned to Department Planning personnel.

3.18. Pole – Wooden

Furnish: Pole; anchoring equipment (as required); hardware (as required).

Excavate and install wood pole to a minimum depth of one-sixth the total pole height. Place backfill material in hole and compact until flush with existing grade. Install guy wire, guy guard, anchor, anchor rod, and strand vise, if necessary. Anchor shall be a minimum of one-third the pole height from the face of the pole. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.19. Removal of Existing Equipment

The Contractor shall remove existing materials (including but not limited to: poles, anchors, cabinets, junction boxes, conduit and wire) not to be reused. Contractor shall dispose of all removed materials off the project. All materials and labor necessary for the removal of existing equipment shall be considered incidental to other bid items.

3.20. Signs

Furnish: Signs; sign standards; hardware.

Construction of **s**igns shall conform to the *Standard Specifications for Road and Bridge Construction.*

3.21. Splicing

Furnish: Splice kit; solder.

These notes describe the splicing process (if permitted) and are not intended to grant permission to splice. Permission to splice shall be determined by the Division of Planning and the locations shall be shown on the layout sheet. If splicing is needed but not shown on the layout sheet, the Contractor shall receive prior written approval from the Division of Planning.

All splices shall conform to the provisions of the NEC.

Splices for loop and loop lead-in wire shall be twisted and soldered. Abrade the outer jacket of both wires to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced loop conductors shall test free of shorts and unauthorized grounds and shall have an insulating resistance of at least 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.

For piezos, the same type coax cable, supplied by the manufacturer, shall be used to splice to the sensor's lead-in cable. Cables shall be soldered. Abrade the outer jacket of both cables to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced piezo cables shall be tested and have a minimum resistance of 20 megohms, a maximum dissipation factor of 0.03, a capacitance within the manufacturer's recommended range based upon the length of additional cable. A functional test of the piezo shall be performed to ensure that the sensor is generating a proper response to the passage of vehicles.

3.22. Trenching and Backfilling

Furnish: Warning tape; seed mix type I; cereal rye or German foxtail-millet; mulch; concrete (as required); asphalt (as required).

Excavate trench and provide required cover as shown on the standard detail sheets. After placing conduit, backfill material shall be placed and compacted in lifts of 9 inches or less. Install warning tape as shown on the detail sheet. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.23. Wiring

Furnish: Wire; wire labels; spade tongue wire terminals (as required).

Installation of all wiring shall conform to the NEC. Permanent identification numbers

shall be affixed to all wires in all junction boxes and cabinets (see Layout(s) for loop and piezo numbers).

Additional lengths of each loop and piezo sensor wire shall be neatly coiled in all cabinets and junction boxes as follows:

Enclosure Type	Additional length of each wire
Galvanized Steel Cabinet	2' – 3'
Pad Mount Cabinet (332)	6' - 8'
Pole Mount Cabinet (336)	3' - 4'
Junction Box Type 10x8x4	2' – 3'
Junction Box Type A, B, or C	2' – 3'

3.24. Wood Post

Furnish: Wood post; concrete (as required); seed mix type I; cereal rye or German foxtail-millet; mulch.

Excavate hole to specified depth and place concrete, if required. Install post, backfill to existing grade, and tamp backfill. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.25. Remove and Replace Sidewalk

Furnish: Lumber, stakes, nails or screws, and concrete.

Remove existing sidewalk to install rigid conduit from edge of roadway to nearest junction box or cabinet. Form, pour and finish concrete in place of old existing sidewalk making sure to replace the expansion joints in their respective locations. Concrete shall conform to the *Kentucky Standard Specifications for Road and Bridge Construction* for sidewalks.

4. BID ITEM NOTES AND METHOD OF MEASUREMENT FOR PAYMENT

Only the bid items listed will be measured for payment. All other items required to complete the vehicle detection installation shall be incidental to other items of work. Payment at the contract unit price shall be full compensation for all materials, labor, equipment and incidentals to furnish and install these items.

4.1. Bore and Jack Pipe – 2”

Bore and jack pipe – 2” shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

4.2. Conduit

Conduit shall include furnishing and installing specified conduit in accordance with the specifications. This item shall include conduit fittings, bodies, boxes, weatherheads, expansion joints, couplings, caps, conduit sealant, electrical tape, clamps, bonding straps and any other necessary hardware. Conduit will be measured in linear feet.

4.3. Electrical Service

Electrical Service shall include furnishing and installing all necessary materials and payment of all fees toward the complete installation of an electrical service which has passed all required inspections. Incidental to this item shall be furnishing and installing:

- Meter-base per utility company’s specifications
- Service disconnect panel per utility company’s specifications
- Meter base and service disconnect entrance hubs, waterproof
- Service entrance conductors
- Rigid steel conduit
- Rigid steel conduit fittings
- Conduit straps
- Weatherhead
- Duplex GFCI receptacle, 120-volt, 20-amp
- Ground rod with clamp
- Grounding conductor

Also incidental to this item shall be any necessary clearing of right of way for the electrical service drop.

Electrical service will be measured in individual units each.

4.4. Flashing Arrow

Flashing Arrow shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction.*

4.5. Galvanized Steel Cabinet

Galvanized Steel Cabinet shall include furnishing and installing galvanized steel cabinet on post as specified. Incidental to this item shall be furnishing and installing grounding hardware, and any necessary post/pole mounting hardware. Also incidental to this item shall be furnishing and installing the required number of terminal blocks and connection of all

sensors to the terminal blocks. Galvanized Steel Cabinet will be measured in individual units each.

4.6. Install Pad Mount Enclosure

Install Pad Mount Enclosure shall include installing a Department-furnished enclosure as specified on the detail sheets.

This item shall include obtaining the enclosure from KYTC and transporting it to the installation site and furnishing and installing the following:

- Concrete foundation (including any excavation necessary)
- Anchor bolts, lock washers, and nuts
- Conduit
- Conduit fittings (including grounding bushings)
- Weatherhead
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Pad Mount Enclosure will be measured in individual units each.

4.7. Install Controller Cabinet

Install Controller Cabinet shall include installing a Department-furnished cabinet as specified on the detail sheets.

This item shall include obtaining the cabinet from KYTC and transporting it to the installation site and furnishing and installing the following:

- Conduit
- Conduit Fittings
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Controller Cabinet will be measured in individual units each.

4.8. Junction Box Type 10" x 8" x 4"

Junction Box Type 10”x8”x4” shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include connectors, splice sleeves, conduit fittings, mounting materials and any other items required to complete the installation. Incidental to this item shall be furnishing and installing specified post (wood, channel, metal, etc.) as required for the installation. Junction Box Type 10”x8”x4” will be measured in individual units each.

4.9. Junction Box Type A, B, or C

Junction Box Type A, B, or C shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include excavation, furnishing and installing #57 aggregate, backfilling around the box, and restoration of disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing a

grounding conductor bonding all conduit grounding bushings in the box. Junction Box Type A, B, or C will be measured in individual units each.

4.10. Loop Saw Slot and Fill

Loop Saw Slot and Fill shall include sawing and cleaning saw slots and furnishing and installing conduit sealant, loop sealant, backer rod, grout, or other specified material. Loop Saw Slot and Fill will be measured in linear feet of sawed slot.

4.11. Maintain and Control Traffic

Maintain and Control Traffic shall be measured for payment per the *Standard Specifications for Road and Bridge Construction.*

4.12. Open Cut Roadway

Open Cut Roadway shall include excavating trench (sawing and chipping roadway) to dimensions as indicated on the detail sheets and furnishing and placing concrete, steel reinforcing bars, and asphalt. This item also includes restoring any disturbed sidewalk to its original condition. Open Cut Roadway will be measured in linear feet.

4.13. Piezoelectric Sensor

Piezoelectric sensor (piezo) shall include sawing and cleaning saw slots and furnishing and installing piezo in accordance with the specifications. This item shall include furnishing and installing lead-in wire, conduit sealant, encapsulation material, backer rod, grout, testing, and accessories. Piezo will be measured in individual units each.

4.14. Pole – 35’ Wooden

Pole – 35’ Wooden shall include excavation, furnishing and installing specified wood pole, backfilling and restoring disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing guy wire, anchor and anchor rod, strand vise, and guy guard, if specified.

Pole – 35’ Wooden will be measured in individual units each.

4.15. Signs

Signs shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction.*

4.16. Trenching and Backfilling

Trenching and Backfilling shall include excavation, warning tape, backfilling, temporary erosion control, seeding, protection and restoration of disturbed areas to original condition. This item shall include concrete, asphalt or approved replacement material for sidewalks, curbs, roadways, etc. (if required). Trenching and backfilling will be measured in linear feet.

4.17. Wire or Cable

Wire or cable shall include furnishing and installing specified wire or cable within saw slot, conduit, junction box, cabinet, or overhead as indicated on the detail sheets. Incidental to this item shall be the labeling of all wires and cables in each junction box, cabinet and splice

box, and furnishing and installing other hardware required for installing cable. Wire or Cable will be measured in linear feet.

4.18. Wood Post

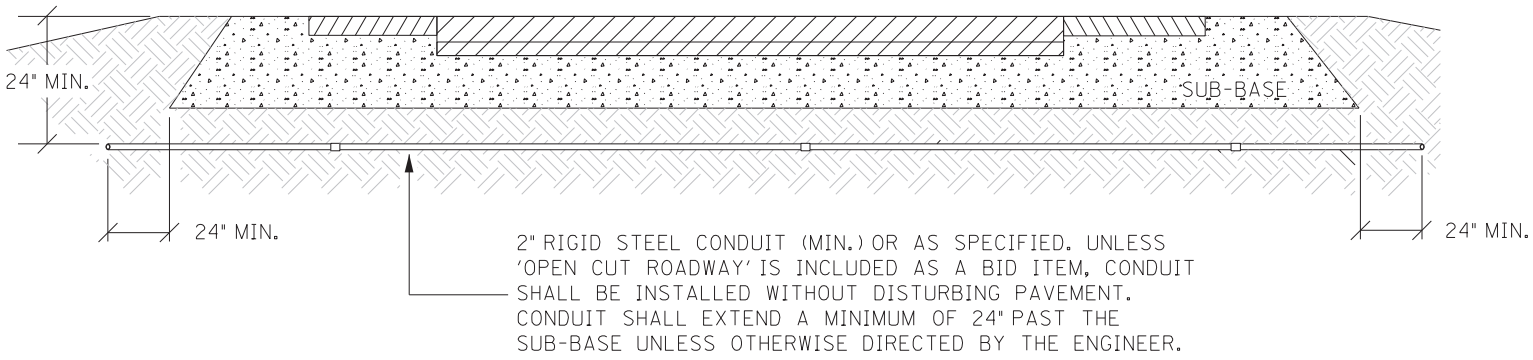
Wood Post shall include furnishing and installing wood post as specified. This item shall include excavation, furnishing and placing concrete (if required), backfilling around the post, and restoration of disturbed areas to the satisfaction of the engineer. Wood Post will be measured in individual units each.

4.19. Remove and Replace Sidewalk

Remove and Replace Sidewalk shall include removing existing sidewalk to install conduit and/or junction box (if required) and replacing old existing sidewalk with new sidewalk after installation of required items. This item includes removing old sidewalk and disposing of off the project and forming, pouring and finishing the new sidewalk after installation of required items.

4.20. Loop Test

Loop Test includes conducting an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.

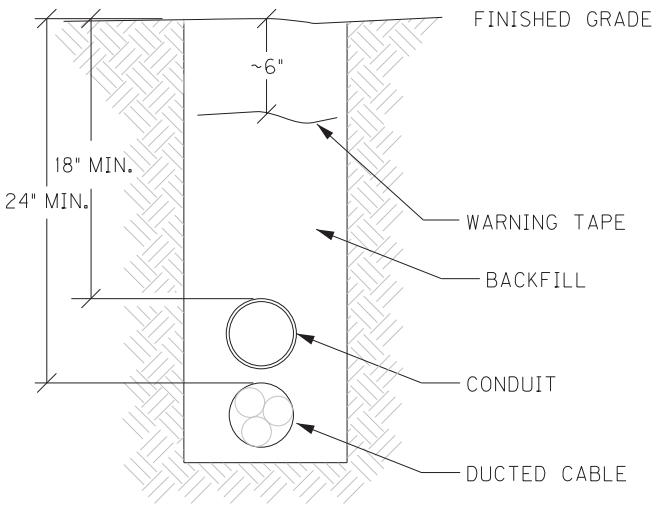


CONDUIT UNDER PAVEMENT

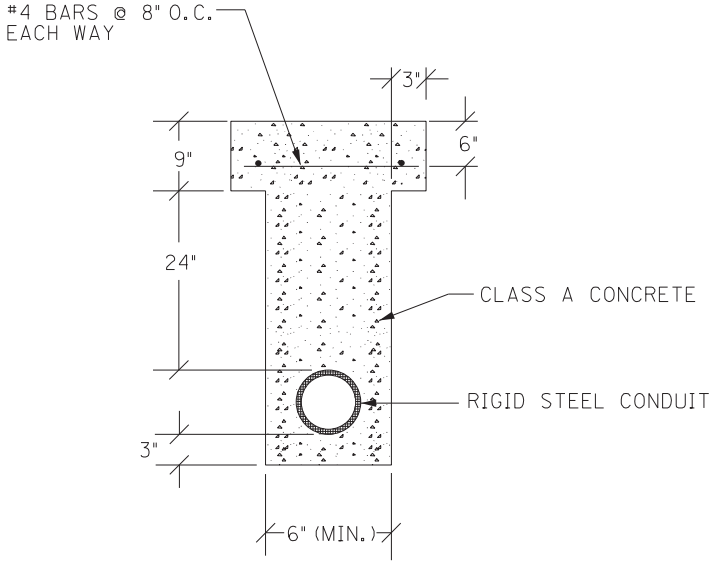
TOTAL TRENCH WIDTH SHALL BE 3" (NOM.) WIDER THAN THE SUM OF THE OUTSIDE DIAMETER(S) OF THE CONDUIT(S) INSTALLED. CONDUIT(S) SHALL BE CENTERED IN TRENCH.

CONTRACTOR SHALL PLACE BACKFILL IN LIFTS (9" MAX.) COMPACT BACKFILL, AND RESTORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER

CONTRACTOR SHALL INSTALL UNDERGROUND UTILITY WARNING TAPE ABOVE CONDUIT AS SHOWN.



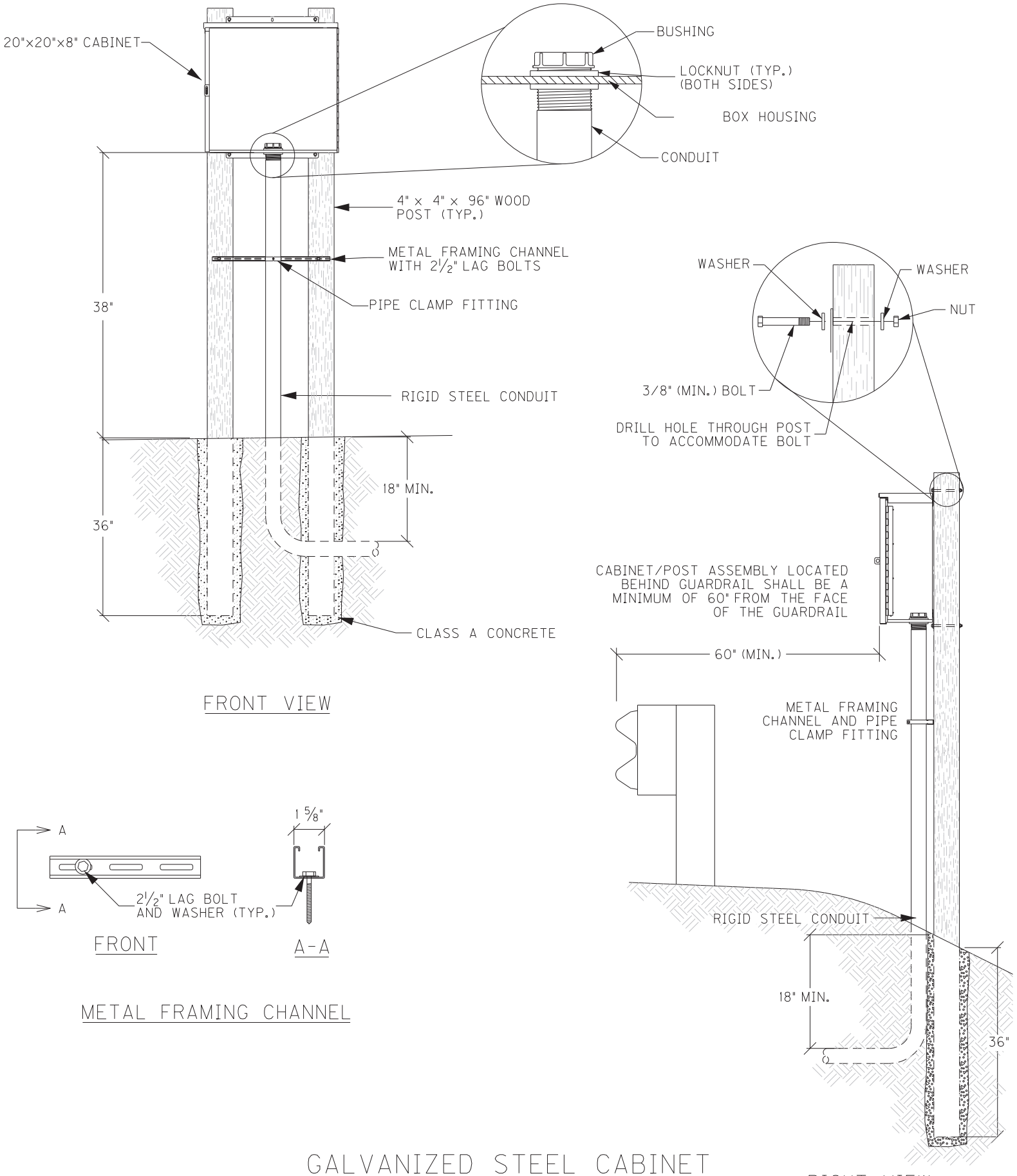
CONDUIT TRENCH



OPEN CUT PAVEMENT DETAIL

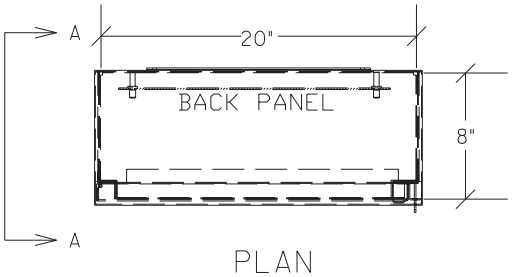
CONDUIT INSTALLATION

NOT TO SCALE

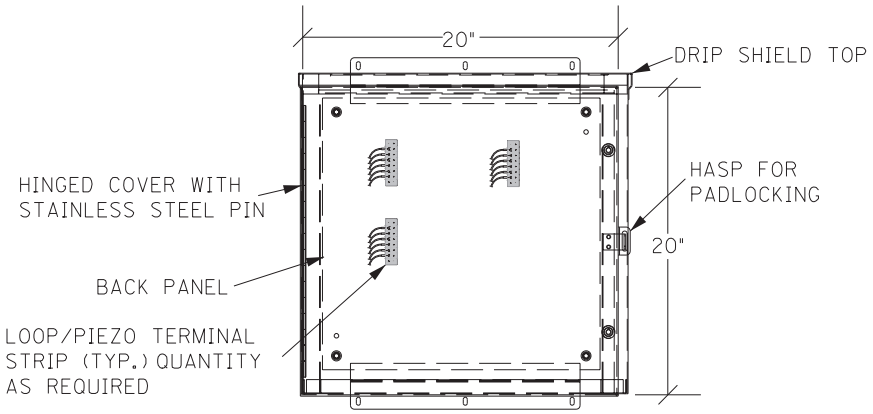


GALVANIZED STEEL CABINET DOUBLE POST ASSEMBLY

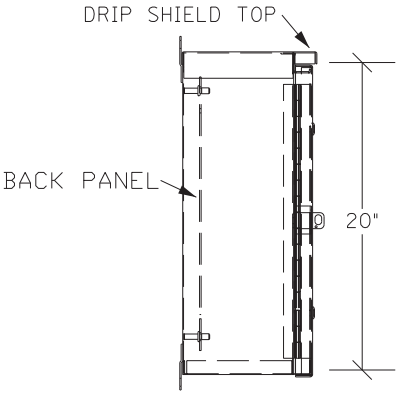
NOT TO SCALE



PLAN

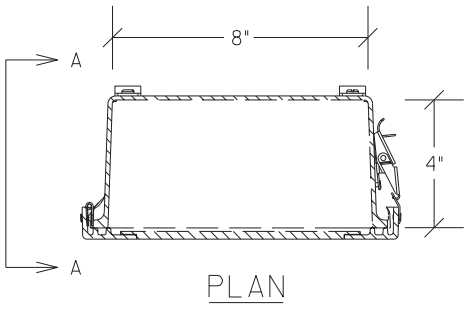


ELEVATION

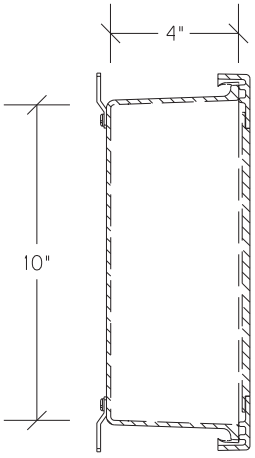


SECTION A-A

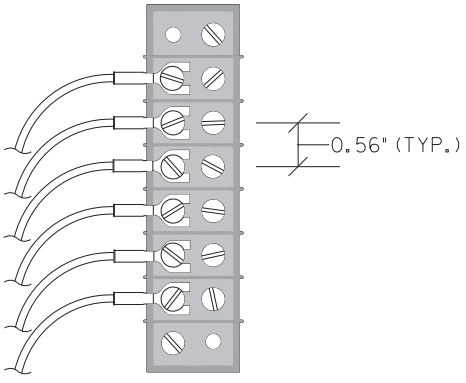
GALVANIZED STEEL CABINET



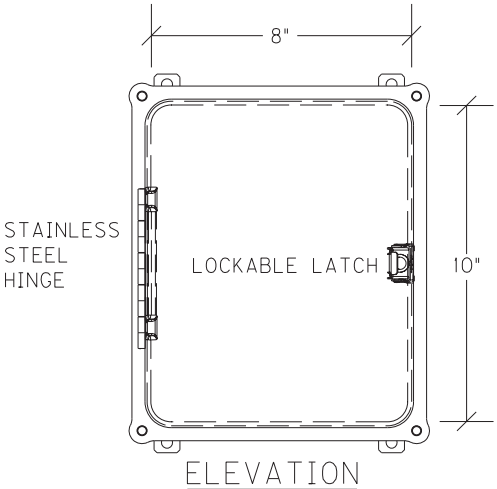
PLAN



SECTION A-A



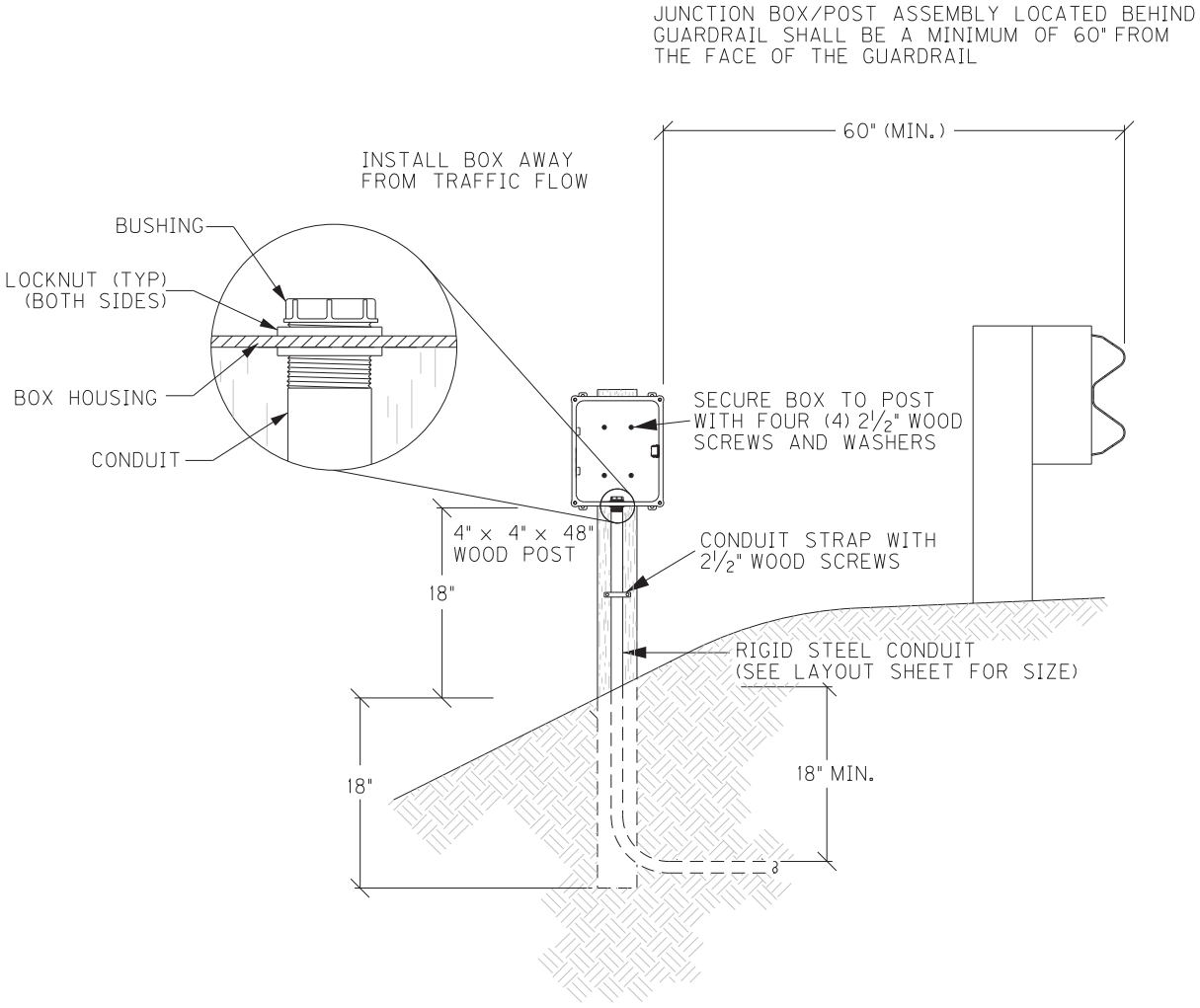
TERMINAL STRIP (TYP.)



ELEVATION

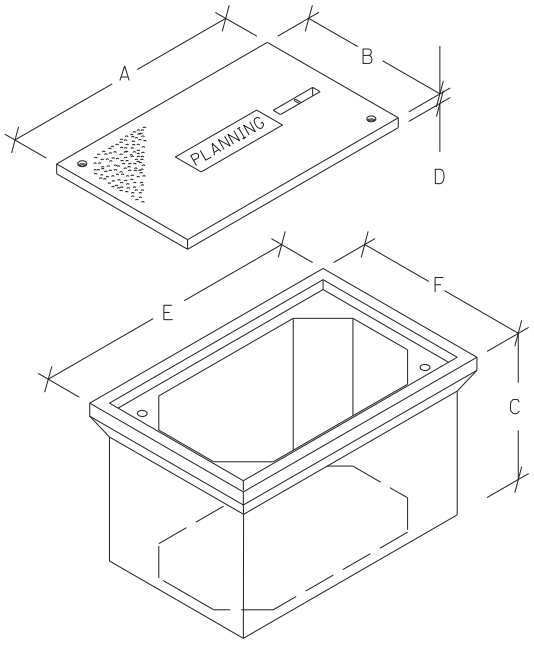
JUNCTION BOX 10"x8"X4"

NOT TO SCALE



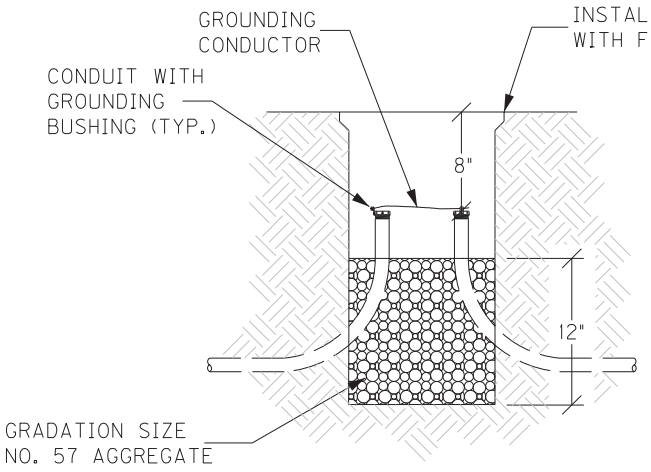
JUNCTION BOX 10"x8"x4" AND POST ASSEMBLY

NOT TO SCALE



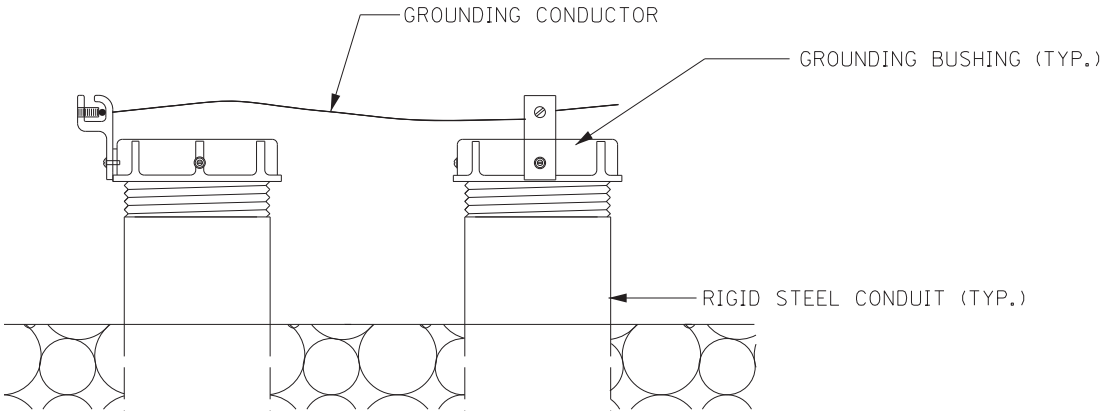
JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D*	E	F
TYPE A	23"	14"	18"	2"	25"	16"
TYPE B	18"	11"	12"	1¾"	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

* MINIMUM
STACKABLE BOXES ARE PERMITTED



ELEVATION

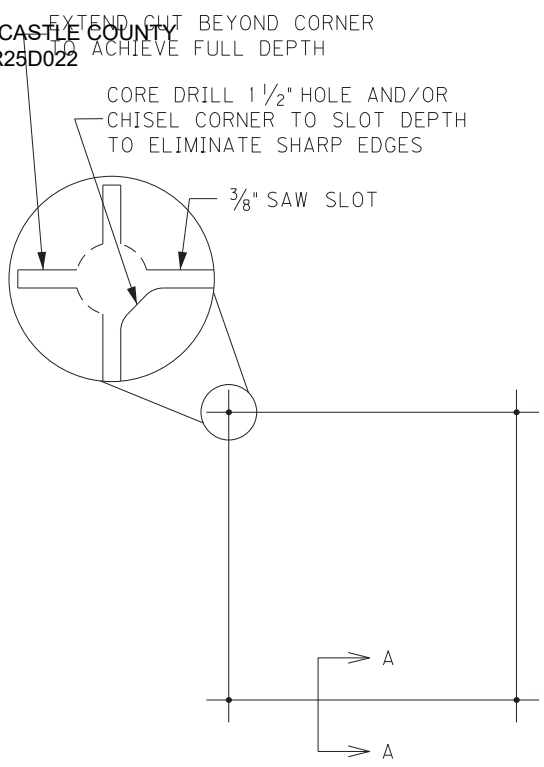
WHERE REQUIRED, JUNCTION BOX SHALL BE ORIENTED SUCH THAT THE DIMENSIONS COMPLY WITH THE NATIONAL ELECTRICAL CODE.



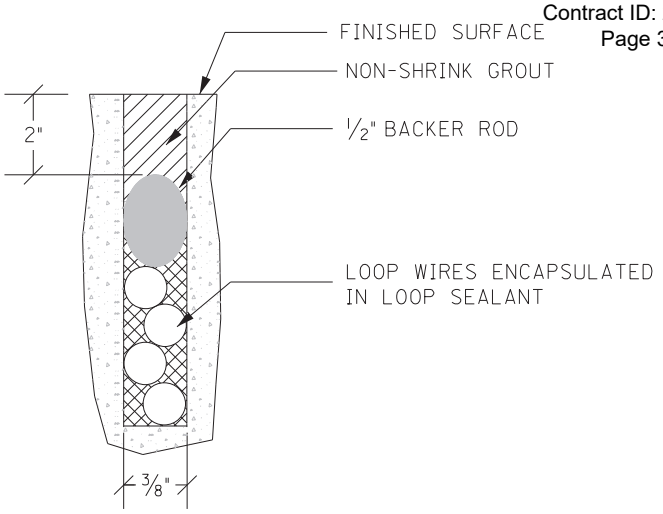
GROUNDING DETAIL

JUNCTION BOX - TYPE A, TYPE B, TYPE C

NOT TO SCALE



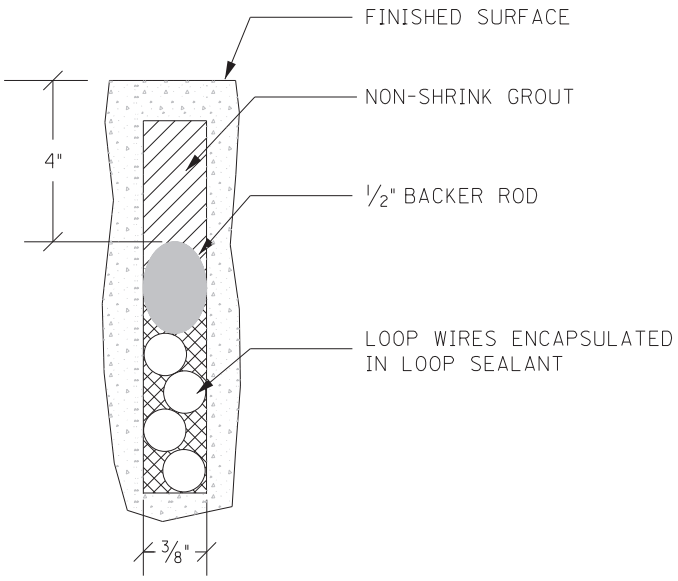
SAW CUT PLAN



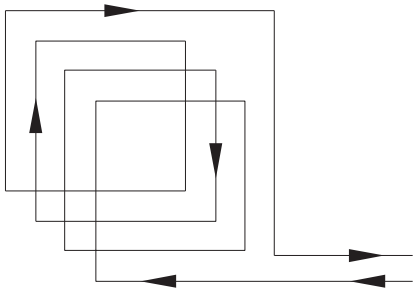
SECTION A-A (CONCRETE)

UNLESS SPECIFIED OTHERWISE, ALL LOOPS SHALL BE 6' x 6' SQUARE, CENTERED IN EACH LANE, WITH FOUR TURNS OF 14 AWG LOOP WIRE.

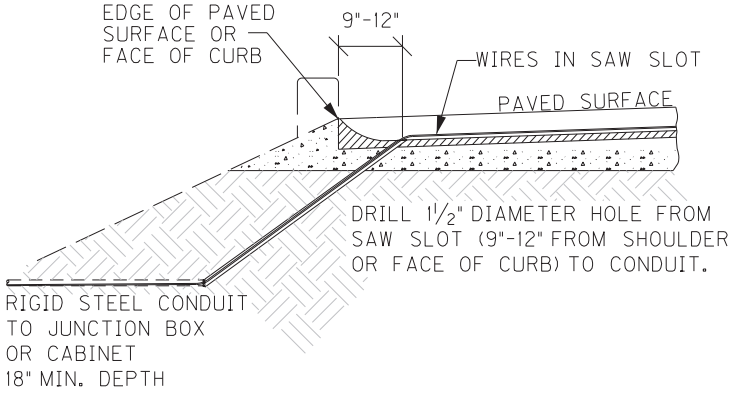
ADJACENT SAW SLOTS SHALL BE A MINIMUM OF 12" APART.



SECTION A-A (ASPHALT)



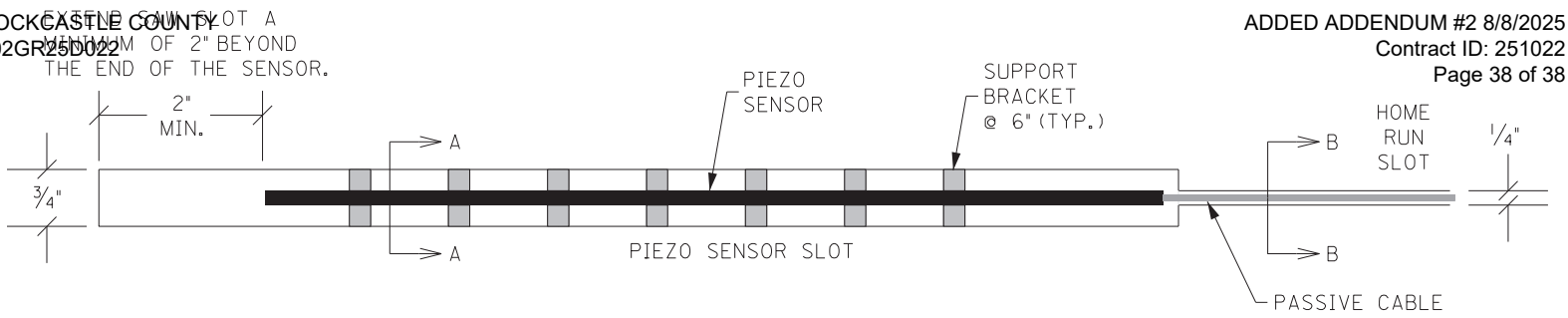
WIRING PLAN



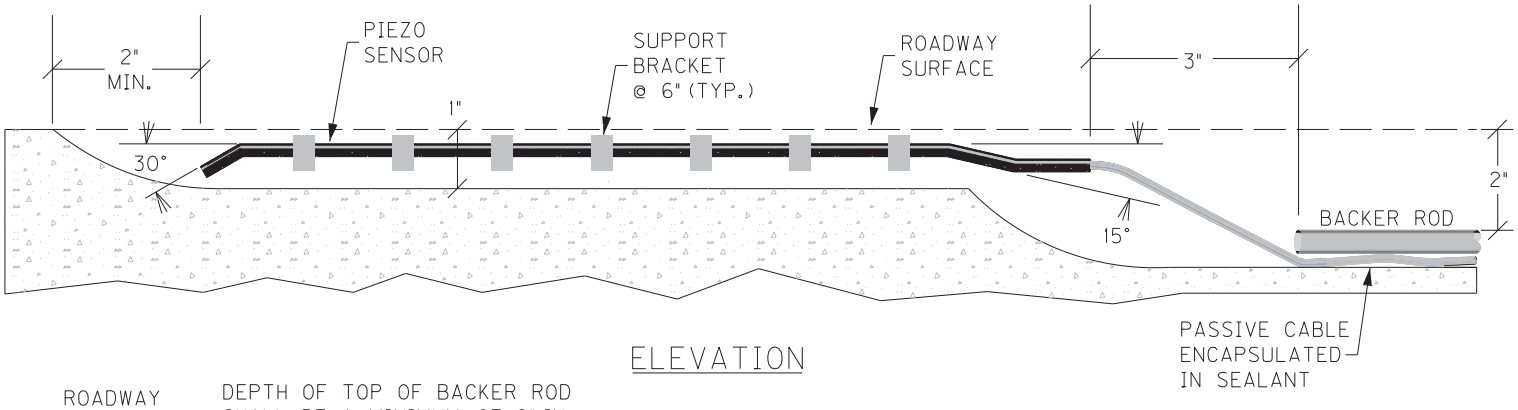
SAW SLOT EDGE OF PAVEMENT TRANSITION

INDUCTIVE LOOP DETECTOR

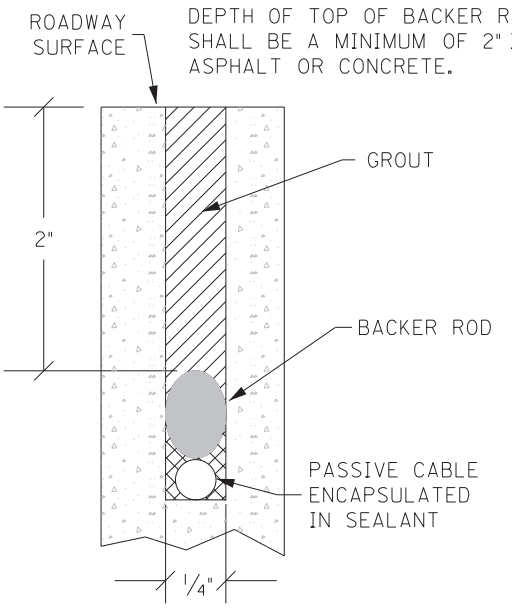
NOT TO SCALE



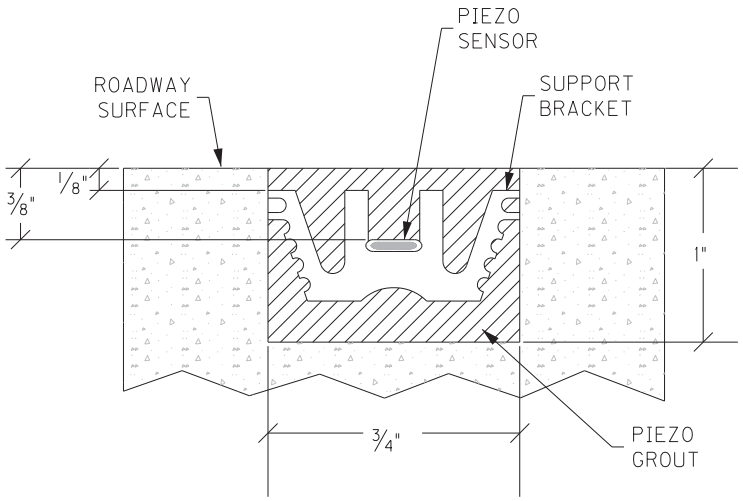
PLAN



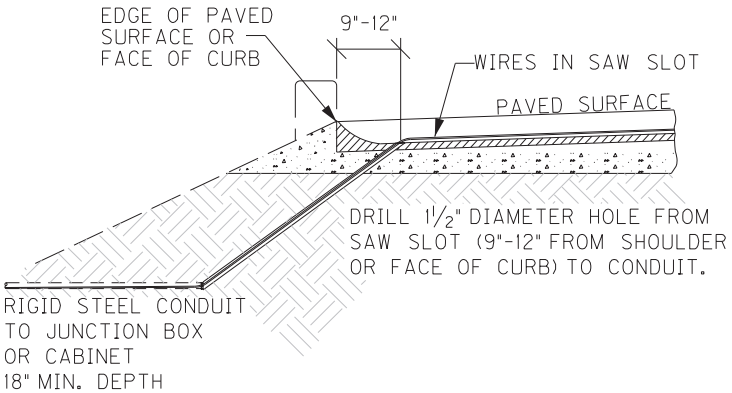
ELEVATION



SECTION B-B



SECTION A-A



SAW SLOT EDGE OF PAVEMENT TRANSITION

PIEZOELECTRIC SENSOR INSTALLATION

NOT TO SCALE