



Andy Beshear
GOVERNOR

TRANSPORTATION CABINET

200 Mero Street
Frankfort, Kentucky 40601

Jim Gray
SECRETARY

September 10, 2025

CALL NO. 204
CONTRACT ID NO. 251026
ADDENDUM # 1

Subject: Bath-Montgomery-Clark Counties, 121GR25D026
Letting September 25, 2025

- (1) Revised - Material Summary - Pages 318-326 of 375
- (2) Revised - Proposal Bid Items - Pages 370-375 of 375
- (3) Added - Notes - Pages 1-35 of 35

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

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

Sincerely,

A handwritten signature in black ink that reads "Rachel Mills".

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

RM:mr
Enclosures

MATERIAL SUMMARY

CONTRACT ID: 251026

121GR25D026

DE00600642526

I-64 ADDRESS CONDITION OF I-64 FROM MP 115.647 TO MP 117.83 IN BATH COUNTY ASPHALT PAVEMENT & ROADWAY REHAB, A DISTANCE OF 2.18 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1430	00001	DGA BASE	11.00	TON
1435	00078	CRUSHED AGGREGATE SIZE NO 2	2.00	TON
1440	00100	ASPHALT SEAL AGGREGATE	255.00	TON
1445	00103	ASPHALT SEAL COAT	31.00	TON
1450	00194	LEVELING & WEDGING PG76-22	500.00	TON
1455	00342	CL4 ASPH SURF 0.38A PG76-22	6,529.00	TON
1460	02676	MOBILIZATION FOR MILL & TEXT - BATH SYP 09-22044.00	1.00	LS
1465	02677	ASPHALT PAVE MILLING & TEXTURING	6,529.00	TON
1470	03240	BASE FAILURE REPAIR	21.00	SQYD
1475	20757ED	PAVEMENT REPAIR	325.00	SQYD
1480	24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING	28.00	TON
1485	00521	STORM SEWER PIPE-15 IN	22.00	LF
1490	01010	NON-PERFORATED PIPE-4 IN	34.00	LF
1495	01432	SLOPED BOX OUTLET TYPE 1-15 IN	2.00	EACH
1500	01904	REMOVE CURB	40.00	LF
1505	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	10.00	EACH
1510	01983	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	25.00	EACH
1515	02003	RELOCATE TEMP CONC BARRIER	340.00	LF
1520	02014	BARRICADE-TYPE III	1.00	EACH
1525	02230	EMBANKMENT IN PLACE	472.00	CUYD
1530	02381	REMOVE GUARDRAIL	862.50	LF
1535	02562	TEMPORARY SIGNS	1,000.00	SQFT
1540	02625	REMOVE HEADWALL	2.00	EACH
1545	02650	MAINTAIN & CONTROL TRAFFIC - BATH - SYP 09-22044.00	1.00	LS
1550	02654	TRUCK MOUNTED ATTENUATOR	1.00	EACH
1555	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
1560	02697	EDGE LINE RUMBLE STRIPS	45,956.00	LF
1565	02705	SILT TRAP TYPE C	5.00	EACH
1570	02708	CLEAN SILT TRAP TYPE C	5.00	EACH
1575	02726	STAKING - BATH - SYP 09-22044.00	1.00	LS
1580	02775	ARROW PANEL	2.00	EACH
1585	02898	RELOCATE CRASH CUSHION	1.00	EACH
1590	05963	INITIAL FERTILIZER	0.20	TON
1595	05964	MAINTENANCE FERTILIZER	0.20	TON
1600	05985	SEEDING AND PROTECTION	4,389.00	SQYD
1605	06401	FLEXIBLE DELINEATOR POST-M/W	329.00	EACH
1610	06511	PAVE STRIPING-TEMP PAINT-6 IN	24,034.00	LF
1615	06542	PAVE STRIPING-THERMO-6 IN W	28,722.00	LF
1620	06543	PAVE STRIPING-THERMO-6 IN Y	22,979.00	LF
1625	06549	PAVE STRIPING-TEMP REM TAPE-B	1,800.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1630	06550	PAVE STRIPING-TEMP REM TAPE-W	5,400.00	LF
1635	06551	PAVE STRIPING-TEMP REM TAPE-Y	1,800.00	LF
1640	06556	PAVE STRIPING-DUR TY 1-6 IN W	520.00	LF
1645	06557	PAVE STRIPING-DUR TY 1-6 IN Y	414.00	LF
1650	06613	INLAID PAVEMENT MARKER-B W/R	289.00	EACH
1655	08912	CRASH CUSHION TY 6 CLASS T TL3	2.00	EACH
1660	10020NS	FUEL ADJUSTMENT	10,608.00	DOLL
1665	10030NS	ASPHALT ADJUSTMENT	26,644.00	DOLL
1670	20071EC	JOINT ADHESIVE	46,104.00	LF
1675	20190ES601	CONC BARR WALL TY 9T-INSTALL	720.00	LF
1680	20411ED	LAW ENFORCEMENT OFFICER	215.00	HOURL
1685	20432ES112	REMOVE CRASH CUSHION	4.00	EACH
1690	20591EC	REMOVE BARRIER	30.00	LF
1695	20758ED	REMOVE AND RESET PERF PIPE HEADWALL	2.00	EACH
1700	21380ES719	GUARDRAIL THRIE BEAM	605.50	LF
1705	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	175.00	LF
1710	22664EN	WATER BLASTING EXISTING STRIPE	9,000.00	LF
1715	24880EC	REMOVE PAVEMENT MARKER	289.00	EACH
1720	24891EC	PAVE MOUNT INFRARED TEMP EQUIPMENT	712,296.00	SF
1725	25075EC	QUEUE PROTECTION VEHICLE	640.00	HOURL
1730	25078ED	THRIE BEAM GUARDRAIL TRANSITION TL-3	6.00	EACH
1735	25079ED	THRIE BEAM GUARDRAIL TRANSITION TL-2	5.00	EACH
1740	25117EC	FURNISH QUEUE PROTECTION VEHICLES	2.00	MONT
1745	26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	2.00	MONT
1750	26137EC	QUEUE WARNING PCMS	12.00	MONT
1755	26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	12.00	MONT
1760	26233EC	MOBILIZATION FOR CONCRETE SURF TREATMENT - BATH - SYP 09-22044.00	1.00	LS
1765	26236EC	THRIE BEAM BULLNOSE TERMINAL	4.00	EACH
1770	26237EC	CONNECTED ARROW PANEL	2.00	MONT
1775	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
1780	08100	CONCRETE-CLASS A	109.20	CUYD
1785	08150	STEEL REINFORCEMENT	10,270.00	LB
1790	20591EC	REMOVE BARRIER	87.00	LF
1795	23378EC	CONCRETE SEALING	2,447.00	SQFT
1800	02568	MOBILIZATION	1.00	LS
1805	02569	DEMOBILIZATION	1.00	LS
1810	04793	CONDUIT-1 1/4 IN (ADDED 9-10-25)	80.00	LF
1815	04795	CONDUIT-2 IN (ADDED 9-10-25)	20.00	LF
1820	04820	TRENCHING AND BACKFILLING (ADDED 9-10-25)	90.00	LF
1825	04829	PIEZOELECTRIC SENSOR (ADDED 9-10-25)	4.00	EACH
1830	04830	LOOP WIRE (ADDED 9-10-25)	1,600.00	LF
1835	04895	LOOP SAW SLOT AND FILL (ADDED 9-10-25)	360.00	LF
1840	20359NN	GALVANIZED STEEL CABINET (ADDED 9-10-25)	2.00	EACH
1845	20360ES818	WOOD POST (ADDED 9-10-25)	4.00	EACH
1850	20391NS835	ELECTRICAL JUNCTION BOX TYPE A (ADDED 9-10-25)	2.00	EACH

MATERIAL SUMMARY

I-64 ADDRESS CONDITION OF I-64 FROM MP 101.7 TO MP 104.26 IN CLARK COUNTY ASPHALT PAVEMENT & ROADWAY REHAB, A DISTANCE OF 2.56 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0100	00001	DGA BASE	461.00	TON
0105	00100	ASPHALT SEAL AGGREGATE	331.00	TON
0110	00103	ASPHALT SEAL COAT	40.00	TON
0115	00194	LEVELING & WEDGING PG76-22	800.00	TON
0120	00335	CL4 ASPH SURF 0.50A PG76-22	8,845.00	TON
0125	00342	CL4 ASPH SURF 0.38A PG76-22	453.00	TON
0130	02676	MOBILIZATION FOR MILL & TEXT - SYP 07-22041.00	1.00	LS
0135	02677	ASPHALT PAVE MILLING & TEXTURING	8,060.00	TON
0140	20757ED	PAVEMENT REPAIR	201.00	SQYD
0145	24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING	35.00	TON
0150	00521	STORM SEWER PIPE-15 IN	10.00	LF
0155	01490	DROP BOX INLET TYPE 1	1.00	EACH
0160	01584	CAP DROP BOX INLET	1.00	EACH
0165	01904	REMOVE CURB	60.00	LF
0170	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	18.00	EACH
0175	01983	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	29.00	EACH
0180	02003	RELOCATE TEMP CONC BARRIER	360.00	LF
0185	02014	BARRICADE-TYPE III	1.00	EACH
0190	02230	EMBANKMENT IN PLACE	930.00	CUYD
0195	02381	REMOVE GUARDRAIL	1,150.00	LF
0200	02383	REMOVE & RESET GUARDRAIL	38.00	LF
0205	02562	TEMPORARY SIGNS	1,000.00	SQFT
0210	02650	MAINTAIN & CONTROL TRAFFIC - SYP 07-22041.00	1.00	LS
0215	02654	TRUCK MOUNTED ATTENUATOR	1.00	EACH
0220	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0225	02697	EDGE LINE RUMBLE STRIPS	56,152.00	LF
0230	02705	SILT TRAP TYPE C	5.00	EACH
0235	02708	CLEAN SILT TRAP TYPE C	5.00	EACH
0240	02726	STAKING - SYP 07-22041.00	1.00	LS
0245	02775	ARROW PANEL	2.00	EACH
0250	02898	RELOCATE CRASH CUSHION	2.00	EACH
0255	05963	INITIAL FERTILIZER	0.30	TON
0260	05964	MAINTENANCE FERTILIZER	0.30	TON
0265	05985	SEEDING AND PROTECTION	6,123.00	SQYD
0270	06401	FLEXIBLE DELINEATOR POST-M/W	348.00	EACH
0275	06404	FLEXIBLE DELINEATOR POST-M/Y	34.00	EACH
0280	06511	PAVE STRIPING-TEMP PAINT-6 IN	27,034.00	LF
0285	06542	PAVE STRIPING-THERMO-6 IN W	36,199.00	LF
0290	06543	PAVE STRIPING-THERMO-6 IN Y	28,169.00	LF
0295	06546	PAVE STRIPING-THERMO-12 IN W	368.00	LF
0300	06549	PAVE STRIPING-TEMP REM TAPE-B	1,800.00	LF
0305	06550	PAVE STRIPING-TEMP REM TAPE-W	5,400.00	LF
0310	06551	PAVE STRIPING-TEMP REM TAPE-Y	1,800.00	LF
0315	06556	PAVE STRIPING-DUR TY 1-6 IN W	670.00	LF
0320	06557	PAVE STRIPING-DUR TY 1-6 IN Y	536.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0325	06613	INLAID PAVEMENT MARKER-B W/R	338.00	EACH
0330	06614	INLAID PAVEMENT MARKER-B Y/R	24.00	EACH
0335	08912	CRASH CUSHION TY 6 CLASS T TL3	6.00	EACH
0340	10020NS	FUEL ADJUSTMENT	15,050.00	DOLL
0345	10030NS	ASPHALT ADJUSTMENT	37,802.00	DOLL
0350	20071EC	JOINT ADHESIVE	54,068.00	LF
0355	20190ES601	CONC BARR WALL TY 9T-INSTALL	2,480.00	LF
0360	20411ED	LAW ENFORCEMENT OFFICER	255.00	HOURL
0365	20432ES112	REMOVE CRASH CUSHION	6.00	EACH
0370	20591EC	REMOVE BARRIER	60.00	LF
0375	21380ES719	GUARDRAIL THRIE BEAM	837.00	LF
0380	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	225.00	LF
0385	22664EN	WATER BLASTING EXISTING STRIPE	9,000.00	LF
0390	24679ED	PAVE MARK THERMO CHEVRON	320.00	SQFT
0395	24880EC	REMOVE PAVEMENT MARKER	362.00	EACH
0400	24891EC	PAVE MOUNT INFRARED TEMP EQUIPMENT	876,519.00	SF
0405	25075EC	QUEUE PROTECTION VEHICLE	960.00	HOURL
0410	25078ED	THRIE BEAM GUARDRAIL TRANSITION TL-3	8.00	EACH
0415	25079ED	THRIE BEAM GUARDRAIL TRANSITION TL-2	5.00	EACH
0420	25117EC	FURNISH QUEUE PROTECTION VEHICLES	3.00	MONT
0425	26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	3.00	MONT
0430	26137EC	QUEUE WARNING PCMS	18.00	MONT
0435	26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	18.00	MONT
0440	26233EC	MOBILIZATION FOR CONCRETE SURF TREATMENT - SYP 07-22041.00	1.00	LS
0445	26236EC	THRIE BEAM BULLNOSE TERMINAL	6.00	EACH
0450	26237EC	CONNECTED ARROW PANEL	3.00	MONT
0455	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
0460	08100	CONCRETE-CLASS A	112.50	CUYD
0465	08150	STEEL REINFORCEMENT	9,135.00	LB
0470	20591EC	REMOVE BARRIER	69.00	LF
0475	23378EC	CONCRETE SEALING	2,480.00	SQFT
0480	23032EN	BRIDGE BARRIER RETROFIT	1,128.00	LF
0485	23378EC	CONCRETE SEALING	6,852.00	SQFT
0490	08100	CONCRETE-CLASS A	104.50	CUYD
0495	08150	STEEL REINFORCEMENT	9,440.00	LB
0500	20591EC	REMOVE BARRIER	69.00	LF
0505	23378EC	CONCRETE SEALING	2,410.00	SQFT
0510	02568	MOBILIZATION	1.00	LS
0515	02569	DEMOBILIZATION	1.00	LS

CONTRACT ID: 251026

121GR25D026

DE08700642526

I-64 ADDRESS CONDITION OF I-64 FROM MP 104.26 TO MP 112.113 IN MONTGOMERY COUNTY ASPHALT PAVEMENT & ROADWAY REHAB, A DISTANCE OF 7.84 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
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MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0520	00001	DGA BASE	6,584.00	TON
0525	00100	ASPHALT SEAL AGGREGATE	1,005.00	TON
0530	00103	ASPHALT SEAL COAT	121.00	TON
0535	00194	LEVELING & WEDGING PG76-22	2,000.00	TON
0540	00214	CL3 ASPH BASE 1.00D PG64-22	5,000.00	TON
0545	00335	CL4 ASPH SURF 0.50A PG76-22	28,254.00	TON
0550	00342	CL4 ASPH SURF 0.38A PG76-22	1,288.00	TON
0555	02676	MOBILIZATION FOR MILL & TEXT - SYP 07-20018.00	1.00	LS
0560	02677	ASPHALT PAVE MILLING & TEXTURING	25,526.00	TON
0565	20757ED	PAVEMENT REPAIR	470.00	SQYD
0570	24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING	109.00	TON
0575	00521	STORM SEWER PIPE-15 IN	95.00	LF
0580	01310	REMOVE PIPE	8.00	LF
0585	01432	SLOPED BOX OUTLET TYPE 1-15 IN	2.00	EACH
0590	01904	REMOVE CURB	100.00	LF
0595	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	14.00	EACH
0600	01983	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	49.00	EACH
0605	02003	RELOCATE TEMP CONC BARRIER	4,600.00	LF
0610	02014	BARRICADE-TYPE III	6.00	EACH
0615	02230	EMBANKMENT IN PLACE	1,121.00	CUYD
0620	02381	REMOVE GUARDRAIL	850.00	LF
0625	02383	REMOVE & RESET GUARDRAIL	75.00	LF
0630	02562	TEMPORARY SIGNS	2,000.00	SQFT
0635	02625	REMOVE HEADWALL	2.00	EACH
0640	02650	MAINTAIN & CONTROL TRAFFIC - SYP 07-20018.00	1.00	LS
0645	02654	TRUCK MOUNTED ATTENUATOR	1.00	EACH
0650	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0655	02697	EDGE LINE RUMBLE STRIPS	173,065.00	LF
0660	02705	SILT TRAP TYPE C	6.00	EACH
0665	02708	CLEAN SILT TRAP TYPE C	6.00	EACH
0670	02720	SIDEWALK-4 IN CONCRETE	1,876.00	SQYD
0675	02726	STAKING - SYP 07-20018.00	1.00	LS
0680	02775	ARROW PANEL	2.00	EACH
0685	02898	RELOCATE CRASH CUSHION	4.00	EACH
0690	05963	INITIAL FERTILIZER	0.30	TON
0695	05964	MAINTENANCE FERTILIZER	0.30	TON
0700	05985	SEEDING AND PROTECTION	8,113.00	SQYD
0705	06401	FLEXIBLE DELINEATOR POST-M/W	1,201.00	EACH
0710	06404	FLEXIBLE DELINEATOR POST-M/Y	77.00	EACH
0715	06511	PAVE STRIPING-TEMP PAINT-6 IN	125,734.00	LF
0720	06542	PAVE STRIPING-THERMO-6 IN W	108,846.00	LF
0725	06543	PAVE STRIPING-THERMO-6 IN Y	86,503.00	LF
0730	06546	PAVE STRIPING-THERMO-12 IN W	3,206.00	LF
0735	06549	PAVE STRIPING-TEMP REM TAPE-B	3,600.00	LF
0740	06550	PAVE STRIPING-TEMP REM TAPE-W	10,800.00	LF
0745	06551	PAVE STRIPING-TEMP REM TAPE-Y	3,600.00	LF
0750	06556	PAVE STRIPING-DUR TY 1-6 IN W	401.00	LF
0755	06557	PAVE STRIPING-DUR TY 1-6 IN Y	319.00	LF
0760	06568	PAVE MARKING-THERMO STOP BAR-24IN	90.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0765	06574	PAVE MARKING-THERMO CURV ARROW	30.00	EACH
0770	06580	PAVEMENT MARKER TYPE IV-MW	556.00	EACH
0775	06581	PAVEMENT MARKER TYPE IV-MY	514.00	EACH
0780	06613	INLAID PAVEMENT MARKER-B W/R	1,110.00	EACH
0785	06614	INLAID PAVEMENT MARKER-B Y/R	50.00	EACH
0790	08912	CRASH CUSHION TY 6 CLASS T TL3	2.00	EACH
0795	10020NS	FUEL ADJUSTMENT	57,884.00	DOLL
0800	10030NS	ASPHALT ADJUSTMENT	139,448.00	DOLL
0805	20071EC	JOINT ADHESIVE	165,856.00	LF
0810	20190ES601	CONC BARR WALL TY 9T-INSTALL	3,860.00	LF
0815	20259ED	TEMPORARY MEDIAN CROSSOVER	2.00	EACH
0820	20411ED	LAW ENFORCEMENT OFFICER	780.00	HOURL
0825	20432ES112	REMOVE CRASH CUSHION	8.00	EACH
0830	20591EC	REMOVE BARRIER	200.00	LF
0835	21380ES719	GUARDRAIL THRIE BEAM	1,414.00	LF
0840	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	175.00	LF
0845	22664EN	WATER BLASTING EXISTING STRIPE	18,000.00	LF
0850	23147EN	HIGH TENSION CABLE-ROPE BARRIER	4,222.00	LF
0855	23148EN	END ANCHORS	2.00	EACH
0860	23496EC	MEDIAN CROSSOVER REMOVAL	2.00	EACH
0865	24255EC	REMOVE CABLE GUARDRAIL BARRIER SYSTEM	4,222.00	LF
0870	24679ED	PAVE MARK THERMO CHEVRON	2,143.00	SQFT
0875	24683ED	PAVE MARKING-THERMO DOTTED LANE EXTEN	40.00	LF
0880	24880EC	REMOVE PAVEMENT MARKER	1,160.00	EACH
0885	24891EC	PAVE MOUNT INFRARED TEMP EQUIPMENT	2,986,965.00	SF
0890	25075EC	QUEUE PROTECTION VEHICLE	1,600.00	HOURL
0895	25078ED	THRIE BEAM GUARDRAIL TRANSITION TL-3	8.00	EACH
0900	25079ED	THRIE BEAM GUARDRAIL TRANSITION TL-2	3.00	EACH
0905	25117EC	FURNISH QUEUE PROTECTION VEHICLES	5.00	MONT
0910	26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	5.00	MONT
0915	26137EC	QUEUE WARNING PCMS	30.00	MONT
0920	26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	30.00	MONT
0925	26233EC	MOBILIZATION FOR CONCRETE SURF TREATMENT - SYP 07-20018.00	1.00	LS
0930	26236EC	THRIE BEAM BULLNOSE TERMINAL	8.00	EACH
0935	26237EC	CONNECTED ARROW PANEL	5.00	MONT
0940	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
0945	23032EN	BRIDGE BARRIER RETROFIT	31.00	LF
0950	23378EC	CONCRETE SEALING	545.00	SQFT
0955	08100	CONCRETE-CLASS A	105.60	CUYD
0960	08150	STEEL REINFORCEMENT	8,630.00	LB
0965	20591EC	REMOVE BARRIER	101.00	LF
0970	23378EC	CONCRETE SEALING	2,260.00	SQFT
0975	08100	CONCRETE-CLASS A	111.30	CUYD
0980	08150	STEEL REINFORCEMENT	7,415.00	LB
0985	20591EC	REMOVE BARRIER	254.00	LF
0990	23378EC	CONCRETE SEALING	2,175.00	SQFT
0995	08100	CONCRETE-CLASS A	19.30	CUYD
1000	08150	STEEL REINFORCEMENT	2,005.00	LB
1005	20591EC	REMOVE BARRIER	48.00	LF

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1010	23378EC	CONCRETE SEALING	400.00	SQFT
1015	04793	CONDUIT-1 1/4 IN	140.00	LF
1020	04795	CONDUIT-2 IN	40.00	LF
1025	04820	TRENCHING AND BACKFILLING	160.00	LF
1030	04829	PIEZOELECTRIC SENSOR	8.00	EACH
1035	04830	LOOP WIRE	3,200.00	LF
1040	04895	LOOP SAW SLOT AND FILL	700.00	LF
1045	20359NN	GALVANIZED STEEL CABINET	4.00	EACH
1050	20360ES818	WOOD POST	8.00	EACH
1055	20391NS835	ELECTRICAL JUNCTION BOX TYPE A	4.00	EACH
1060	02568	MOBILIZATION	1.00	LS
1065	02569	DEMOBILIZATION	1.00	LS

CONTRACT ID: 251026

121GR25D026

DE08700642528

I-64 ADDRESS CONDITION OF I-64 FROM MP 112.113 TO MP 115.647 IN MONTGOMERY COUNTY ASPHALT PAVEMENT & ROADWAY REHAB, A DISTANCE OF 3.53 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1070	00001	DGA BASE	738.00	TON
1075	00100	ASPHALT SEAL AGGREGATE	514.00	TON
1080	00103	ASPHALT SEAL COAT	62.00	TON
1085	00194	LEVELING & WEDGING PG76-22	1,000.00	TON
1090	00219	CL4 ASPH BASE 1.00D PG76-22	2,953.00	TON
1095	00342	CL4 ASPH SURF 0.38A PG76-22	12,447.00	TON
1100	02676	MOBILIZATION FOR MILL & TEXT - SYP 07-22043.00	1.00	LS
1105	02677	ASPHALT PAVE MILLING & TEXTURING	15,400.00	TON
1110	03240	BASE FAILURE REPAIR	101.00	SQYD
1115	24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING	59.00	TON
1120	01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	2.00	EACH
1125	01983	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	6.00	EACH
1130	02003	RELOCATE TEMP CONC BARRIER	380.00	LF
1135	02014	BARRICADE-TYPE III	1.00	EACH
1140	02230	EMBANKMENT IN PLACE	218.00	CUYD
1145	02367	GUARDRAIL END TREATMENT TYPE 1	1.00	EACH
1150	02381	REMOVE GUARDRAIL	50.00	LF
1155	02383	REMOVE & RESET GUARDRAIL	150.00	LF
1160	02562	TEMPORARY SIGNS	2,000.00	SQFT
1165	02650	MAINTAIN & CONTROL TRAFFIC - SYP 07-22043.00	1.00	LS
1170	02654	TRUCK MOUNTED ATTENUATOR	1.00	EACH
1175	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
1180	02697	EDGE LINE RUMBLE STRIPS	83,896.00	LF
1185	02705	SILT TRAP TYPE C	4.00	EACH
1190	02708	CLEAN SILT TRAP TYPE C	4.00	EACH
1195	02726	STAKING - SYP 07-22043.00	1.00	LS

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
1200	02775	ARROW PANEL	2.00	EACH
1205	02898	RELOCATE CRASH CUSHION	1.00	EACH
1210	05963	INITIAL FERTILIZER	0.20	TON
1215	05964	MAINTENANCE FERTILIZER	0.20	TON
1220	05985	SEEDING AND PROTECTION	1,592.00	SQYD
1225	06401	FLEXIBLE DELINEATOR POST-M/W	550.00	EACH
1230	06404	FLEXIBLE DELINEATOR POST-M/Y	85.00	EACH
1235	06511	PAVE STRIPING-TEMP PAINT-6 IN	37,320.00	LF
1240	06542	PAVE STRIPING-THERMO-6 IN W	51,755.00	LF
1245	06543	PAVE STRIPING-THERMO-6 IN Y	42,296.00	LF
1250	06546	PAVE STRIPING-THERMO-12 IN W	1,030.00	LF
1255	06549	PAVE STRIPING-TEMP REM TAPE-B	1,800.00	LF
1260	06550	PAVE STRIPING-TEMP REM TAPE-W	5,400.00	LF
1265	06551	PAVE STRIPING-TEMP REM TAPE-Y	1,800.00	LF
1270	06568	PAVE MARKING-THERMO STOP BAR-24IN	54.00	LF
1275	06613	INLAID PAVEMENT MARKER-B W/R	576.00	EACH
1280	06614	INLAID PAVEMENT MARKER-B Y/R	61.00	EACH
1285	10020NS	FUEL ADJUSTMENT	24,867.00	DOLL
1290	10030NS	ASPHALT ADJUSTMENT	62,460.00	DOLL
1295	20071EC	JOINT ADHESIVE	74,640.00	LF
1300	20191ED	OBJECT MARKER TY 3	1.00	EACH
1305	20411ED	LAW ENFORCEMENT OFFICER	350.00	HOURL
1310	20432ES112	REMOVE CRASH CUSHION	2.00	EACH
1315	20591EC	REMOVE BARRIER	30.00	LF
1320	21380ES719	GUARDRAIL THRIE BEAM	125.00	LF
1325	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	150.00	LF
1330	22664EN	WATER BLASTING EXISTING STRIPE	9,000.00	LF
1335	24679ED	PAVE MARK THERMO CHEVRON	452.00	SQFT
1340	24683ED	PAVE MARKING-THERMO DOTTED LANE EXTEN	894.00	LF
1345	24880EC	REMOVE PAVEMENT MARKER	637.00	EACH
1350	24891EC	PAVE MOUNT INFRARED TEMP EQUIPMENT	1,494,324.00	SF
1355	25075EC	QUEUE PROTECTION VEHICLE	640.00	HOURL
1360	25117EC	FURNISH QUEUE PROTECTION VEHICLES	2.00	MONT
1365	26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	2.00	MONT
1370	26137EC	QUEUE WARNING PCMS	12.00	MONT
1375	26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	12.00	MONT
1380	26233EC	MOBILIZATION FOR CONCRETE SURF TREATMENT - SYP 07-22043.00	1.00	LS
1385	26236EC	THRIE BEAM BULLNOSE TERMINAL	2.00	EACH
1390	26237EC	CONNECTED ARROW PANEL	2.00	MONT
1395	26248EC	ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS
1400	08100	CONCRETE-CLASS A	26.20	CUYD
1405	08150	STEEL REINFORCEMENT	2,395.00	LB
1410	20591EC	REMOVE BARRIER	57.00	LF
1415	23378EC	CONCRETE SEALING	485.00	SQFT
1420	02568	MOBILIZATION	1.00	LS
1425	02569	DEMOBILIZATION	1.00	LS

MATERIAL SUMMARY

CONTRACT ID: 251026 121GR25D026 MB08700642501

WINCHESTER - MOUNT STERLING ROAD (I-64) BRIDGE 087B00024LR OVER PREWITT-GRASSY LICK ROAD
AT MP 105.57 BRIDGE DECK RESTORATION & WATERPROOFING.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0005	03293	EXPAN JOINT REPLACE 1 IN	60.00	LF
0010	03299	ARMORED EDGE FOR CONCRETE	60.00	LF
0015	08150	STEEL REINFORCEMENT	540.00	LB
0020	08504	EPOXY SAND SLURRY	45.00	SQYD
0025	08510	REM EPOXY BIT FOREIGN OVERLAY	530.00	SQYD
0030	08526	CONC CLASS M FULL DEPTH PATCH	9.00	CUYD
0035	08534	CONCRETE OVERLAY-LATEX	22.10	CUYD
0040	08549	BLAST CLEANING	575.00	SQYD
0045	24094EC	PARTIAL DEPTH PATCHING	19.00	CUYD
0050	03293	EXPAN JOINT REPLACE 1 IN - (ADDED 6-24-25)	60.00	LF
0055	03299	ARMORED EDGE FOR CONCRETE	60.00	LF
0060	08150	STEEL REINFORCEMENT	540.00	LB
0065	08504	EPOXY SAND SLURRY	45.00	SQYD
0070	08510	REM EPOXY BIT FOREIGN OVERLAY	530.00	SQYD
0075	08526	CONC CLASS M FULL DEPTH PATCH	9.00	CUYD
0080	08534	CONCRETE OVERLAY-LATEX	22.10	CUYD
0085	08549	BLAST CLEANING	575.00	SQYD
0090	24094EC	PARTIAL DEPTH PATCHING	19.00	CUYD
0095	02569	DEMOBILIZATION	1.00	LS

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Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	7,794.00	TON		\$	
0020	00078		CRUSHED AGGREGATE SIZE NO 2	2.00	TON		\$	
0030	00100		ASPHALT SEAL AGGREGATE	2,105.00	TON		\$	
0040	00103		ASPHALT SEAL COAT	254.00	TON		\$	
0050	00194		LEVELING & WEDGING PG76-22	4,300.00	TON		\$	
0060	00214		CL3 ASPH BASE 1.00D PG64-22	5,000.00	TON		\$	
0070	00219		CL4 ASPH BASE 1.00D PG76-22	2,953.00	TON		\$	
0080	00335		CL4 ASPH SURF 0.50A PG76-22	37,099.00	TON		\$	
0090	00342		CL4 ASPH SURF 0.38A PG76-22	20,717.00	TON		\$	
0100	02676		MOBILIZATION FOR MILL & TEXT SYP 07-22041.00	1.00	LS		\$	
0110	02676		MOBILIZATION FOR MILL & TEXT SYP 07-20018.00	1.00	LS		\$	
0120	02676		MOBILIZATION FOR MILL & TEXT SYP 07-22043.00	1.00	LS		\$	
0130	02676		MOBILIZATION FOR MILL & TEXT BATH SYP 09-22044.00	1.00	LS		\$	
0140	02677		ASPHALT PAVE MILLING & TEXTURING	55,515.00	TON		\$	
0150	03240		BASE FAILURE REPAIR	122.00	SQYD		\$	
0160	20757ED		PAVEMENT REPAIR	996.00	SQYD		\$	
0170	24970EC		ASPHALT MATERIAL FOR TACK NON- TRACKING	231.00	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0180	00521		STORM SEWER PIPE-15 IN	127.00	LF		\$	
0190	01010		NON-PERFORATED PIPE-4 IN	34.00	LF		\$	
0200	01310		REMOVE PIPE	8.00	LF		\$	
0210	01432		SLOPED BOX OUTLET TYPE 1-15 IN	4.00	EACH		\$	
0220	01490		DROP BOX INLET TYPE 1	1.00	EACH		\$	
0230	01584		CAP DROP BOX INLET	1.00	EACH		\$	
0240	01904		REMOVE CURB	200.00	LF		\$	
0250	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	44.00	EACH		\$	
0260	01983		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	109.00	EACH		\$	
0270	02003		RELOCATE TEMP CONC BARRIER	5,680.00	LF		\$	
0280	02014		BARRICADE-TYPE III	9.00	EACH		\$	
0290	02230		EMBANKMENT IN PLACE	2,741.00	CUYD		\$	
0300	02367		GUARDRAIL END TREATMENT TYPE 1	1.00	EACH		\$	
0310	02381		REMOVE GUARDRAIL	2,912.50	LF		\$	
0320	02383		REMOVE & RESET GUARDRAIL	263.00	LF		\$	
0330	02562		TEMPORARY SIGNS	6,000.00	SQFT		\$	
0340	02625		REMOVE HEADWALL	4.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0350	02650		MAINTAIN & CONTROL TRAFFIC SYP 07-22041.00	1.00	LS		\$	
0360	02650		MAINTAIN & CONTROL TRAFFIC SYP 07-20018.00	1.00	LS		\$	
0370	02650		MAINTAIN & CONTROL TRAFFIC SYP 07-22043.00	1.00	LS		\$	
0380	02650		MAINTAIN & CONTROL TRAFFIC BATH - SYP 09-22044.00	1.00	LS		\$	
0390	02654		TRUCK MOUNTED ATTENUATOR	4.00	EACH		\$	
0400	02671		PORTABLE CHANGEABLE MESSAGE SIGN	8.00	EACH		\$	
0410	02697		EDGE LINE RUMBLE STRIPS	359,069.00	LF		\$	
0420	02705		SILT TRAP TYPE C	20.00	EACH		\$	
0430	02708		CLEAN SILT TRAP TYPE C	20.00	EACH		\$	
0440	02720		SIDEWALK-4 IN CONCRETE	1,876.00	SQYD		\$	
0450	02726		STAKING SYP 07-22041.00	1.00	LS		\$	
0460	02726		STAKING SYP 07-20018.00	1.00	LS		\$	
0470	02726		STAKING SYP 07-22043.00	1.00	LS		\$	
0480	02726		STAKING BATH - SYP 09-22044.00	1.00	LS		\$	
0490	02775		ARROW PANEL	8.00	EACH		\$	
0500	02898		RELOCATE CRASH CUSHION	8.00	EACH		\$	
0510	05963		INITIAL FERTILIZER	1.00	TON		\$	
0520	05964		MAINTENANCE FERTILIZER	1.00	TON		\$	
0530	05985		SEEDING AND PROTECTION	20,217.00	SQYD		\$	
0540	06401		FLEXIBLE DELINEATOR POST-M/W	2,428.00	EACH		\$	
0550	06404		FLEXIBLE DELINEATOR POST-M/Y	196.00	EACH		\$	
0560	06511		PAVE STRIPING-TEMP PAINT-6 IN	214,122.00	LF		\$	
0570	06542		PAVE STRIPING-THERMO-6 IN W	225,522.00	LF		\$	
0580	06543		PAVE STRIPING-THERMO-6 IN Y	179,947.00	LF		\$	
0590	06546		PAVE STRIPING-THERMO-12 IN W	4,604.00	LF		\$	
0600	06549		PAVE STRIPING-TEMP REM TAPE-B	9,000.00	LF		\$	
0610	06550		PAVE STRIPING-TEMP REM TAPE-W	27,000.00	LF		\$	
0620	06551		PAVE STRIPING-TEMP REM TAPE-Y	9,000.00	LF		\$	
0630	06556		PAVE STRIPING-DUR TY 1-6 IN W	1,591.00	LF		\$	
0640	06557		PAVE STRIPING-DUR TY 1-6 IN Y	1,269.00	LF		\$	
0650	06568		PAVE MARKING-THERMO STOP BAR-24IN	144.00	LF		\$	
0660	06574		PAVE MARKING-THERMO CURV ARROW	30.00	EACH		\$	
0670	06580		PAVEMENT MARKER TYPE IV-MW	556.00	EACH		\$	
0680	06581		PAVEMENT MARKER TYPE IV-MY	514.00	EACH		\$	
0690	06613		INLAID PAVEMENT MARKER-B W/R	2,313.00	EACH		\$	
0700	06614		INLAID PAVEMENT MARKER-B Y/R	135.00	EACH		\$	
0710	08912		CRASH CUSHION TY 6 CLASS T TL3	10.00	EACH		\$	
0720	10020NS		FUEL ADJUSTMENT	108,409.00	DOLL	\$1.00	\$	\$108,409.00
0730	10030NS		ASPHALT ADJUSTMENT	266,354.00	DOLL	\$1.00	\$	\$266,354.00
0740	20071EC		JOINT ADHESIVE	340,668.00	LF		\$	
0750	20190ES601		CONC BARR WALL TY 9T-INSTALL	7,060.00	LF		\$	
0760	20191ED		OBJECT MARKER TY 3	1.00	EACH		\$	
0770	20259ED		TEMPORARY MEDIAN CROSSOVER	2.00	EACH		\$	
0780	20411ED		LAW ENFORCEMENT OFFICER	1,600.00	HOURL		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0790	20432ES112		REMOVE CRASH CUSHION	20.00	EACH		\$	
0800	20591EC		REMOVE BARRIER	320.00	LF		\$	
0810	20758ED		REMOVE AND RESET PERF PIPE HEADWALL	2.00	EACH		\$	
0820	21380ES719		GUARDRAIL THRIE BEAM	2,981.50	LF		\$	
0830	21802EN		G/R STEEL W BEAM-S FACE (7 FT POST)	725.00	LF		\$	
0840	22664EN		WATER BLASTING EXISTING STRIPE	45,000.00	LF		\$	
0850	23147EN		HIGH TENSION CABLE-ROPE BARRIER	4,222.00	LF		\$	
0860	23148EN		END ANCHORS	2.00	EACH		\$	
0870	23496EC		MEDIAN CROSSOVER REMOVAL	2.00	EACH		\$	
0880	24255EC		REMOVE CABLE GUARDRAIL BARRIER SYSTEM	4,222.00	LF		\$	
0890	24679ED		PAVE MARK THERMO CHEVRON	2,915.00	SQFT		\$	
0900	24683ED		PAVE MARKING-THERMO DOTTED LANE EXTEN	934.00	LF		\$	
0910	24880EC		REMOVE PAVEMENT MARKER	2,448.00	EACH		\$	
0920	24891EC		PAVE MOUNT INFRARED TEMP EQUIPMENT	6,070,104.00	SF		\$	
0930	25075EC		QUEUE PROTECTION VEHICLE	3,840.00	HOURL		\$	
0940	25078ED		THRIE BEAM GUARDRAIL TRANSITION TL-3	22.00	EACH		\$	
0950	25079ED		THRIE BEAM GUARDRAIL TRANSITION TL-2	13.00	EACH		\$	
0960	25117EC		FURNISH QUEUE PROTECTION VEHICLES	12.00	MONT		\$	
0970	26136EC		PORTABLE QUEUE WARNING ALERT SYSTEM	12.00	MONT		\$	
0980	26137EC		QUEUE WARNING PCMS	72.00	MONT		\$	
0990	26138EC		QUEUE WARNING PORTABLE RADAR SENSORS	72.00	MONT		\$	
1000	26233EC		MOBILIZATION FOR CONCRETE SURF TREATMENT SYP 07-22041.00	1.00	LS		\$	
1010	26233EC		MOBILIZATION FOR CONCRETE SURF TREATMENT SYP 07-20018.00	1.00	LS		\$	
1020	26233EC		MOBILIZATION FOR CONCRETE SURF TREATMENT SYP 07-22043.00	1.00	LS		\$	
1030	26233EC		MOBILIZATION FOR CONCRETE SURF TREATMENT BATH - SYP 09-22044.00	1.00	LS		\$	
1040	26236EC		THRIE BEAM BULLNOSE TERMINAL	20.00	EACH		\$	
1050	26237EC		CONNECTED ARROW PANEL	12.00	MONT		\$	
1060	26248EC		ELECTRONIC DELIVERY MGMT SYSTEM - AGG	1.00	LS		\$	

Section: 0003 - BRIDGE - 087B00024L

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1070	03293		EXPAN JOINT REPLACE 1 IN	60.00	LF		\$	
1080	03299		ARMORED EDGE FOR CONCRETE	60.00	LF		\$	
1090	08150		STEEL REINFORCEMENT	540.00	LB		\$	
1100	08504		EPOXY SAND SLURRY	45.00	SQYD		\$	
1110	08510		REM EPOXY BIT FOREIGN OVERLAY	530.00	SQYD		\$	
1120	08526		CONC CLASS M FULL DEPTH PATCH	9.00	CUYD		\$	
1130	08534		CONCRETE OVERLAY-LATEX	22.10	CUYD		\$	

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1140	08549		BLAST CLEANING	575.00	SQYD		\$	
1150	24094EC		PARTIAL DEPTH PATCHING	19.00	CUYD		\$	

Section: 0004 - BRIDGE - 087B00024R

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1160	03293		EXPAN JOINT REPLACE 1 IN (ADDED 6-24-25)	60.00	LF		\$	
1170	03299		ARMORED EDGE FOR CONCRETE	60.00	LF		\$	
1180	08150		STEEL REINFORCEMENT	540.00	LB		\$	
1190	08504		EPOXY SAND SLURRY	45.00	SQYD		\$	
1200	08510		REM EPOXY BIT FOREIGN OVERLAY	530.00	SQYD		\$	
1210	08526		CONC CLASS M FULL DEPTH PATCH	9.00	CUYD		\$	
1220	08534		CONCRETE OVERLAY-LATEX	22.10	CUYD		\$	
1230	08549		BLAST CLEANING	575.00	SQYD		\$	
1240	24094EC		PARTIAL DEPTH PATCHING	19.00	CUYD		\$	

Section: 0005 - BRIDGE- 006B00049N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1250	08100		CONCRETE-CLASS A	109.20	CUYD		\$	
1260	08150		STEEL REINFORCEMENT	10,270.00	LB		\$	
1270	20591EC		REMOVE BARRIER	87.00	LF		\$	
1280	23378EC		CONCRETE SEALING	2,447.00	SQFT		\$	

Section: 0006 - BRIDGE- 025B00009N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1290	08100		CONCRETE-CLASS A	112.50	CUYD		\$	
1300	08150		STEEL REINFORCEMENT	9,135.00	LB		\$	
1310	20591EC		REMOVE BARRIER	69.00	LF		\$	
1320	23378EC		CONCRETE SEALING	2,480.00	SQFT		\$	

Section: 0007 - BRIDGE- 087B00024LR

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1330	23032EN		BRIDGE BARRIER RETROFIT	31.00	LF		\$	
1340	23378EC		CONCRETE SEALING	545.00	SQFT		\$	

Section: 0008 - BRIDGE- 087B00060N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1350	08100		CONCRETE-CLASS A	26.20	CUYD		\$	
1360	08150		STEEL REINFORCEMENT	2,395.00	LB		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1370	20591EC		REMOVE BARRIER	57.00	LF		\$	
1380	23378EC		CONCRETE SEALING	485.00	SQFT		\$	

Section: 0009 - BRIDGE- 025B00049LR

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1390	23032EN		BRIDGE BARRIER RETROFIT	1,128.00	LF		\$	
1400	23378EC		CONCRETE SEALING	6,852.00	SQFT		\$	

Section: 0010 - BRIDGE- 087B00022N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1410	08100		CONCRETE-CLASS A	105.60	CUYD		\$	
1420	08150		STEEL REINFORCEMENT	8,630.00	LB		\$	
1430	20591EC		REMOVE BARRIER	101.00	LF		\$	
1440	23378EC		CONCRETE SEALING	2,260.00	SQFT		\$	

Section: 0011 - BRIDGE- 025B00060N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1450	08100		CONCRETE-CLASS A	104.50	CUYD		\$	
1460	08150		STEEL REINFORCEMENT	9,440.00	LB		\$	
1470	20591EC		REMOVE BARRIER	69.00	LF		\$	
1480	23378EC		CONCRETE SEALING	2,410.00	SQFT		\$	

Section: 0012 - BRIDGE- 087B00066N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1490	08100		CONCRETE-CLASS A	111.30	CUYD		\$	
1500	08150		STEEL REINFORCEMENT	7,415.00	LB		\$	
1510	20591EC		REMOVE BARRIER	254.00	LF		\$	
1520	23378EC		CONCRETE SEALING	2,175.00	SQFT		\$	

Section: 0013 - BRIDGE- 087B00030N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1530	08100		CONCRETE-CLASS A	19.30	CUYD		\$	
1540	08150		STEEL REINFORCEMENT	2,005.00	LB		\$	
1550	20591EC		REMOVE BARRIER	48.00	LF		\$	
1560	23378EC		CONCRETE SEALING	400.00	SQFT		\$	

Section: 0014 - TRAFFIC LOOPS

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1570	04793		CONDUIT-1 1/4 IN (REVISED 9-10-25)	220.00	LF		\$	
1580	04795		CONDUIT-2 IN (REVISED 9-10-25)	60.00	LF		\$	
1590	04820		TRENCHING AND BACKFILLING (REVISED 9-10-25)	250.00	LF		\$	
1600	04829		PIEZOELECTRIC SENSOR (REVISED 9-10-25)	12.00	EACH		\$	
1610	04830		LOOP WIRE (REVISED 9-10-25)	4,800.00	LF		\$	
1620	04895		LOOP SAW SLOT AND FILL (REVISED 9-10-25)	1,060.00	LF		\$	
1630	20359NN		GALVANIZED STEEL CABINET (REVISED 9-10-25)	6.00	EACH		\$	
1640	20360ES818		WOOD POST (REVISED 9-10-25)	12.00	EACH		\$	
1650	20391NS835		ELECTRICAL JUNCTION BOX TYPE A (REVISED 9-10-25)	6.00	EACH		\$	

Section: 0015 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1660	02568		MOBILIZATION	1.00	LS		\$	
1670	02569		DEMOBILIZATION	1.00	LS		\$	

BATH CO. I-64 ~m.p. 116.4
~LAT/LONG N 38.10468, W 83.82899
STATION 520

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 SPICE-FREE TO THE CABINET AND A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED INSIDE EACH JUNCTION BOX AND CABINET. ALL LOOPS AND PIEZOS SHALL BE LABELED IN ALL JUNCTION BOXES AND CABINETS. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS AND PIEZOS INSIDE THE CABINETS.

INSTALL ONE (1) 1/4" CONDUIT FROM EACH SAW SLOT TO NEAREST JUNCTION BOX.

INSTALL TWO (2) TYPE A JUNCTION BOXES (JB A1, JB A2).

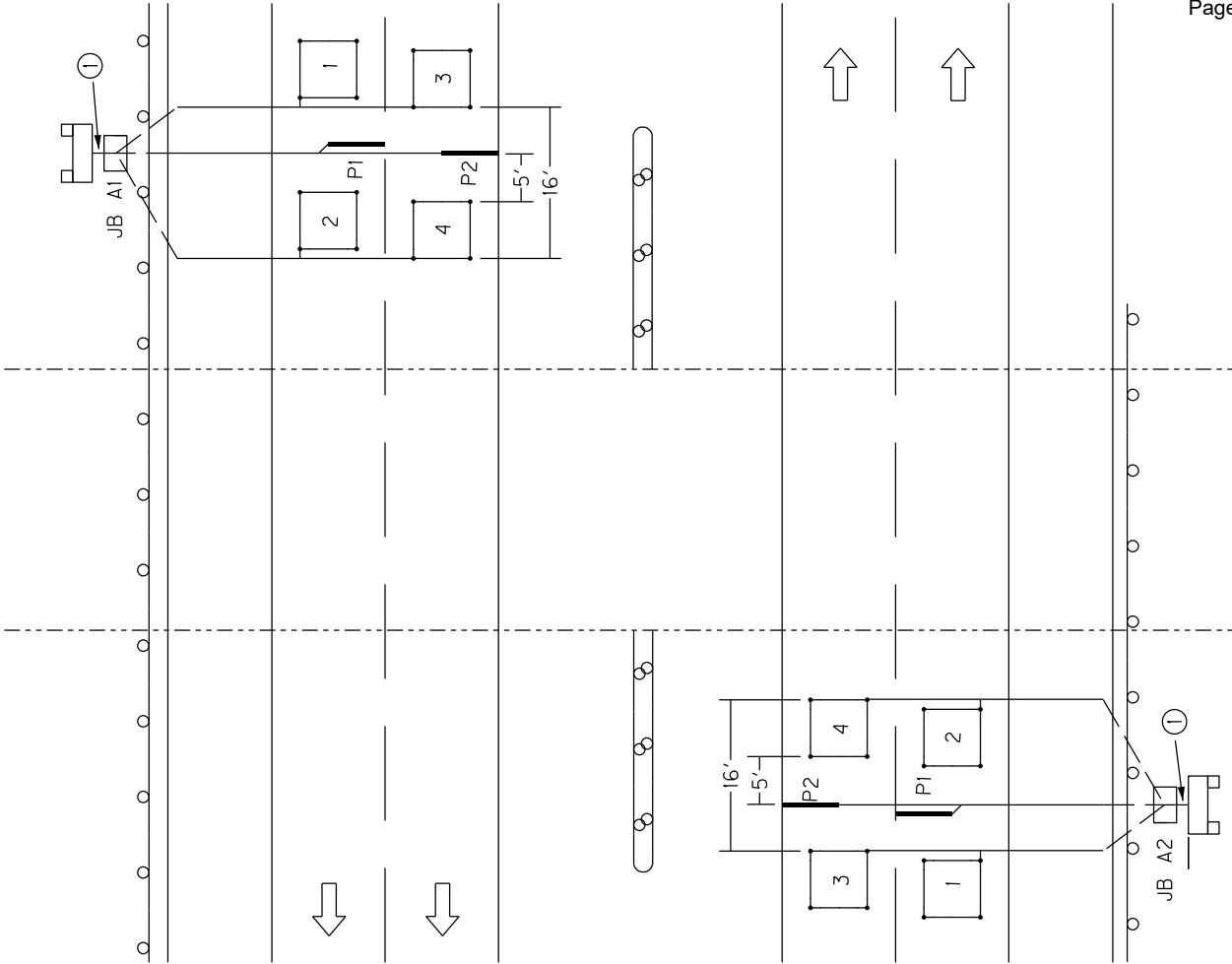
INSTALL TWO (2) 20"X20"X8" CABINETS MOUNTED TO TWO (2) WOOD POSTS EACH.

REMOVE ANY AND ALL OLD EXISTING EQUIPMENT AND DISPOSE OF OFF THE PROJECT.

RETURN BACKPLATES, FROM INSIDE THE CABINETS, WITH TERMIAL STRIPS AND WIRING HARNESSSES TO DIVISION OF PLANNING PERSONNEL.

CODD NOTE:

- ① INSTALL ONE (1) 2" CONDUIT.



Permanent Traffic Data Acquisition Station
Estimate Of Quantities

Revised January 2023

**PERMANENT TRAFFIC DATA ACQUISITION STATIONS
ESTIMATE OF QUANTITIES**

Bid Item Code	Description	Unit	Quantity
4793	CONDUIT 1 ¼ INCH	LIN FT	80
4795	CONDUIT 2 INCH	LIN FT	20
4811	ELECTRICAL JUNCTION BOX TYPE B	EACH	
4820	TRENCHING AND BACKFILLING	LIN FT	90
4821	OPEN CUT ROADWAY	LIN FT	
4829	PIEZOELECTRIC SENSOR	EACH	4
4830	LOOP WIRE	LIN FT	1600
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	360
4899	ELECTRICAL SERVICE	EACH	
4960	REMOVE AND REPLACE SIDEWALK	SQYD	
20213EC	INSTALL PAD MOUNT ENCLOSURE	EACH	
20359NN	GALVANIZED STEEL CABINET	EACH	2
20360ES818	WOOD POST	EACH	4
20391NS835	ELECTRICAL JUNCTION BOX TYPE A	EACH	2
20392NS835	ELECTRICAL JUNCTION BOX TYPE C	EACH	
20468EC	ELECTRICAL JUNCTION BOX 10x8x4	EACH	
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.

Material, Installation, and Bid Item Notes for
Permanent Traffic Data Acquisition Stations

Revised January 2023

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 3/4 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. Strandwise for Guy Wire

Strandwise 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 1/2 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/m ³ ; 6 lbs/ft ³ |
| • 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 2¹/₈ 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 1/4 inch wood screws.

2.14.2. Mounting Strap for Pole Mount Cabinet

Mounting strap for pole mount cabinet shall be 3/4 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 38°F.

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 $\frac{3}{4}$ inch conduit with three 8 AWG service conductors from the cabinet, through the service disconnect to the meter base and a $1\frac{1}{4}$ " 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 $1\frac{3}{4}$ " 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 $\frac{3}{4}$ 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 “¾ 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 from 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 “¾ in. conduit”.

Install specified rigid steel conduit(s) and type LB conduit(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 45° 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.

Material, Installation, and Bid Item Notes for
Permanent Traffic Data Acquisition Stations

Revised January 2023

- It is strongly recommended that a $\frac{3}{4}$ inch wide diamond blade be used for cutting the slot, or that blades be ganged together to provide a single $\frac{3}{4}$ inch wide cut. The slot shall be wet cut to minimize damage to the pavement.
- Cut a slot $\frac{3}{4}$ inch wide ($\pm 1/16$ 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 $\frac{1}{2}$ 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 $\frac{1}{4}$ 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 $1\frac{1}{2}$ inch hole on a 45° 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 $\pm 20\%$ 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 $\pm 20\%$ 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 signs 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

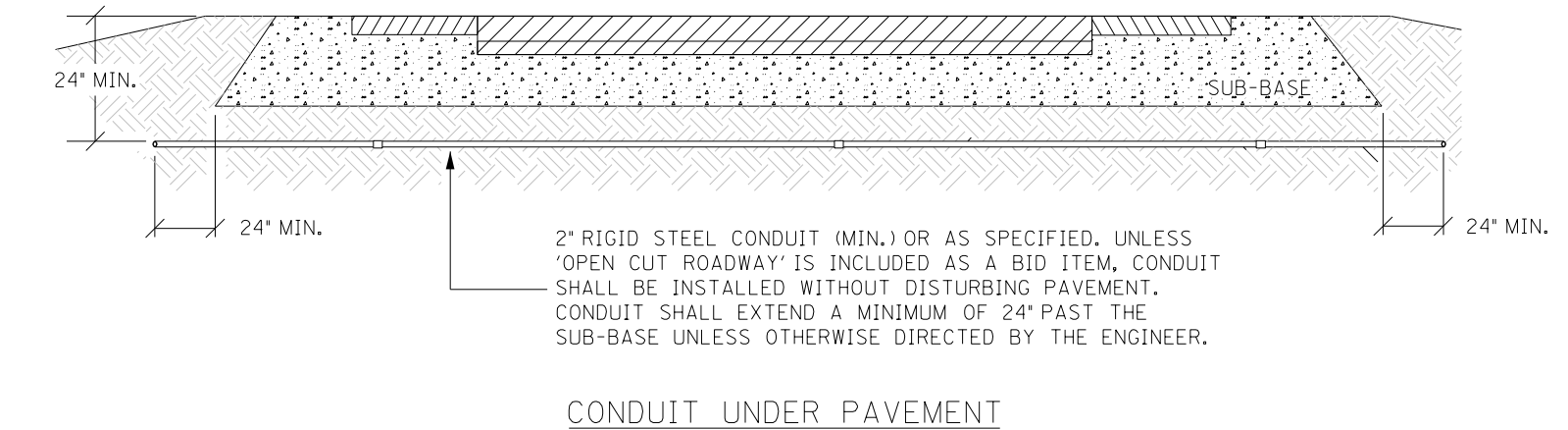
Wood Post shall include furnishing and installing wood post as specified. This item shall include excavation, furnishing and placing concrete (if required), backfilling around the post, and restoration of disturbed areas to the satisfaction of the engineer. Wood Post will be measured in individual units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

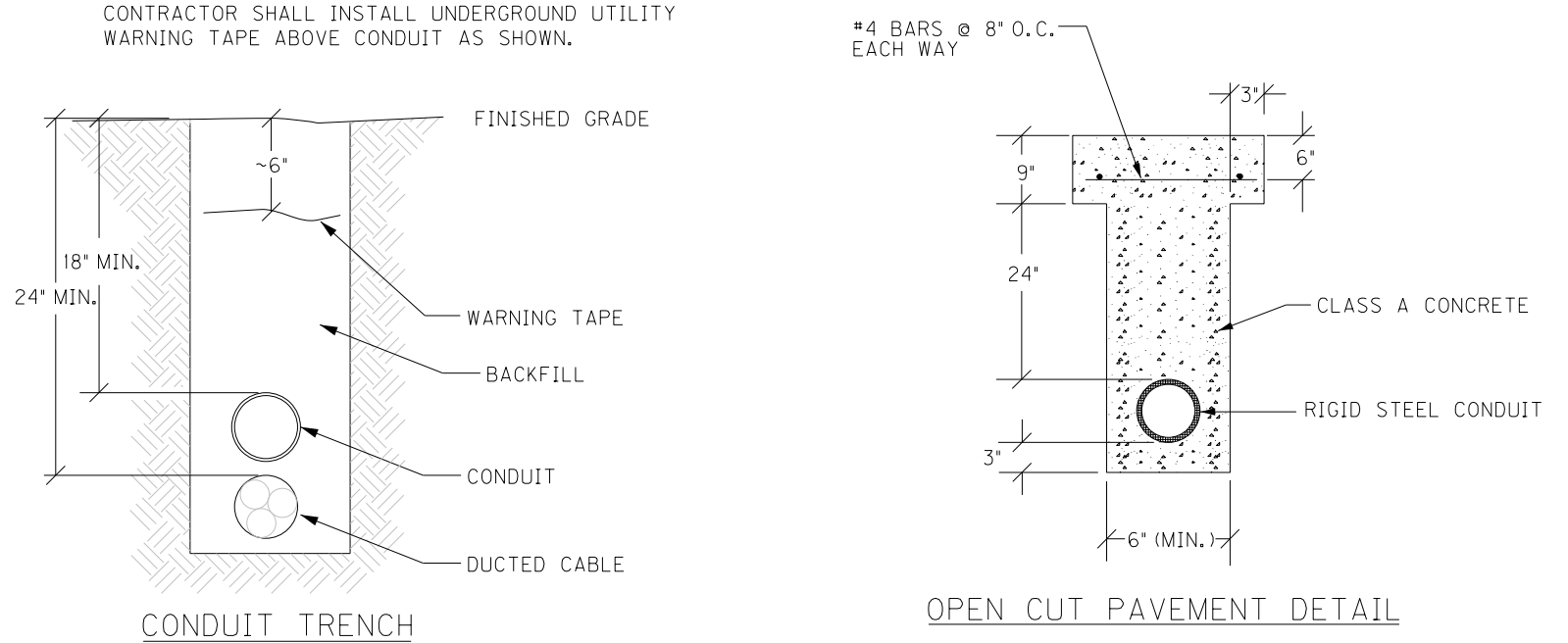
Loop Test includes conducting an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably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



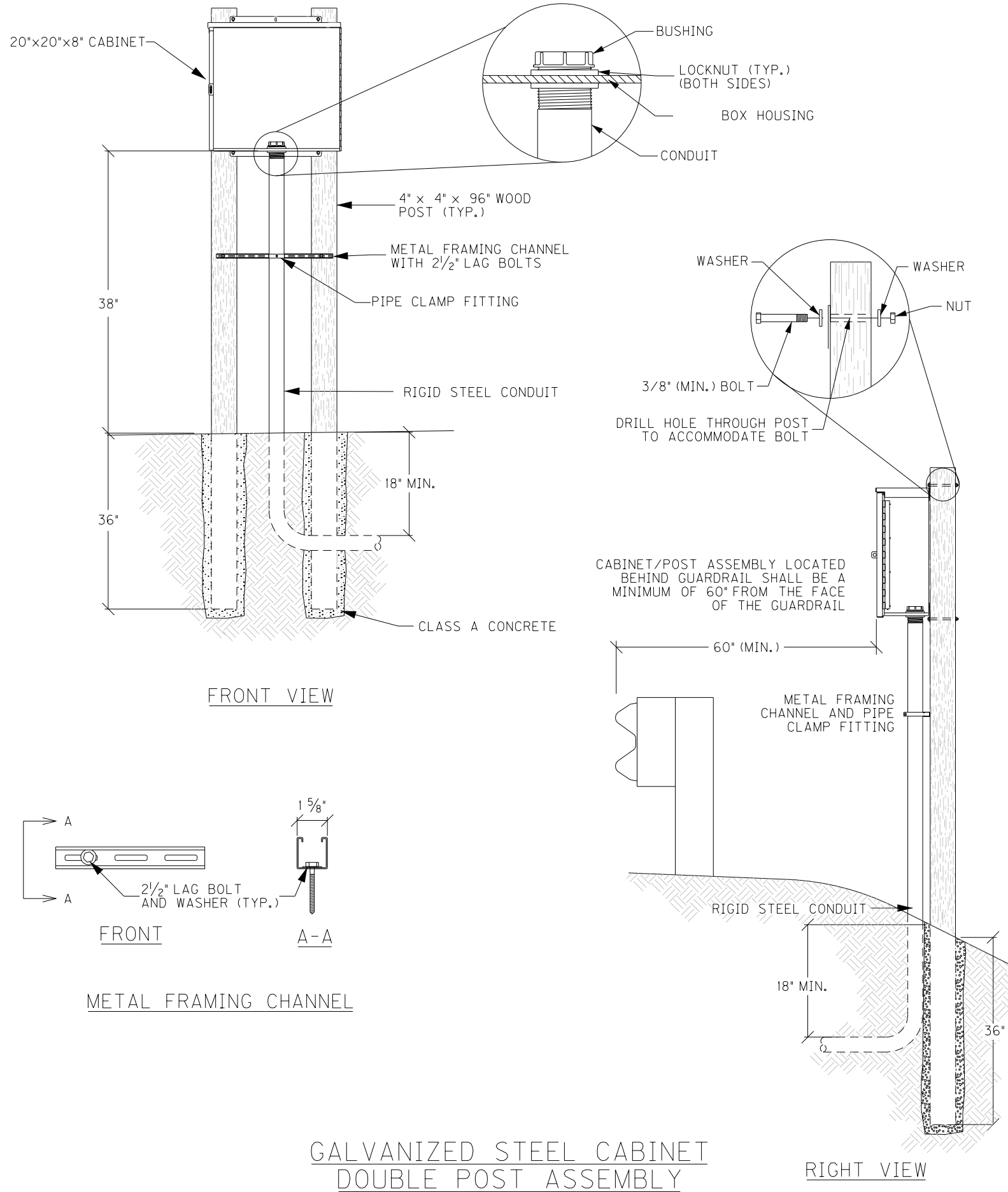
TOTAL TRENCH WIDTH SHALL BE 3" (NOM.) WIDER THAN THE SUM OF THE OUTSIDE DIAMETER(S) OF THE CONDUIT(S) INSTALLED. CONDUIT(S) SHALL BE CENTERED IN TRENCH.

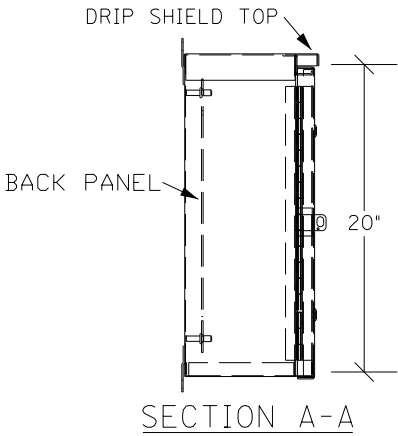
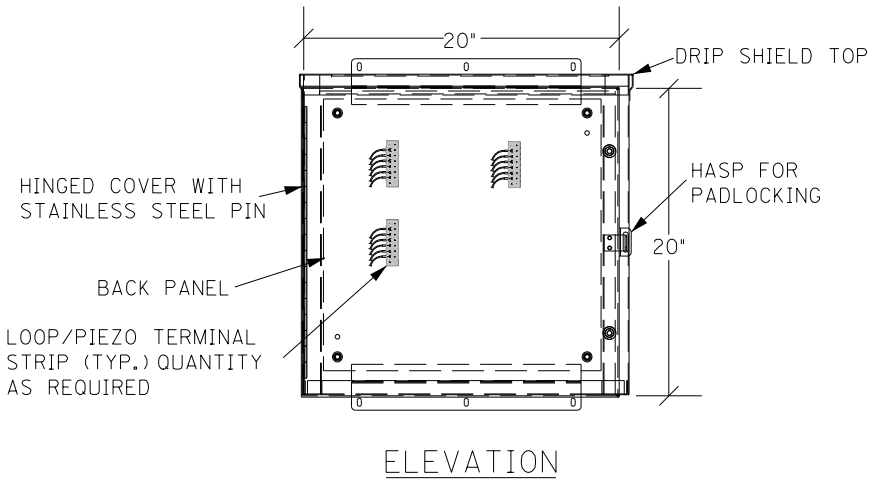
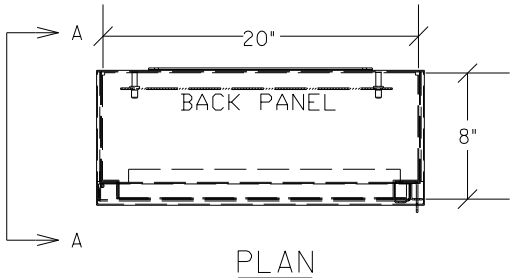
CONTRACTOR SHALL PLACE BACKFILL IN LIFTS (9" MAX.) COMPACT BACKFILL, AND RESTORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER

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

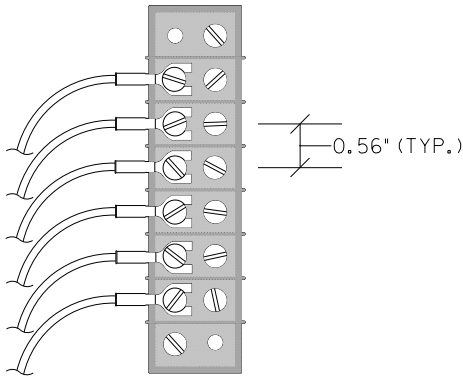
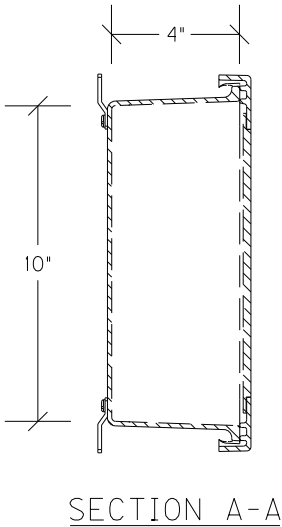
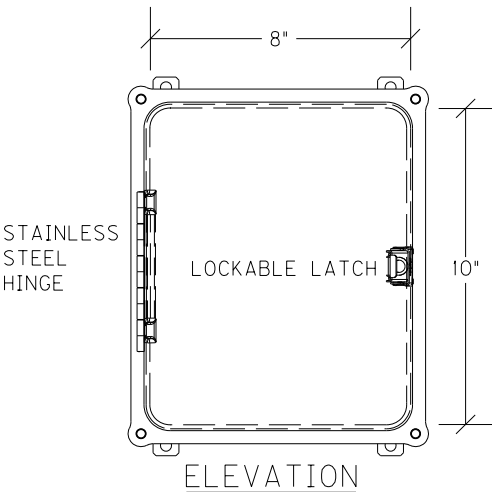
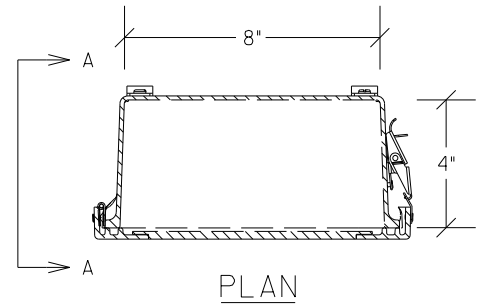


CONDUIT INSTALLATION



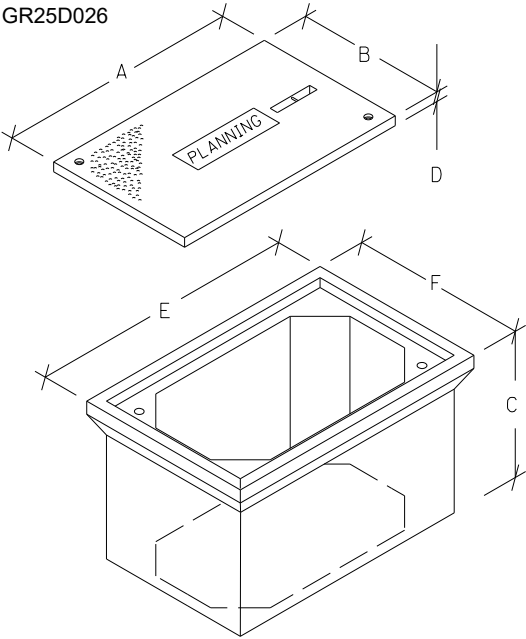


GALVANIZED STEEL CABINET



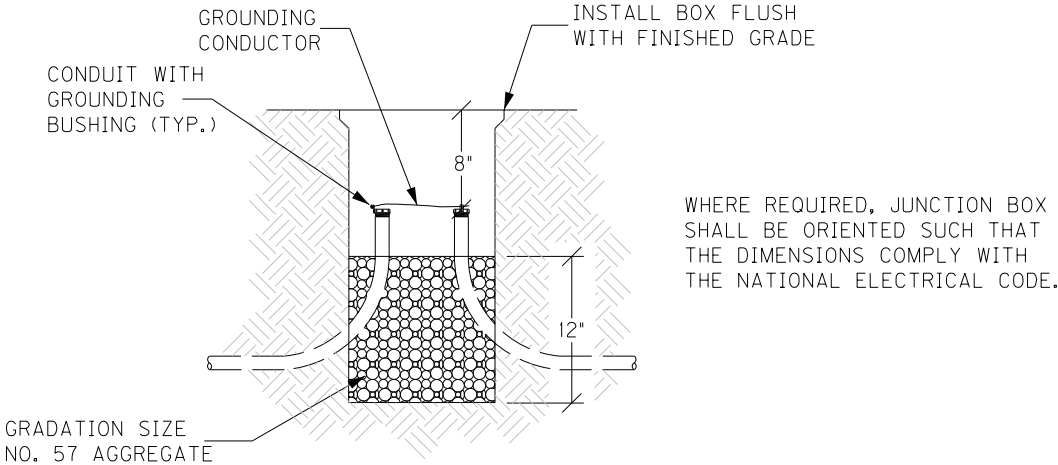
TERMINAL STRIP (TYP.)

JUNCTION BOX 10"X8"X4"

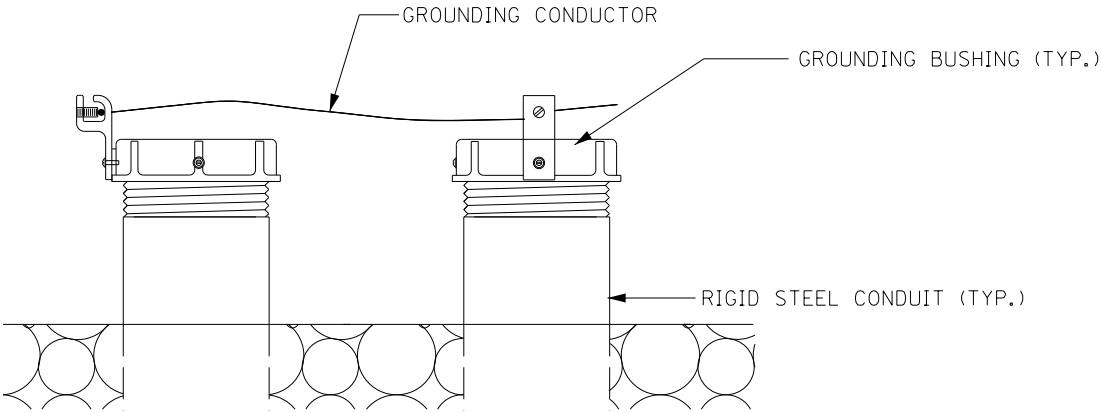


JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D*	E	F
TYPE A	23"	14"	18"	2"	25"	16"
TYPE B	18"	11"	12"	1¾"	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

* MINIMUM
STACKABLE BOXES ARE PERMITTED



ELEVATION

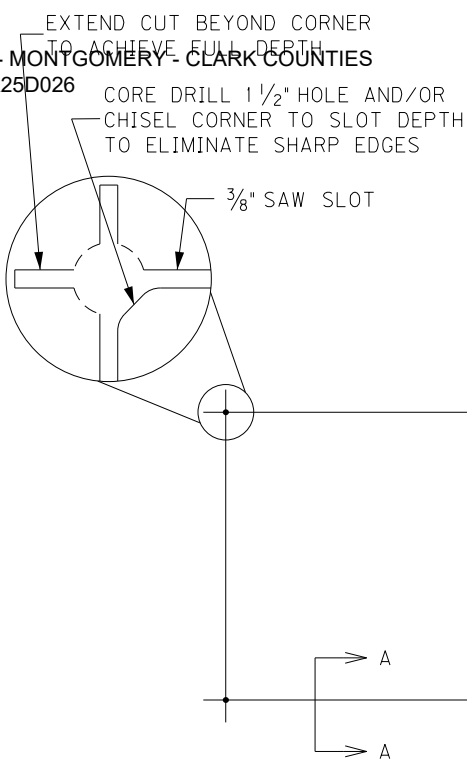


GROUNDING DETAIL

JUNCTION BOX - TYPE A, TYPE B, TYPE C

BATH - MONTGOMERY - CLARK COUNTIES

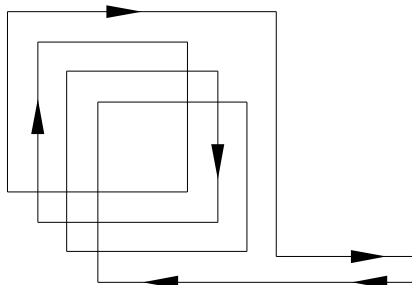
121GR25D026



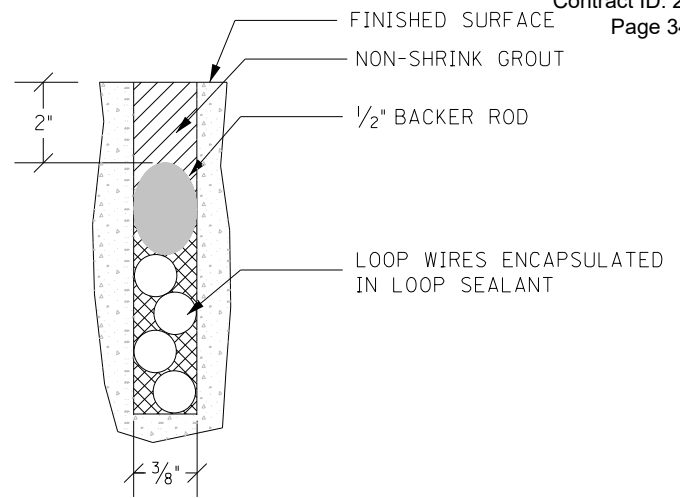
SAW CUT PLAN

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

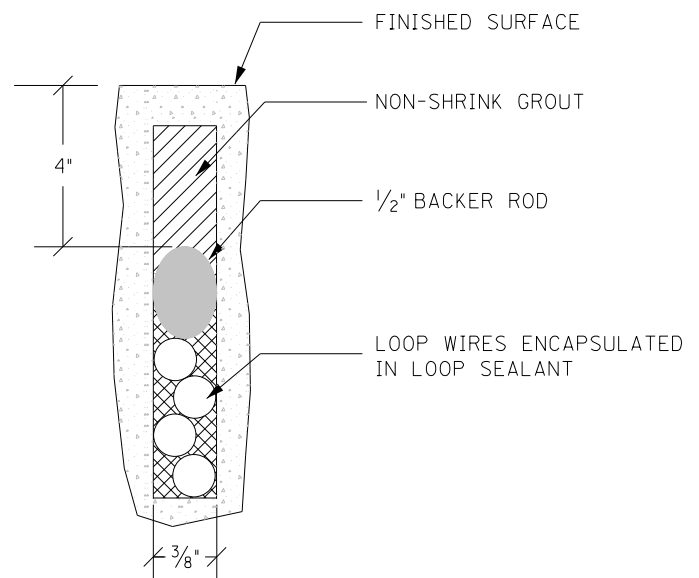
ADJACENT SAW SLOTS SHALL BE A MINIMUM OF 12" APART.



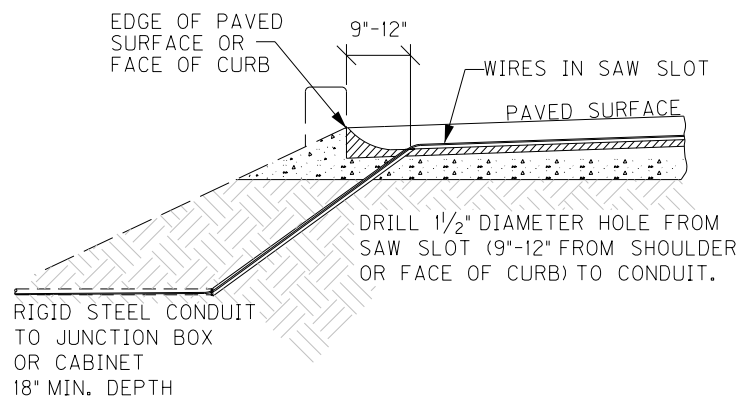
WIRING PLAN



SECTION A-A (CONCRETE)



SECTION A-A (ASPHALT)

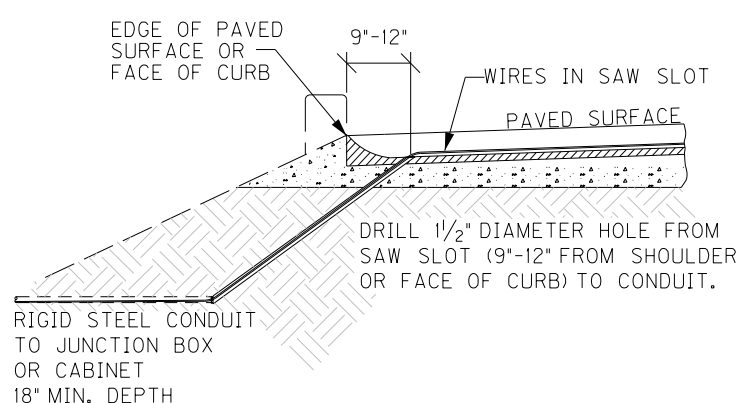
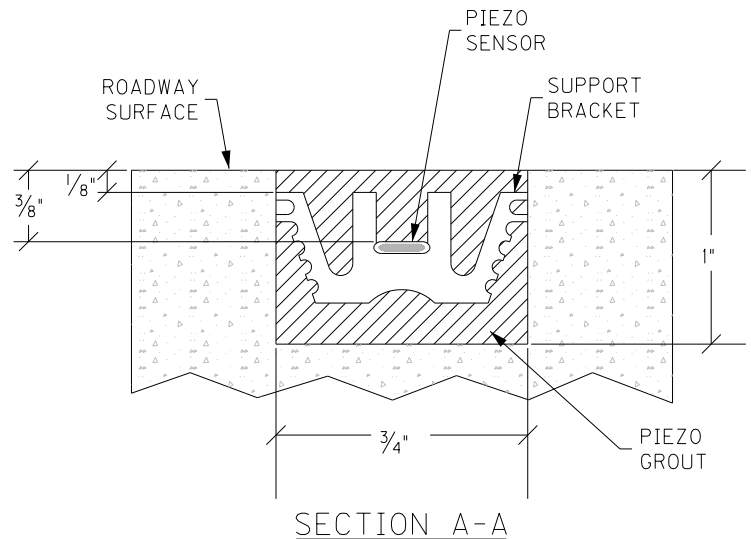
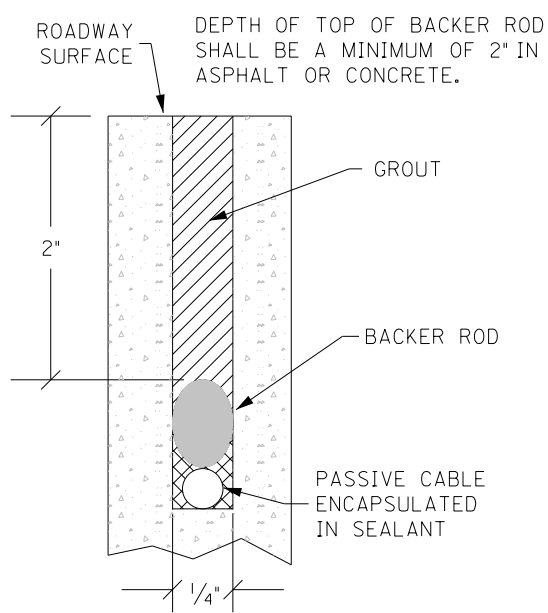
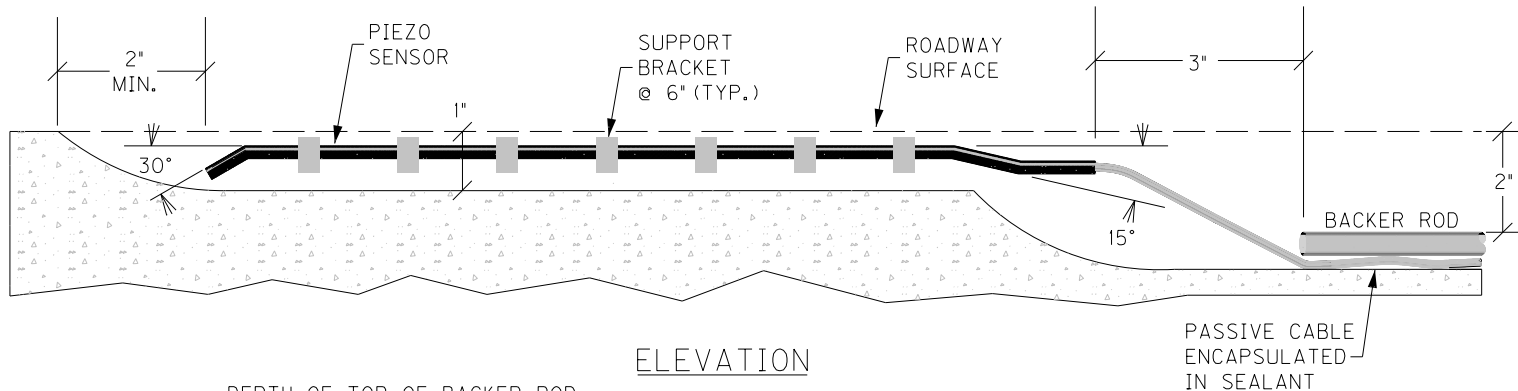
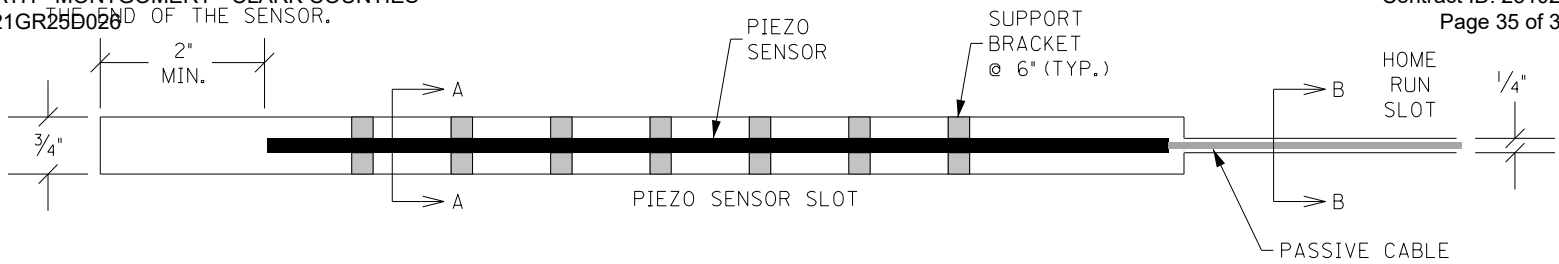


SAW SLOT EDGE OF PAVEMENT TRANSITION

INDUCTIVE LOOP DETECTOR

NOT TO SCALE

EXTEND SAW SLOT A MINIMUM OF 2" BEYOND THE END OF THE SENSOR.
BATH, MONTGOMERY & CLARK COUNTIES
121GR25D026



PIEZOELECTRIC SENSOR INSTALLATION