## Commonwealth of Kentucky

Transportation Cabinet

CALL NO. 100
CONTRACT ID NO. 201305
ADDENDUM \# 2

Subject: PULASKI COUNTY, NHPP 4611 (009)
Letting September 25, 2020
(1) Revised - Proposal Bid Items - Pages 253-261 of 261
(2) Added - Special Notes for Fiber Optic Cable and Fiber Termination Rack - Pages $134(a)-134(f)$ of 261
(3) Revised - Plan Sheets - R2, R2a, Reg, R2h, R2i, Rem, R2o, R2v, R2w, Red, R144, R145, Ti, T17, T21

Proposal revisions are available at http://transportation.ky.gov/ConstructionProcurement/.

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

Sincerely,


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

RM: mr
Enclosures

Section: 0001 - PAVING

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0010 | 00003 | CRUSHED STONE BASE (REVISED: 9-11-20) | 176,083.00 | TON |  | \$ |  |
| 0020 | 00020 | TRAFFIC BOUND BASE | 5,000.00 | TON |  | \$ |  |
| 0030 | 00100 | ASPHALT SEAL AGGREGATE | 929.00 | TON |  | \$ |  |
| 0040 | 00103 | ASPHALT SEAL COAT | 112.00 | TON |  | \$ |  |
| 0050 | 00190 | LEVELING \& WEDGING PG64-22 (REVISED: 9-11-20) | 19,501.00 | TON |  | \$ |  |
| 0060 | 00214 | CL3 ASPH BASE 1.00D PG64-22 | 15,761.00 | TON |  | \$ |  |
| 0070 | 00217 | CL4 ASPH BASE 1.00D PG64-22 | 37,913.00 | TON |  | \$ |  |
| 0080 | 00219 | CL4 ASPH BASE 1.00D PG76-22 | 46,111.00 | TON |  | \$ |  |
| 0090 | 00221 | CL2 ASPH BASE 0.75D PG64-22 (REVISED: 9-11-20) | 3,635.00 | TON |  | \$ |  |
| 0100 | 00301 | CL2 ASPH SURF 0.38D PG64-22 (REVISED: 9-11-20) | 1,302.00 | TON |  | \$ |  |
| 0110 | 00342 | CL4 ASPH SURF 0.38A PG76-22 | 19,529.00 | TON |  | \$ |  |
| 0120 | 00388 | CL3 ASPH SURF 0.38B PG64-22 | 5,641.00 | TON |  | \$ |  |
| 0130 | 02677 | ASPHALT PAVE MILLING \& TEXTURING | 15,869.00 | TON |  | \$ |  |
| 0140 | 20071EC | JOINT ADHESIVE | 205,825.00 | LF |  | \$ |  |
| 0150 | 24891EC | PAVE MOUNT INFRARED TEMP EQUIPMENT | 5,273,734.00 | SF |  | \$ |  |
| 0160 | 24970EC | ASPHALT MATERIAL FOR TACK NONTRACKING | 198.00 | TON |  | \$ |  |
| 0170 | 24986EC | HMA ELECTRONIC DELIVERY MGMT SYSTEM | 1.00 | L S |  | \$ |  |

## Section: 0002-ROADWAY

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0180 | 00078 | CRUSHED AGGREGATE SIZE NO 2 | 1,360.00 | TON |  | \$ |  |
| 0190 | 01000 | PERFORATED PIPE-4 IN | 863.00 | LF |  | \$ |  |
| 0200 | 01010 | NON-PERFORATED PIPE-4 IN | 116.00 | LF |  | \$ |  |
| 0210 | 01020 | PERF PIPE HEADWALL TY 1-4 IN | 2.00 | EACH |  | \$ |  |
| 0220 | 01028 | PERF PIPE HEADWALL TY 3-4 IN | 7.00 | EACH |  | \$ |  |
| 0230 | 01032 | PERF PIPE HEADWALL TY 4-4 IN | 1.00 | EACH |  | \$ |  |
| 0240 | 01691 | FLUME INLET TYPE 2 | 9.00 | EACH |  | \$ |  |
| 0250 | 01810 | STANDARD CURB AND GUTTER | 1,472.00 | LF |  | \$ |  |
| 0260 | 01875 | STANDARD HEADER CURB | 216.00 | LF |  | \$ |  |
| 0270 | 01891 | ISLAND HEADER CURB TYPE 2 (REVISED: 9-11-20) | 58.00 | LF |  | \$ |  |
| 0280 | 01982 | DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE | 116.00 | EACH |  | \$ |  |
| 0290 | 01983 | DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW | 72.00 | EACH |  | \$ |  |
| 0300 | 01986 | DELINEATOR FOR BARRIER WALL-B/Y | 6.00 | EACH |  | \$ |  |
| 0310 | 01987 | DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE | 151.00 | EACH |  | \$ |  |
| 0320 | 01990 | DELINEATOR FOR BARRIER WALL-B/W | 40.00 | EACH |  | \$ |  |
| 0330 | 02003 | RELOCATE TEMP CONC BARRIER (REVISED: 9-11-20) | 1,940.00 | LF |  | \$ |  |
| 0340 | 02014 | BARRICADE-TYPE III | 14.00 | EACH |  | \$ |  |

Report Date 9/22/20

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0350 | 02091 | REMOVE PAVEMENT | 11,775.00 | SQYD |  | \$ |  |
| 0360 | 02159 | TEMP DITCH | 22,680.00 | LF |  | \$ |  |
| 0370 | 02160 | CLEAN TEMP DITCH | 11,340.00 | LF |  | \$ |  |
| 0380 | 02200 | ROADWAY EXCAVATION | 2,913,773.00 | CUYD |  | \$ |  |
| 0390 | 02242 | WATER | 10,000.00 | MGAL |  | \$ |  |
| 0400 | 02262 | FENCE-WOVEN WIRE TYPE 1 (REVISED: 9-11-20) | 21,458.00 | LF |  | \$ |  |
| 0410 | 02268 | REMOVE \& REPLACE FENCE (REVISED: 9-11-20) | 29,839.00 | LF |  | \$ |  |
| 0420 | 02351 | GUARDRAIL-STEEL W BEAM-S FACE | 22,350.00 | LF |  | \$ |  |
| 0430 | 02352 | GUARDRAIL-STEEL W BEAM-D FACE | 275.00 | LF |  | \$ |  |
| 0440 | 02360 | GUARDRAIL TERMINAL SECTION NO 1 | 12.00 | EACH |  | \$ |  |
| 0450 | 02363 | GUARDRAIL CONNECTOR TO BRIDGE END TY A | 13.00 | EACH |  | \$ |  |
| 0460 | 02365 | CRASH CUSHION TYPE IX-A | 2.00 | EACH |  | \$ |  |
| 0470 | 02367 | GUARDRAIL END TREATMENT TYPE 1 | 26.00 | EACH |  | \$ |  |
| 0480 | 02369 | GUARDRAIL END TREATMENT TYPE 2A | 29.00 | EACH |  | \$ |  |
| 0490 | 02381 | REMOVE GUARDRAIL | 6,749.00 | LF |  | \$ |  |
| 0500 | 02387 | GUARDRAIL CONNECTOR TO BRIDGE END TY A-1 | 5.00 | EACH |  | \$ |  |
| 0510 | 02391 | GUARDRAIL END TREATMENT TYPE 4A | 3.00 | EACH |  | \$ |  |
| 0520 | 02429 | RIGHT-OF-WAY MONUMENT TYPE 1 | 92.00 | EACH |  | \$ |  |
| 0530 | 02432 | WITNESS POST | 22.00 | EACH |  | \$ |  |
| 0540 | 02471 | FILL AND CAP SINKHOLE | 2.00 | EACH |  | \$ |  |
| 0550 | 02488 | CHANNEL LINING CLASS IV (REVISED: 9-11-20) | 35,976.00 | CUYD |  | \$ |  |
| 0560 | 02545 | CLEARING AND GRUBBING APPROX 305 ACRES (REVISED: 9-22-20) | 1.00 | LS |  | \$ |  |
| 0570 | 02555 | CONCRETE-CLASS B | 372.75 | CUYD |  | \$ |  |
| 0580 | 02562 | TEMPORARY SIGNS | 3,280.00 | SQFT |  | \$ |  |
| 0590 | 02585 | EDGE KEY | 317.00 | LF |  | \$ |  |
| 0600 | 02602 | FABRIC-GEOTEXTILE CLASS 1 (FOR PIPE) | 30,000.00 | SQYD |  | \$ |  |
| 0610 | 02603 | FABRIC-GEOTEXTILE CLASS 2 | 6,200.00 | SQYD |  | \$ |  |
| 0620 | 02607 | FABRIC-GEOTEXTILE CLASS 2 FOR PIPE | 25,764.00 | SQYD | \$2.00 | \$ | \$51,528.00 |
| 0630 | 02650 | MAINTAIN \& CONTROL TRAFFIC | 1.00 | LS |  | \$ |  |
| 0640 | 02651 | DIVERSIONS (BY-PASS DETOURS) | 1.00 | LS |  | \$ |  |
| 0650 | 02671 | PORTABLE CHANGEABLE MESSAGE SIGN | 10.00 | EACH |  | \$ |  |
| 0660 | 02676 | MOBILIZATION FOR MILL \& TEXT | 1.00 | LS |  | \$ |  |
| 0670 | 02690 | SAFELOADING | 288.00 | CUYD |  | \$ |  |
| 0680 | 02692 | SETTLEMENT PLATFORM | 2.00 | EACH |  | \$ |  |
| 0690 | 02696 | SHOULDER RUMBLE STRIPS | 93,479.00 | LF |  | \$ |  |
| 0700 | 02701 | TEMP SILT FENCE | 22,680.00 | LF |  | \$ |  |
| 0710 | 02703 | SILT TRAP TYPE A | 346.00 | EACH |  | \$ |  |
| 0720 | 02704 | SILT TRAP TYPE B | 346.00 | EACH |  | \$ |  |
| 0730 | 02705 | SILT TRAP TYPE C | 346.00 | EACH |  | \$ |  |
| 0740 | 02706 | CLEAN SILT TRAP TYPE A | 346.00 | EACH |  | \$ |  |
| 0750 | 02707 | CLEAN SILT TRAP TYPE B | 346.00 | EACH |  | \$ |  |
| 0760 | 02708 | CLEAN SILT TRAP TYPE C | 346.00 | EACH |  | \$ |  |
| 0770 | 02726 | STAKING | 1.00 | LS |  | \$ |  |
| 0790 | 02775 | ARROW PANEL | 4.00 | EACH |  | \$ |  |

Report Date 9/22/20

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0800 | 02898 | RELOCATE CRASH CUSHION (REVISED: 9-11-20) | 7.00 | EACH |  | \$ |  |
| 0810 | 02929 | CRASH CUSHION TYPE IX | 2.00 | EACH |  | \$ |  |
| 0820 | 03171 | CONCRETE BARRIER WALL TYPE 9T (REVISED: 9-11-20) | 1,140.00 | LF |  | \$ |  |
| 0830 | 03340 | STEEL PIPE-2 1/2 IN | 73.50 | LF |  | \$ |  |
| 0840 | 03343 | STEEL PIPE-4 IN | 73.50 | LF |  | \$ |  |
| 0850 | 05950 | EROSION CONTROL BLANKET | 43,705.00 | SQYD |  | \$ |  |
| 0860 | 05952 | TEMP MULCH | 1,115,078.00 | SQYD |  | \$ |  |
| 0870 | 05953 | TEMP SEEDING AND PROTECTION | 836,309.00 | SQYD |  | \$ |  |
| 0880 | 05963 | INITIAL FERTILIZER | 173.00 | TON |  | \$ |  |
| 0890 | 05964 | MAINTENANCE FERTILIZER | 87.00 | TON |  | \$ |  |
| 0900 | 05985 | SEEDING AND PROTECTION | 1,017,445.00 | SQYD |  | \$ |  |
| 0910 | 05992 | AGRICULTURAL LIMESTONE | 1,037.00 | TON |  | \$ |  |
| 0920 | 06401 | FLEXIBLE DELINEATOR POST-M/W | 146.00 | EACH |  | \$ |  |
| 0930 | 06404 | FLEXIBLE DELINEATOR POST-M/Y | 108.00 | EACH |  | \$ |  |
| 0940 | 06510 | PAVE STRIPING-TEMP PAINT-4 IN | 62,500.00 | LF |  | \$ |  |
| 0950 | 06511 | PAVE STRIPING-TEMP PAINT-6 IN | 513,050.00 | LF |  | \$ |  |
| 0960 | 06514 | PAVE STRIPING-PERM PAINT-4 IN | 14,390.00 | LF |  | \$ |  |
| 0970 | 06540 | PAVE STRIPING-THERMO-4 IN W (REVISED: 9-11-20) | 7,920.00 | LF |  | \$ |  |
| 0980 | 06541 | PAVE STRIPING-THERMO-4 IN Y (REVISED: 9-11-20) | 7,815.00 | LF |  | \$ |  |
| 0990 | 06546 | PAVE STRIPING-THERMO-12 IN W | 4,010.00 | LF |  | \$ |  |
| 1000 | 06547 | PAVE STRIPING-THERMO-12 IN Y | 310.00 | LF |  | \$ |  |
| 1010 | 06550 | PAVE STRIPING-TEMP REM TAPE-W | 25,120.00 | LF |  | \$ |  |
| 1020 | 06551 | PAVE STRIPING-TEMP REM TAPE-Y | 26,120.00 | LF |  | \$ |  |
| 1030 | 06556 | PAVE STRIPING-DUR TY 1-6 IN W | 1,444.00 | LF |  | \$ |  |
| 1040 | 06557 | PAVE STRIPING-DUR TY 1-6 IN Y | 1,050.00 | LF |  | \$ |  |
| 1050 | 06568 | PAVE MARKING-THERMO STOP BAR-24IN | 355.00 | LF |  | \$ |  |
| 1060 | 06574 | PAVE MARKING-THERMO CURV ARROW | 123.00 | EACH |  | \$ |  |
| 1070 | 06588 | PAVEMENT MARKER TY IVA-BY TEMP | 434.00 | EACH |  | \$ |  |
| 1080 | 08100 | CONCRETE-CLASS A (FOR PIPE COLLARS) | 59.43 | CUYD |  | \$ |  |
| 1090 | 08150 | STEEL REINFORCEMENT | 447.00 | LB |  | \$ |  |
| 1110 | 08903 | CRASH CUSHION TY VI CLASS BT TL3 | 2.00 | EACH |  | \$ |  |
| 1120 | 10020NS | FUEL ADJUSTMENT | 805,043.00 | DOLL | \$1.00 | \$ | \$805,043.00 |
| 1130 | 10030NS | ASPHALT ADJUSTMENT | 583,930.00 | DOLL | \$1.00 | \$ | \$583,930.00 |
| 1140 | 20000ES724 | TREE | 1,070.00 | EACH |  | \$ |  |
| 1150 | 20001ES724 | SHRUB | 416.00 | EACH |  | \$ |  |
| 1160 | 20100ES842 | PAVE MARK TEMP PAINT LINE ARROW | 50.00 | EACH |  | \$ |  |
| 1170 | 20191ED | OBJECT MARKER TY 3 | 29.00 | EACH |  | \$ |  |
| 1180 | 21430ES508 | CONC MEDIAN BARRIER TYPE 12C(50) | 546.50 | LF |  | \$ |  |
| 1190 | 23010EN | PAVE MARK TEMP PAINT STOP BAR-24 IN | 1,236.00 | LF |  | \$ |  |
| 1200 | 23260EC | PAVE MARK-THERMO-24 IN Y | 2,718.00 | LF |  | \$ |  |
| 1210 | 23274EN11F | TURF REINFORCEMENT MAT 1 | 2,334.00 | SQYD |  | \$ |  |
| 1220 | 23484EC | PIPE LINER ACCEPTANCE TESTING | 1.00 | LS |  | \$ |  |
| 1230 | 23607EC | PAVE MARK THERMO-LANE REDUCTION ARROW | 3.00 | EACH |  | \$ |  |
| 1240 | 24489EC | INLAID PAVEMENT MARKER | 2,228.00 | EACH |  | \$ |  |
| 1250 | 24679ED | PAVE MARK THERMO CHEVRON | 455.00 | SQFT |  | \$ |  |


| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1260 | 24768EC | LANE SEPARATOR CURB | 140.00 | LF | \$ |  |
| 1270 | 24814EC | PIPELINE INSPECTION | 6,808.00 | LF | \$ |  |
| 1280 | 24862EC | PVC FOLD AND FORM PIPE LINER-18 IN (REVISED: 9-11-20) | 223.00 | LF | \$ |  |
| 1290 | 24863EC | PVC FOLD AND FORM PIPE LINER-24 IN | 239.00 | LF | \$ |  |
| 1300 | 24864EC | PVC FOLD AND FORM PIPE LINER-30 IN | 109.00 | LF | \$ |  |
| 1310 | 24865EC | PVC FOLD AND FORM PIPE LINER-36 IN | 653.00 | LF | \$ |  |
| 1320 | 25008EC | PAVE STRIPING-THERMO-6 IN W-WET REFLECT | 83,374.00 | LF | \$ |  |
| 1330 | 25009EC | PAVE STRIPING-THERMO-6 IN Y-WET REFLECT | 87,516.00 | LF | \$ |  |
| 1340 | 25019EC | GROOVE FOR PAVE STRIPING - 7 IN | 155,657.00 | LF | \$ |  |
| 1350 | 25100ED | CONSTRUCTED RIFFLES | 2,415.00 | SQYD | \$ |  |

Section: 0003 - DRAINAGE

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1360 | 00441 | ENTRANCE PIPE-18 IN | 248.00 | LF |  | \$ |  |
| 1370 | 00443 | ENTRANCE PIPE-24 IN (REVISED: 9-11-20) | 252.00 | LF |  | \$ |  |
| 1380 | 00445 | ENTRANCE PIPE-30 IN | 134.00 | LF |  | \$ |  |
| 1390 | 00462 | CULVERT PIPE-18 IN | 564.00 | LF |  | \$ |  |
| 1400 | 00464 | CULVERT PIPE-24 IN | 2,044.00 | LF |  | \$ |  |
| 1410 | 00466 | CULVERT PIPE-30 IN | 198.00 | LF |  | \$ |  |
| 1420 | 00468 | CULVERT PIPE-36 IN | 302.00 | LF |  | \$ |  |
| 1430 | 00470 | CULVERT PIPE-48 IN (REVISED: 9-11-20) | 98.00 | LF |  | \$ |  |
| 1440 | 00471 | CULVERT PIPE-54 IN | 188.00 | LF |  | \$ |  |
| 1450 | 00472 | CULVERT PIPE-60 IN | 1,061.00 | LF |  | \$ |  |
| 1460 | 00521 | STORM SEWER PIPE-15 IN | 1,270.00 | LF |  | \$ |  |
| 1470 | 00522 | STORM SEWER PIPE-18 IN | 111.00 | LF |  | \$ |  |
| 1480 | 00526 | STORM SEWER PIPE-30 IN | 937.00 | LF |  | \$ |  |
| 1490 | 01204 | PIPE CULVERT HEADWALL-18 IN | 12.00 | EACH |  | \$ |  |
| 1500 | 01208 | PIPE CULVERT HEADWALL-24 IN | 19.00 | EACH |  | \$ |  |
| 1510 | 01210 | PIPE CULVERT HEADWALL-30 IN | 5.00 | EACH |  | \$ |  |
| 1520 | 01212 | PIPE CULVERT HEADWALL-36 IN | 8.00 | EACH |  | \$ |  |
| 1530 | 01216 | PIPE CULVERT HEADWALL-48 IN | 6.00 | EACH |  | \$ |  |
| 1540 | 01220 | PIPE CULVERT HEADWALL-60 IN | 6.00 | EACH |  | \$ |  |
| 1550 | 01451 | S \& F BOX INLET-OUTLET-24 IN | 3.00 | EACH |  | \$ |  |
| 1560 | 01452 | S \& F BOX INLET-OUTLET-30 IN | 2.00 | EACH |  | \$ |  |
| 1570 | 01453 | S \& F BOX INLET-OUTLET-36 IN | 1.00 | EACH |  | \$ |  |
| 1580 | 01456 | CURB BOX INLET TYPE A | 7.00 | EACH |  | \$ |  |
| 1590 | 01487 | CURB BOX INLET TYPE F | 1.00 | EACH |  | \$ |  |
| 1600 | 01490 | DROP BOX INLET TYPE 1 | 2.00 | EACH |  | \$ |  |
| 1610 | 01493 | DROP BOX INLET TYPE 2 | 1.00 | EACH |  | \$ |  |
| 1620 | 01505 | DROP BOX INLET TYPE 5B | 5.00 | EACH |  | \$ |  |
| 1630 | 01511 | DROP BOX INLET TYPE 5D | 5.00 | EACH |  | \$ |  |
| 1640 | 01517 | DROP BOX INLET TYPE 5F | 4.00 | EACH |  | \$ |  |
| 1650 | 01608 | CONC MED BARR BOX INLET TY 12B1 | 5.00 | EACH |  | \$ |  |
| 1660 | 01650 | JUNCTION BOX | 6.00 | EACH |  | \$ |  |

Report Date 9/22/20

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1670 | 01756 | MANHOLE TYPE A | 2.00 | EACH | \$ |  |
| 1680 | 01767 | MANHOLE TYPE C | 1.00 | EACH | \$ |  |
| 1685 | 23124EN | BORE AND JACK PIPE-48 IN (ADDED: 9-11-20) | 153.00 | LF | \$ |  |
| 1690 | 23952EC | DRAINAGE JUNCTION BOX TY B | 2.00 | EACH | \$ |  |
| 1700 | 24026EC | PIPE CULVERT HEADWALL-54 IN | 4.00 | EACH | \$ |  |
| 1710 | 25116EC | BORE AND JACK PIPE-54 IN | 68.00 | LF | \$ |  |

Section: 0004 - BRIDGE - \#28314 - KY 461 STA 142+27.90 (TWIN)

| LINE | BID CODE |
| :--- | :--- |
| 1720 | 02231 |
| 1730 | 02998 |
| 1740 | 03299 |
| 1750 | 08002 |
| 1760 | 08003 |
| 1770 | 08020 |
| 1780 | 08033 |
| 1790 | 08039 |
| 1800 | 08046 |
| 1810 | 08094 |
| 1820 | 08100 |
| 1830 | 08104 |
| 1840 | 08150 |
| 1850 | 08151 |
| 1860 | 08160 |
| 1870 | 08170 |
| 1880 | 08269 |
| 1890 | $25028 E D$ |

ALT DESCRIPTION
STRUCTURE GRANULAR BACKFILL
MASONRY COATING
ARMORED EDGE FOR CONCRETE
STRUCTURE EXCAV-SOLID ROCK
FOUNDATION PREPARATION (\#28314)
CRUSHED AGGREGATE SLOPE PROT
TEST PILES
PRE-DRILLING FOR PILES
PILES-STEEL HP12X53
PILE POINTS-12 IN
CONCRETE-CLASS A
CONCRETE-CLASS AA
STEEL REINFORCEMENT
STEEL REINFORCEMENT-EPOXY COATED STRUCTURAL STEEL
(1,905,110 LBS)
SHEAR CONNECTORS $(16,650)$
ELECTRICAL CONDUIT (\#28314)
RAIL SYSTEM SINGLE SLOPE - 40 IN

QUANTITY
1,812.00 CUYD \$
5,090.00 SQYD \$
313.00 LF \$
582.00 CUYD \$
1.00 LS \$

| $1,236.00$ | TON | $\$$ |
| ---: | ---: | ---: |
| 156.00 | LF | $\$$ |
| 150.00 | LF | $\$$ |
| $2,669.00$ | LF | $\$$ |
| 96.00 | EACH | $\$$ |
| $1,483.50$ | CUYD | $\$$ |
| $1,675.80$ | CUYD | $\$$ |
| $184,766.00$ | LB | $\$$ |
| $551,584.00$ | LB | $\$$ |
| 1.00 | LS | $\$$ |
| 1.00 | LS | $\$$ |
| 1.00 | LS | $\$$ |
| $2,100.00$ | LF | $\$$ |

Section: 0005 - BRIDGE - \#28315-COIN ROAD STA 50+00

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1900 | 02231 | STRUCTURE GRANULAR BACKFILL | 343.00 | CUYD |  | \$ |  |
| 1910 | 02998 | MASONRY COATING | 1,334.00 | SQYD |  | \$ |  |
| 1920 | 03299 | ARMORED EDGE FOR CONCRETE | 99.50 | LF |  | \$ |  |
| 1930 | 08002 | STRUCTURE EXCAV-SOLID ROCK | 41.00 | CUYD |  | \$ |  |
| 1940 | 08003 | FOUNDATION PREPARATION (28315) | 1.00 | LS |  | \$ |  |
| 1950 | 08020 | CRUSHED AGGREGATE SLOPE PROT | 240.00 | TON |  | \$ |  |
| 1960 | 08033 | TEST PILES | 41.00 | LF |  | \$ |  |
| 1970 | 08046 | PILES-STEEL HP12X53 | 250.00 | LF |  | \$ |  |
| 1980 | 08094 | PILE POINTS-12 IN | 18.00 | EACH |  | \$ |  |
| 1990 | 08100 | CONCRETE-CLASS A | 371.50 | CUYD |  | \$ |  |
| 2000 | 08104 | CONCRETE-CLASS AA | 377.60 | CUYD |  | \$ |  |


| Report Date 9/22/20 |  |  | Page 6 of 9 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |
| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP AMOUNT |  |
| 2010 | 08150 | STEEL REINFORCEMENT | 52,361.00 | LB |  | \$ |  |
| 2020 | 08151 | STEEL REINFORCEMENT-EPOXY COATED | 125,562.00 | LB |  | \$ |  |
| 2030 | 08269 | ELECTRICAL CONDUIT (COIN ROAD) | 1.00 | LS |  | \$ |  |
| 2040 | 08633 | PRECAST PC I BEAM TYPE 3 | 1,126.50 | LF |  | \$ |  |
| 2050 | 25028ED | RAIL SYSTEM SINGLE SLOPE - 40 IN | 458.50 | LF |  | \$ |  |

Section: 0006 - BRIDGE - \#28316 - MARK SHOPVILLE ROAD

| LINE | BID CODE |
| :--- | :--- |
| 2060 | 02231 |
| 2070 | 02998 |
| 2080 | 03299 |
| 2090 | 08002 |
| 2100 | 08003 |
| 2110 | 08019 |
| 2120 | 08033 |
| 2130 | 08046 |
| 2140 | 08094 |
| 2150 | 08100 |
| 2160 | 08104 |
| 2170 | 08150 |
| 2180 | 08151 |
| 2190 | 08634 |
| 2200 | $25028 E D$ |

ALT DESCRIPTION
STRUCTURE GRANULAR BACKFILL
MASONRY COATING
ARMORED EDGE FOR CONCRETE
STRUCTURE EXCAV-SOLID ROCK
FOUNDATION PREPARATION
(MARK SHOPVILLE ROAD)
CYCLOPEAN STONE RIP RAP
TEST PILES
PILES-STEEL HP12X53
PILE POINTS-12 IN
CONCRETE-CLASS A
CONCRETE-CLASS AA
STEEL REINFORCEMENT
STEEL REINFORCEMENT-EPOXY COATED
PRECAST PC I BEAM TYPE 4
RAIL SYSTEM SINGLE SLOPE - 40 IN

QUANTITY
246.00 CUYD \$

1,276.60 SQYD \$
85.00 LF \$
74.00 CUYD \$
1.00 LS \$
1,280.00 TON \$
51.00 LF \$
371.00 LF \$
20.00 EACH \$
247.10 CUYD \$
301.10 CUYD \$

41,502.00 LB \$
103,673.00 LB \$
877.00 LF \$
448.50 LF \$

Section: 0007 - BRIDGE - \#28317-KY 461 OVER FLAT LICK CREEK - RCBC STA 169+34 T

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2210 | 02403 | REMOVE CONCRETE MASONRY | 173.00 | CUYD |  | \$ |  |
| 2220 | 08002 | STRUCTURE EXCAV-SOLID ROCK | 64.00 | CUYD |  | \$ |  |
| 2230 | 08003 | FOUNDATION PREPARATION (KY 461 - STA 169+34) | 1.00 | LS |  | \$ |  |
| 2240 | 08100 | CONCRETE-CLASS A | 608.60 | CUYD |  | \$ |  |
| 2250 | 08150 | STEEL REINFORCEMENT | 90,660.00 | LB |  | \$ |  |
| 2260 | 23931EC | EPS FOAM BLOCK | 220,711.00 | CUFT |  | \$ |  |

Section: 0008 - BRIDGE - \#28318 - KY 461 OVER UNNAMED STREAM - RCBC STA 210+92

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2270 | 02403 | REMOVE CONCRETE MASONRY | 22.00 | CUYD |  | \$ |  |
| 2280 | 08002 | STRUCTURE EXCAV-SOLID ROCK | 122.00 | CUYD |  | \$ |  |
| 2290 | 08003 | FOUNDATION PREPARATION (KY 461 - STA 210+92) | 1.00 | LS |  | \$ |  |
| 2300 | 08100 | CONCRETE-CLASS A | 130.30 | CUYD |  | \$ |  |
| 2310 | 08150 | STEEL REINFORCEMENT | 7,838.00 | LB |  | \$ |  |


| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2320 | 02403 | REMOVE CONCRETE MASONRY | 28.00 | CUYD |  | \$ |  |
| 2330 | 08002 | STRUCTURE EXCAV-SOLID ROCK | 34.00 | CUYD |  | \$ |  |
| 2340 | 08003 | FOUNDATION PREPARATION <br> (KY 461 - STA 242+35) | 1.00 | LS |  | \$ |  |
| 2350 | 08100 | CONCRETE-CLASS A | 72.70 | CUYD |  | \$ |  |
| 2360 | 08150 | STEEL REINFORCEMENT | 7,071.00 | LB |  | \$ |  |

Section: 0010 - SIGNING

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2370 | 06400 | GMSS GALV STEEL TYPE A | 4,513.00 | LB | \$ |  |
| 2380 | 06405 | SBM ALUMINUM PANEL SIGNS | 2,330.00 | SQFT | \$ |  |
| 2390 | 06406 | SBM ALUM SHEET SIGNS . 080 IN | 932.00 | SQFT | \$ |  |
| 2400 | 06407 | SBM ALUM SHEET SIGNS . 125 IN | 1,127.00 | SQFT | \$ |  |
| 2410 | 06410 | STEEL POST TYPE 1 | 4,675.00 | LF | \$ |  |
| 2420 | 06424 | OSS ALUMINUM 65 FT TRUSS | 1.00 | EACH | \$ |  |
| 2435 | 06436 | OSS ALUMINUM 75 FT TRUSS (ADDED: 9-22-20) | 1.00 | EACH | \$ |  |
| 2440 | 06441 | GMSS GALV STEEL TYPE C | 6,921.00 | LB | \$ |  |
| 2445 | 06445 | OSS ALUMINUM 90 FT TRUSS (ADDED: 9-22-20) | 1.00 | EACH | \$ |  |
| 2460 | 06490 | CLASS A CONCRETE FOR SIGNS | 109.80 | CUYD | \$ |  |
| 2470 | 06491 | STEEL REINFORCEMENT FOR SIGNS | 7,498.00 | LB | \$ |  |
| 2480 | 20419ND | ROADWAY CROSS SECTION | 11.00 | EACH | \$ |  |
| 2490 | 20912ND | BARRIER WALL POST | 3.00 | EACH | \$ |  |
| 2500 | 21596ND | GMSS TYPE D | 8.00 | EACH | \$ |  |
| 2510 | 24631EC | BARCODE SIGN INVENTORY | 102.00 | EACH | \$ |  |

## Section: 0011 - LIGHTING

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2520 | 04714 | POLE 120 FT MTG HT HIGH MAST | 15.00 | EACH | \$ |  |
| 2530 | 04761 | LIGHTING CONTROL EQUIPMENT | 3.00 | EACH | \$ |  |
| 2540 | 04797 | CONDUIT-3 IN | 2,490.00 | LF | \$ |  |
| 2550 | 04800 | MARKER | 33.00 | EACH | \$ |  |
| 2560 | 04820 | TRENCHING AND BACKFILLING | 10,158.00 | LF | \$ |  |
| 2570 | 04860 | CABLE-NO. 8/3C DUCTED | 5,700.00 | LF | \$ |  |
| 2580 | 04861 | CABLE-NO. 6/3C DUCTED | 5,105.00 | LF | \$ |  |
| 2590 | 20391NS835 | ELECTRICAL JUNCTION BOX TYPE A | 6.00 | EACH | \$ |  |
| 2600 | 20392NS835 | ELECTRICAL JUNCTION BOX TYPE C | 12.00 | EACH | \$ |  |
| 2610 | 21543EN | BORE AND JACK CONDUIT | 660.00 | LF | \$ |  |
| 2620 | 23161EN | POLE BASE-HIGH MAST | 134.30 | CUYD | \$ |  |
| 2630 | 24749EC | HIGH MAST LED LUMINAIRE | 88.00 | EACH | \$ |  |
| 2640 | 24851EC | CABLE-NO. 10/3C DUCTED | 8,040.00 | LF | \$ |  |

## Section: 0012 - INTELLIGENT TRANSPORTATION SYSTEMS

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2650 | 04792 | CONDUIT-1 IN | 90.00 | LF | \$ |  |
| 2660 | 04795 | CONDUIT-2 IN | 90.00 | LF | \$ |  |
| 2670 | 04797 | CONDUIT-3 IN | 60.00 | LF | \$ |  |
| 2680 | 04820 | TRENCHING AND BACKFILLING | 850.00 | LF | \$ |  |
| 2690 | 04835 | WIRE-NO. 4 | 3,530.00 | LF | \$ |  |
| 2700 | 04899 | ELECTRICAL SERVICE | 3.00 | EACH | \$ |  |
| 2710 | 06400 | GMSS GALV STEEL TYPE A | 3,486.00 | LB | \$ |  |
| 2720 | 06490 | CLASS A CONCRETE FOR SIGNS | 7.08 | CUYD | \$ |  |
| 2730 | 20257NC | SITE PREPARATION (KY461 SOUTHBOUND) | 1.00 | LS | \$ |  |
| 2740 | 20257NC | SITE PREPARATION (KY80 EASTBOUND) | 1.00 | LS | \$ |  |
| 2750 | 20257NC | SITE PREPARATION (KY80 WESTBOUND) | 1.00 | LS | \$ |  |
| 2760 | 20257NC | SITE PREPARATION (WEB CAMERA LOCATION INTERCHANGE) | 1.00 | LS | \$ |  |
| 2770 | 20390NS835 | INSTALL COORDINATING UNIT | 7.00 | EACH | \$ |  |
| 2780 | 20392NS835 | ELECTRICAL JUNCTION BOX TYPE C | 2.00 | EACH | \$ |  |
| 2790 | 20419ND | ROADWAY CROSS SECTION | 3.00 | EACH | \$ |  |
| 2800 | 21065ND | MODEL 334 ENCLOSURE | 1.00 | EACH | \$ |  |
| 2810 | 21066ND | MODEL 336 ENCLOSURE | 5.00 | EACH | \$ |  |
| 2820 | 21069ND | SURGE DEVICE 120 VOLT | 4.00 | EACH | \$ |  |
| 2830 | 21071ND | DATA SURGE DEVICE | 10.00 | EACH | \$ |  |
| 2840 | 21076ND | FIBER TERMINATION RACK | 8.00 | EACH | \$ |  |
| 2850 | 21077ED | FIBER OPTIC CABLE | 1,125.00 | LF | \$ |  |
| 2860 | 21079ND | TRANSFORMER 480/120 | 1.00 | EACH | \$ |  |
| 2870 | 21458ND | FIBER TRANSCEIVER SIGN | 11.00 | EACH | \$ |  |
| 2880 | 21489ND | RACK MOUNTED UPS | 6.00 | EACH | \$ |  |
| 2890 | 21543EN | BORE AND JACK CONDUIT | 60.00 | LF | \$ |  |
| 2900 | 22403NN | WEB CAMERA ASSEMBLY | 1.00 | EACH | \$ |  |
| 2910 | 22408NN | VARIABLE MESSAGE SIGN-DYNAMIC SIDE MOUNT | 3.00 | EACH | \$ |  |
| 2920 | 23150NN | COMMUNICATION CABLE | 150.00 | LF | \$ |  |
| 2930 | 23151NN | POLE WITH LOWERING DEVICE | 1.00 | EACH | \$ |  |
| 2940 | 23157EN | TRAFFIC SIGNAL POLE BASE | 4.32 | CUYD | \$ |  |
| 2950 | 23941EC | VIDEO SURVEILLANCE CONTROLLER | 1.00 | EACH | \$ |  |
| 2960 | 23942EC | FIXED WEB CAMERA ASSEMBLY | 3.00 | EACH | \$ |  |
| 2970 | 23944EC | ADVANCED GROUNDING SYSTEM | 9.00 | EACH | \$ |  |
| 2980 | 24601EC | INSTALL <br> (TYPE ATC CONTROLLER) | 7.00 | EACH | \$ |  |
| 2990 | 24851EC | CABLE-NO. 10/3C DUCTED | 750.00 | LF | \$ |  |
| 3000 | 24901EC | PVC CONDUIT-2 IN-SCHEDULE 80 | 1,180.00 | LF | \$ |  |

## Section: 0013-TRAINEES

## Report Date 9/22/20

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3010 | 02742 | TRAINEE PAYMENT REIMBURSEMENT (1-GROUP 2, 3 OR 4 OPERATOR) | 1,400.00 | HOUR |  | \$ |  |
| 3020 | 02742 | TRAINEE PAYMENT REIMBURSEMENT (1-GROUP 2, 3 OR 4 OPERATOR) | 1,400.00 | HOUR |  | \$ |  |
| 3030 | 02742 | TRAINEE PAYMENT REIMBURSEMENT (1-IRONWORKER) | 1,400.00 | HOUR |  | \$ |  |

## Section: 0014 - DEMOBILIZATION \&/OR MOBILIZATION

| LINE | BID CODE | ALT DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3040 | 02568 | MOBILIZATION | 1.00 | LS |  | \$ |  |
| 3050 | 02569 | DEMOBILIZATION | 1.00 | LS |  | \$ |  |

## FIBER OPTIC CABLE AND FIBER TERMINATION RACK

## DESCRIPTION

Furnish and install Fiber Optic Cable and Fiber Termination Rack in accordance with the plans, specifications and Standard Drawings.

## MATERIALS

The Contractor shall install specified fiber optic cable and distribution equipment using the stated installation procedures. The fiber termination rack shall include rack enclosure (Corning Fiber CCH01 or approved equal), panel modules 12 fiber (Corning Fiber CCHCP1259 or approved equal), and single mode patch cords (Corning Fiber VDX9YYS3FIS or approved equal).

This shall include furnishing and installing all materials, mounting hardware, and cabling necessary to construct a complete and functional system. This shall also include all labor, tools, equipment, and incidentals necessary to complete the work, including but not limited to integrated fiber optic termination units, connector modules, jumper cables, testing, and documentation.

Fiber optic cable shall be Optical Cable Company BX12 165AD SLX 900 OFNR or approved equal. Fiber optic cable, jumper cables, and distribution equipment shall be fabricated by a certified ISO 9001 manufacturer.

All fiber cable provided under this contract shall be from the same manufacturer utilizing identical specifications. Fiber cables shall be dielectric (constructed from non-metallic materials). Fiber cables shall contain single mode optical fibers, loose tube, filled with a water-blocking material, and shall be suitable for installation in underground conduit and field cabinets.

All optical fiber in the cable shall, at a minimum, comply with the following requirements:

- Min. Cladding diameter: $125+/-1.0 \mu \mathrm{~m}$
- Core to cladding offset: $0.8 \mu u m$ maximum
- Maximum attenuation: $0.5 \mathrm{~dB} / \mathrm{km}$ at 1310 nm
$0.5 \mathrm{~dB} / \mathrm{km}$ at 1550 nm
- Maximum chromatic dispersion: $3.2 \mathrm{ps} /(\mathrm{nm} \times \mathrm{km})$ from 1285 nm to 1330 nm $18 \mathrm{ps} /(\mathrm{nm} \times \mathrm{km})$ at 1550 nm
- Fiber polarization mode dispersion: $0.5 \mathrm{ps} /(\mathrm{km}), 2$ maximum
- Coating diameter: $245 \mu \mathrm{~m}+/-10 \mu \mathrm{~m}$

The change in attenuation for single-mode from $0^{\circ} \mathrm{F}$ to $-150^{\circ} \mathrm{F}$ shall not exceed 0.2 $\mathrm{dB} / \mathrm{km}$ at 1550 nm , with 80 percent of the measured values no greater than $0.1 \mathrm{~dB} / \mathrm{km}$ at 1550 nm .

The cable design shall have a life expectancy of 20 years when installed to manufacturer's specifications.

Optical fibers shall be contained inside a loose buffer tube. Each buffer tube shall contain 12 fibers. The buffer tubes shall allow free movement of the fibers without fiber damage during installation or normal operation, including expansion and contraction of the buffer tubes. The diameter of all buffer tubes in a cable shall match.

The cable shall have a central member designed to prevent buckling of the cable.
The cable core interstices shall be filled with a non-nutritive to fungus, electrically nonconductive, water-blocking material such as water-swellable tape that is dry to the touch. The water blocking material shall be free from dirt and foreign matter.

The cable shall contain a least one ripcord under the sheath for easy sheath removal.
The cable shall have tensile strength members that minimize cable elongation due to installation forces and temperature. The cable shall withstand a 600 lb . tensile load applied per EIA-455-33. The change in attenuation shall not exceed 0.2 dB during loading and 0.1 dB after loading. The cable shall be rated for a minimum installed tensile service load of 200 lbs .

The cable shall be dielectric (with no armoring) and be either HDPE or MDPE. Jacketing material shall be applied directly over the tensile strength members and waterblocking material.

The markings on the fiber optic cable shall include cable length markings.
The fiber optic cable shall be capable of withstanding the following conditions without damage or decrease in function:

- Cable freezing per EIA/TIA-455-98
- Total immersion in water with natural mineral and salt contents
- Salt spray or salt water immersion for extended periods
- Wasp and hornet spray

Cable shall be furnished in one continuous length per reel and shall be free from optical splices. A minimum length of six feet on each end of the cable shall be accessible for testing.

Information either stenciled or lettered on the reel or provided on a weatherproof tag firmly attached to the reel shall include the following:

- Factory order number
- Job number
- Ship date
- Manufacturer's cable code
- Type of cable (single mode, outdoor, indoor)
- Beginning and ending length markings
- Measured length and attenuation


## FIBER OPTIC DISTRIBUTION EQUIPMENT:

SC type Connectors shall used. The measured attenuation of the connector (inclusive of coupler and mated test connector) shall not exceed an average of 0.3 dB for all connectors provided. Any connector found in excess of 0.5 dB will be rejected. Reflectance shall be less than -40 dB , from $14^{\circ} \mathrm{F}$ to $+140^{\circ} \mathrm{F}$. The manufacturer shall have a program that periodically tests connectors to ensure that, after 1000 re-matings, the attenuation shall not change more than 0.2 dB .

The connector shall be able to withstand an axial pull of 25 lbs . with no physical damage to the connector and no permanent optical degradation more than 0.3 dB . Connectors shall be pre-wired by the manufacturer.

Fiber optic jumper cables shall, at a minimum, comply with the following requirements:

- Have less than 0.2 dB loss when subjected to EIA/TIA-455-1A, 300 cycles, 0.5 kg
- Have an Aramid yarn strength member
- Have a rugged PVC sheathing
- Have a minimum bend radius of 12.5 inches following installation, 25 inches during installation
- Have a minimum tensile strength of 100 lbs
- Have connectors with strain relief pre-wired by the manufacturer
- Comply with NEC requirements for indoor fiber optic cable

Jumper cables shall be either single or duplex. Duplex jumper cables shall have permanent markings to distinguish between the fibers or connectors.

Connector modules shall consist of a connector panel, couplers, and a protective housing. The measured attenuation of the connector module (inclusive of coupler, fiber, and mated ST test connector) shall not exceed an average of 0.3 dB for all connector modules provided. Any connector module found in excess of 0.5 dB will be rejected. Connector modules shall, at a minimum, comply with the following:

- Have 6 couplers for ST applications
- Have 12 couplers for SC applications
- Have a durable housing that provides physical protection and strain relief for the termination of multi-fiber cable to couplers
- Be easily installed and removed from the termination housing
- Be furnished with protective covers for couplers on the jumper cable side
- Comply with NEC requirements for indoor fiber optic cable

There shall be a fixed correlation between each buffered fiber color and coupler position for all connector modules. Fiber color shall meet the requirements for outdoor fiber optic cable.

Fiber optic termination units shall be properly sized for the required number of terminations subject to the minimum requirements stated for each configuration. The fiber optic termination units shall, at a minimum, comply with the following requirements:

- Be rack mounted
- Have front and rear doors or removable panels
- Have a top, bottom, and 4 sides that fully enclose the interior and protect its contents from physical damage
- Be manufactured using 16 gauge aluminum or equivalent and corrosion resistant
- Have provisions for neatly routing cables, buffer tubes and fan-out tubing
- Have cable management brackets or rings integral to the unit to secure and route cables from the connector modules to the vertical rack members while maintaining a minimum 1.5 inch cable radius


## INSTALLATION

Fiber optic cable shall be installed in conduit and cabinets. Fiber optic cable shall be installed in accordance with the manufacturer's installation techniques and procedures. The Contractor shall furnish and install all jumper cables and termination equipment necessary to connect fiber optic cable to the equipment.

The Contractor shall install fiber optic cable as a continuous run, without splices, between the cable ends identified. The Contractor shall label fiber optic cables at each end of the cable run, at the points where the cable enters and exits the cabinet for midcable access locations, and in all junction boxes. Labels for fiber optic cable shall identify the cable number and the string numbers of the fiber contained within the cable.

Installation of fiber optic cable and jumper cables shall meet the minimum requirements of local building codes and NEC Article 770. Cable shall not be pulled along the ground, over or around obstructions, over edges or corners, or through unnecessary curves or bends. Bend radius criteria of 10 times the cable diameter no stress and twenty times cable diameter under stress shall not be exceeded. Manufacturer-approved pulling grips, cable guides, feeders, shoes, and bushings shall be used to prevent damage to cable during installation.

When cable is removed from the reel prior to installation, it shall be placed in a "figureeight" configuration to prevent kinking or twisting. Care shall be taken to relieve pressure on the cable by placing cardboard shims at each crossover, by creating additional "figure-eights", or by an approved equivalent method.

Prior to the installation of any fiber optic cable in conduit, the Contractor shall provide the cable manufacturer's recommended and maximum pulling tensions to the Engineer.

Included with these pulling tensions shall be a list of the cable manufacturer's approved pulling lubricants. Lubricants shall be used in quantities and in accordance with the procedures recommended by the lubricant manufacturer.

Prior to the installation of any fiber optic cable in conduit, all cable pulling equipment shall be approved by the Engineer. The cable pulling equipment shall include a meter to display pulling tension and a mechanism to ensure that the maximum allowable pulling tension cannot be exceeded at any time during installation.

The Contractor shall furnish attachment hardware, installation guides, and other necessary equipment, not specifically listed herein, as required to install the fiber optic cable.

Fiber optic cable in junction boxes shall be properly looped and attached to the sidewall.
Slack fiber optic cable shall be coiled, labeled, and attached to cable guides.
All fibers, including spares, shall be installed from the connector modules, terminated at the appropriate fibers, and secured neatly within the termination rack.

Fiber terminations shall be neatly and permanently labeled on the connector modules to designate transmit or receive.

Blank connector panels shall be of the same finish and manufacture as the connector modules and shall be installed for all unused connector module spaces.

Prior to the installation of jumper cables, the Contractor shall provide and maintain protective covers over the optical connectors and terminations. Protective covers on unused terminations shall remain.

Jumper cables shall be installed from connector modules to end equipment, and from end equipment to end equipment in multiple cabinet configurations. Jumper cables shall be secured to provide strain relief at both the connector module and the end equipment. Manufacturer recommended installation and minimum bend radius requirements shall be adhered to. Jumper cables shall be labeled at both ends.

Any approved splices shall be made using the fusion splice technique and shall not induce more than 0.1 dB attenuation for each splice nor 0.07 dB average for all splices. Splices that exceed 0.1 dB attenuation shall be re-spliced by the Contractor at no additional cost.

## TESTING

Fiber optic cables shall be tested by the manufacturer in conformance with the procedures of TIA/EIA-526-7A. Submittal of test data shall include a summary sheet that clearly illustrates measured loss versus budgeted loss. Each test result on the summary sheet shall be identified by cable number(s) and begin and end locations. The

Contractor shall identify any unacceptable losses and perform corrective work at no additional cost. The maximum permissible loss for cables other than jumpers, terminations, and connector modules is 0.05 dB . Any cable not compliant shall be replaced in its entirely and re-tested for compliance. A copy of the final, summarized, post-installation test results shall be placed in a protective sleeve approved by the Engineer and attached to the rack or door.

Bi-directional (OTDR) tests shall be conducted by the manufacturer for all string paths. The OTDR tests shall document the loss for each component (connector module, jumper cable, etc.). Short runs of fiber shall be tested using a 'lead-in' cable or an 'attenuator' to obtain proper readings from the OTDR. OTDR traces shall be submitted. Each test shall be clearly annotated with the measured loss identified on the OTDR trace. All tests over 0.05 dB shall be identified on the summary sheet.

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Fiber Optic Cable will be measured for payment per unit linear foot. Termination Fiber Rack will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.







| Try | no. | suter |
| :---: | :---: | :---: |
| PuLask | ${ }_{\text {8,-59.25 }}^{8-56}$ | R2n |




|  | KY $\mathbf{4 6 1}$ |
| :--- | :--- |
| OVERLAY |  |



| comery of | Tel | Stert Ma. |
| :---: | :---: | :---: |
| Pulaskı | ${ }_{\text {8-5. }}^{8.59}$ | R2i |








| Pulask | ${ }_{\text {8,5.5,25 }}^{8.95}$ |  |
| :---: | :---: | :---: |
| Notes: |  |  |
|  |  |  |
|  <br>  |  |  |
|  |  |  |
|  |  |  |
| (4) cafried over from guaborall |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| (1) for ceotech note mil - Rrb |  |  |
| (1) 200 Sy for const. EvTr |  |  |
|  |  |  |
| earthwork quantities |  |  |
| Excavation |  |  |
| ${ }_{\text {cock }}$ |  |  |
|  |  |  |
| cer |  |  |
|  |  |  |
|  |  |  |
| entractes |  |  |
|  |  | 2,933,773 |
| Nueer |  |  |
| Exuanument |  |  |
| ExB. |  |  |
| rock Eme. |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| 379,4 |  |  |





TEMPORARY SHEETING OR SHORING MAY BE REOUIRED WITH PLACEMENT OF
LICHTWIICHT FILL MATERILLS. THE SPECIFIC DESICNS FOR ANY NECESSARY





MAINTAIN AND CONTROL



## 





## GENERAL NOTES






 тाचघסघणन
 CONSTRUCTION ENTRANCES


 typical section








NOT SUBSCRIBE TO KY 811. IT MAY BE NECESSARY FOR THE CONTRACTOR
TO COTACT THE COUNTY COURT CLER TO DETERMINE WHAT UTILITY
COMPANIES HAVE FACILITIES IN THE AREA.
190 DEPARTMENT OF THE ARMY PERMIT AND WATER QUALITY CERTIFICATION APPROVALS A DEPARTMENT OF OE QUALITY CERTIIICATION FROM THE KENTUCKY DIVISION ALL APPLICABLE WORK IN COMPLIANCE WITH THE CONDITIONS STATED IN THE OF THE DA PERMIT AND THE WATER QUALITY CERTIFICATION IN A CONSPICUOUS
 UNTIL OBTANING THE APPROPRIATE APPROVAL(S). REFER TO NOTICE(S) CONTAINED
IN THE CONTRACT BID PROPOSAL FOR DESIGNATED AREA(S) WHERE WORK IS
PROHIBITED BY THE ABSENCE OF APPROVAL. 429 WINTER CLOSEDOWN
ANY ASPHALT CONCRETE BAS
429Y ASPHALT CONCRETE BASE AND/OR SURFACE COURSE USED AS A RIDING SURFACE
EXPOSED TO TRAFIC DURING WINER CLOSEDOWN PERIODS SHALL CONTAIN
NATURAL, CONGLOMERATE, CRUSHED SCAG, CRUSHED GRANITE OR CRUSHED
SALAL COMINE NATURAL, CONGLOMERATE, CRUSHED SLAG, CRUSHED GRANITE OR CRUSHED
SANDSTONE SAND IN THE PROPORTION OF NO LESS THAN 25\% OF THE TOTAL COMBINED

COARSE AND FINE AGGREGATE. | 444 ASPHALT PAVEMENT RIDE QUALITY |
| :--- |
| PAVEMENT RIDEABILITY REQUIREMENTS, IN ACCORDANCE WITH SECTION 410 OF THE |



[^0]|  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 8-59 |  |
| EVISED 9-21-2 |  |  |  |  |
| crushed agcregate size no. 2 <br> THE BID ITEM "OOOT8 CRUSHED AGGREGATE SIZE NO. 2 " INCLLDES OUANTTTIES FOR PERF. PIPE HEADWALSS, CONSTRUCTION ENTRACES, AND TO PROVIDE A CONTINGNCY OUANTITY TO MEET THE REOUREMENTS OF GEOTECHNICAL <br>  <br>  GENERATED FROM ROADAY EXCAVATION IS NOT AVAILABLE. UPON THE APPROVAL OF THE ENGINEER, KY CRUSHED AGGREGATE SIZE 3 OR 23 MAY BE SUBSTITUTED AT THE CONTRACT UNIT BID PRICE FOR CRUSHED AGGREGATE SIZE No. 2. |  |  |  |  |
| CROSS HATCHING <br> measurement and payment of cross hatching will be based on the measured square feet of marking and not the total measured ISLANMAREA |  |  |  |  |
| GEOTECH <br> The contractor shall conduct grading operations in such a manner THAT LIMESTONE FROM ROADWAY EXCAVATION BE STOCKPILLED SEPARATELY <br>  <br>  No Direct payment will be allowed for such necessary manipllating as stockpiling, hauling and/or double handling the material. |  |  |  |  |
|  |  |  |  |  |
| temporary sheeting or shoring may be reauired with placement of LIGHTWEIGHT FILL MATERIALS. THE SPECIFIC DESIGNS FOR ANY NECESSAAY SHEETING AND SHORING STAL BEREVIEWED /APPROVED BY THE ENGINER. CONSTRUCTION AND STABILITY OF TEMPORARY SLOPES REQUIRED FOR LIGHTWEIGHT FILL PLACEMENT ARE THE RESPONSIBILITY OF THE CONTRACTOR. CAUTION SHOULD BE USED WITH SHEETING/SHORING OR TEMPORARY SLOPES ADJACENT TO EXISTINGROADWAYS. MINIMIZE THE TIME TEMPORARY CUT SLOPES ARE EXPOSED TO REDUCE THE LIKELIHOOD OF SLOPE INSTABILITY. |  |  |  |  |
| TEMPORARY SHORING, IF REQUIRED FOR PHASED CONSTRUCTION OF ANY DRAINAGE STRUCTURE, SHALL BE CONSIDERED INCIDENTAL TO MAINTAIN AND CONTROL TRAFFIC. |  |  |  |  |
| drainage structures <br> all existing drainage structures designated to remain in PLACE SHALL BE INSPECTED FOR BLOCKAGE AND STRUCCURAL INTEGRITY. THESE STRUCTURES SHALL BE CLEANED AND REPATRED TU REP ACEI THESE STRUC TURES SHALL BE CLEANED AND REPAIRED OR REPLACED AS DIRECTED BY THE ENGINER, INSPECTION AND CLEANING IS CONSIDRED INCIDENTAL TO OTHER DRAINAGE ITEMS. IF THE ENGINEER DETERMINES THAT THEN THIS WORK MAY BE ADDED THROUGH CONTRACT MODIFICATION. |  |  |  |  |
|  |  |  |  |  |
| all drainage structures that are to be extended must be CONSTRUCTED IN-KIND AND ON THE SAME SLOPE UNLESS OTHERWISE SPECIFIED: |  |  |  |  |
| SETTLEMENT PLATFORM CONSTRUCT SETTLEMENT PLATFORMS FOR THE PROPOSED KY 461 MAINLINE bridges per section 216 of the standard specifications. |  |  |  |  |
| For additional notes and geotechnical information see geotechnicalREPORT $S$-072-2019, BY REFERENCE THE GEOTECHNICAL REPORT IS PART OF THE CONTRACT DOCUMENTS. |  |  |  |  |

## GENERAL NOTES

|  <br>  <br>  <br>  <br>  <br>  <br>  |
| :---: |
|  |
|  <br>  <br>  <br>  |
| S9NIMVYO OUVONVIS 099 |
|  |
|  |
| $\qquad$ |
|  |


.
$\begin{aligned} & \text { ANO } 3 \text { PM, MONDAY-RIDAS } \\ & \text { CONSTRUCTION ENTRANCES }\end{aligned}$
 tYpical Section



NOT SUBSCRIBE TO KY 811. IT MAY BE NECESSARY FOR THE CONTRACTOR
TO CONTACT THE COUNTYO COURT CLERK TOO DETERMINE WHAT UTILITY
COMPANIES HAVE FACILITIES IN THE AREA.
190 DEPARTMENT OF THE ARMY PERMIT AND WATER QUALITY CERTIFICATION APPROVALS A DEPARTMENT WF OL ARMY CEA PERMTTO NH FROM THE KENTUCKY DIVISION OF THE DA PERMIT AND THE WATER QUALITY CERTIFICATION IN A CONSPICUOUS
 UNTIL OBTANING THE APPROPRIATE APPROVAL(S). REFER TO NOTICEIS ISONTAINE
IN THE CNTRACT BID PROPOAL FOR EESIGNATED AREA(S) WHERE WORK IS
PROHIBITED BY THE ABSENCE OF APPROVAL. $\frac{429 \text { WINTER CLOSEDOWN }}{\text { ANY ASPHALT CONCRETE BAS }}$

[^1]











[^0]:    SヨNヤา 9
    

[^1]:    EXPOED TO TRAFIC DUUING WINTER CLOSEDOWN PERRODS SHALL CONTAN
    NATURAL, CONGLOMERATE, CRUSHED SLAG, CRUSHED GRANITE OR CRUSHED
    SANDTONE SAND IN THE PROOORTION OF NO LESS THAN $25 \%$ OF THE TOTAL COMBINED
    COARSE AND FINE AGGREGATE.
    
    
    

