DocuSign Envelope ID: C33CD8E6-D5C9-4702-BD6A-33C2AC318774

TGSZACH-LAPTOP

| COMPUTED BY: | Zachary J. Richard, PE | DATE: | 9/5/2018 |
|---|---|---|---|
| CHECKED BY: | David B. Petty, PE | DATE: | 9/7/2018 |

| PROJECT NO. | SHEET NO. |
|---|---|
| 44983 | SW-2 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.**
**See "Standard Specifications For Roads and Structures, Section 300-5".**

## *LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)*

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % |
|---|---|---|---|---|---|---|---|---|
| Y4 11+08 | 13 | LT | 0101 | | 2129.0 | | | |
| | | | 0101 | 0102 | | 2126.0 | 2119.9 | |
| Y4 11+88 | 13 | LT | 0102 | | 2122.9 | | | |
| | | | 0102 | 0103 | | 2119.8 | 2114.7 | |
| Y4 12+66 | 15 | LT | 0103 | | 2117.7 | | | |
| | | | 0103 | 0104 | | 2114.6 | 2108.9 | |
| Y4 13+33 | 42 | LT | 0104 | | 2111.9 | | | |
| | | | 0104 | 0105 | | 2108.8 | 2103.3 | |
| L 13+08 | 32 | LT | 0105 | | 2106.3 | | | |
| | | | 0105 | 0106 | | 2103.2 | 2099.2 | 0.4 |
| L 13+71 | 24 | LT | 0106 | | 2102.2 | | | |
| | | | 0106 | 0108 | | 2099.1 | 2095.9 | 0.4 |
| L 14+17 | 36 | LT | 0107 | | 2098.5 | | | |
| | | | 0107 | 0108 | | 2096.2 | 2095.9 | |
| L 14+13 | 24 | LT | 0108 | | 2098.9 | | | |
| | | | 0108 | 0109 | | 2095.6 | 2089.4 | |
| L 14+94 | 22 | LT | 0109 | | 2092.6 | | | |
| | | | 0109 | 0110 | | 2089.3 | 2089.0 | |
| L 15+04 | 34 | LT | 0110 | | 2092.4 | | | |
| | | | 0110 | 0111 | | 2083.9 | 2083.7 | 0.6 |
| L 15+04 | 18 | LT | 0111 | | 2086.2 | | | |
| L 13+88 | 25 | LT | | | | | | |
| L 14+84 | 24 | LT | | | | | | |
| Y4 11+86 | 19 | LT | | | | | | |
| Y4 11+86 | 32 | LT | | | | | | |
| L 14+16 | 32 | LT | | | | | | |
| L 15+02 | 24 | LT | | | | | | |
| L 15+61 | 1 | LT | | | | | | |

SIZE / THICKNESS OR GAUGE

| LINE & STATION | FROM | TO | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C. S. PIPE 12 (.064) | 15 (.064) | 18 (.064) | 24 (.064) | 30 (.079) | 36 (.079) | 42 (.109) | 48 (.109) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y4 11+08 | 0101 | | | | | | | | | | | | | | | | | | | | | |
| | 0101 | 0102 | | | | | | | | | | | | | | | | | | | | |
| Y4 11+88 | 0102 | | | | | | | | | | | | | | | | | | | | | |
| | 0102 | 0103 | | | | | | | | | | | | | | | | | | | | |
| Y4 12+66 | 0103 | | | | | | | | | | | | | | | | | | | | | |
| | 0103 | 0104 | | | | | | | | | | | | | | | | | | | | |
| Y4 13+33 | 0104 | | | | | | | | | | | | | | | | | | | | | |
| | 0104 | 0105 | | | | | | | | | | | | | | | | | | | | |
| L 13+08 | 0105 | | | | | | | | | | | | | | | | | | | | | |
| | 0105 | 0106 | | | | | | | | | | | | | | | | | | | | |
| L 13+71 | 0106 | | | | | | | | | | | | | | | | | | | | | |
| | 0106 | 0108 | | | | | | | | | | | | | | | | | | | | |
| L 14+17 | 0107 | | | | | | | | | | | | | | | | | | | | | |
| | 0107 | 0108 | | 12 | | | | | | | | | | | | | | | | | | |
| L 14+13 | 0108 | | | | | | | | | | | | | | | | | | | | | |
| | 0108 | 0109 | | | | | | | | | | | | | | | | | | | | |
| L 14+94 | 0109 | | | | | | | | | | | | | | | | | | | | | |
| | 0109 | 0110 | | | 16 | | | | | | | | | | | | | | | | | |
| L 15+04 | 0110 | | | | | | | | | | | | | | | | | | | | | |
| | 0110 | 0111 | | | | | | | | | | | | | | | | | | | | |
| L 15+04 | 0111 | | | | | | | | | | | | | | | | | | | | | |
| L 13+88 | | | | | | | | | | | | | | | | | | | | | | |
| L 14+84 | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | |
| L 14+16 | | | | | | | | | | | | | | | | | | | | | | |
| L 15+02 | | | | | | | | | | | | | | | | | | | | | | |
| L 15+61 | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | 12 | 16 | | | | | | | | | | | | | | | | | |
| PROJECT TOTALS | | | | 12 | 16 | | | | | | | | | | | | | | | | | |

| LINE & STATION | FROM | TO | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | STRUCTURAL PLATE PIPE 60 | 66 | 72 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y4 11+08 | 0101 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0101 | 0102 | | 72 | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+88 | 0102 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0102 | 0103 | | 72 | | | | | | | | | | | | | | | | | | | | | | |
| Y4 12+66 | 0103 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0103 | 0104 | | 72 | | | | | | | | | | | | | | | | | | | | | | |
| Y4 13+33 | 0104 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0104 | 0105 | | 72 | | | | | | | | | | | | | | | | | | | | | | |
| L 13+08 | 0105 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0105 | 0106 | | 64 | | | | | | | | | | | | | | | | | | | | | | |
| L 13+71 | 0106 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0106 | 0108 | | 44 | | | | | | | | | | | | | | | | | | | | | | |
| L 14+17 | 0107 | | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| | 0107 | 0108 | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+13 | 0108 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0108 | 0109 | | | 84 | | | | | | | | | | | | | | | | | | | | | |
| L 14+94 | 0109 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | 1 |
| | 0109 | 0110 | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+04 | 0110 | | | | | | | | | | | | | | | | | | | 1 | 3.5 | | | | | |
| | 0110 | 0111 | | | 16 | | | | | | | | | | | | | | | | | | | | | |
| L 15+04 | 0111 | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 13+88 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+84 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+61 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | 396 | 100 | | | | | | | | | | | | | | | 10 | 3.5 | | 8 | | | 8 |
| PROJECT TOTALS | | | | 396 | 100 | | | | | | | | | | | | | | | 10 | 3.5 | | 8 | | | 8 |

| LINE & STATION | FROM | TO | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Y4 11+08 | 0101 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0101 | 0102 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+88 | 0102 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0102 | 0103 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 12+66 | 0103 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0103 | 0104 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 13+33 | 0104 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0104 | 0105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 13+08 | 0105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0105 | 0106 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 13+71 | 0106 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0106 | 0108 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+17 | 0107 | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| | 0107 | 0108 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+13 | 0108 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0108 | 0109 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+94 | 0109 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0109 | 0110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+04 | 0110 | | | | | | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | |
| | 0110 | 0111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+04 | 0111 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 13+88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+84 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y4 11+86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 14+16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 15+61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | | 1 | 1 | | 1 | | | | | | | | | 1 | | | | | | | | | | | | |
| PROJECT TOTALS | | | | | | | 1 | 1 | | 1 | | | | | | | | | 1 | | | | | | | | | | | | |

| LINE & STATION | FROM | TO | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---|---|---|---|---|
| Y4 11+08 | 0101 | | | | | | |
| | 0101 | 0102 | | | | | |
| Y4 11+88 | 0102 | | | | | | |
| | 0102 | 0103 | | | | | |
| Y4 12+66 | 0103 | | | | | | |
| | 0103 | 0104 | | | | | |
| Y4 13+33 | 0104 | | | | | | |
| | 0104 | 0105 | | | | | |
| L 13+08 | 0105 | | | | | | |
| | 0105 | 0106 | | | | | |
| L 13+71 | 0106 | | | | | | |
| | 0106 | 0108 | | | | | |
| L 14+17 | 0107 | | | | | | |
| | 0107 | 0108 | | | | | |
| L 14+13 | 0108 | | | | | | |
| | 0108 | 0109 | | | | | |
| L 14+94 | 0109 | | | | | | |
| | 0109 | 0110 | | | | | |
| L 15+04 | 0110 | | | | | | |
| | 0110 | 0111 | | | | | |
| L 15+04 | 0111 | | | 0.4465 | | | |
| L 13+88 | | | | | | 55 | |
| L 14+84 | | | | | | 142 | |
| Y4 11+86 | | | | | | 15 | |
| Y4 11+86 | | | | | | 40 | |
| L 14+16 | | | | | | 12 | |
| L 15+02 | | | | | | 12 | |
| L 15+61 | | | 4 | | | | |
| SHEET TOTALS | | | 4 | 0.4465 | | 276 | |
| PROJECT TOTALS | | | 4 | 0.4465 | | 276 | |

**ABBREVIATIONS**

| | |
|---|---|
| C.A.A. | CORRUGATED ALUMINIUM ALLOY |
| C.B. | CATCH BASIN |
| C.S. | CORRUGATED STEEL |
| D.I. | DROP INLET |
| G.D.I. | GRATED DROP INLET |
| H.D.P.E. | HIGH DENSITY POLYETHYLENE |
| J.B. | JUNCTION BOX |
| M.H. | MANHOLE |
| N.S. | NARROW SLOT |
| P.V.C. | POLYVINYL CHLORIDE |
| R.C. | REINFORCED CONCRETE |
| T.B.D.I. | TRAFFIC BEARING DROP INLET |
| T.B.J.B. | TRAFFIC BEARING JUNCTION BOX |
| W.S. | WIDE SLOT |