



One Easton Oval  
Suite 400  
Columbus, OH 43219  
614-476-6000

### ROS-138-1728 Estimated Quantities - Concrete Arch Culvert

Calculated By: JYM/SL Date: 1/2/2025 Job No.: 115773 SFN: 7104146  
Checked By: MJZ Date: 1/2/2025 Bridge No.: ROS-138

| ESTIMATED QUANTITIES |       |          |      |                                                                                     |
|----------------------|-------|----------|------|-------------------------------------------------------------------------------------|
| ITEM                 | EXT   | QUANTITY | UNIT | DESCRIPTION                                                                         |
| 202                  | 11003 | 1        | LS   | STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN                                   |
| 202                  | 22900 | 112      | SY   | APPROACH SLAB REMOVED                                                               |
| 202                  | 23500 | 586      | SY   | WEARING COURSE REMOVED                                                              |
| 203                  | 10000 | 1,739    | CY   | EXCAVATION                                                                          |
| 203                  | 20001 | 50       | CY   | EMBANKMENT, AS PER PLAN                                                             |
| 203                  | 35120 | 2,846    | CY   | GRANULAR MATERIAL, TYPE C                                                           |
| 503                  | 11101 | 1        | LS   | COFFERDAMS AND EXCAVATION BRACING, AS PER PLAN                                      |
| 503                  | 21300 | 1        | LS   | UNCLASSIFIED EXCAVATION                                                             |
| 505                  | 11100 | 1        | LS   | PILE DRIVING EQUIPMENT MOBILIZATION                                                 |
| 507                  | 00600 | 2,100    | FT   | 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN                                 |
| 507                  | 00650 | 2,400    | FT   | 14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED                              |
| 509                  | 10000 | 29,500   | LB   | EPOXY COATED STEEL REINFORCEMENT                                                    |
| 511                  | 46012 | 102      | CY   | CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING             |
| 511                  | 46512 | 141      | CY   | CLASS QC1 CONCRETE WITH QC/QA, FOOTING                                              |
| 511                  | 46612 | 44       | CY   | CLASS QC1 CONCRETE WITH QC/QA, HEADWALL                                             |
| 512                  | 10100 | 204      | SY   | SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)                                       |
| 512                  | 33000 | 502      | SY   | TYPE 2 WATERPROOFING                                                                |
| 516                  | 13600 | 15       | SF   | 1" PREFORMED EXPANSION JOINT FILLER                                                 |
| 518                  | 21200 | 115      | CY   | POROUS BACKFILL WITH GEOTEXTILE FABRIC                                              |
| 601                  | 32200 | 106      | CY   | ROCK CHANNEL PROTECTION, TYPE C WITH FILTER                                         |
| 611                  | 71000 | 56       | FT   | CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE ARCH SECTIONS (60' SPAN X 13'-3" RISE) |
| <b>TOTAL</b>         |       |          |      |                                                                                     |

|              |              |                |              |                               |
|--------------|--------------|----------------|--------------|-------------------------------|
| <b>202</b>   | <b>22900</b> | <b>112</b>     | <b>SY</b>    | <b>APPROACH SLAB REMOVED</b>  |
|              |              | 25.00          | ft           | length (orig plans)           |
|              |              | 20.00          | ft           | width (orig plans)            |
|              |              | 2.00           | ea           | number of approaches          |
|              |              | 1000.00        | sq ft        | total area                    |
|              |              | <b>111.11</b>  | <b>sq yd</b> | <b>total</b>                  |
| <b>202</b>   | <b>23500</b> | <b>586</b>     | <b>SY</b>    | <b>WEARING COURSE REMOVED</b> |
|              |              | 118.54         | ft           | length (orig plans)           |
|              |              | 36.00          | ft           | width (orig plans)            |
|              |              | 1000.00        | sq ft        | approach slabs                |
|              |              | 5267.44        | sq ft        | total area                    |
|              |              | <b>585.27</b>  | <b>sq yd</b> | <b>total</b>                  |
| <b>203</b>   | <b>10000</b> | <b>1739</b>    | <b>CY</b>    | <b>EXCAVATION</b>             |
| rear abut    |              | 194.24         | sq ft        | area behind prop abutment     |
|              |              | 47.16          | sq ft        | area front prop. abutment     |
|              |              | 64.46          | ft           | length prop. abutment         |
|              |              | 20.47          | ft           | wingwall left                 |
|              |              | 31.21          | ft           | wingwall right                |
|              |              | 28035.09       | cu ft        | volume                        |
| forward abut |              | 113.60         | sq ft        | area behind prop abutment     |
|              |              | 51.11          | sq ft        | area front prop. abutment     |
|              |              | 63.15          | ft           | length prop. abutment         |
|              |              | 20.98          | ft           | wingwall left                 |
|              |              | 17.13          | ft           | wingwall right                |
|              |              | 16677.04       | cu ft        | volume                        |
|              |              | 44712.13       | cft          | total volume                  |
|              |              | 2235.61        | cft          | 5% assumed around ends        |
|              |              | 46947.74       | cu ft        | total                         |
|              |              | <b>1738.81</b> | <b>cyd</b>   | <b>total</b>                  |

|              |              |                |              |                                                               |
|--------------|--------------|----------------|--------------|---------------------------------------------------------------|
| <b>203</b>   | <b>20001</b> | <b>50</b>      | <b>CY</b>    | <b>EMBANKMENT, AS PER PLAN</b>                                |
| rear abut    |              | 9.19           | sq ft        | area front prop. abutment                                     |
|              |              | 64.46          | ft           | length prop. abutment                                         |
|              |              | 20.47          | ft           | wingwall left                                                 |
|              |              | 31.21          | ft           | wingwall right                                                |
|              |              | 1067.28        | cu ft        | volume                                                        |
| forward abut |              | 2.03           | sq ft        | area front prop. abutment                                     |
|              |              | 63.15          | ft           | length prop. abutment                                         |
|              |              | 20.98          | ft           | wingwall left                                                 |
|              |              | 17.13          | ft           | wingwall right                                                |
|              |              | 205.54         | cu ft        | volume                                                        |
|              |              | 1272.82        | cft          | total volume                                                  |
|              |              | 63.64          | cft          | 5% assumed around ends                                        |
|              |              | 1336.47        | cu ft        | total                                                         |
|              |              | <b>49.50</b>   | <b>cyd</b>   | <b>total</b>                                                  |
| <b>203</b>   | <b>35120</b> | <b>2846</b>    | <b>CY</b>    | <b>GRANULAR MATERIAL, TYPE C</b>                              |
|              |              | 56.00          | ft           | length culvert                                                |
|              |              | 1372.00        | sq ft        | structural backfill around culvert, 1.5:1 slope               |
|              |              | 76832.00       | cu ft        |                                                               |
|              |              | <b>2845.63</b> | <b>cu yd</b> | <b>total</b>                                                  |
| <b>507</b>   | <b>00650</b> | <b>2400</b>    | <b>FT</b>    | <b>14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED</b> |
|              |              | 32.00          | ea           | piles, rear foundation                                        |
|              |              | 40.00          | ft           | furnished length = driven length + 5ft                        |
|              |              | 28.00          | ea           | piles, forward foundation                                     |
|              |              | 40.00          | ft           | furnished length = driven length + 5ft                        |
|              |              | <b>2400.00</b> | <b>ft</b>    | <b>total length</b>                                           |
| <b>507</b>   | <b>00600</b> | <b>2100</b>    | <b>FT</b>    | <b>14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN</b>    |
|              |              | 32.00          | ea           | piles, rear foundation                                        |
|              |              | 35.00          | ft           | estimated length, rear                                        |
|              |              | 28.00          | ea           | piles, forward foundation                                     |
|              |              | 35.00          | ft           | estimated length, fwd                                         |
|              |              | <b>2100.00</b> | <b>ft</b>    | <b>total length</b>                                           |

|            |              |                 |              |                                                                                |
|------------|--------------|-----------------|--------------|--------------------------------------------------------------------------------|
| <b>509</b> | <b>10000</b> | <b>29500</b>    | <b>LB</b>    | <b>EPOXY COATED STEEL REINFORCEMENT</b>                                        |
|            |              | 12250.00        | lb           | foundation total from resteel list                                             |
|            |              | 4956.00         | lb           | headwall total from resteel list                                               |
|            |              | 12243.00        | lb           | wingwall total from resteel list                                               |
|            |              | <b>29449.00</b> | <b>lb</b>    | <b>total</b>                                                                   |
| <b>511</b> | <b>46012</b> | <b>102</b>      | <b>CY</b>    | <b>CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING</b> |
| wall 1     |              | 1.50            | ft           | wingwall top width                                                             |
|            |              | 2.00            | ft           | wingwall bottom width                                                          |
|            |              | 1.75            | ft           | avg wingwall width                                                             |
|            |              | 17.58           | ft           | max wingwall height                                                            |
|            |              | 10.08           | ft           | min wingwall height                                                            |
|            |              | 2.00            | ft           | top length                                                                     |
|            |              | 21.50           | ft           | taper length                                                                   |
|            |              | 332.51          | sq ft        | area                                                                           |
| wall 2     |              | 581.88          | cu ft        | volume                                                                         |
|            |              | 1.50            | ft           | wingwall top width                                                             |
|            |              | 2.00            | ft           | wingwall bottom width                                                          |
|            |              | 1.75            | ft           | avg wingwall width                                                             |
|            |              | 19.88           | ft           | max wingwall height                                                            |
|            |              | 15.58           | ft           | min wingwall height                                                            |
|            |              | 2.00            | ft           | top length                                                                     |
|            |              | 21.50           | ft           | taper length                                                                   |
| wall 3     |              | 420.96          | sq ft        | area                                                                           |
|            |              | 736.67          | cu ft        | volume                                                                         |
|            |              | 1.50            | ft           | wingwall top width                                                             |
|            |              | 2.00            | ft           | wingwall bottom width                                                          |
|            |              | 1.75            | ft           | avg wingwall width                                                             |
|            |              | 18.18           | ft           | max wingwall height                                                            |
|            |              | 14.08           | ft           | min wingwall height                                                            |
|            |              | 2.00            | ft           | top length                                                                     |
| wall 4     |              | 31.50           | ft           | taper length                                                                   |
|            |              | 544.56          | sq ft        | area                                                                           |
|            |              | 952.97          | cu ft        | volume                                                                         |
|            |              | 1.50            | ft           | wingwall top width                                                             |
|            |              | 2.00            | ft           | wingwall bottom width                                                          |
|            |              | 1.75            | ft           | avg wingwall width                                                             |
|            |              | 16.38           | ft           | max wingwall height                                                            |
|            |              | 12.33           | ft           | min wingwall height                                                            |
|            |              | 2.00            | ft           | top length                                                                     |
|            |              | 16.50           | ft           | taper length                                                                   |
|            |              | 269.67          | sq ft        | area                                                                           |
|            |              | 471.93          | cu ft        | volume                                                                         |
|            |              | 2743.45         | cu ft        | total volume                                                                   |
|            |              | <b>101.61</b>   | <b>cu yd</b> | <b>total volume</b>                                                            |

| 511    | 46512 | 141     | CY    | CLASS QC1 CONCRETE WITH QC/QA, FOOTING  |
|--------|-------|---------|-------|-----------------------------------------|
| rear   |       | 657.93  | sq ft | full footing area                       |
|        |       | 3.00    | ft    | thickness                               |
|        |       | 1973.80 | cu ft | volume                                  |
|        |       | 61.92   | sq ft | culvert key step plan area, back        |
|        |       | 61.10   | sq ft | culvert key step plan area, front       |
|        |       | 0.50    | ft    | thickness                               |
|        |       | 61.51   | cu ft | volume                                  |
|        |       | 134.69  | sq ft | wingwall footing step area              |
|        |       | 0.25    | ft    | thickness                               |
|        |       | 33.67   | cu ft | volume                                  |
|        |       | 2068.98 | cu ft | total rear volume                       |
| fwd    |       | 542.31  | sq ft | footing area                            |
|        |       | 3.00    | ft    | thickness                               |
|        |       | 1626.93 | cu ft | volume                                  |
|        |       | 62.94   | sq ft | culvert key step plan area, back        |
|        |       | 55.71   | sq ft | culvert key step plan area, front       |
|        |       | 0.50    | ft    | thickness                               |
|        |       | 59.33   | cu ft | volume                                  |
|        |       | 101.42  | sq ft | wingwall footing step area              |
|        |       | 0.25    | ft    | thickness                               |
|        |       | 25.36   | cu ft | volume                                  |
|        |       | 1711.61 | cu ft | total fwd volume                        |
|        |       | 3780.59 | cu ft | total volume                            |
|        |       | 140.02  | cu yd | total                                   |
| 511    | 46612 | 44      | CY    | CLASS QC1 CONCRETE WITH QC/QA, HEADWALL |
| Inlets |       | 436.34  | sq ft | inlet headwall area                     |
|        |       | 347.11  | sq ft | outlet headwall area                    |
|        |       | 1.50    | ft    | thickness                               |
|        |       | 1175.18 | cu ft | volume                                  |
|        |       | 43.53   | cu ft | volume                                  |

| 512        | 10100 | 204     | SY    | SEALING OF CONCRETE SURFACES (EPOXY-URETHANE) |
|------------|-------|---------|-------|-----------------------------------------------|
| wingwall 1 |       | 16.00   | ft    | max exposed height                            |
|            |       | 1.50    | ft    | min exposed height                            |
|            |       | 23.50   | ft    | wingwall 1 length                             |
|            |       | 205.63  | sq ft | surface area front wall                       |
|            |       | 1.50    | ft    | wall thickness at top                         |
|            |       | 0.5     | ft    | exposed height behind wall                    |
|            |       | 47.00   | sq ft | surface area top and back wall                |
|            |       | 252.63  | sq ft | area                                          |
| wingwall 2 |       | 8.36    | ft    | max exposed height                            |
|            |       | 1.25    | ft    | min exposed height                            |
|            |       | 23.50   | ft    | wingwall 2 length                             |
|            |       | 112.92  | sq ft | surface area front wall                       |
|            |       | 1.50    | ft    | wall thickness at top                         |
|            |       | 0.5     | ft    | exposed height behind wall                    |
|            |       | 47.00   | sq ft | surface area top and back wall                |
|            |       | 159.92  | sq ft | area                                          |
| wingwall 3 |       | 14.25   | ft    | max exposed height                            |
|            |       | 1.50    | ft    | min exposed height                            |
|            |       | 33.50   | ft    | wingwall 3 length                             |
|            |       | 263.81  | sq ft | surface area front wall                       |
|            |       | 1.50    | ft    | wall thickness at top                         |
|            |       | 0.5     | ft    | exposed height behind wall                    |
|            |       | 67.00   | sq ft | surface area top and back wall                |
|            |       | 330.81  | sq ft | area                                          |
| wingwall 4 |       | 8.50    | ft    | max exposed height                            |
|            |       | 1.75    | ft    | min exposed height                            |
|            |       | 18.50   | ft    | wingwall 4 length                             |
|            |       | 94.81   | sq ft | surface area front wall                       |
|            |       | 1.50    | ft    | wall thickness at top                         |
|            |       | 0.5     | ft    | exposed height behind wall                    |
|            |       | 37.00   | sq ft | surface area top and back wall                |
|            |       | 131.81  | sq ft | area                                          |
| headwall   |       | 523.95  | sq ft | exposed surface area front of inlet headwall  |
|            |       | 434.45  | sq ft | exposed surface area front of outlet headwall |
|            |       | 1833.57 | sq ft | total area                                    |
|            |       | 203.73  | sq yd | total                                         |

| 512   | 33000 | 502     | SY    | TYPE 2 WATERPROOFING                |
|-------|-------|---------|-------|-------------------------------------|
|       |       | 75.14   | ft    | culvert arch outside perimeter      |
|       |       | 53.00   | ft    | culvert length between headwalls    |
|       |       | 1.50    | ft    | end lap each side                   |
|       |       | 4.00    | ea    | wingwalls                           |
|       |       | 4300.42 | sq ft | area                                |
|       |       | 3.00    | ft    | width at wingwall joint             |
|       |       | 18.01   | ft    | avg height behind wingwall          |
|       |       | 4.00    | ea    | locations                           |
|       |       | 216.08  | sq ft | area                                |
|       |       | 4516.50 | sq ft | area                                |
|       |       | 501.83  | sq yd | total                               |
| 516   | 13600 | 15.00   | SF    | 1" PREFORMED EXPANSION JOINT FILLER |
| inlet |       | 1.75    | ft    | avg inlet wingwall width            |
|       |       | 18.73   | ft    | avg inlet wingwall height           |
|       |       | 2.00    | ea    | wides                               |
|       |       | 65.56   | sq ft | area                                |
|       |       | 1.75    | ft    | avg inlet wingwall width            |
|       |       | 17.28   | ft    | avg inlet wingwall height           |
|       |       | 2.00    | ea    | wides                               |
|       |       | 60.49   | sq ft | area                                |
|       |       | 126.05  | sq ft | area                                |
|       |       | 14.01   | sq yd | total                               |

| 518        | 21200 | 115     | CY    | POROUS BACKFILL WITH GEOTEXTILE FABRIC                                              |
|------------|-------|---------|-------|-------------------------------------------------------------------------------------|
| wingwall 1 |       | 2.00    | ft    | width                                                                               |
|            |       | 17.58   | ft    | max height                                                                          |
|            |       | 10.08   | ft    | min height                                                                          |
|            |       | 23.50   | ft    | length                                                                              |
|            |       | 325.01  | sq ft | area                                                                                |
|            |       | 650.01  | cu ft | volume                                                                              |
| wingwall 2 |       | 2.00    | ft    | width                                                                               |
|            |       | 19.88   | ft    | max height                                                                          |
|            |       | 15.58   | ft    | min height                                                                          |
|            |       | 23.50   | ft    | length                                                                              |
|            |       | 416.66  | sq ft | area                                                                                |
|            |       | 833.31  | cu ft | volume                                                                              |
| wingwall 3 |       | 2.00    | ft    | width                                                                               |
|            |       | 18.18   | ft    | max height                                                                          |
|            |       | 14.08   | ft    | min height                                                                          |
|            |       | 33.50   | ft    | length                                                                              |
|            |       | 540.46  | sq ft | area                                                                                |
|            |       | 1080.91 | cu ft | volume                                                                              |
| wingwall 4 |       | 2.00    | ft    | width                                                                               |
|            |       | 16.38   | ft    | max height                                                                          |
|            |       | 12.33   | ft    | min height                                                                          |
|            |       | 18.50   | ft    | length                                                                              |
|            |       | 265.62  | sq ft | area                                                                                |
|            |       | 531.25  | cu ft | volume                                                                              |
|            |       | 3095.48 | cu ft | total volume                                                                        |
|            |       | 114.65  | cu yd | total                                                                               |
| 601        | 32200 | 106     | CY    | ROCK CHANNEL PROTECTION, TYPE C WITH FILTER                                         |
| rear       |       | 830.00  | sq ft | RCP around rear arch leg                                                            |
| fwd        |       | 600.00  | sq ft | RCP around fwd arch leg                                                             |
|            |       | 2.00    | ft    | thickness                                                                           |
|            |       | 2860.00 | cu ft | volume                                                                              |
|            |       | 105.93  | cu yd | total                                                                               |
| 611        | 71000 | 56      | FT    | CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE ARCH SECTIONS (60' SPAN X 13'-3" RISE) |
|            |       | 4.00    | ft    | arch section widths                                                                 |
|            |       | 14.00   | ea    | number of sections                                                                  |
|            |       | 56.00   | ft    | total                                                                               |