



A division of The Mannik & Smith Group, Inc.
 29 North Park Street, Mansfield, OH 44902
 Phone: 419-524-0074
 Fax: 419-524-1812

CALCULATION SHEET

JOB NO. 22105-7 SHEET NO. 1 OF 6
 SUBJECT HUR-CR 11-2.96 - Structure Estimated Quantities
 CALCULATED BY DHT DATE 11/25
 CHECKED BY RWC DATE 11/25
 REVISED BY RWC DATE 1/26

Bridge HUR-M0014-03240 (SFN 3946712) - Baseline Road over Ashland Railway

ITEM 202E11002 - STRUCTURE REMOVED, OVER 20 FOOT SPAN

_____ **LS**

ITEM 202E23500 - WEARING COURSE REMOVED

Existing Bridge = 62 FT x 34.1 FT / 9 SF/SY = 234.91 SY

Bridge Totals

General Total = 235 SY

_____ **235 SY**

ITEM 203E35110 - GRANULAR MATERIAL, TYPE B

@ Rear Abutment = 13.63 FT x 46.333 FT x 3.632 FT / 27 CF/CY = 84.94 CY
 @ Forward Abutment = 13.62 FT x 46.333 FT x 3.793 FT / 27 CF/CY = 88.66 CY

Bridge Totals

Abutment Total = 174 CY

_____ **174 CY**

ITEM 503E11100 - COFFERDAMS AND EXCAVATION BRACING

_____ **LS**

ITEM 503E21300 - UNCLASSIFIED EXCAVATION

_____ **LS**

ITEM 504E11101 - STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN

@ Pier 1 = 20 FT x 45 FT = 900.0 SF
 @ Pier 2 = 20 FT x 45 FT = 900.0 SF

Bridge Totals

Pier Total = 1,800 SF

_____ **1,800 SF**

ITEM 505E11100 - PILE DRIVING EQUIPMENT MOBILIZATION

_____ **LS**

ITEM 507E00100 - STEEL PILES HP10X42, FURNISHED

Rear Abutment = 12 Piles x 90 FT/Pile = 1,080.0 FT
 Pier 1 = 12 Piles x 75 FT/Pile = 900.0 FT
 Pier 2 = 12 Piles x 70 FT/Pile = 840.0 FT
 Forward Abutment = 12 Piles x 85 FT/Pile = 1,020.0 FT

Bridge Totals

Pier Total = 1,740.0 FT
 Abutment Total = 2,100.0 FT

_____ **3,840 FT**



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JOB NO. 22105-7 SHEET NO. 2 OF 6
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ITEM 507E00150 - STEEL PILES HP10X42, DRIVEN

Rear Abutment = 12 Piles x 85 FT/Pile = 1,020.0 FT
 Pier 1 = 12 Piles x 70 FT/Pile = 840.0 FT
 Pier 2 = 12 Piles x 65 FT/Pile = 780.0 FT
 Forward Abutment = 12 Piles x 80 FT/Pile = 960.0 FT

Bridge Totals

Pier Total = 1,620.0 FT
 Abutment Total = 1,980.0 FT

3,600 FT

ITEM 509E26000 - GALVANIZED STEEL REINFORCEMENT

Bridge Totals

Superstructure Total = 47,235 LB
 Pier Total = 26,498 LB
 Abutment Total = 6,878 LB

80,611 LB

ITEM 511E32210 - CLASS QC2 CONCRETE, SUPERSTRUCTURE

Concrete Slab = 66.5 FT x 46.333 FT x 14 IN / 12 IN/FT = 3,594.69 CF
 End Block at RA = 2.25 FT x [32 FT x 1.882 FT + 7.167 FT x (1.757 + 1.757 FT)] = 192.13 CF
 End Block at FA = 2.25 FT x [32 FT x 2.043 FT + 7.167 FT x (1.913 + 1.913 FT)] = 208.82 CF
 Pier 1 Cap Block = 42 FT x 2.5 FT x 0.168 FT = 17.64 CF
 Pier 2 Cap Block = 42 FT x 2.5 FT x 0.168 FT = 17.64 CF
 Sidewalks = 2 x 66.5 FT x [6 FT x 0.5 x (0.667 FT + 0.763 FT) + 1 FT x 0.763 FT] = 671.74 CF

Bridge Totals

Abutment Total = Σ CF / 27 CF/CY = 175 CY

175 CY

ITEM 511E40510 - CLASS QC1 CONCRETE, PIER ABOVE FOOTINGS

Pier 1 = 21.95 FT x 2.5 FT x 42 FT = 2,304.75 CF
 Pier 2 = 22.31 FT x 2.5 FT x 42 FT = 2,342.55 CF

Bridge Totals

Pier Total = Σ CF / 27 CF/CY = 173 CY

173 CY

ITEM 511E43510 - CLASS QC1 CONCRETE, ABUTMENT INCLUDING FOOTING

RA Footing = 6.5 FT x 3 FT x 46.333 FT = 903.5 CF
 RA Breastwall = 2.25 FT x 2 FT x 46.333 FT = 208.5 CF
 FA Footing = 6.5 FT x 3 FT x 46.333 FT = 903.5 CF
 FA Breastwall = 2.25 FT x 2 FT x 46.333 FT = 208.5 CF

Bridge Totals

Abutment Total = Σ CF / 27 CF/CY = 83 CY

83 CY



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ITEM 511E46510 - CLASS QC1 CONCRETE, FOOTING

Pier 1 Footing = 6 FT x 3 FT x 44 FT = 792.0 CF
 Pier 2 Footing = 6 FT x 3 FT x 44 FT = 792.0 CF

Bridge Totals

Pier Total = Σ CF / 27 CF/CY = 59 CY

59 CY

ITEM 511E51511 - CLASS QC2 CONCRETE, SIDEWALK, AS PER PLAN

Rear Approach Moment Slab Sidewalk = 2 x 7.167 FT x 1.528 FT x 65.25 FT = 1,429.16 CF

Bridge Totals

Moment Slab Total = Σ CF / 27 CF/CY = 53 CY

53 CY

ITEM 512E10100 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)

RA Breastwall & Footing = 5.625 FT x 46.333 FT = 260.625 SF
 FA Breastwall & Footing = 5.625 FT x 46.333 FT = 260.625 SF

Pier 1 = 21.95 FT x 89 FT = 1,953.55 SF
 Pier 2 = 22.31 FT x 89 FT = 1,985.59 SF

Exterior of Superstructure = 2 x 14.175 FT x 63 FT = 1,786.008 SF
 Rear Approach Sidewalk and Railing = 2 x (97 FT x 12.583 FT + 2 SF) = 2,445.167 SF
 Forward Approach Sidewalk and Railing = 2 x (15.5 FT x 12.583 FT + 2 SF) = 394.083 SF

MSE Wall East = 506.35 SF
 MSE Wall West = 950.71 SF

Bridge Totals

Abutment Total = Σ SF / 9 SF/SY = 58 SY
 Pier Total = Σ SF / 9 SF/SY = 438 SY
 MSE Wall Total = Σ SF / 9 SF/SY = 162 SY
 Superstructure Total = Σ SF / 9 SF/SY = 514 SY

1,172 SY

ITEM 516E13600 - 1" PREFORMED EXPANSION JOINT FILLER

@ Rear Abutment = 2 x (1 FT x 2 FT + 4.25 SF) = 12.5 SF
 @ Forward Abutment = 2 x (1 FT x 2 FT + 4.25 SF) = 12.5 SF

MSE Wall Moment Slab between sections = 4 x [(1.5 FT + 1.667 FT) / 2 x 7 FT + 2 FT x 1 FT] = 52.3324 SF
 MSE Wall Moment Slab at end (Sidewalk only) = 2 x (1.5 FT + 1.667 FT) / 2 x 7 FT = 22.1662 SF

Bridge Totals

General Total = 25 SF
 Moment Slab Total = 75 SF

100 SF



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ITEM 516E13900 - 2" PREFORMED EXPANSION JOINT FILLER

@ Rear Abutment = $2 \times (0.839 \text{ FT} \times 65.25 \text{ FT} + 1.417 \text{ FT} \times 29.5 \text{ FT} + 6 \text{ SF} + 17.25 \text{ SF} + 8.452 \text{ SF}) = 256.42 \text{ SF}$
 @ Forward Abutment = $2 \times (1.417 \text{ FT} \times 13.25 \text{ FT} + 6 \text{ SF} + 17.25 \text{ SF} + 8.805 \text{ SF}) = 101.65 \text{ SF}$

Bridge Totals

MSE Total = 359 SF
359 SF

ITEM 516E14020 - SEMI-INTEGRAL ABUTMENT EXPANSION JOINT SEAL

@Rear Abutment = 46.33 FT
 @Forward Abutment = 46.33 FT

Bridge Totals

Abutment Total = 93 FT
93 FT

ITEM 516E43200 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE)

(2" X 10" X 18")

@Rear Abutment = 9 EACH
 @Forward Abutment = 9 EACH

Bridge Totals

Superstructure Total = 18 EACH
18 EACH

ITEM 517E75120 - RAILING (CONCRETE PARAPET WITH TWIN STEEL TUBE RAILING)

Left Edge Length = $97 \text{ FT} + 66.5 \text{ FT} + 13.75 \text{ FT} = 177.25 \text{ FT}$
 Left Edge Length = $97 \text{ FT} + 66.5 \text{ FT} + 13.75 \text{ FT} = 177.25 \text{ FT}$

Bridge Totals

Superstructure Total = 355 FT
355 FT

ITEM 518E21200 - POROUS BACKFILL WITH GEOTEXTILE FABRIC

@ Rear Abutment = $2 \text{ FT} \times [32 \text{ FT} \times 2.632 \text{ FT} + 7.167 \text{ FT} \times (2.507 \text{ FT} + 2.507 \text{ FT})] = 348.4 \text{ CF}$
 @ Forward Abutment = $2 \text{ FT} \times [32 \text{ FT} \times 2.793 \text{ FT} + 7.167 \text{ FT} \times (2.663 \text{ FT} + 2.663 \text{ FT})] = 363.23 \text{ CF}$

Bridge Totals

Abutment Total = $\Sigma \text{CF} / 27 \text{ CF/CY} = 27 \text{ CY}$
27 CY

ITEM 518E40000 - 6" PERFORATED CORRUGATED PLASTIC PIPE

@ Rear Abutment = $48.333 \text{ FT} / \text{COS}[\text{ARCTAN}\{0.125 \text{ IN} / 12 \text{ IN}\}] = 48.34 \text{ FT}$
 @ Forward Abutment = $48.333 \text{ FT} / \text{COS}[\text{ARCTAN}\{0.125 \text{ IN} / 12 \text{ IN}\}] = 48.34 \text{ FT}$

Bridge Totals

Abutment Total = 97 FT
97 FT



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ITEM 526E30001 - REINFORCED CONCRETE APPROACH SLABS (T=17"), AS PER PLAN

@ Rear Abutment = 30 FT x 46.333 FT = 1,390.0 SF
 @ Forward Abutment = 30 FT x 32 FT + 2 x 13.75 FT x 7.167 FT x = 1,157.08 SF

Bridge Totals

General Total = Σ SF / 9 SF/SY = 284 SY
284 SY

ITEM 526E90010 - TYPE A INSTALLATION

@ Rear Abutment = 46.333 FT = 46.33 FT
 @ Forward Abutment = 32 FT = 32.0 FT

Bridge Totals

General Total = 79 FT
79 FT

ITEM 530E14000 - SPECIAL - STRUCTURAL SURVEY AND MONITORING OF VIBRATION

LS

ITEM 635E33000 - STRUCTURE GROUNDING SYSTEM

1 bridge system:

1 each
 General Total = 1 EA
1 EACH

ITEM 840E20000 - MECHANICALLY STABILIZED EARTH WALL

MSE Wall 1 @ Rear Abutment = 251 FT x 9.754 FT = 2,448.36 SF
 MSE Wall 2 @ Forward Abutment = 88 FT x 13.964 FT = 1,228.87 SF

Bridge Totals

MSE Wall Total = 3678 SF
3,678 SF

ITEM 840E21000 -WALL EXCAVATION

MSE Wall 1 = 2 x 68.26 FT x 11 FT x 6.5 FT + 2 x 19.82 FT x 14 FT x 8 FT + 51.58 FT x 15.63 FT x 11.38 FT = 23,375.36 CF
 MSE Wall 2 = 6.59 FT x 11 FT x 18 FT + 51.58 FT x 15.62 FT x 11.62 FT + 6.59 FT x 11 FT x 18 FT = 11,971.64 CF

Bridge Totals

MSE Wall Total = Σ CF / 27 CF/CY = 1310 CY
1,310 CY

ITEM 8140E22000 - FOUNDATION PREPARATION

MSE Wall 1 = 2 x 68.26 FT x 11 FT + 2 x 19.82 FT x 14 FT + 51.58 FT x 15.63 FT = 2,862.88 SF
 MSE Wall 2 = 6.59 FT x 11 FT + 51.58 FT x 15.62 FT + 6.59 FT x 11 FT = 950.66 SF

Bridge Totals

MSE Wall Total = Σ SF / 9 SF/SY = 424 SY
424 SY



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ITEM 840E23000 - SELECT GRANULAR BACKFILL

MSE Wall 1 = 2 x 68.26 FT x 9 FT x 6.5 FT + 2 x 19.82 FT x 12 FT x 8 FT + 51.58 FT x 13.63 FT x 14.38 FT = 21,901.51 CF
 MSE Wall 2 = 6.59 FT x 9 FT x 18 FT + 51.58 FT x 13.62 FT x 14.62 FT + 6.59 FT x 9 FT x 18 FT = 12,406.0 CF

Bridge Totals

MSE Wall Total = Σ CF / 27 CF/CY = 1271 CY
1,271 CY

ITEM 840E25010 - 6" DRAINAGE PIPE, PERFORATED

MSE Wall 1 = 122.59 FT + 122.59 FT = 245.18 FT
 MSE Wall 2 = 34.84 FT + 34.84 FT = 69.68 FT

Bridge Totals

MSE Wall Total = 315.0 FT
315 FT

ITEM 840E25020 - 6" DRAINAGE PIPE, NON-PERFORATED

MSE Wall 1 = 21 FT + 21 FT = 42.0 FT
 MSE Wall 2 = 21 FT + 21 FT = 42.0 FT

Bridge Totals

MSE Wall Total = 84 FT
84 FT

ITEM 840E26000 - CONCRETE COPING

MSE Wall 1 = 107.77 FT + 47.58 FT + 107.77 FT = 263.12 FT
 MSE Wall 2 = 26.3 FT + 47.58 FT + 26.3 FT = 100.18 FT

Bridge Totals

MSE Wall Total = 364 FT
364 FT

ITEM 840E27000 - ON-SITE ASSISTANCE

MSE Wall 1 = 3 DAYS = 3 DAY
 MSE Wall 2 = 2 DAYS = 2 DAY

Bridge Totals

MSE Wall Total = 5 DAY
5 DAY

ITEM 840E28000 - SGB INSPECTION AND COMPACTION TESTING

LS

ITEM 846E00110 - POLMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM

@ Rear Approach = 32 FT x 3 IN x 20 IN / 144 SI/SF = 13.33 SF
 @ Forward Approach = 32 FT x 3 IN x 20 IN / 144 SI/SF = 13.33 SF

Bridge Totals

General Total = 27 SF
27 SF