DocuSign Envelope ID: 62F4EDF2-40A2-456A-8C52-0B1183872025

# BILL OF MATERIAL

## WING 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| H1 | 6 | #4 | STR | 18'-7" | 74 |
| H2 | 2 | #4 | STR | 13'-11" | 19 |
| H3 | 2 | #4 | STR | 8'-10" | 12 |
| H4 | 2 | #4 | STR | 3'-10" | 5 |
| H5 | 14 | #4 | 1 | 3'-3" | 30 |
| H6 | 2 | #4 | STR | 19'-5" | 26 |
| N1 | 2 | #6 | 2 | 11'-2" | 34 |
| N2 | 2 | #6 | 2 | 10'-10" | 33 |
| N3 | 3 | #5 | 2 | 10'-0" | 31 |
| N4 | 3 | #5 | 2 | 9'-1" | 28 |
| N5 | 3 | #5 | 2 | 8'-2" | 26 |
| N6 | 3 | #4 | 2 | 7'-4" | 15 |
| N7 | 3 | #4 | 2 | 6'-5" | 13 |
| N8 | 3 | #4 | 2 | 5'-6" | 11 |
| S1 | 3 | #6 | STR | 6'-0" | 27 |
| T1 | 3 | #5 | STR | 20'-6" | 64 |
| V1 | 2 | #4 | STR | 9'-2" | 12 |
| V2 | 2 | #4 | STR | 8'-10" | 12 |
| V3 | 3 | #4 | STR | 8'-0" | 16 |
| V4 | 3 | #4 | STR | 7'-1" | 14 |
| V5 | 3 | #4 | STR | 6'-2" | 12 |
| V6 | 3 | #4 | STR | 5'-4" | 11 |
| V7 | 3 | #4 | STR | 4'-5" | 9 |
| V8 | 3 | #4 | STR | 3'-6" | 7 |
| Z1 | 3 | #5 | 3 | 6'-8" | 21 |
| Z2 | 3 | #5 | 3 | 6'-1" | 19 |
| Z3 | 4 | #4 | 3 | 5'-5" | 14 |
| Z4 | 4 | #4 | 3 | 4'-9" | 13 |
| Z5 | 4 | #4 | 3 | 4'-0" | 11 |
| Z6 | 4 | #4 | 3 | 3'-4" | 9 |

REINFORCING STEEL 628 LBS

CLASS A CONCRETE 9.16 CY

## WING 2

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| H7 | 6 | #4 | STR | 20'-7" | 82 |
| H8 | 2 | #4 | STR | 15'-5" | 21 |
| H9 | 2 | #4 | STR | 9'-10" | 13 |
| H10 | 2 | #4 | STR | 4'-4" | 6 |
| H11 | 14 | #4 | 1 | 3'-3" | 30 |
| H12 | 2 | #4 | STR | 21'-4" | 29 |
| N9 | 2 | #6 | 2 | 11'-2" | 34 |
| N10 | 2 | #6 | 2 | 10'-11" | 33 |
| N11 | 4 | #5 | 2 | 9'-10" | 41 |
| N12 | 4 | #5 | 2 | 8'-9" | 37 |
| N13 | 4 | #4 | 2 | 7'-8" | 20 |
| N14 | 4 | #4 | 2 | 6'-7" | 18 |
| N15 | 4 | #4 | 2 | 5'-6" | 15 |
| S1 | 3 | #6 | STR | 6'-0" | 27 |
| T2 | 3 | #5 | STR | 22'-6" | 70 |
| V9 | 2 | #4 | STR | 9'-2" | 12 |
| V10 | 2 | #4 | STR | 8'-11" | 12 |
| V11 | 4 | #4 | STR | 7'-10" | 21 |
| V12 | 4 | #4 | STR | 6'-9" | 18 |
| V13 | 4 | #4 | STR | 5'-8" | 15 |
| V14 | 4 | #4 | STR | 4'-7" | 12 |
| V15 | 4 | #4 | STR | 3'-6" | 9 |
| Z7 | 4 | #5 | 3 | 6'-6" | 27 |
| Z8 | 4 | #5 | 3 | 5'-10" | 24 |
| Z9 | 4 | #4 | 3 | 5'-3" | 14 |
| Z10 | 4 | #4 | 3 | 4'-7" | 12 |
| Z11 | 4 | #4 | 3 | 4'-0" | 11 |
| Z12 | 4 | #4 | 3 | 3'-4" | 9 |

REINFORCING STEEL 672 LBS

CLASS A CONCRETE 10.03 CY

## WING 3

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| H13 | 6 | #4 | STR | 22'-1" | 89 |
| H14 | 2 | #4 | STR | 16'-7" | 22 |
| H15 | 2 | #4 | STR | 10'-8" | 14 |
| H16 | 2 | #4 | STR | 4'-9" | 6 |
| H17 | 14 | #4 | 1 | 3'-3" | 30 |
| H18 | 2 | #4 | STR | 22'-9" | 30 |
| N16 | 2 | #6 | 2 | 11'-3" | 34 |
| N17 | 3 | #6 | 2 | 10'-7" | 48 |
| N18 | 4 | #5 | 2 | 9'-7" | 40 |
| N19 | 4 | #5 | 2 | 8'-6" | 35 |
| N20 | 4 | #4 | 2 | 7'-6" | 20 |
| N21 | 4 | #4 | 2 | 6'-6" | 17 |
| N22 | 4 | #4 | 2 | 5'-6" | 15 |
| S1 | 3 | #6 | STR | 6'-0" | 27 |
| T3 | 3 | #5 | STR | 24'-0" | 75 |
| V16 | 2 | #4 | STR | 9'-3" | 12 |
| V17 | 3 | #4 | STR | 8'-7" | 17 |
| V18 | 4 | #4 | STR | 7'-7" | 20 |
| V19 | 4 | #4 | STR | 6'-7" | 18 |
| V20 | 4 | #4 | STR | 5'-6" | 15 |
| V21 | 4 | #4 | STR | 4'-6" | 12 |
| V22 | 4 | #4 | STR | 3'-6" | 9 |
| Z13 | 5 | #5 | 3 | 6'-4" | 33 |
| Z14 | 5 | #5 | 3 | 5'-7" | 29 |
| Z15 | 5 | #4 | 3 | 4'-10" | 16 |
| Z16 | 5 | #4 | 3 | 4'-1" | 14 |
| Z17 | 5 | #4 | 3 | 3'-4" | 11 |

REINFORCING STEEL 708 LBS

CLASS A CONCRETE 10.69 CY

## WING 4

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| H19 | 6 | #4 | STR | 20'-1" | 80 |
| H20 | 2 | #4 | STR | 15'-0" | 20 |
| H21 | 2 | #4 | STR | 9'-7" | 13 |
| H22 | 2 | #4 | STR | 4'-2" | 6 |
| H23 | 14 | #4 | 1 | 3'-3" | 30 |
| H24 | 2 | #4 | STR | 20'-10" | 28 |
| N23 | 2 | #6 | 2 | 11'-3" | 34 |
| N24 | 1 | #6 | 2 | 11'-0" | 17 |
| N25 | 4 | #5 | 2 | 9'-11" | 41 |
| N26 | 4 | #5 | 2 | 8'-10" | 37 |
| N27 | 4 | #4 | 2 | 7'-9" | 21 |
| N28 | 4 | #4 | 2 | 6'-7" | 18 |
| N29 | 4 | #4 | 2 | 5'-6" | 15 |
| S1 | 3 | #6 | STR | 6'-0" | 27 |
| T4 | 3 | #5 | STR | 22'-0" | 69 |
| V23 | 2 | #4 | STR | 9'-3" | 12 |
| V24 | 1 | #4 | STR | 9'-1" | 6 |
| V25 | 4 | #4 | STR | 7'-11" | 21 |
| V26 | 4 | #4 | STR | 6'-10" | 18 |
| V27 | 4 | #4 | STR | 5'-9" | 15 |
| V28 | 4 | #4 | STR | 4'-7" | 12 |
| V29 | 4 | #4 | STR | 3'-6" | 9 |
| Z18 | 3 | #5 | 3 | 6'-7" | 21 |
| Z19 | 5 | #5 | 3 | 5'-9" | 30 |
| Z20 | 5 | #4 | 3 | 4'-11" | 16 |
| Z21 | 5 | #4 | 3 | 4'-2" | 14 |
| Z22 | 5 | #4 | 3 | 3'-4" | 11 |

REINFORCING STEEL 641 LBS

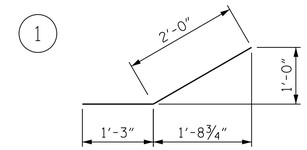
CLASS A CONCRETE 9.81 CY

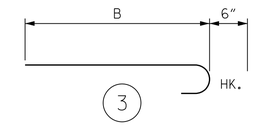
REINFORCING STEEL FOR 4 WINGS 2,649 LBS

CLASS A CONCRETE

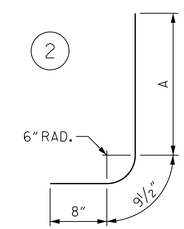
| | |
|---|---|
| 4 WINGS | 39.69 CY |
| 2 HEADWALLS | 1.85 CY |
| 2 END CURTAIN WALLS | 2.07 CY |
| TOTAL | 43.61 CY |

# BAR TYPES




| DIMENSION B | | | |
|---|---|---|---|
| BAR | LENGTH | BAR | LENGTH |
| Z1 | 6'-2" | Z12 | 2'-10" |
| Z2 | 5'-7" | Z13 | 5'-10" |
| Z3 | 4'-11" | Z14 | 5'-1" |
| Z4 | 4'-3" | Z15 | 4'-4" |
| Z5 | 3'-6" | Z16 | 3'-7" |
| Z6 | 2'-10" | Z17 | 2'-10" |
| Z7 | 6'-0" | Z18 | 6'-1" |
| Z8 | 5'-4" | Z19 | 5'-3" |
| Z9 | 4'-9" | Z20 | 4'-5" |
| Z10 | 4'-1" | Z21 | 3'-8" |
| Z11 | 3'-6" | Z22 | 2'-10" |




| DIMENSION A | | | |
|---|---|---|---|
| BAR | LENGTH | BAR | LENGTH |
| N1 | 9'-8½" | N16 | 9'-9½" |
| N2 | 9'-4½" | N17 | 9'-1½" |
| N3 | 8'-6½" | N18 | 8'-1½" |
| N4 | 7'-7½" | N19 | 7'-0½" |
| N5 | 6'-8½" | N20 | 6'-0½" |
| N6 | 5'-10½" | N21 | 5'-0½" |
| N7 | 4'-11½" | N22 | 4'-0½" |
| N8 | 4'-0½" | N23 | 9'-9½" |
| N9 | 9'-8½" | N24 | 9'-6½" |
| N10 | 9'-5½" | N25 | 8'-5½" |
| N11 | 8'-4½" | N26 | 7'-4½" |
| N12 | 7'-3½" | N27 | 6'-3½" |
| N13 | 6'-2½" | N28 | 5'-1½" |
| N14 | 5'-1½" | N29 | 4'-0½" |
| N15 | 4'-0½" | | |

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. W-5107

JOHNSTON COUNTY

STATION: 17+33.63 -Y6LPB-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR
CONCRETE BOX CULVERT

H = 9'-0" SLOPE = 3:1

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER PAUL A. de PAOLI

11/20/2014

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

| REVISIONS | | | | | | |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO. C-22 |
| 1 | | | 3 | | | TOTAL SHEETS 36 |
| 2 | | | 4 | | | |

DRAWN BY : J.S. ISRAELNAIM DATE : 06/14
CHECKED BY : P.A. de PAOLI DATE : 06/14
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE : 06/14

11/20/2014
10:19:02 AM
User:blanning
Filename: P:\NC Bridges\MI2005 - W-5107 Johnston Co\MI2005.05_Culvert 3_New_Quincosin Swamp at -Y6LPB-\Structures\412.030.C03.W5107.SMU.CU6.dgn