

LOCATION SKETCH

FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS.

NOTES

ASSUMED LIVE LOAD -----HS20 OR ALTERNATE LOADING.
 DESIGN FILL ----- 6.20 FT.
 FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTE SHEET.
 3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
 CONCRETE IN CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. PHASE I WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF PHASE I VERTICAL WALLS.
2. THE REMAINING PORTIONS OF PHASE I WALLS AND PHASE I WINGS FULL HEIGHT.
3. THE ROOF SLAB AND HEADWALLS OF PHASE I.
4. PHASE II WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF PHASE II VERTICAL WALLS.
5. THE REMAINING PORTIONS OF PHASE II WALLS AND PHASE II WINGS FULL HEIGHT.
6. THE REMAINING ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEETS.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN (1 @ 21') WITH A CLEAR ROADWAY WIDTH OF 23'-9" ON A REINFORCED CONCRETE DECK WITH A 7/8" ASPHALT WEARING SURFACE AND SUPPORTED BY 12 LINES OF 12" I-BEAMS ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE ABUTMENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

MATERIAL EXCAVATED FROM THE EXISTING BED SHALL BE STOCKPILED FOR USE IN THE PROPOSED CULVERT BARRELS. UPON COMPLETION OF THE PROPOSED CULVERT, THE MATERIAL SHALL BE PLACED IN THE BARREL TO A DEPTH OF 1'-0". BED MATERIAL MAY BE SUPPLEMENTED WITH CLASS 'B' RIP RAP IF SUITABLE MATERIAL IS NOT AVAILABLE IN SUFFICIENT QUANTITIES.

THE ENTIRE COST OF WORK REQUIRED TO PLACE THE EXCAVATED MATERIAL OR SUPPLEMENTAL MATERIAL SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

TOTAL STRUCTURE QUANTITIES

| | | |
|------------------|----------|------------|
| CLASS A CONCRETE | | |
| BARREL @ 1.777 | C.Y./FT. | 163.5 C.Y. |
| WINGS, ETC. | | 32.2 C.Y. |
| TOTAL | | 195.7 C.Y. |

| | |
|-------------------|-------------|
| REINFORCING STEEL | |
| BARREL | 28,657 LBS. |
| WINGS, ETC. | 2,319 LBS. |
| TOTAL | 30,976 LBS. |

| | |
|-------------------------------|----------------|
| CULVERT EXCAVATION | ----- LUMP SUM |
| FOUNDATION COND. MAT'L | ----- 32 TONS |
| REMOVAL OF EXISTING STRUCTURE | -- LUMP SUM |

HYDRAULIC DATA

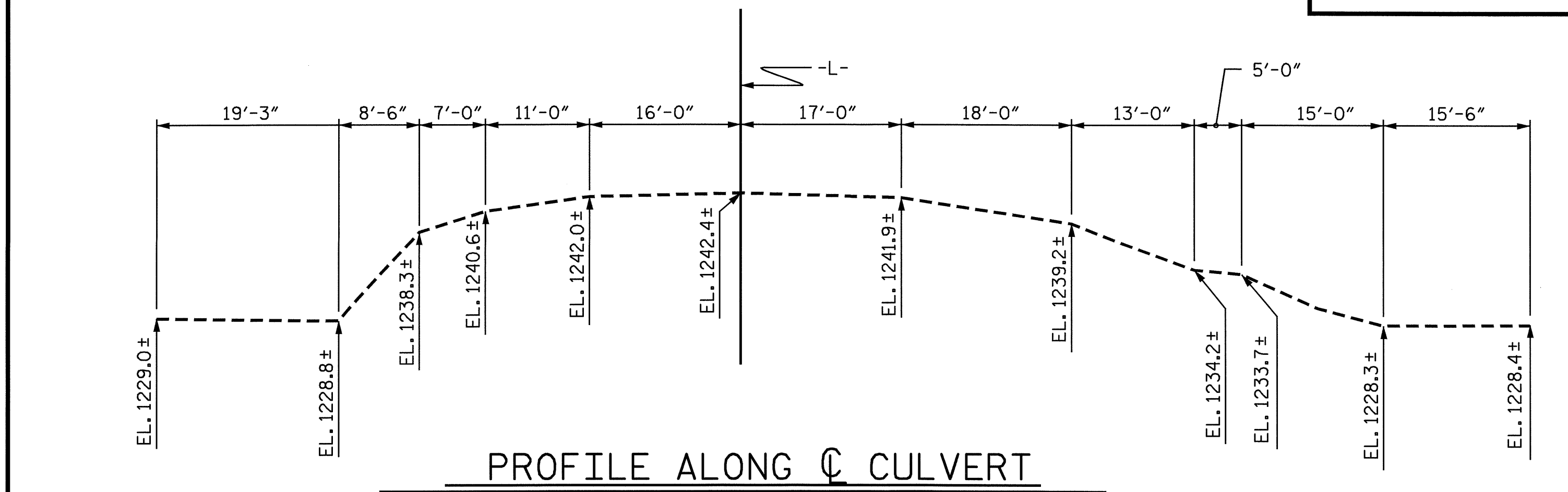
| | |
|-----------------------------|---------------|
| DESIGN DISCHARGE | = 700.0 C.F.S |
| FREQUENCY OF DESIGN FLOOD | = 50 YEARS |
| DESIGN HIGH WATER ELEVATION | = 1236.6 FT. |
| DRAINAGE AREA | = 1.3 SQ. MI |
| BASIC DISCHARGE (Q100) | = 870.0 C.F.S |
| BASIC HIGH WATER ELEVATION | = 1237.7 FT. |

OVERTOPPING FLOOD DATA

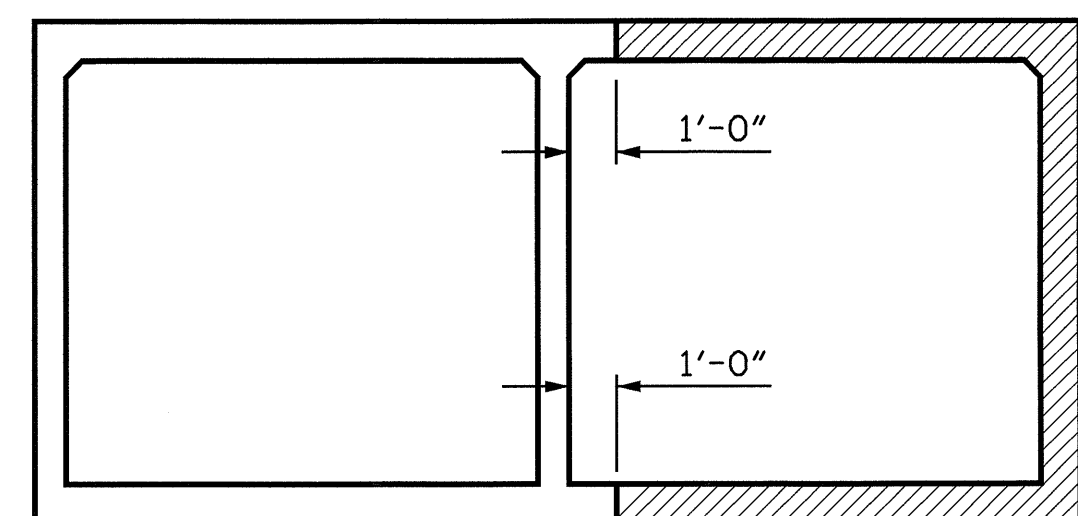
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|--------------------------------|--------------|
| OVERTOPPING DISCHARGE | = 1500 C.F.S |
| FREQUENCY OF OVERTOPPING FLOOD | = 500+ YEARS |
| OVERTOPPING FLOOD ELEVATION | = 1242.9 FT. |

ROADWAY DATA

| | |
|--|-----------|
| GRADE POINT ELEV. @ STATION 75+39.00 -L- | = 1243.34 |
| BED ELEV. @ STATION 75+39.00 -L- | = 1227.60 |
| ROADWAY SLOPE | = 2:1 |



PROFILE ALONG C CULVERT



CONSTRUCTION PHASING

(LOOKING DOWNSTREAM)

- PHASE I CONSTRUCTION
- PHASE II CONSTRUCTION



Quang H. Nguyen 7-22-09



PROJECT NO. B-4191
McDOWELL COUNTY
 STATION: 75+39.00 -L-

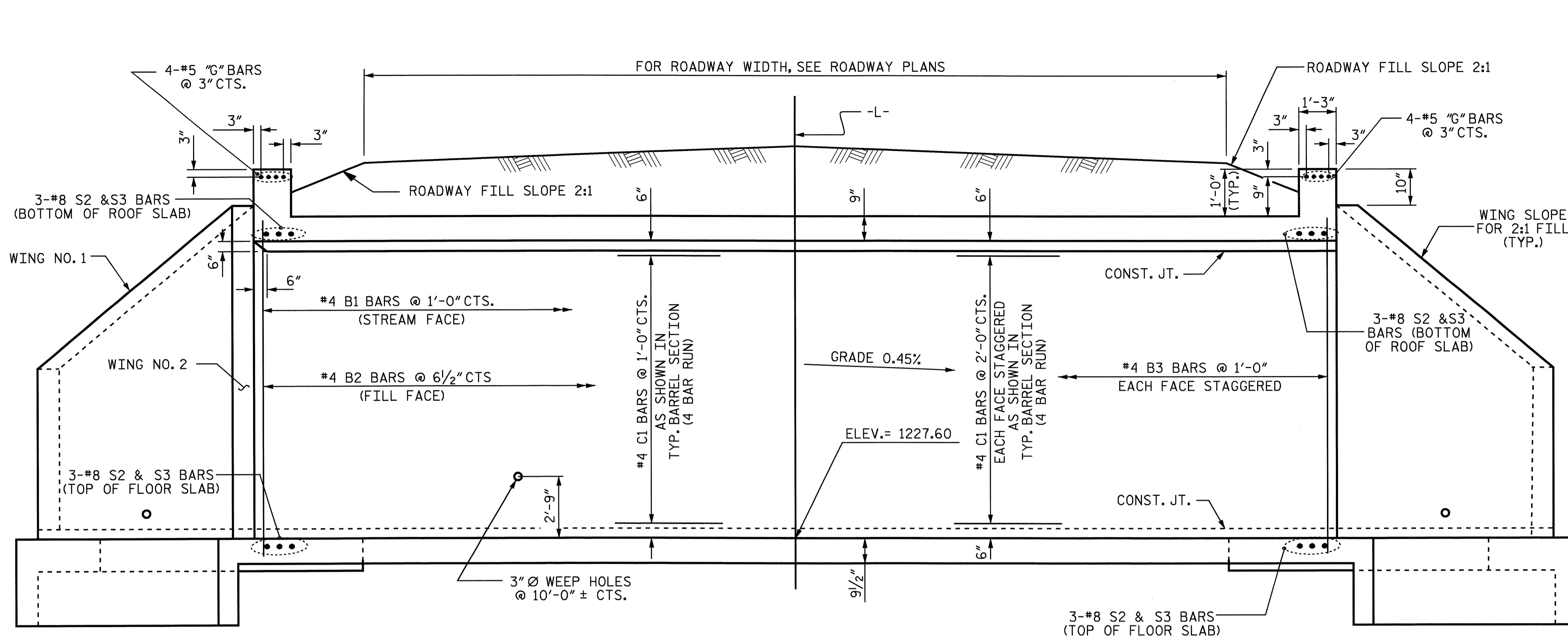
SHEET 1 OF 6 REPLACES BRIDGE #82

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DOUBLE 8'-0" X 10'-0"
 CONCRETE BOX CULVERT

| REVISIONS | | | | SHEET NO. | |
|-----------|----|------|-----|-----------|------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

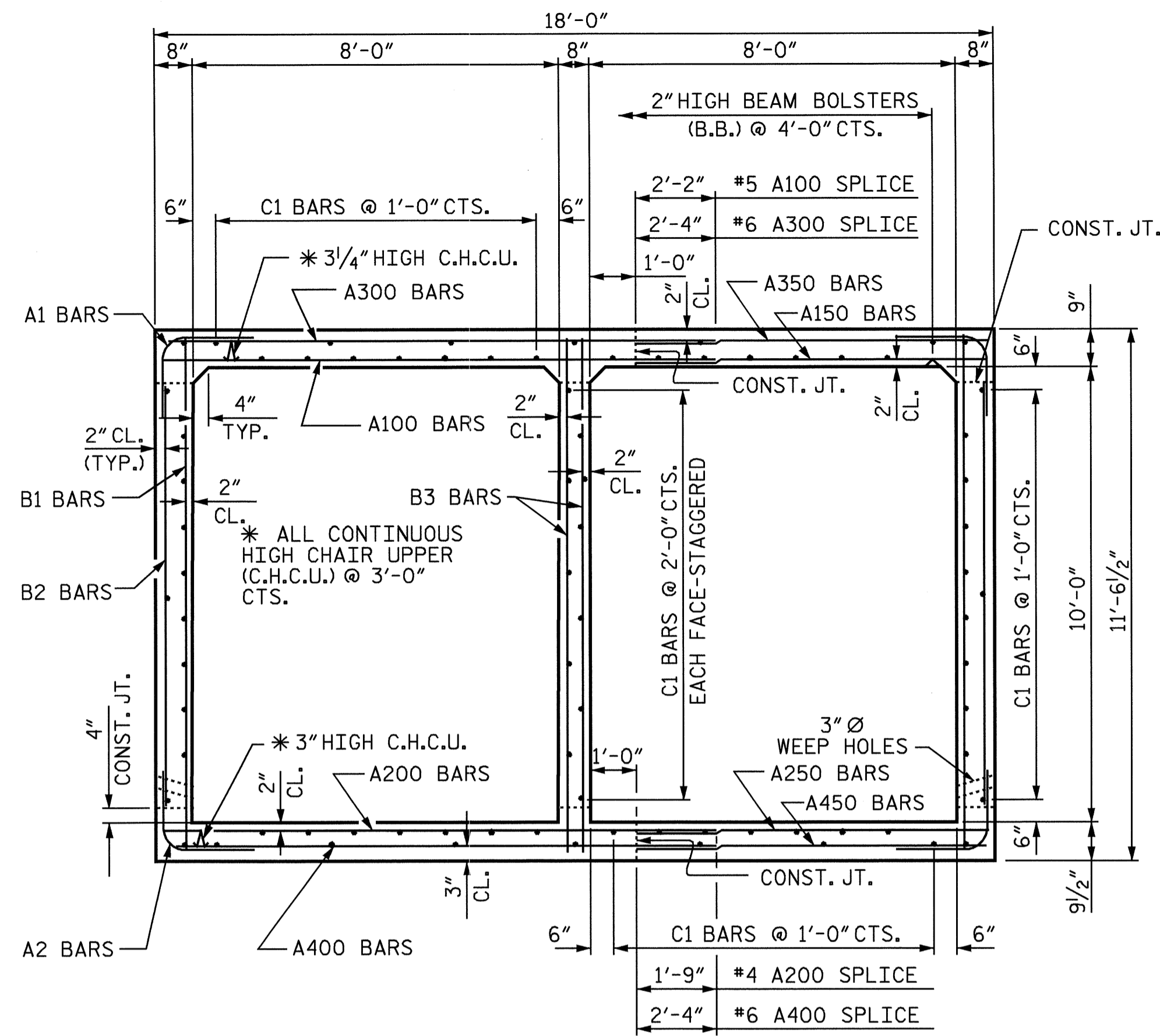
DRAWN BY: A.L. FIGUEROA DATE: 03-26-09
 CHECKED BY: M.G. CHEEK DATE: 04-29-09



EXTERIOR WALL

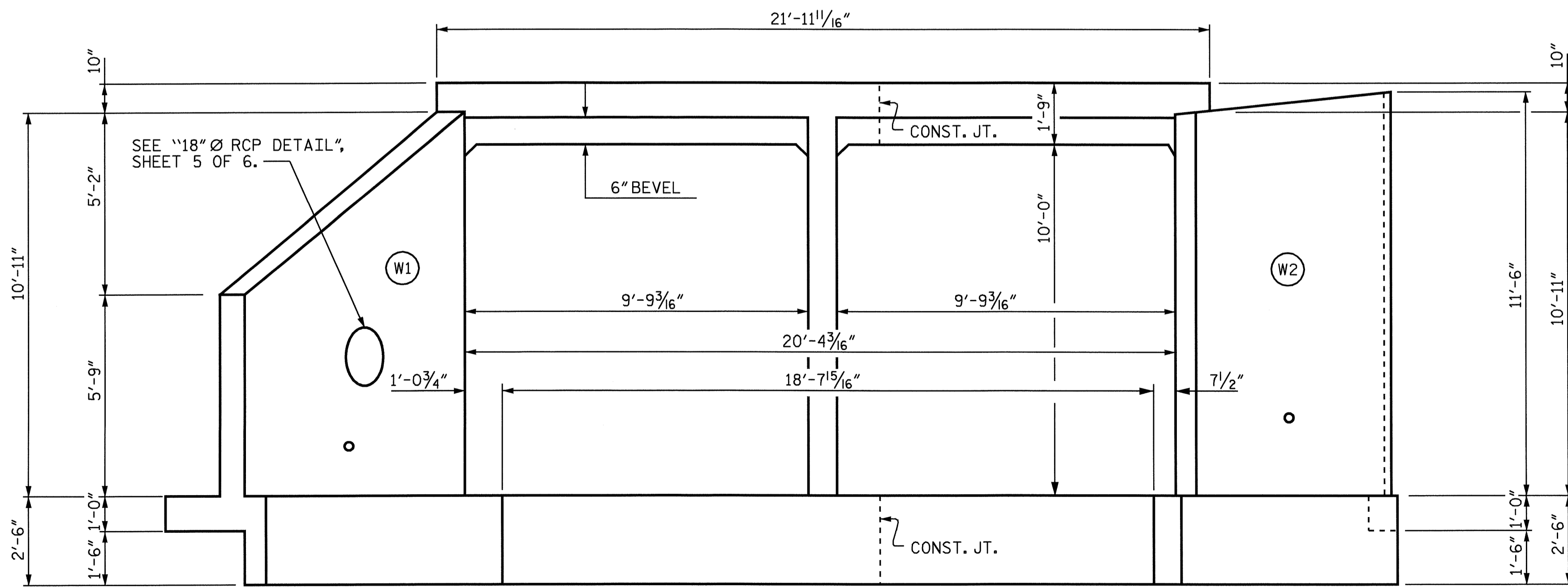
INTERIOR WALL

CULVERT SECTION NORMAL TO ROADWAY



RIGHT ANGLE SECTION OF BARREL

THERE ARE 78 "C" BARS IN SECTION OF BARREL.
(LOOKING DOWNSTREAM)



INLET END ELEVATION NORMAL TO SKEW

PROJECT NO. B-4191
MCDOWELL COUNTY
 STATION: 75+39.00 -L-

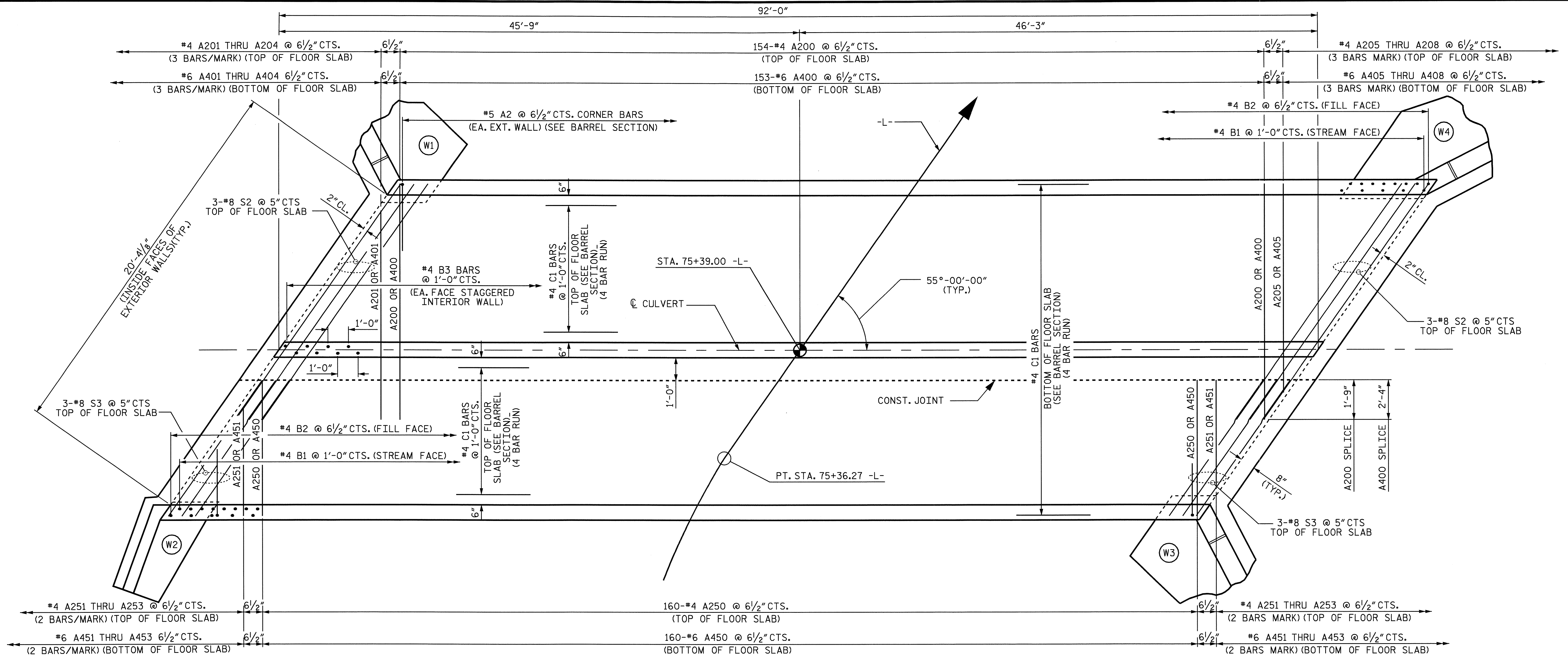
SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE 8'-0" X 10'-0"
 CONCRETE BOX CULVERT

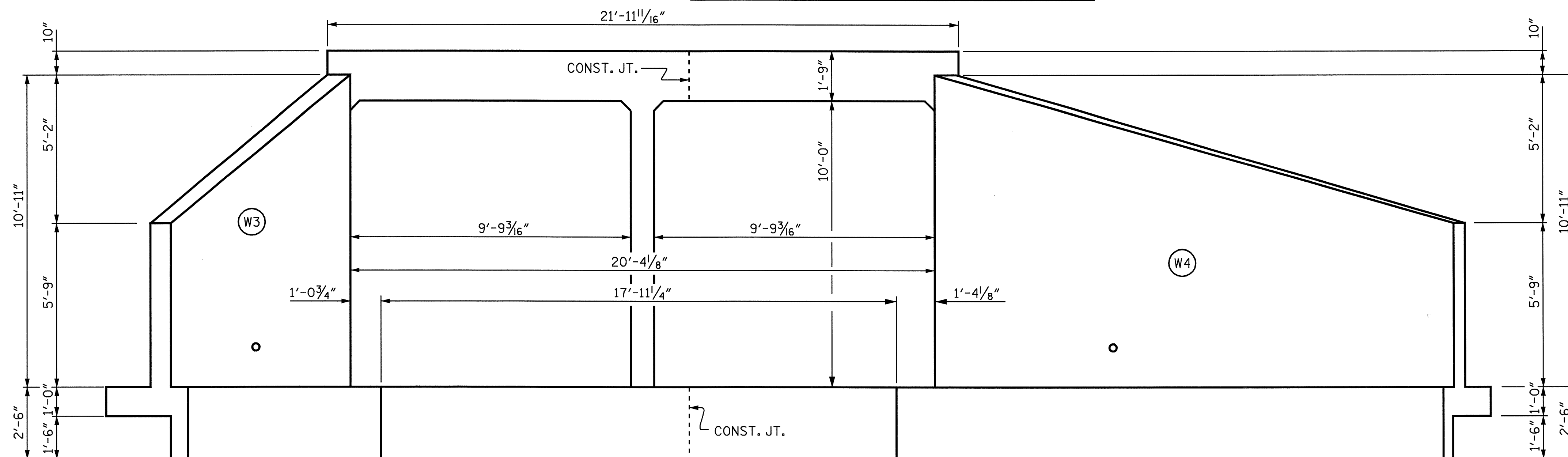


DRAWN BY : A.L. FIGUEROA DATE : 03-12-09
 CHECKED BY : M.G. CHEEK DATE : 04-29-09

| REVISIONS | | | | | | SHEET NO. | |
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| NO. | BY: | DATE: | NO. | BY: | DATE: | C-2 | |
| 1 | | | 3 | | | TOTAL SHEETS 6 | |
| 2 | | | 4 | | | | |



PLAN-FLOOR SLAB



OUTLET END ELEVATION NORMAL TO SKEW

DRAWN BY : A.L. FIGUEROA DATE : 03-12-09
 CHECKED BY : M.G. CHEEK DATE : 04-29-09

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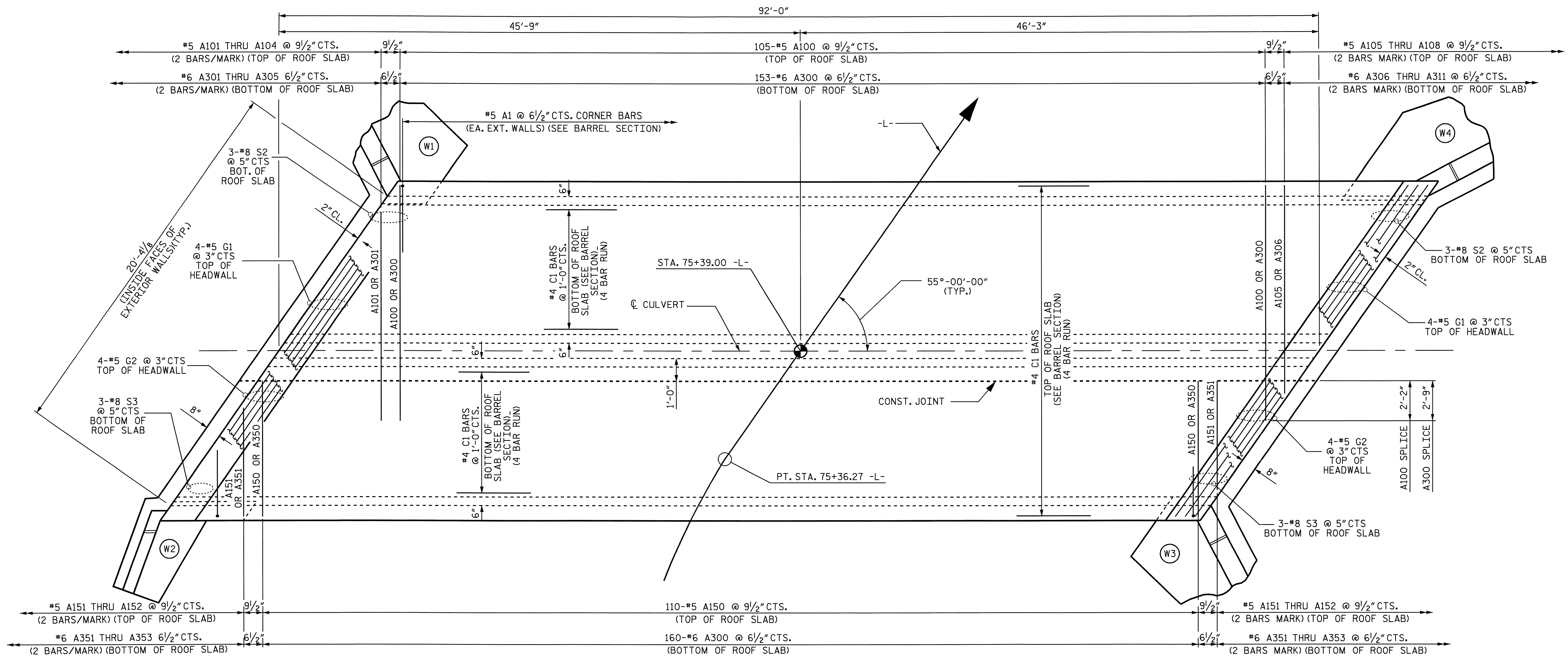


PROJECT NO. B-4191
 McDOWELL COUNTY
 STATION: 75+39.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE 8'-0" X 10'-0"
 CONCRETE BOX CULVERT

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|----------------|
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| 2 | | | 4 | | | |



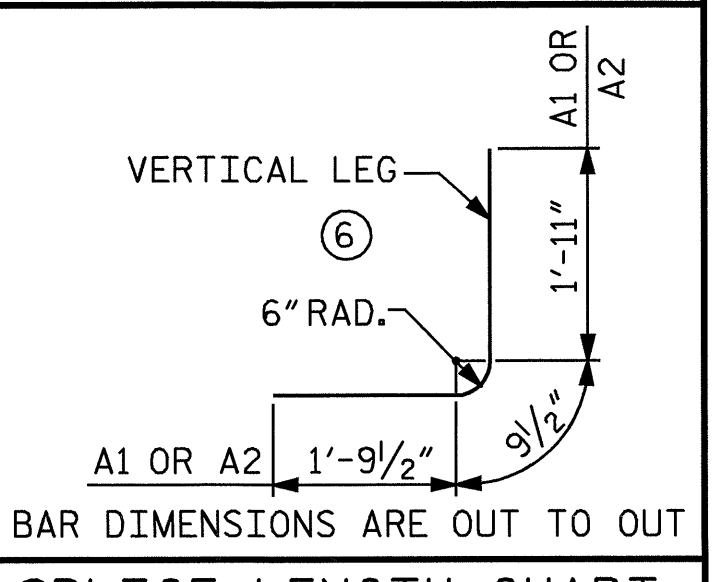
PLAN-ROOF SLAB

BAR SCHEDULE

| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---------|-----|------|------|---------|--------|---------|-----|------|------|---------|--------|---------|-----|------|------|---------|--------|
| A1 | 340 | #5 | 6 | 4'-6" | 1596 | A205 | 3 | #4 | STR | 10'-1" | 20 | A350 | 160 | #6 | STR | 7'-5" | 1782 |
| A2 | 340 | #5 | 6 | 4'-6" | 1596 | A206 | 3 | #4 | STR | 7'-9" | 16 | A351 | 4 | #6 | STR | 6'-0" | 36 |
| A100 | 105 | #5 | STR | 12'-4" | 1351 | A207 | 3 | #4 | STR | 5'-5" | 11 | A352 | 4 | #6 | STR | 4'-6" | 27 |
| A101 | 2 | #5 | STR | 10'-0" | 21 | A208 | 3 | #4 | STR | 3'-2" | 6 | A353 | 4 | #6 | STR | 2'-11" | 18 |
| A102 | 2 | #5 | STR | 7'-9" | 16 | A250 | 160 | #4 | STR | 7'-5" | 793 | A400 | 153 | #6 | STR | 12'-6" | 2873 |
| A103 | 2 | #5 | STR | 5'-6" | 11 | A251 | 4 | #4 | STR | 6'-0" | 16 | A401 | 3 | #6 | STR | 10'-2" | 46 |
| A104 | 2 | #5 | STR | 3'-3" | 7 | A252 | 4 | #4 | STR | 4'-6" | 12 | A402 | 3 | #6 | STR | 7'-10" | 35 |
| A105 | 2 | #5 | STR | 10'-9" | 22 | A253 | 4 | #4 | STR | 3'-0" | 8 | A403 | 3 | #6 | STR | 5'-6" | 25 |
| A106 | 2 | #5 | STR | 8'-6" | 18 | A300 | 153 | #6 | STR | 12'-6" | 2873 | A404 | 3 | #6 | STR | 4'-0" | 18 |
| A107 | 2 | #5 | STR | 6'-3" | 13 | A301 | 2 | #6 | STR | 10'-11" | 33 | A405 | 3 | #6 | STR | 10'-10" | 49 |
| A108 | 2 | #5 | STR | 4'-0" | 8 | A302 | 2 | #6 | STR | 9'-4" | 28 | A406 | 3 | #6 | STR | 8'-6" | 38 |
| A150 | 110 | #5 | STR | 7'-5" | 851 | A303 | 2 | #6 | STR | 7'-10" | 24 | A407 | 3 | #6 | STR | 6'-3" | 28 |
| A151 | 4 | #5 | STR | 5'-2" | 22 | A304 | 2 | #6 | STR | 6'-3" | 19 | A408 | 3 | #6 | STR | 3'-11" | 18 |
| A152 | 4 | #5 | STR | 2'-11" | 12 | A305 | 2 | #6 | STR | 4'-9" | 14 | A450 | 160 | #6 | STR | 7'-5" | 1782 |
| A200 | 154 | #4 | STR | 11'-11" | 1226 | A306 | 2 | #6 | STR | 11'-8" | 35 | A451 | 4 | #6 | STR | 6'-0" | 36 |
| A201 | 3 | #4 | STR | 9'-7" | 19 | A307 | 2 | #6 | STR | 10'-1" | 30 | A452 | 4 | #6 | STR | 4'-6" | 27 |
| A202 | 3 | #4 | STR | 7'-3" | 15 | A308 | 2 | #6 | STR | 8'-7" | 26 | A453 | 4 | #6 | STR | 2'-11" | 18 |
| A203 | 3 | #4 | STR | 4'-11" | 10 | A309 | 2 | #6 | STR | 7'-0" | 21 | | | | | | |
| A204 | 3 | #4 | STR | 3'-5" | 7 | A310 | 2 | #6 | STR | 5'-5" | 16 | | | | | | |
| | | | | | | A311 | 2 | #6 | STR | 3'-11" | 12 | | | | | | |

TOTAL REINFORCING
STEEL = 28,657 LBS.

BAR TYPE



BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTH CHART

| BAR | SIZE | SPLICE LENGTH |
|------|------|---------------|
| A100 | #5 | 2'-2" |
| A200 | #4 | 1'-9" |
| A300 | #6 | 2'-4" |
| A400 | #6 | 2'-4" |
| B1 | #4 | 1'-9" |
| B3 | #4 | 1'-9" |
| C1 | #4 | 1'-11" |
| G1 | #5 | 2'-2" |
| S2 | #8 | 4'-11" |

PROJECT NO. B-4191
McDOWELL COUNTY
STATION: 75+39.00 -L-

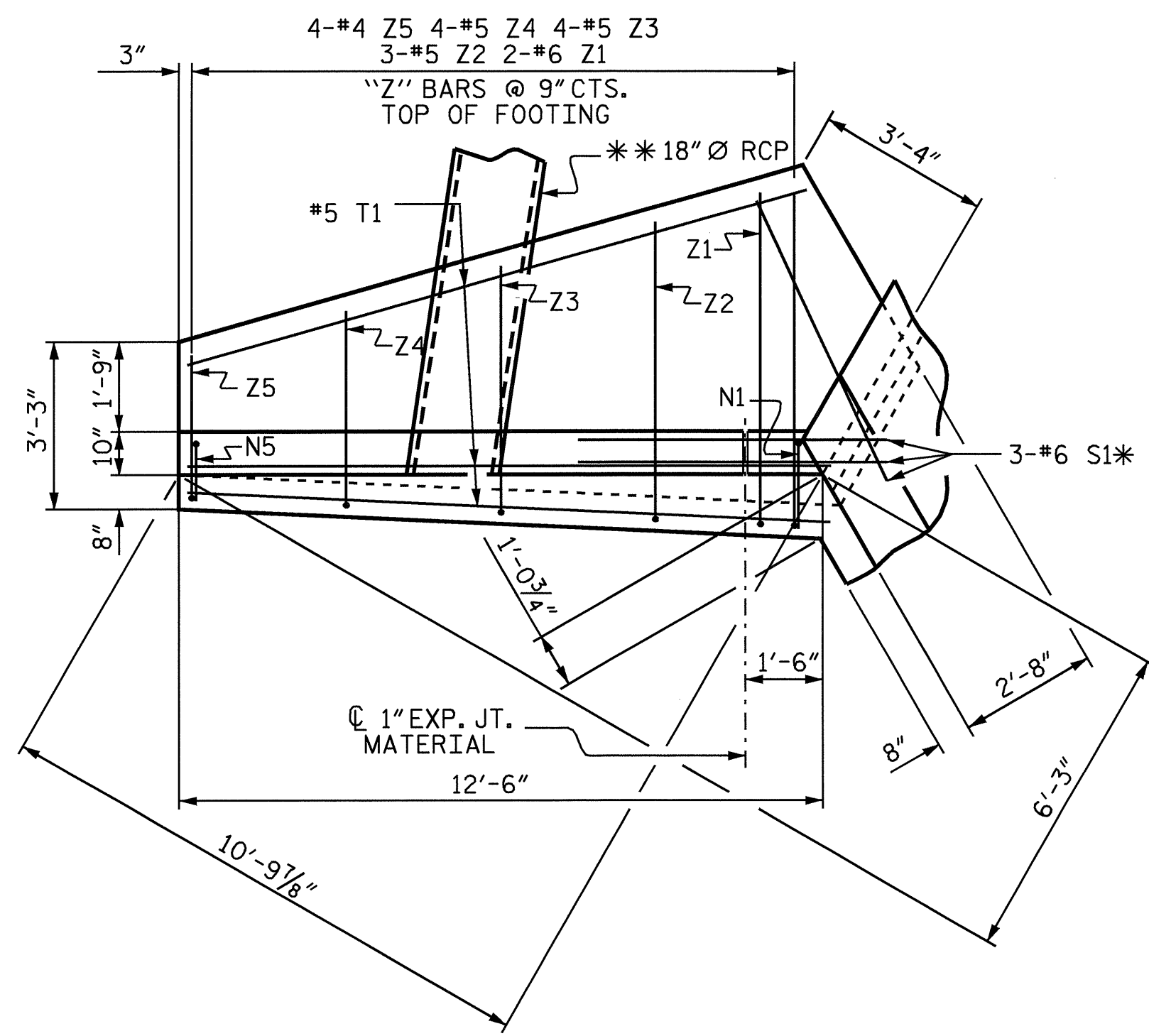
SHEET 4 OF 6
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
DOUBLE 8'-0" X 10'-0" CONCRETE BOX CULVERT



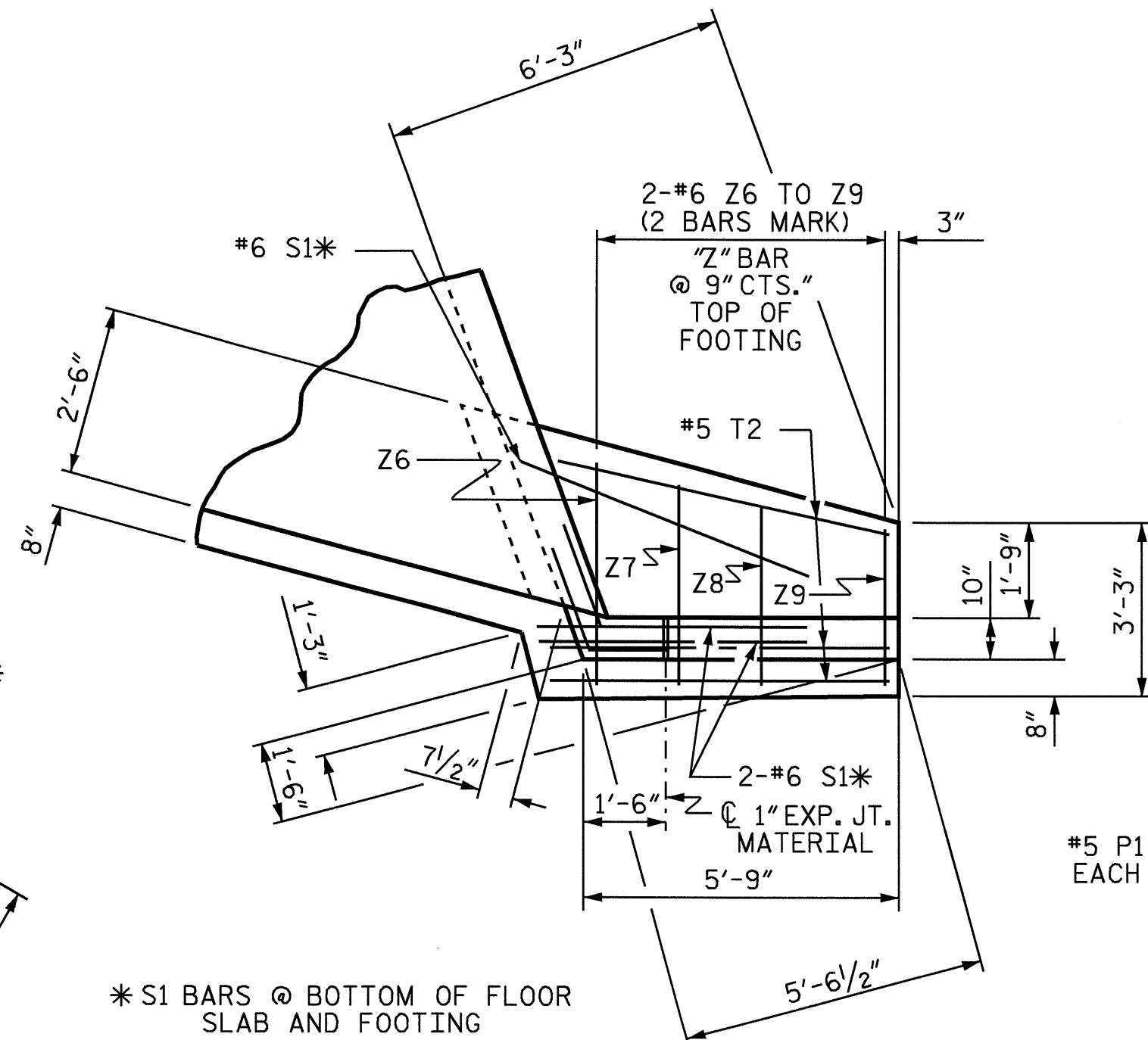
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CHECKED BY: M.G. CHEEK DATE: 04-29-09

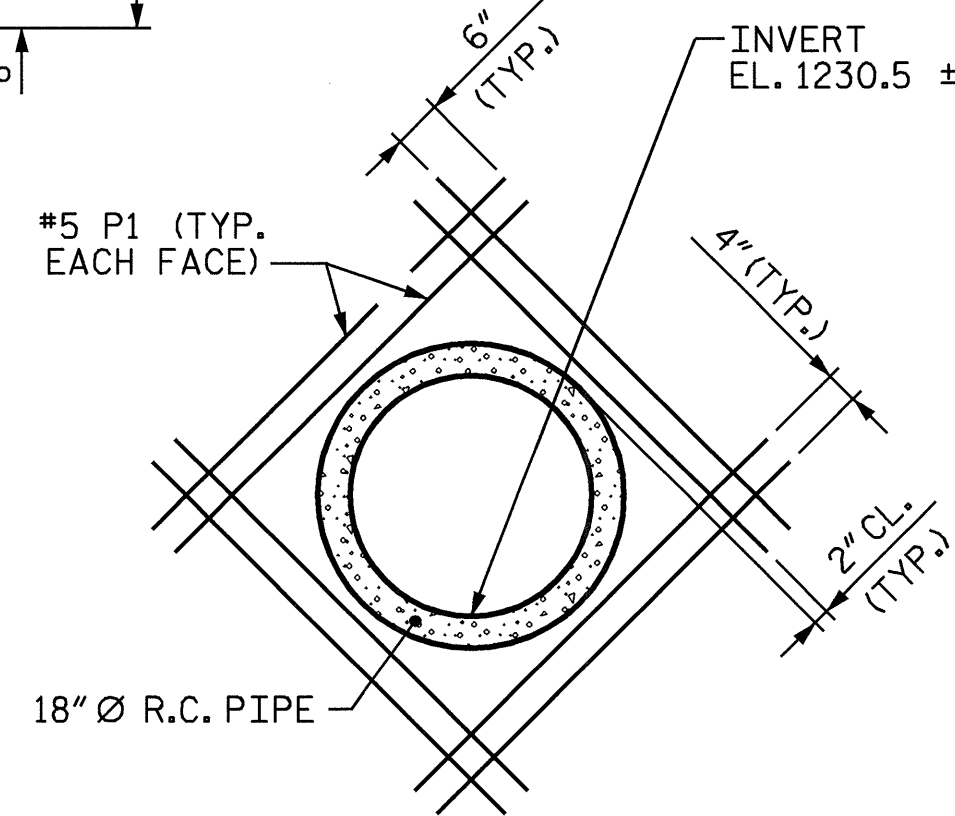
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PLAN W1



PLAN W2



18" Ø PIPE DETAIL

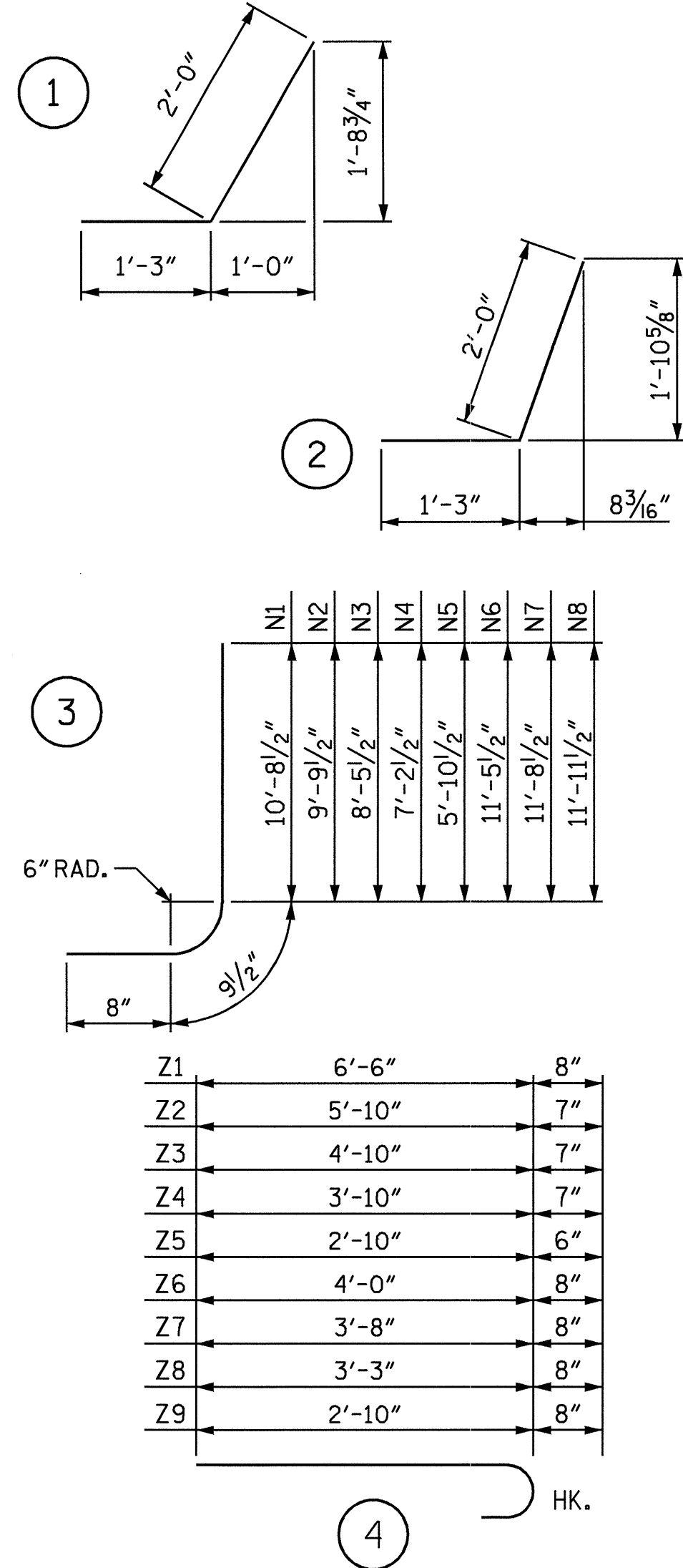
** THE PIPE THRU THE WING WALL OF THE CULVERT WILL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL WILL BE CUT & FIELD BENT AS NECESSARY TO CLEAR THE PIPE.

NOTES

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
G1 BARS IN HEADWALL ARE INCLUDED WITH BARREL REINFORCING STEEL.

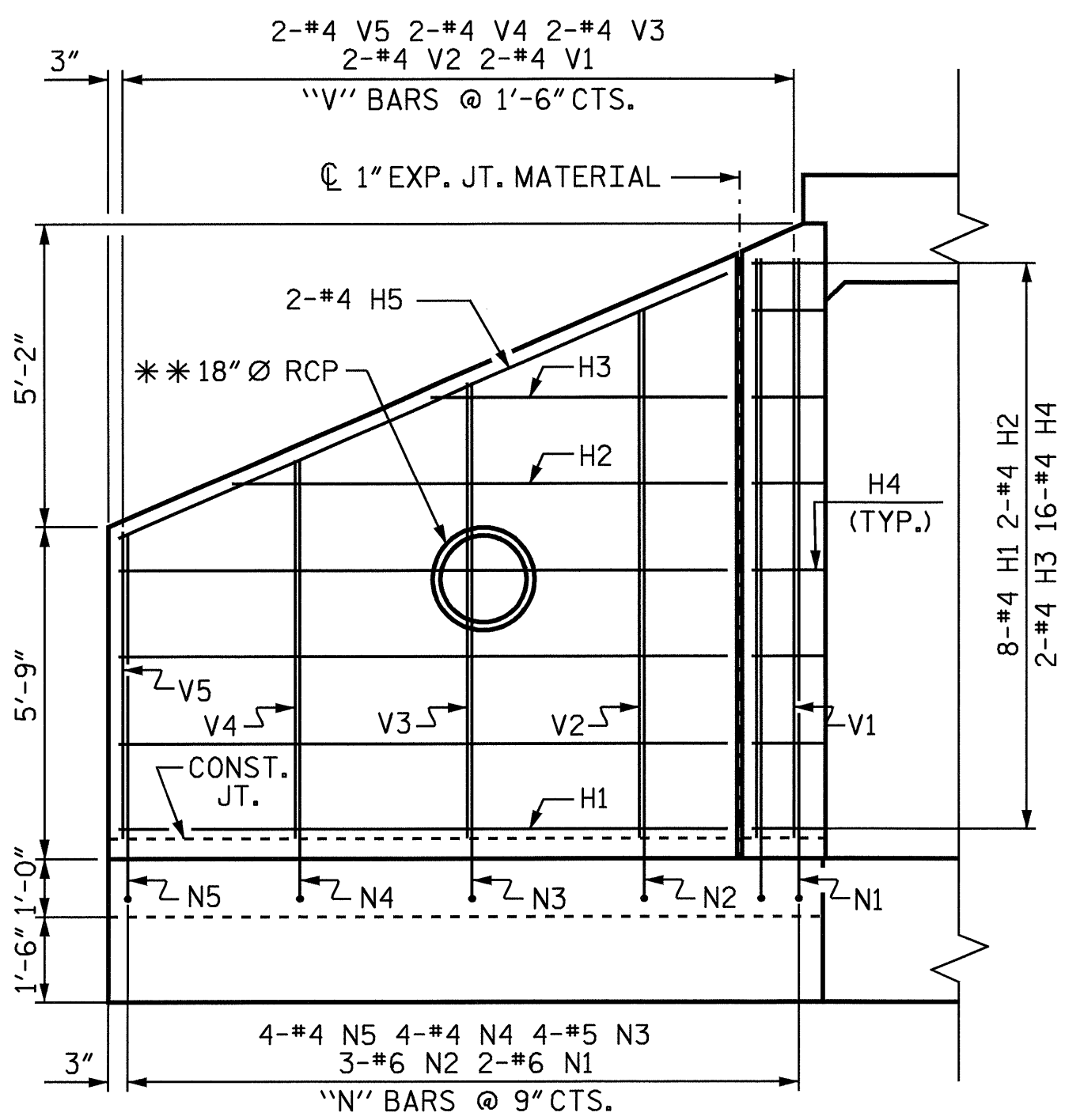
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

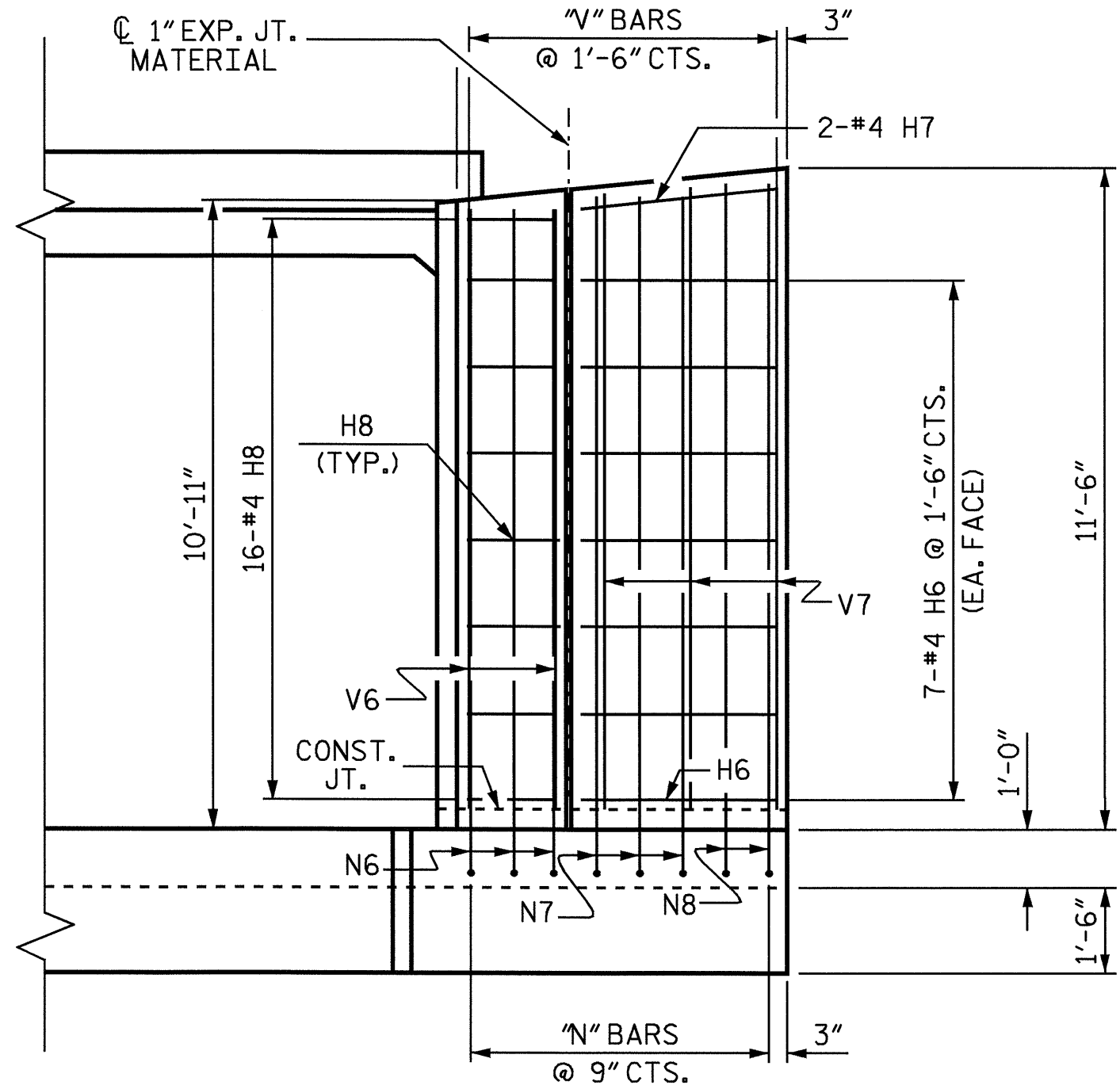


BILL OF MATERIAL

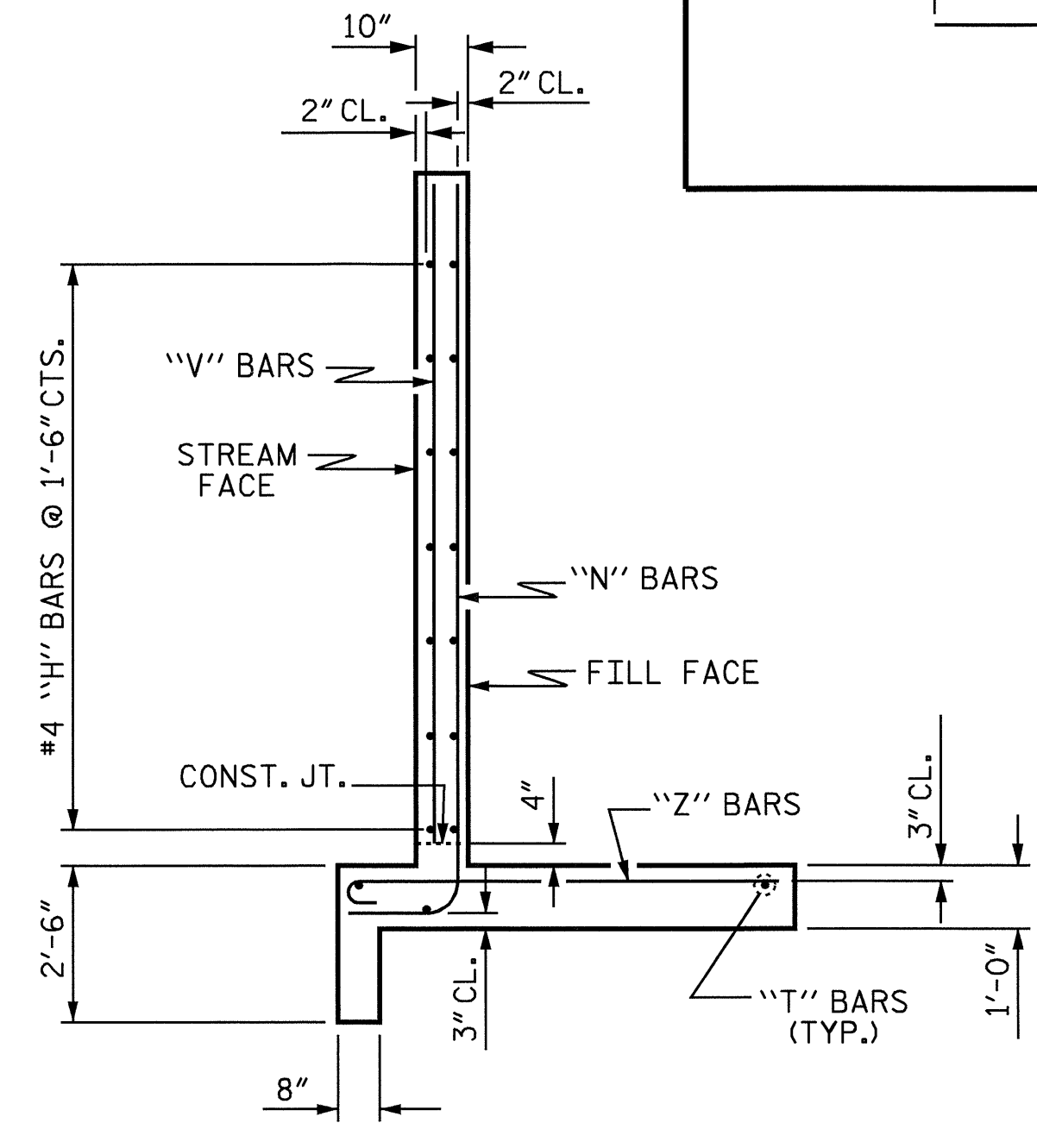
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-------------------------------|------|------|---------|-----------|
| H1 | #4 | STR | 10'-7" | 57 |
| H2 | #4 | STR | 8'-7" | 11 |
| H3 | #4 | STR | 5'-2" | 7 |
| H4 | #4 | 1 | 3'-3" | 35 |
| H5 | #4 | STR | 11'-7" | 15 |
| H6 | #4 | STR | 3'-10" | 36 |
| H7 | #4 | STR | 3'-11" | 5 |
| H8 | #4 | 2 | 3'-3" | 35 |
| N1 | #6 | 3 | 12'-2" | 37 |
| N2 | #6 | 3 | 11'-3" | 51 |
| N3 | #5 | 3 | 9'-11" | 41 |
| N4 | #4 | 3 | 8'-8" | 23 |
| N5 | #4 | 3 | 7'-4" | 20 |
| N6 | #6 | 3 | 12'-11" | 58 |
| N7 | #6 | 3 | 13'-2" | 59 |
| N8 | #6 | 3 | 13'-5" | 40 |
| P1 | #5 | STR | 4'-0" | 67 |
| S1 | #6 | STR | 4'-9" | 43 |
| T1 | #5 | STR | 12'-6" | 39 |
| T2 | #5 | STR | 6'-2" | 19 |
| V1 | #4 | STR | 10'-1" | 13 |
| V2 | #4 | STR | 9'-2" | 12 |
| V3 | #4 | STR | 7'-11" | 11 |
| V4 | #4 | STR | 6'-7" | 9 |
| V5 | #4 | STR | 5'-4" | 7 |
| V6 | #4 | STR | 10'-5" | 14 |
| V7 | #4 | STR | 10'-8" | 21 |
| Z1 | #6 | 4 | 7'-2" | 22 |
| Z2 | #5 | 4 | 6'-5" | 20 |
| Z3 | #5 | 4 | 5'-5" | 23 |
| Z4 | #5 | 4 | 4'-5" | 18 |
| Z5 | #4 | 4 | 3'-4" | 9 |
| Z6 | #6 | 4 | 4'-8" | 14 |
| Z7 | #6 | 4 | 4'-4" | 13 |
| Z8 | #6 | 4 | 3'-11" | 12 |
| Z9 | #6 | 4 | 3'-6" | 11 |
| REINFORCING STEEL FOR 2 WINGS | | | | 927 LBS. |
| CLASS A CONCRETE | | | | |
| 2 WINGS | | | | 9.8 C.Y. |
| 1 HEADWALL | | | | 1.0 C.Y. |
| 1 END CURTAIN WALL | | | | 1.2 C.Y. |
| TOTAL | | | | 12.0 C.Y. |



ELEVATION W1



ELEVATION W2



TYPICAL WING SECTION

PROJECT NO. B-4191
MCDOWELL COUNTY
STATION: 75+39.00 -L-

SHEET 5 OF 6

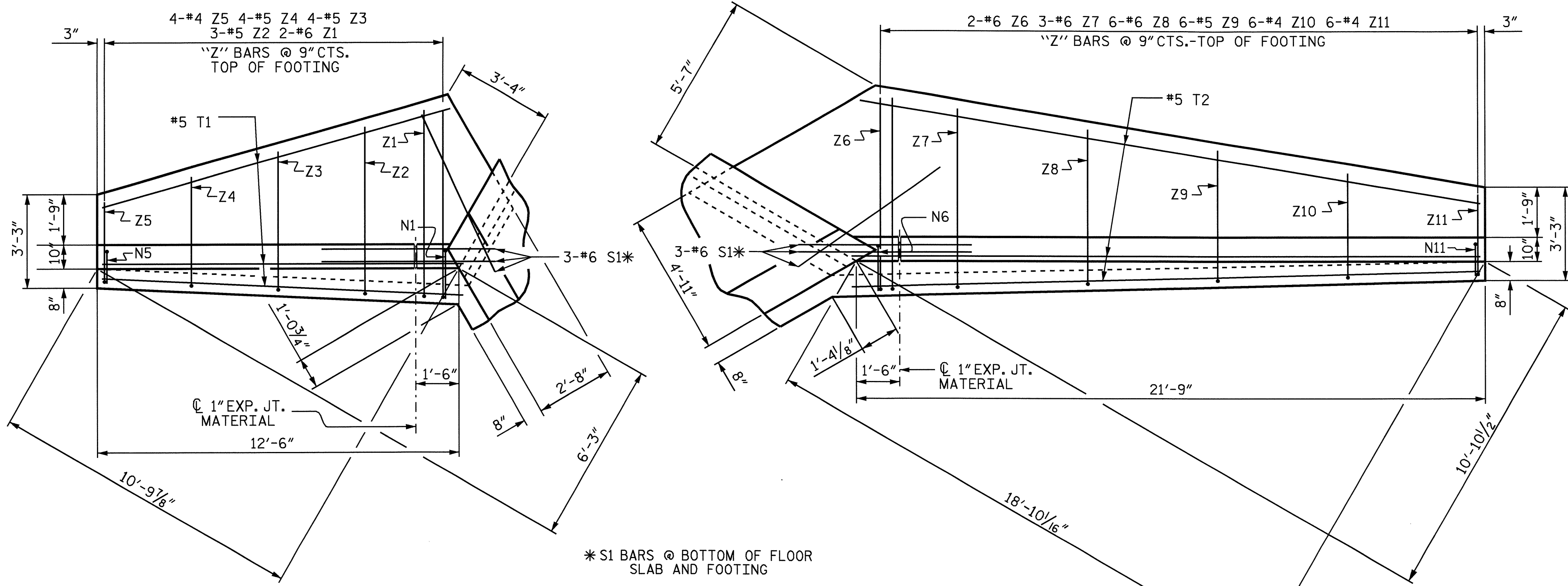
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS FOR
CONCRETE BOX CULVERT
INLET END

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | C-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 6 |



DRAWN BY: A.L. FIGUEROA DATE: 03-26-09
CHECKED BY: M.G. CHEEK DATE: 04-29-09

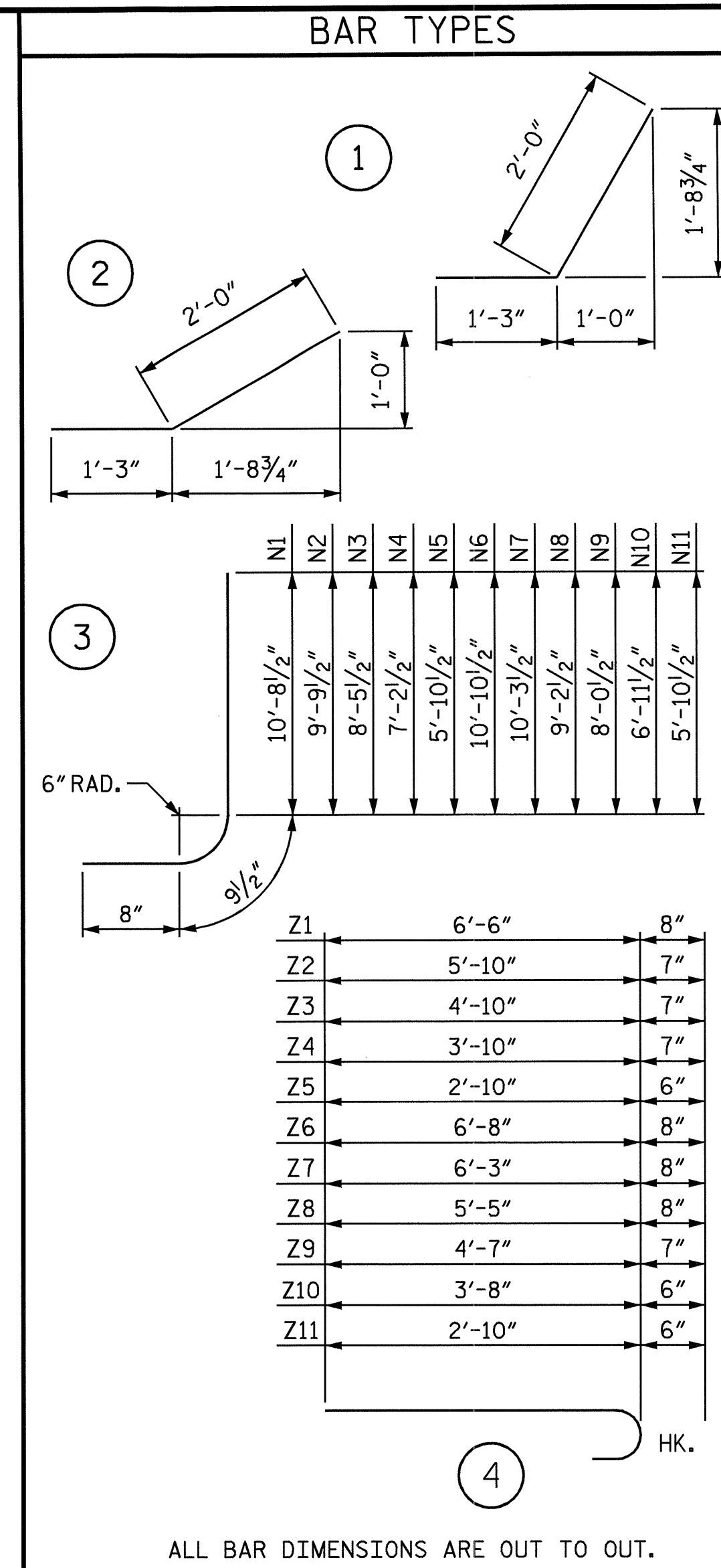


PLAN W3

PLAN W4

NOTES

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.
G1 BARS IN HEADWALL ARE INCLUDED WITH BARREL REINFORCING STEEL.

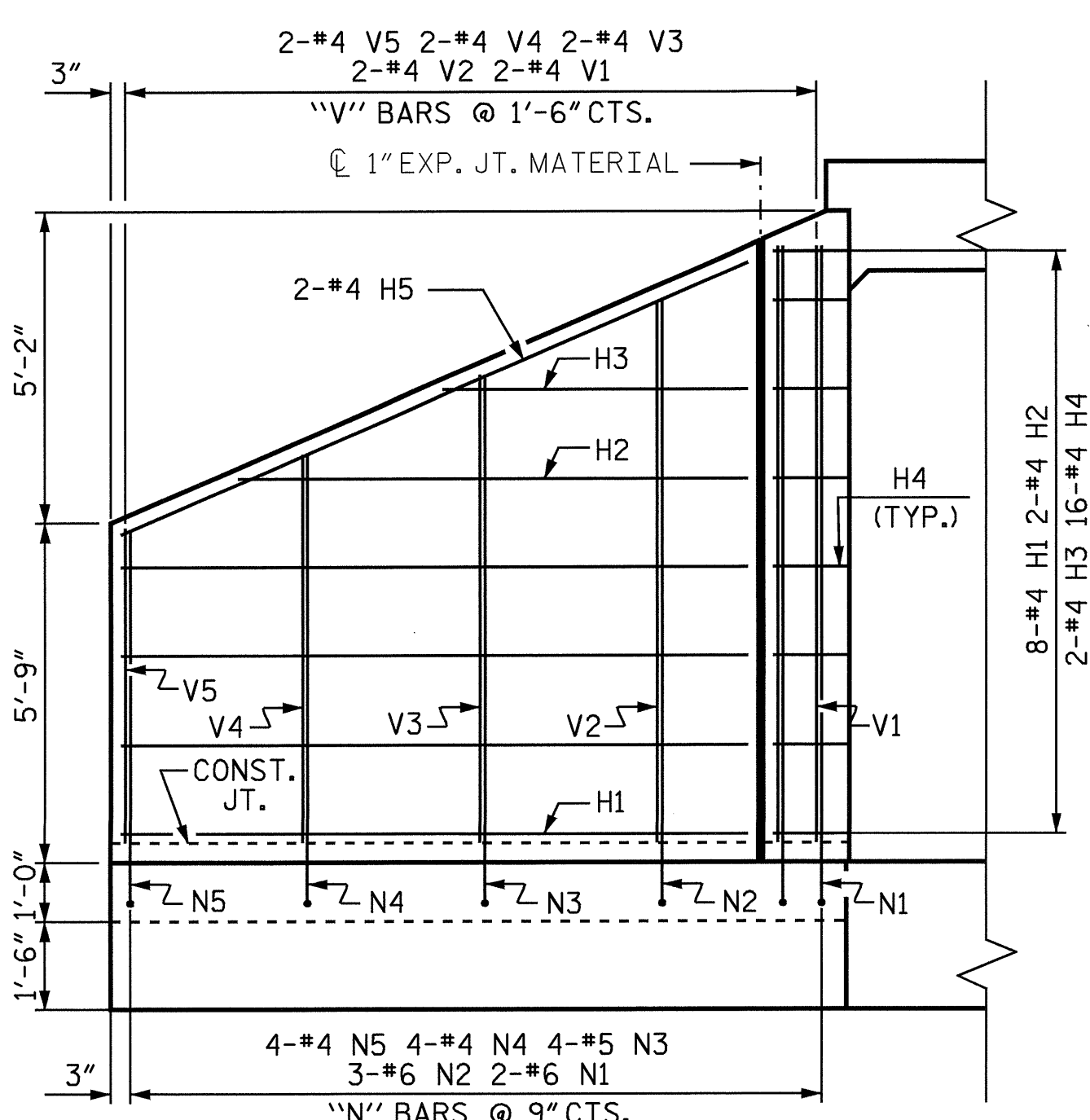


BAR TYPES

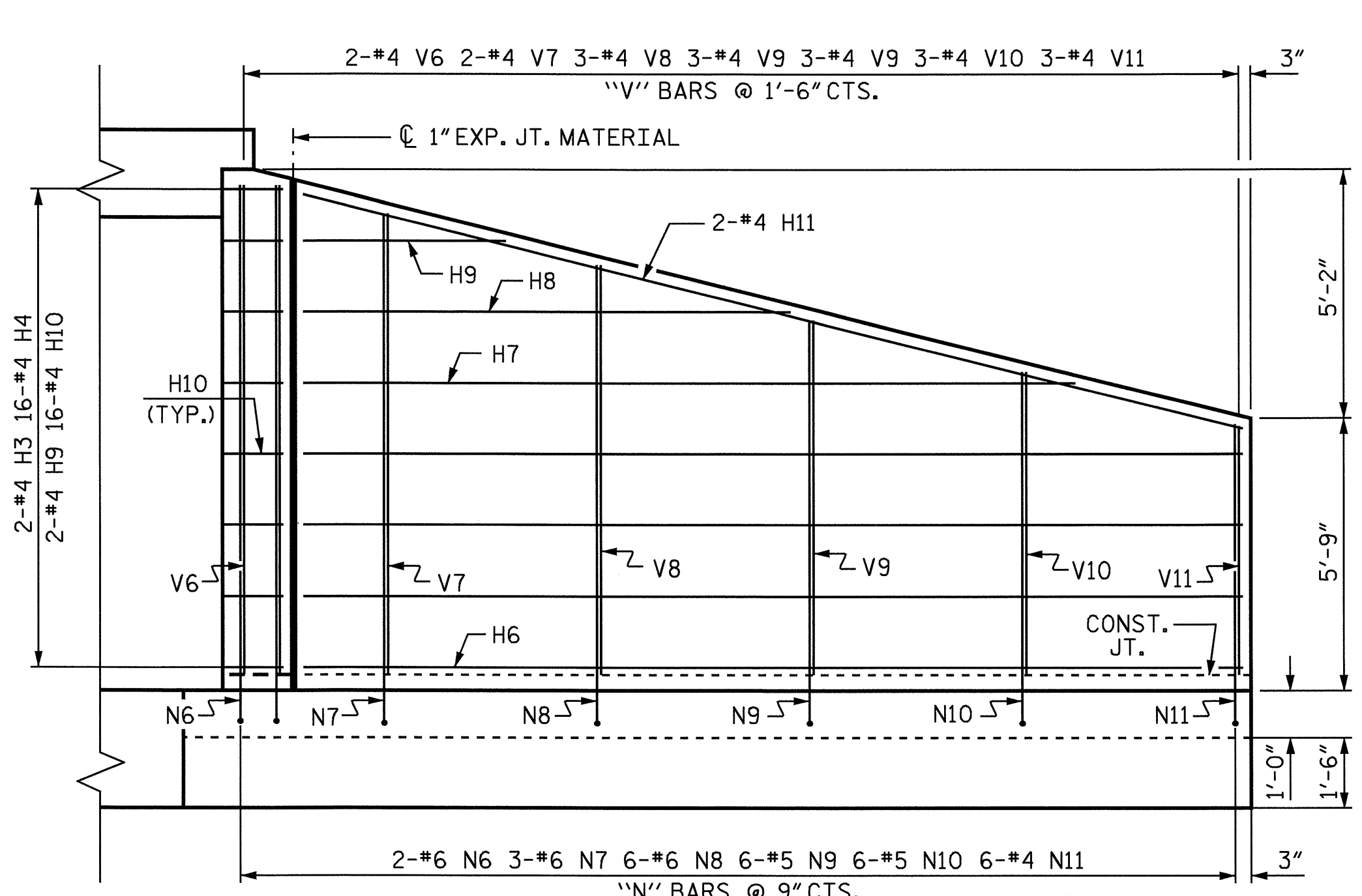
BILL OF MATERIAL

| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---------|------|------|---------|--------|
| H1 | #4 | STR | 10'-7" | 57 |
| H2 | #4 | STR | 8'-7" | 11 |
| H3 | #4 | STR | 5'-2" | 7 |
| H4 | #4 | 1 | 3'-3" | 35 |
| H5 | #4 | STR | 11'-7" | 15 |
| H6 | #4 | STR | 19'-10" | 106 |
| H7 | #4 | STR | 16'-4" | 22 |
| H8 | #4 | STR | 10'-3" | 14 |
| H9 | #4 | STR | 4'-3" | 6 |
| H10 | #4 | 2 | 3'-3" | 35 |
| H11 | #4 | STR | 20'-5" | 27 |
| N1 | #6 | 3 | 12'-2" | 37 |
| N2 | #6 | 3 | 11'-3" | 51 |
| N3 | #5 | 3 | 9'-11" | 41 |
| N4 | #4 | 3 | 8'-8" | 23 |
| N5 | #4 | 3 | 7'-4" | 20 |
| N6 | #6 | 3 | 12'-4" | 37 |
| N7 | #6 | 3 | 11'-9" | 53 |
| N8 | #6 | 3 | 10'-8" | 96 |
| N9 | #5 | 3 | 9'-6" | 59 |
| N10 | #5 | 3 | 8'-5" | 53 |
| N11 | #4 | 3 | 7'-4" | 29 |
| S1 | #6 | STR | 6'-0" | 54 |
| T1 | #5 | STR | 12'-6" | 39 |
| T2 | #5 | STR | 21'-9" | 68 |
| V1 | #4 | STR | 10'-1" | 13 |
| V2 | #4 | STR | 9'-2" | 12 |
| V3 | #4 | STR | 7'-11" | 11 |
| V4 | #4 | STR | 6'-7" | 9 |
| V5 | #4 | STR | 5'-4" | 7 |
| V6 | #4 | STR | 10'-4" | 14 |
| V7 | #4 | STR | 9'-9" | 13 |
| V8 | #4 | STR | 8'-8" | 17 |
| V9 | #4 | STR | 7'-6" | 15 |
| V10 | #4 | STR | 6'-5" | 13 |
| V11 | #4 | STR | 5'-3" | 11 |
| Z1 | #6 | 4 | 7'-2" | 22 |
| Z2 | #5 | 4 | 6'-5" | 20 |
| Z3 | #5 | 4 | 5'-5" | 23 |
| Z4 | #5 | 4 | 4'-5" | 18 |
| Z5 | #4 | 4 | 3'-4" | 9 |
| Z6 | #6 | 4 | 7'-4" | 22 |
| Z7 | #6 | 4 | 6'-11" | 31 |
| Z8 | #6 | 4 | 6'-1" | 55 |
| Z9 | #5 | 4 | 5'-2" | 32 |
| Z10 | #4 | 4 | 4'-2" | 17 |
| Z11 | #4 | 4 | 3'-4" | 13 |

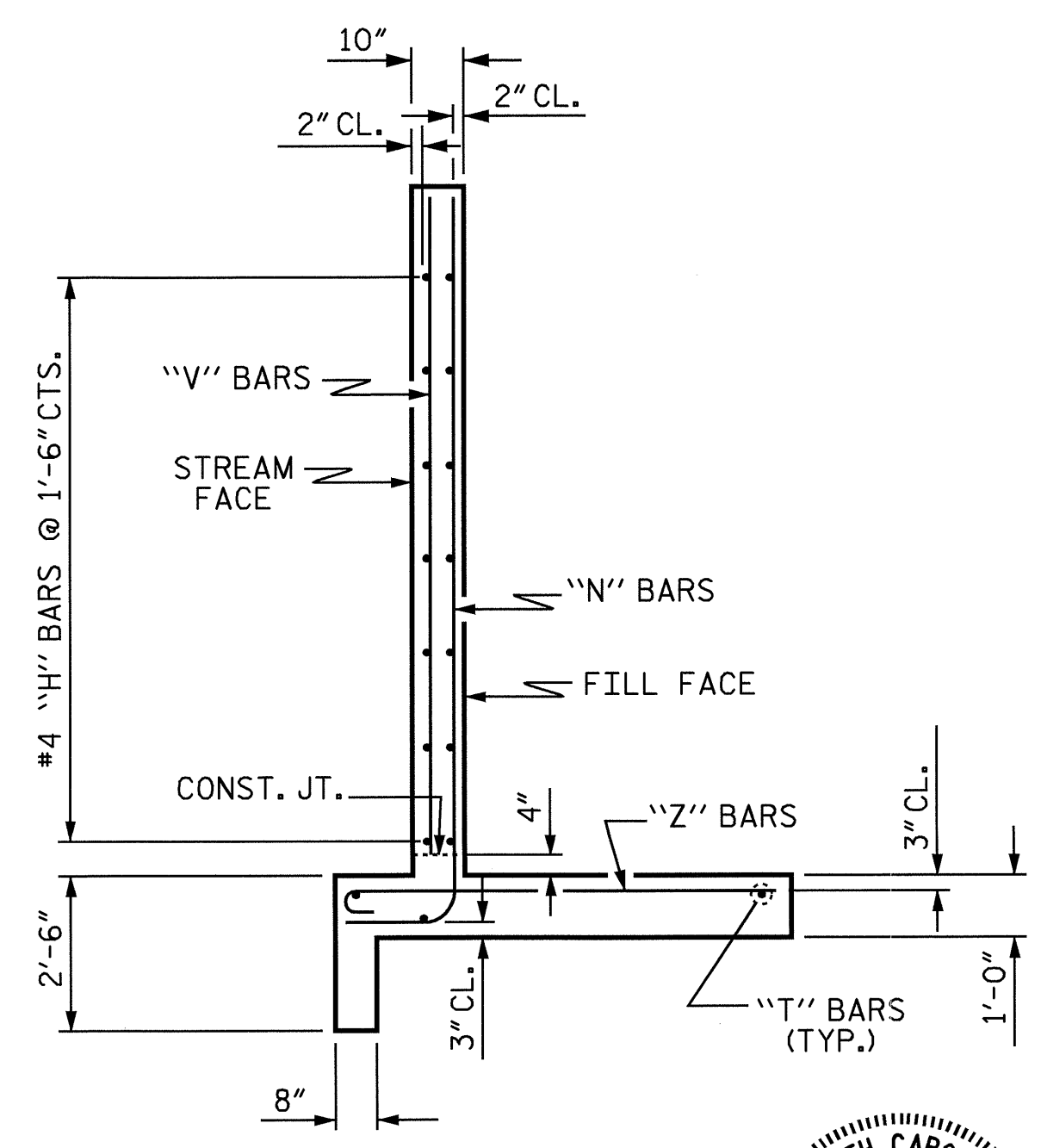
ALL BAR DIMENSIONS ARE OUT TO OUT.



ELEVATION W3



ELEVATION W4



TYPICAL WING SECTION

| | |
|--------------------|-----------|
| REINFORCING STEEL | 1392 LBS. |
| FOR 2 WINGS | |
| CLASS A CONCRETE | |
| 2 WINGS | 18.0 C.Y. |
| 1 HEADWALL | 1.0 C.Y. |
| 1 END CURTAIN WALL | 1.2 C.Y. |
| TOTAL | 20.2 C.Y. |

PROJECT NO. B-4191
MCDOWELL COUNTY
 STATION: 75+39.00 -L-

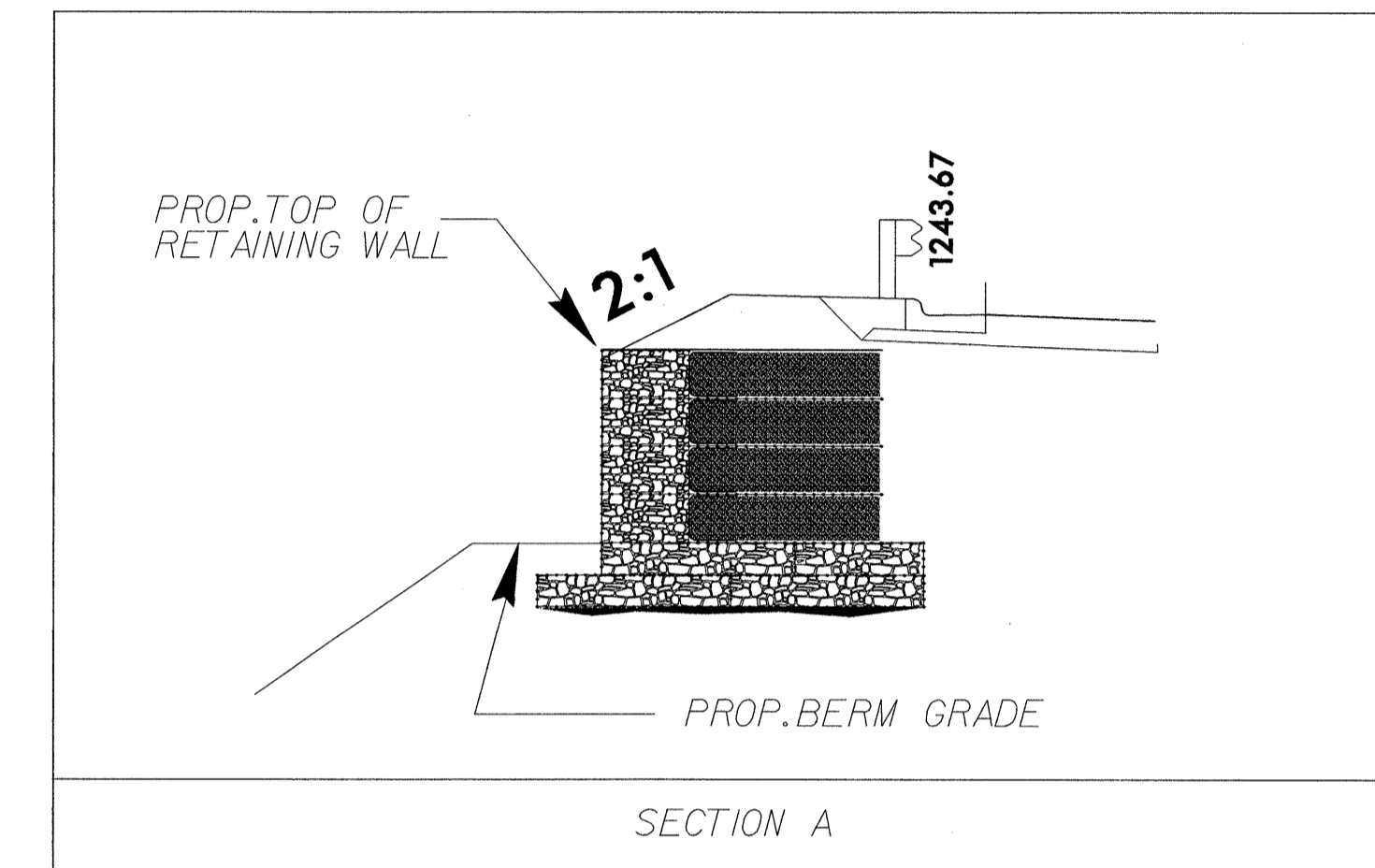
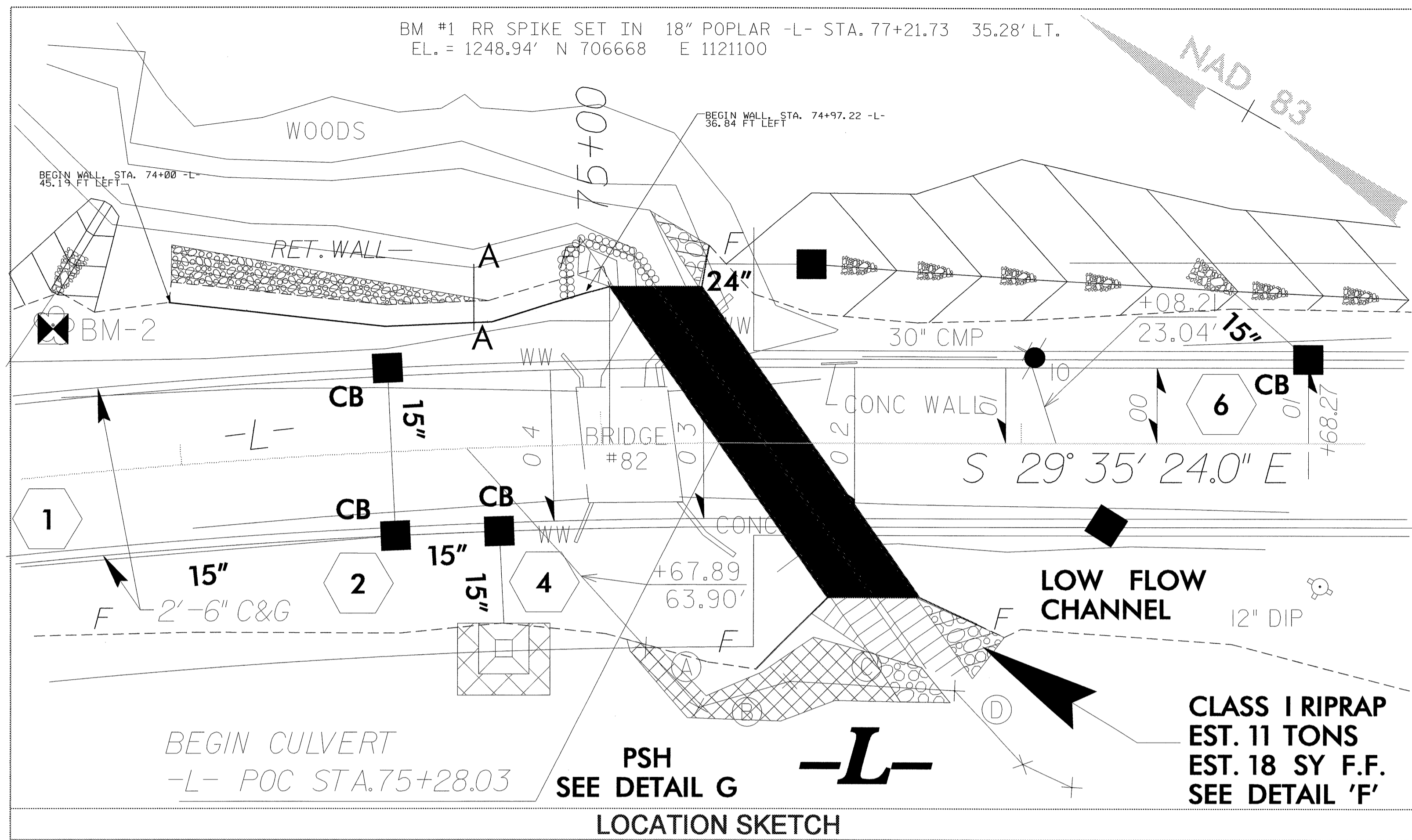
SHEET 6 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD WINGS FOR
 CONCRETE BOX CULVERT
 OUTLET END

| | |
|-----------------------------|----------------|
| ASSEMBLED BY: A.L. FIGUEROA | DATE: 03-10-09 |
| CHECKED BY: M.G. CHEEK | DATE: 04-29-09 |
| DRAWN BY: CCJ | 12/99 |
| CHECKED BY: RWW | 03/00 |

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|--------------|
| NO. | BY: | DATE: | NO. | C-6 |
| 1 | | | 3 | TOTAL SHEETS |
| 2 | | | 4 | 6 |

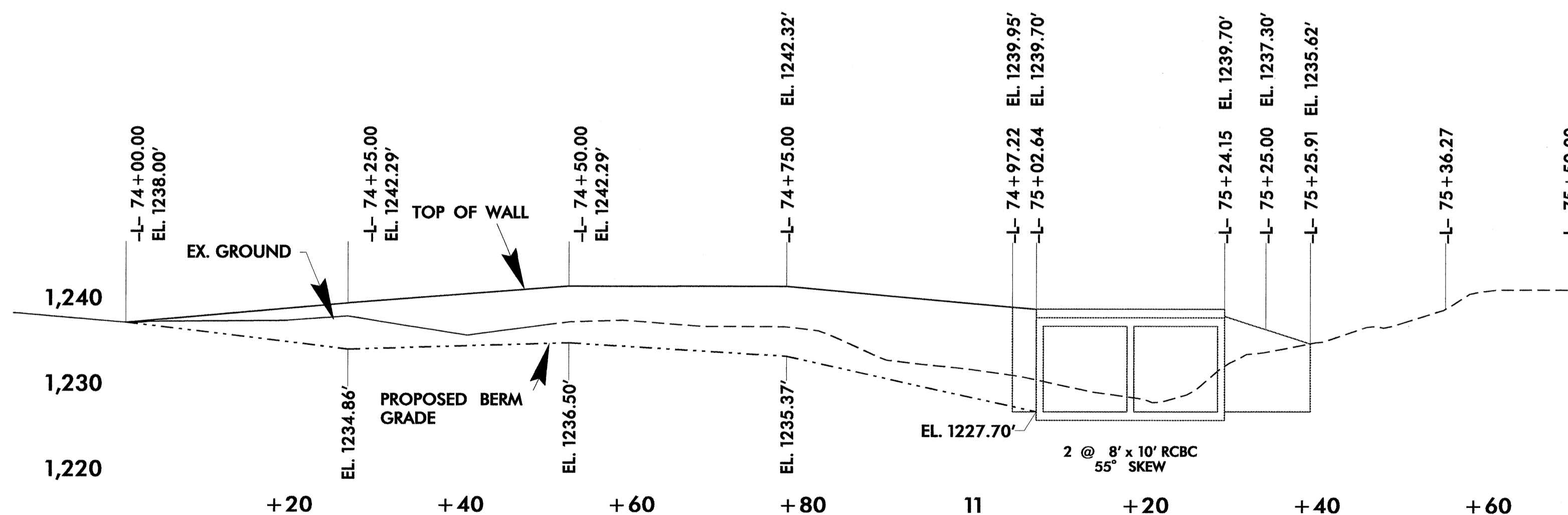




ROCK BASKET WALL ELEVATIONS

| -L- STA | OFFSET FROM C (LEFT) | ELEV @ TOP OF WALL | * PROPOSED BERM GRADE | * EXPOSED WALL HEIGHT | ** TOTAL WALL HEIGHT "H" |
|----------|----------------------|--------------------|-----------------------|-----------------------|--------------------------|
| 74+00.00 | 45.19 | 1238.00 | 1238.00 | 0.00 | 0.00 |
| 74+50.00 | 30.00 | 1242.29 | 1236.50 | 5.79 | 7.79 |
| 74+75.00 | 30.00 | 1242.32 | 1235.37 | 6.95 | 8.95 |
| 74+97.22 | 36.84 | 1239.95 | 1227.70 | 12.25 | 14.25 |

* ELEVATION @ PROPOSED BERM GRADE AND EXPOSED WALL HEIGHT DO NOT INCLUDE EMBEDMENT DEPTH
 ** INCLUDES 2 FOOT DOUBLE TWISTED WIRE MATTRESS EMBEDMENT



TOTAL STRUCTURE QUANTITIES

| | | |
|---------------------|-------|---------|
| ROCK FACED MSE WALL | 715.0 | SQ. FT. |
|---------------------|-------|---------|

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
29869
ENGINEER
STANLEY C. CLARK

Signature: *Stanley C. Clark* 6/21/9 DATE

PROJECT NO.: B-4191
McDOWELL COUNTY
STATION: -L- STA. 74+00.00 to 75+00.00
 SHEET 1 OF 2

GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

**RETAINING WALL #1
ROCK FACED MSE WALL**

| REVISIONS | | | | | | SHEET NO. |
|-----------|----|------|-----|----|------|-------------------|
| NO. | BY | DATE | NO. | BY | DATE | |
| 1 | | | 3 | | | W-1 |
| 2 | | | 4 | | | TOTAL SHEETS 2 |

PREPARED BY: J.T.W. DATE: 5.15.08
 REVIEWED BY: S.C.C. DATE: 6.18.09

NOTES:

FOR ROCK FACED MSE WALL, SEE SPECIAL PROVISION.

FOR RENO MATTRESSES, SEE RENO MATTRESS SPECIAL PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

BEFORE BEGINNING ROCK BASKET WALL CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS SHOWN ON THE WALL PROFILE VIEW (WALL ENVELOPE) AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

"TEMPORARY SHORING FOR WALL CONSTRUCTION" MAY BE REQUIRED FOR RETAINING WALL. FOR TEMPORARY SHORING FOR WALL CONSTRUCTION, DESIGN AND CONSTRUCT THE SHORING IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. NO SEPARATE PAYMENT WILL BE MADE FOR TEMPORARY SHORING FOR WALL CONSTRUCTION. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE RETAINING WALL.

THE MINIMUM EMBEDMENT ELEVATION FOR THE ROCK BASKET WALL IS 2 FEET BELOW BERM GRADE.

WHERE THE ROCK FACED MSE WALL MEETS THE CULVERT WINGWALL, TURN THE TYPE 1 ENGINEERING FABRIC PERPENDICULAR TO THE WING WALL AND EXTEND THE FABRIC 3 FEET INTO THE REINFORCED ZONE, TYPICAL FOR EACH REINFORCED LAYER

THE MINIMUM REINFORCEMENT LENGTH IS 6.8 FEET BEHIND THE ROCK FACING.

RENO MATTRESSES SHALL BE CONSTRUCTED ACCORDING THE SPECIAL PROVISION.

BACKFILL REINFORCEMENT SHALL HAVE A LONG-TERM DESIGN TENSILE STRENGTH OF 2,900 LB/FT (COVERAGE RATIO=100%).

MINIMUM SERVICE LIFE = 75 YEARS

ALLOWABLE BEARING CAPACITY = 1000 PSF

IN-SITU ASSUMED MATERIAL PARAMETERS:

| MATERIAL TYPE | UNIT WEIGHT (GAMMA) PCF | FRICTION ANGLE (PHI) DEGREES | COHESION (C) PSF |
|---------------|-------------------------|------------------------------|------------------|
| BACKFILL | 120 | 32 | 0 |
| FOUNDATION | 120 | 28 | 0 |

DO NOT PLACE RENO MATTRESSES FOR RETAINING WALL NO. 1 UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

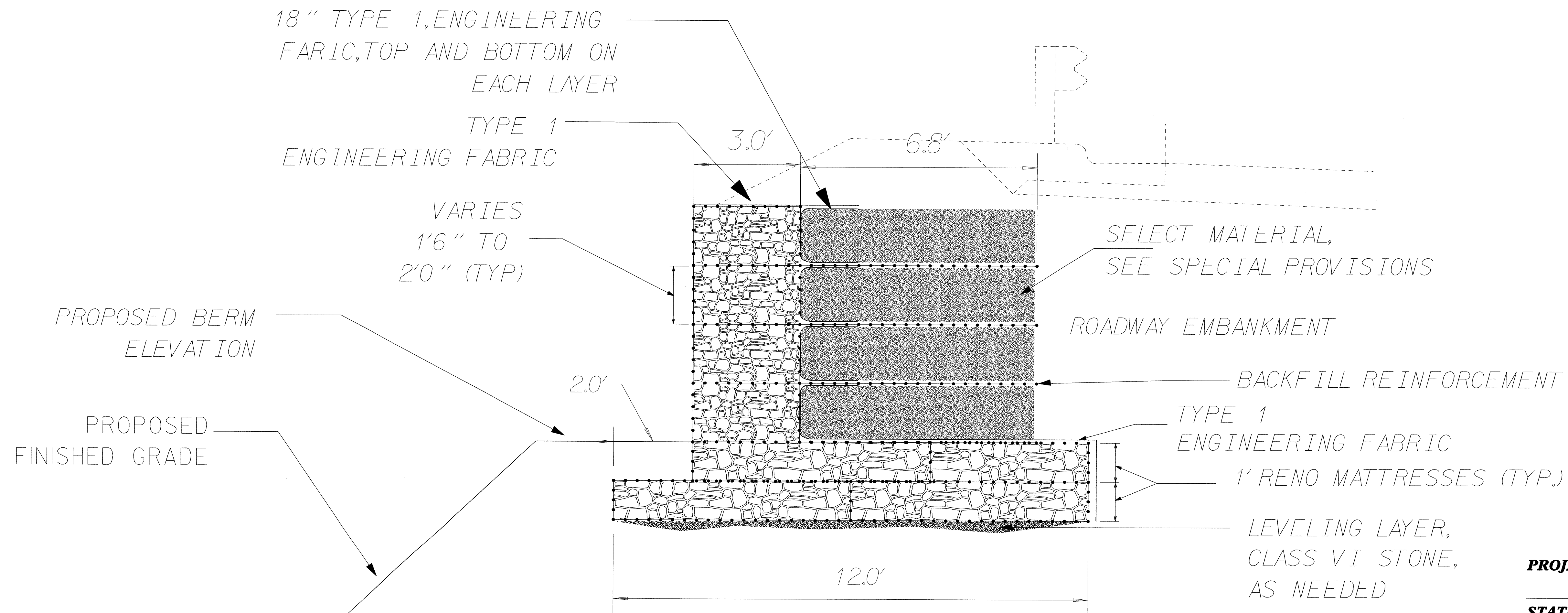
GEOTECHNICAL ENGINEER

ENGINEER



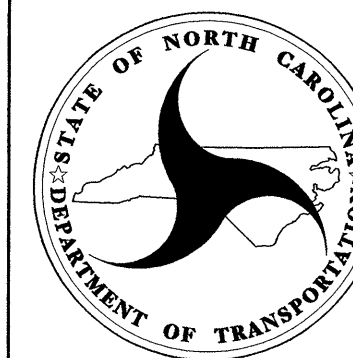
Signature: [Handwritten Signature] DATE: 6/18/09

SIGNATURE DATE



PROJECT NO.: B-4191
McDOWELL COUNTY
STATION: -L- STA. 74+00.00 to 75+00.00
 SHEET 2 OF 2

GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE



**RETAINING WALL #1
ROCK FACED MSE
WALL DETAILS**

| REVISIONS | | | | | | SHEET NO. W-2 TOTAL SHEETS 2 |
|-----------|----|------|-----|----|------|---------------------------------------|
| NO. | BY | DATE | NO. | BY | DATE | |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

STANDARD NOTES

DESIGN DATA:

| | | |
|---|-------|-------------------------|
| SPECIFICATIONS | ----- | A.A.S.H.T.O. (CURRENT) |
| LIVE LOAD | ----- | SEE PLANS |
| IMPACT ALLOWANCE | ----- | SEE A.A.S.H.T.O. |
| STRESS IN EXTREME FIBER OF | | |
| STRUCTURAL STEEL - AASHTO M270 GRADE 36 | - | 20,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50W | - | 27,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50 | - | 27,000 LBS. PER SQ. IN. |
| REINFORCING STEEL IN TENSION | | |
| GRADE 60 | -- | 24,000 LBS. PER SQ. IN. |
| CONCRETE IN COMPRESSION | | |
| ----- | ----- | 1,200 LBS. PER SQ. IN. |
| CONCRETE IN SHEAR | | |
| ----- | ----- | SEE A.A.S.H.T.O. |
| STRUCTURAL TIMBER - TREATED OR | | |
| UNTREATED - EXTREME FIBER STRESS | ----- | 1,800 LBS. PER SQ. IN. |
| COMPRESSION PERPENDICULAR TO GRAIN | | |
| OF TIMBER | ----- | 375 LBS. PER SQ. IN. |
| EQUIVALENT FLUID PRESSURE OF EARTH | | |
| ----- | ----- | 30 LBS. PER CU. FT. |
| | | (MINIMUM) |

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN