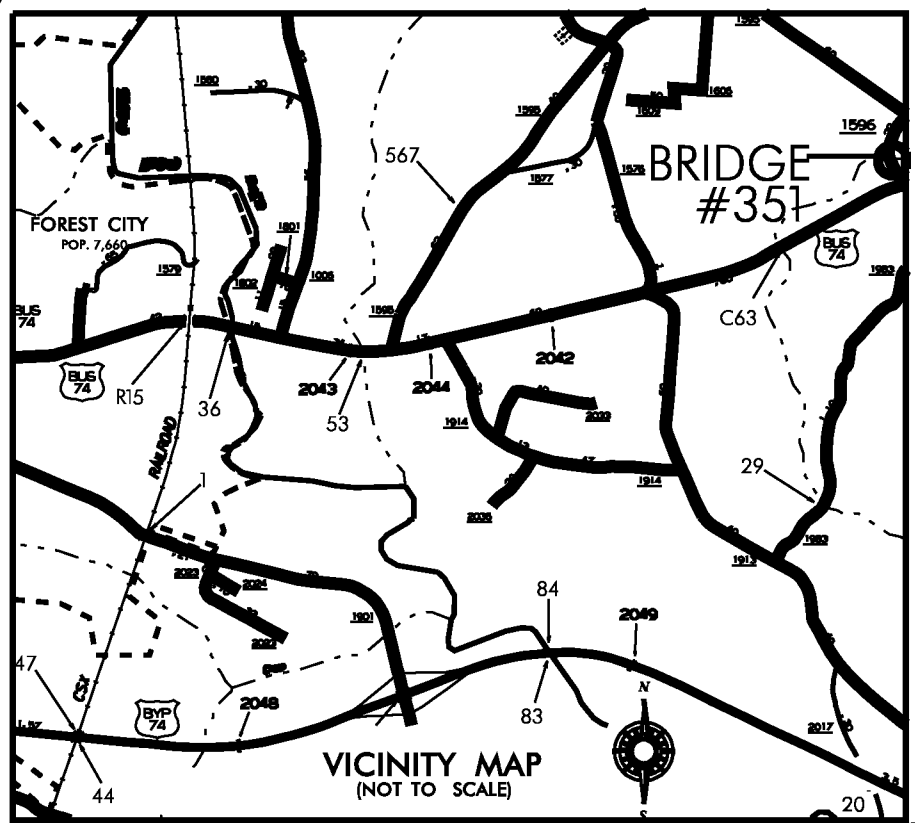


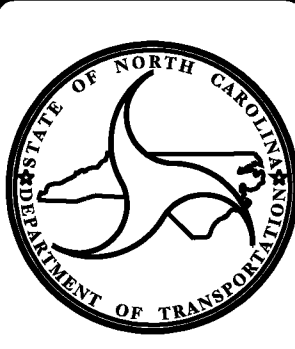
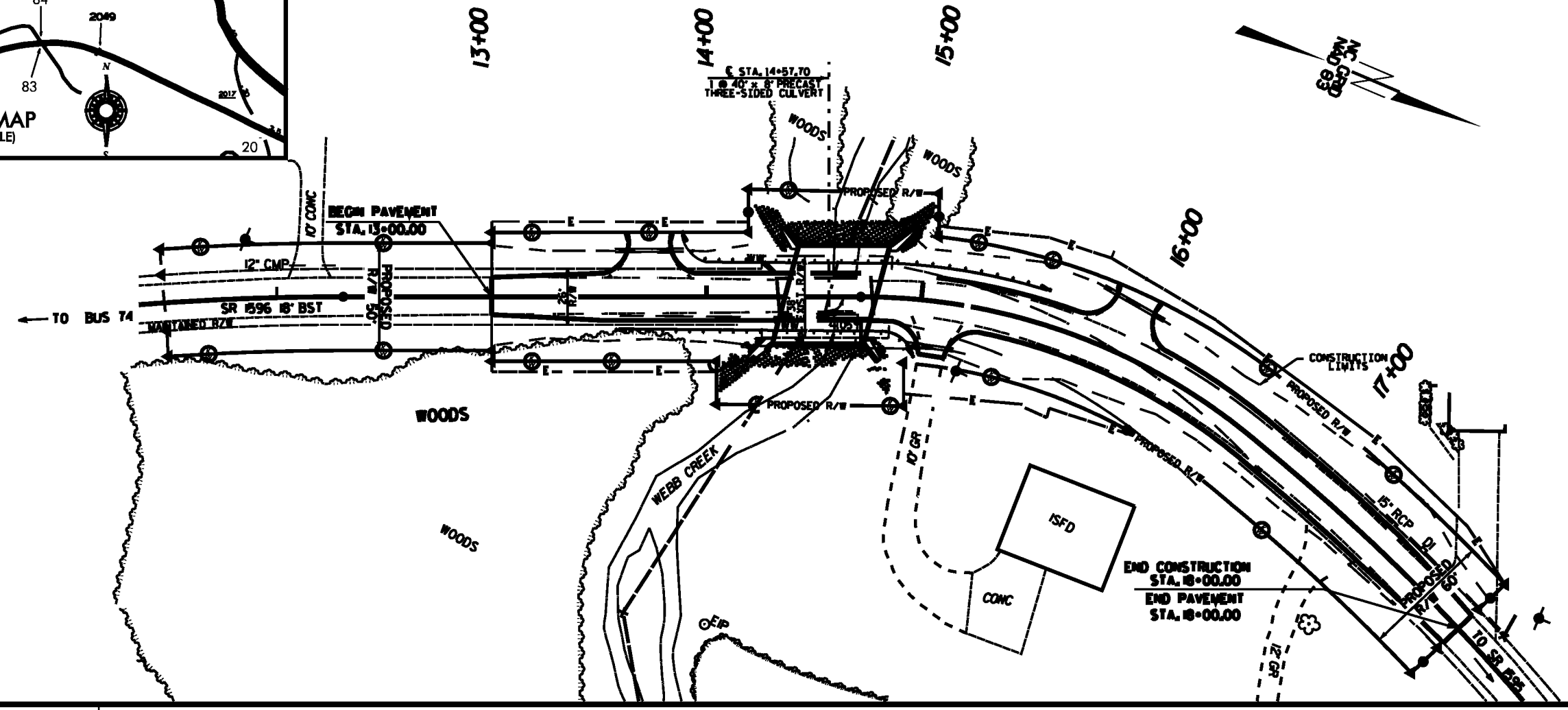
WBS: 33606.1.1 TIP PROJECT: B-4264



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RUTHERFORD COUNTY

STATE	STATE PROJECT NUMBER	TITLE
N.C.	B-4264	
STATE PROJECT NO.	S.A. NUMBER	DESCRIPTION
33606.1.1		P.E.

LOCATION: SR 1596 BRIDGE NO. 351 OVER WEBB CREEK
TYPE OF WORK: BRIDGE REPLACEMENT WITH REINFORCED CONCRETE CULVERT



DESIGN DATA

ADT 2005 = 580

FUTURE ADT 2025 = 1200

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT = 0.095 MILE

LENGTH STRUCTURE TIP PROJECT = 0.018 MILE

TOTAL LENGTH TIP PROJECT = 0.095 MILE

Prepared in the Office of:
BRIDGE MANAGEMENT UNIT
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2006 STANDARD SPECIFICATIONS

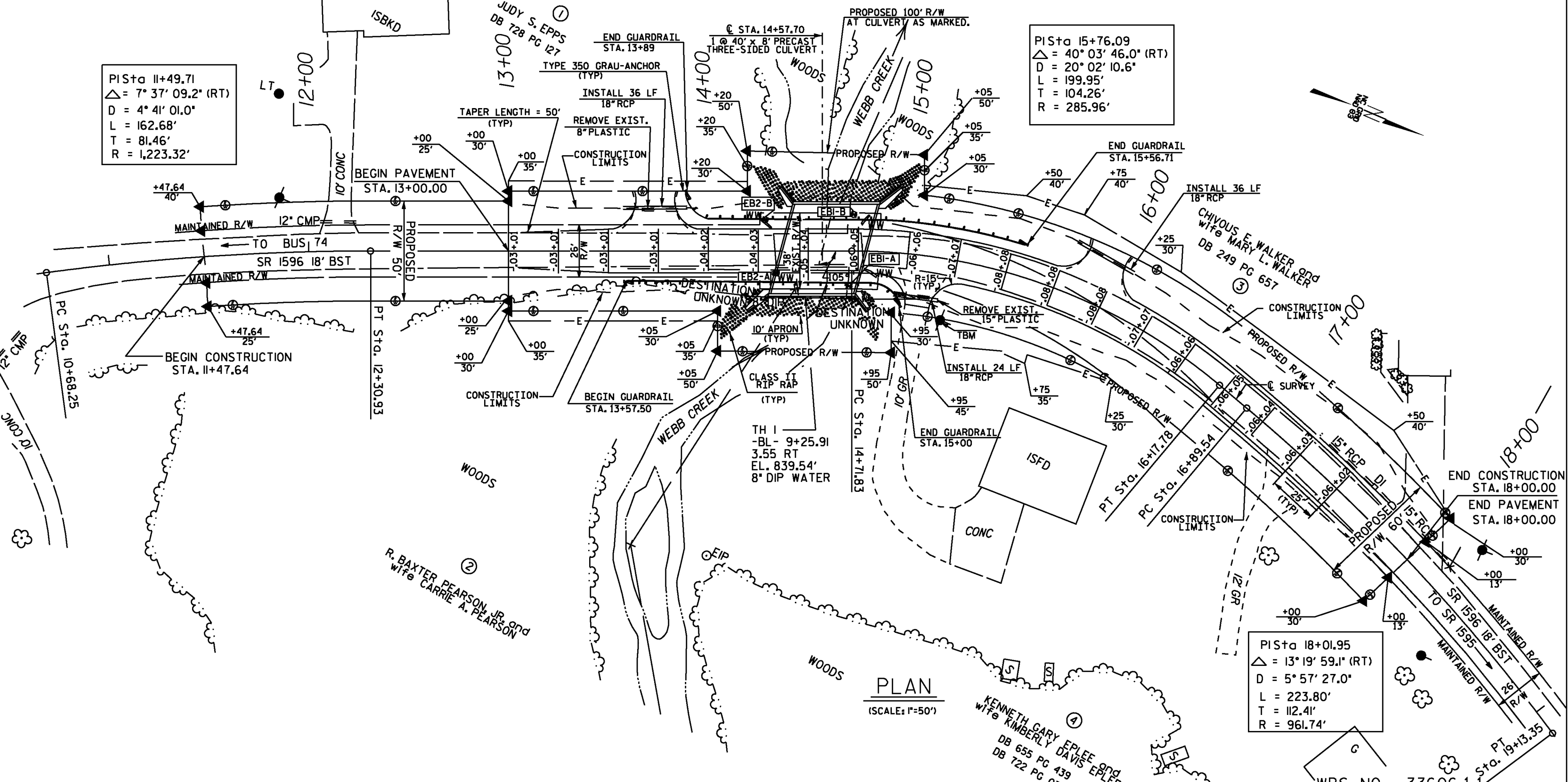
LETTING DATE:
11-18-2009

DAN HOLDERMAN, PE
STATE BRIDGE MANAGEMENT ENGINEER

MIKE SUMMERS
BRIDGE MANAGEMENT PROJECT MANAGER

RICK NELSON, PE
DESIGN ENGINEER

COUNTY: RUTHERFORD #351 WBS. #33606



PISt+0 11+49.71
 $\Delta = 7^{\circ} 37' 09.2''$ (RT)
 D = 4' 4" 01.0'
 L = 162.68'
 T = 81.46'
 R = 1,223.32'

PISt+0 15+76.09
 $\Delta = 40^{\circ} 03' 46.0''$ (RT)
 D = 20' 02" 10.6"
 L = 199.95'
 T = 104.26'
 R = 285.96'

PISt+0 18+01.95
 $\Delta = 13^{\circ} 19' 59.1''$ (RT)
 D = 5' 57" 27.0"
 L = 223.80'
 T = 112.41'
 R = 961.74'

PLAN
 (SCALE: 1"=50')

OWNER	CONSTRUCTION EASEMENT	RIGHT OF WAY
JUDY S.EPPS	0.0135 ACRES	0.1304 ACRES
R.BAXTER PEARSON, JR. and wife CARRIE A. PEARSON	0.0135 ACRES	0.1304 ACRES
CHIVOUS E.WALKER and wife MARY L.WALKER	0.0461 ACRES	0.1533 ACRES
KENNETH GARY EPLEE and wife KIMBERLY DAVIS EPLEE	0.0222 ACRES	0.1648 ACRES

EXISTING BRIDGE INFO
 O.A.L. = 44.9', CL RDWY = 17.2'
 TIMBER DECK W/ STEEL I-BEAMS
 ON 30' SPAN
 TIMBER BEAMS ON 15' SPAN,
 MASONRY ABUTMENTS AND WINGWALLS
 TIMBER BENT CAPS ON TIMBER PILES

NOTE
 TBM ELE=851.434

WBS. NO. 33606.1.1
 COUNTY: RUTHERFORD
 STATION: 14+72.54-L-
 REPLACES BRIDGE NO.351

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
 #351 ON SR 1596 OVER
 WEBB CREEK

REVISIONS						SHEET NO. 1
NO.	BY	DATE	NO.	BY	DATE	
1			2			TOTAL SHEETS 6
2			4			

NOTES

- 1) ASSUMED LIVE LOAD = HS20-44 OR ALTERNATE LOADING.
- 2) DESIGN FILL = 2.5 FT.
- 3) ALL REINFORCING STEEL SHALL BE GRADE 60.
- 4) THE ENGINEER SHALL CHECK THE LENGTH OF THE CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.
- 5) THE REQUIRED BEARING CAPACITY OF THE CONTINUOUS SPREAD FOOTING AT THE END BENTS IS 5 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED PRIOR TO PLACING CONCRETE.
- 6) TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTING SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.
- 7) FOOTINGS SHALL BE KEYED A MINIMUM OF 12 INCHES INTO ROCK WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.
- 8) THE SCOUR CRITICAL ELEVATION IS THE AS BUILT BOTTOM OF FOOTING ELEVATION. BRIDGE MAINTENANCE FORCES USE THE SCOUR CRITICAL ELEVATIONS TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- 9) FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-II OF THE STANDARD SPECIFICATIONS.
- 10) THE BOTTOM OF FOOTING ELEVATION SHALL BE LOWERED TO SATISFY BEARING CAPACITY AND MINIMUM ROCK EMBEDMENT REQUIREMENTS.
- 11) THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES," MAY 2001.
- 12) PRECAST CULVERT TO BE DESIGNED BY A NORTH CAROLINA REGISTERED ENGINEER IN ACCORDANCE WITH APPLICABLE PORTIONS OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO. CONSTRUCTION SHALL MEET THE APPLICABLE SECTIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2002.

- 13) FOR PRECAST THREE-SIDED CULVERT, SEE SPECIAL PROVISIONS.
- 14) REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- 15) THE ENTIRE COST OF THE WORK REQUIRED TO CONSTRUCT PRECAST CULVERT INCLUDING HEADWALLS AND WINGS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR PRECAST THREE-SIDED CULVERT.
- 16) NO PRECAST WING OR HEADWALL OPTION WILL BE ALLOWED.
- 17) INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT WILL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF EXISTING STRUCTURE.
- 18) ADT 1200 FOR YEAR 2025.

19) THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED IN TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE.

PLAIN RIP RAP CLASS II (2'-0" THICK)
 UPSTREAM = 100 TONS
 DOWNSTREAM = 150 TONS
 TOTAL = 250 TONS

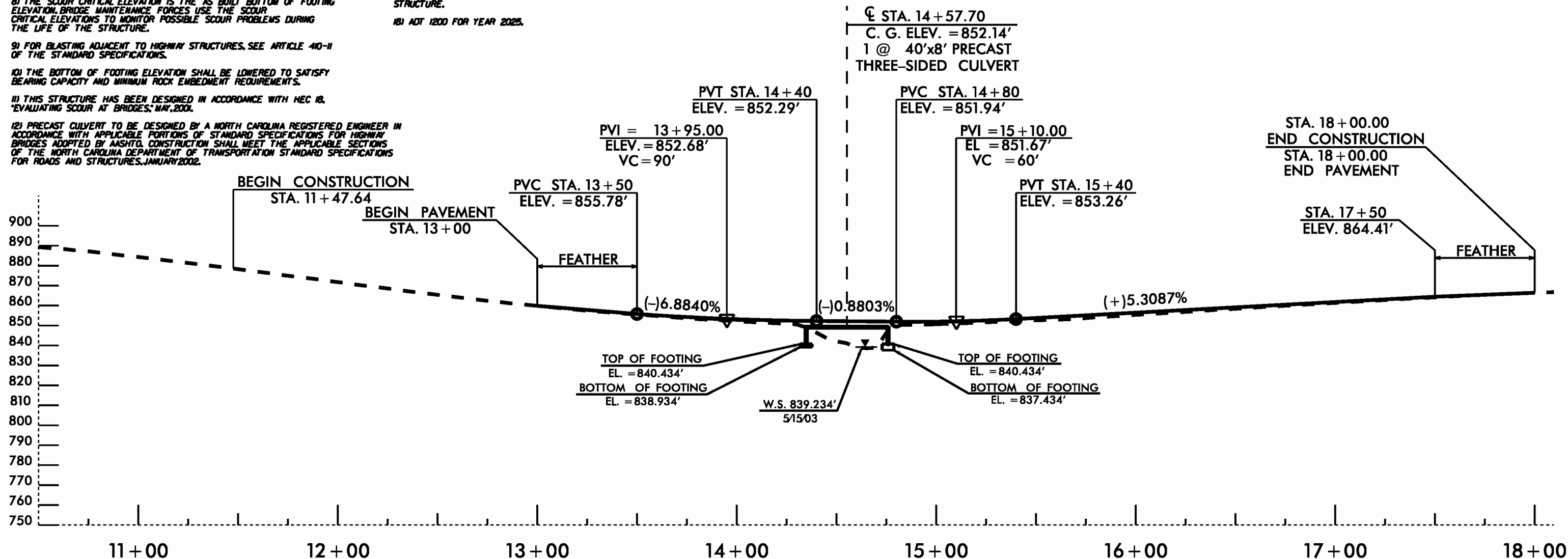
● DENOTES GEO-TECH BORING HOLE LOCATIONS (SEE SHEET 1).

HYDRAULIC DATA

DRAINAGE AREA = 3.6 SQ.MI.
 BASIC DISCHARGE (1025) = 1400 CFS
 BASIC DISCHARGE (1000) = 1800 CFS

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 2500 CFS
 FREQUENCY OF OVERTOPPING FLOOD = 500 YEARS
 OVERTOPPING FLOOD ELEVATION = 850.334'



PROFILE ALONG C SURVEY

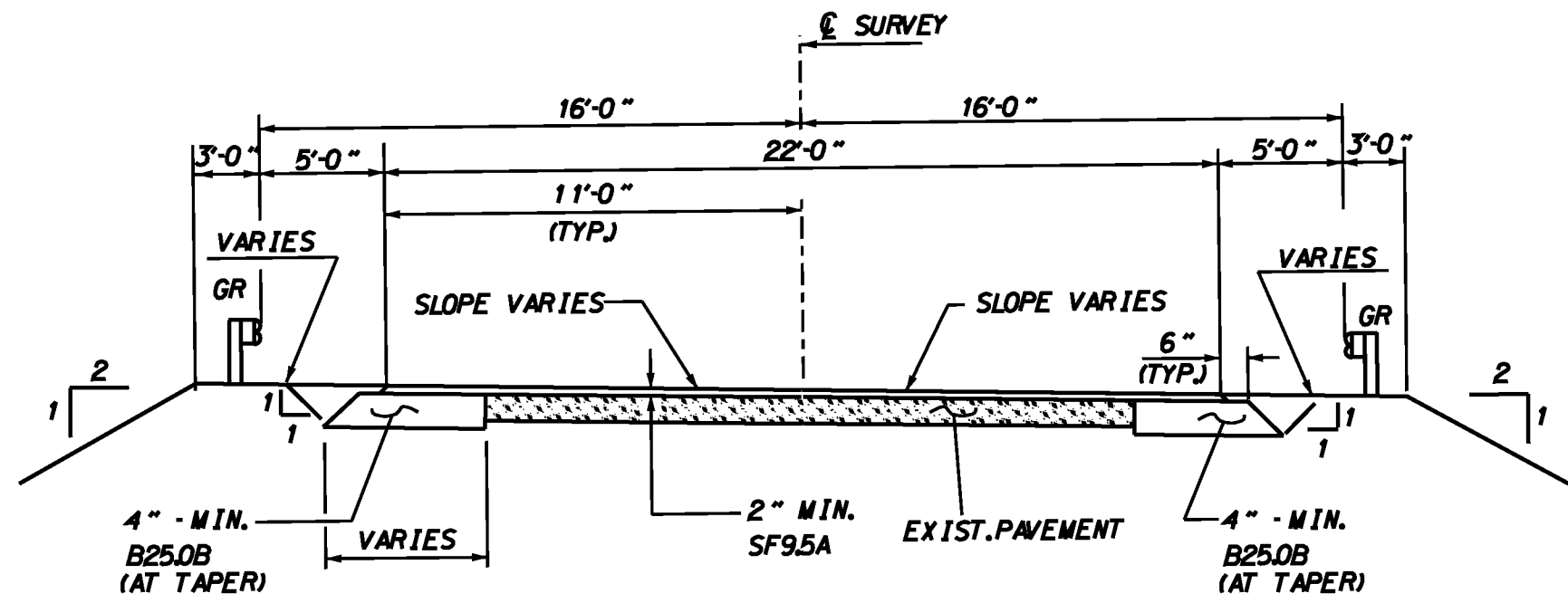
SCALE: 1" = 50'

WBS NO. 33606.1.1
 COUNTY: RUTHERFORD
 STATION: 14+57.70
 REPLACES BRIDGE NO. 351

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE NO. 351 ON SR 1596
 OVER WEBB CREEK

DRAWN BY: P. BYRD DATE: JAN. 2007
 CHECK BY: J. YANNACCONE DATE: JAN. 2007

REVISIONS						NO. 2
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			6
2			4			



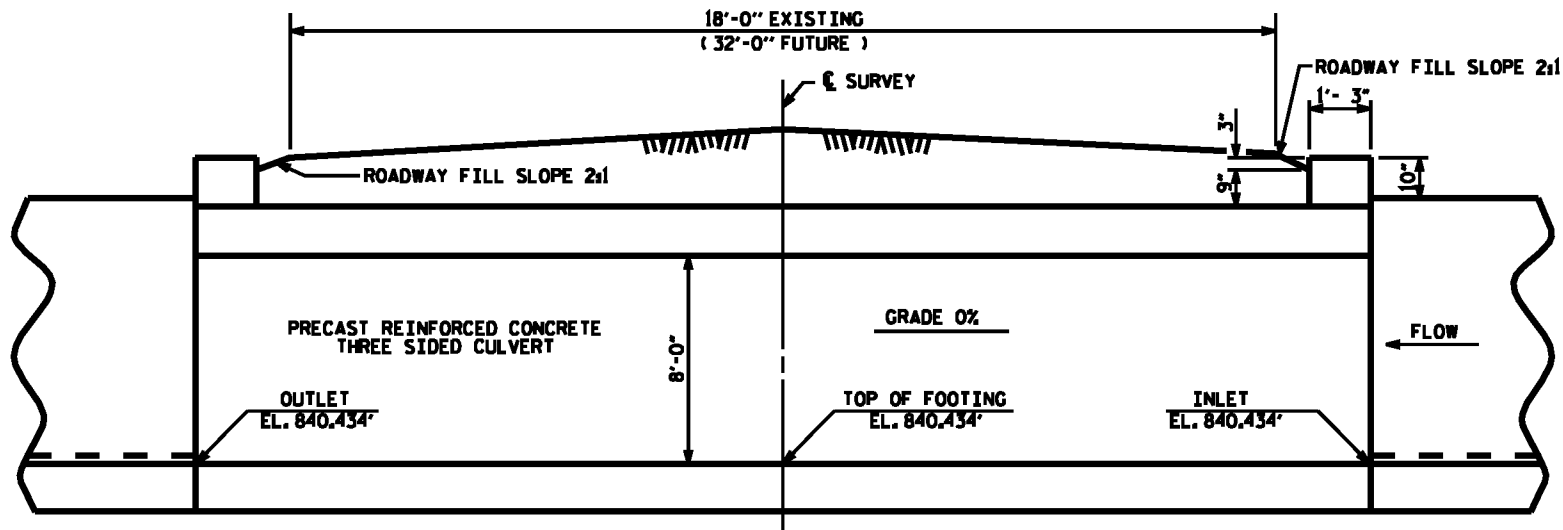
TYPICAL ROADWAY SECTION
(BEYOND 50' TAPER)

WBS. NO. 33606.1.1
 COUNTY: RUTHERFORD
 STATION: 14+57.70
 BRIDGE NO. 351

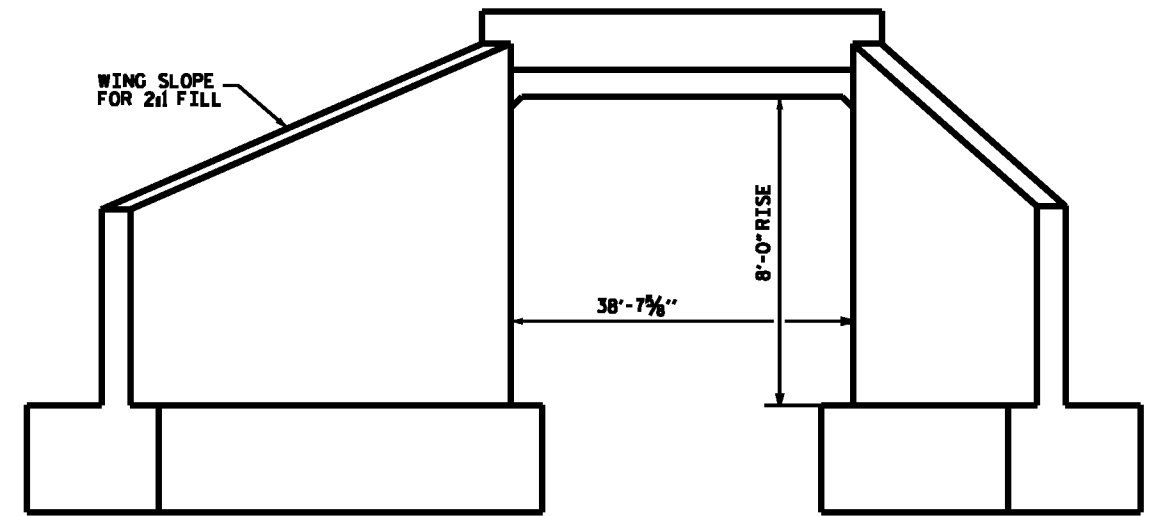
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION
**TYPICAL
 ROADWAY SECTION**

REVISIONS						NO.
NO.	BY	DATE	NO.	BY	DATE	
1			2			3
2			4			6

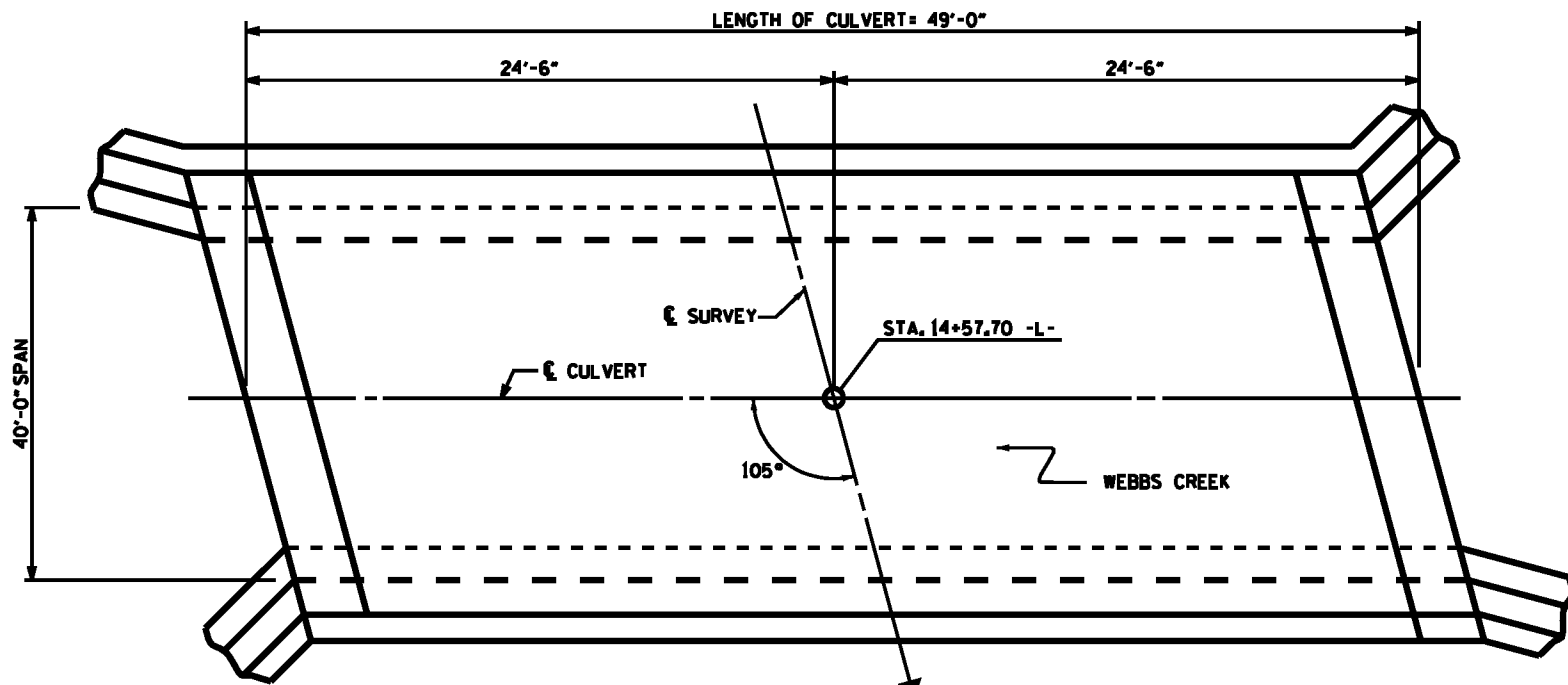
DRAWN BY : S. T. SANDOR DATE : JUNE/2008
 CHECKED BY : DATE :



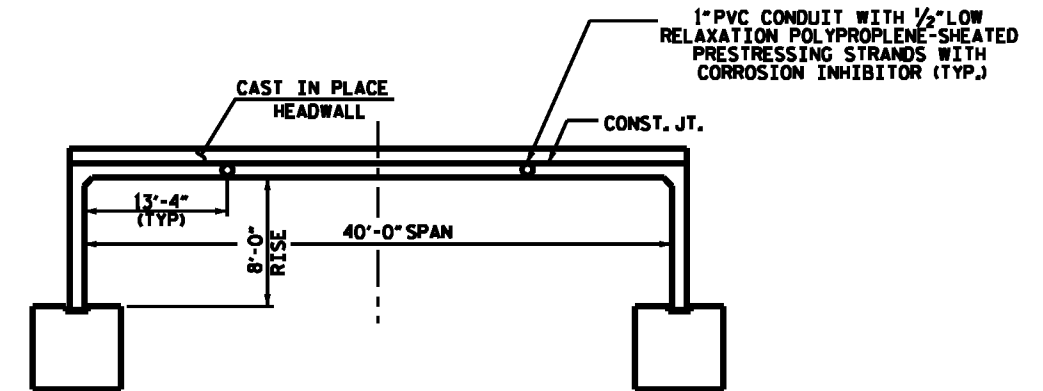
CULVERT SECTION NORMAL TO ROADWAY



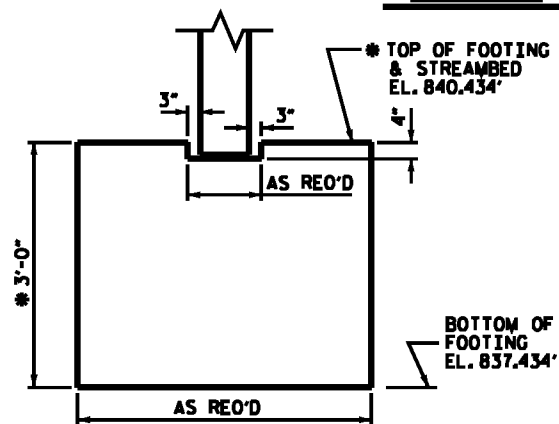
END ELEVATION NORMAL TO SKEW



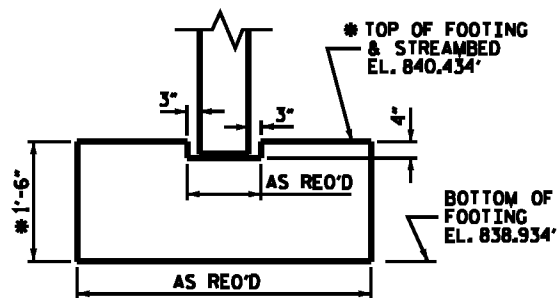
PLAN



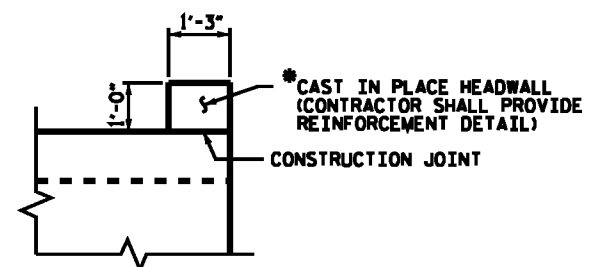
RIGHT ANGLE SECTION OF PRECAST CONCRETE THREE-SIDED CULVERT



FOOTING DETAIL (NORTH END)



FOOTING DETAIL (SOUTH END)



SECTION THRU HEADWALL

* ALL REINFORCING STEEL IN HEADWALLS SHALL BE EPOXY COATED.

**WBS. NO. 33606.1.1
RUTHERFORD COUNTY
STATION 14+57.70
REPLACES BRIDGE NO. 351**

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH**

**40' x 8'
PRECAST REINFORCED CONCRETE
THREE SIDED CULVERT
105° SKEW**

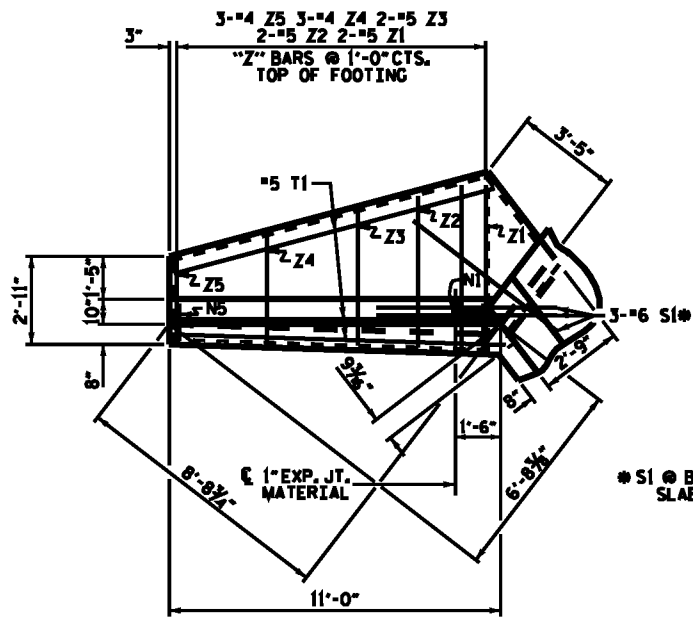
REVISIONS				DATE
NO.	BY	DATE	NO.	BY
1			2	
2			4	

**4
6**

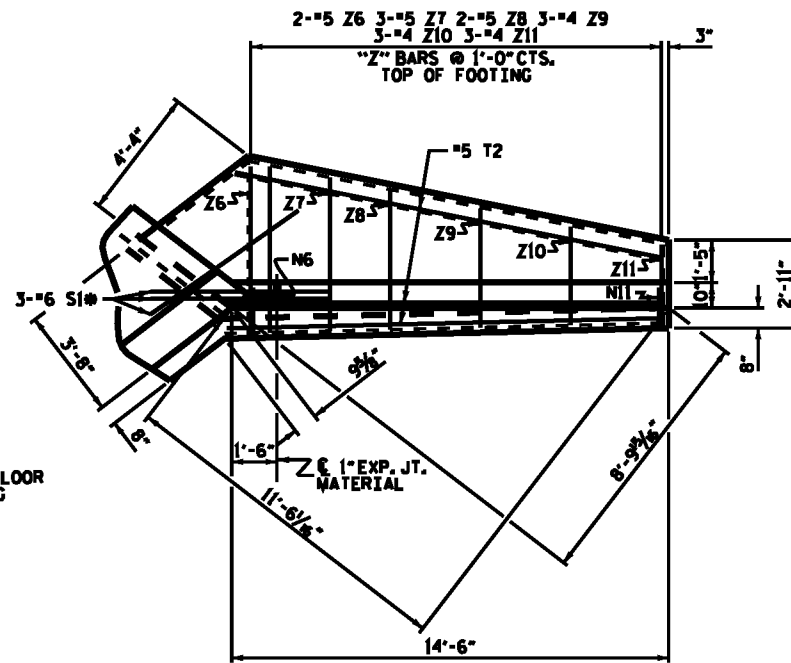
**DRAWN BY : S. T. SANDOR DATE : SEPT./2009
CHECKED BY : Z. WAFA DATE : SEPT./2009**

* SEE NOTE #10, SHEET 2

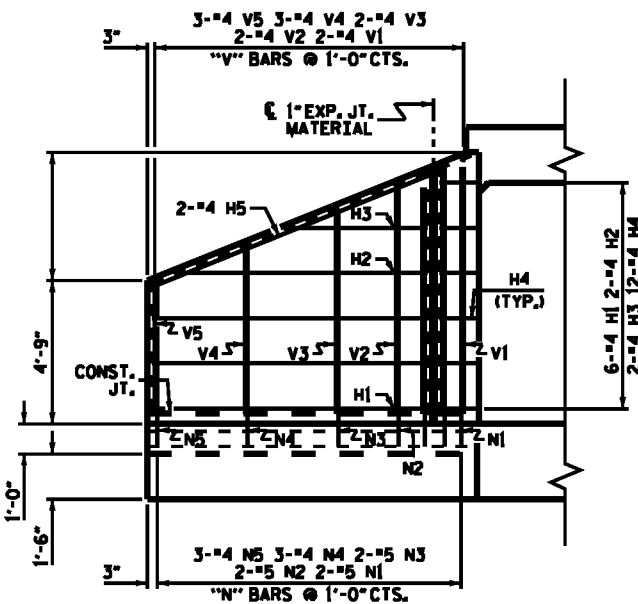
* SEE NOTE #10, SHEET 2



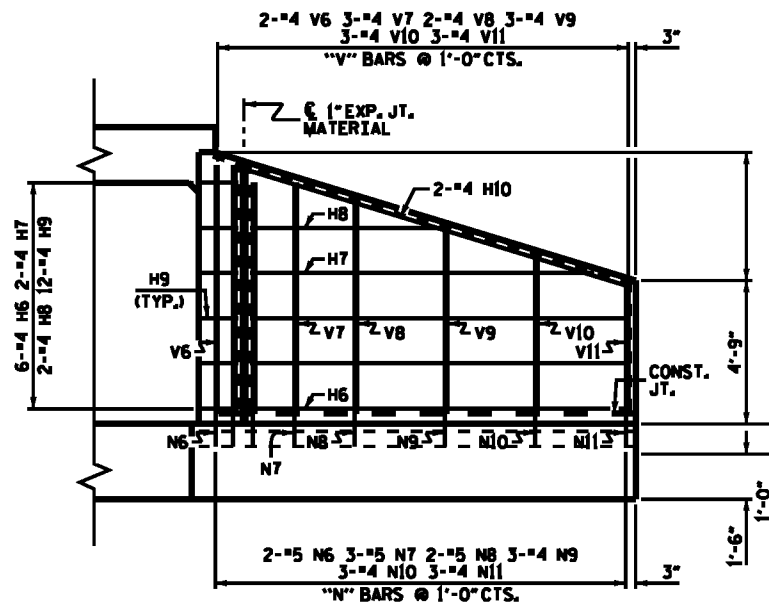
PLAN W2



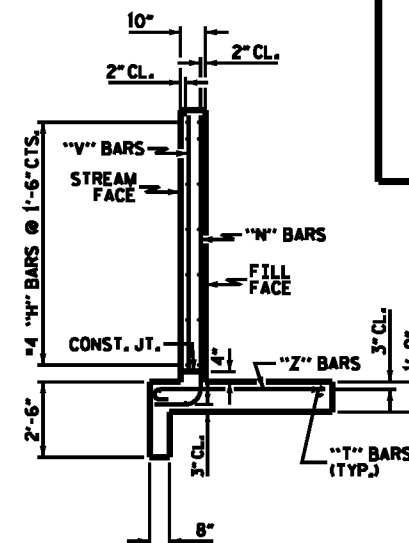
PLAN W1



ELEVATION W2



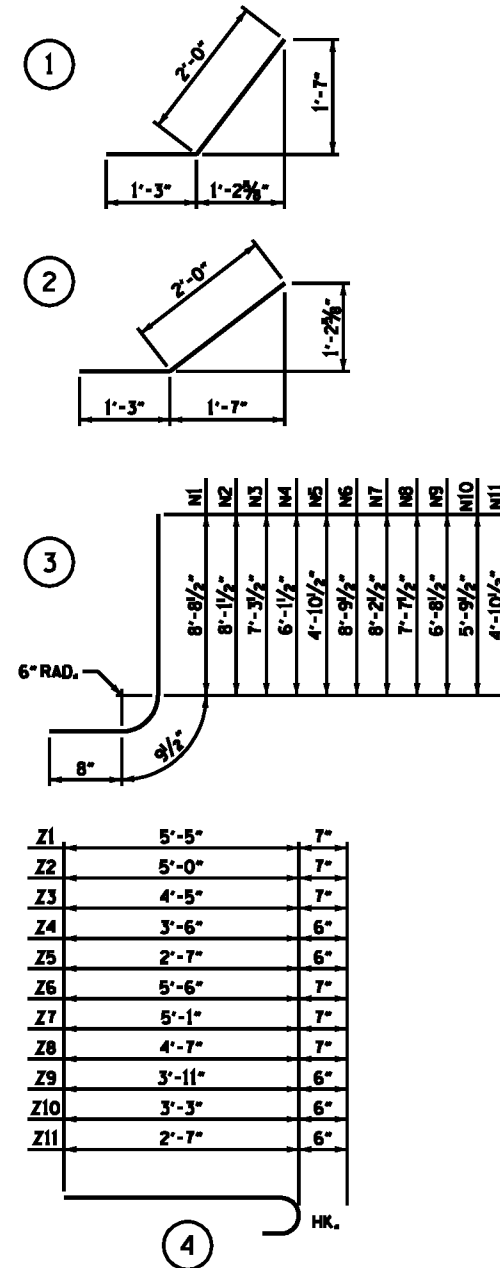
ELEVATION W1



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



Z1	5'-5"	7"
Z2	5'-0"	7"
Z3	4'-5"	7"
Z4	3'-6"	6"
Z5	2'-7"	6"
Z6	5'-6"	7"
Z7	5'-1"	7"
Z8	4'-7"	7"
Z9	3'-11"	6"
Z10	3'-3"	6"
Z11	2'-7"	6"

BILL OF MATERIAL

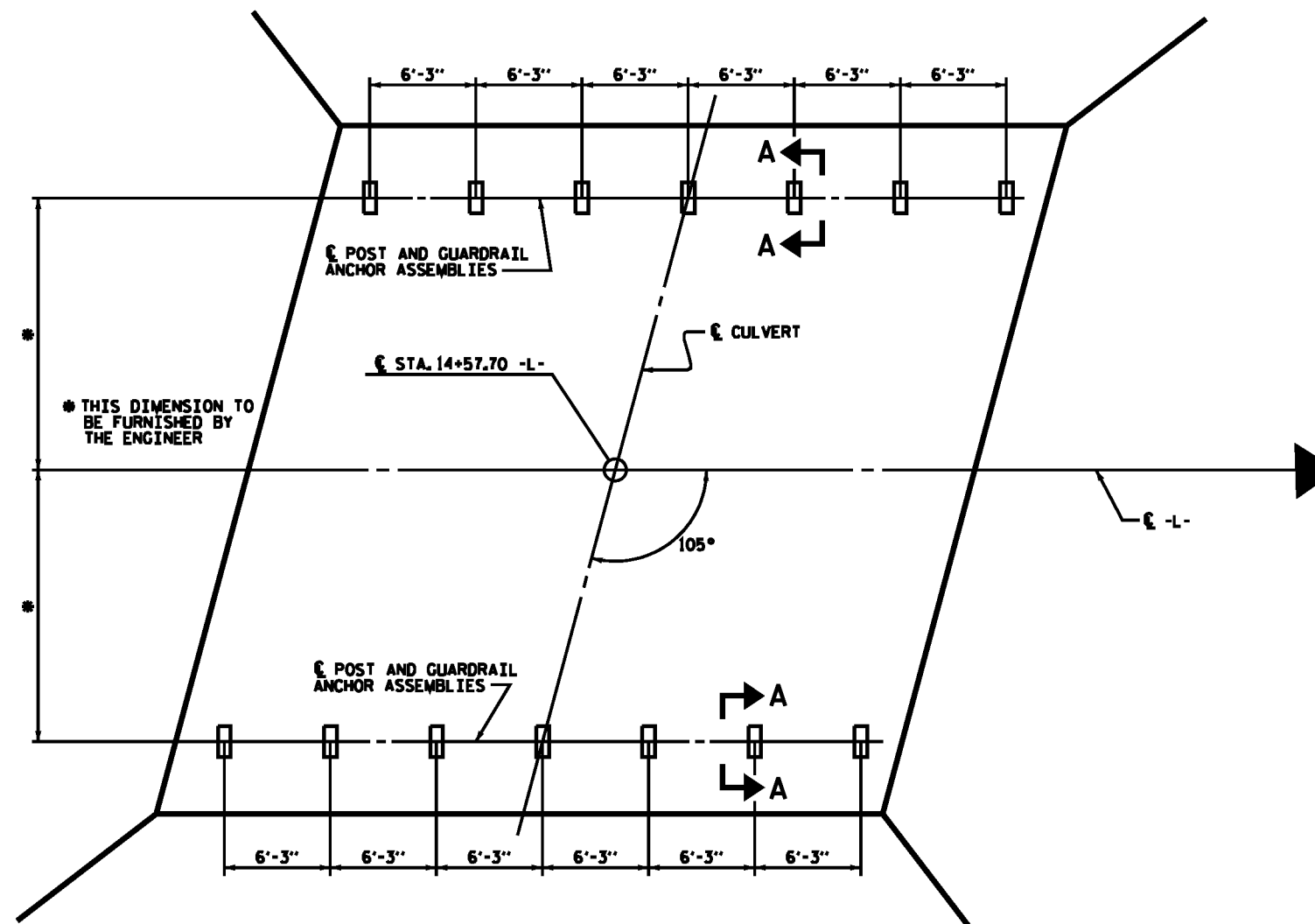
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR 9'-1"	73
H2	4	#4	STR 8'-2"	22
H3	4	#4	STR 4'-5"	12
H4	24	#4	1 3'-3"	52
H5	4	#4	STR 9'-10"	26
H6	12	#4	STR 12'-7"	101
H7	4	#4	STR 11'-4"	30
H8	4	#4	STR 6'-5"	17
H9	24	#4	2 3'-3"	52
H10	4	#4	STR 13'-2"	35
N1	4	#5	3 10'-2"	42
N2	4	#5	3 9'-7"	40
N3	4	#5	3 8'-9"	37
N4	6	#4	3 7'-7"	30
N5	6	#4	3 6'-4"	25
N6	4	#5	3 10'-3"	43
N7	6	#5	3 9'-8"	60
N8	4	#5	3 9'-1"	38
N9	6	#4	3 8'-2"	33
N10	6	#4	3 7'-3"	29
N11	6	#4	3 6'-4"	25
S1	12	#6	STR 6'-0"	108
T1	6	#5	STR 11'-0"	69
T2	6	#5	STR 14'-6"	91
V1	4	#4	STR 8'-2"	22
V2	4	#4	STR 7'-6"	20
V3	4	#4	STR 6'-9"	18
V4	6	#4	STR 5'-6"	22
V5	6	#4	STR 4'-4"	17
V6	4	#4	STR 8'-3"	22
V7	6	#4	STR 7'-8"	31
V8	4	#4	STR 7'-0"	19
V9	6	#4	STR 6'-1"	24
V10	6	#4	STR 5'-2"	21
V11	6	#4	STR 4'-3"	17
Z1	4	#5	4 6'-0"	25
Z2	4	#5	4 5'-7"	23
Z3	4	#5	4 5'-0"	21
Z4	6	#4	4 4'-0"	16
Z5	6	#4	4 3'-1"	12
Z6	4	#5	4 6'-1"	25
Z7	6	#5	4 5'-8"	35
Z8	4	#5	4 5'-2"	22
Z9	6	#4	4 4'-5"	18
Z10	6	#4	4 3'-9"	15
Z11	6	#4	4 3'-1"	12
REINFORCING STEEL FOR 4 WINGS				1547 LBS
CLASS A CONCRETE				
4 WINGS				22.6 CY
2 HEADWALLS				4.6 CY
2 END CURTAIN WALLS				CY
TOTAL				27.2 CY

WBS. NO. 33606.1.1
 RUTHERFORD COUNTY
 STATION: 14+57.70
 REPLACES BRIDGE #351

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 BALDWIN
STANDARD WINGS FOR CONCRETE BOX CULVERT
 H = 8'-0" SLOPE = 2:1
 75° OR 105° SKEW

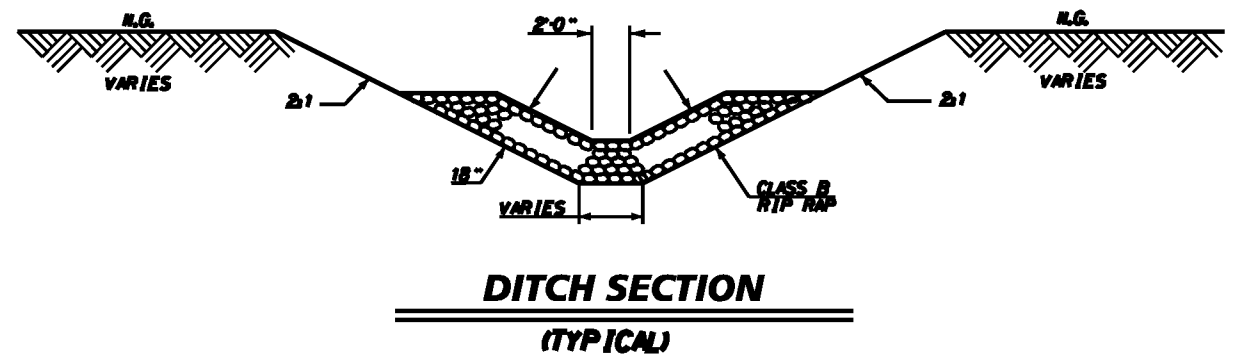
ASSEMBLED BY: PHIBBYRD DATE: Sep-08
 CHECKED BY: Z. WAFI DATE: Sep-09
 DRAWN BY: CCJ 01/00
 CHECKED BY: RWW 03/00

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			5		
			6		



**PLAN OF PRECAST CULVERT
GUARDRAIL POST SPACING**

NOTE: GUARDRAIL POSTS PLACEMENT AS SHOWN. GUARDRAIL POSTS AND THREADED ANCHOR RODS MUST CLEAR ALL JOINTS OF PRECAST CONCRETE CULVERT UNITS.



**DITCH SECTION
(TYPICAL)**

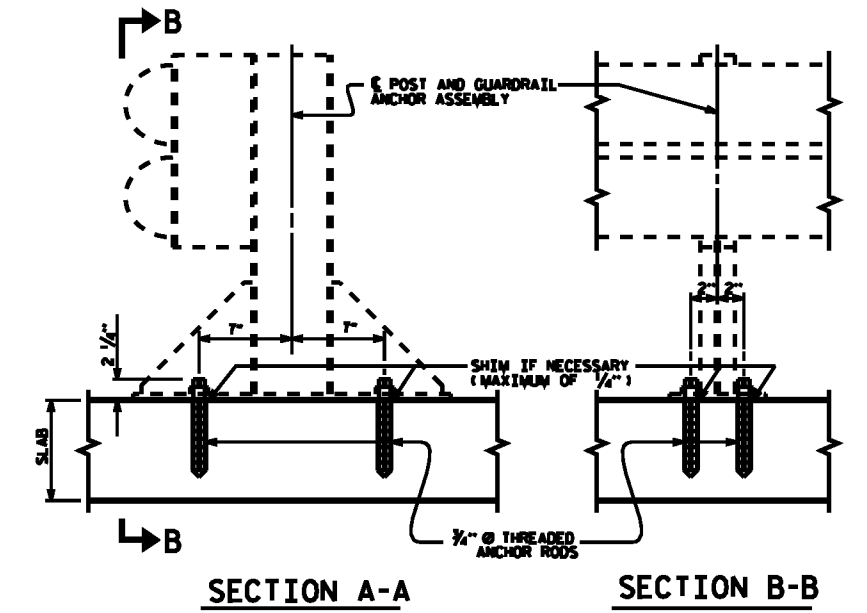
NOTES

ALL GUARDRAIL ATTACHMENTS SHALL BE MADE USING ADHESIVELY ANCHORED ANCHOR BOLTS, FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE 3/4" Ø AND MEET THE REQUIREMENTS OF ASTM A325. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

ADHESIVELY ANCHORED ANCHOR BOLTS SHALL PROVIDE A MINIMUM DESIGN TENSILE STRENGTH OF 12,750 LBS. ONE BOLT PER ATTACHMENT LOCATION SHALL BE TESTED. FOR TESTING, SEE SPECIAL PROVISIONS.

PAYMENT FOR GUARDRAIL, POST AND POST BASE PLATES IS INCLUDED IN LUMP SUM BID PRICE FOR GUARDRAIL.



SECTION A-A SECTION B-B

**WBS. NO. 33606.JJ
RUTHERFORD COUNTY
STATION: 14+57.70
REPLACES BRIDGE NO. 351**

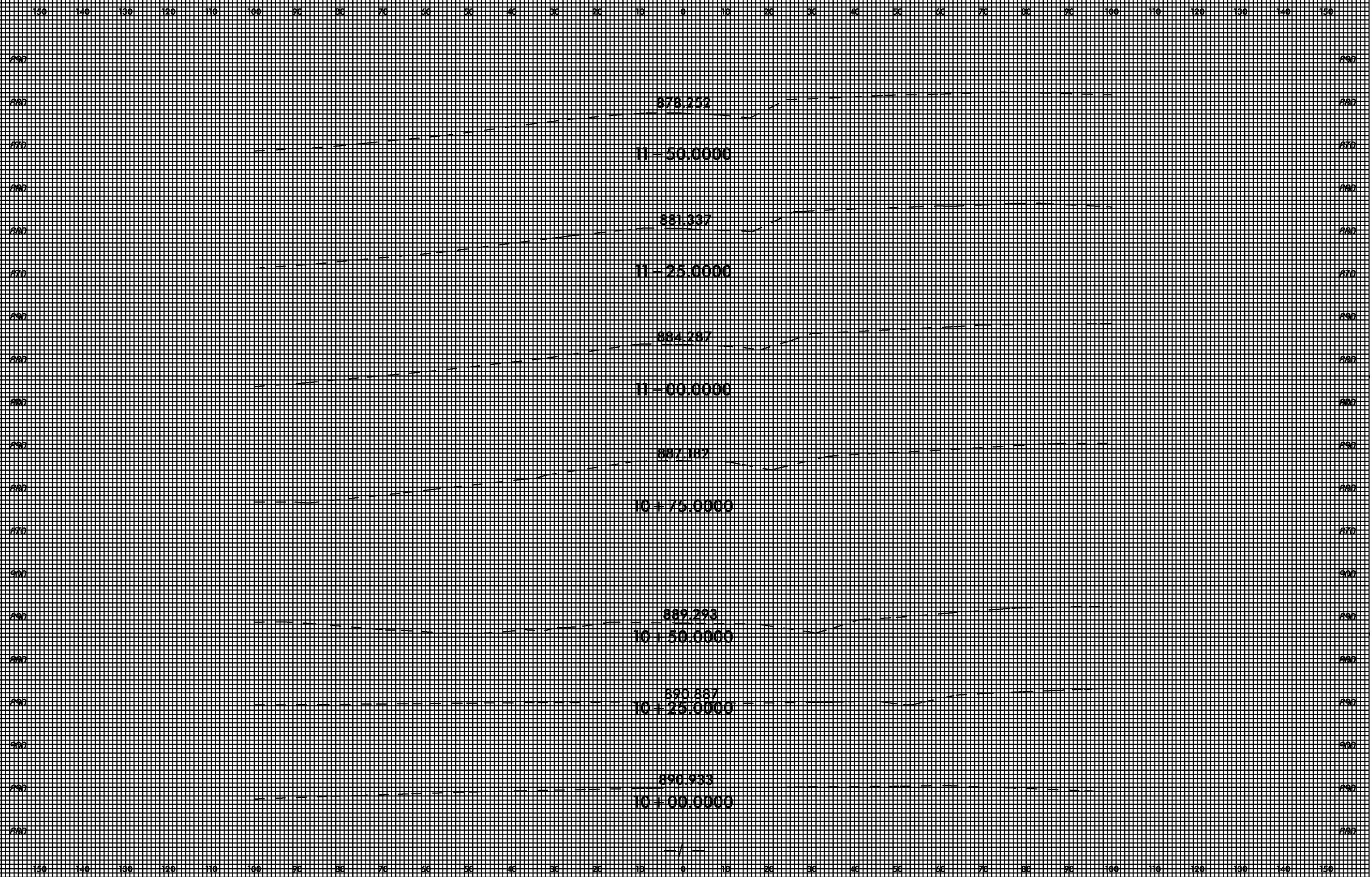
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RAILROAD

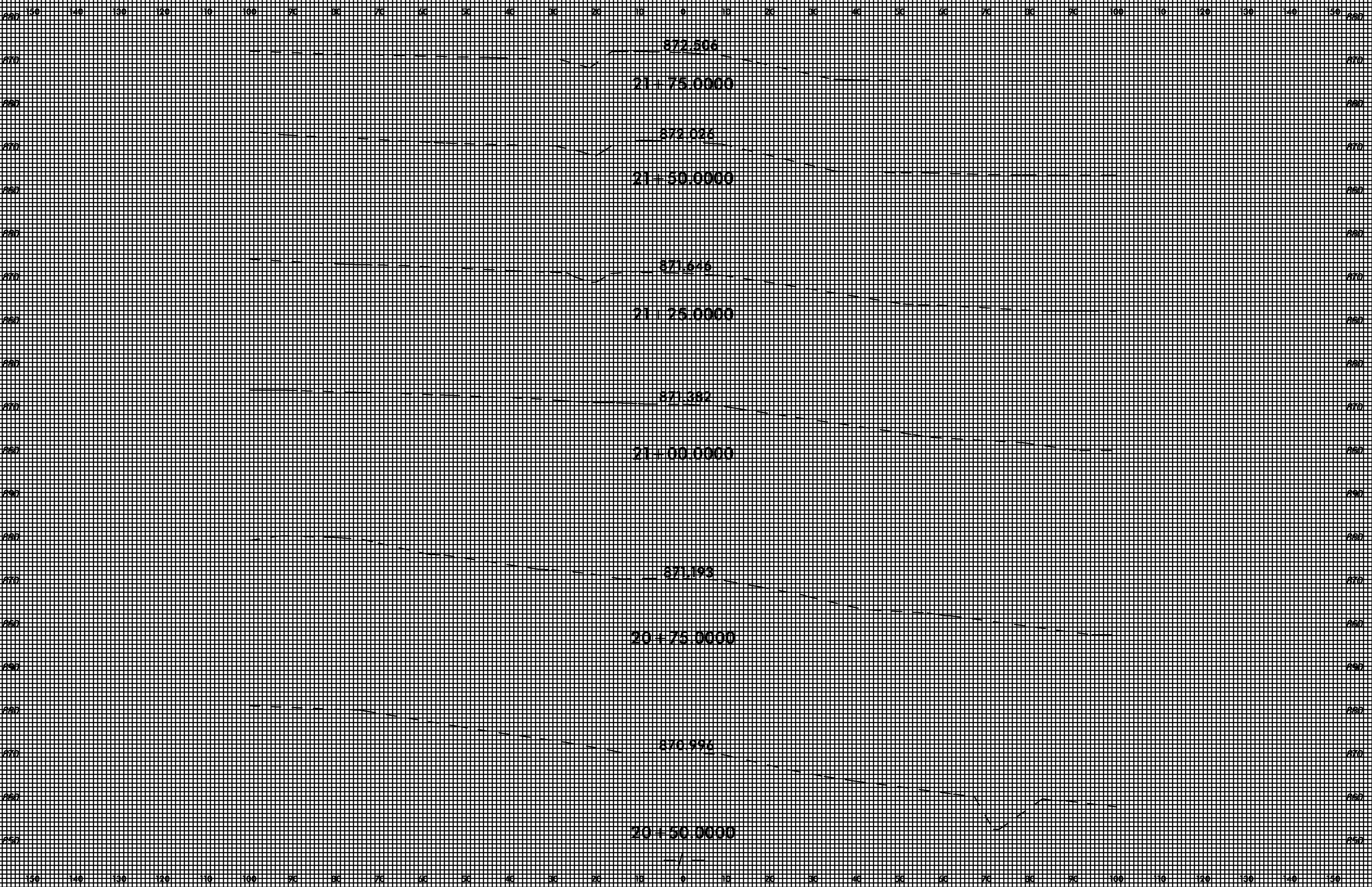
**ANCHORAGE DETAILS FOR
GUARDRAIL ATTACHMENTS
FOR CULVERTS**

DRAWN BY: PHIL BYRD DATE: 9-9-08
CHECKED BY: Z. WAEA DATE: SEPT. 2009 STANDARD

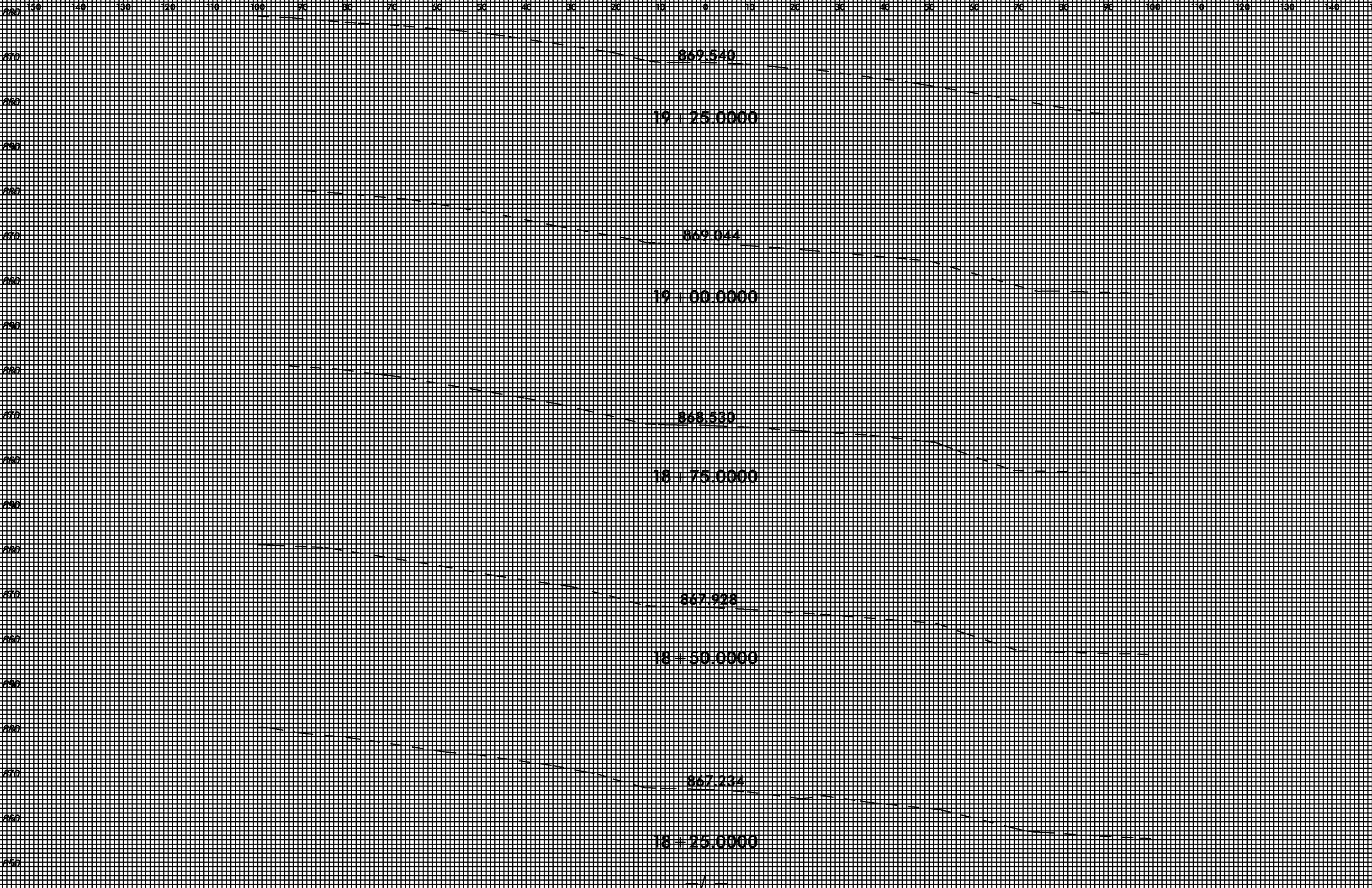
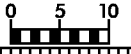
NOT TO SCALE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6
1			1			TOTAL SHEETS
						6

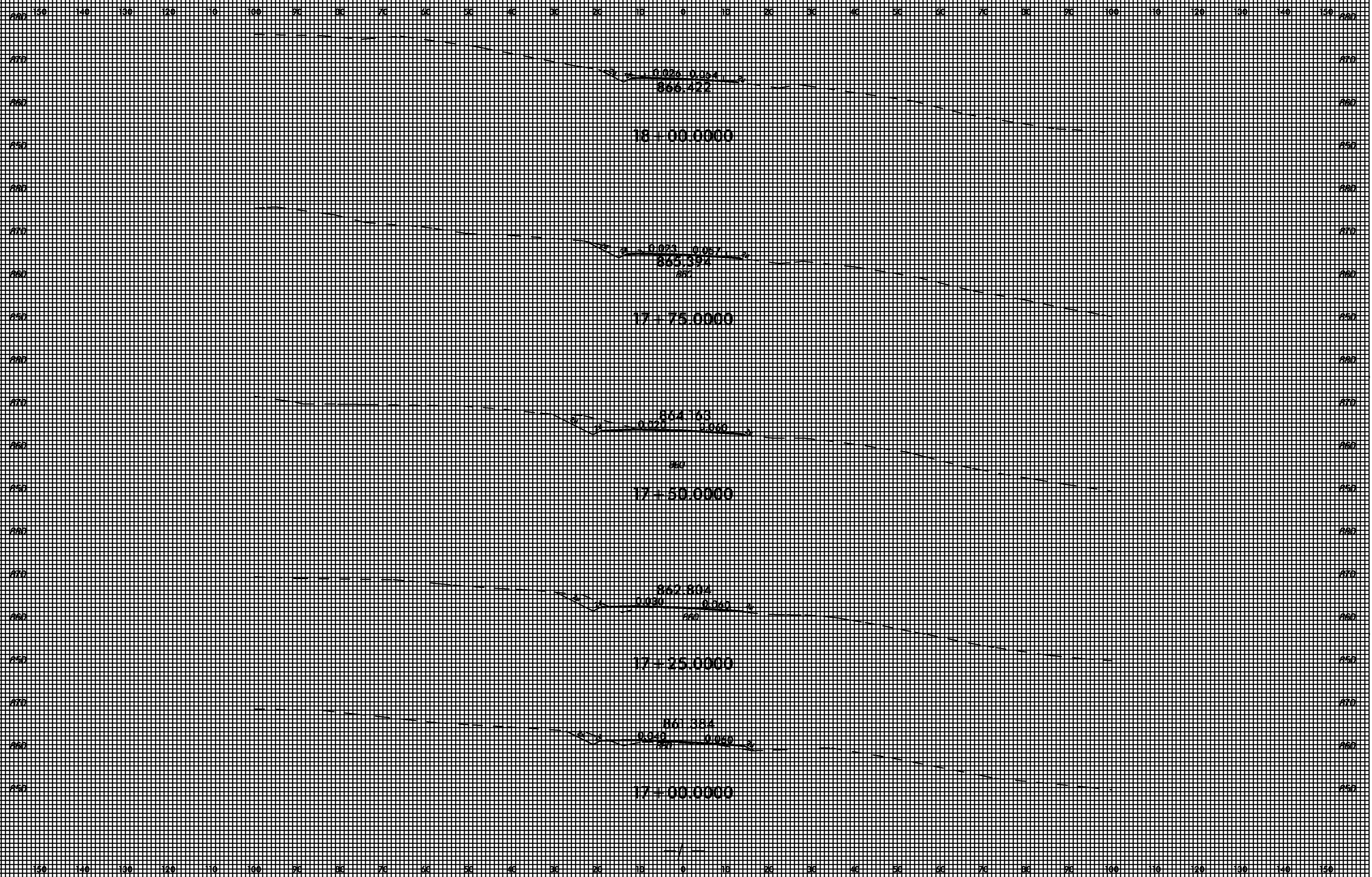




*****SYTIME****
*****3:48:00PM*****
*****SERNAME ****

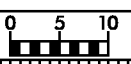


*****SYTIME*****
*****SUNTIME*****
*****USE NAME*****



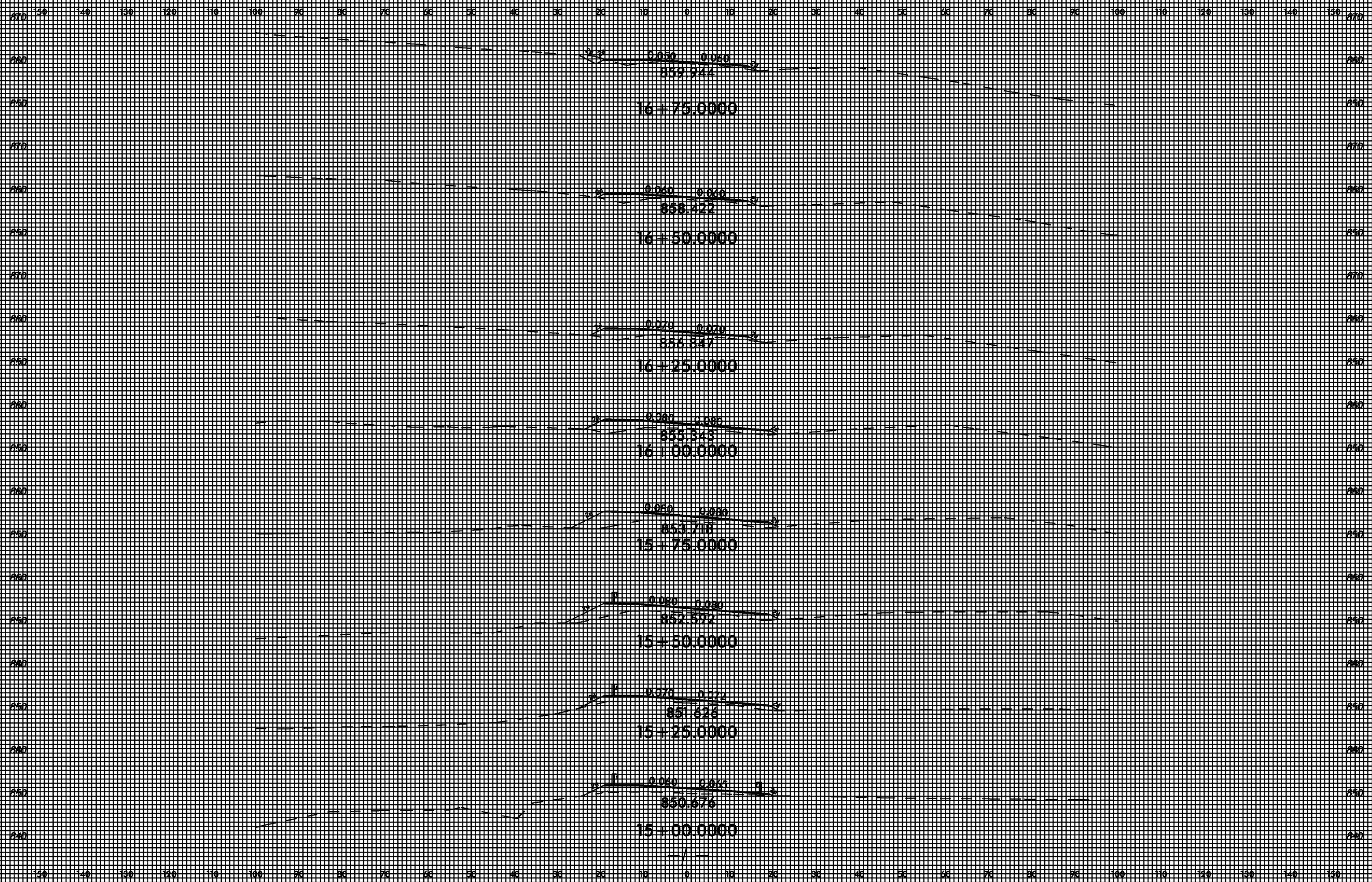
*****\TUF****
*****\MPS****
*****\SERNAME****

8/23/99



PROJ. REFERENCE NO.
B-4264

SHEET NO.
X-4



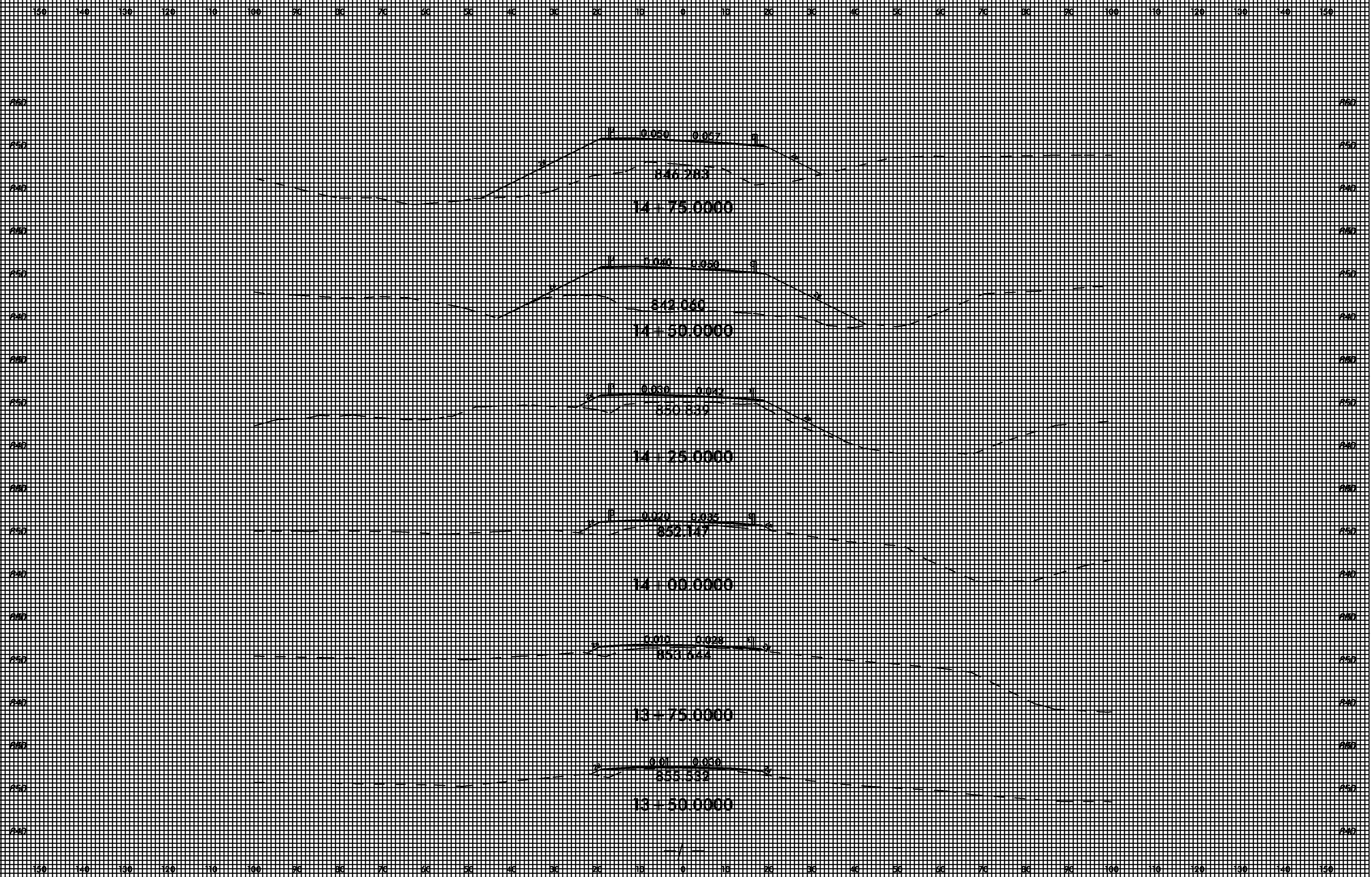
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*****WE HAVE BEEN ADVISED*****
*****YOUR USERNAME *****

8/23/99



PROJ. REFERENCE NO.
B-4264

SHEET NO.
X-3

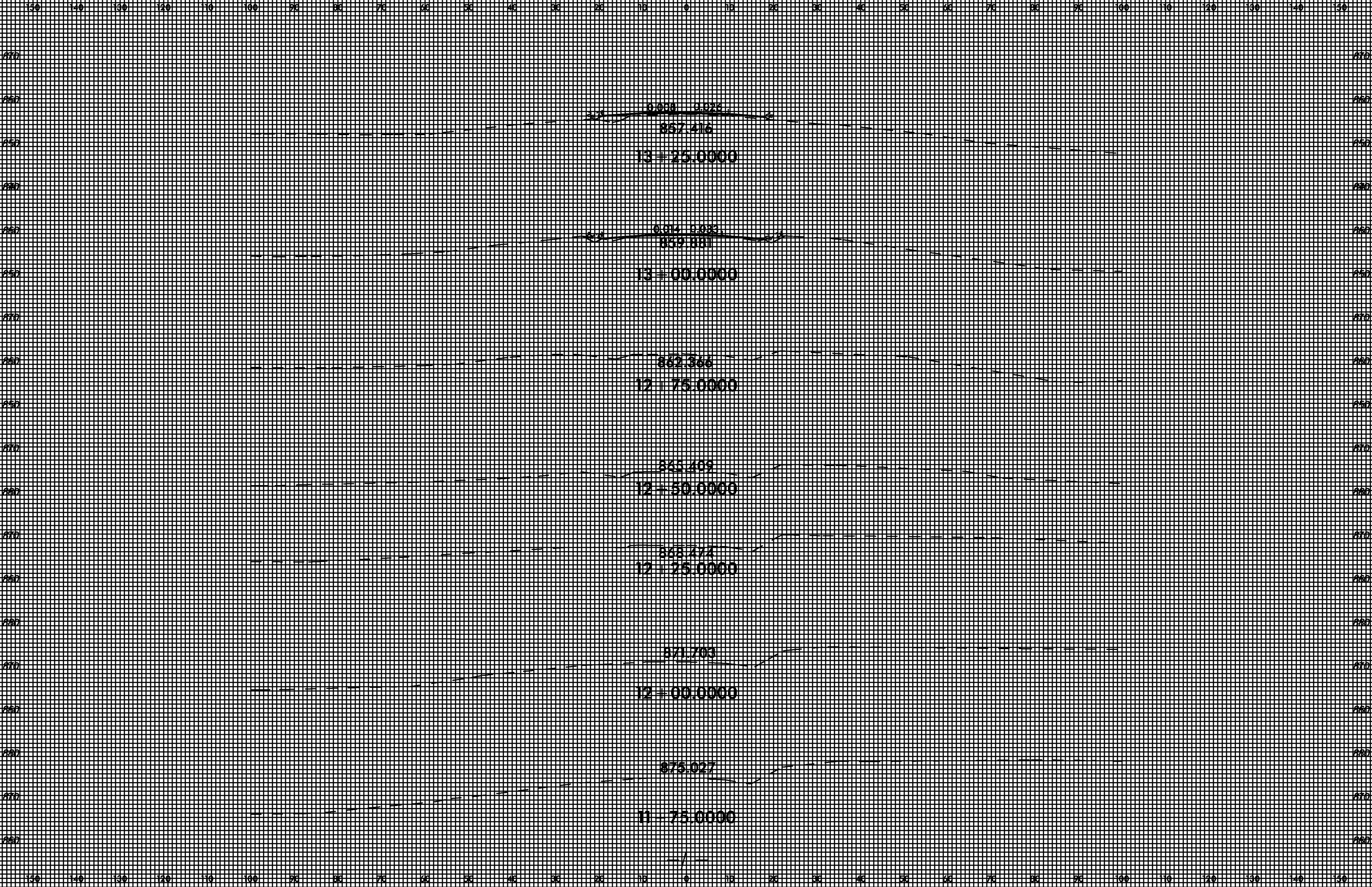


*****SYTIME*****
*****DATE*****
*****USER*****

8/23/99



PROJ. REFERENCE NO.
B-4264
SHEET NO.
X-2



0.008 0.025
857.416
13 + 25.0000

0.014 0.033
859.881
13 + 00.0000

852.366
12 + 75.0000

845.409
12 + 50.0000

868.474
12 + 25.0000

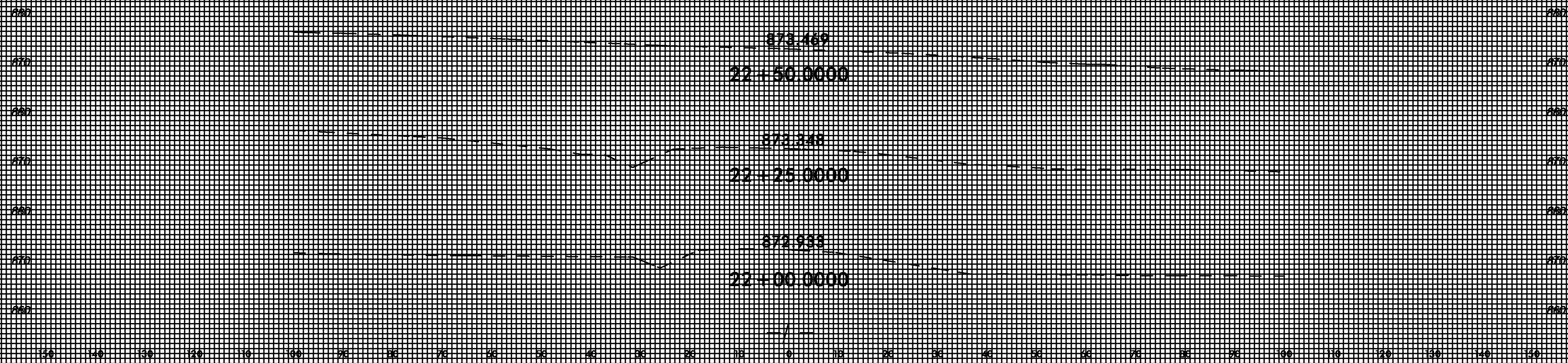
871.703
12 + 00.0000

875.027
11 + 75.0000

*****SYSTEMS*****
*****SERIALS*****
*****SERIALS*****
*****SERIALS*****



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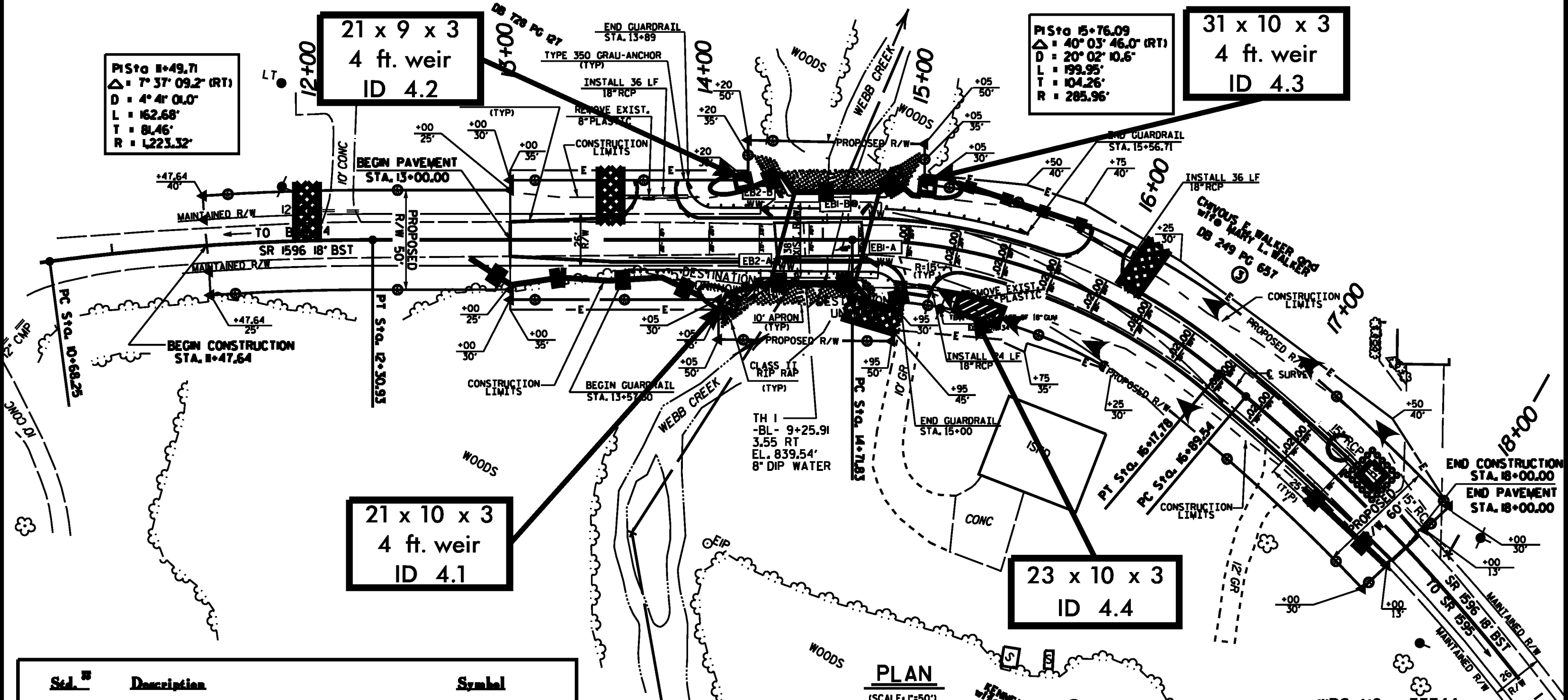


SUSAN TINE

SERIAL NUMBER *****

EROSION CONTROL PLAN

COUNTY: RUTHERFORD #351 WBS. #33606



PI Stn 11+49.71
 $\Delta = 7^\circ 37' 09.2''$ (RT)
 D = 4' 4" 01.0"
 L = 162.68'
 T = 81.46'
 R = 1223.32'

PI Stn 15+76.09
 $\Delta = 40^\circ 03' 46.0''$ (RT)
 D = 20' 02" 10.6"
 L = 199.95'
 T = 104.26'
 R = 285.96'

31 x 10 x 3
 4 ft. weir
 ID 4.3

21 x 10 x 3
 4 ft. weir
 ID 4.1

23 x 10 x 3
 ID 4.4

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	--- --- ---
1630.06	Silt Basin Type B	▨
1632.03	Special Stilling Basin	□
1633.01	Rock Inlet Sediment Trap Type C	▣
1633.01	Temporary Rock Silt Check Type-A	▩
1633.01	Temporary Rock Silt Check Type-B	▩
1634.02	Temporary Rock Sediment Dam Type-B	⊓

ROADSIDE ENVIRONMENTAL UNIT
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 BALDWIN, NC
 2006 STANDARD SPECIFICATIONS

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.
 ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

WBS. NO. 33744
 COUNTY: RUTHERFORD
 STATION: 14+72.54-L
 REPLACES BRIDGE NO. 351

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 PLAN VIEW OF BRIDGE
 #351 ON SR 1596 OVER
 WEBB CREEK

REVISIONS				DRAWN BY	
NO.	BY	DATE	NO.	BY	DATE
1			2		
2			3		

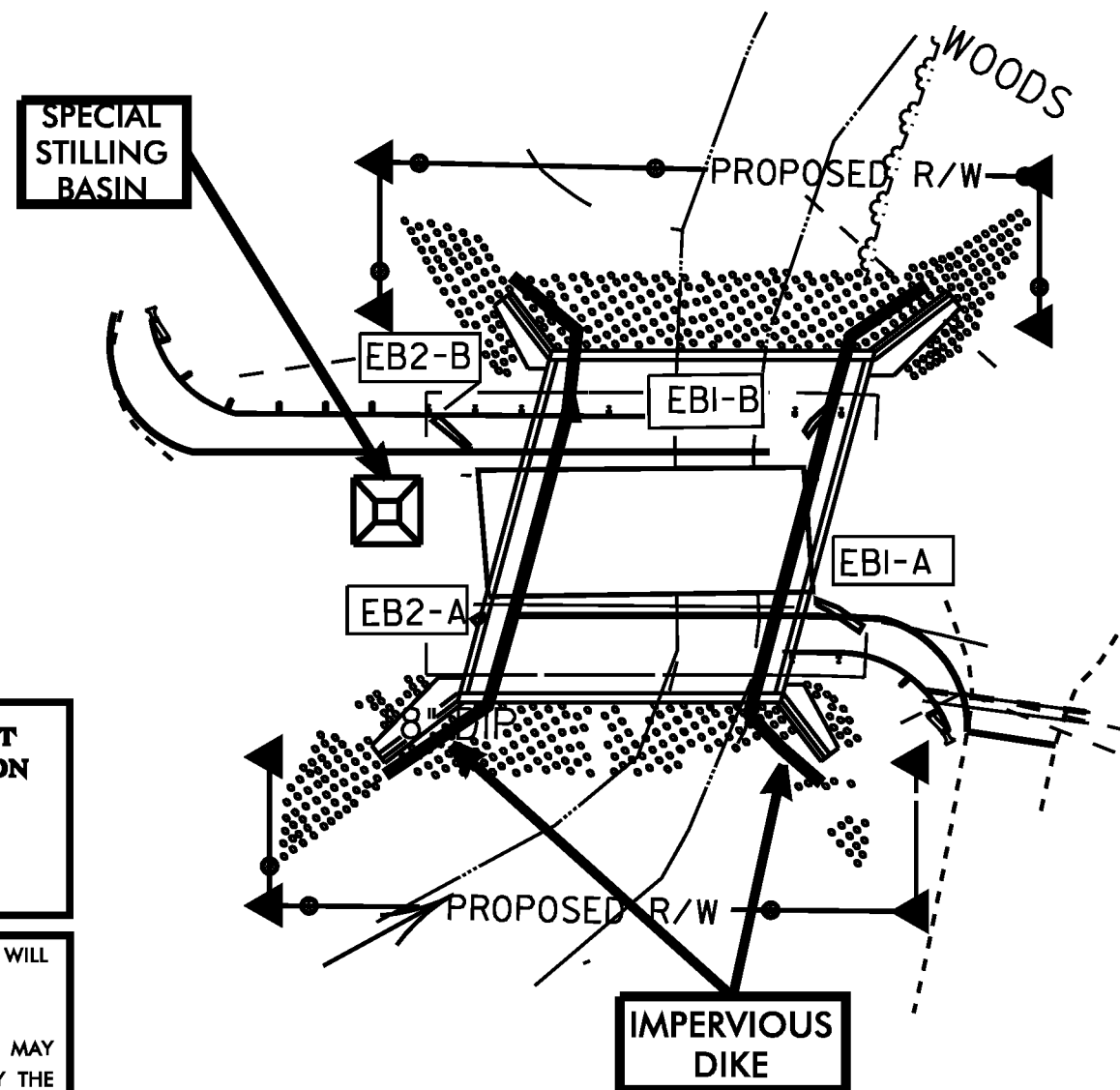
EC-1
8

DRAWN BY: P. BYRD/S. T. SANDOR DATE: JUNE/2009
 CHECKED BY: J.A.Y./R. WEISZ DATE: JULY/2009

EROSION CONTROL PLAN

CULVERT CONSTRUCTION SEQUENCE STA. 14+70 -L-

1. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT CULVERT CONSTRUCTION.
2. CONSTRUCT IMPERVIOUS DIKES.
3. CONSTRUCT FOOTINGS FOR CULVERT.
4. INSTALL CULVERT.
5. REMOVE IMPERVIOUS DIKES AND COMPLETE ANY NECESSARY UPSTREAM/DOWNSTREAM CHANNEL IMPROVEMENTS.
6. REMOVE SPECIAL STILLING BASIN(S).
7. REMOVE EXISTING BRIDGE AND COMPLETE ROADWAY.



**ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALPHOH, NC.
2006 STANDARD SPECIFICATIONS**

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WBS. NO. 33744
COUNTY: RUTHERFORD
STATION: 14+72.54-L-
REPLACES BRIDGE NO.351

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
#351 ON SR 1596 OVER
WEBB CREEK

REVISIONS						SHEET NO. EC-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 8
2			4			

EROSION CONTROL PLAN

SAFETY FENCE:

Description

Safety Fence shall consist of furnishing, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland or water. The fence shall be installed prior to any land disturbing activities.

Materials

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb./ft. of length.

Construction Methods

No additional clearing and grubbing is anticipated for the installation of this fence; however, if any clearing and grubbing is required, it will be the minimum required for the installation of the safety fence. Such clearing shall include satisfactory removal and disposal of all trees, brush, stumps and other objectionable material.

The fence shall be erected to conform to the general contour of the ground. When determined necessary, minor grading along the fence line shall be performed to meet this requirement provided no obstructions to proper drainage are created.

Posts shall be set and maintained in a vertical position and may be hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

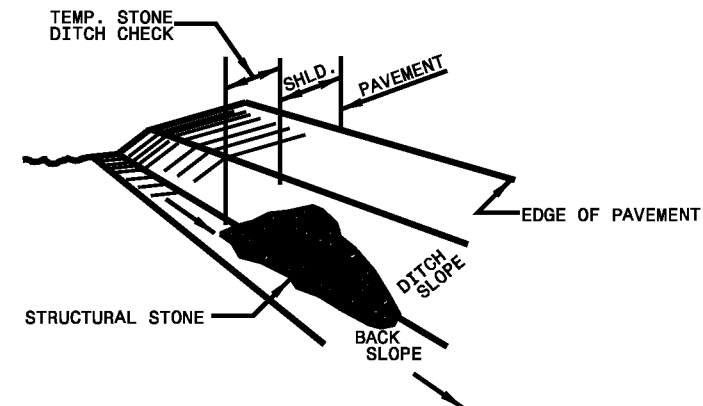
The fence fabric shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

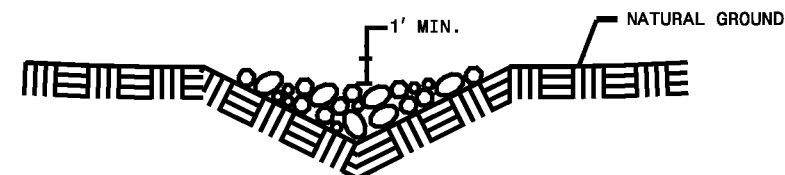
Measurement and Payment

Safety Fence will be paid for at the contract price for "Lump Sum for Erosion Control". Such payment will be full compensation including but not limited to clearing and grading, furnishing and installing fence fabric with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

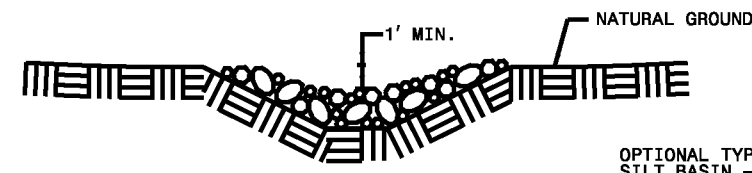
TEMPORARY ROCK SILT CHECK TYPE 'B' DETAIL



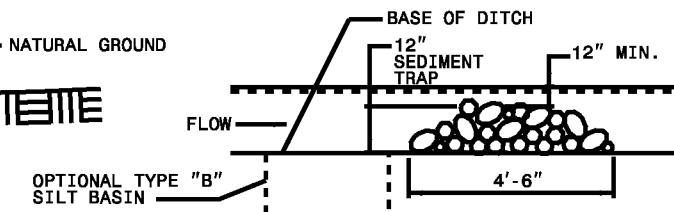
ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH



ELEVATION VIEW

NOTES:

USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.

THE ENGINEER MAY DIRECT THE OPTION OF CLASS "A" STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.

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ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
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RALEIGH, NC.
2006 STANDARD SPECIFICATIONS

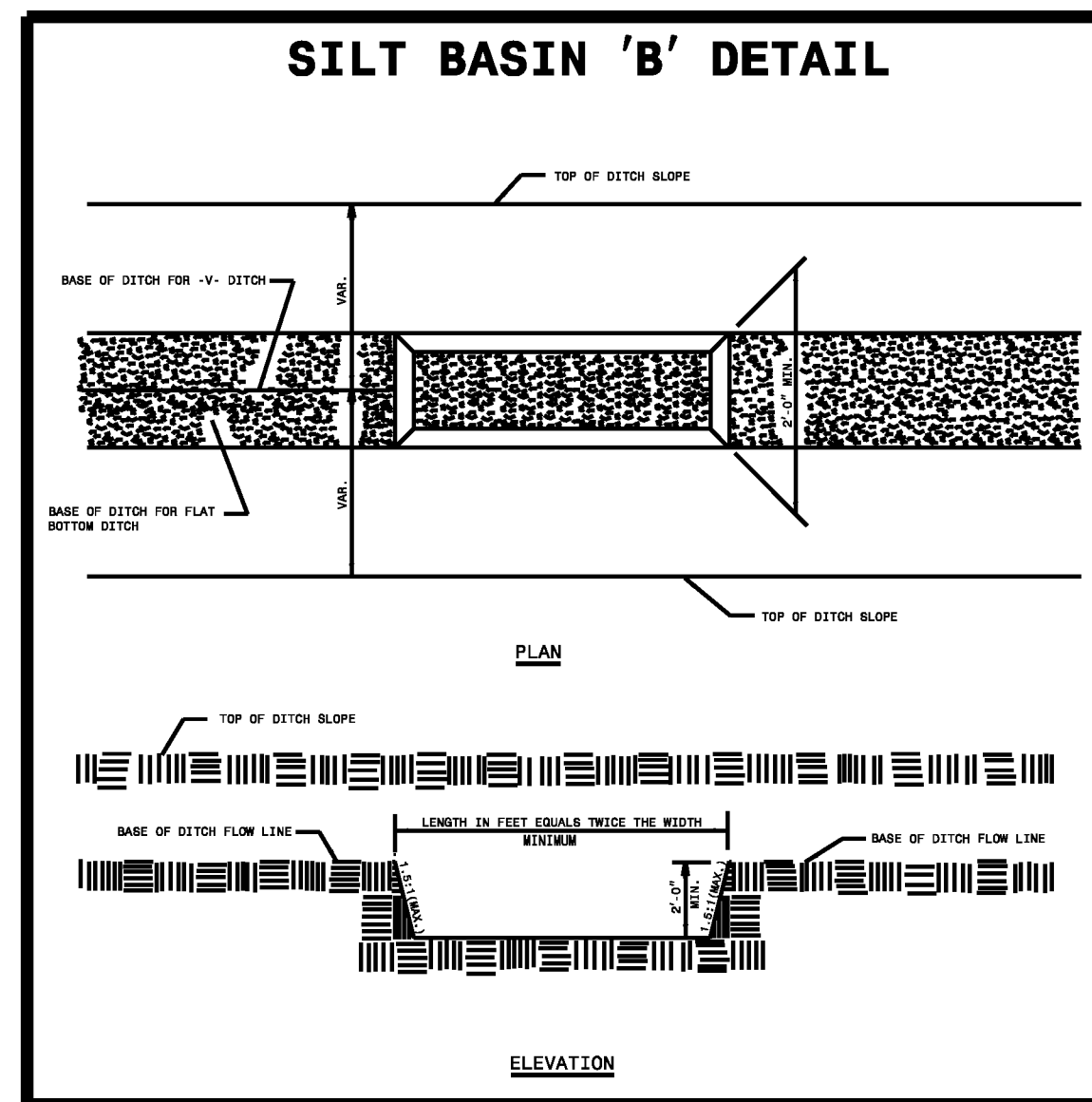
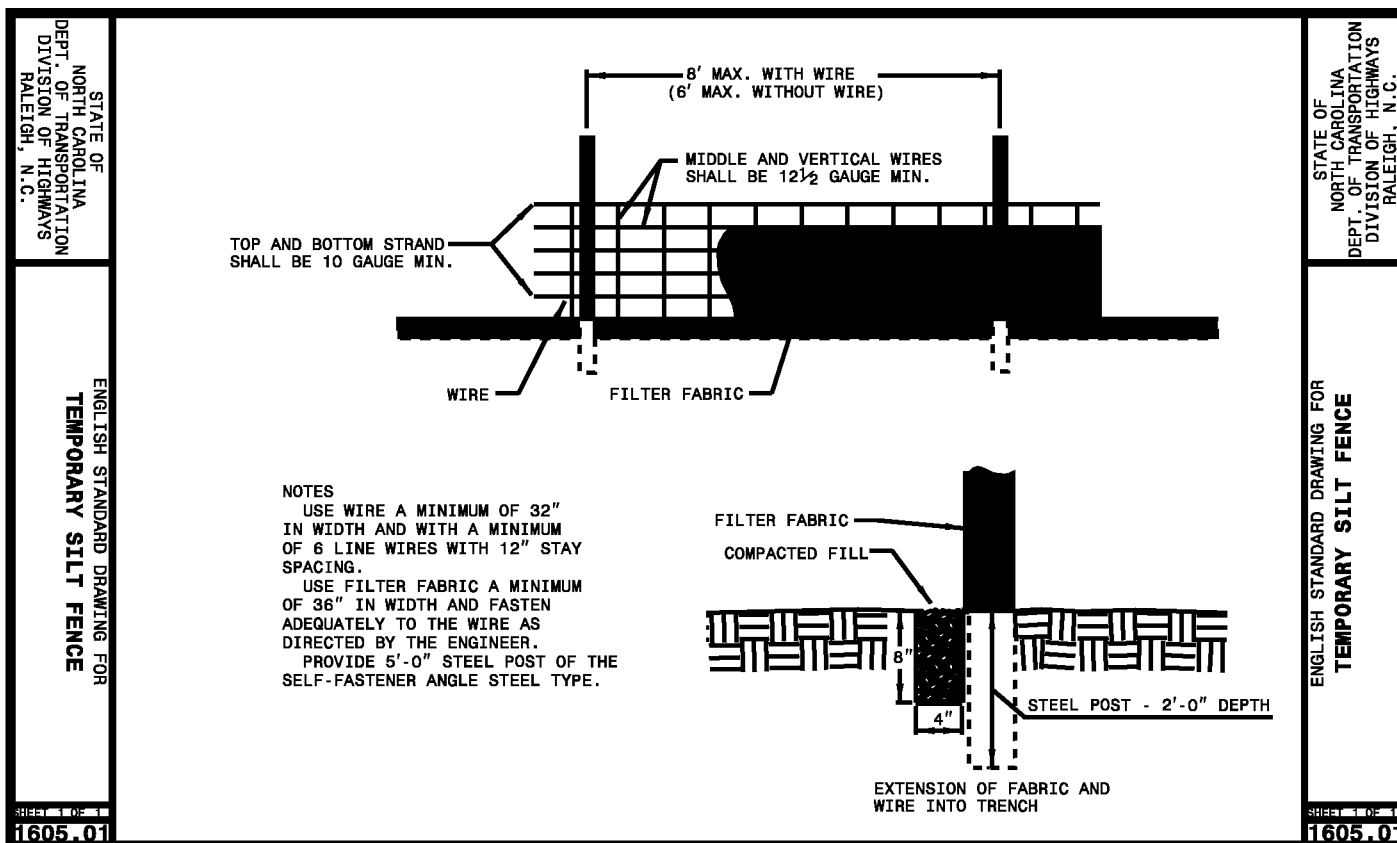
WBS. NO. 33744
COUNTY: RUTHERFORD
STATION: 14+72.54-L-
REPLACES BRIDGE NO.351

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
#351 ON SR 1596 OVER
WEBB CREEK

REVISIONS						HEET NO.
NO.	BY	DATE	NO.	BY	DATE	EC-3
1			3			TOTAL SHEETS 8
2			4			

EROSION CONTROL PLAN



WBS. NO. 33744
 COUNTY: RUTHERFORD
 STATION: 14+72.54-L-
 REPLACES BRIDGE NO.351

ROADSIDE ENVIRONMENTAL UNIT
 DEPARTMENT OF TRANSPORTATION
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 RALEIGH, N.C.
 2006 STANDARD SPECIFICATIONS

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
 #351 ON SR 1596 OVER
 WEBB CREEK

REVISIONS						SHEET NO. EC-4
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 8
2			4			

EROSION CONTROL PLAN

SPECIAL STILLING BASIN:

Description

This work consists of furnishing, placing, and removing special stilling basin(s) as directed. The special stilling basin shall be used to filter pumped water during construction of drilled piers, footing excavation, and/or culvert construction. The special stilling basin shall also be used for sediment storage at the outlet of temporary slope drain pipe(s).

Materials

Refer to Division 10

Item	Section
Filter Fabric for Drainage, Type 2	1056
Sediment Control Stone	1005

The filter fabric and sediment control stone shall be clean and shall not contain debris.

The special stilling basin shall be a water permeable fabric bag that traps sand, silt, and fines as sediment-laden water is pumped into it, or as runoff flows into it through the temporary slope drain pipe(s).

The special stilling basin shall be a bag constructed to a minimum size of 10' x 15' made from a nonwoven fabric. It shall have a sewn-in 8" (maximum) spout for receiving pump discharge. The bag seams shall be sewn with a double needle machine using a high strength thread. The seams shall have a minimum wide width strength as follows:

Test Method	Minimum Specifications
ASTM D-4884	60 lb/in

The fabric used to construct the bag shall be stabilized to provide resistance to ultra-violet degradation and meet the following specifications for flow rates, strength, and permeability:

Property	Test Method	Minimum Specifications
Weight	ASTM D-3776	8.0 oz/yd
Grab tensile	ASTM D-4632	200.0 lb
Puncture	ASTM D-4833	130.0 lb
Flow rate	ASTM D-4491	80.0 gal/min/ft
Permittivity	ASTM D-4491	1.2 1/sec
UV Resistance	ASTM D-4355	70.0%

Construction Methods

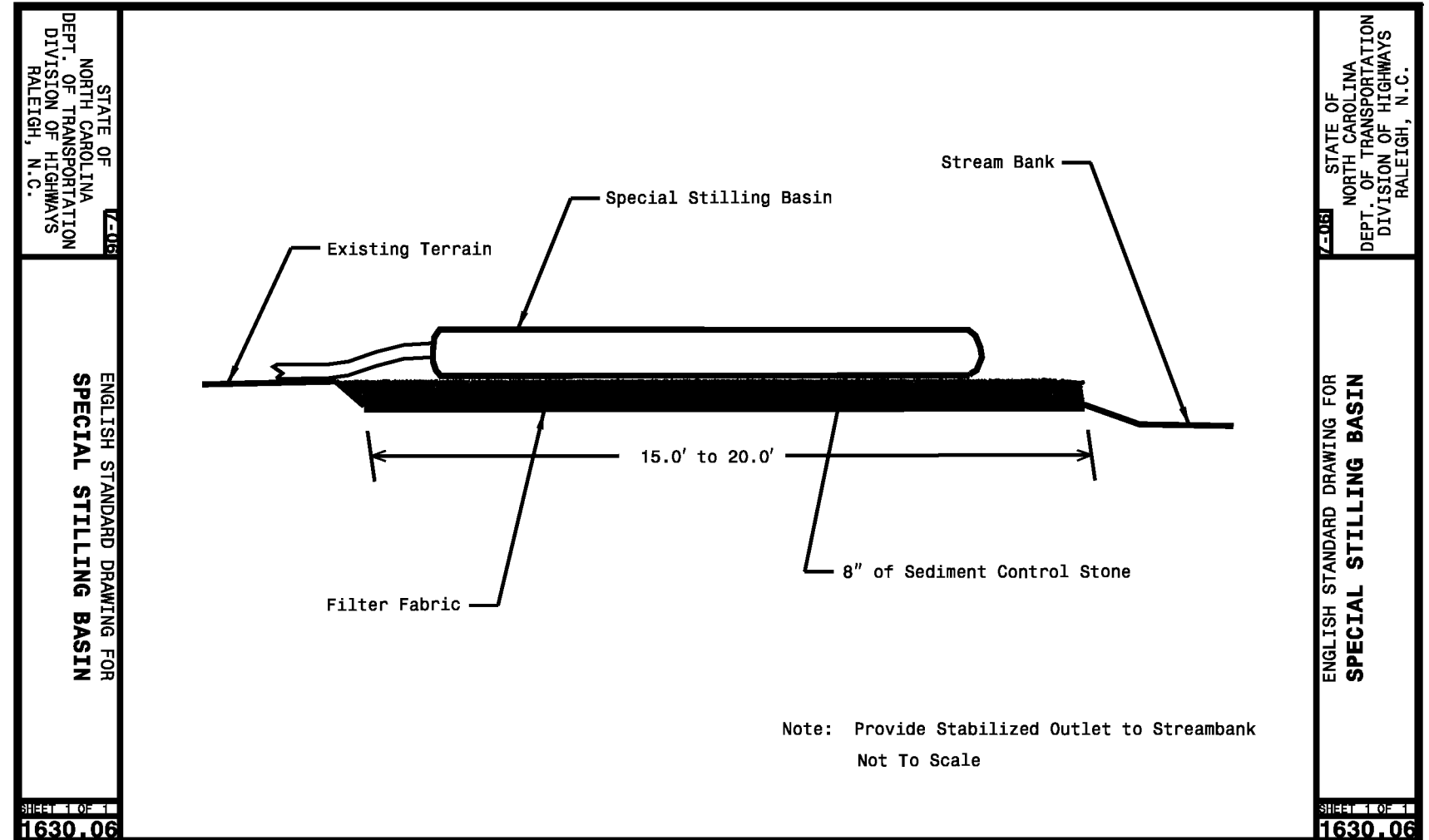
The Contractor shall install the special stilling basin(s), filter fabric, and stone in accordance with Standard Drawing No. 1630.06 and at locations on the plans and as directed.

The special stilling basin(s) shall be constructed such that it is portable and can be used adjacent to each drilled pier, footing, and/or culvert. Temporary slope drain pipe(s) shall be attached to the special stilling basin(s) so that the runoff in the slope drain pipe(s) flows directly into the special stilling basin(s). The special stilling basin(s) shall be placed so the incoming water flows into and through the bag without causing erosion. The neck or spout of the bag shall be tied off tightly to stop the water from flowing out of the bag without going through the walls. If applicable, the neck or spout of the silt bag shall be cut to allow for a slope drain pipe to be inserted into the special stilling basin, and tied off tightly to stop the water from flowing out of the bag.

The special stilling basin(s) shall be replaced and disposed of when it is full of sediment or when it is impractical for the bag to filter the sediment out at a reasonable flow rate. Prior approval from the Engineer shall be received before removal and replacement.

The Contractor shall be responsible for providing a sufficient quantity of bags to contain silt from pumped effluent during construction of drilled piers, footing excavation, and/or culvert construction. A sufficient quantity of special stilling basins shall be provided to contain sediment from temporary slope drain runoff.

The quantity of sediment control stone, filter fabric for drainage, and special stilling basin(s) as measured above will be paid for at contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limited to, furnishing all materials, placing and maintaining the special stilling basin(s), and removal and disposal of silt accumulations and bag.



Note: Provide Stabilized Outlet to Streambank
Not To Scale

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
SPECIAL STILLING BASIN

1630.06

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
SPECIAL STILLING BASIN

1630.06

**ROADSIDE ENVIRONMENTAL UNIT
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WBS. NO. 33744
COUNTY: RUTHERFORD
STATION: 14+72.54-L-
REPLACES BRIDGE NO. 351

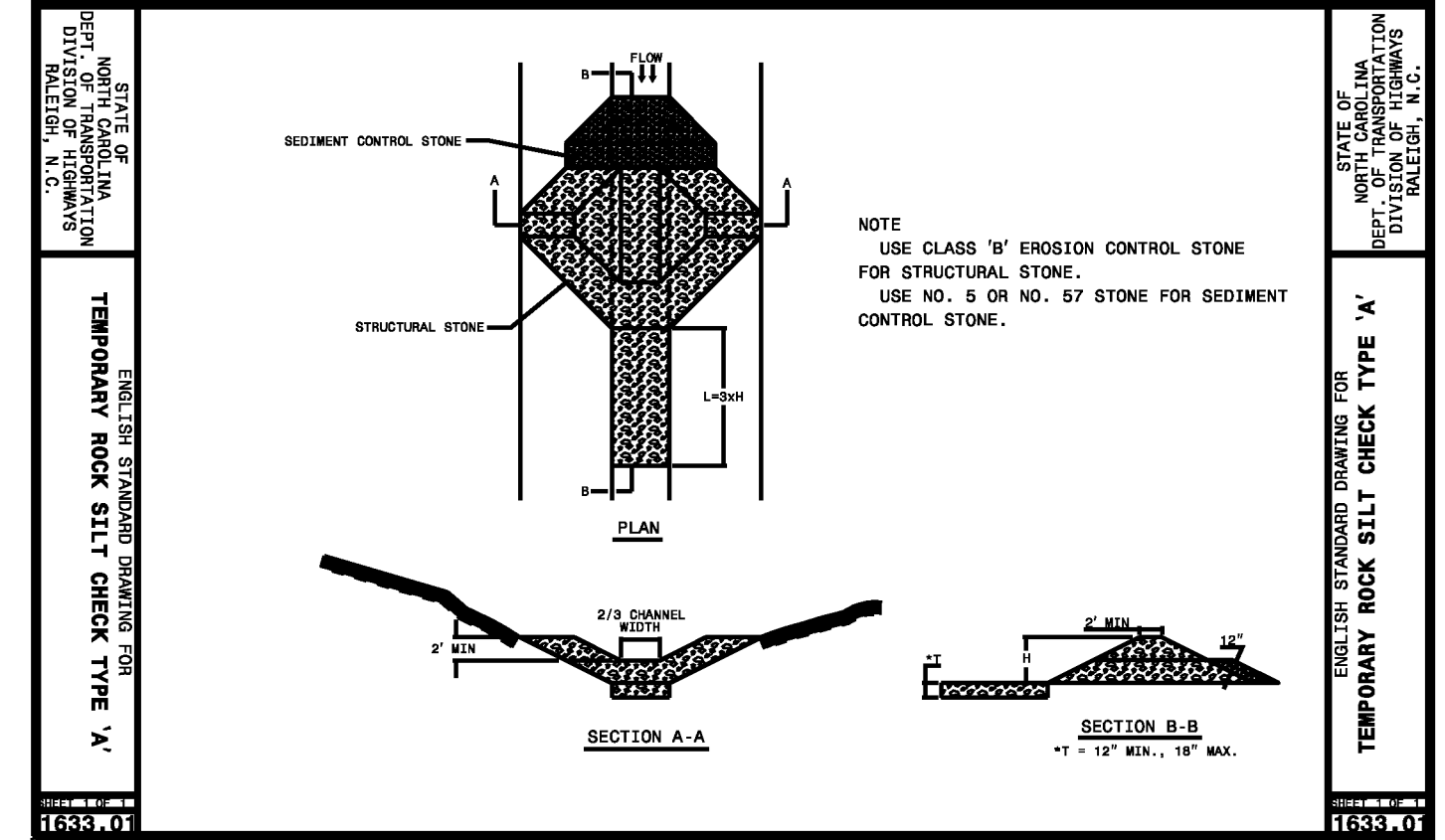
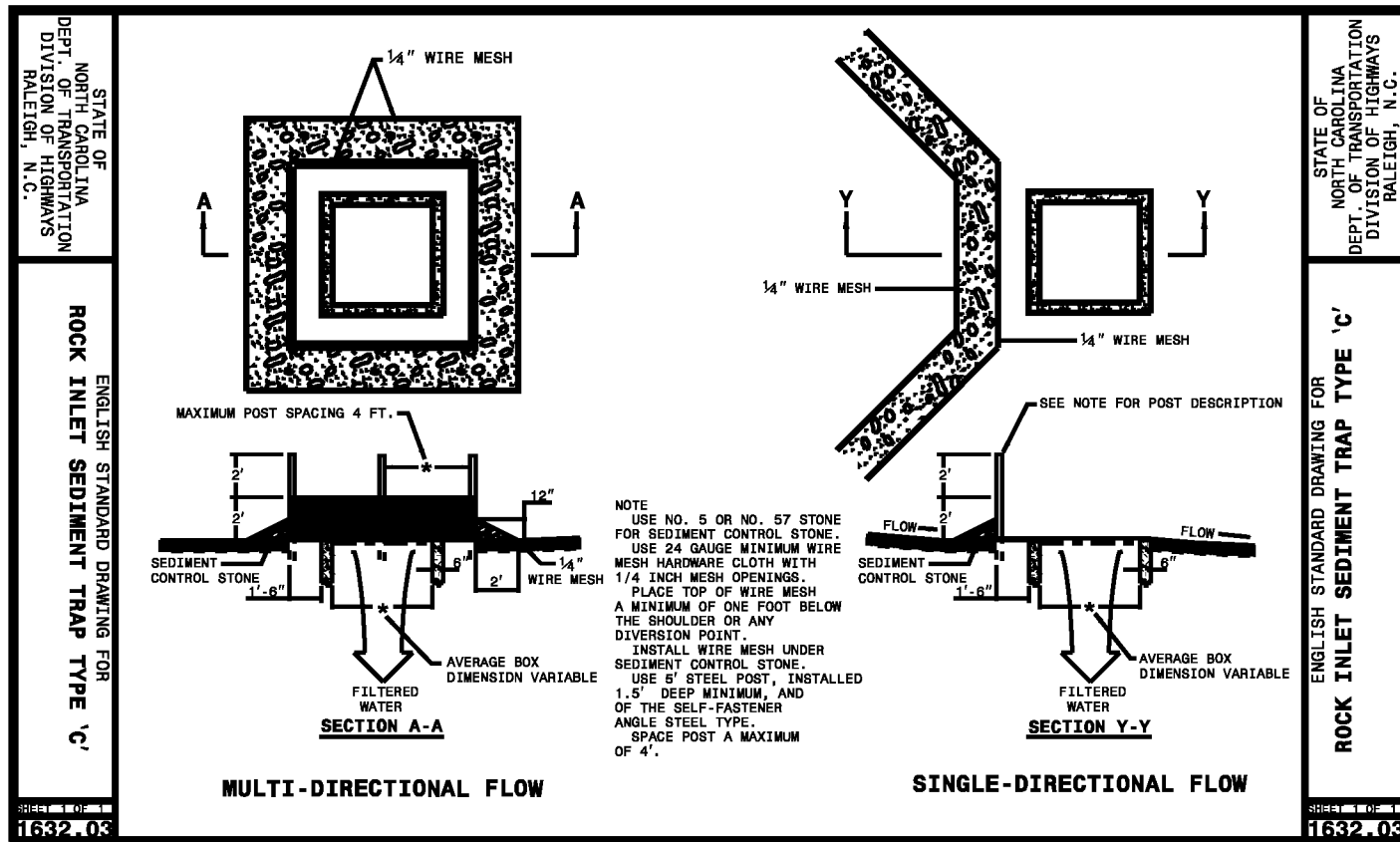
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
#351 ON SR 1596 OVER
WEBB CREEK

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
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SHEET NO. **EC-5**
TOTAL SHEETS **8**

EROSION CONTROL PLAN



ROADSIDE ENVIRONMENTAL UNIT
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PLAN VIEW OF BRIDGE
#351 ON SR 1596 OVER
WEBB CREEK

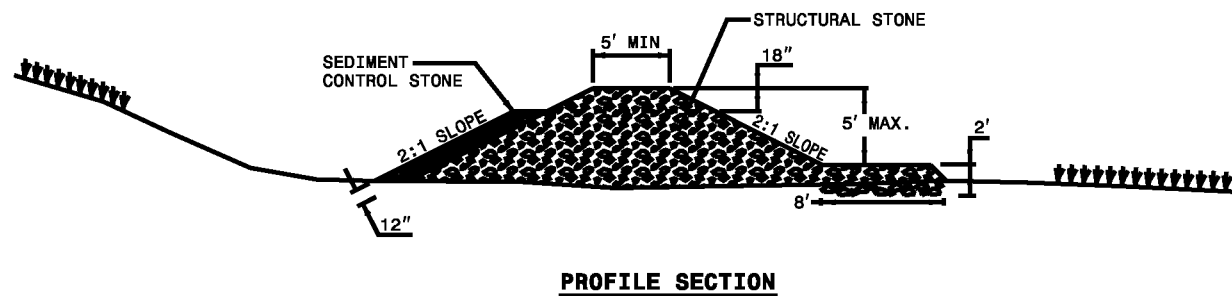
REVISIONS						SHEET NO. EC-6
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 8
2			4			

EROSION CONTROL PLAN

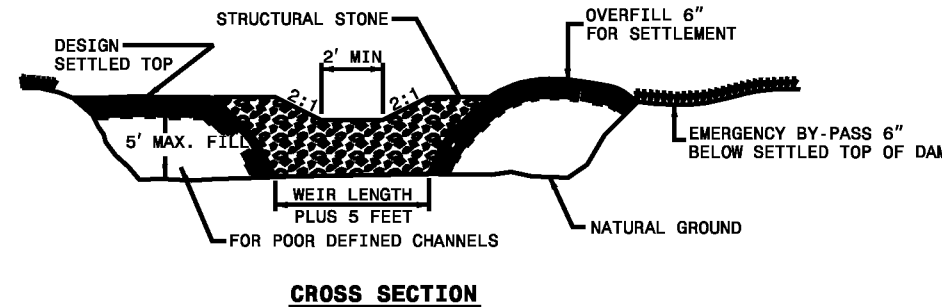
STATE OF
NORTH CAROLINA
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RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE 'B'

SHEET 1 OF 1
1634.02



PROFILE SECTION



CROSS SECTION

DRAINAGE AREA (ACRES)	WEIR LENGTH (FT)
1	4.0
2	6.0
3	8.0
4	10.0
5	12.0

NOTES:

- USE CLASS 'B' EROSION CONTROL STONE FOR STRUCTURAL STONE.
- USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
- DIKE MAY EXTEND ALONG MORE THAN ONE SIDE OF THE TRAP AREA. PROVIDE A TOTAL SEDIMENT STORAGE VOLUME OF 1800± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY OTHER UP OR DOWNSTREAM CONTROLS.
- AN UNDERLAY OF STRUCTURAL STONE WITH FILTER FABRIC MAY BE REQUIRED BY THE ENGINEER.

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ENGLISH STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE 'B'

SHEET 1 OF 1
1634.02

Impervious Dike:

The work covered by this section consists of furnishing, installing, maintaining, and removing an impervious dike for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious fabric.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

No direct payment shall be made for the work of installation, maintenance, and removal of impervious dike(s) as described in this provision. Payment for such work shall be included in the contract bid price for "Lump Sum for Erosion Control".

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN VIEW OF BRIDGE
#351 ON SR 1596 OVER
WEBB CREEK

REVISIONS						UNIT NO.
NO.	BY	DATE	NO.	BY	DATE	EC-7
1			2			8
2			4			
TOTAL SHEETS						

EROSION CONTROL PLAN

COIR FIBER BAFFLE:

Description

Furnish material, install and maintain coir fiber baffles according to the details in the plans or in locations as directed. Coir Fiber Baffles shall be installed in silt basins and sediment dams at drainage outlets. Work includes providing all materials, placing, securing, excavating and backfilling of Coir Fiber Baffles.

Materials

(A) Coir Fiber Mat

Matting: Provide matting to meet the following requirements:

100% coconut fiber (coir) twine woven into high strength matrix
 Thickness - 0.30 in. minimum
 Tensile Strength 1348 x 626 lb/ft minimum
 Elongation 34% x 38% maximum
 Flexibility (mg-cm) 65030 x 29590
 Flow Velocity Observed 11 ft/sec
 Weight 20 oz/SY
 Size 6.6 x 164 ft (120 SY)
 C Factor 0.002
 Open Area (measured) 50%

(B) Staples

Provide staples made of 0.125 in. diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

(C) Posts

Steel posts shall be at least 5 ft. in length, approximately 1 3/8" wide measured parallel to the fence, and have a minimum weight of 1.25 lb/ft of length. The post shall be equipped with an anchor plate having a minimum area of 14.0 square inches, and shall be of the self-fastener angle steel type to have a means of retaining wire and coir fiber mat in the desired position without displacement.

(D) Wire

Provide 9-gauge high-tension wire strand of variable lengths.

Construction Methods

Place the coir fiber baffles immediately upon excavation of basins. Install three (3) baffles in basins with a spacing of one fourth (1/4) the basin length and according to the detail sheets. Two (2) coir fiber baffles shall be installed in basins less than 20 ft. in length with a spacing of one third (1/3) the basin length.

Steel posts shall be placed at a depth of 2 ft. below the basin surface, with a maximum spacing of 4 ft. The top height of the coir fiber baffles shall not be below the elevation of the emergency spillway base of dams and basins. Attach an 9-gauge high tension wire strand to the steel posts at a height of 3 ft. with plastic ties or wire fasteners. Install a steel post into side of the basin at a variable depth and a height of 3 ft. from the bottom of the basin to anchor coir fiber mat. Secure anchor post to the upright steel post in basin with wire fasteners.

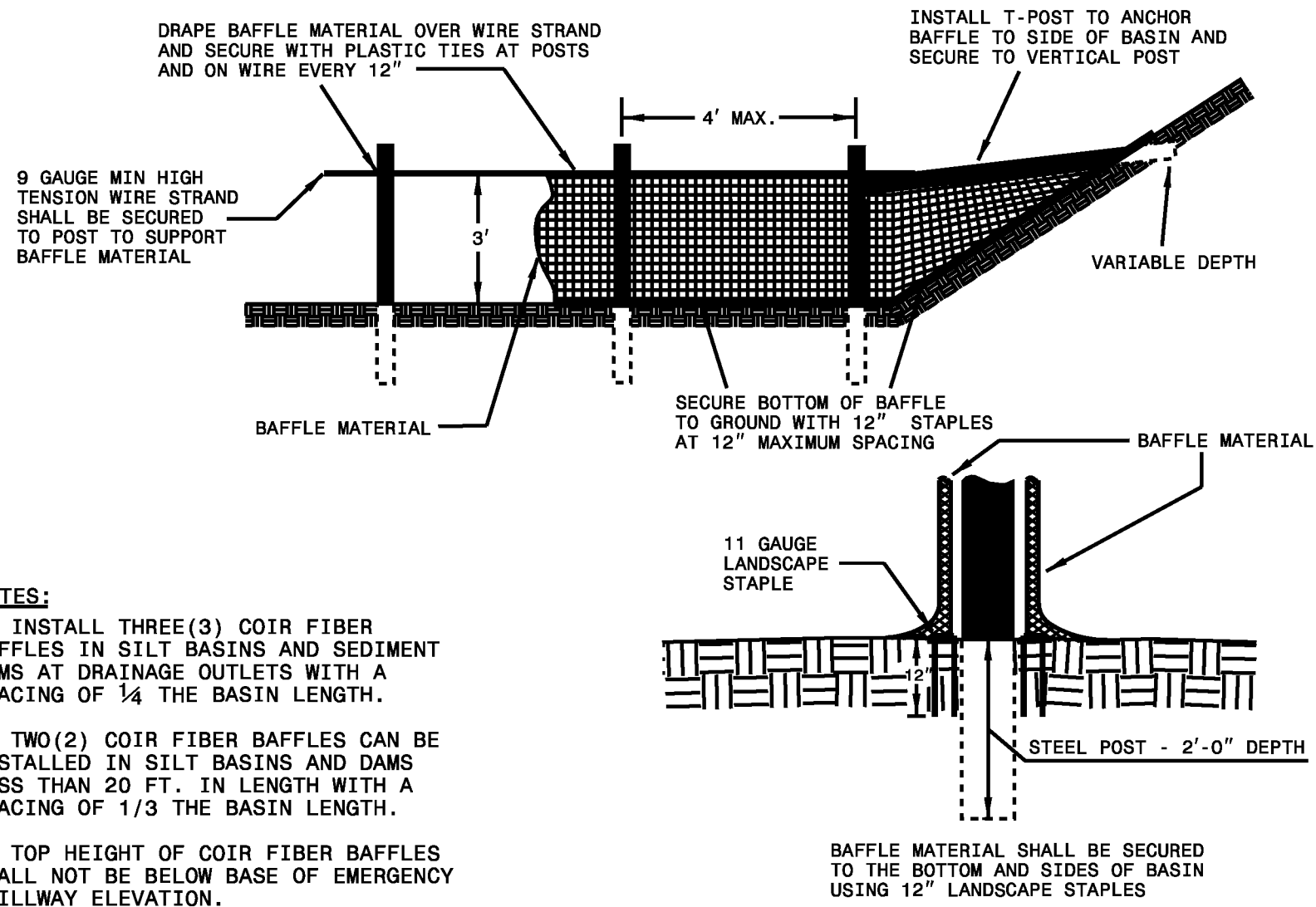
The coir fiber mat shall be draped over the wire strand to a minimum of 3 ft. of material on each side of the strand. Secure the coir fiber mat to the wire strand with plastic ties or wire fasteners. Place staples across the matting at ends and junctions approximately 1 ft. apart at the bottom and side slopes of basin. Overlap matting at least 6" where 2 or more widths of matting are installed side by side.

Refer to details in the plan sheets. The Engineer may require adjustments in the stapling requirements to fit individual site conditions.

Measurement and Payment

Payment for Coir Fiber Baffles will be included in the contract bid price for Lump Sum for Erosion Control. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the coir fiber baffles.

COIR FIBER BAFFLE DETAIL



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PLAN VIEW OF BRIDGE
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REVISIONS						SHEET NO. EC-8
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 8
2			4			