

DESIGN DATA RP 34.191 - RP 35.168				
Traffic	Average Daily			Max. Hr.
Current 2003	Pass: 1260	Trucks 240	Total 1500	150
Forecast 2023	Pass: 1625	Trucks 310	Total 1935	195
Minimum Sight Dist. for:		Design Speed 45 MPH		
Stopping 360'		Bridges		
Safe Passing 1625'				
Passing for Marking 700'				
Pavement Design Life (years) 20				
DESIGN DATA RP 35.168 - RP 45.915				
Traffic	Average Daily			Max. Hr.
Current 2003	Pass: 810	Trucks 190	Total 1000	100
Forecast 2023	Pass: 1045	Trucks 245	Total 1290	130
Minimum Sight Dist. for:		Design Speed 70 MPH		
Stopping 730'		Bridges		
Safe Passing 2480'				
Passing for Marking 1200'				
Pavement Design Life (years) 20				

JOB# 23

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	13123	1	1

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PROJECT NO. NH-5-012(027)034
IN BOWMAN COUNTY
WIDENING, BLENDED BASE COURSE,
HOT BITUMINOUS PAVEMENT, BOX
CULVERT EXTENSIONS, AND
INCIDENTALS

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October 2002; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

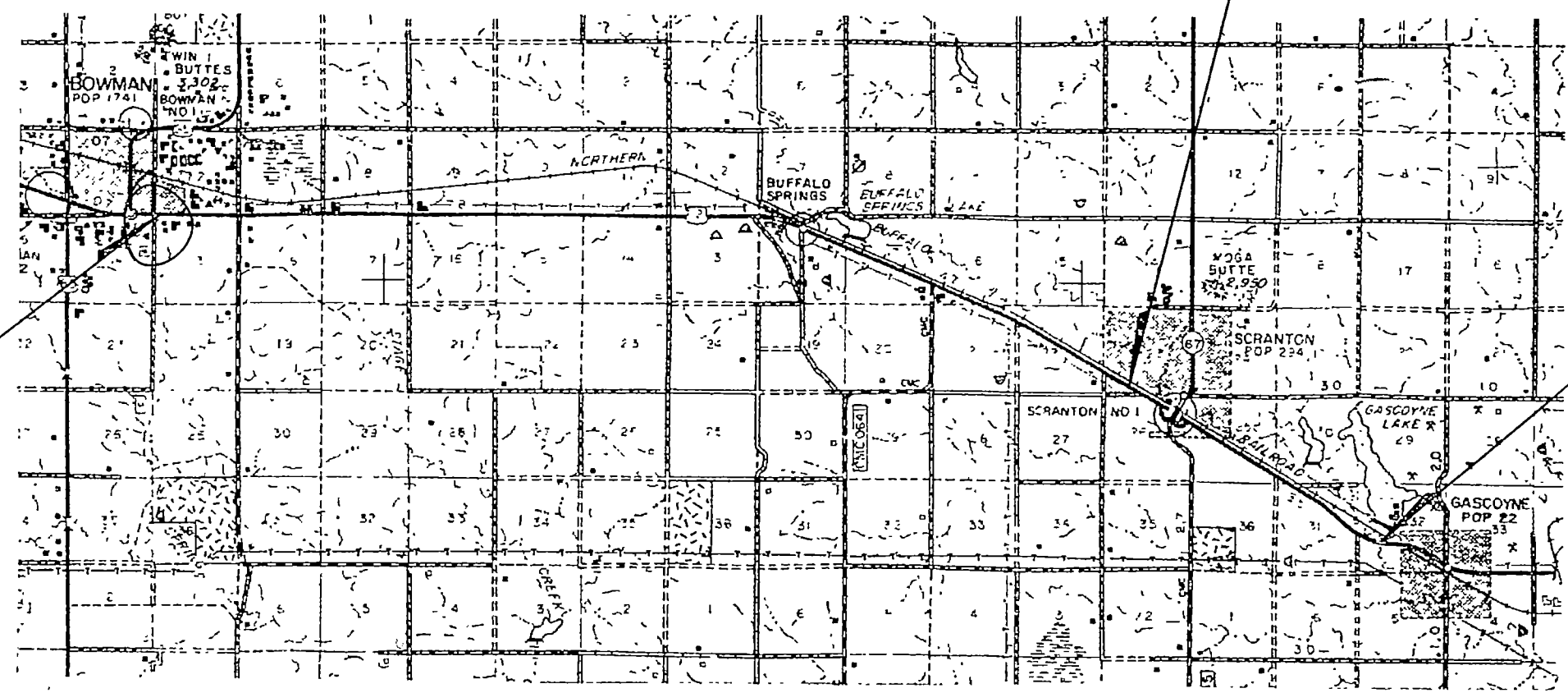
LENGTH OF PROJECT

11.724 miles
Not including work at Gascoyne Bridge

End Project
NH-5-012(027)034
Sta 2424+30, RP 45.915
Sec 23, T131N, R100W

Begin Project
NH-5-012(027)034
Sta 1805+25, RP 34.191
Sec 12 & 13, T131N, R102W

RP 49.406
Gascoyne Bridge
Repair approach slab
settlement & erosion
on slopes



DESIGNERS

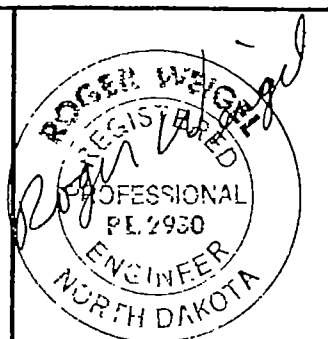
Stacey Heenan
Andy Hall
Wes Both
Wayne St. John

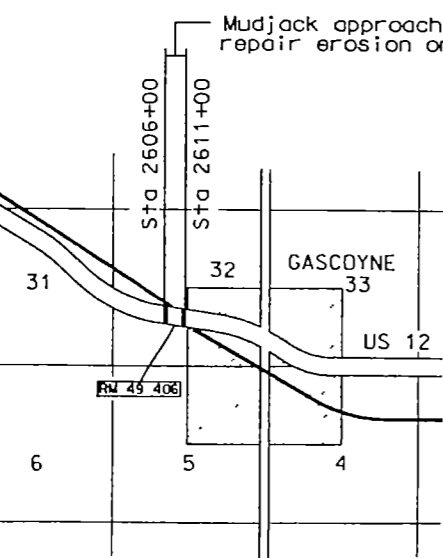
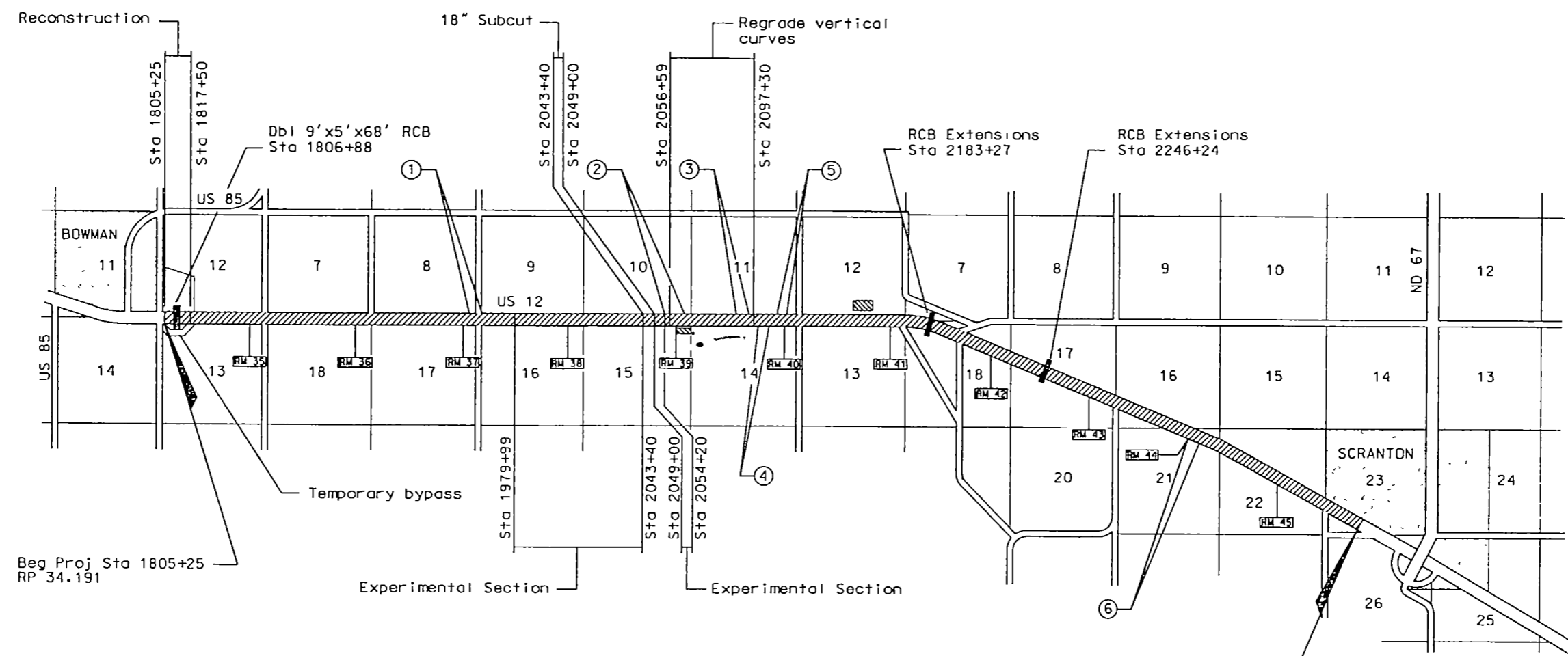
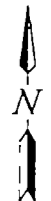
APPROVED DATE 01-27-2005
Travis Ziegler
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

APPROVED DATE _____
FEDERAL HIGHWAY ADMINISTRATION
U.S. DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 01-27-2005
Roger Weigel
DESIGN DIVISION
ND DEPARTMENT OF TRANSPORTATION





NOTE: This project consists of widening with mine and blend and hot bituminous pavement except at areas designated as reconstruction or regrading. All approach pipes will be replaced

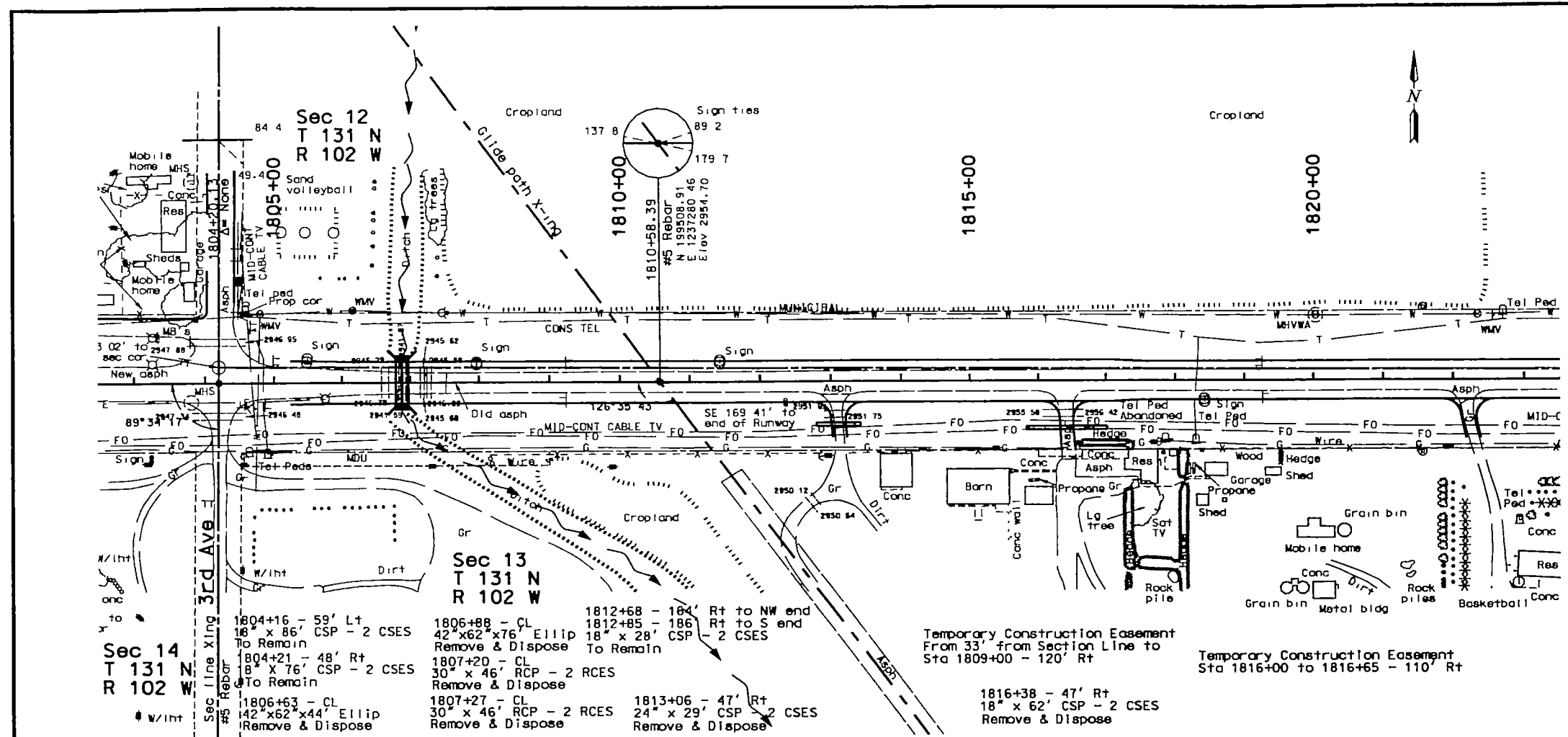
CULTURAL RESOURCE SITES

- ① Sta 1958+40 to Sta 1962+00 Lt
- ② Sta 2054+20 to Sta 2064+00 Lt
- ③ Sta 2088+90 to Sta 2095+00 Lt
- ④ Sta 2099+90 to Sta 2105+00 Rt
- ⑤ Sta 2108+90 to Sta 2113+80 Lt
- ⑥ Sta 2323+35 to Sta 2329+40 Rt

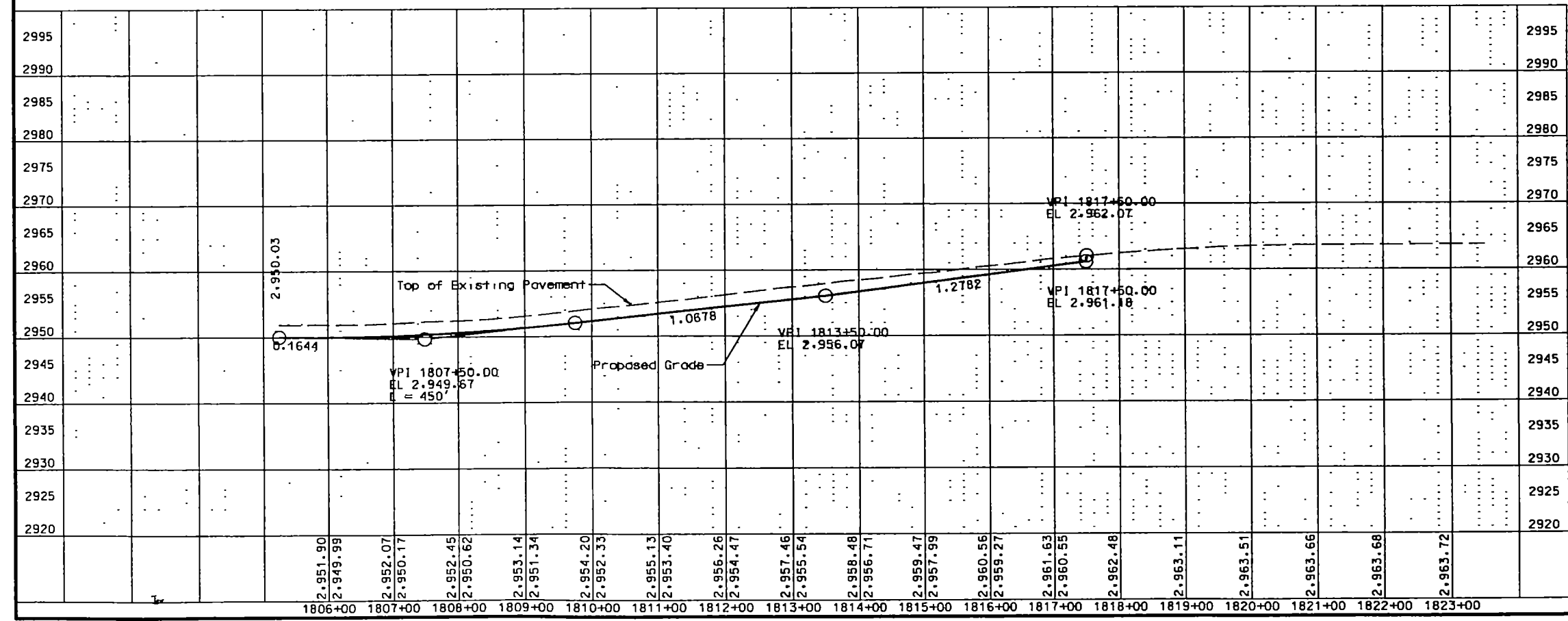
▨ Borrow Area

Scope of Work
 US Highway 12
 Bowman to 1/2 Mi. W. of Scranton

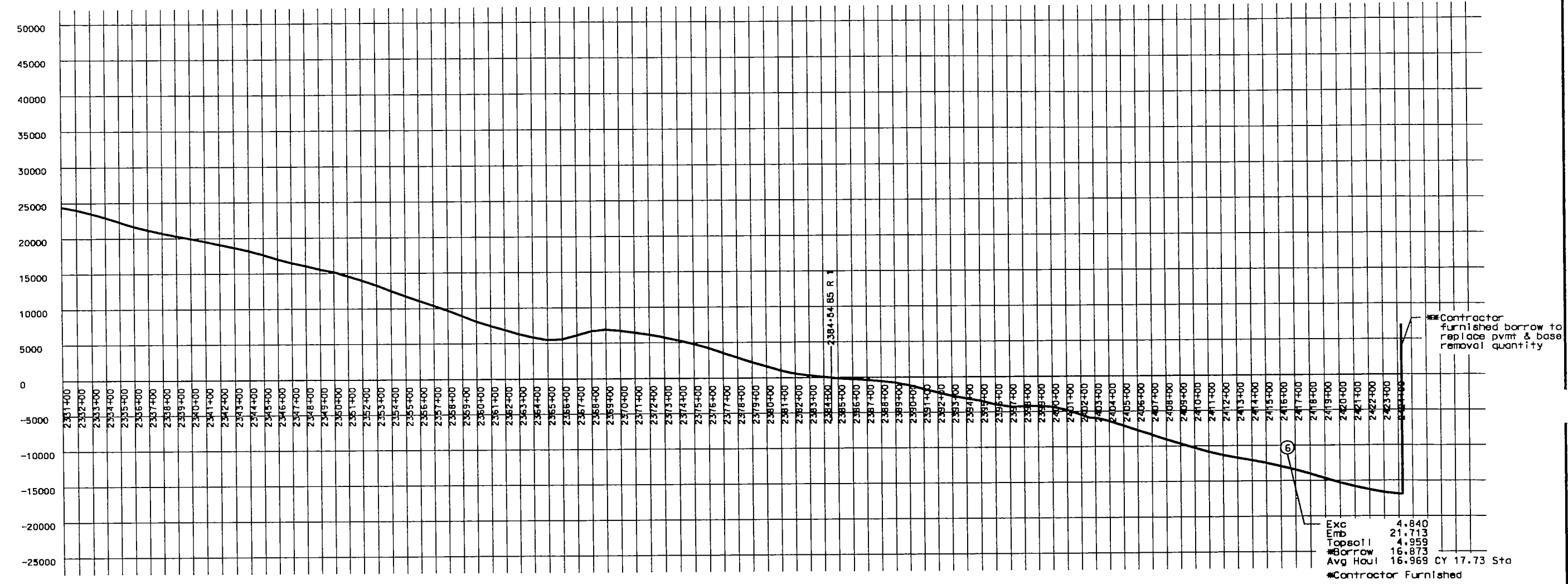
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
NH	NH-5-012(027)034	060	52



- INSTALL PIPE CULVERT & END SECTIONS**
- 1813+06 RT 24"x62' CSP .064" 2-24" CSES
 - 1816+38 RT 18"x124' CSP .064" 2-18" CSES
- INSTALL MONUMENT**
- 1804+20.13 23' LT (Section Corner) 1 Each
 - 1804+20.13 (Section Line Crossing) 1 Each
- INSTALL RIGHT of WAY MARKERS**
- 1821+57 100' LT 1 Each
 - 1821+57 100' RT 1 Each



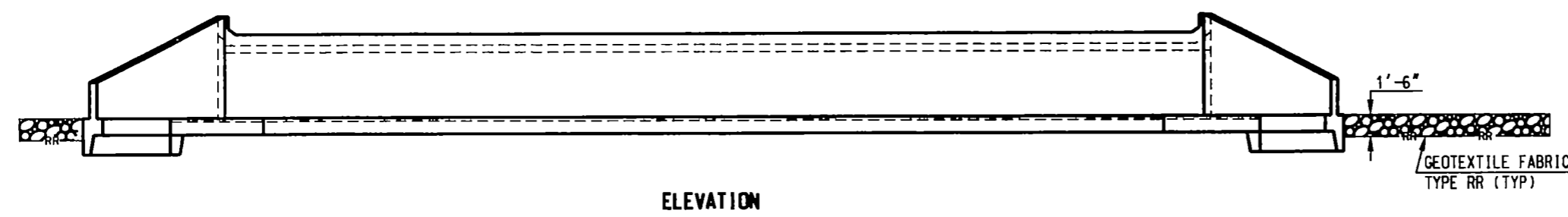
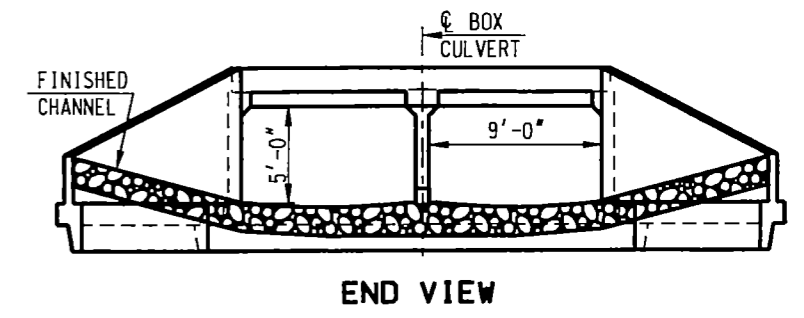
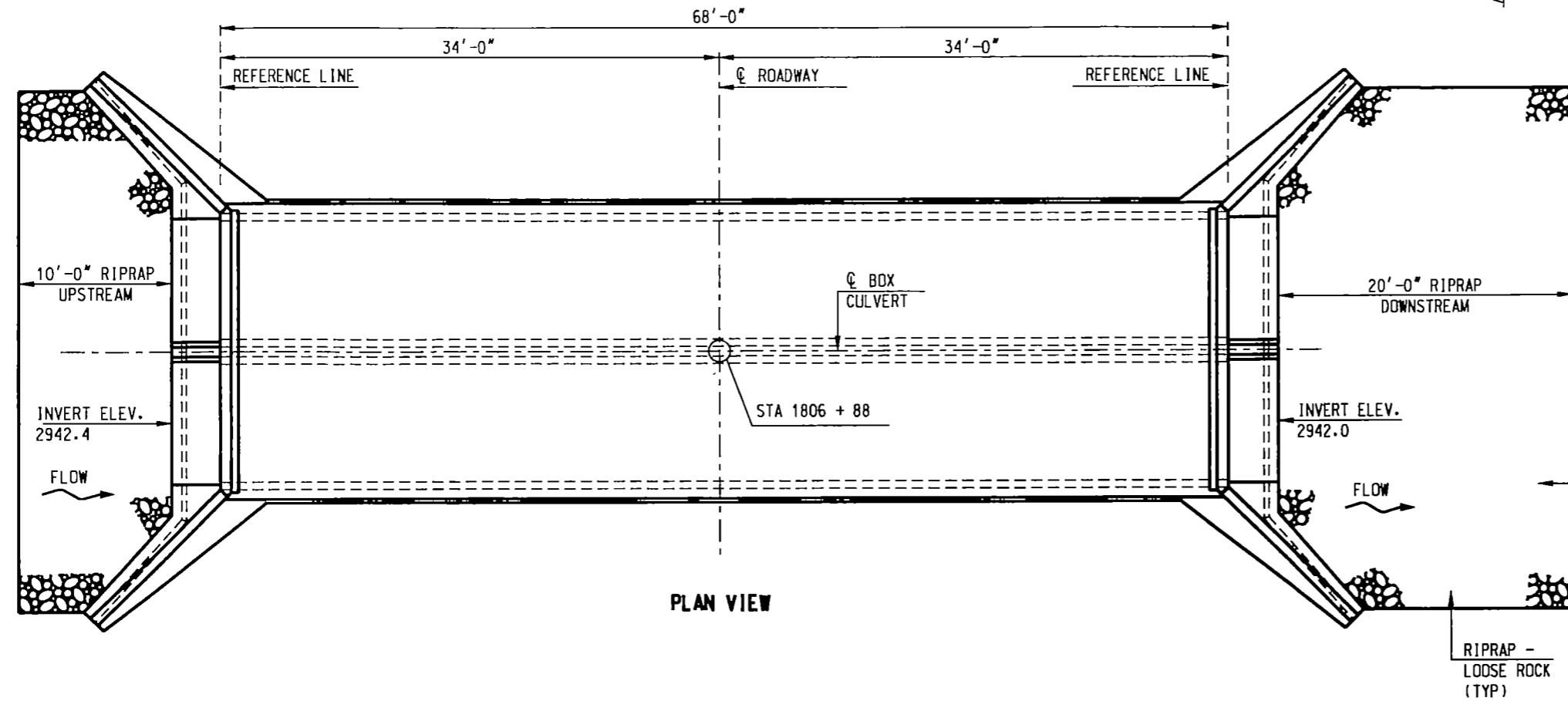
US 12 Plan & Profile Sheets
Sta 1805+25 to Sta 1823+00



NOTE: Mass ordinates include existing pavement and base to be removed from the reconstruction/regrading areas. Refer to the earthwork summary for quantities.

MASS DIAGRAM

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	113



HYDRAULIC DATA

DRAINAGE AREA	2.0 sq. mi.
STREAM GRADIENT	0.00116 ft/ft
DESIGN FREQUENCY	50 year
DESIGN DISCHARGE	470 cfs
DESIGN HEADWATER STAGE	2949.50 ft
DESIGN TAILWATER STAGE	2947.16 ft
VELOCITY THROUGH CULVERT	9.4 fps
100-YEAR FREQUENCY DISCHARGE	530 cfs
100-YEAR FREQUENCY HEADWATER	2950.30 ft
OVERTOPPING STAGE	2951.96 ft
OVERTOPPING DISCHARGE	N/A cfs

QUANTITIES

SPEC NO.	CODE NO.	BID ITEM	QUANTITY
202	0105	REMOVAL OF STRUCTURE	1 L SUM
210	0112	CLASS 2 EXCAVATION - SITE 1	1 L SUM
210	0201	FOUNDATION PREPARATION	1 EA
210	0210	FOUNDATION FILL	1,500 CY
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	139.6 CY
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	16,954 LBS
708	1020	RIPRAP - LOOSE ROCK	55 CY
709	0600	GEOTEXTILE FABRIC - TYPE RR	110 SY
709	0701	GEOTEXTILE FABRIC - TYPE R1	570 SY



NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
**REINFORCED CONCRETE
DOUBLE BOX CULVERT
LAYOUT**
CLEAR SPAN 2 x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25
PROJECT: NH-5-012(027)034
STATION 1806 + 88
BOWMAN COUNTY
DATE: 1-10-05
Terrence R. Udland
BRIDGE ENGINEER

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	114

- 100 SCOPE OF WORK: Work at this site consists of building a new double barrel 9' x 5' x 68' reinforced concrete box culvert.
- 202 REMOVAL OF STRUCTURE: The existing structure is made up of two 42"x62"x44' RCPA and two 30"x46' RCP. The lump sum bid item "Removal of Structure" includes all work required to remove the existing pipes and end sections. All materials removed shall become property of the contractor and shall be disposed of properly off of the right of way.
- 210 FOUNDATION PREPARATION: The bidders shall be aware of the possible inundated conditions at this site before the bid letting. The cost of any cofferdams and dewatering the excavation shall be included in the bid for "Foundation Preparation."
- 210 FOUNDATION FILL: Foundation fill shall meet the requirements of Section 816.03, Class 5. The backfill shall be placed in layers of not more than six inches, moistened or dried as required, and thoroughly compacted with mechanical tamping equipment.
- 210 EXCAVATION: All excavation required to build the box culvert shall be included in the bid for "Class 2 Excavation-Site 1."
- 602 CONCRETE: All concrete shall be Class AE-3 and shall be compacted by vibration.

The following elements of each section shall be cast in one continuous run:

1. Floor slab and wing footings
2. Each intermediate wall up to the bottom of fillets
3. Each sidewall up to the bottom of fillets with its adjacent wings complete to the top
4. Roof slab and parapets

All exposed edges of concrete shall be beveled with 3/4" triangular molding. The concrete in the walls shall be allowed to set at least two hours before the roof slab is poured.

- 612 REINFORCING STEEL: The transverse and vertical bars shall be placed nearest the surface, the longitudinal, temperature or tie bars shall be placed immediately inside the vertical and transverse bars and the intersections tied.

When the distance between end bars is not evenly divisible by bar spacing, the odd distance should be adjusted by a few irregular spaces near the center, not at the ends of the culvert.

The clear distance from the nearest bar to the surface of the concrete shall be as follows:

Bottom of wing footing =	3" clear
Bottom of floor slab =	2 1/2" clear
Top of floor slab =	2" clear
Top of wing footing =	2" clear
All walls =	2" clear
Top of roof slab =	2" clear
Bottom of roof slab =	1" clear

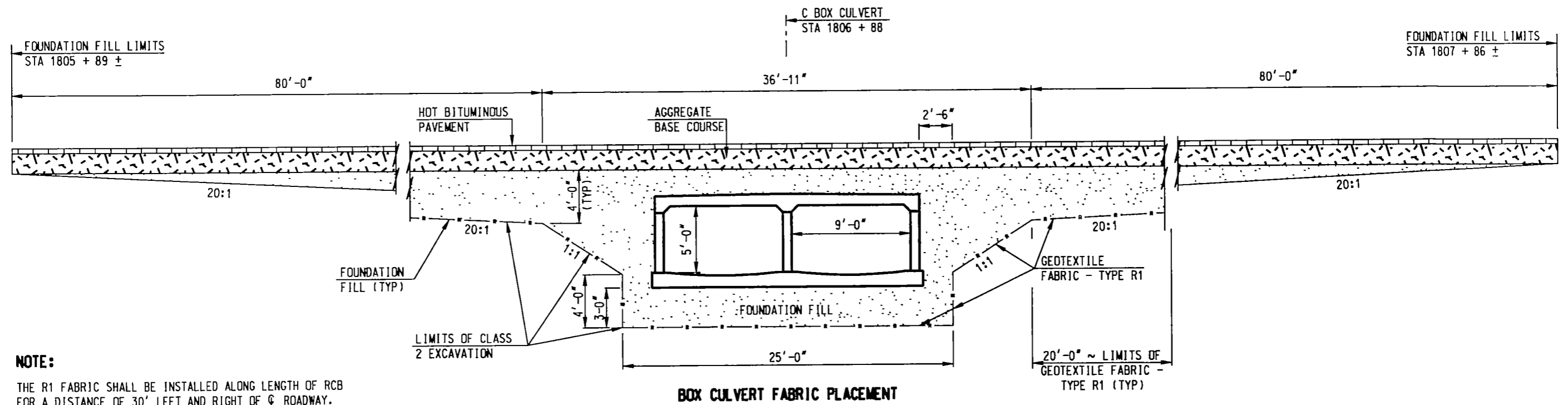
Dimensions of bent bars are given out to out. All bends conform to A.C.I. Standards unless indicated otherwise.

- 708 RIPRAP - LOOSE ROCK: Any excavation required to place the riprap shall be incidental to the price bid for "Riprap - Loose Rock."
- 709 GEOTEXTILE FABRIC - TYPE R1: Reinforcement fabric shall be placed parallel to the roadway centerline. If more than one piece of fabric is used to meet the required roadway length, then the joint must be sewn. Adjacent strips of fabric shall be overlapped 30". All fabric must be taut and pinned with a six inch (min) pin, peg, or staple every 15' along all edges and on all corners prior to placing fill on the fabric.

DESIGN STRENGTHS:

f'c 3,000 psi ~ Class AE-3 Concrete
fy 60,000 psi ~ Reinforcing Steel

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	115



NOTE:

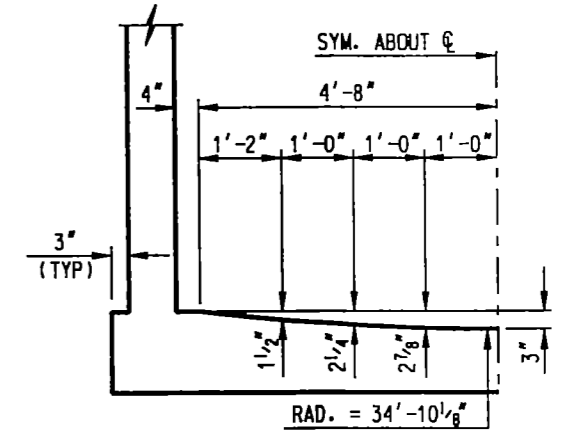
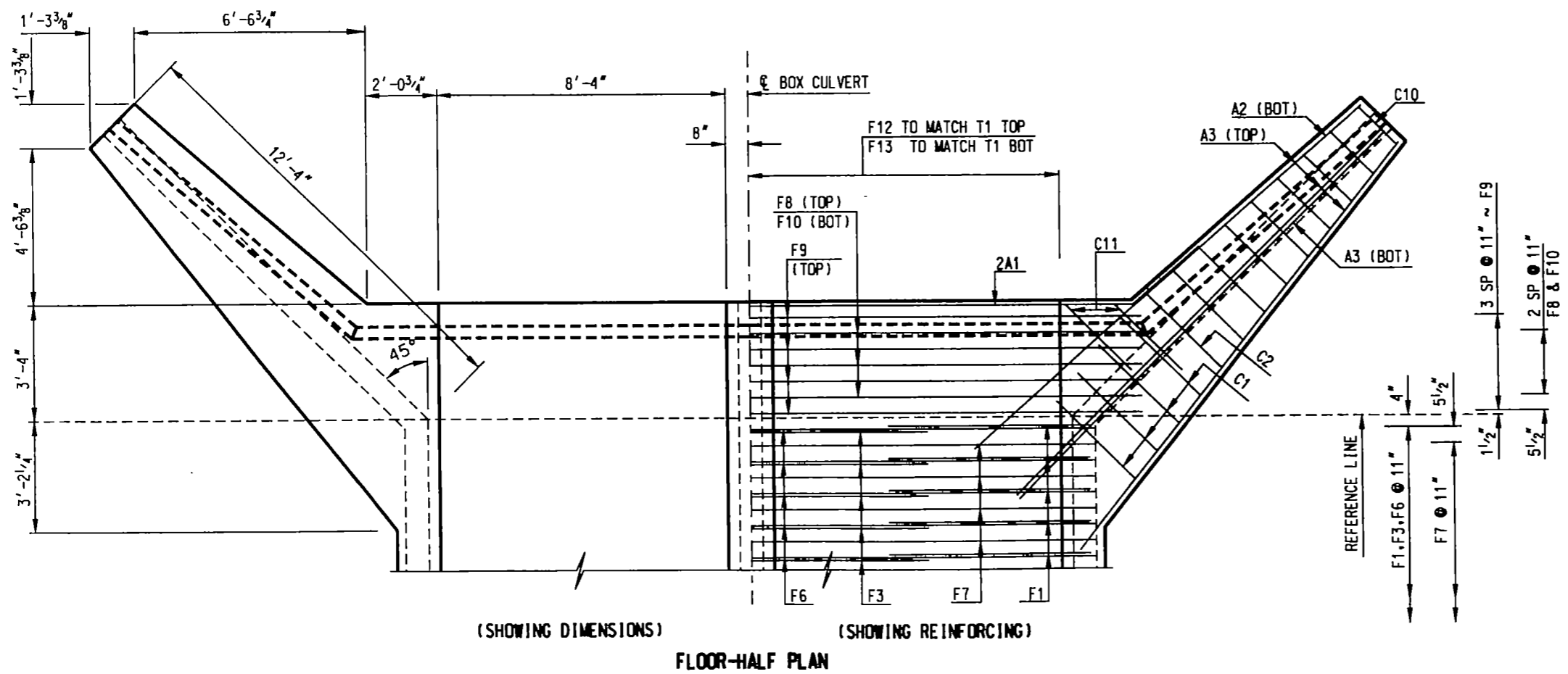
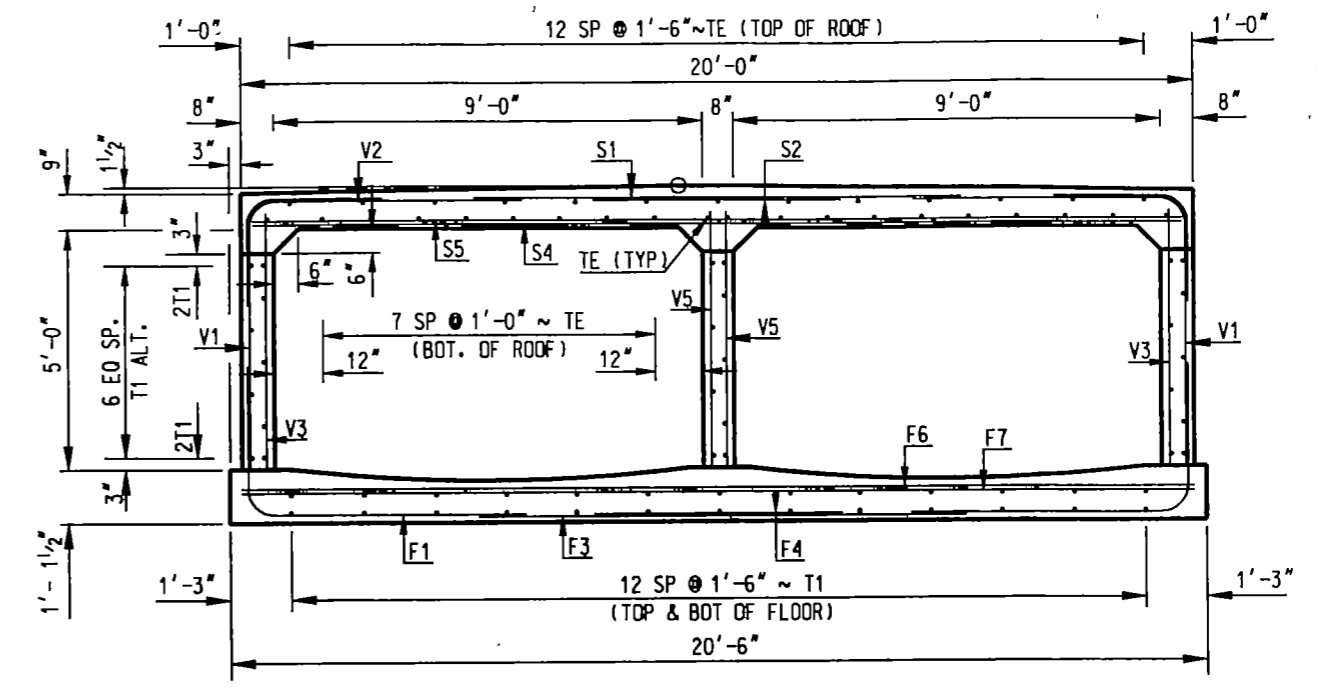
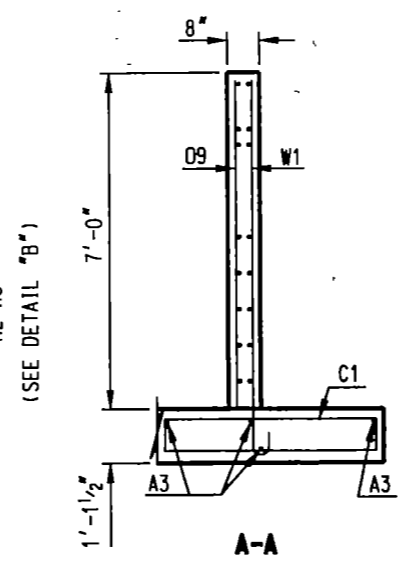
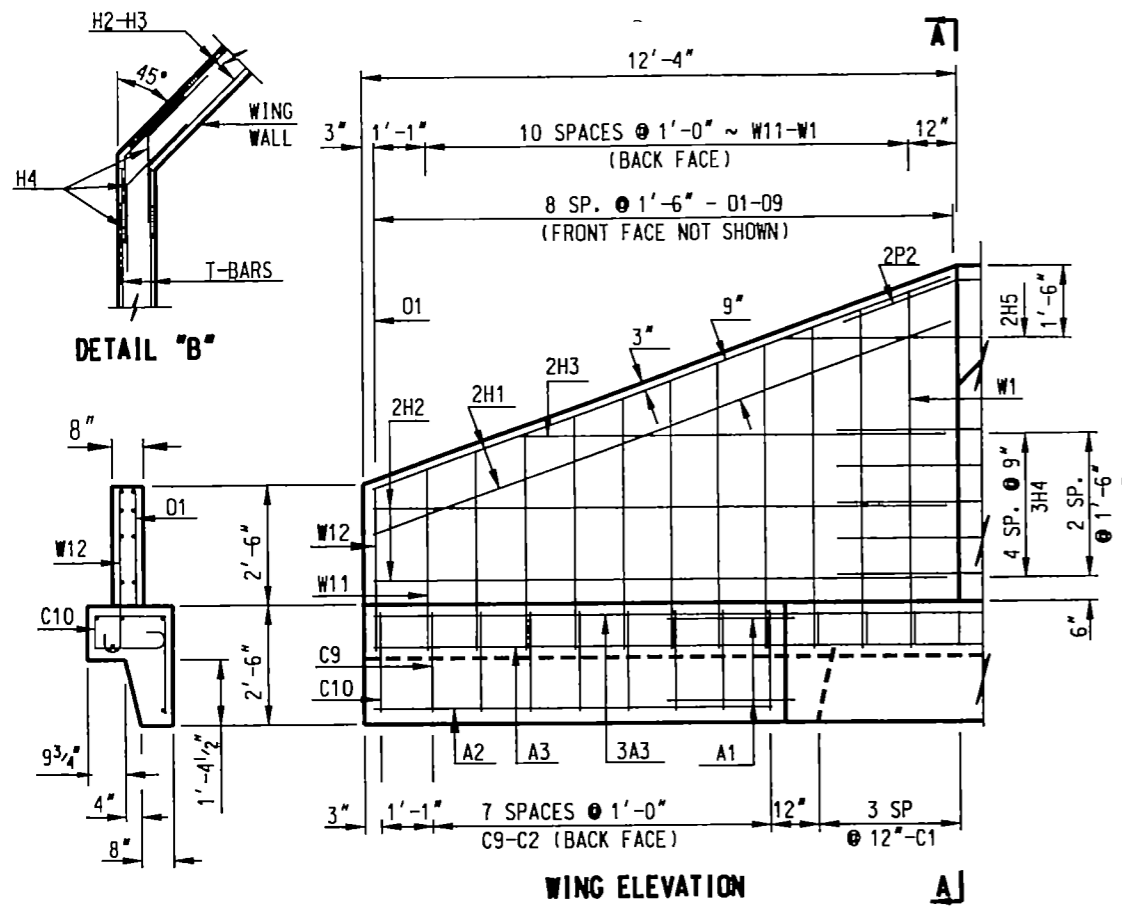
THE R1 FABRIC SHALL BE INSTALLED ALONG LENGTH OF RCB FOR A DISTANCE OF 30' LEFT AND RIGHT OF ϕ ROADWAY.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

**REINFORCED CONCRETE
DOUBLE BOX CULVERT
EXTENSION**

STA 1806 + 88
CLEAR SPAN 2 x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	110

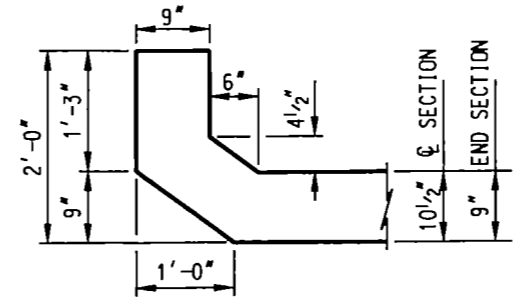


NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

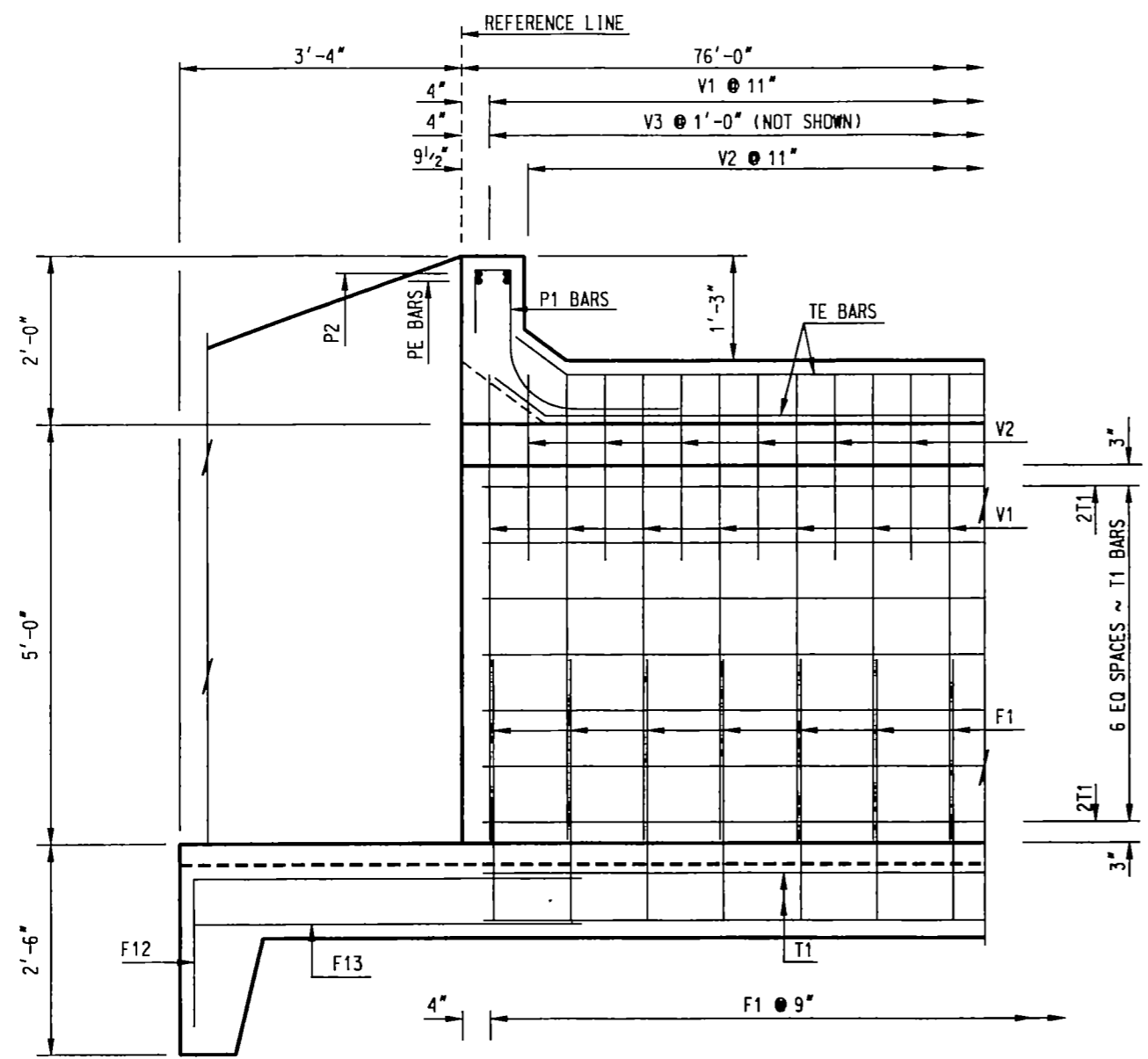
**REINFORCED CONCRETE
SINGLE BOX CULVERT**

STA 1006 + 00
CLEAR SPAN 2x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

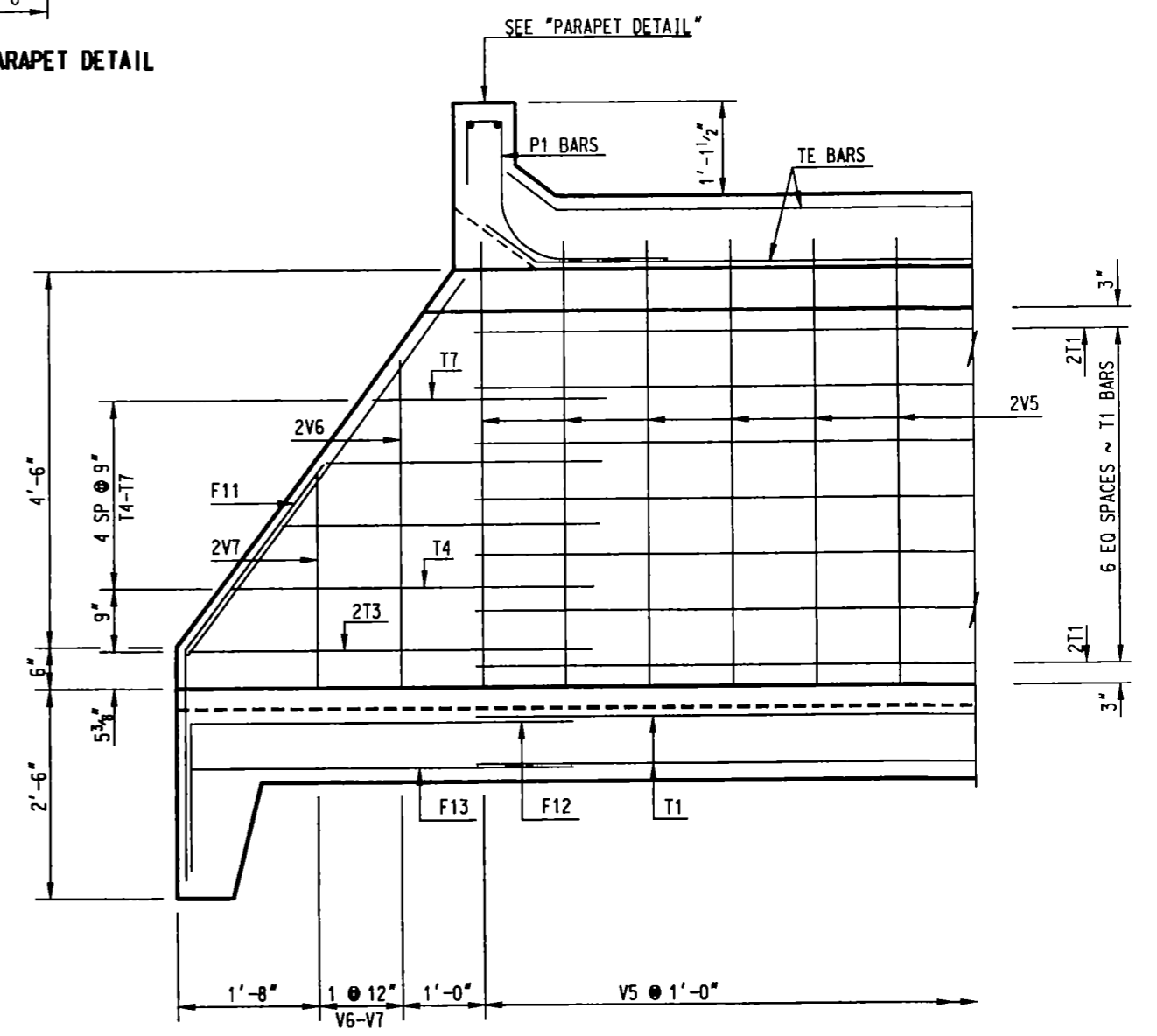
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	117



PARAPET DETAIL



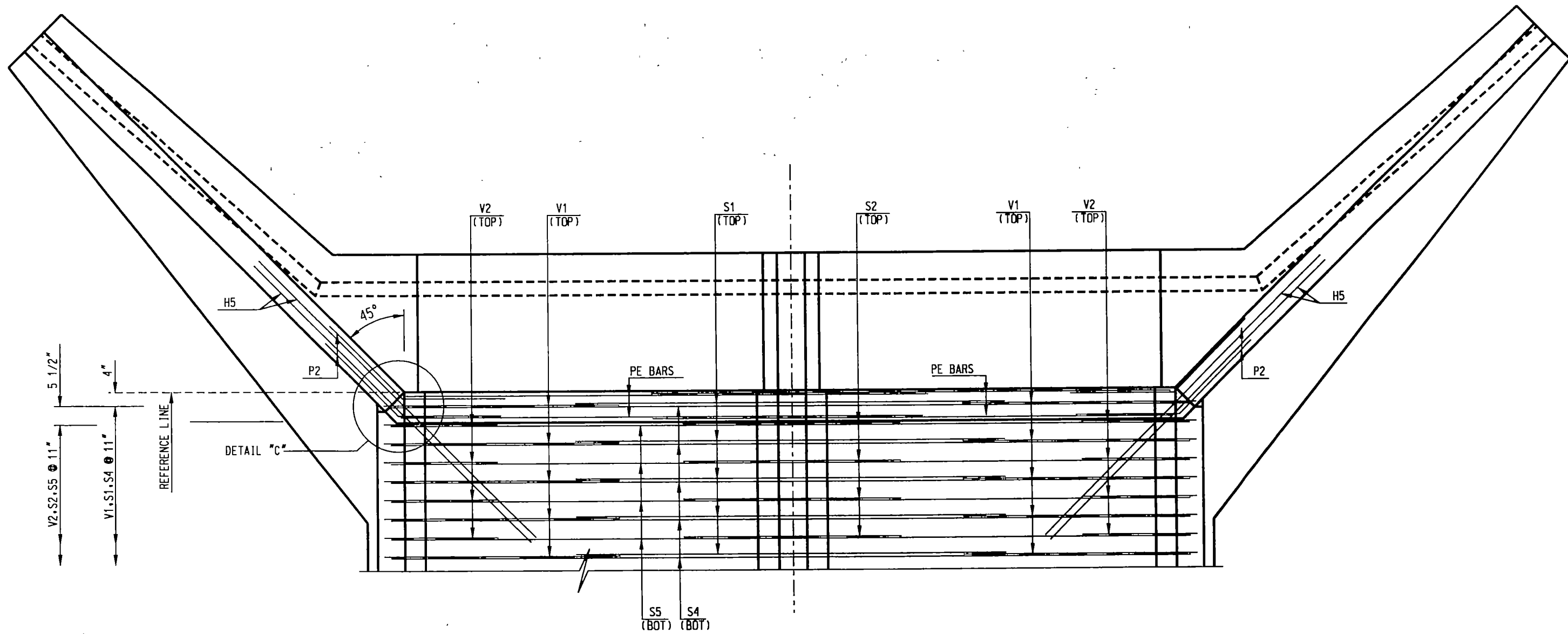
LONGITUDINAL SECTION



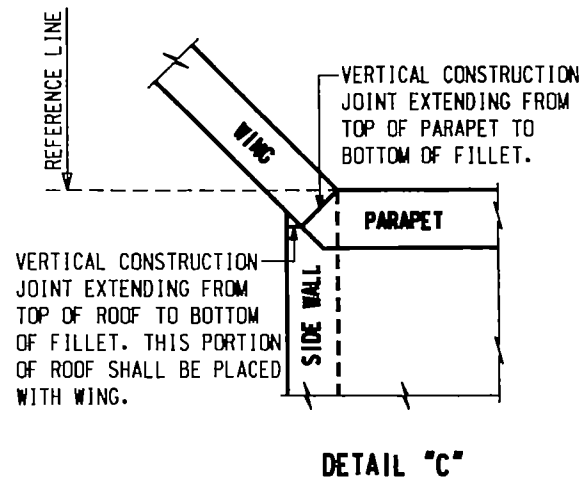
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE
SINGLE BOX CULVERT

STA 1006 + 00
CLEAR SPAN 2x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	118



ROOF-HALF PLAN



DETAIL "C"

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
REINFORCED CONCRETE
SINGLE BOX CULVERT

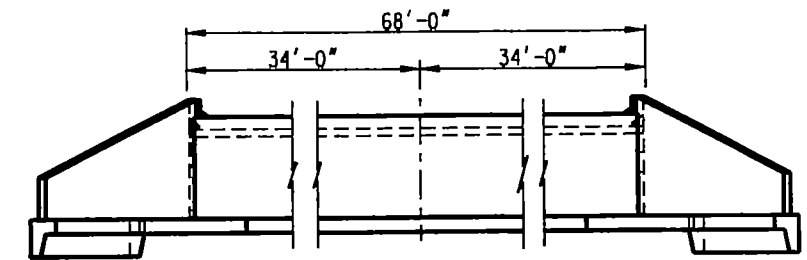
STA 1006 + 00
CLEAR SPAN 2 x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	119

BAR LIST (CONSTANT)				
MARK	SIZE	NO.	LENGTH	SHAPE
W 1	4	4	7'-11"	BENT
W 2	4	4	7'-7"	BENT
W 3	4	4	7'-2"	BENT
W 4	4	4	6'-10"	BENT
W 5	4	4	6'-6"	BENT
W 6	4	4	6'-1"	BENT
W 7	4	4	5'-9"	BENT
W 8	4	4	5'-4"	BENT
W 9	4	4	5'-0"	BENT
W10	4	4	4'-8"	BENT
W11	4	4	4'-3"	BENT
W12	4	4	3'-11"	BENT
C 1	4	16	8'-4"	BENT
C 2	4	4	9'-3"	BENT
C 3	4	4	8'-11"	BENT
C 4	4	4	8'-7"	BENT
C 5	4	4	8'-1"	BENT
C 6	4	4	7'-9"	BENT
C 7	4	4	7'-5"	BENT
C 8	4	4	7'-1"	BENT
C 9	4	4	6'-9"	BENT
C10	4	4	6'-3"	BENT
C11	4	8	4'-9"	BENT
H 1	6	16	12'-8"	STR.
H 2	4	16	11'-10"	STR.
H 3	4	8	9'-1"	STR.
H 4	4	60	6'-0"	BENT
H 5	6	8	9'-6"	STR.
D 1-D 9	4	4 SETS	41'-8"	STR.
A 1	6	8	14'-7"	BENT
A 2	6	4	8'-9"	STR.
A 3	6	16	14'-10"	STR.
P 1	4	40	4'-7"	BENT
P 2	6	8	5'-0"	BENT
PE	6	8	12'-7"	STR.
V 6	4	4	3'-11"	STR.
V 7	4	4	2'-7"	STR.
V 8	6	4	5'-7"	STR.
F 8	4	6	22'-8"	STR.
F 9	4	8	22'-8"	STR.
F10	5	6	22'-8"	STR.
F11	6	4	5'-6"	BENT
F12	4	26	6'-4"	BENT
F13	4	26	4'-7"	STR.
T3	4	4	4'-10"	STR.
T 4-T 7	4	2	14'-4"	STR.

BAR LIST (VARIABLE)				
MARK	SIZE	NO.	LENGTH	SHAPE
V 1	4	152	11'-0"	BENT
V 2	4	148	4'-9"	BENT
V 3	4	152	5'-4"	STR.
V 5	4	140	5'-4"	STR.
F 1	4	152	8'-8"	BENT
F 3	5	76	10'-4"	STR.
F 4	5	80	5'-3"	STR.
F 6	4	76	20'-0"	STR.
F 7	4	74	20'-0"	STR.
S 1	5	76	10'-4"	STR.
S 2	5	74	5'-3"	STR.
S 4	4	76	19'-4"	STR.
S 5	4	74	19'-4"	STR.
TE	4	66	33'-3"	BENT
T 1	4	106	33'-6"	STR.
SP	4	86	3'-0"	STR.



OPTIONAL CONSTRUCTION JOINTS

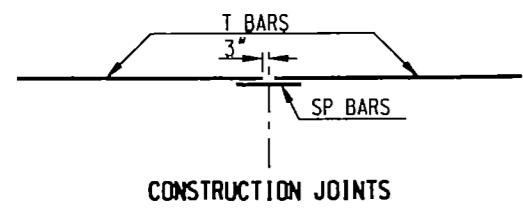
L = 68'

CONCRETE FORMULAS	
ENTIRE FLOOR	"L" X 0.75121 + 13.92894 CY
O.S. WALLS & WINGS	"L" X 0.22222 + 5.66328 CY
INNER WALLS	"L" X 0.11111 + 0.45267 CY
ENTIRE ROOF	"L" X 0.66127 + 0.87881 CY
TOTAL	"L" X 1.74581 + 20.92370 CY

QUANTITIES	
CONCRETE CLASS AE-3 CY	REINFORCING GRADE 60 LBS
139.6	16,954

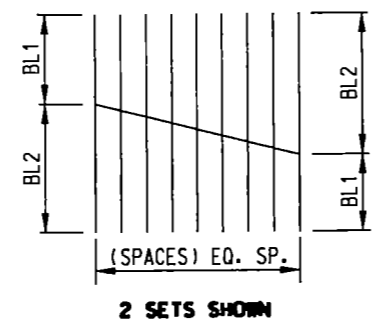
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
**REINFORCED CONCRETE
SINGLE BOX CULVERT**

STA 1005 + 00
CLEAR SPAN 2x9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25



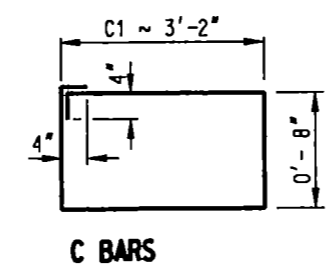
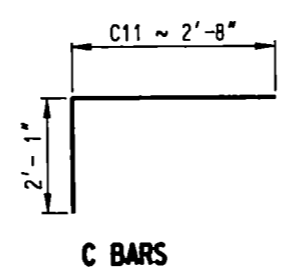
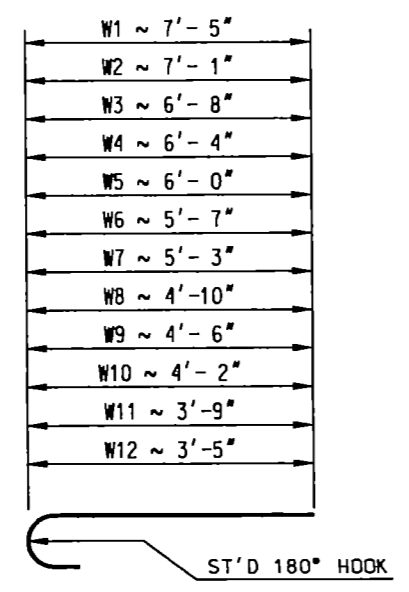
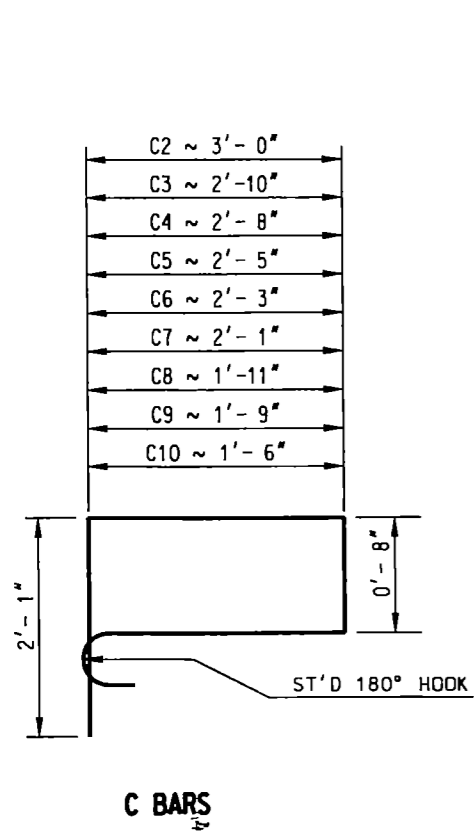
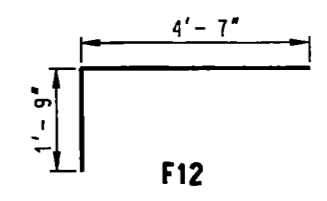
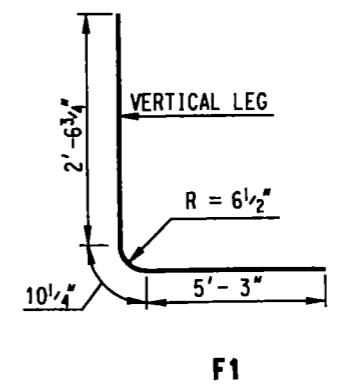
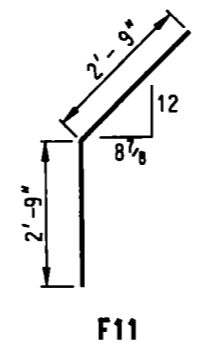
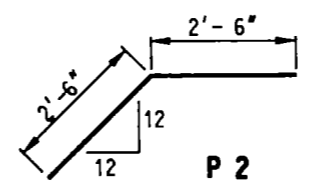
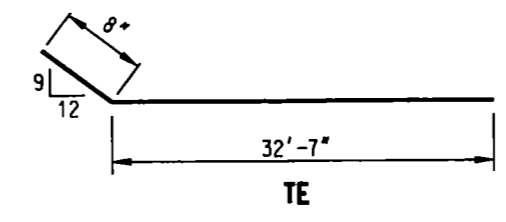
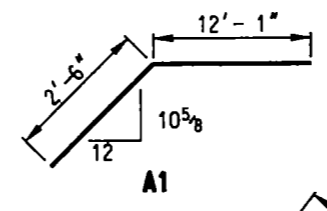
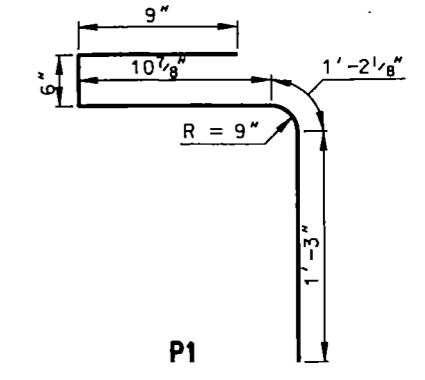
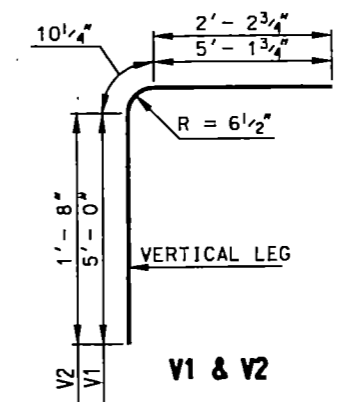
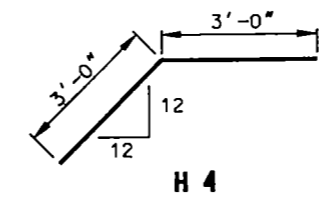
T1. TE & SP BAR PLACEMENT

UNLESS CONSTRUCTION REQUIREMENT DICATE OTHERWISE, THE CONTRACTOR HAS THE OPTION TO CONSTRUCT THE BOX CULVERT USING THE CONSTRUCTION JOINTS AS SHOWN OR AS ONE CONTINUOUS UNIT. THE THREE FOOT SP BARS SHALL BE USED FOR EITHER OPTION.



MARK	LENGTH 1 SET	BL1	BL2	SPACES
D 1-0 9	41'-8"	2'-5"	6'-10"	8
T 4-T 7	14'-4"	2'-10"	4'-4"	3

BAR CUTTING DETAILS

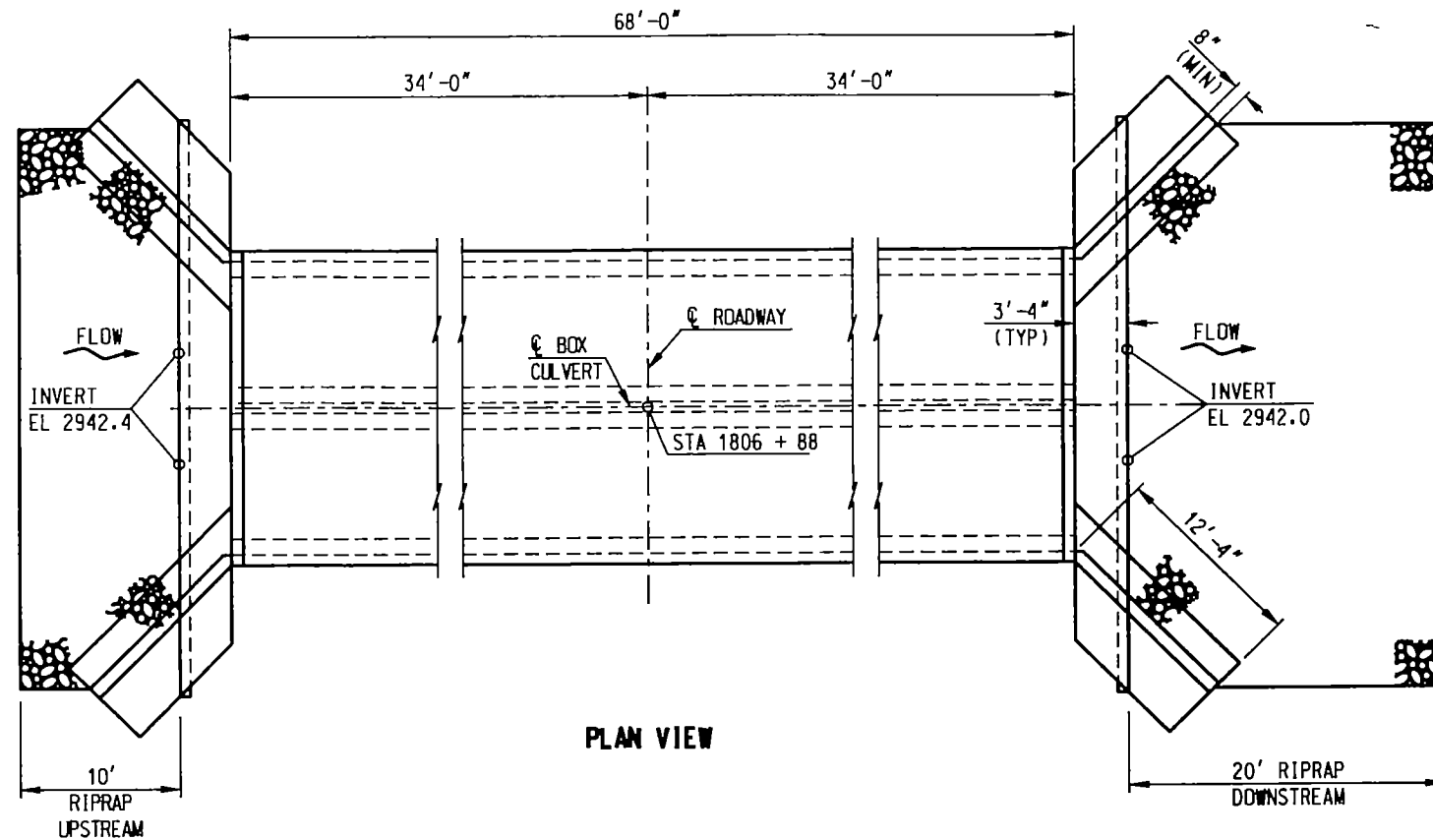


NOTE:
DIMENSIONS OF BENT BARS ARE GIVEN OUT TO OUT. ALL BENDS CONFORM TO A.C.I. STANDARDS UNLESS INDICATED OTHERWISE.

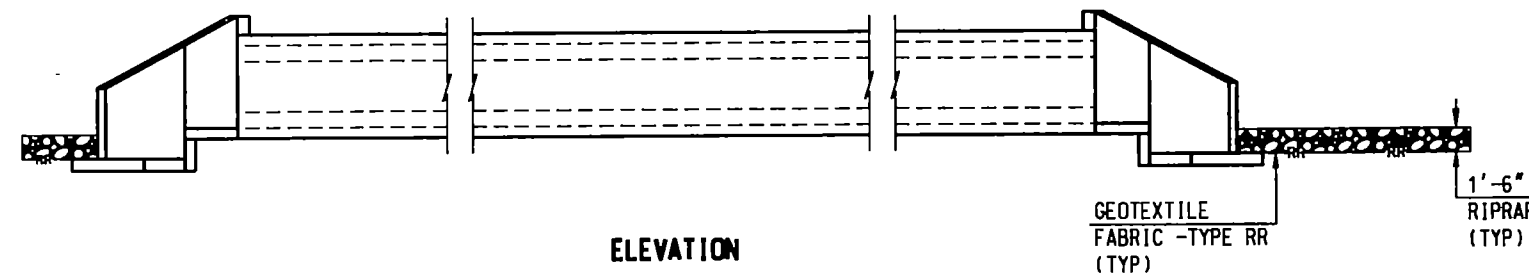
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
**REINFORCED CONCRETE
SINGLE BOX CULVERT**

STA 1005 + 00
CLEAR SPAN 2x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

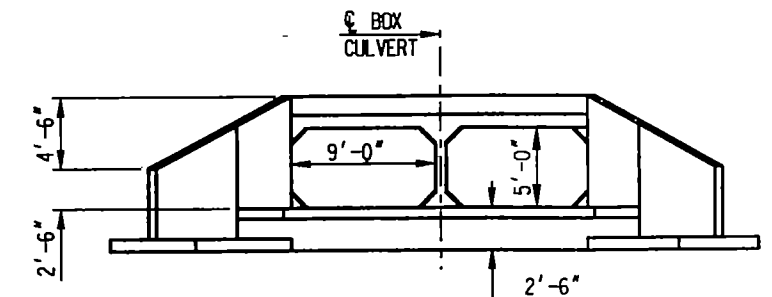
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	121



PLAN VIEW



ELEVATION



END VIEW

HYDRAULIC DATA

DRAINAGE AREA	2.0	sq. mi.
STREAM GRADIENT	0.00116	ft/ft
DESIGN FREQUENCY	50	year
DESIGN DISCHARGE	470	cfs
DESIGN HEADWATER STAGE	2949.50	ft
DESIGN TAILWATER STAGE	2947.16	ft
VELOCITY THROUGH CULVERT	9.4	fps
100-YEAR FREQUENCY DISCHARGE	530	cfs
100-YEAR FREQUENCY HEADWATER	2950.30	ft
OVERTOPPING STAGE	2951.96	ft
OVERTOPPING DISCHARGE	N/A	cfs



QUANTITIES

SPEC NO.	CODE NO.	BID ITEM	QUANTITY
202	0105	REMOVAL OF STRUCTURE	1 L SUM
210	0112	CLASS 2 EXCAVATION - SITE 1	1 L SUM
210	0201	FOUNDATION PREPARATION	1 EA
210	0210	FOUNDATION FILL	1500 CY
606	2905	DBL 9 FT X 5 FT PRECAST RCB CULVERT	68 LF
606	6905	DBL 9 FT X 5 FT PRECAST RCB END SECTION	2 EA
708	1020	RIPRAP - LOOSE ROCK	55 CY
709	0600	GEOTEXTILE FABRIC - TYPE RR	110 SY
709	0701	GEOTEXTILE FABRIC - TYPE R1	570 SY

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PRECAST
BOX CULVERT
LAYOUT

CLEAR SPAN 2 x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

PROJECT: NH-5-012(027)034
STATION 1806 +88

BOWMAN COUNTY

1-10-05
DATE

Terrence R. Udland
BRIDGE ENGINEER

NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-012 (027) 034	170	122

100 SCOPE OF WORK: Work at this site consists of building a new 2x9' x 5' x 68' precast concrete box culvert.

202 REMOVAL OF STRUCTURE: The existing structure is made up of two 42"x62"x44' RCPA and two 30"x46' RCP. The lump sum bid item "Removal of Structure" includes all work required to remove the existing pipes and end sections. All materials removed shall become property of the contractor and shall be disposed of properly off of the right of way.

210 FOUNDATION PREPARATION: The bidders shall be aware of the possible inundated conditions at this site before the bid letting. The cost of any cofferdams and dewatering the excavation shall be included in the bid for "Foundation Preparation."

210 FOUNDATION FILL: Foundation fill shall meet the requirements of Section 816.03, Class 5. The backfill shall be placed in layers of not more than six inches, moistened or dried as required, and thoroughly compacted with mechanical tamping equipment.

210 EXCAVATION: All excavation required to build the box culvert shall be included in the bid for "Class 2 Excavation-Site 1."

606 PRECAST SECTION: The barrel sections shall be tied together with prestressing strands. There shall be a minimum of six 1/2" diameter 270K strands for double box sections and 4 for single box sections, with one strand in each corner. Strands shall be stressed from opposite ends to a force of 20 kips. All hardware shall either be hot-dipped galvanized according to section 854 of the "North Dakota Standard Specifications for Road and Bridge Construction" or mechanically galvanized according to ASTM B695. Prestressing cables shall be corrosion protected and their ends grouted.

The "Dbl 9Ft x 5Ft Precast RCB End Section" bid item shall consist of the apron, the wingwalls, the cutoff wall and the parapet.

The apron shall be attached to the last barrel section, the wingwalls and the cutoff wall. Holes shall be cast at 3' centers through the apron and into the cutoff wall to receive 3/4" diameter dowels. The connections of the apron to the box and the wingwalls shall be a welded tie type system or an approved equal. The wingwalls shall be connected to the last barrel section by the use of galvanized U-bolts, galvanized steel-bolted plates or another approved method so that the inside corner surface is smooth.

Separate single or double cell precast units may be used as alternates to a multi cell culvert. The distance between separate precast units should be a minimum of 3" and a maximum of 6". This gap shall be filled with a controlled density backfill. The

controlled density backfill shall be a blend of cement, water, pozzolanic materials, and fillers. The material shall be fluid on placement to flow around and fill voids in the backfill area. The material shall be able to support normal loads after 6 hours and shall have a compressive strength in the range of 75 psi to 125 psi at 28 days. If the mix design shown is used, no further testing will be required. The mix design yields approximately one cubic yard of flowable mortar.

MIX DESIGN

Cement	100 lbs
Fly Ash	300 lbs
Fine Aggregate	2600 lbs
Water	70 gals

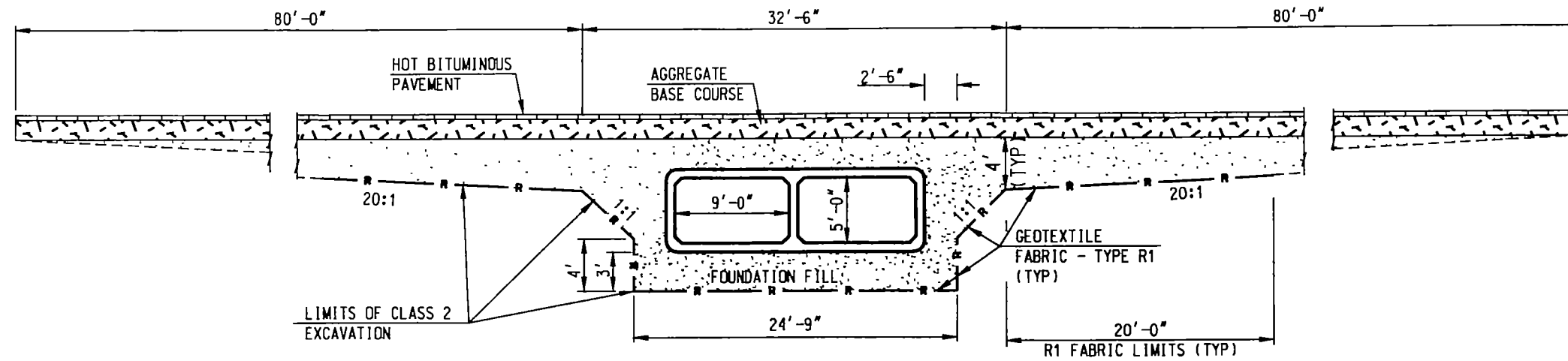
Measurement and Payment: Controlled density backfill will not be measured separately but shall be included in the price bid for "Dbl 9Ft x 5Ft Precast RCB Culvert."

The 12" cap shall consist of a weatherproof and freeze/thaw resistant material such as Sikagrout 212, EVA-POX Epoxy Paste No. 22, Speed Crete Red Line, or an approved equal.

708 RIPRAP - LOOSE ROCK: Any excavation required to place the riprap shall be incidental to the price bid for "Riprap - Loose Rock."

709 GEOTEXTILE FABRIC - TYPE R1: Reinforcement fabric shall be placed parallel to the roadway centerline. If more than one piece of fabric is used to meet the required roadway length, then the joint must be sewn. Adjacent strips of fabric shall be overlapped 30" or sewn. All sewn seams shall be connected with a j-seam which shall be no less than 90 percent of the wide width fabric tensile strength as in 709.03.E. All fabric must be taut and pinned with a six inch (min) pin, peg, or staple every 15' along all edges and on all corners prior to placing fill on the fabric.

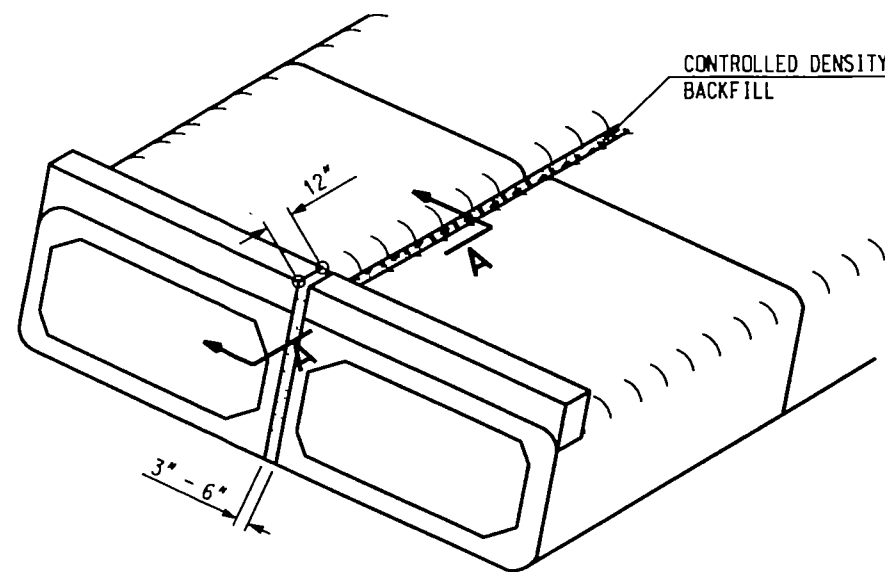
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	123



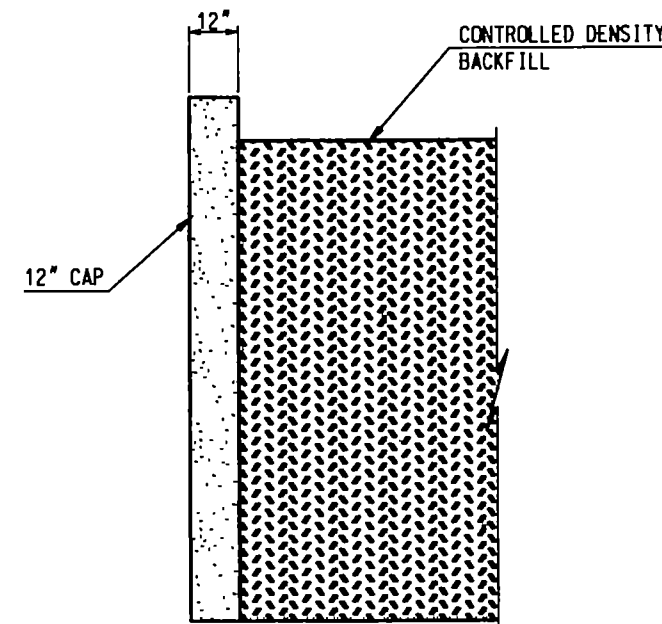
BOX CULVERT FABRIC PLACEMENT

NOTE:

THE R1 FABRIC SHALL BE INSTALLED ALONG LENGTH OF PRECAST CULVERT FOR A DISTANCE OF 30' LEFT AND RIGHT OF ϕ ROADWAY.



**MULTIPLE CELL INSTALLATION
(WINGS & APRON NOT SHOWN)**



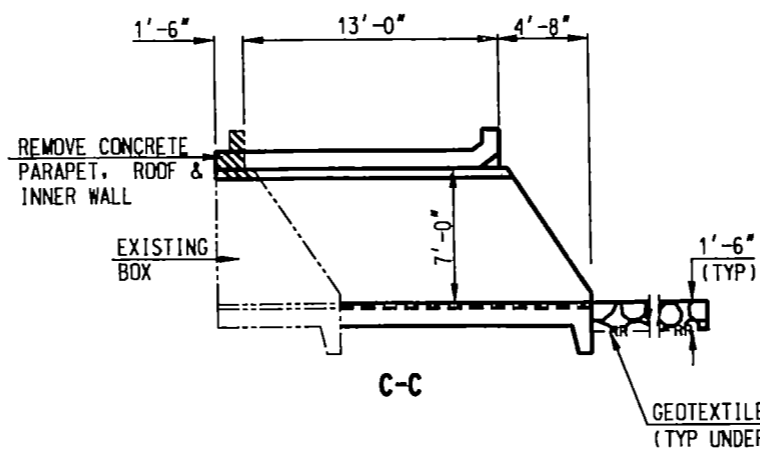
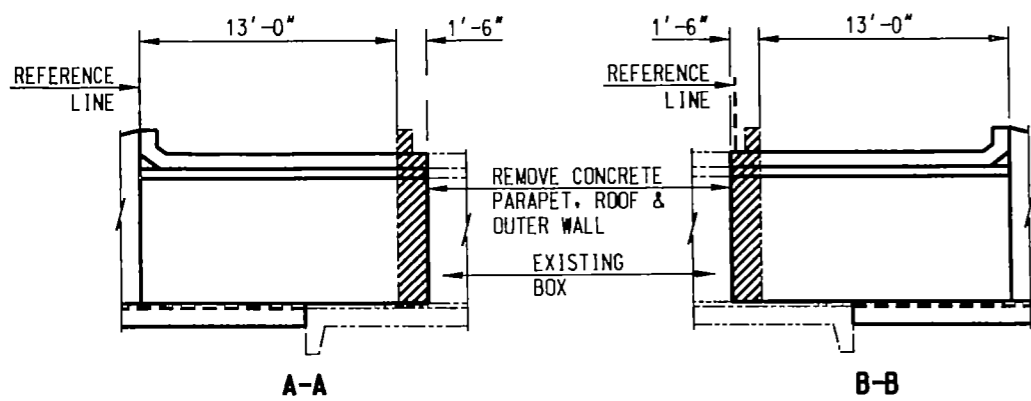
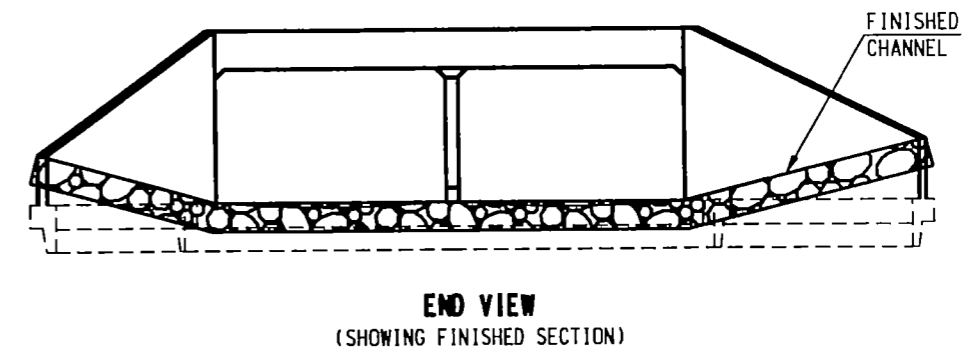
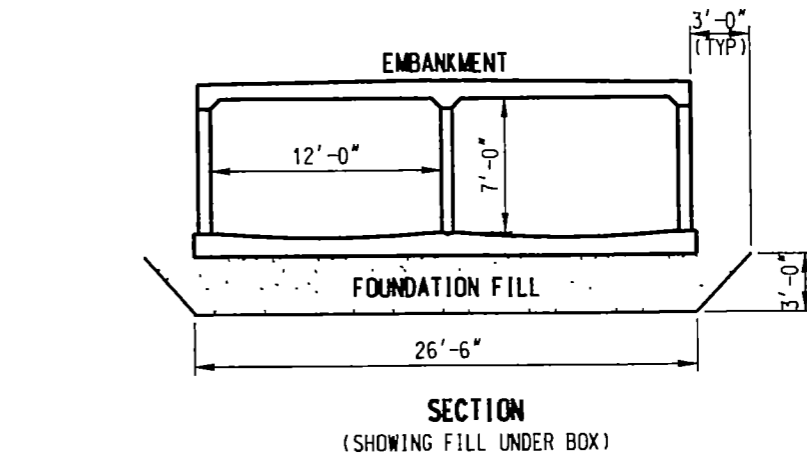
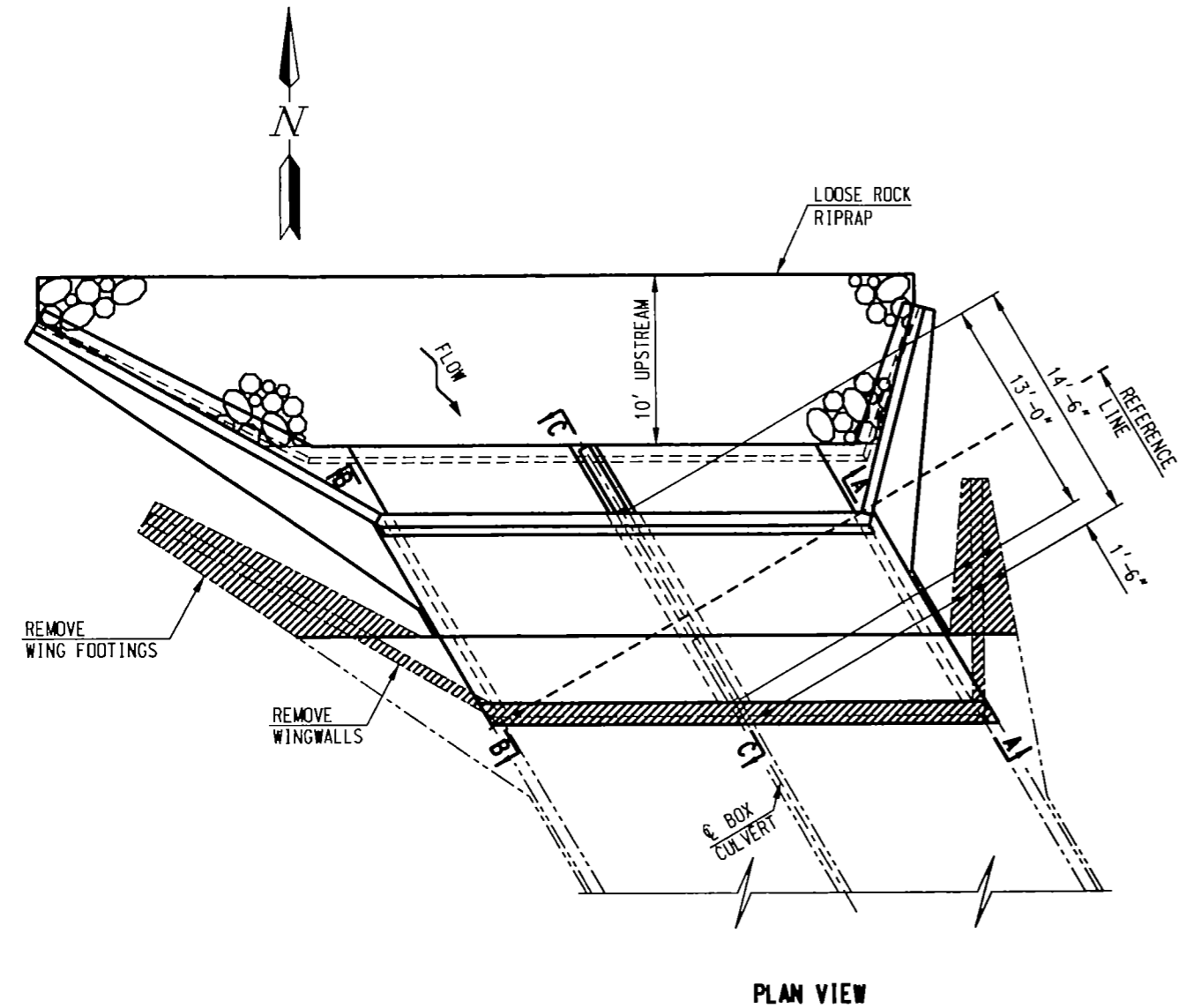
SECTION A-A

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

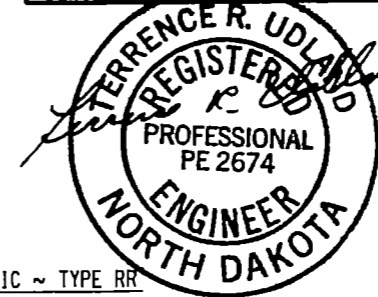
**PRECAST
BOX CULVERT**

STA 1806 + 88
CLEAR SPAN 2 x 9 CLEAR HEIGHT 5
MAXIMUM FILL 3
LIVE LOAD HS 25

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-5-012(027)034	170	124



QUANTITIES			
SPEC NO.	CODE NO.	BID ITEM	
202	0101	REMOVAL OF CONCRETE	1 EA
210	0109	CLASS 2 EXCAVATION-BOX CULVERT	1 EA
210	0201	FOUNDATION PREPARATION	1 EA
210	0210	FOUNDATION FILL	75 CY
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	51.5 CY
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	6440 LBS
708	1020	RIPRAP - LOOSE ROCK	25 CY
709	0600	GEOTEXTILE FABRIC - TYPE RR	50 SY



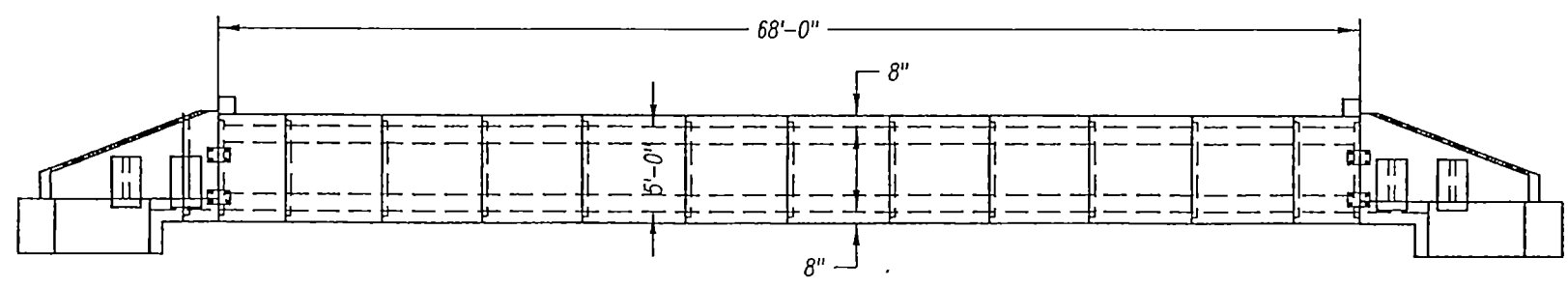
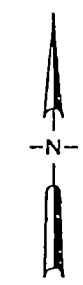
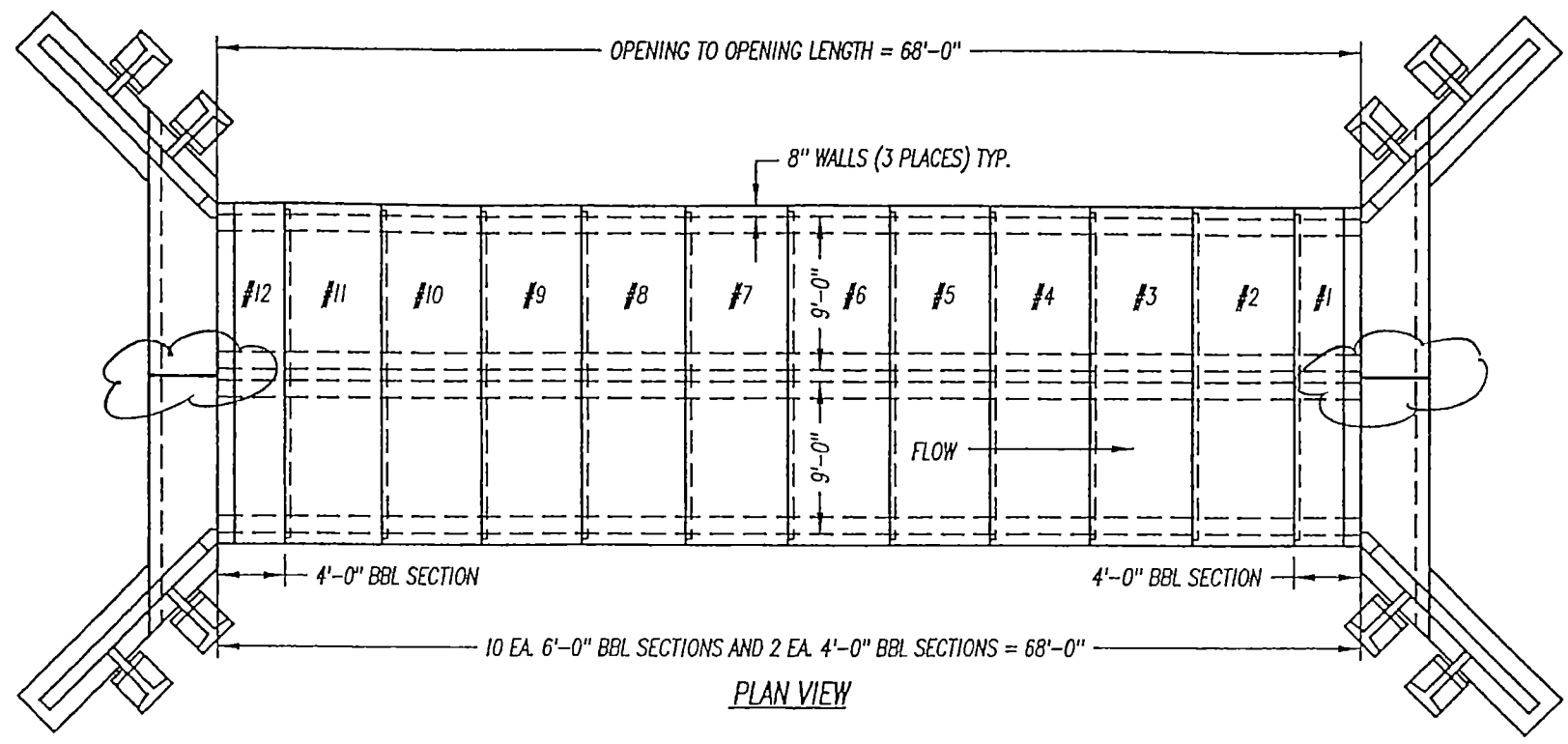
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
**REINFORCED CONCRETE DOUBLE
BOX CULVERT EXTENSION
LAYOUT**
CLEAR SPAN 2x12 CLEAR HEIGHT 7
MAXIMUM FILL 4
LIVE LOAD HS 25
PROJECT: NH-5-012(027)034
STATION 2183 + 27
BOWMAN COUNTY
DATE 1-10-05 *Terrence R. Ulland*
BRIDGE ENGINEER

APPROVED MAY 24 2005

Signature: *[Handwritten Signature]*

Title: *President*

PLACE OF FABRICATION	MENOKEN ①
STATE TEST (Y OR N)	YES
CONCRETE STRENGTH	5,000 P.S.I.

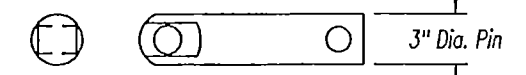


ELEVATION VIEW

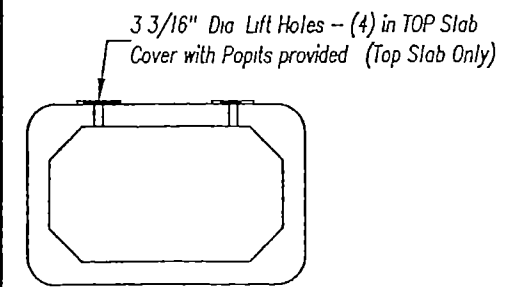
NOTES
 1. Stencil each box with information as listed below. Center stencil on the inside face of the top haunch of each box culvert section

DATE OF MANUFACTURE
 MENOKEN
 2 - 9'X 5'
 3' FILL HT.
 STR #12-034.221
 BOWMAN COUNTY

2. Contact Cretex West for specifications or purchase of round lifting pins.



3. Lifting holes are formed by 3 3/16" Dia Galvanized Tubing.
 -Lifting holes located in the TOP slab of the culvert shall be covered with Popits (provided)
 -Lifting holes located in the BOTTOM slab or in the END SECT WALLS of the culvert shall be grouted with an approved non-shrink grout



SECTION WEIGHTS
 DBL 6'-0" BBL SECTION = 36,775 LBS
 4'-0" BBL SECTION W/ PARAPET = 27,520 LBS
 WING = 8,800 LBS
 APRON SLAB = 6,750 LBS
 CUTOFF WALL = 3,240 LBS
 FOOTING = 7,550 LBS

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
APPROVED AS NOTED
 13 Jun 05 *[Signature]*
 DATE BY

16'-0"

- SECTION WEIGHTS**
- 68 L F 2-9'X5' DOUBLE CELL BOX CULVERT
 - (4) APRON SLABS
 - (4) 3'-0" X 3'-0" FOOTINGS *3'-3"*
 - (4) 17'-0" X 2'-0" CUTOFF WALLS
 - (4) WING WALLS
 - (6) CABLE TIE CONNECTIONS
 - (8) 45° GALVANIZED CONNECTION PLATES
 - (8) 1" GALVANIZED SPACER PLATES
 - (16) 1"X3" BOLTS & (16) 1"X4" BOLTS (ALL BOLTS TO BE GRADE 5) GALVANIZED
 - (32) 4"X4" WASHERS & (64) ROUND WASHERS
 - (16) #6X18" DOWEL PINS, (6) 2"X6"X 3/8" WELD PLATES
 - (12) 2"X2"X 3/8" ANGLE, (144) PLASTIC HOLE PLUGS *96*
 - (3) ROLLS OF JOINT FABRIC
 - (40) BAGS OF NON-SHRINK SET GROUT (SIKAGROUT 212)

		OFFICES IN:		
		BISMARCK	HELENA	RAPID CITY
SCALE	NONE	TITLE		
DATE	4-27-05	DBL 9'-0"X 5'-0" PRECAST BOX CULVERT		
DP 11 BY	RTF	BOWMAN COUNTY		
		NH-5-012(027)034		
PS#	495071	CUSTOMER	ED SCHWARTZ	
PE / D-TE	NONE	ENG NAME	BCI-105	