



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 7, 2008

U.S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

ATTENTION: Mr. Brad Shaver
NCDOT Coordinator

Dear Sir,

Subject: **Application for Section 404 Nationwide Permit 23 and 401 Water Quality Certification**, for the Replacement of Bridge No. 12 over the Black River and Bridge No. 26 over the Black River overflow on NC 41 (Tomahawk Rd.); Sampson County; TIP Project B-1382; Federal Aid Project No. BRSTP-41(8); State Project No. 8.1281501. Debit \$240.00 from WBS 32595.1.1.

Please find enclosed a site map, permit drawings, and half size plan sheets for the above mentioned project. A Categorical Exclusion (CE) was completed for this project on July 31, 2003, and distributed shortly thereafter. Additional copies are available upon request. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 12 over the Black River and Bridge No. 26 over the Black River overflow on existing alignment, while using an off-site detour to maintain traffic during construction. Bridge No. 12 is currently 226 feet long and Bridge No. 26 has an overall length of 151 feet. The proposed structure for both bridges is a cored slab, with a length of 235-feet for Bridge No. 12 and 155-feet for Bridge No. 26. Both structures will provide two 12-foot travel lanes with 3-foot shoulders. The roadway approaches will consist of two 12-foot travel lanes with 8-foot shoulders, 2 feet of which will be paved. Proposed permanent impacts include 0.09 acre to riverine wetlands and .01 acre to surface waters.

Impacts to Waters of the United States

General Description: This project is located in the Cape Fear River Basin (Hydrologic Cataloging Unit 03030006) on the Black River [DWQ Index # 18-68], which is a Division of Water Quality Class "C Sw ORW" Water of the State. In addition to the Black River, four jurisdictional wetlands will be impacted in the project area, including one classified as the Black River overflow crossed by Bridge No. 26.

The Black River is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River. Additionally, the Black River is not listed on the Final 2006 303(d) list of impaired waters due to sedimentation for the Cape Fear River Basin, nor does it drain into any Section 303(d) waters within 1.0 mile of the project study area.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1334
FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH NC 27604

Permanent Impacts: There are 0.09 acre of proposed impacts to riverine wetlands due to roadway fill and .01 acre of proposed impacts to surface waters resulting from two bents in the Black River.

Temporary Impacts: NCDOT anticipates 0.03 acre of temporary impacts to wetlands within hand-clearing areas. These impacts involve the placement of temporary wetland fill for the installation of erosion control measures. These include some or all of the following: Temporary Silt Fence, Special Sediment Control Fence, and Temporary Rock Silt Checks.

Hand Clearing: There will be 0.11 acre of hand clearing in jurisdictional areas on this project.

Utility Impacts: No impacts to jurisdictional resources will occur due to relocation of utilities in the project area.

Bridge Demolition: The superstructure for Bridge No. 12 and Bridge No. 26 is a reinforced concrete floor on continuous steel I-beams, with a substructure composed of reinforced concrete caps on timber piles. Best Management Practices for Bridge Demolition and Removal will be followed to prevent any temporary fill from entering Waters of the United States.

In-Stream Work Moratorium

According to the NC Wildlife Resources Commission, anadromous fish species are found in this portion of the Black River; therefore, NCDOT will strictly adhere to all stream-crossing guidelines for anadromous fish passage, including an in-water work moratorium between February 15 and June 15. The end date in the CE is given as August 15; however, in correspondence with Travis Wilson of the NCWRC, dated 8/22/07, the date was corrected to June 15. This moratorium will also apply to the Black River overflow only if there is an active hydrological connection to the Black River at the time of construction.

Avoidance and Minimization

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". Due to the presence of surface waters and wetlands within the project study area, avoidance of all impacts is not possible. The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Minimization measures were incorporated as part of the project design and are listed below:

- NCDOT is replacing Bridge No. 12 and Bridge No. 26 in place and utilizing an off-site detour.
- Three preformed scour holes will be constructed to filter storm-water runoff.
- The roadway grade was kept as close as possible to the existing, minimizing fill height.
- 3:1 slopes were used in jurisdictional areas.
- Hand clearing will be utilized to reduce permanent wetland impacts.
- 'Design Standards for Sensitive Watersheds' will be implemented due to the Black River's classification as an 'Outstanding Resource Water'.

Mitigation

Due to limited impacts, no compensatory mitigation is proposed for this project.

Federally Protected Species

As of January 31, 2008, the US Fish and Wildlife Service (USFWS) lists three federally protected species for Sampson County. Table 1 lists the species and their federal status.

Table 1. Species under federal protection in Sampson County

Scientific Name	Common Name	Federal Status	Biological Conclusion	Habitat Present?
<i>Alligator mississippiensis</i>	American Alligator	T (S/A)	N/A	Yes
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	No Effect	No
<i>Lindera melissafolia</i>	Pondberry	E	No Effect	No

Project Schedule

The project has a scheduled let of August 19, 2008 with a review date of July 1, 2008.

Regulatory Approvals

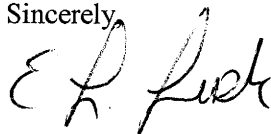
Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (72 CFR; 11092-11198, March 12, 2007).

Section 401 Permit: We anticipate 401 General Certification number 3701 will apply to this project. All general conditions of the Water Quality Certification will be met. NCDOT is providing five copies of this application to the NCDWQ for their review and approval. Authorization to debit the \$240 Permit Application Fee from WBS Element 32595.1.1 is hereby given.

A copy of this permit application will be posted on the NCDOT website at: <http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html>.

If you have any questions or need additional information, please contact Amy James at (919) 715-7216.

Sincerely,



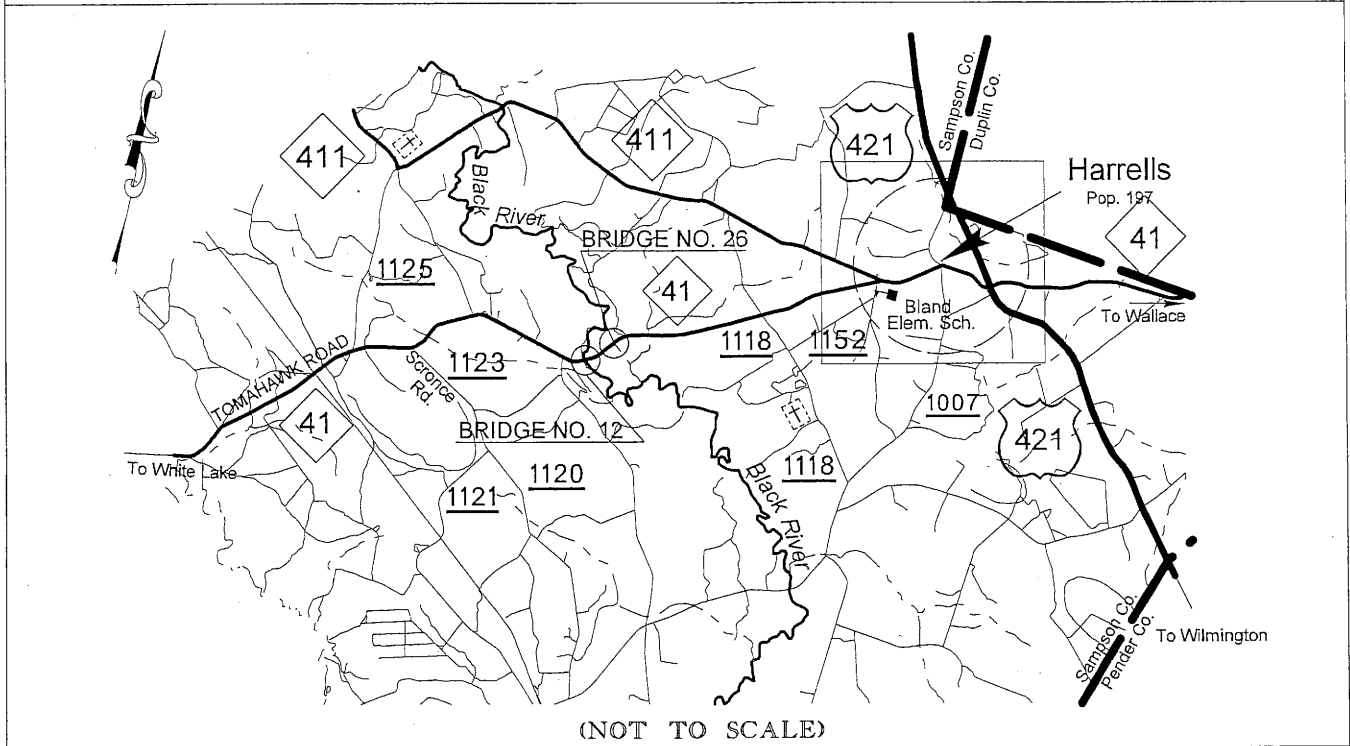
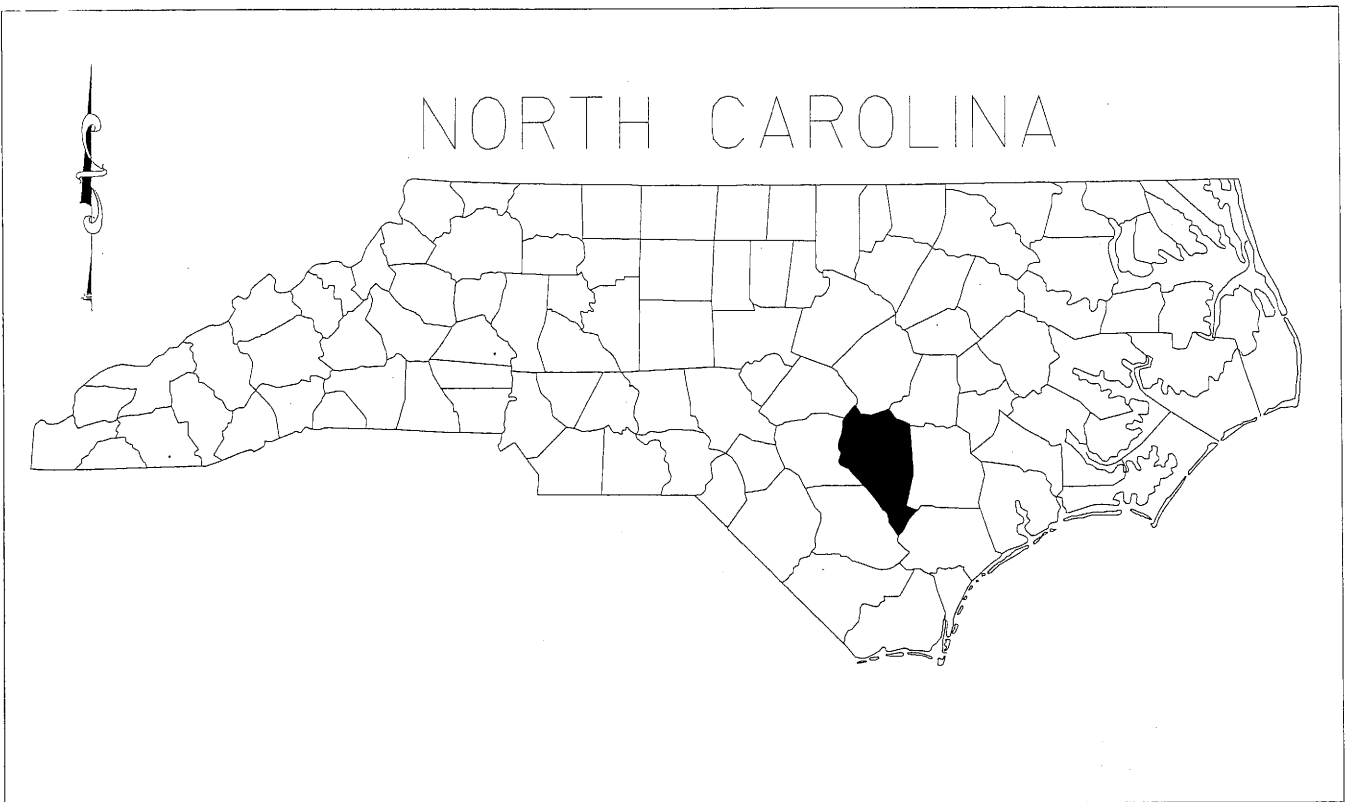
Gregory J. Thorpe, Ph.D., Environmental Management Director
Project Development and Environmental Analysis Branch

W/attachment

Mr. Brian Wrenn, NCDWQ (5 copies)
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Ron Sechler, NMFS
Ms. Jeanne Hardy, NCDMF

W/o attachment (see website for attachments)

Mr. Scott McLendon, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Art McMillan, P.E., Highway Design
Mr. Elmo Vance, Project Planning Engineer
Mr. Allen Pope, P.E. Div. 3 Engineer
Mr. Mason Herndon, Div. 3 Environmental Officer



VICINITY MAPS

Permit Drawing
Sheet 1 of 26

NCDOT

DIVISION OF HIGHWAYS

SAMPSON COUNTY

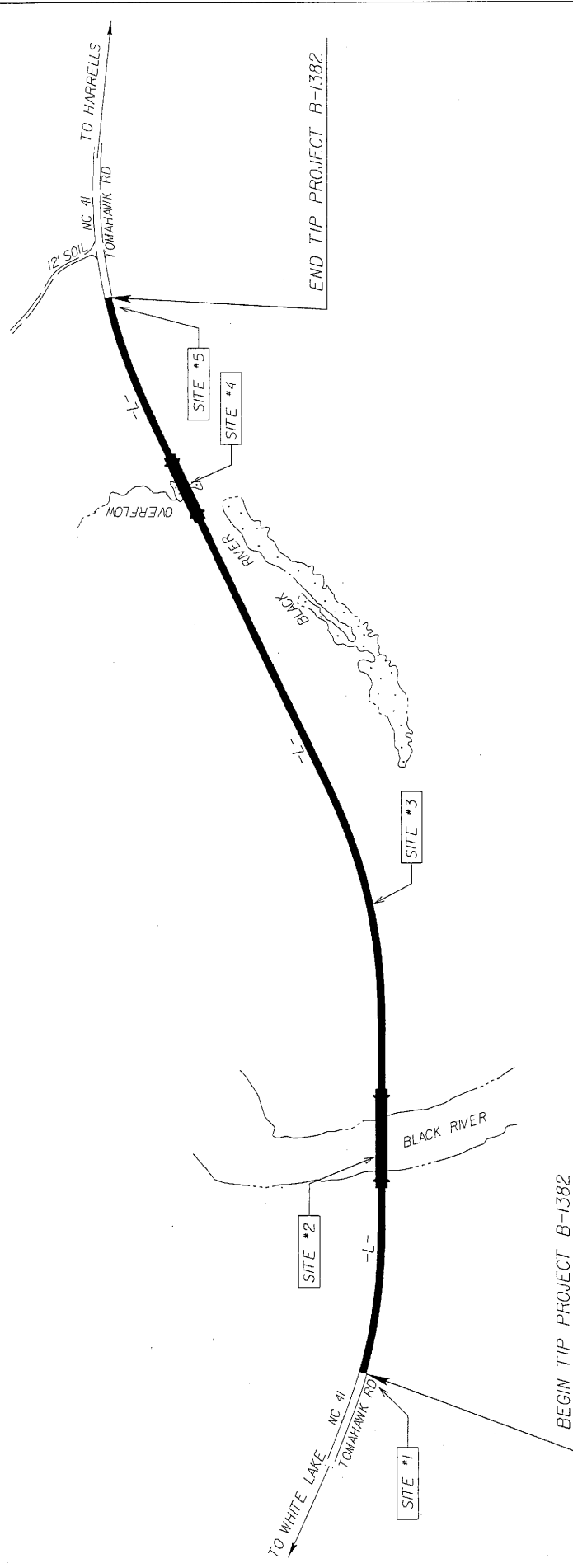
PROJECT: (B-1382)

BRIDGE NO. 12 OVER BLACK RIVER
AND BRIDGE NO. 26 BLACK RIVER
OVERFLOW ON NC 41
(TOMAHAWK ROAD)

SHEET

OF

12 / 1 / 05



SITE MAP
NOT TO SCALE

Permit Drawing
Sheet 2 of 26

NCDOT

DIVISION OF HIGHWAYS
SAMPSON COUNTY

PROJECT: (B-1382)

BRIDGE NO. 12 OVERBLACK RIVER
AND BRIDGE NO. 26 BLACK RIVER
OVERFLOW ON NC 41
(TOMAHAWK ROAD)

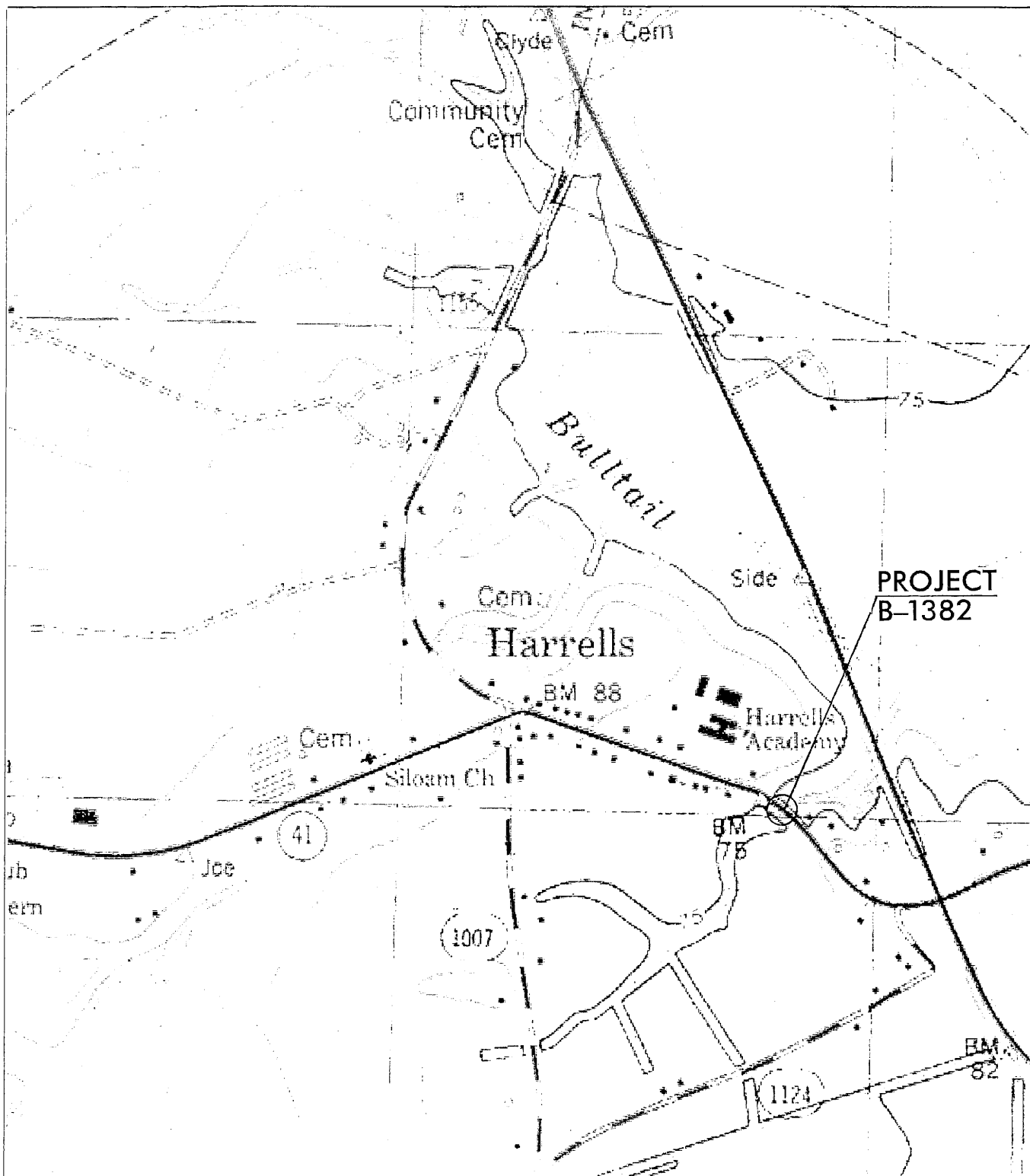
PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
1.	R.E. Pendergrass	5340 Tomahawk Rd. Harrells, NC 28444
2.	Josette Wessel	209 Bogue Landing Court Newport, NC 28570
3.	David Sanderson	P.O. Box 110 Harrells, NC 28444
4.	Edwin W. Melvin	3613 Dade St. Raleigh, NC 27612
5.	Norman Watson	3613 Dade St. Raleigh, NC 27612

Permit Drawing
Sheet 3 of 26

NCDOT
DIVISION OF HIGHWAYS
SAMPSON COUNTY
PROJECT: (B-1382)
BRIDGE NO.12 OVERBLACK RIVER
AND BRIDGE NO. 26 BLACK RIVER
OVERFLOW ON NC 41
(TOMAHAWK ROAD)
SHEET OF 9 // 29 // 07



TOPO MAP

SCALE: 1" : 1000'

Permit Drawing
Sheet 4 of 26

NCDOT

DIVISION OF HIGHWAYS
SAMPSON COUNTY

PROJECT: (B-1382)

BRIDGE NO. 12 OVER BLACK RIVER
AND BRIDGE NO. 26 BLACK RIVER
OVERFLOW ON NC 41
(TOMAHAWK ROAD)

SHEET

OF

12/1/05

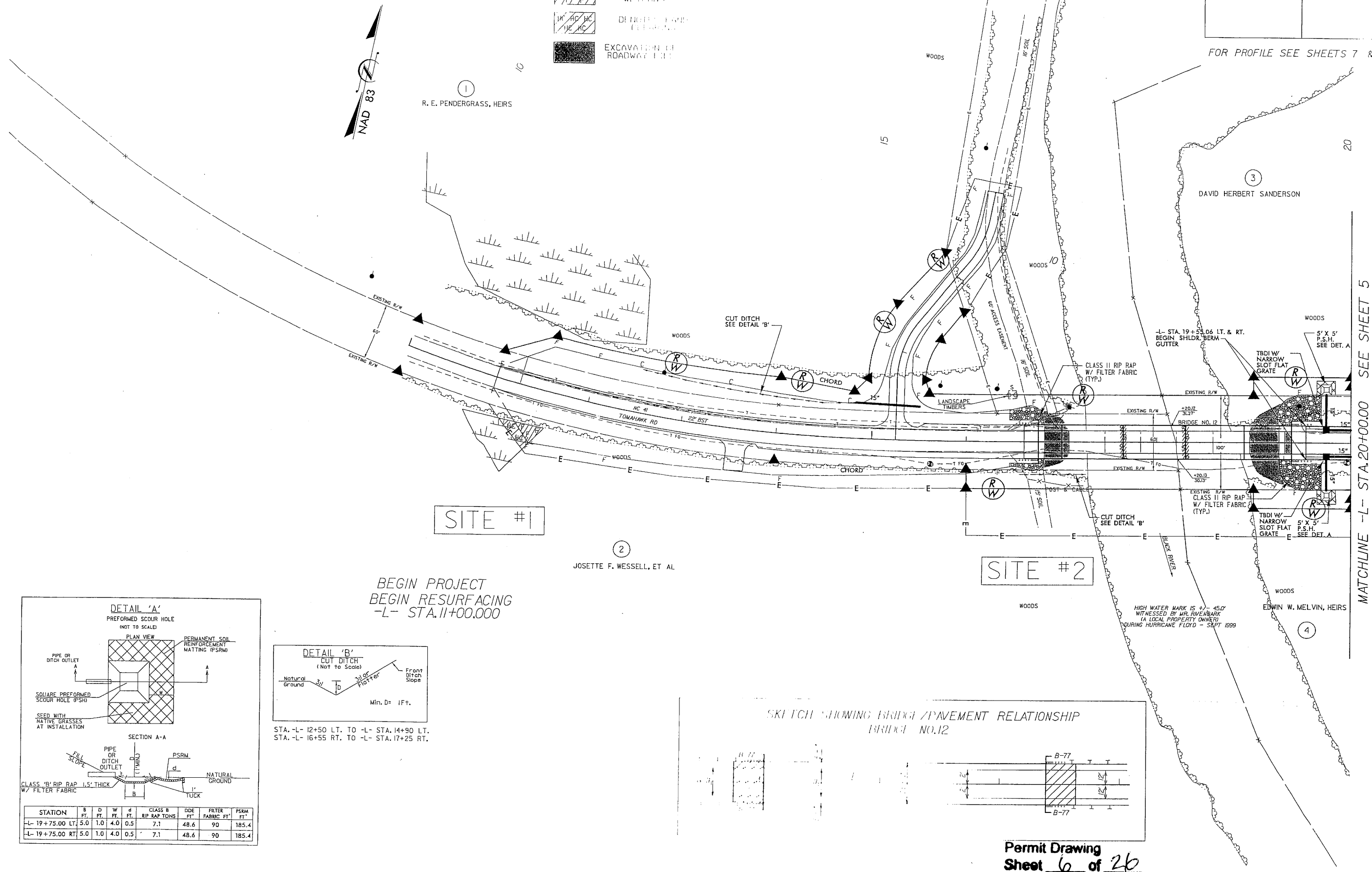
B/17/99

ENGLISH

-  DENOTE SECTION ON SURFACE
-  DENOTE SECTION IN WETLAND
-  DENOTE SECTION IN WETLAND
-  EXCAVATION OF ROADWAY

PROJECT REFERENCE NO.	SHEET NO.
B-1382	1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

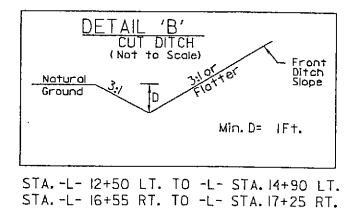
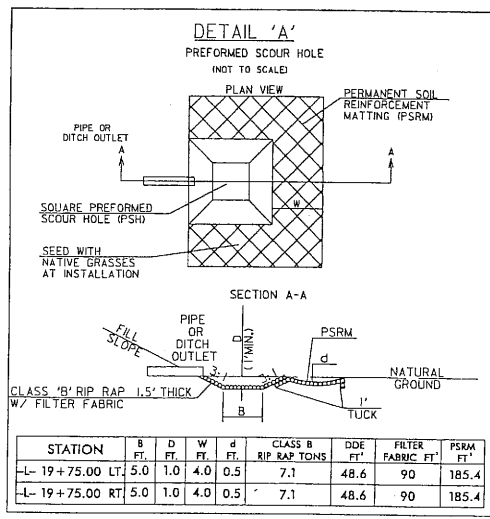
FOR PROFILE SEE SHEETS 7 & 8



SITE #1

SITE #2

BEGIN PROJECT
BEGIN RESURFACING
-L- STA. 11+00.00



SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP
BRIDGE NO. 12



REVISIONS

1/10/2008
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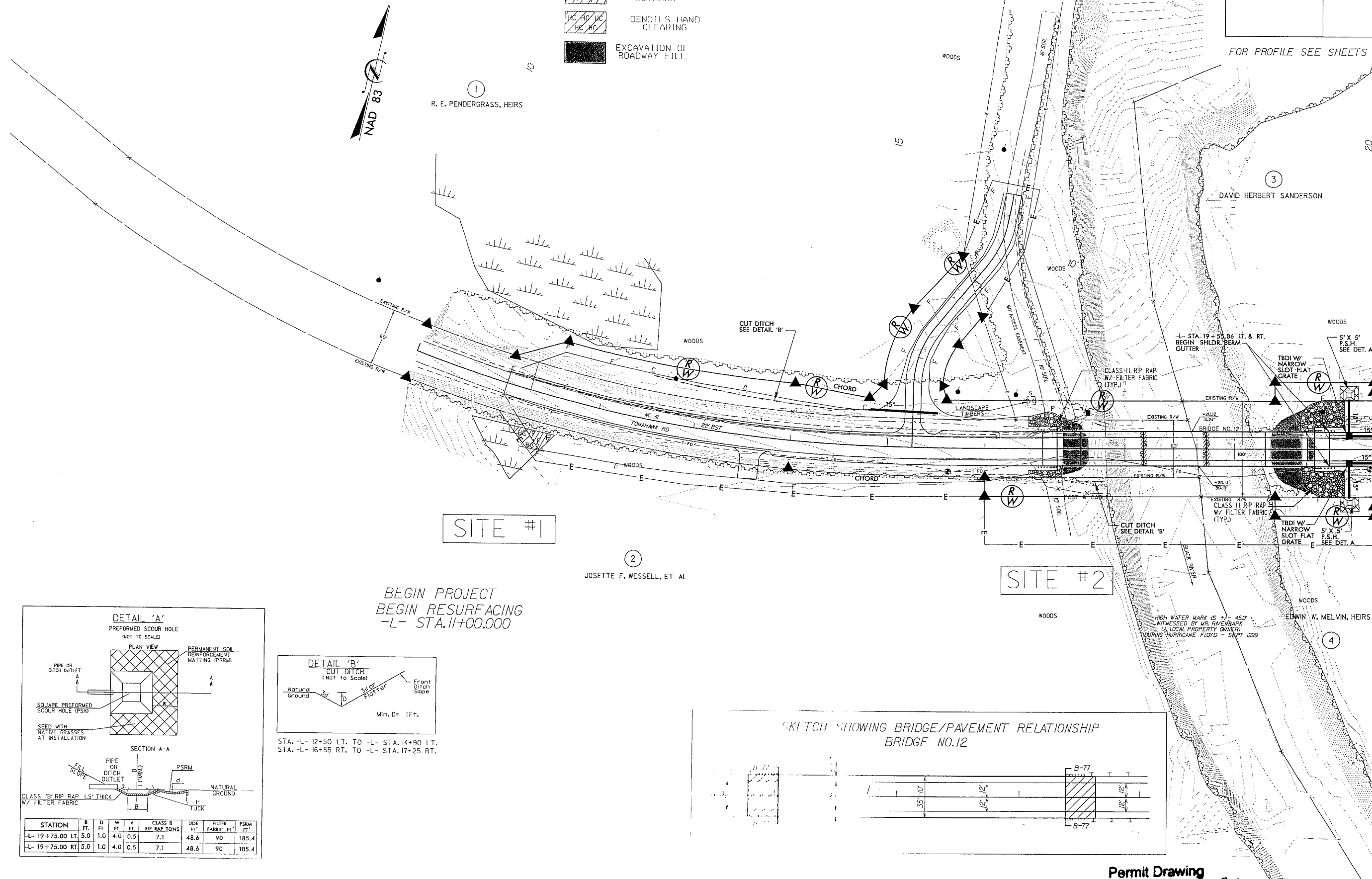
8/17/99

ENGLISH

- DENOTES FILL IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING
- EXCAVATION OF ROADWAY FILL

PROJECT REFERENCE NO.	SHEET NO.
B-1382	4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR PROFILE SEE SHEETS 7 & 8

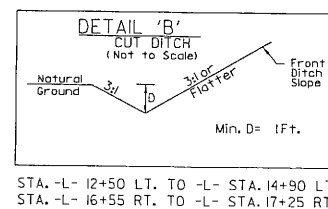
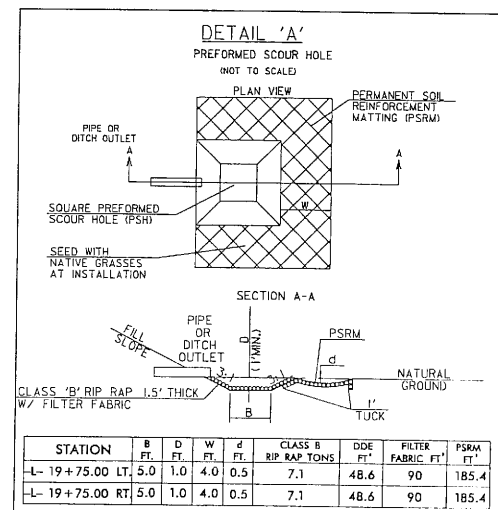


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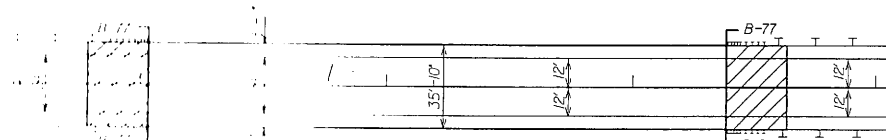
SITE #2

BEGIN PROJECT
BEGIN RESURFACING
-L- STA. 11+00.000

JOSETTE F. WESSELL, ET AL



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
BRIDGE NO. 12



MATCHLINE -L- STA. 20+00.00 SEE SHEET 5

REVISIONS

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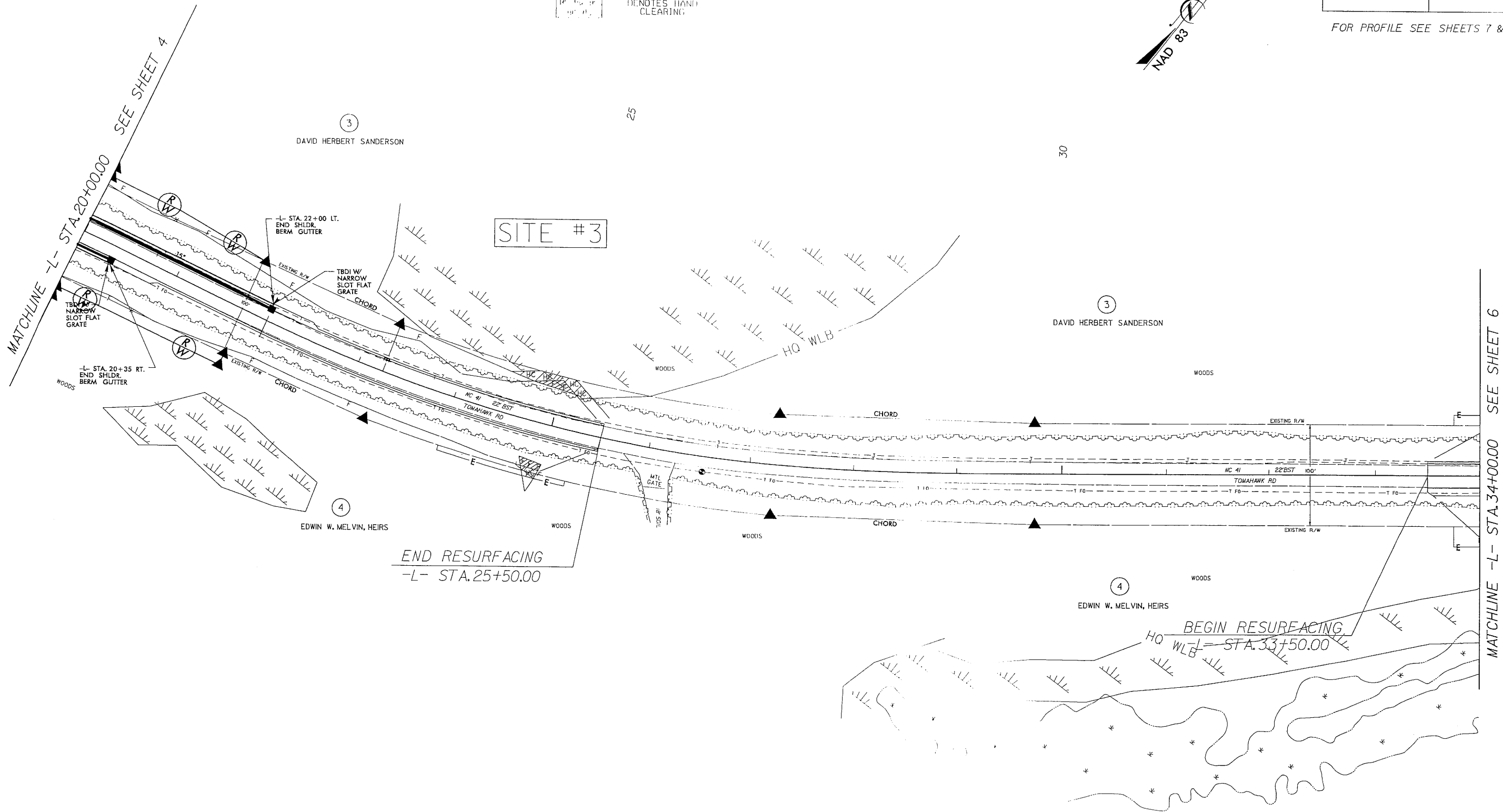
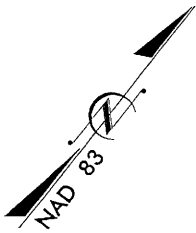
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PROJECT REFERENCE NO.	SHEET NO.
B-1382	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR PROFILE SEE SHEETS 7 & 8

ENGLISH

INDICATES FILL IN WETLAND
DENOTES HAND CLEARING



REVISIONS

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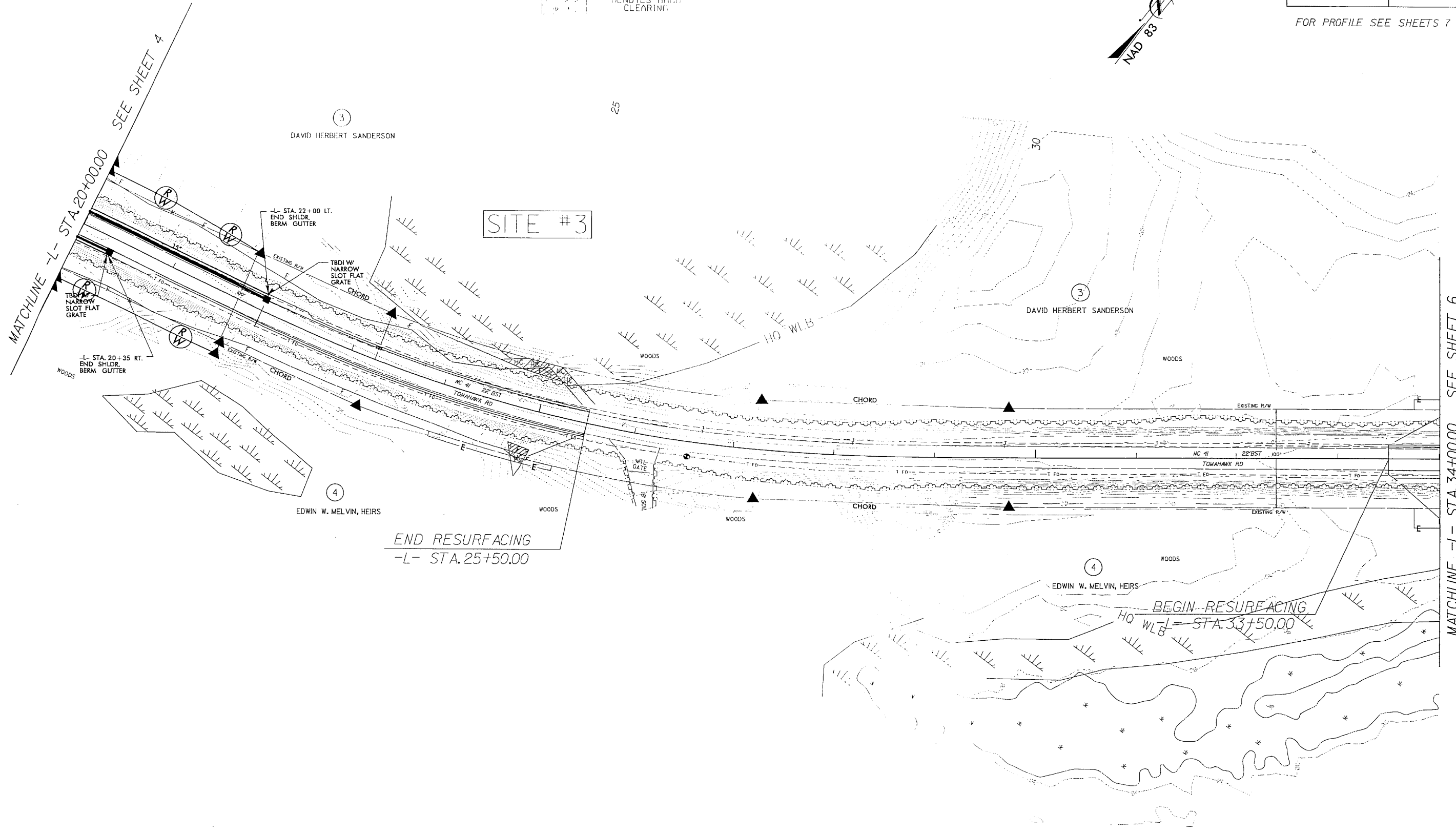
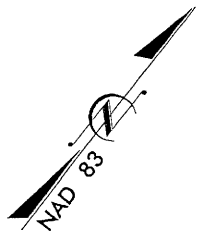
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-1382	5
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR PROFILE SEE SHEETS 7 & 8

ENGLISH

WHITE'S FILL III
WETLAND
HENDTES HAND
CLEARING



REVISIONS

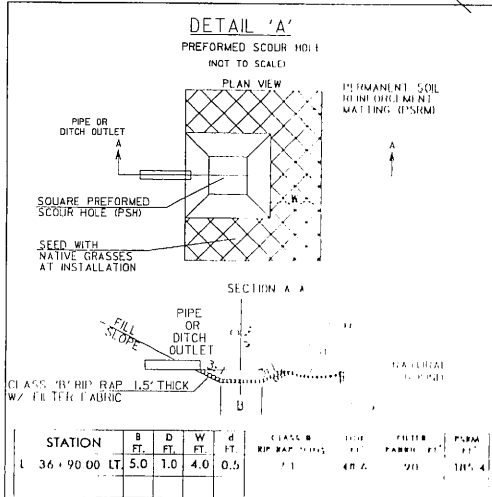
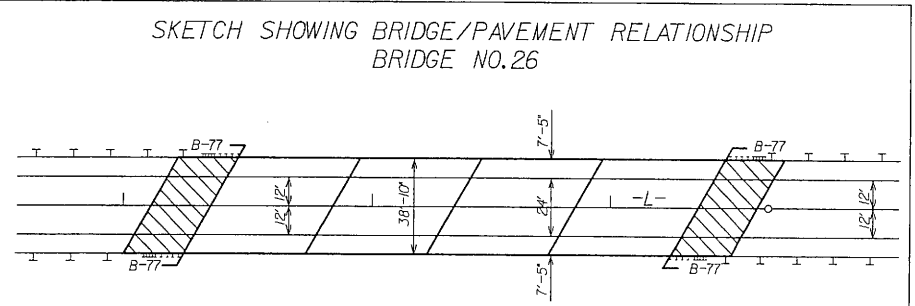
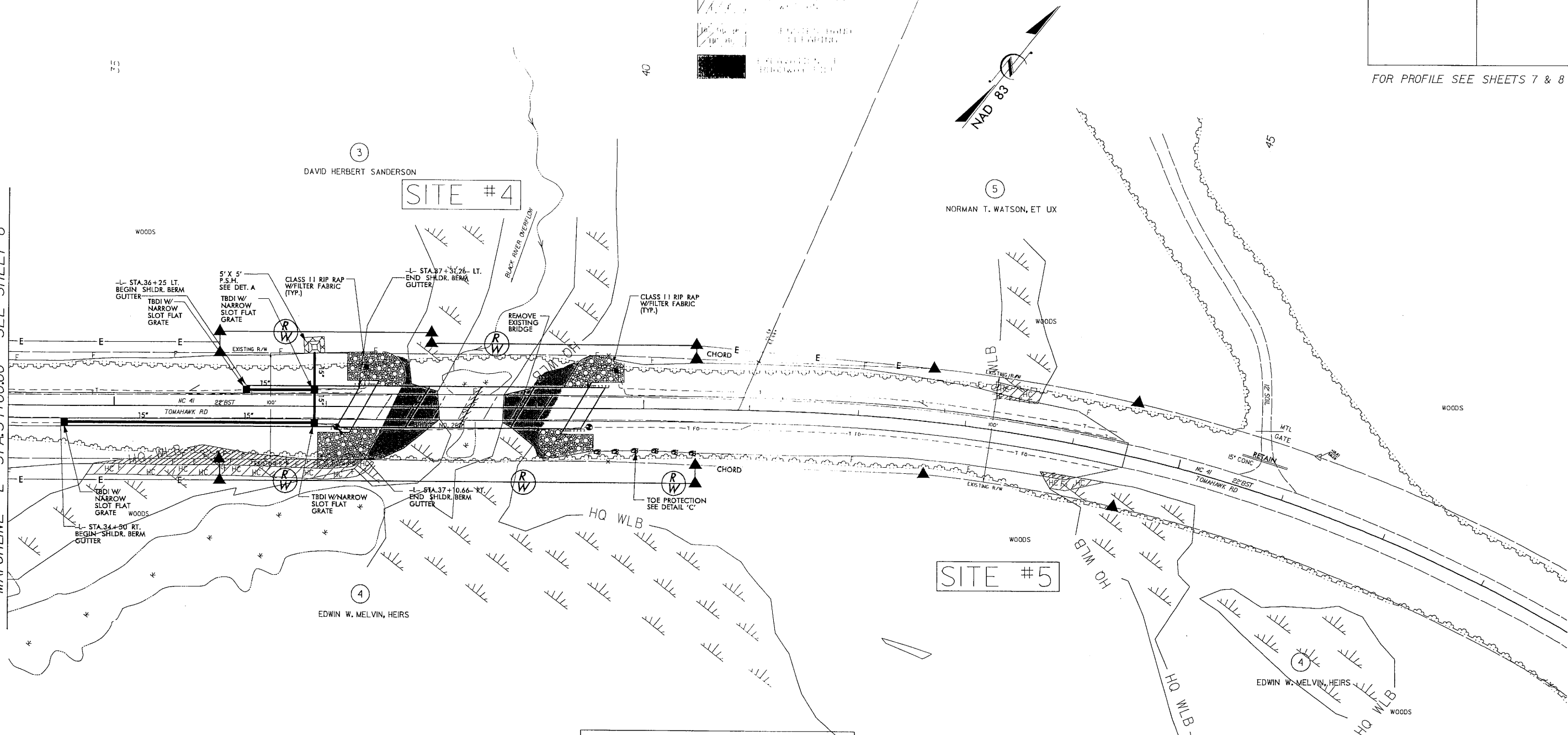
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B-1382	6
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR PROFILE SEE SHEETS 7 & 8

ENGLISH

MATCHLINE -L- STA.34+00.00 SEE SHEET 6

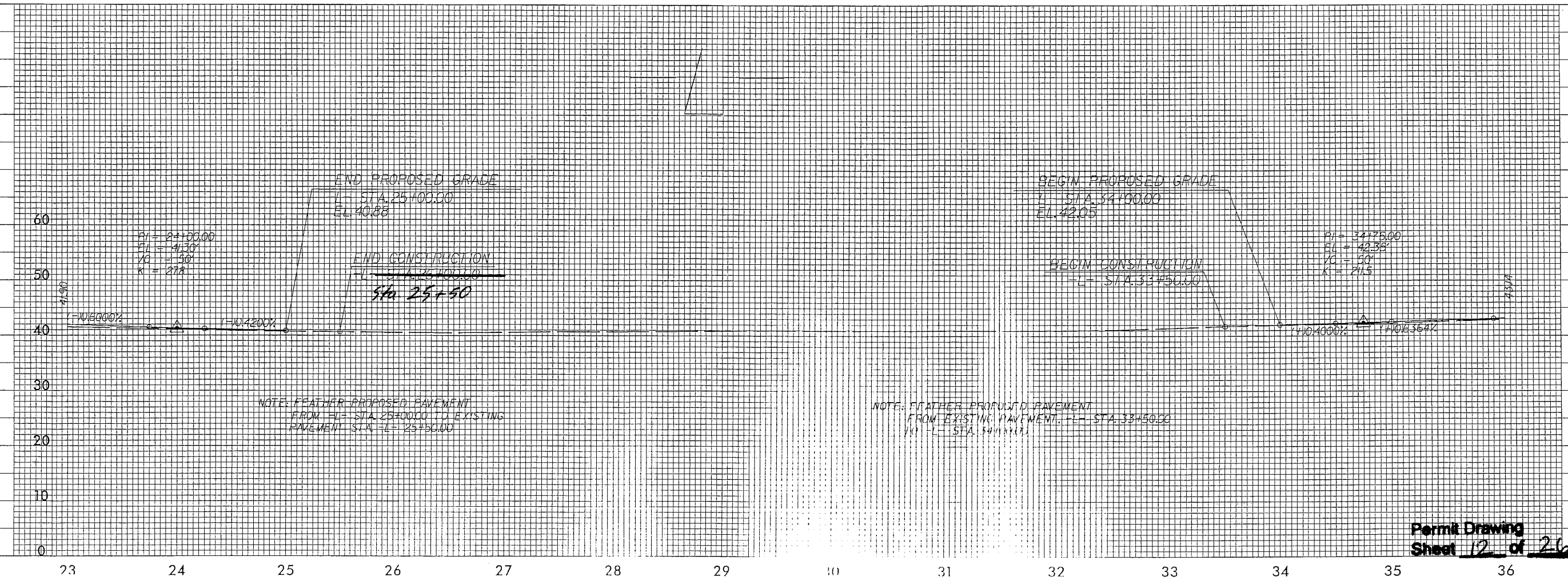
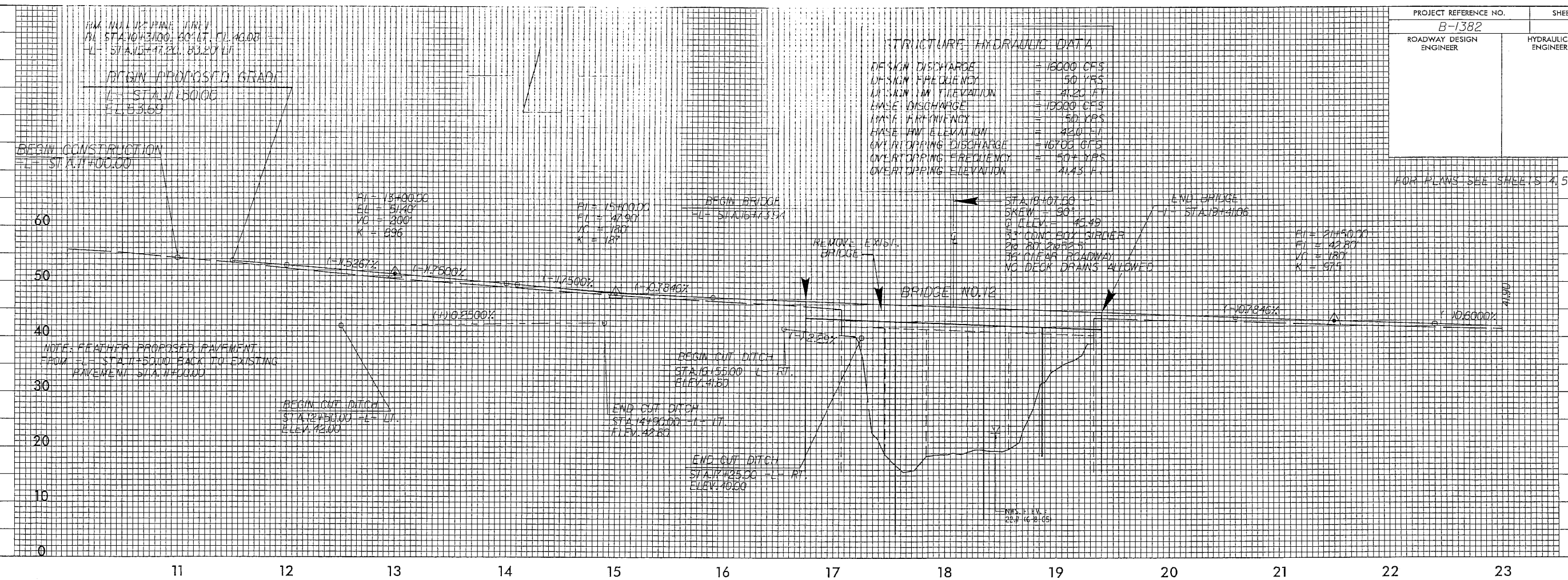


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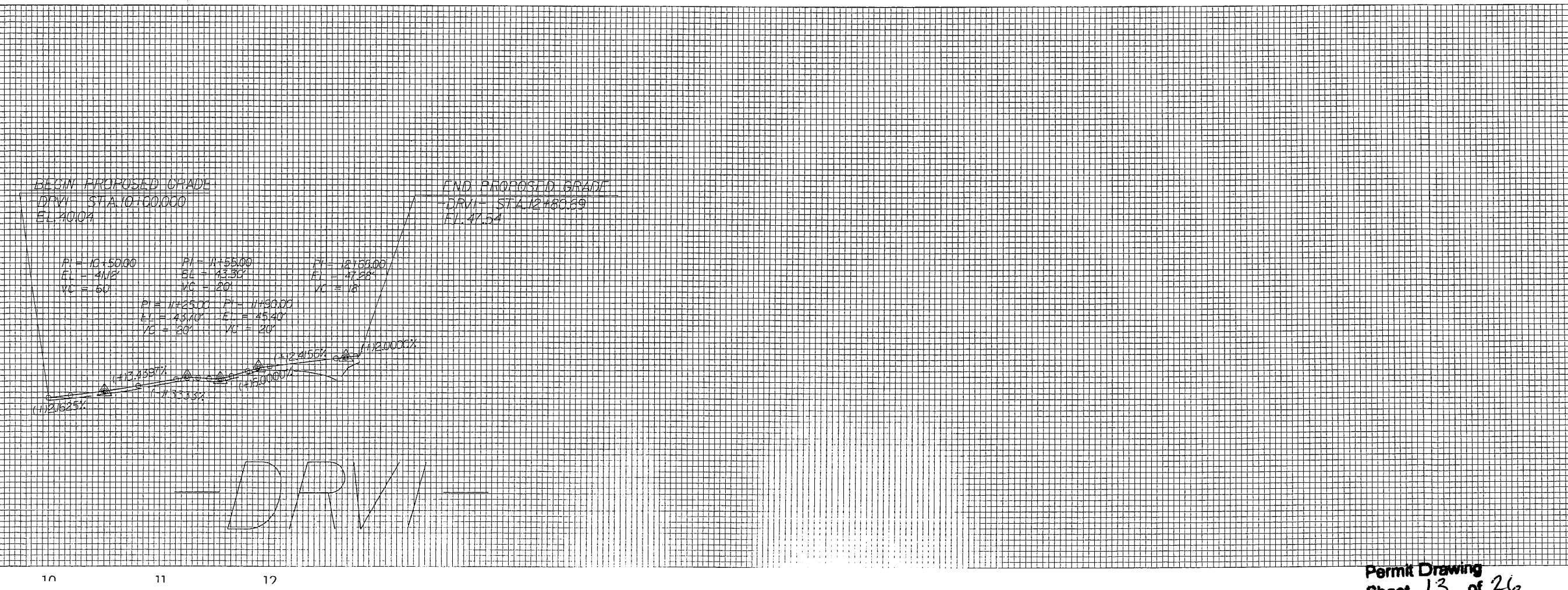
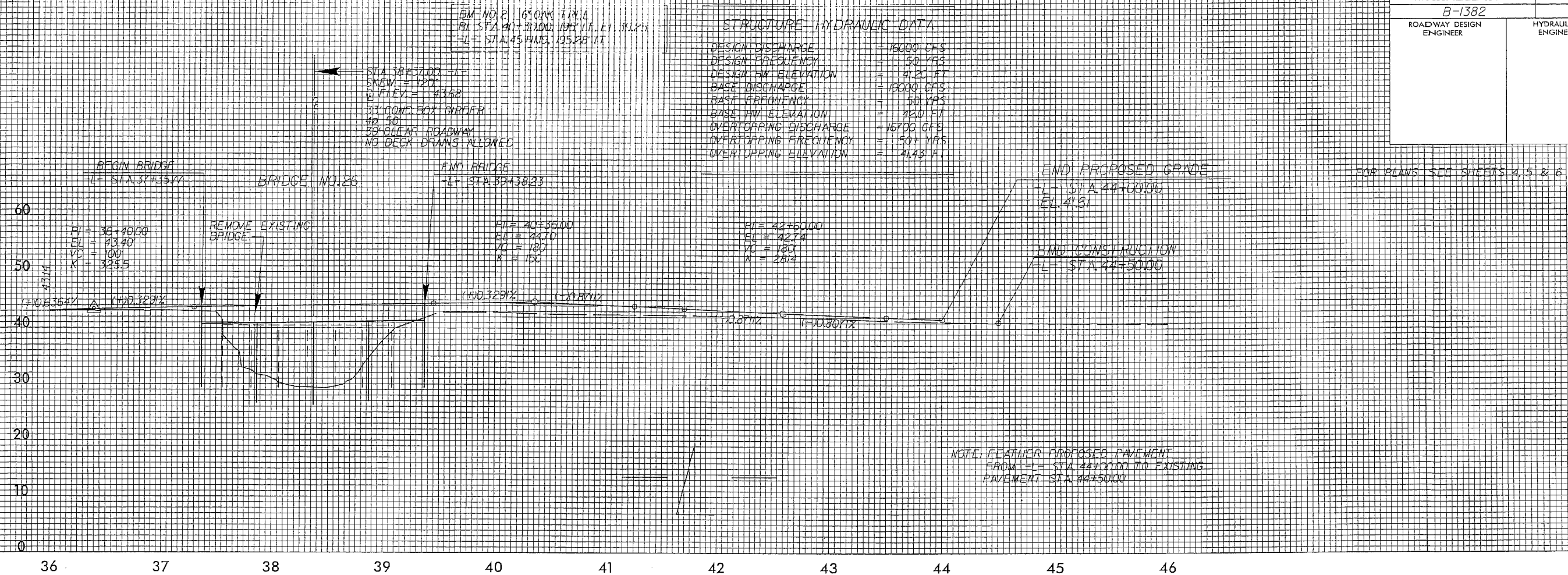


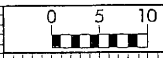
FOR PLANS SEE SHEETS 4, 5 & 6

STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 16000 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN FLOW ELEVATION	= 41.20 FT
BASE DISCHARGE	= 10000 CFS
BASE FREQUENCY	= 50 YRS
BASE FLOW ELEVATION	= 40.50 FT
OVERTOPPING DISCHARGE	= 16700 CFS
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING ELEVATION	= 41.43 FT



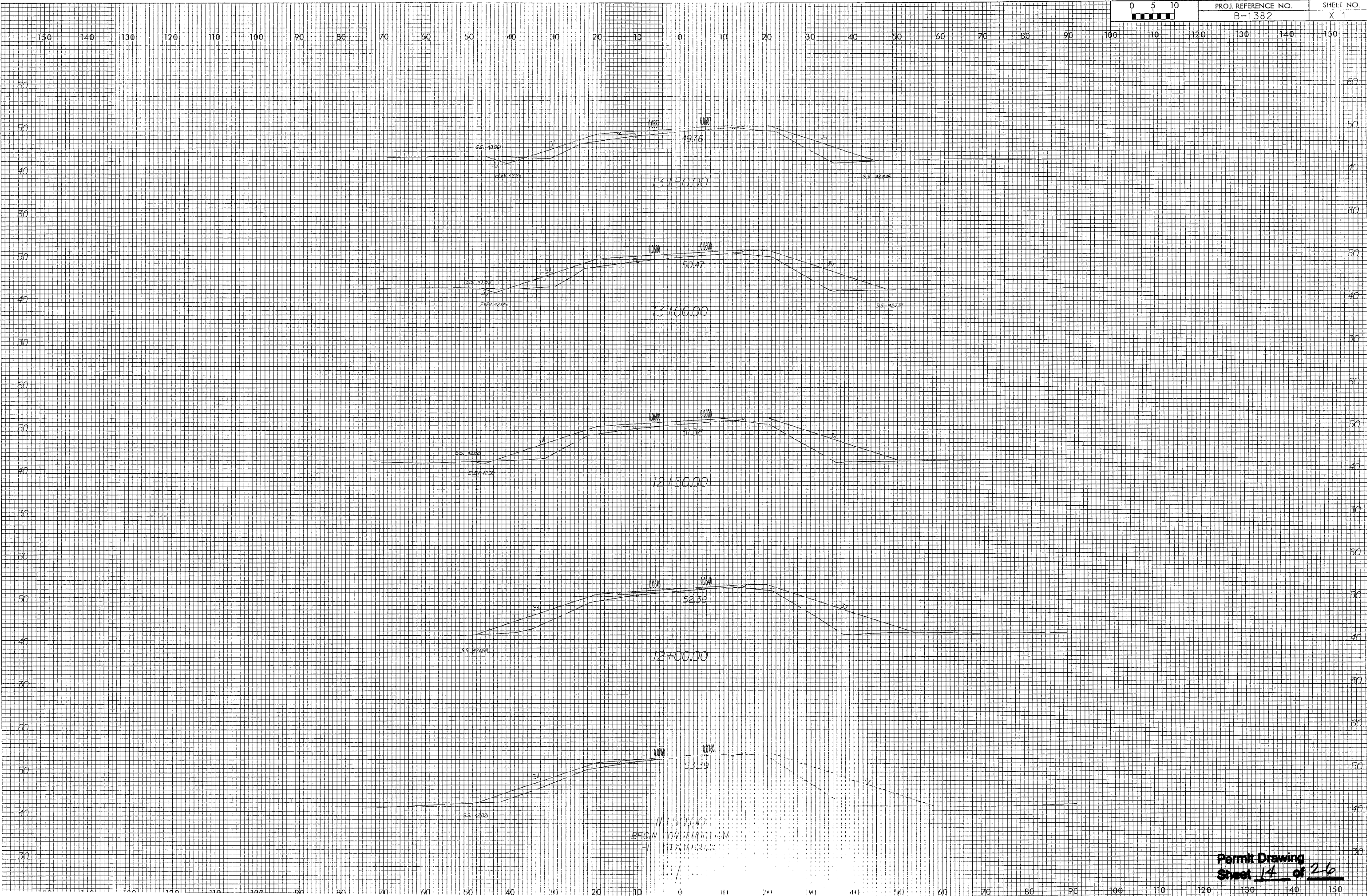
STRUCTURE HYDRAULIC DATA	
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DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 41.20 FT
BASE DISCHARGE	= 10000 CFS
BASE FREQUENCY	= 50 YRS
BASE HW ELEVATION	= 42.0 FT
OVERTOPPING DISCHARGE	= 16700 CFS
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING ELEVATION	= 41.43 FT



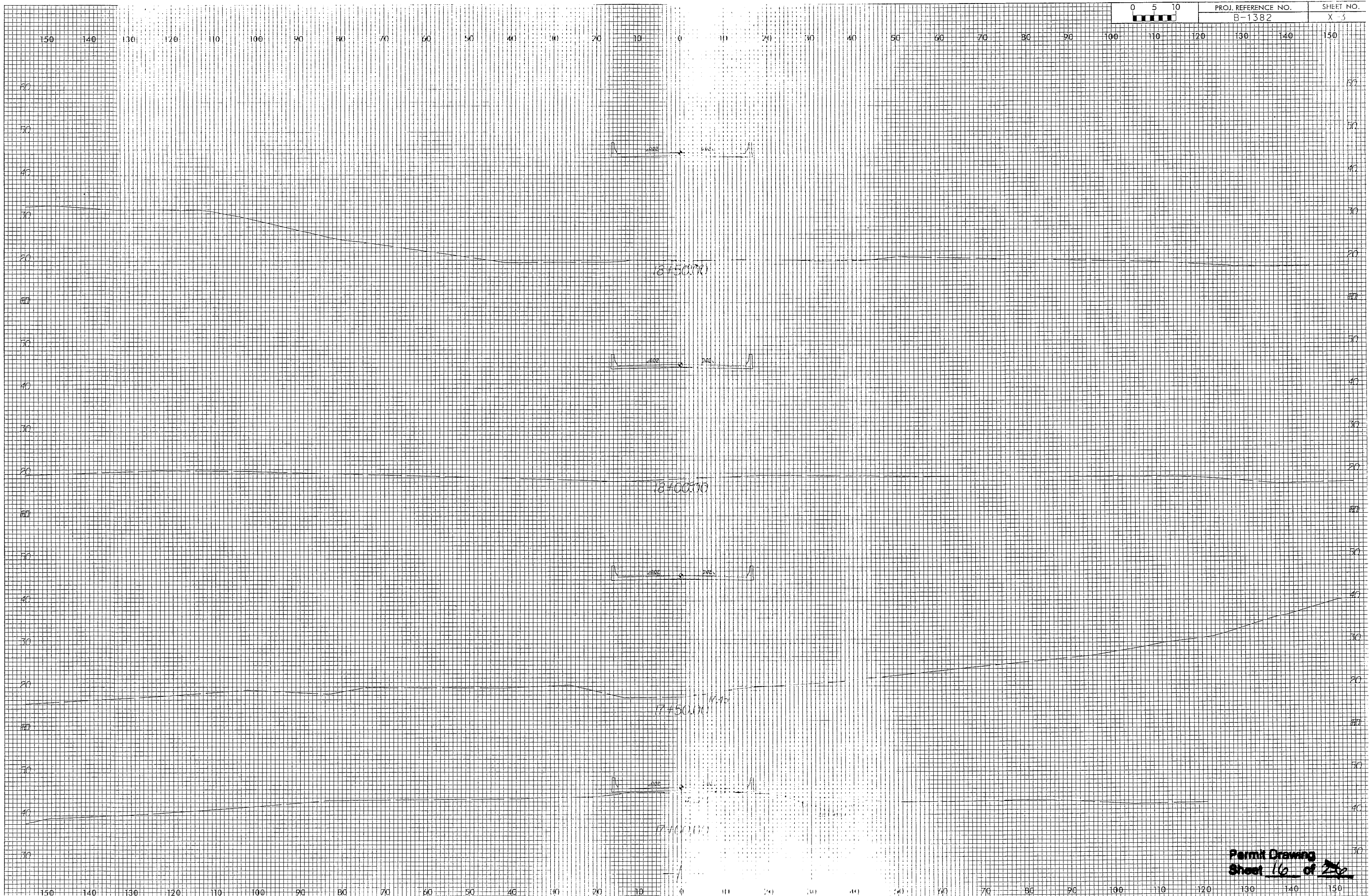


PROJ. REFERENCE NO.
B-1382

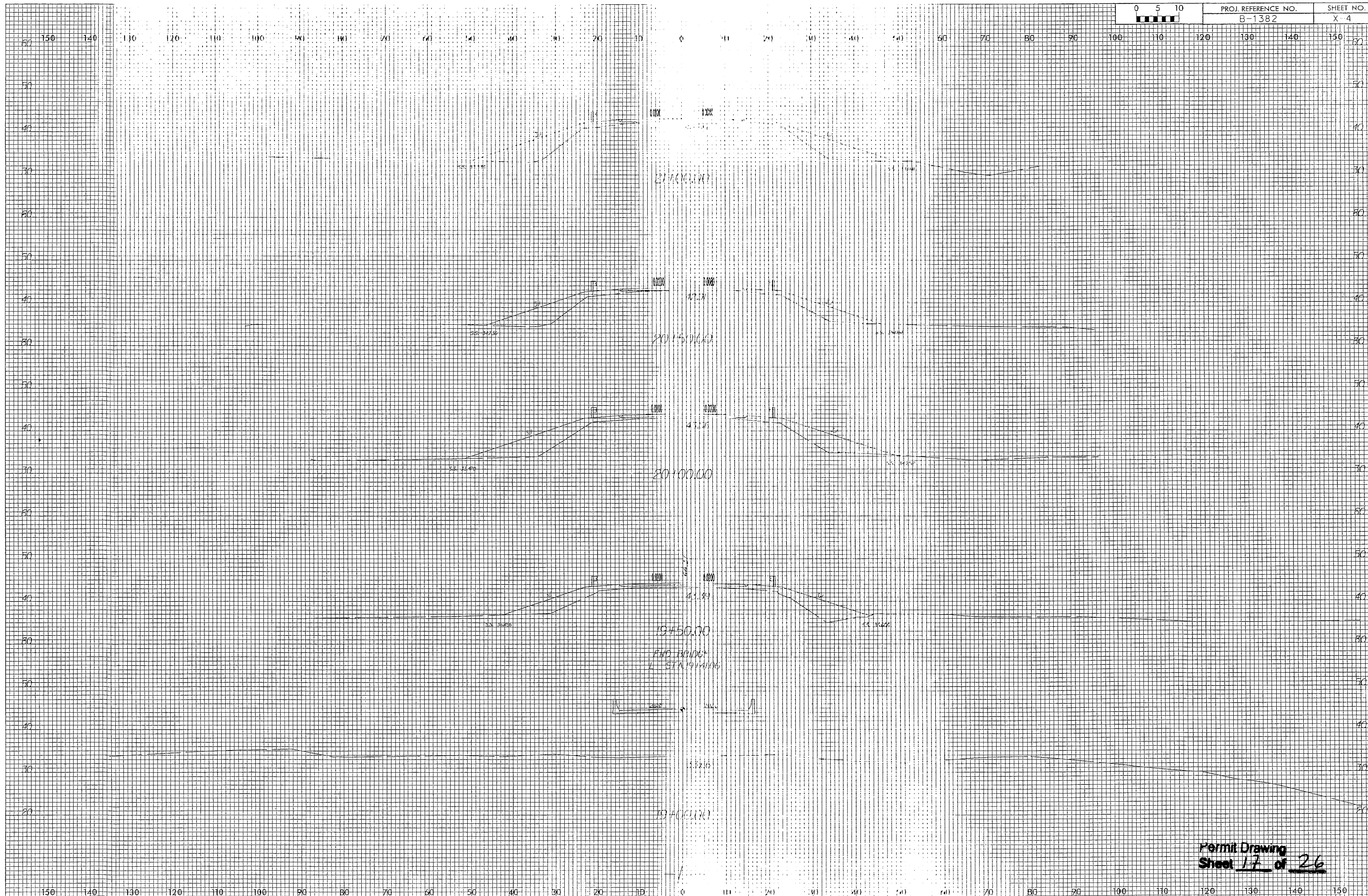
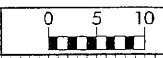
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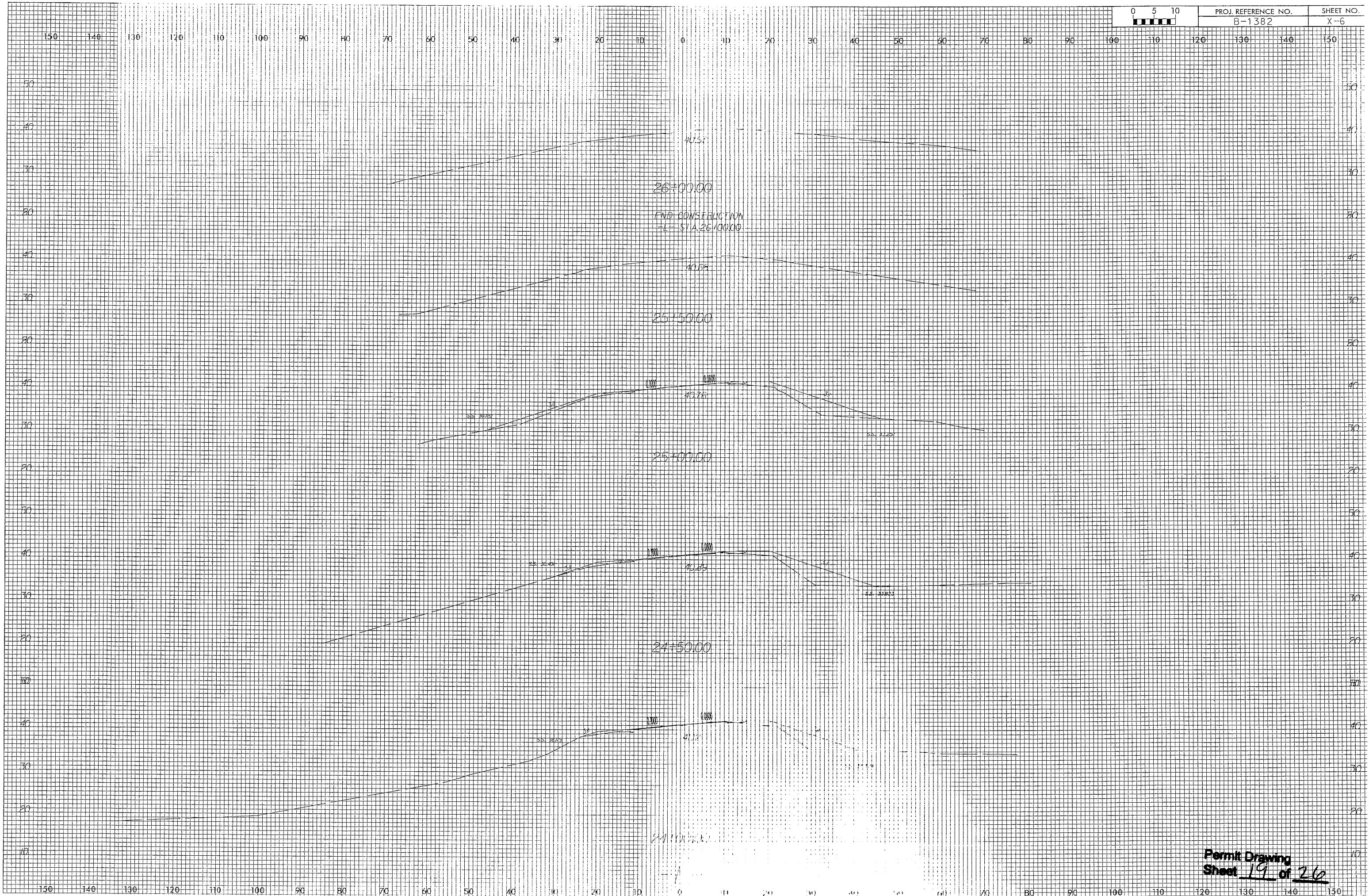


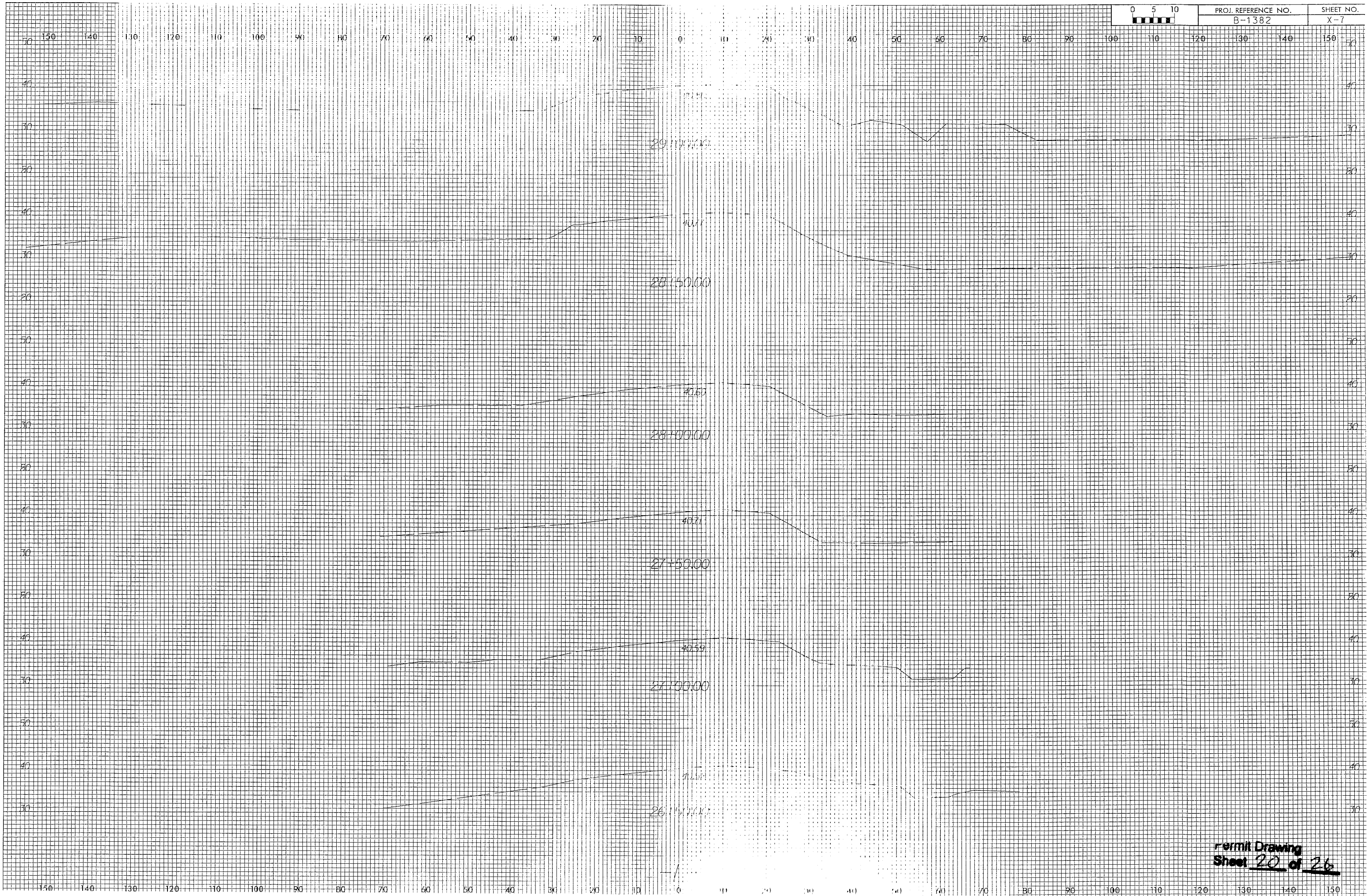
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11/1/1966

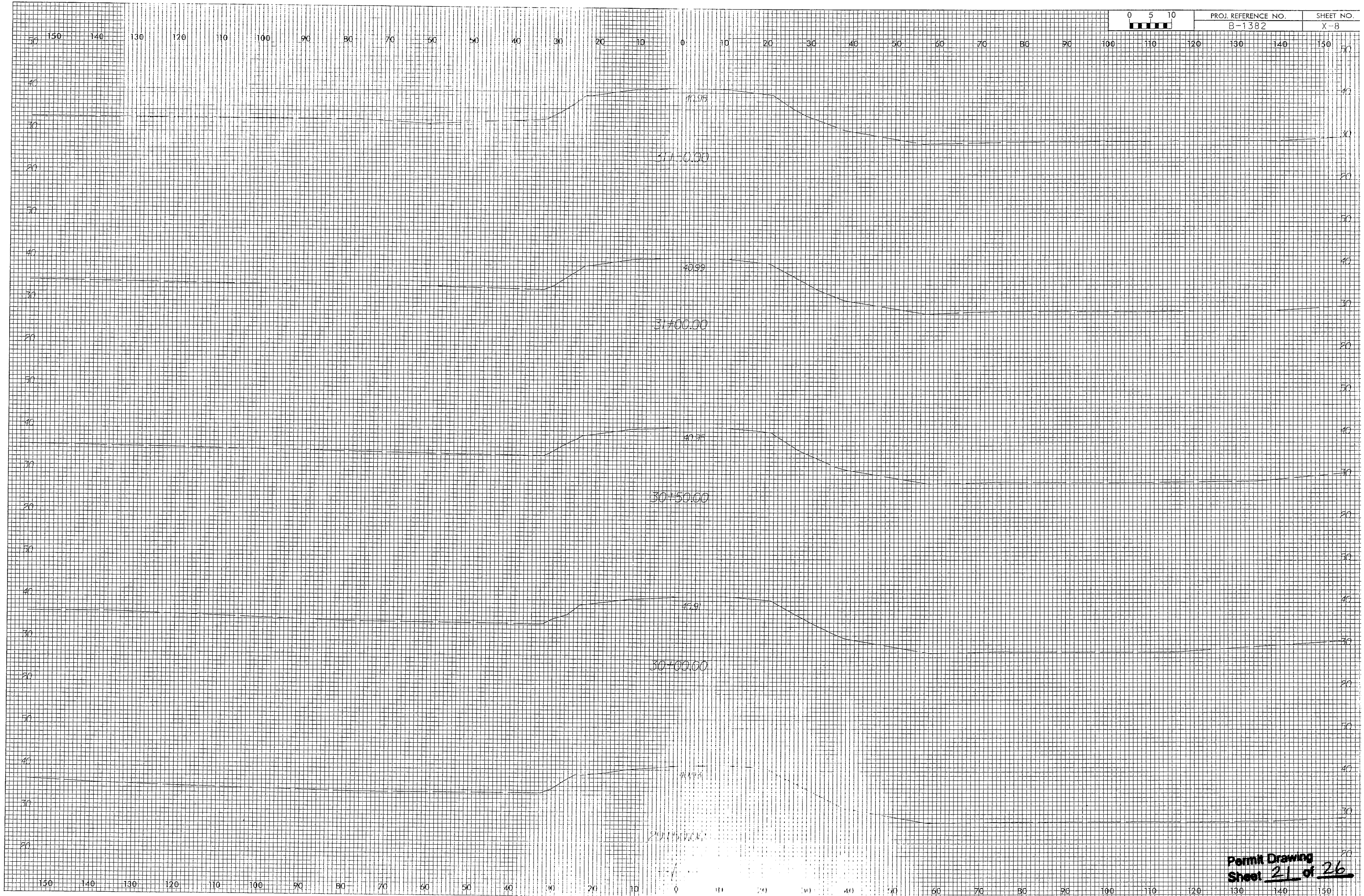


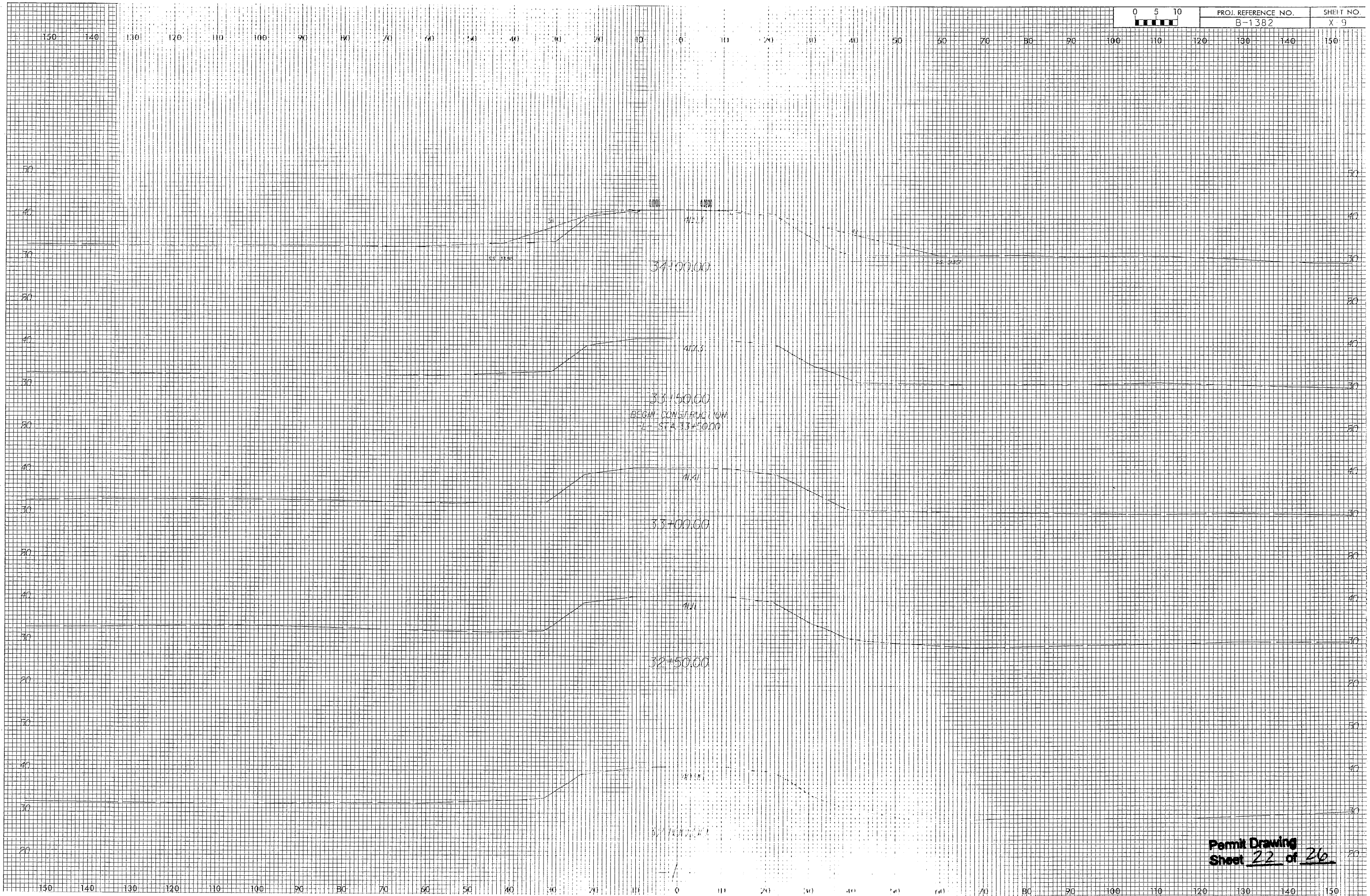
Permit Drawing
Sheet 16 of 26

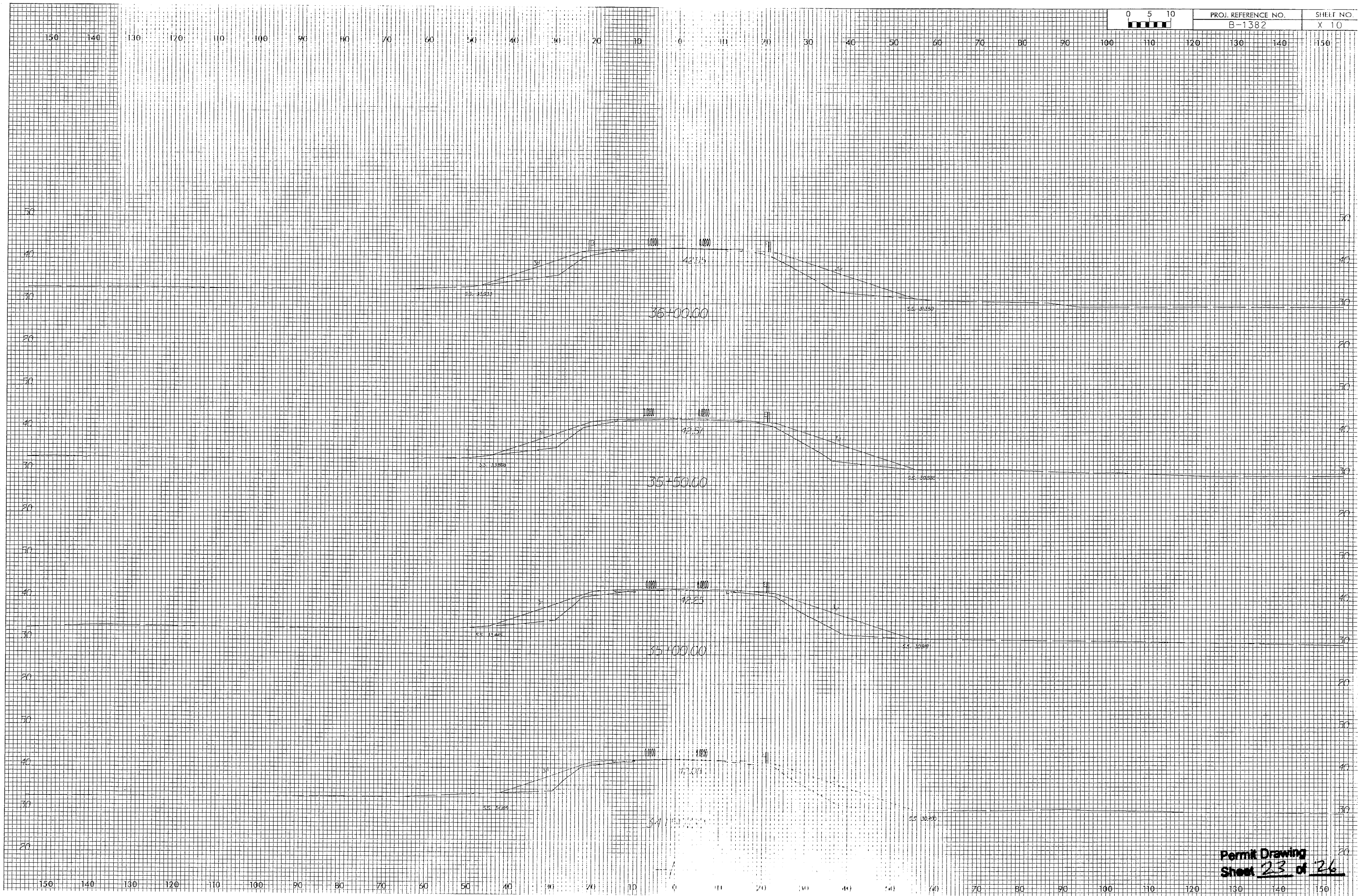


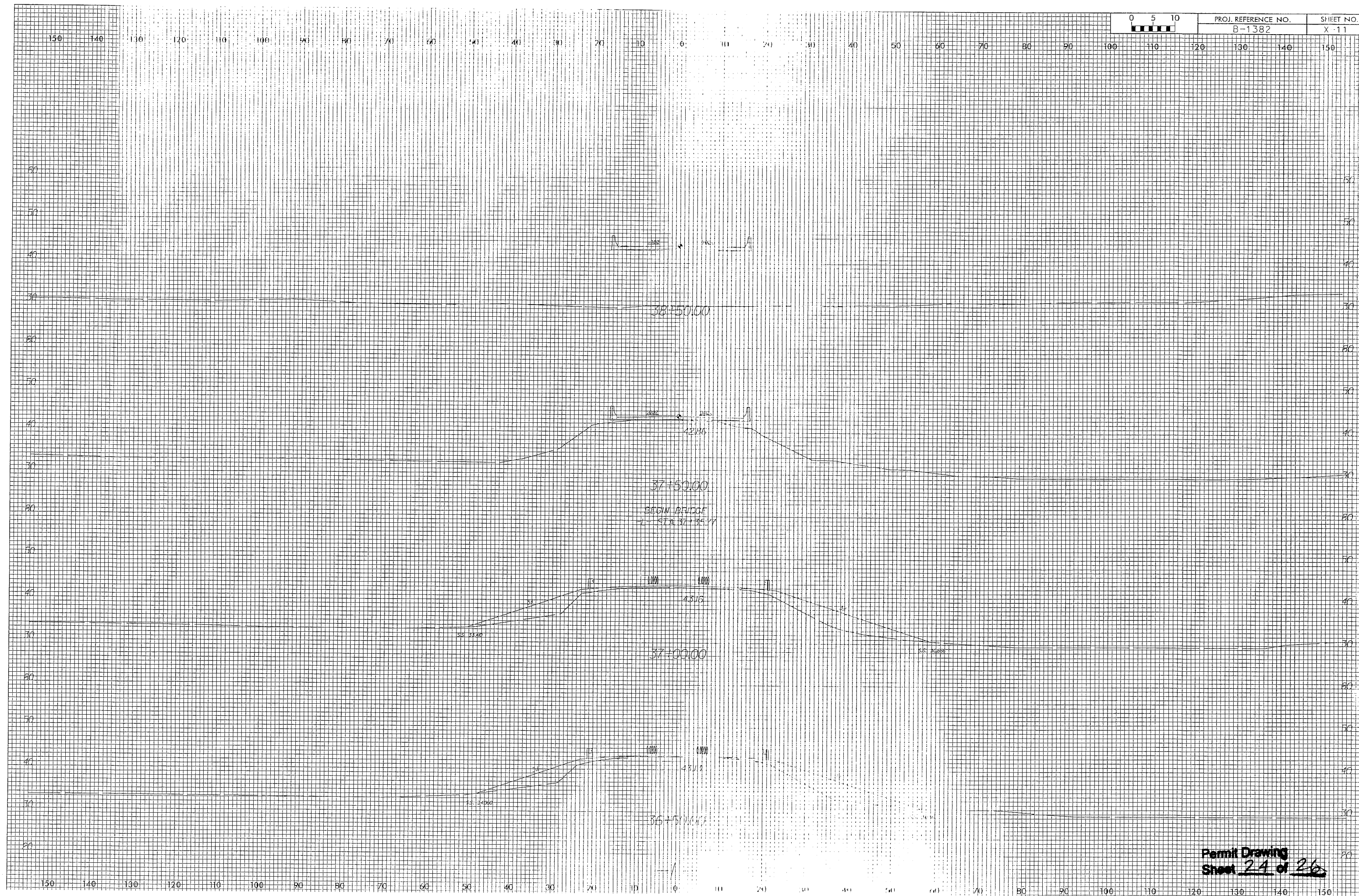


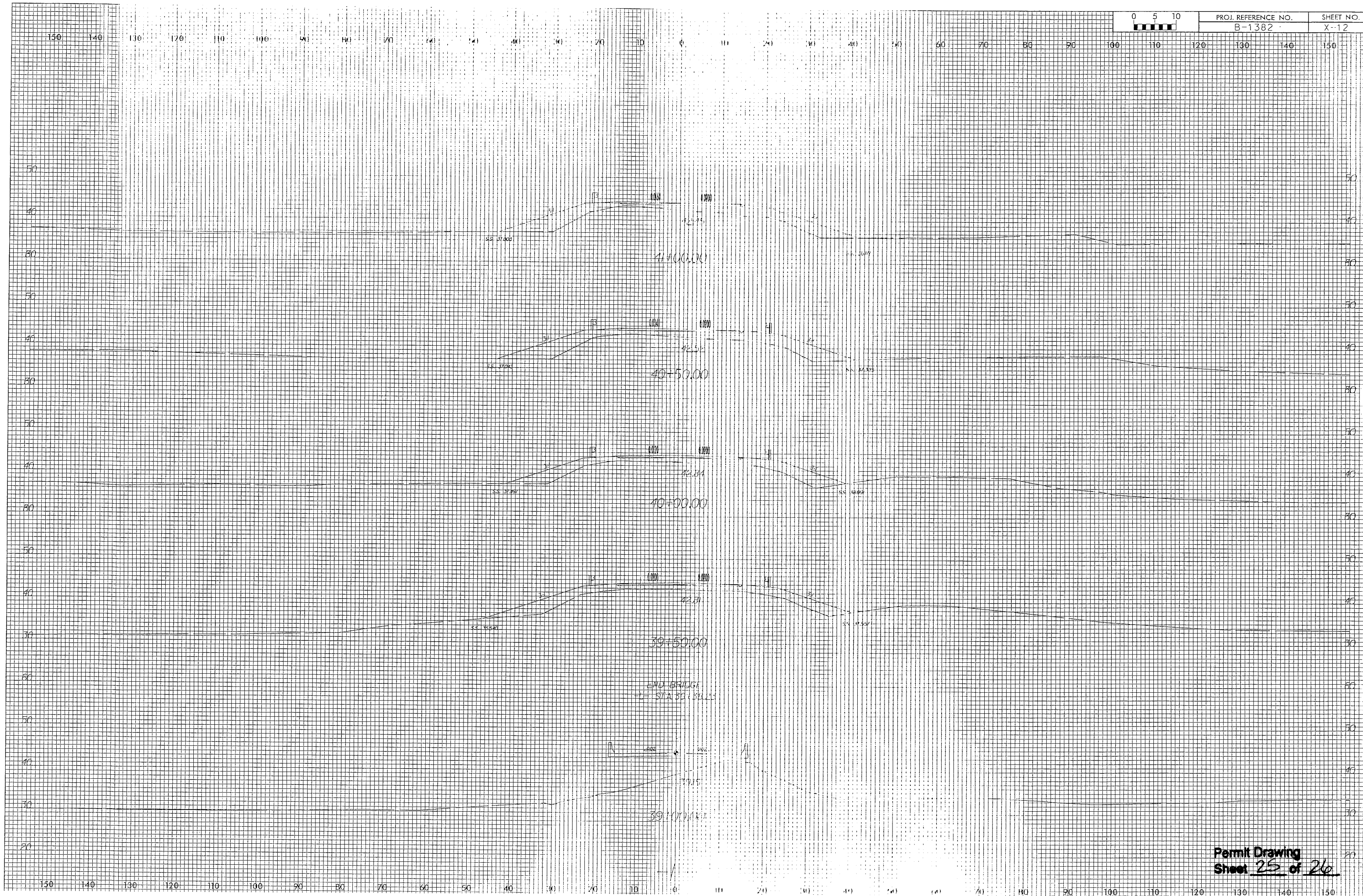


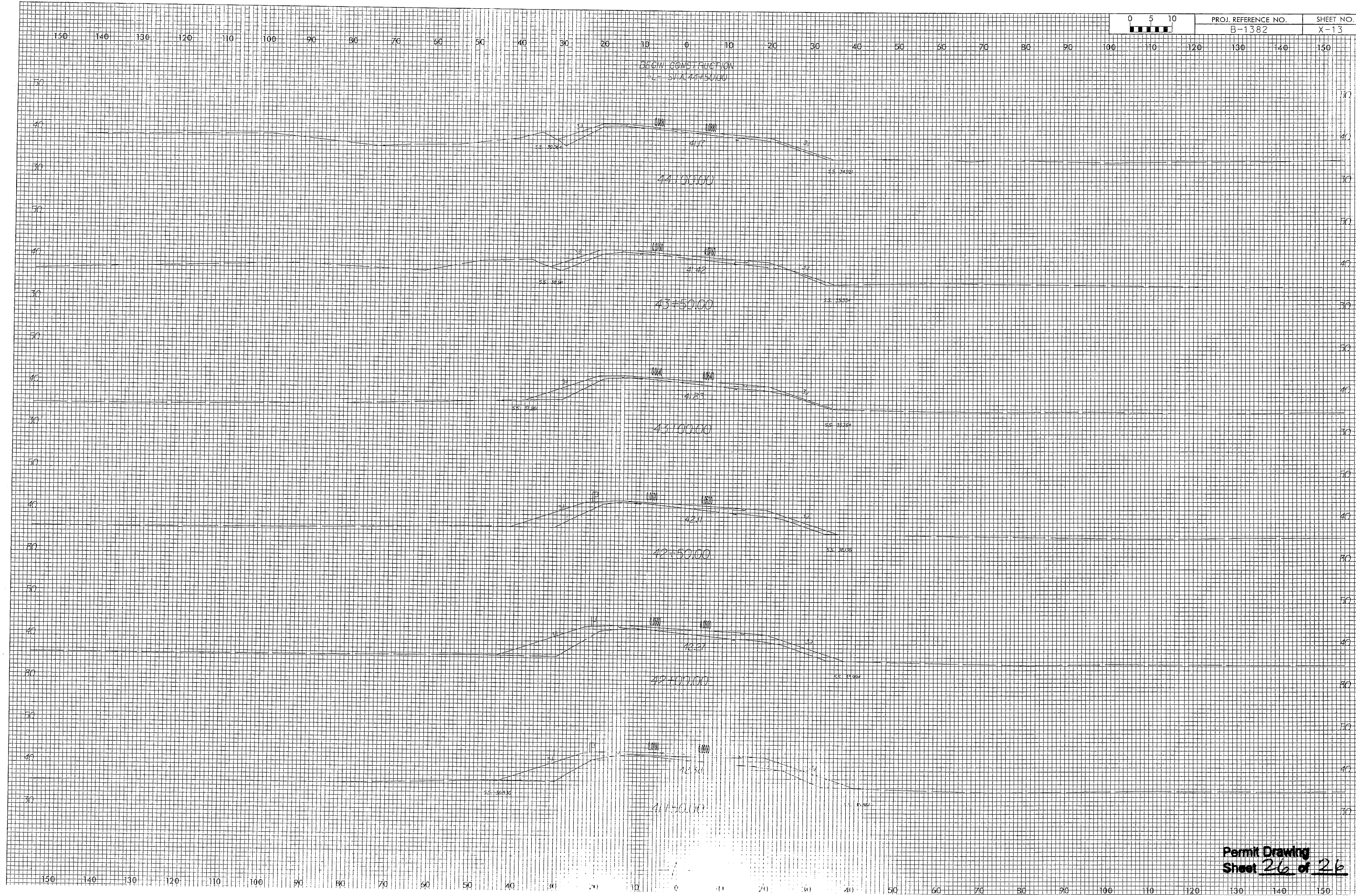








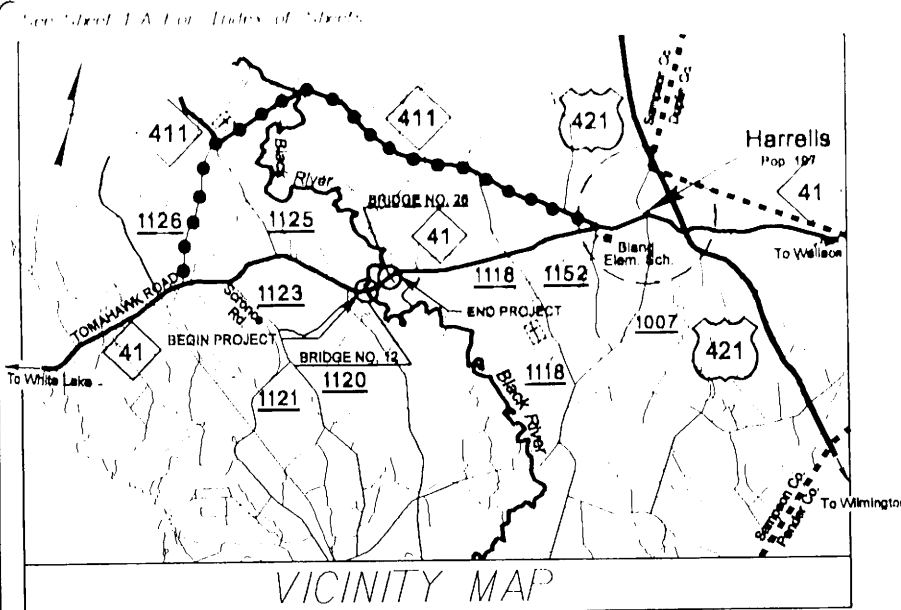




09/08/99

TIP PROJECT: B-1382

CONTRACT:



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

OFFSITE DETOUR ROUTE

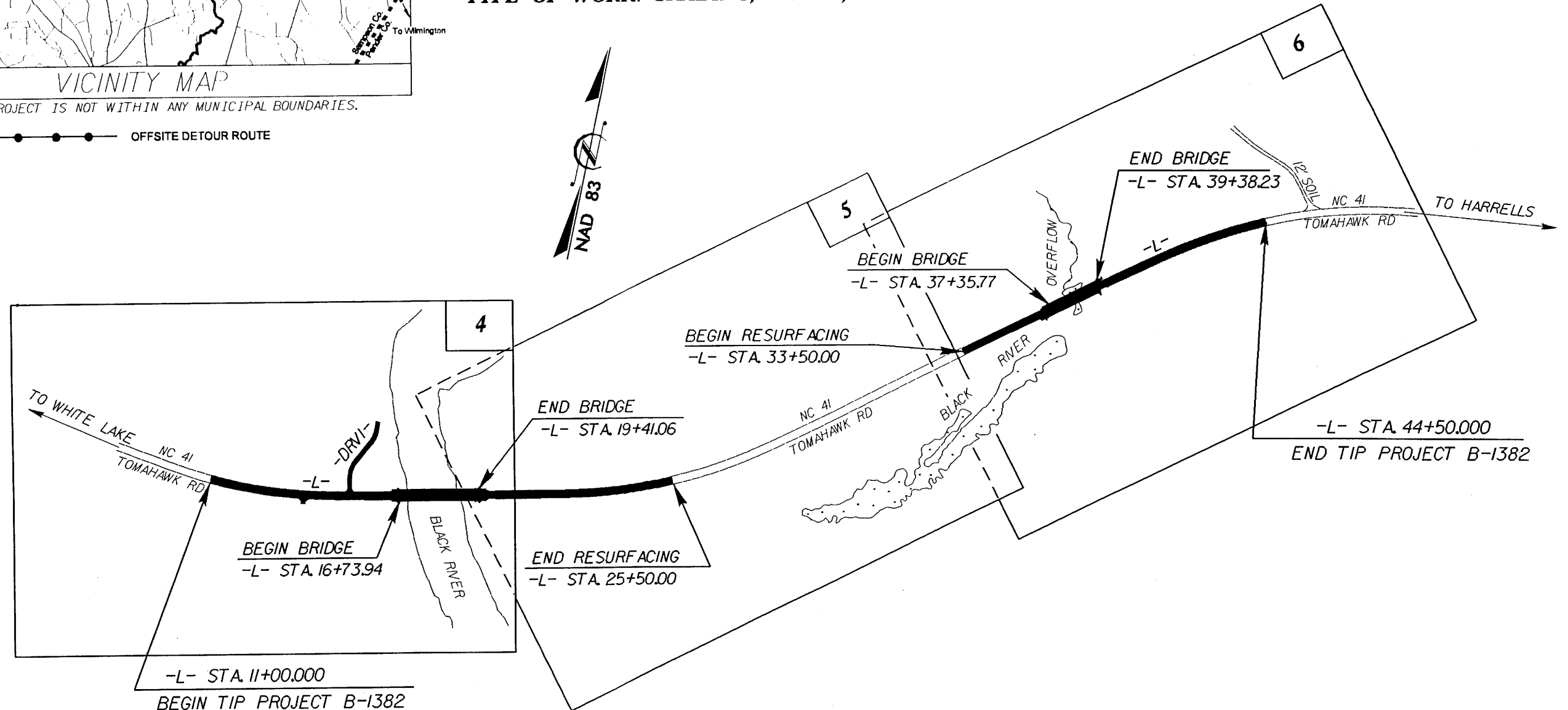
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SAMPSON COUNTY

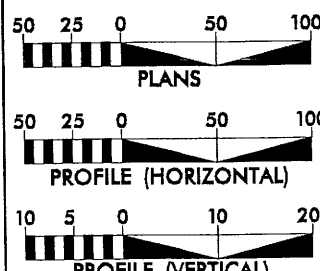
LOCATION: BRIDGE NO. 12 AND NO. 26 OVER BLACK RIVER AND BLACK RIVER OVERFLOW ON NC 41 (TOMAHAWK ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-1382	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32595.1.1	BRSTP-41(8)	P.E.	



GRAPHIC SCALES



DESIGN DATA

ADT 2005 = 2,500
ADT 2030 = 4,900
DHV = 12 %
D = 55 %
T = 20 %*
V = 60 MPH
* TTST 15% DUAL 5%
FUNCTIONAL CLASS =
RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-1382 = 0.394 MILES
LENGTH OF STRUCTURE TIP PROJECT B-1382 = 0.051 MILES
LENGTH OF STRUCTURE TIP PROJECT B-1382 = 0.038 MILES
TOTAL LENGTH OF TIP PROJECT B-1382 = 0.483 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 21, 2005

LETTING DATE:
MARCH 18, 2008

G.E.BREW, PE
PROJECT ENGINEER

D. WILLIAMS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____
ROADWAY DESIGN
ENGINEER

SIGNATURE: _____

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

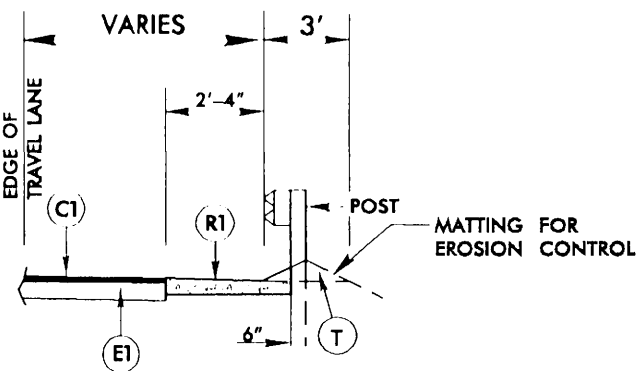
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DEC-2007 09:18
Roadway\Proj\B1382_rdy.tsh.dgn
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PROJECT REFERENCE NO.	SHEET NO.
B-1382	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

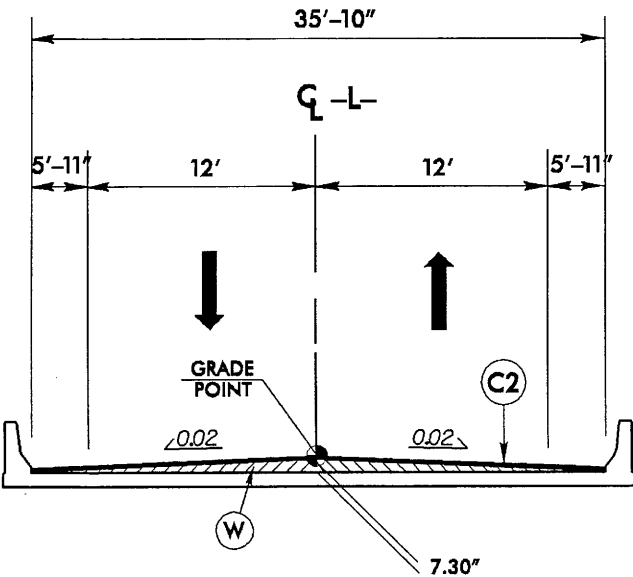
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
J1	PROP. 6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED



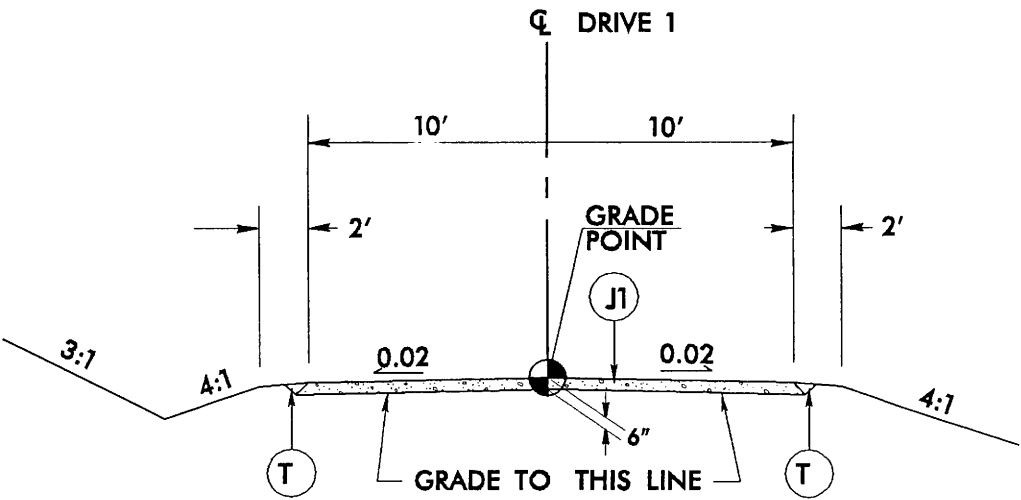
DETAIL SHOWING SHOULDER BERM GUTTER

- L- STA. 19+55.06 TO 20+35.00 (RT)
- L- STA. 19+55.06 TO 22+00.00 (LT)
- L- STA. 34+50.00 TO 37+21.92 (RT)
- L- STA. 36+25.00 TO 37+21.92 (LT)



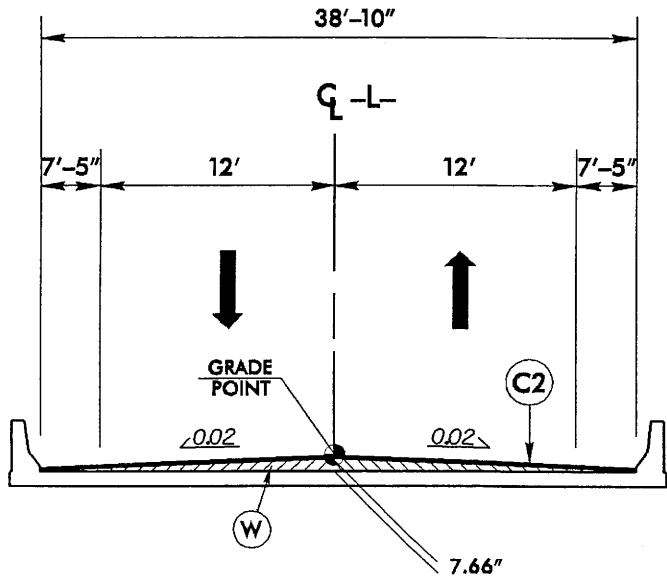
TYPICAL SECTION ON BRIDGE NO. 12

- L- STA. 16+73.94 (BEGIN BRIDGE) TO
- L- STA. 19+41.06 (END BRIDGE)



USE TYPICAL SECTION NO. 3

- DRV1- STA. 10+00.000 TO 12+65.00



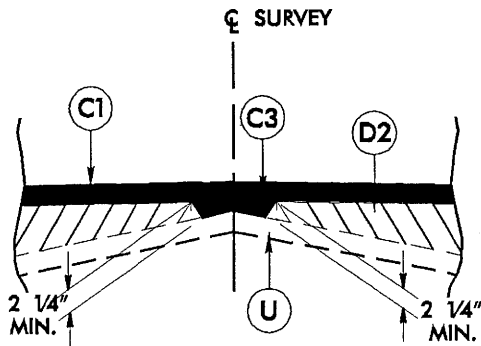
TYPICAL SECTION ON BRIDGE NO. 26

- L- STA. 37+35.77 (BEGIN BRIDGE) TO
- L- STA. 39+38.23 (END BRIDGE)

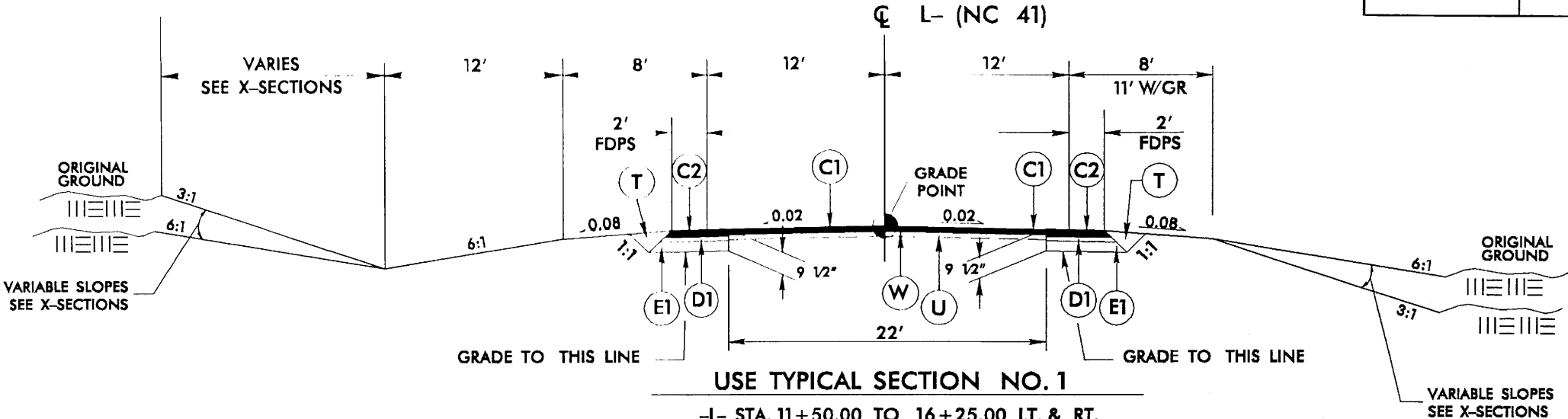
PROJECT REFERENCE NO.	SHEET NO.
B-1382	2
ROADWAY DESIGN ENGINEER	PAYEMENT DESIGN ENGINEER

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 288 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 468 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 6 1/2" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED



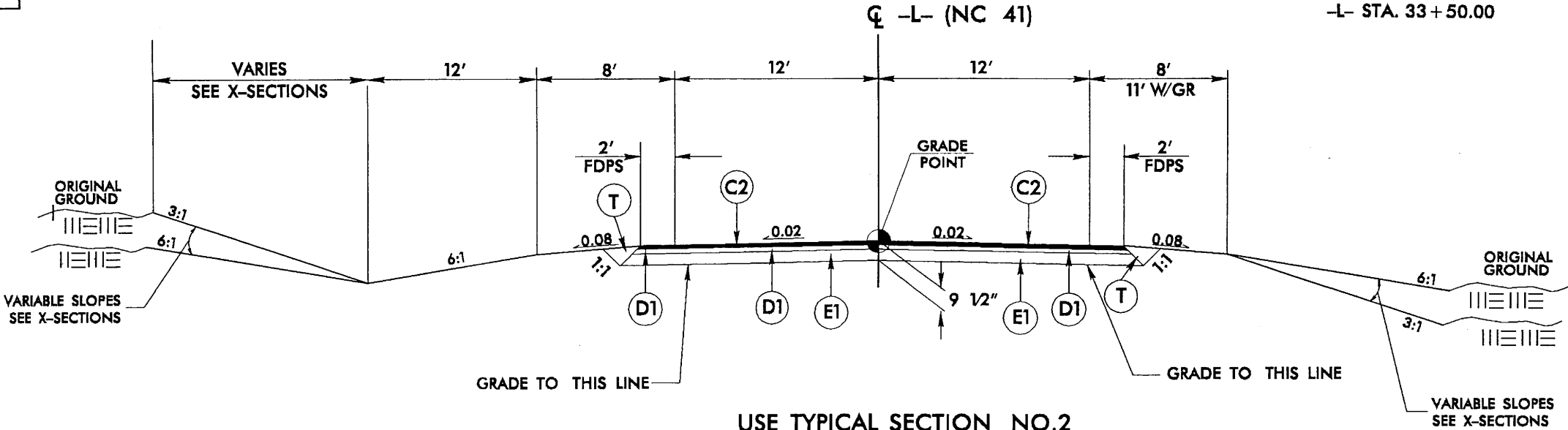
Detail Showing Method of Wedging



- L- STA. 11+50.00 TO 16+25.00 LT. & RT.
- L- STA. 20+00.00 TO 25+00.00 LT. & RT.
- L- STA. 34+00.00 TO 36+87.00 LT & RT.
- L- STA. 41+50.00 TO 44+00.00 LT. & RT.

- TRANSITION FROM EXIST. TO TS. NO. 1
- L- STA. 11+00.00 TO STA. 11+50.00
- TRANSITION FROM TS. NO. 1 TO EXIST.
- L- STA. 25+00.00 TO STA. 25+50.00
 - L- STA. 33+50.00 TO STA. 34+00.00
 - L- STA. 44+00.00 TO STA. 44+50.00

NOTE: NO RESURFACING TO BE DONE BETWEEN -L- STA. 25+50.00 AND -L- STA. 33+50.00



- L- STA. 16+25.00 TO 16+73.94 (BEGIN BRIDGE)
- L- STA. 19+41.06 (END BRIDGE) TO 20+00.00
- L- STA. 36+87.00 TO 37+35.77 (BEGIN BRIDGE)
- L- STA. 39+38.23 (END BRIDGE) TO 41+50.00



STATION	B FT.	D FT.	W FT.	d FT.	CLASS 1 RIP RAP TONS	DDE FT ³	FILTER FABRIC FT ²	FSRM FT ³
L- 19+75.00 LT.	5.0	1.0	4.0	0.5	7.1	48.6	90	185.4
L- 19+75.00 RT.	5.0	1.0	4.0	0.5	7.1	48.6	90	185.4

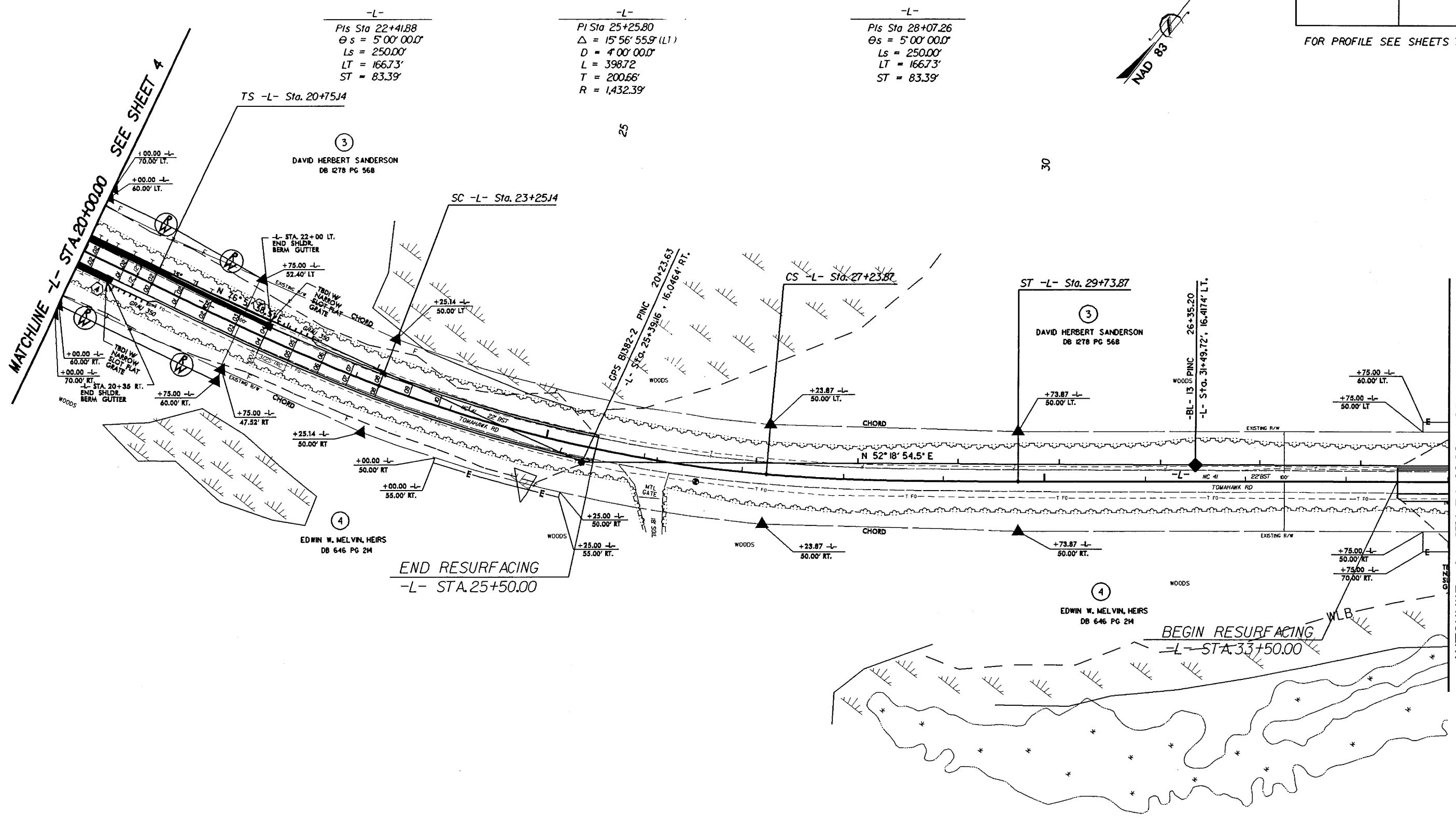
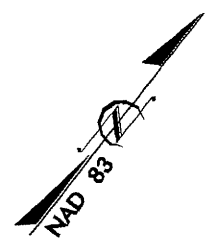
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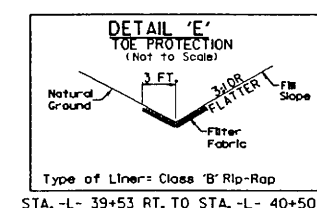
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-1382	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FOR PROFILE SEE SHEETS 7 & 8



MATCHLINE -L- STA. 34+00.00 SEE SHEET 6

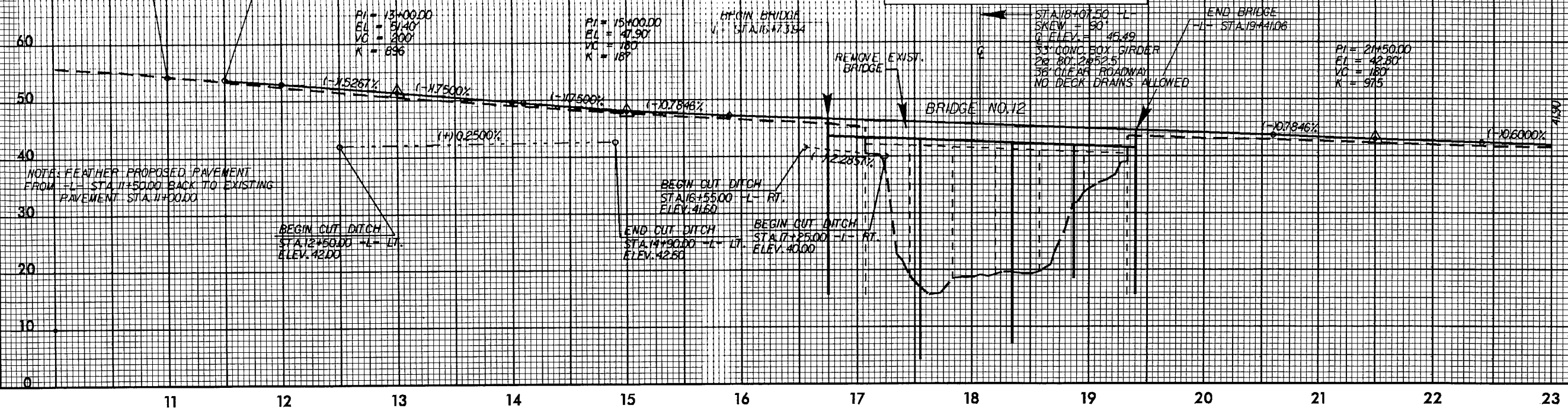


5/28/99

B.M. NO. 117 VINE TAIL
1A STA 10+100.00 HGT. 11.45 FT.
1B STA 10+120.00 HGT. 11.45 FT.

BEGIN PROPOSED GRADE
-L- STA 11+50.00
EL 53.59

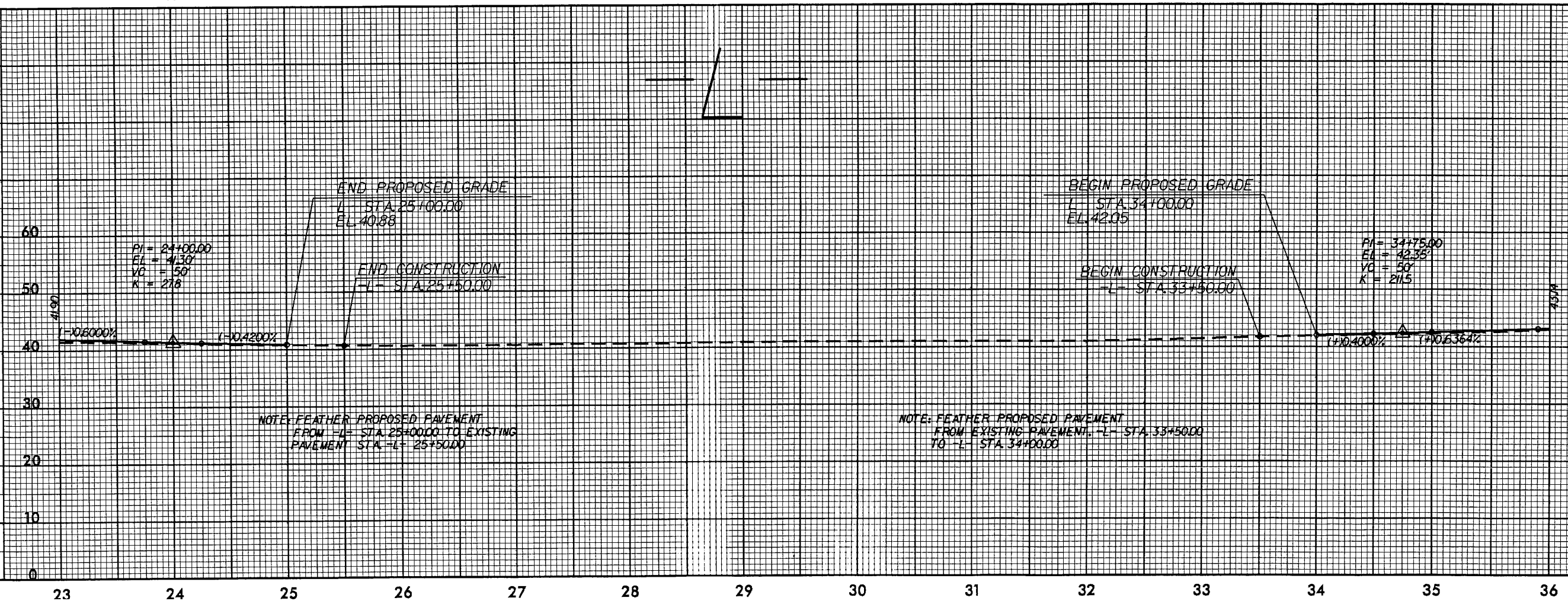
BEGIN CONSTRUCTION
-L- STA 11+00.00



STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 16000 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 41.20 FT
BASE DISCHARGE	= 19000 CFS
BASE FREQUENCY	= 50 YRS
BASE HW ELEVATION	= 42.0 FT
OVERTOPPING DISCHARGE	= 16700 CFS
OVERTOPPING FREQUENCY	= 50 YRS
OVERTOPPING ELEVATION	= 41.43 FT

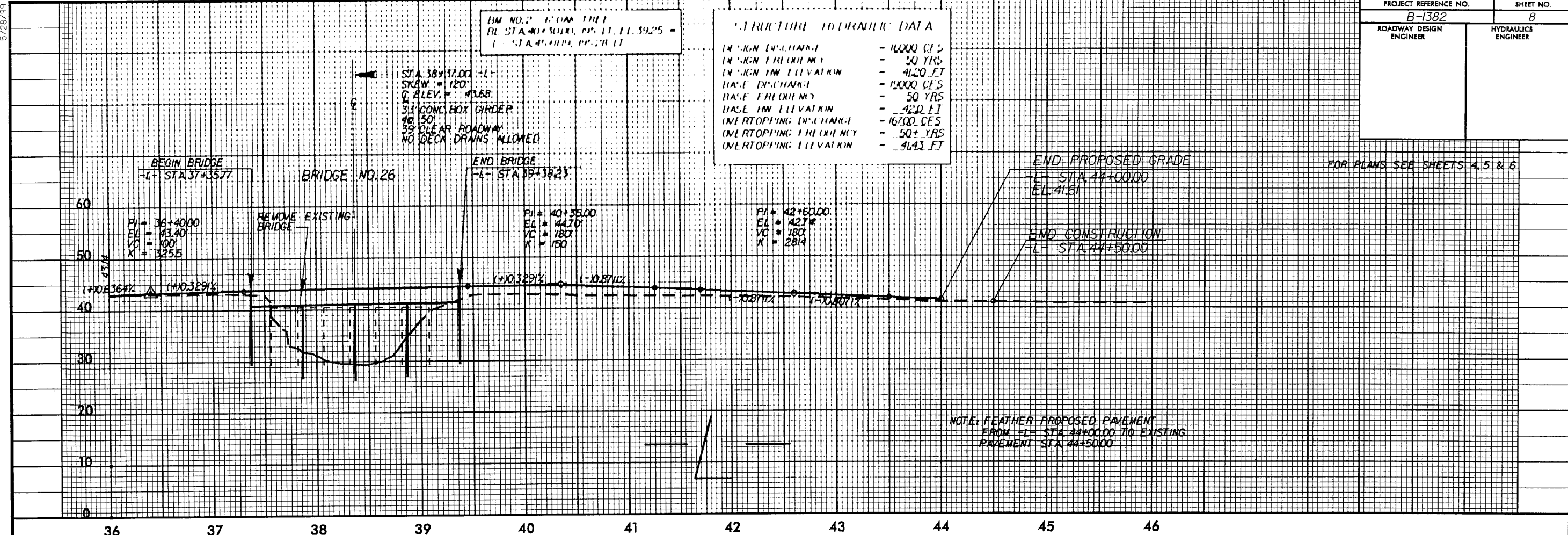
PROJECT REFERENCE NO.		SHEET NO.
B-1382		7
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER

FOR PLANS SEE SHEETS 4, 5 & 6

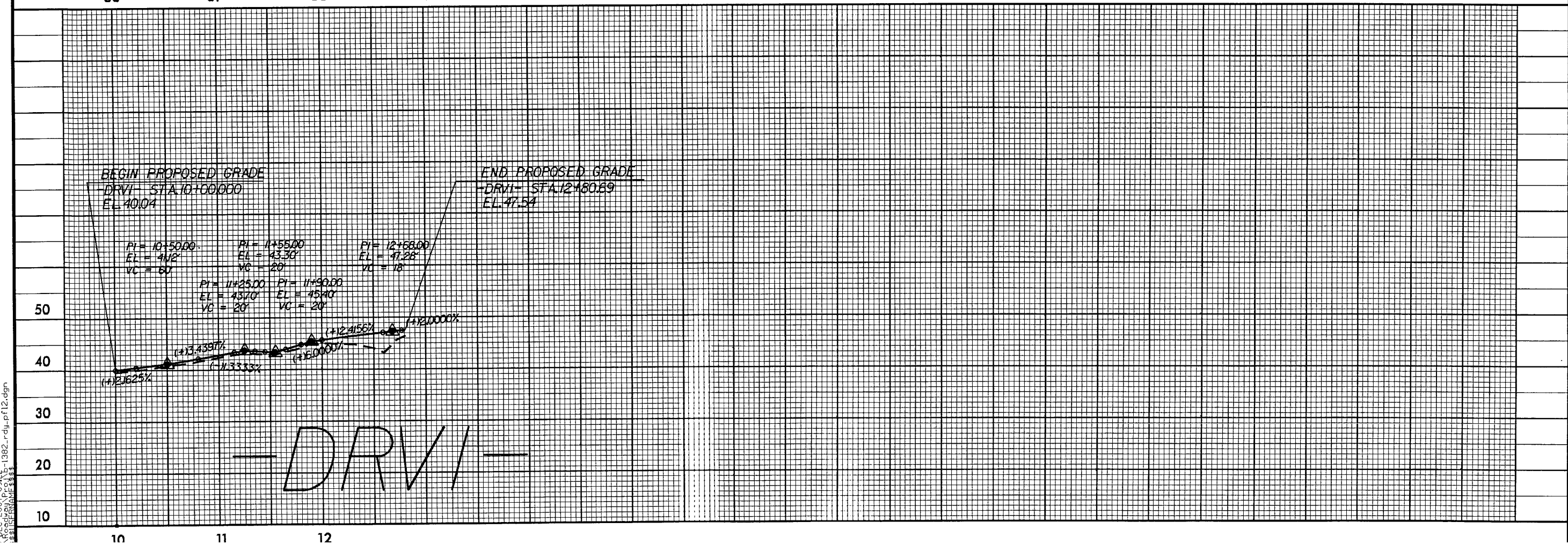


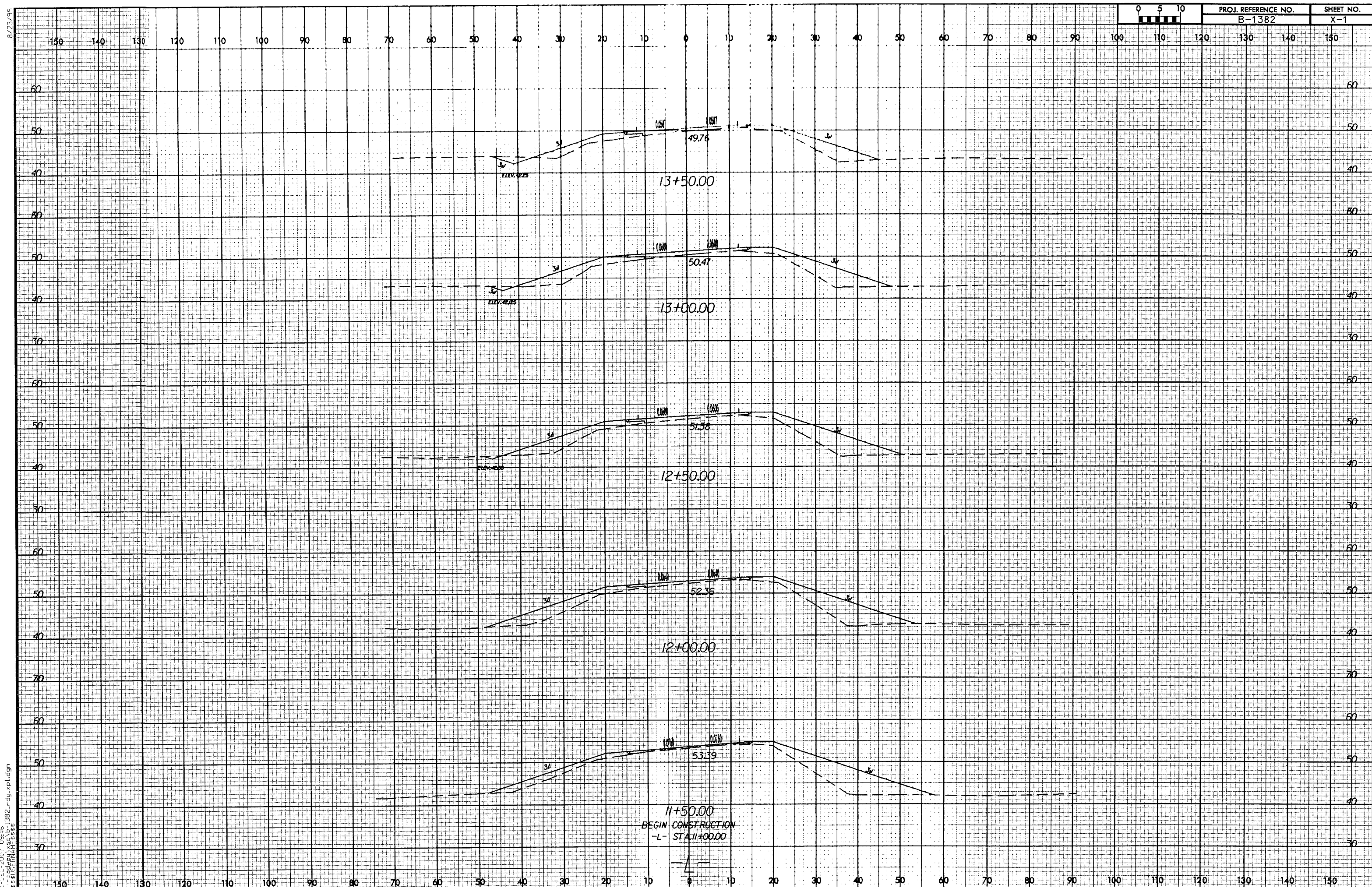
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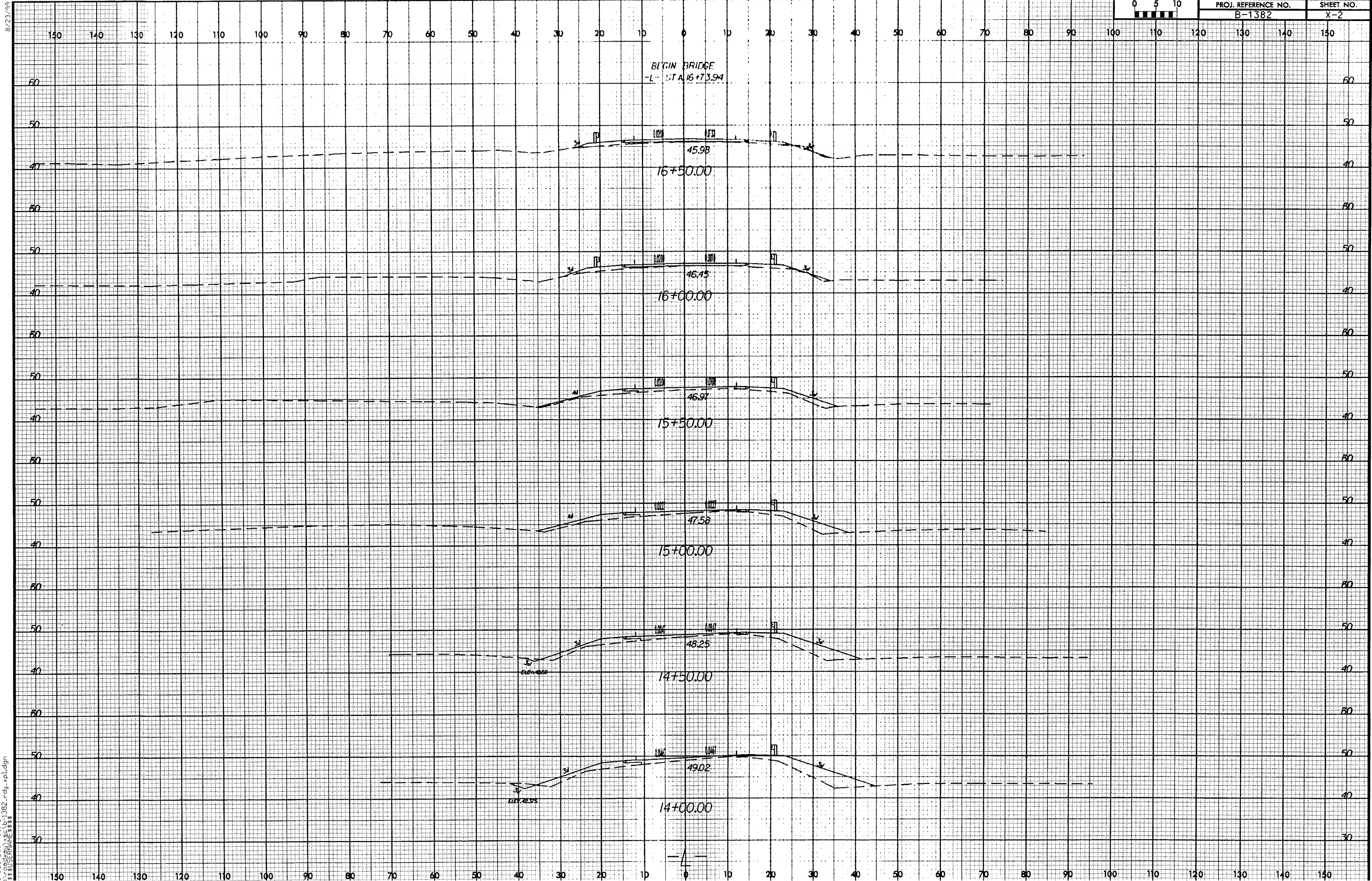
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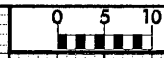
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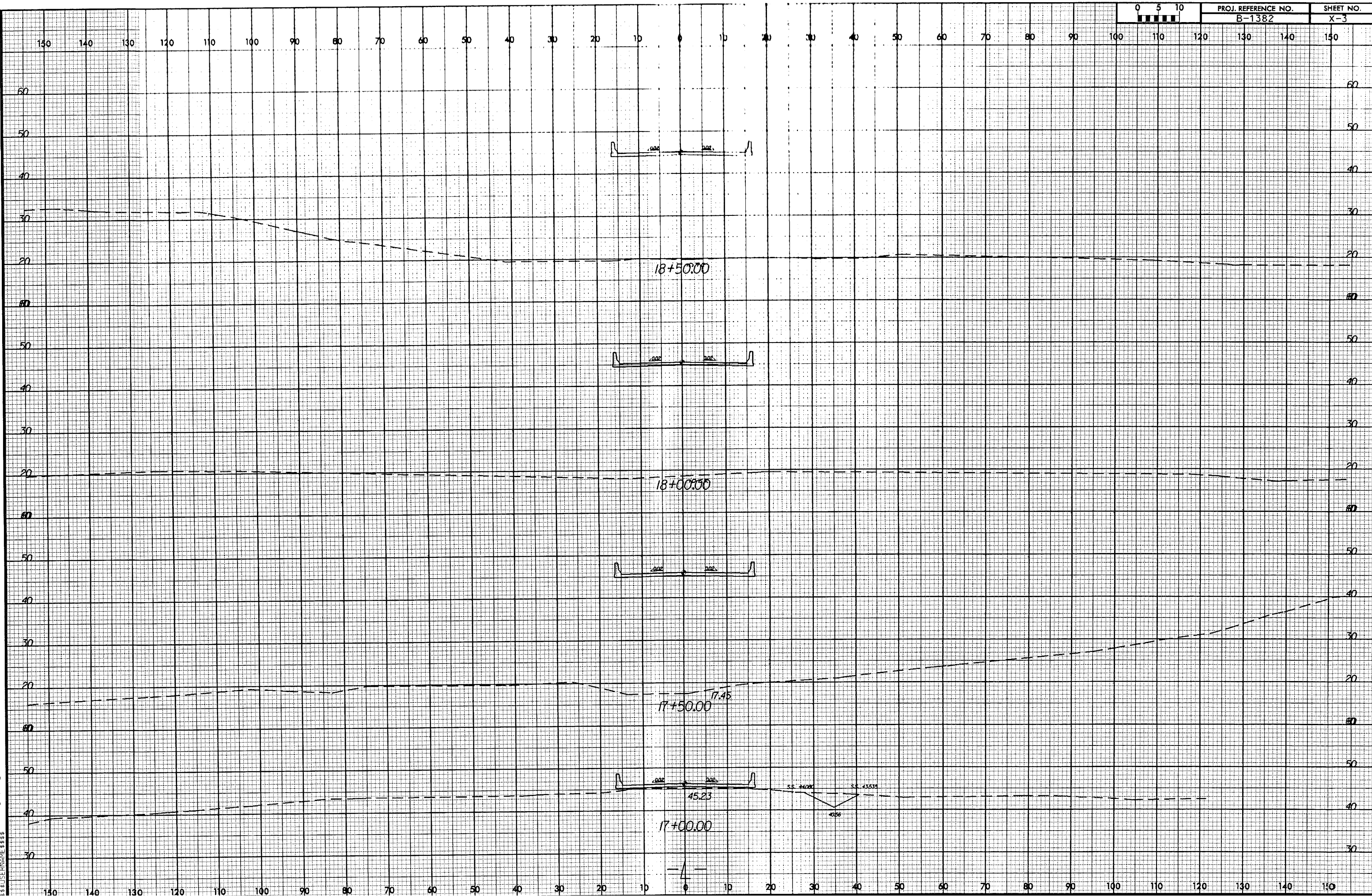


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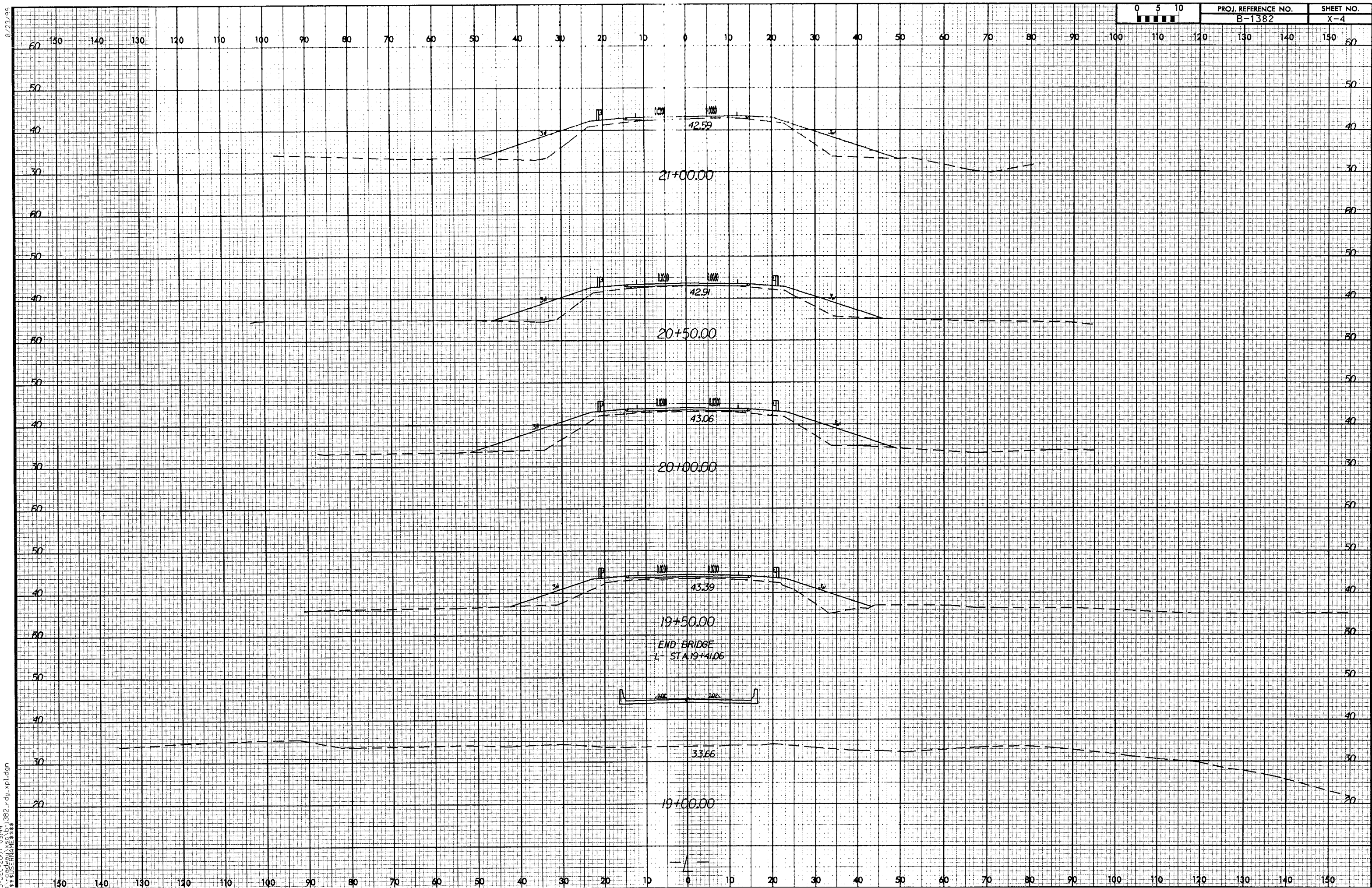


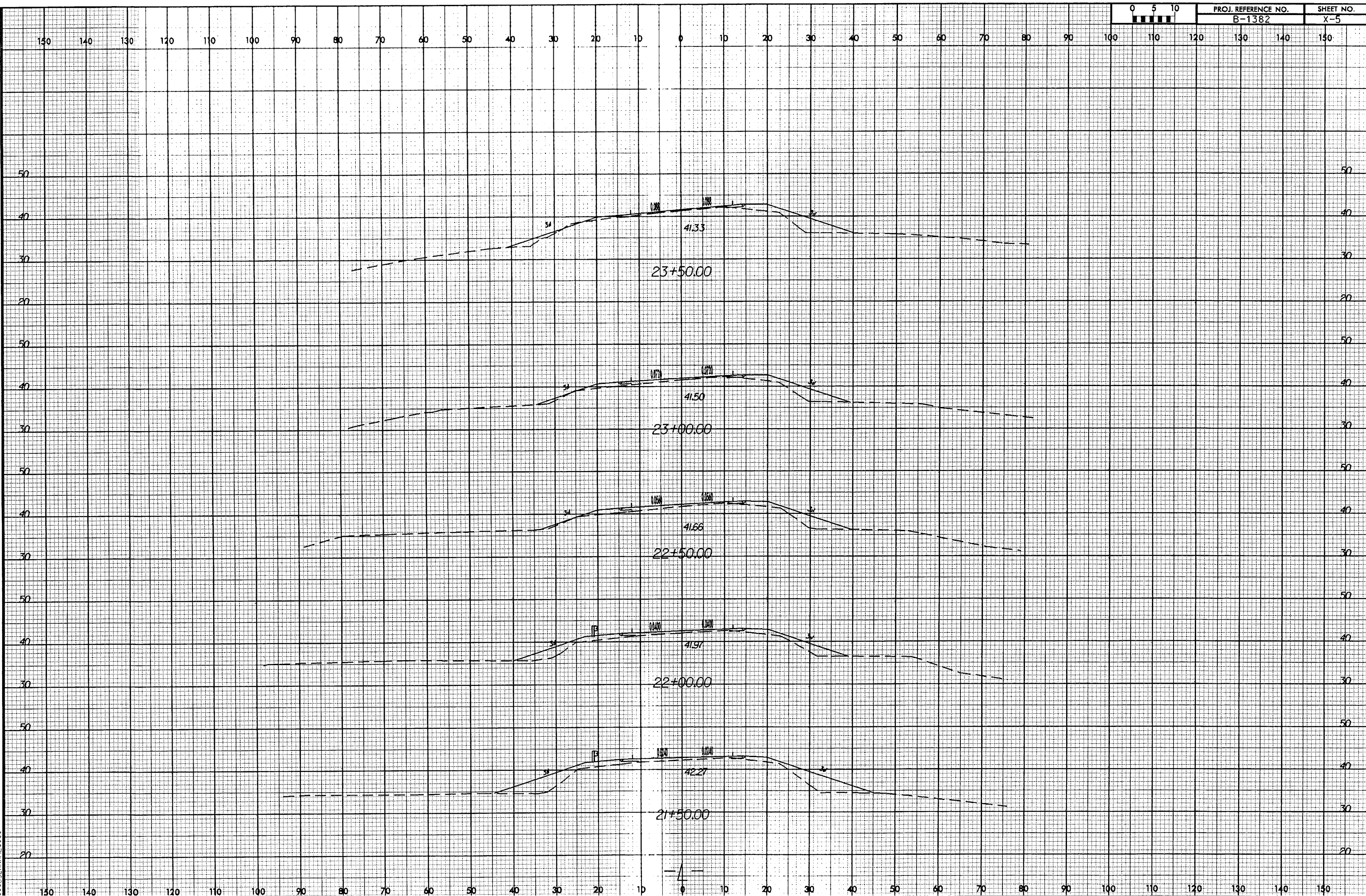
PROJ. REFERENCE NO.	SHEET NO.
B-1382	X-3



8/23/06

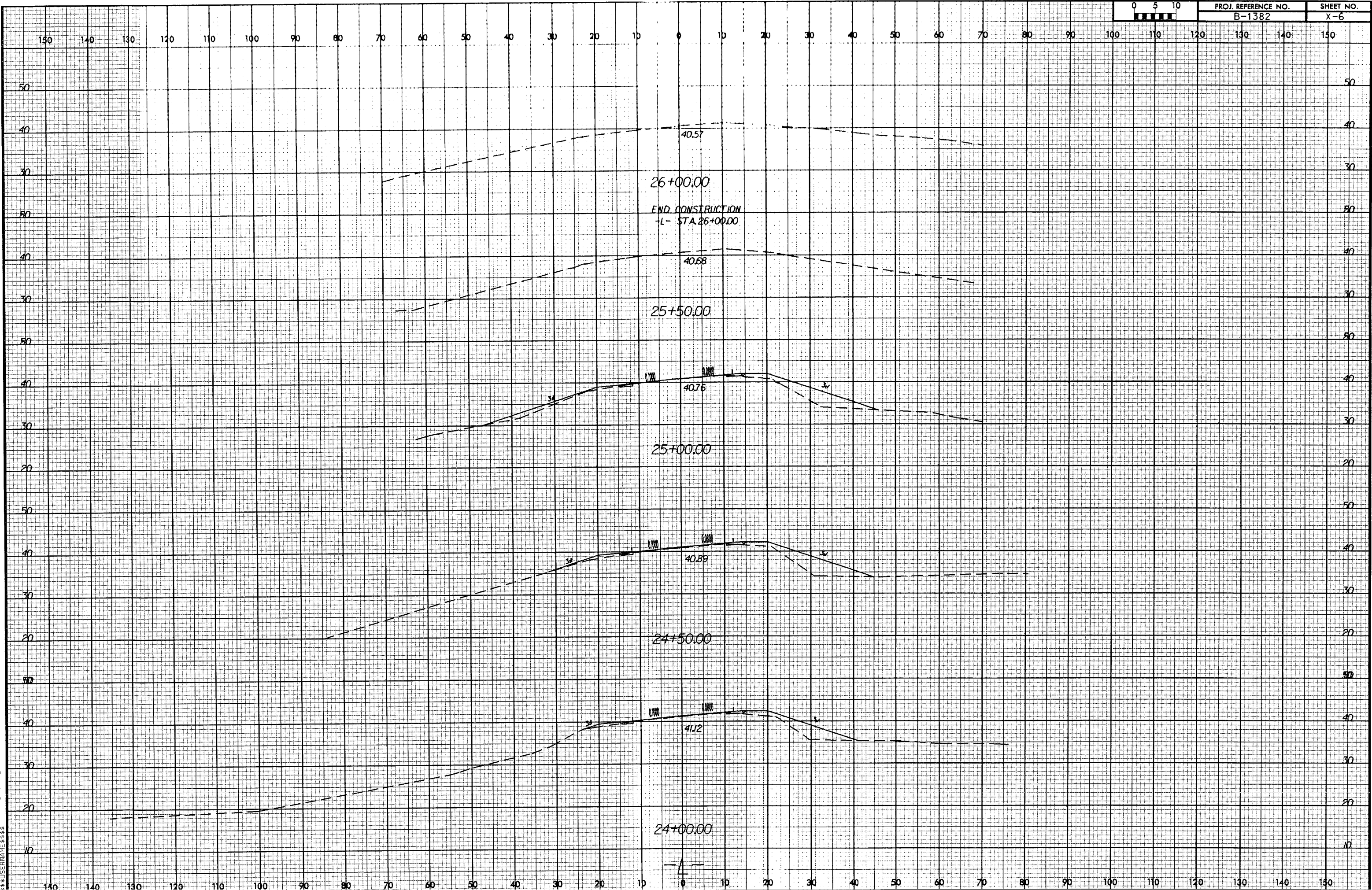
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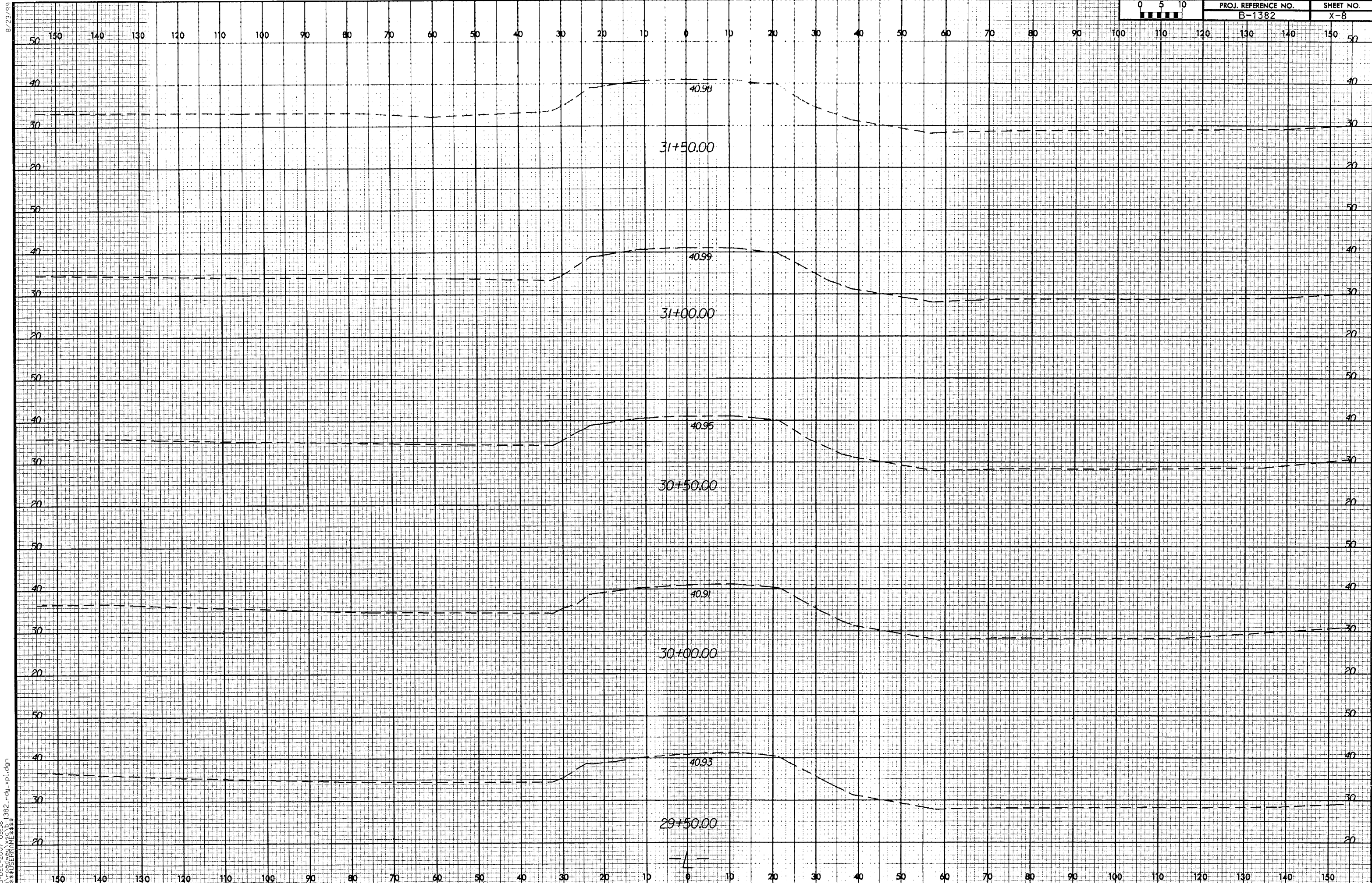
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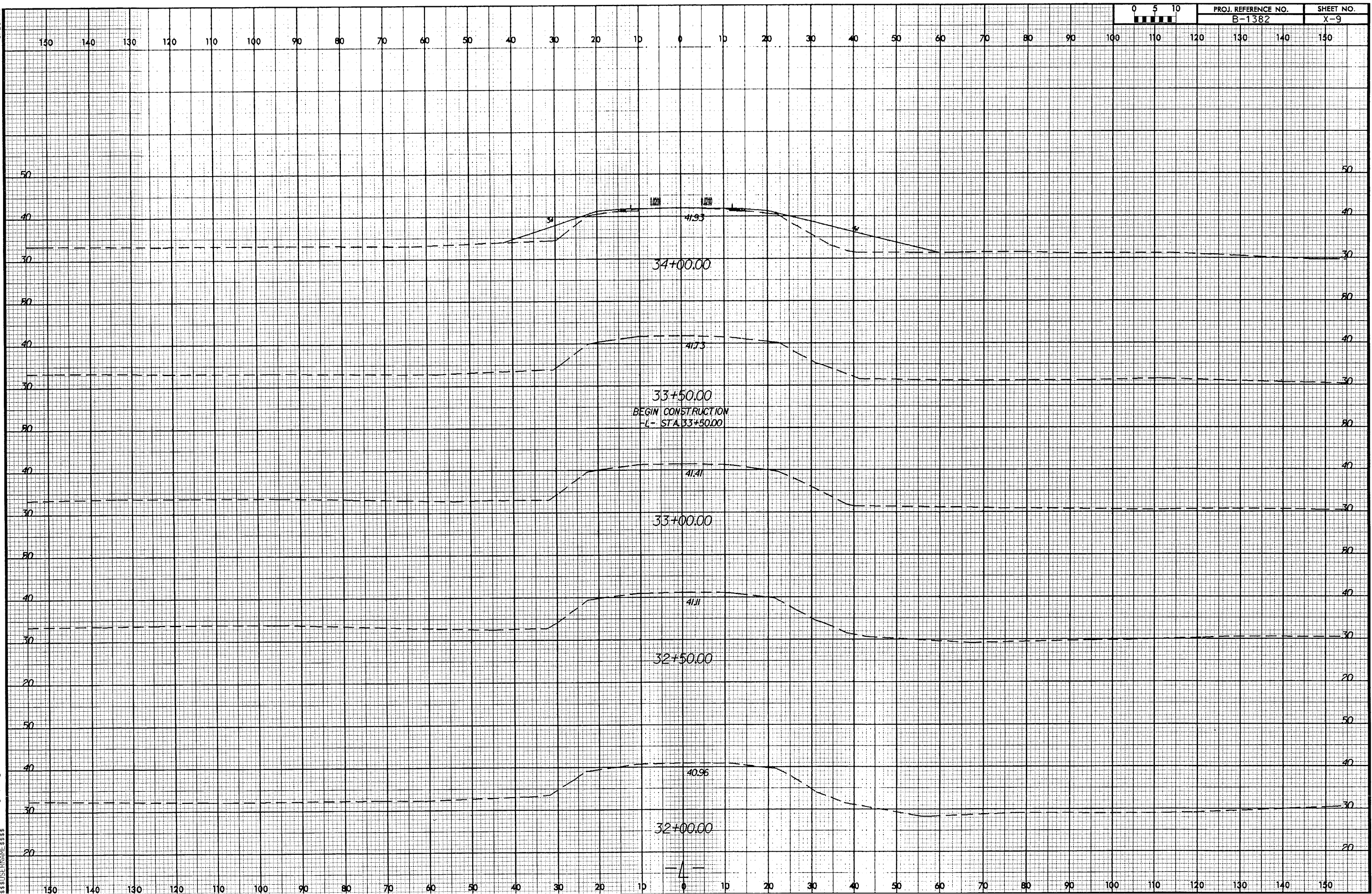


PROJ. REFERENCE NO.	SHEET NO.
B-1382	X-8



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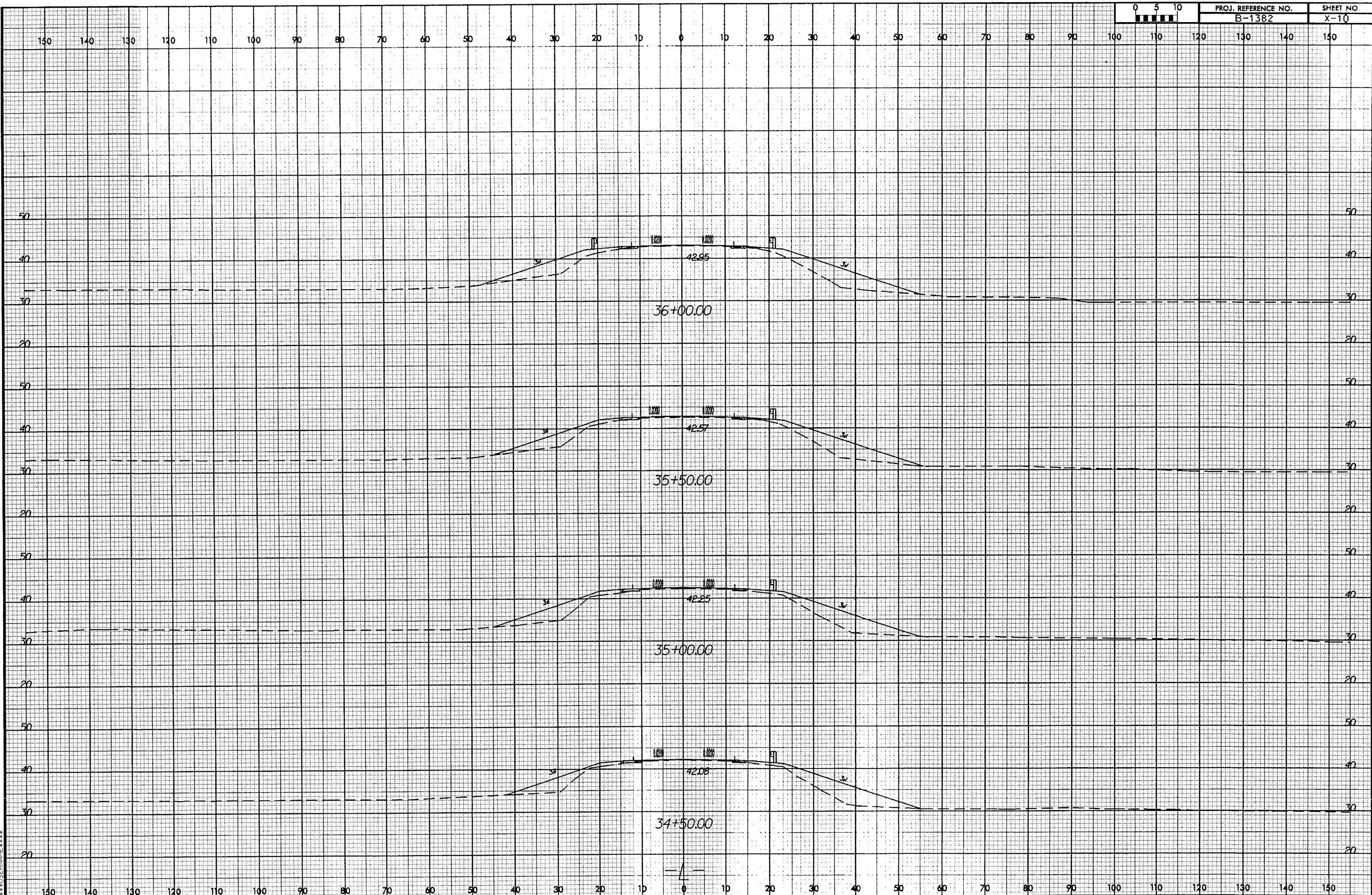


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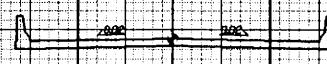
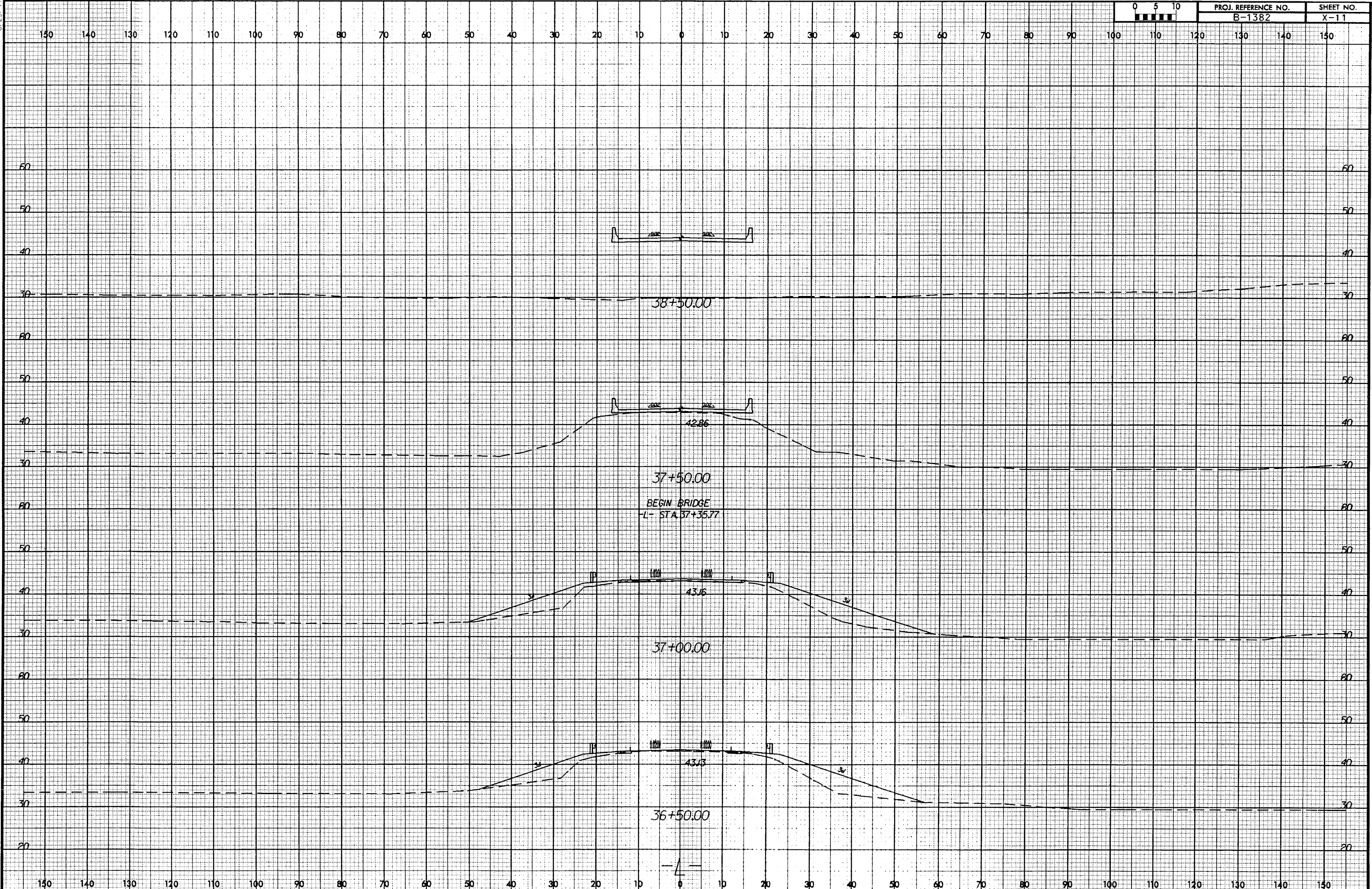
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B-1382	X-10



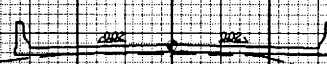
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PROJ. REFERENCE NO.	SHEET NO.
B-1382	X-11



38+50.00



42.86

37+50.00

BEGIN BRIDGE

L- STA. 37+35.77



43.16

37+00.00



43.13

36+50.00

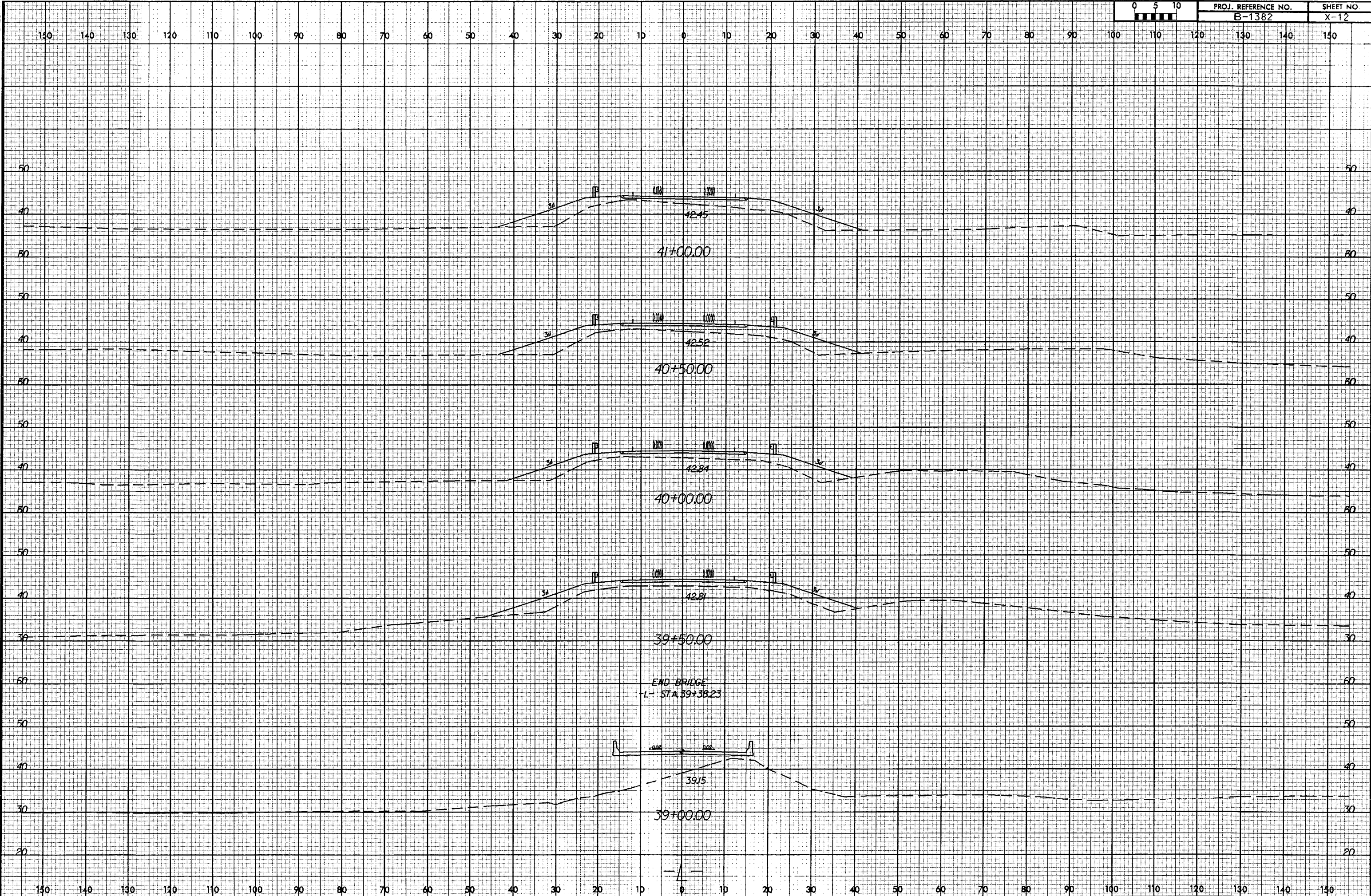


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PROJ. REFERENCE NO.	SHEET NO.
B-1382	X-12



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