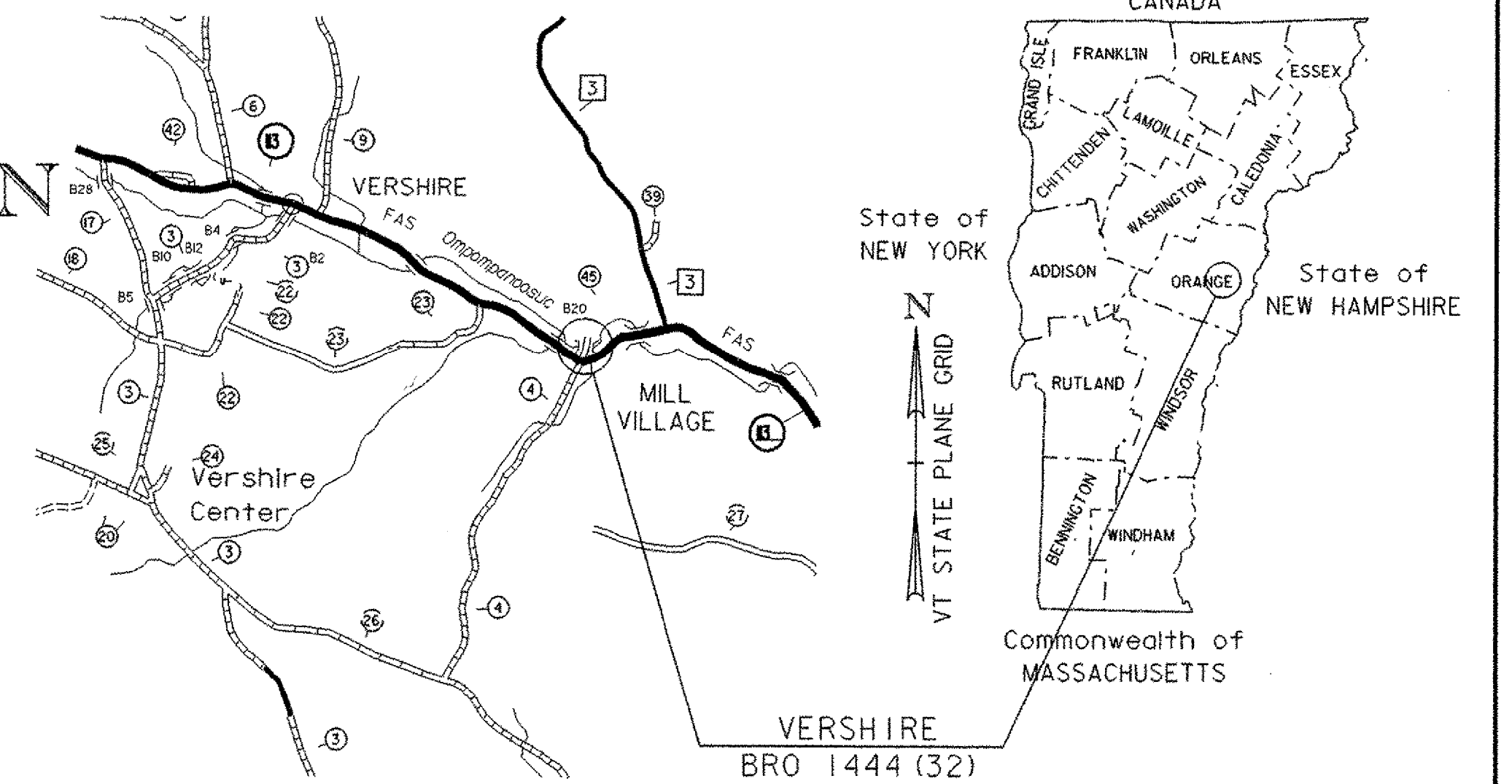


1. TITLE SHEET  
2. INDEX OF SHEETS

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT



TOWN OF VERSHIRE  
COUNTY OF ORANGE  
ROUTE NO : TH 45 CL3 BRIDGE NO : 20

PROJECT LOCATION : BEGINNING AT THE INTERSECTION OF VT RTE 113 AND TH 45 AND EXTENDING NORTHEASTERLY APPROXIMATELY 21 METERS.

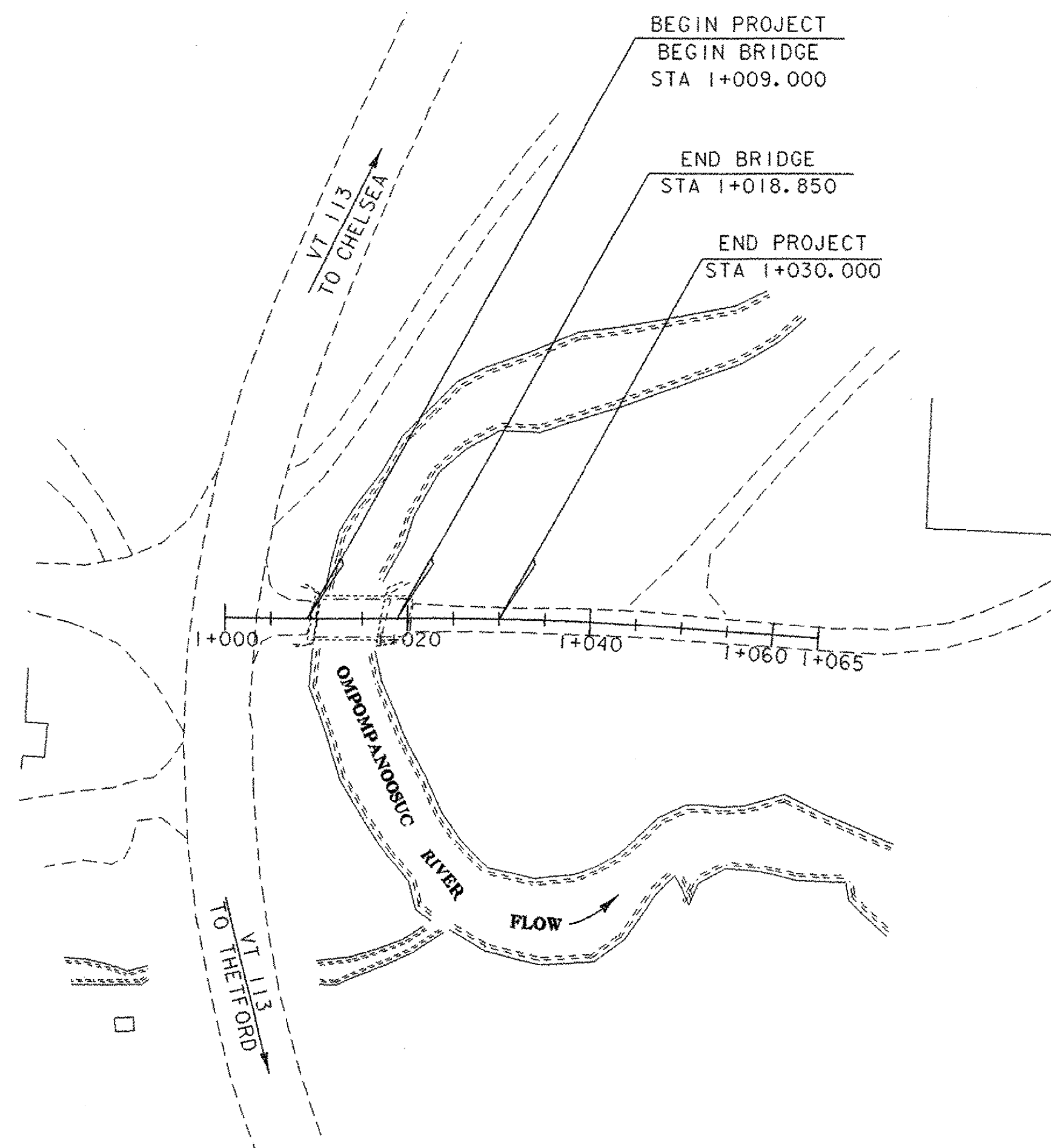
PROJECT DESCRIPTION : CONSTRUCTION OF A NEW STRUCTURE ALONG WITH RELATED ROADWAY APPROACH AND CHANNEL WORK.

LENGTH OF STRUCTURE : 9.850 METERS  
LENGTH OF ROADWAY : 11.150 METERS  
LENGTH OF PROJECT : 21.000 METERS

### CONTRACT PLANS

**THESE PLANS DO NOT REFLECT  
CHANGES MADE ON THE PROJECT**

**CONTRACTOR: MILLER CONSTRUCTION - WINDSOR, VT**  
**RESIDENT ENGINEER: JIM FORREST**  
**CONSTRUCTION BEGAN: MAY 18, 2006**  
**CONSTRUCTION COMPLETE: OCTOBER 10, 2006**



#### CONVENTIONAL SYMBOLS

COUNTY LINE		COUNTY LINE
TOWN LINE		TOWN LINE
LIMITS OF ACCESS		
POINT OF ACCESS		
FENCE LINE		
STONE WALL		
TRAVELED WAY		
GUARD RAIL		
RAILROAD		
SURVEY LINE		
CULVERT		
POWER POLE		
TELEPHONE POLE		
TREES		
CONTROL OF ACCESS		
PROPERTY LINE		
R.O.W. TAKING LINE		
SLOPE RIGHTS		
TOP OF CUT		
TOE OF SLOPE		

SURVEYED BY : 11/94  
SURVEYED DATE : R. GILMAN

DATUM  
VERTICAL NAVD 88  
HORIZONTAL NAD 83/92

0 10 20 30  
SCALE 1:500

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

**Metric**

UNLESS NOTED OTHERWISE  
STATIONS ARE IN KILOMETERS  
ELEVATIONS ARE IN METERS  
DIMENSIONS ARE IN MILLIMETERS

DIRECTOR OF PROGRAM DEVELOPMENT

APPROVED DATE 2-7-06

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : VERSHIRE  
PROJECT NUMBER : BRO 1444 (32)

SHEET 1 OF 34 SHEETS

sj027+tit.i

INDEX OF SHEETS

1. TITLE SHEET
2. PRELIMINARY INFORMATION SHEET
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5. TYPICAL SECTIONS
6. TIE SHEET
7. LAYOUT
8. TH 45 PROFILE
9. TRAFFIC CONTROL PLAN
10. TRAFFIC SIGN SUMMARY SHEET
11. PLAN AND ELEVATION
12. NOTES AND MISCELLANEOUS DETAILS
13. SLAB DETAILS
14. ABUTMENT NO. 1 DETAILS
15. ABUTMENT NO. 2 DETAILS
16. FOOTING REINFORCING DETAILS
17. WINGWALL NO. 1 & 2 DETAILS
18. WINGWALL NO. 3 & 4 DETAILS
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21. RIGHT OF WAY DETAILS
22. EROSION CONTROL NARRATIVE
23. EROSION CONTROL NOTES
24. EXISTING CONDITIONS
25. EROSION PREVENTION AND SEDIMENT CONTROL
26. FINAL CONDITIONS
27. EPSC 1 (SILT FENCE)
28. EPSC 2 (CHECK DAMS)
29. EPSC 4 (STABILIZED CONSTRUCTION ENTRANCE)
30. EPSC 5 (DITCH AND SLOPE PROTECTION)
- 31-32. MAINLINE CROSS SECTIONS
- 33-34. CHANNEL CROSS SECTIONS

LIST OF STANDARDS

- |           |          |
|-----------|----------|
| B-5M      | 01/03/00 |
| B-71      | 07/08/05 |
| E-100     | 01/02/04 |
| E-101     | 05/30/03 |
| E-102     | 06/30/03 |
| E-102A    | 05/01/04 |
| E-107     | 06/30/03 |
| E-121     | 08/08/95 |
| E-138     | 05/30/03 |
| E-141     | 09/20/95 |
| E-143     | 06/15/04 |
| E-160     | 05/20/99 |
| E-164     | 05/20/99 |
| G-1M      | 01/03/00 |
| G-1DM     | 01/03/00 |
| J-3M      | 6/13/97  |
| SB-R6-82M | 7/10/97  |

FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: 6/3/99

DRAINAGE AREA : 26.4 sq km  
 CHARACTER OF TERRAIN : Mountainous, Rolling Hills, Forested  
 STREAM CHARACTERISTICS : Meandering, Perennial  
 NATURE OF STREAMBED : Gravel, Cobble to Ledge

PEAK FLOW DATA

Q 2.33 =	14.2 cms	Q 50 =	48.1 cms
Q 10 =	28.3 cms	Q 100 =	56.6 cms
Q 25 =	39.6 cms	Q 500 =	75.3 cms

DATE OF FLOOD RECORD : Unknown  
 ESTIMATED DISCHARGE : N/A  
 WATER SURFACE ELEV. : N/A  
 NATURAL STREAM VELOCITY : @ Q25 = 3.4 mps  
 ICE CONDITIONS : Moderate  
 DEBRIS : Moderate  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes  
 IS ORDINARY RISE RAPID? Yes  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No  
 IF YES, DESCRIBE:

WATERSHED STORAGE: 1% HEADWATERS:  
 UNIFORM: X  
 IMMEDIATELY ABOVE SITE:

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE: Single Span Steel Beam Bridge with Timber Deck  
 YEAR BUILT: 1919  
 CLEAR SPAN(NORMAL TO STREAM): 7.0 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.0 m  
 WATERWAY OF FULL OPENING: 19.4 sq m  
 DISPOSITION OF STRUCTURE: Remove  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Ledge

WATER SURFACE ELEVATIONS AT:

Q2.33 =	308.7 m	VELOCITY =	2.7 mps
Q10 =	309.3 m	"	3.4 mps
Q25 =	309.7 m	"	3.8 mps
Q50 =	310.0 m	"	4.1 mps
Q100 =	310.4 m	"	3.7 mps

LONG TERM STREAMBED CHANGES: None

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: Above Q50  
 RELIEF ELEVATION: 310.0 m  
 DISCHARGE OVER ROAD @Q100: 8.0 cms

**UPSTREAM STRUCTURE**

TOWN: Vershire DISTANCE: 0.43 km  
 HIGHWAY #: VT 113 STRUCTURE #: Bridge 11  
 CLEAR SPAN: 4.6 m CLEAR HEIGHT: 3.5 m  
 YEAR BUILT: 1928 FULL WATERWAY: Unknown  
 STRUCTURE TYPE: Single Span Bridge

**DOWNSTREAM STRUCTURE**

TOWN: Vershire DISTANCE: 0.24 km  
 HIGHWAY #: VT 113 STRUCTURE #: Bridge 17  
 CLEAR SPAN: 17.1 m CLEAR HEIGHT: 4.3 m  
 YEAR BUILT: 1938 FULL WATERWAY: Unknown  
 STRUCTURE TYPE: Single Span Bridge

**LOAD FACTOR - LOAD RATING (METRIC TONS)**

LOADING LEVELS	TRUCK						
	M	M5	352	8 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	26	41					
POSTED	36	58	73		43	44	72
OPERATING		69	87	79	51	52	

COMMENTS: RF=0M<sub>N</sub> - 1.3M<sub>DL</sub> / A X M<sub>LL+1</sub>

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
1996	10	5	0	<1	1
2016	15	5	0	<1	1

20 year ESAL for flexible pavement from 0 to 0 : 0  
 20 year ESAL for flexible pavement from 0 to 0 : 0  
 Design Speed : 25 km/h

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single Span Concrete Bridge

CLEAR SPAN(NORMAL TO STREAM): 8.5 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.2 m  
 WATERWAY OF FULL OPENING: 26.2 sq m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	308.5 m	VELOCITY =	2.6 mps
Q10 =	309.0 m	"	3.2 mps
Q25 =	309.4 m	"	3.6 mps
Q50 =	309.7 m	"	3.8 mps
Q100 =	310.0 m	"	4.0 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 310.1 m  
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 310.3 m  
 VERTICAL CLEARANCE: @ Q100 = 0.3 m

SCOUR: None - Footings to be founded on sound ledge.

REQUIRED CHANNEL PROTECTION: Type IV

**PERMIT INFORMATION**

AVERAGE DAILY FLOW:	0.6 cms	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	0.3 cms		0.1 m
ORDINARY HIGH WATER:	6.1 cms		0.3 m

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: Single Span Bridge  
 CLEAR SPAN (NORMAL TO STREAM): 7.0 m (minimum)  
 VERTICAL CLEARANCE ABOVE STREAMBED: Low Beam Elev.=309.0 m (min.)  
 WATERWAY AREA OF FULL OPENING: 13.5 sq m (minimum)

**ADDITIONAL INFORMATION**

\* Temporary Bridge Low Beam elevation of 309.0 m is based on the temporary being constructed approximately 10 m downstream of the existing structure, and being removed before winter.

- DESIGN CRITERIA**
1. DESIGN LIVE LOAD AASHTO MS 22.5
  2. DESIGN SPAN 9.85m
  3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL NA  
ON LEDGE 500 kPa
  4. ALLOWABLE LOAD FOR PILING NA  
TYPE NA
  - ESTIMATED LENGTH NA
  5. STRUCTURAL STEEL AASHTO GRADE NA
  6. REINFORCING STEEL GRADE 420
  7. CONCRETE CLASS HPC A f'c : 30 Mpa  
CONCRETE CLASS HPC B f'c : 25 Mpa
  8. SOIL UNIT WEIGHT 22.00 Kn/m<sup>3</sup>
  9. DESIGN LOAD FOR SPREAD FOOTINGS ON LEDGE 265 kPa

- TRAFFIC MAINTENANCE**
1. IS TRAFFIC TO BE MAINTAINED? YES  
 IF YES, ON EXISTING STRUCTURE NO  
 OR ON TEMPORARY BRIDGE YES
  2. TEMPORARY BRIDGE REQUIREMENTS: ONE OF TWO WAY ONE WAY  
 TRAFFIC CONTROL SIGNALS REQUIRED NO  
 MINIMUM CLEAR SPAN (NORMAL TO STREAM):  
 WATERWAY OF FULL OPENING:  
 VERTICAL CLEARANCE ABOVE STREAMBED:  
 ARE SIDEWALKS REQUIRED? NO  
 IF SO, ON WHAT SIDE?  
 STRUCTURE TYPE:

PROJECT NAME: **VERSHIRE**  
 PROJECT NUMBER: **BRO 1444 (32)**

FILE NAME: pw93j027/s93j02xls.dgn PLOT DATE: 12/21/2005  
 PROJECT LEADER: C.P.WILLIAMS DRAWN BY: P.K.PERRY  
 DESIGNED BY: P.K.PERRY CHECKED BY: K.M.HIGGINS  
**PRELIMINARY INFORMATION** SHEET 2 OF 34

# QUANTITY SHEET



SUMMARY OF ESTIMATED QUANTITIES													TOTALS			DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
Super Struct.	Abut. #1	Abut. #2	Apprch. Slab #1	Apprch. Slab #2	Roadway	E & C Items	Erosion Control	BRIDGE QUANTITY	ROUND	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS				
					1					1		LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10							
					145					145		CM	COMMON EXCAVATION	203.15							
	30	30								60		CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27							
							10			10		CM	TRENCH EXCAVATION OF EARTH	204.20							
	150									150		CM	STRUCTURE EXCAVATION (ABUTMENT #1)	204.25							
		150								150		CM	STRUCTURE EXCAVATION (ABUTMENT #2)	204.25							
	50	70								120		CM	GRANULAR BACKFILL FOR STRUCTURES	204.30							
					130		10			140		CM	SUBBASE OF GRAVEL	301.15							
					40					40		CM	AGGREGATE SURFACE COURSE	401.10							
27	37	36								100		CM	CONCRETE, HIGH PERFORMANCE CLASS B	501.34							
	2470	2630								5100		KG	REINFORCING STEEL	507.15							
	13	14								27		M	DRILLING AND GROUTING DOWELS	507.16							
2520										2520		KG	EPOXY COATED REINFORCING STEEL	507.17							
21	8	7								36		L	WATER REPELLENT (MOD.-SILANE)	514.10							
23										23		M	BRIDGE RAILING - HD STEEL BEAM/FASCIA MOUNTED (GALVANIZED)	525.41							
					1					1		LS	ONE-WAY TEMPORARY BRIDGE(50 SM-EST.)(MOD.)	528.10							
1										1		EACH	REMOVAL OF STRUCTURE(39 SM-EST.)	529.15							
							5			5		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25							
					1					1		T	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15							
	2						10			12		CM	STONE FILL, TYPE I	613.10							
							10			10		CM	STONE FILL, TYPE I (MOD. - CHECK DAM)	613.10							
							10			10		CM	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10							
	50	60								110		CM	STONE FILL, TYPE IV	613.13							
					1					1		EACH	RELOCATE MAIL BOX, MULTIPLE SUPPORT	617.12							
							12			12		M	SNOW FENCE (MOD. - PDF)	620.70							
					49					49		M	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21							
					4					4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60							
					23					23		M	REMOVL AND DISP OF GUARD RAIL	621.80							
					25					25		M	TEMPORARY TRAFFIC BARRIER	621.90							
					200					200		HR	FLAGGERS	630.15							
						1				1		LS	FIELD OFFICE-ENGINEERS	631.10							
						1				1		LS	TESTING EQUIPMENT - CONCRETE	631.16							
						1				1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25							
					1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11							
					1					1		LS	TRAFFIC CONTROL	641.10							
					10					10		M	DURABLE 100 mm YELLOW LINE	646.41							
					10					10		M	TEMPORARY 100 mm YELLOW LINE	646.61							
					5					5		SM	BLACK PAVEMENT MARKING MASKING TAPE	646.86							
	35	40								75		SM	GEOTEXTILE UNDER STONE FILL	649.31							
							82			82		SM	GEOTEXTILE FOR SILT FENCE	649.51							
							10			10		KG	SEED	651.15							
							5			5		KG	SEED-WINTER RYE	651.17							
							50			50		KG	FERTILIZER	651.18							

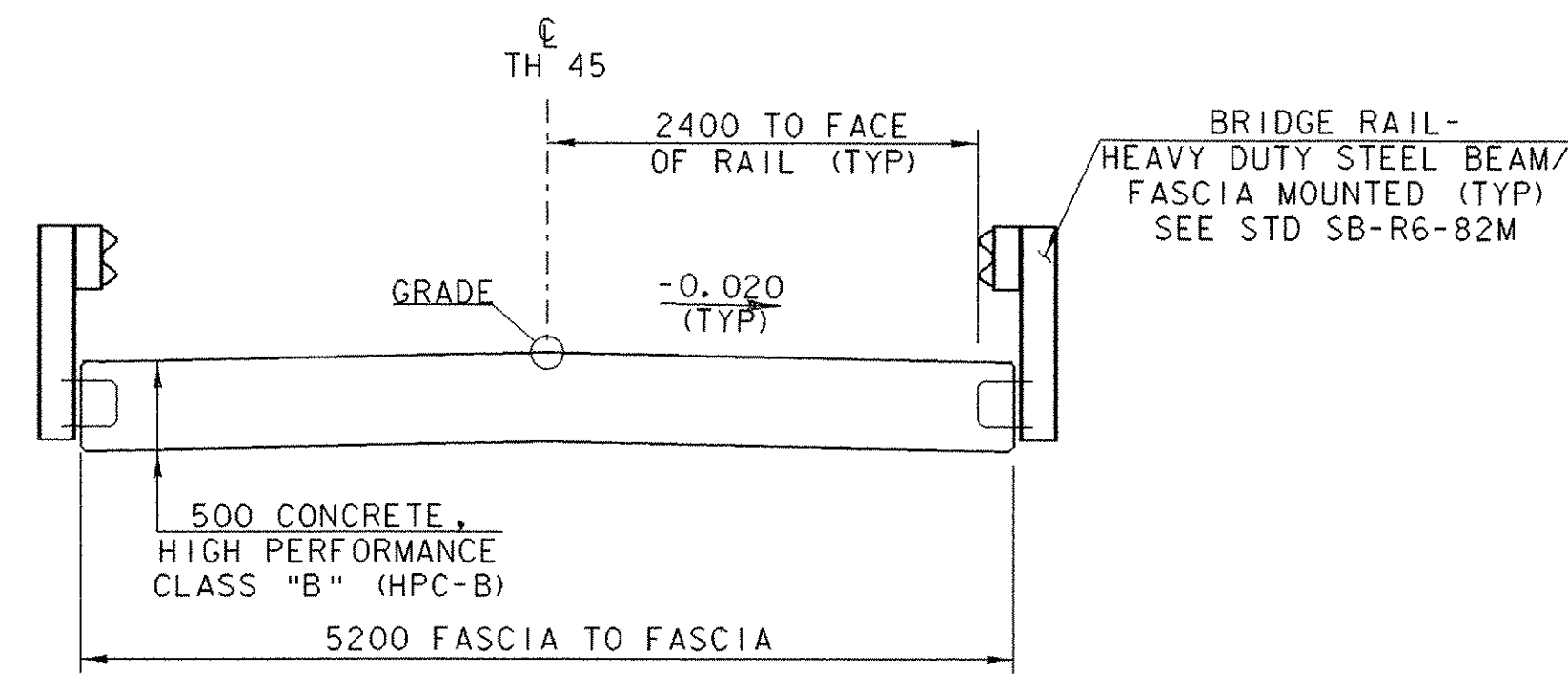
PROJECT NAME: **Vershire**  
 PROJECT NUMBER: **BRO 1444 (32)**  
 FILE NAME: sj027qs1.xls PLOT DATE: 3/14/2006  
 PROJECT LEADER: C.P. Williams DRAWN BY: P.K.PERRY  
 DESIGNED BY: P.K.PERRY CHECKED BY: K.M. Higgins  
 QUANTITY SHEET #1 SHEET 3 OF 34

# QUANTITY SHEET

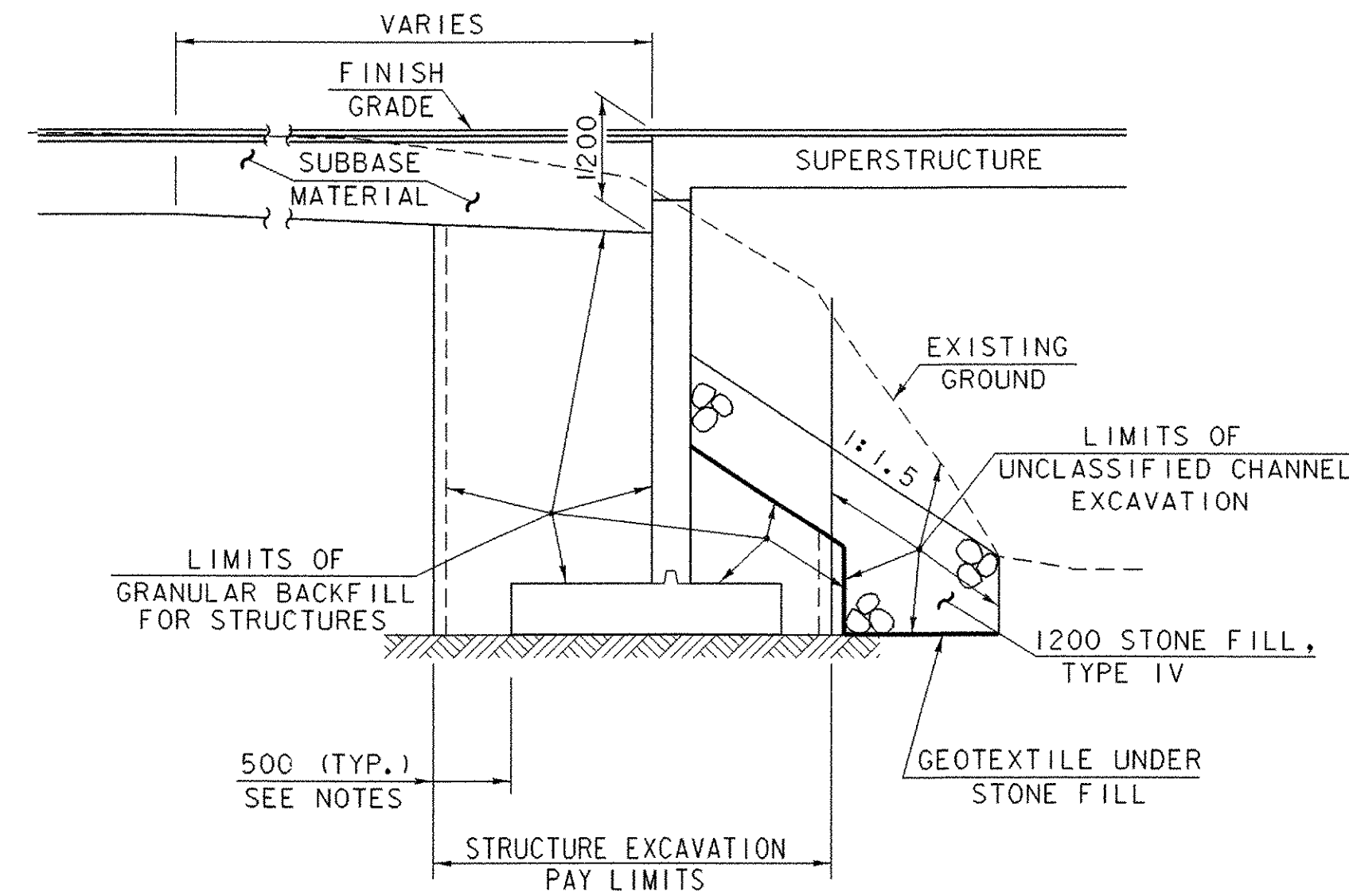
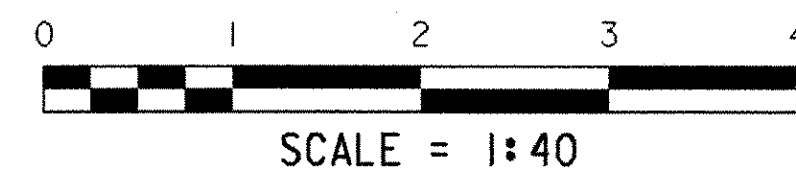


SUMMARY OF ESTIMATED QUANTITIES											TOTALS			DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
Super Struct.	Abut. #1	Abut. #2	Apprch. Slab #1	Apprch. Slab #2	Roadway	E & C Items	Erosion Control	BRIDGE QUANTITY	ROUND	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS		
							1			1		T	AGRICULTURAL LIMESTONE	651.20					
							1			1		T	HAY MULCH	651.25					
							40			40		EACH	HAY BALES FOR EROSION CONTROL	651.26					
							40			40		SM	GRUBBING MATERIAL	651.40					
							1			1		LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10					
							40			40		HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20					
							1			1		LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30					
							10			10		SM	EROSION MATTING	654.10					
									1			SM	TRAFFIC SIGNS, TYPE A	675.20					
									9			M	FLANGED CHANNEL SIGN POST	675.301					
									1			EACH	REMOVING SIGNS	675.50					

PROJECT NAME: **Vershire**  
 PROJECT NUMBER: **BRO 1444 (32)**  
 FILE NAME: sj027qs1.xls PLOT DATE: 2/8/2006  
 PROJECT LEADER: C.P. Williams DRAWN BY: P.K.PERRY  
 DESIGNED BY: P.K.PERRY CHECKED BY: K.M. Higgins  
 QUANTITY SHEET #2 SHEET 4 OF 34



**BRIDGE TYPICAL SECTION**

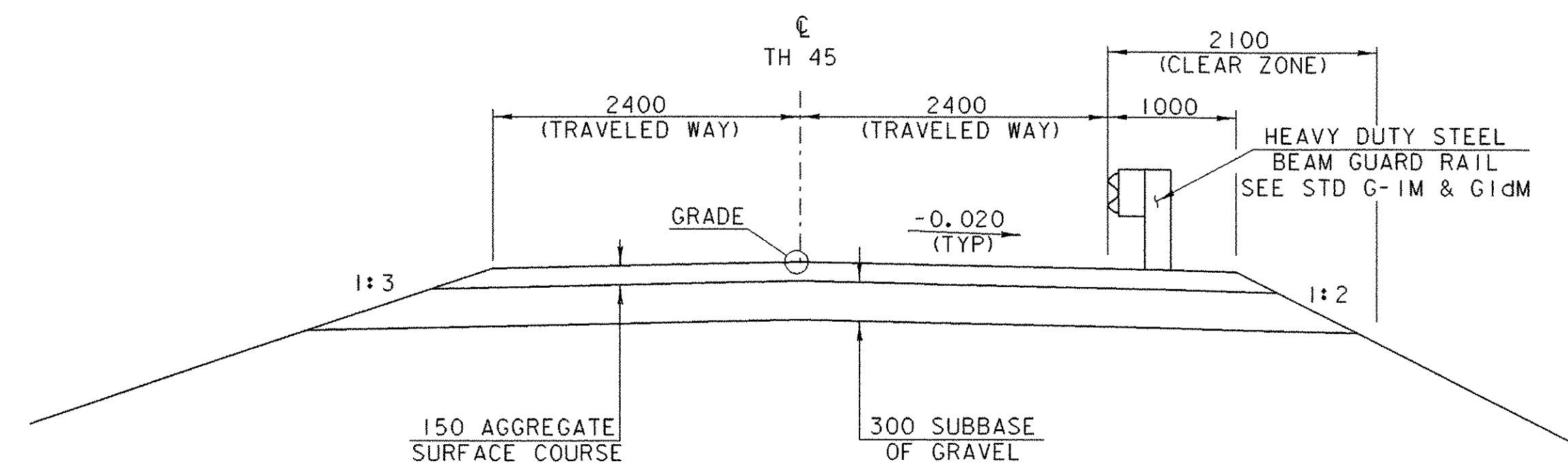


**TYPICAL ABUTMENT SECTION**

(NOT TO SCALE)

**NOTE**

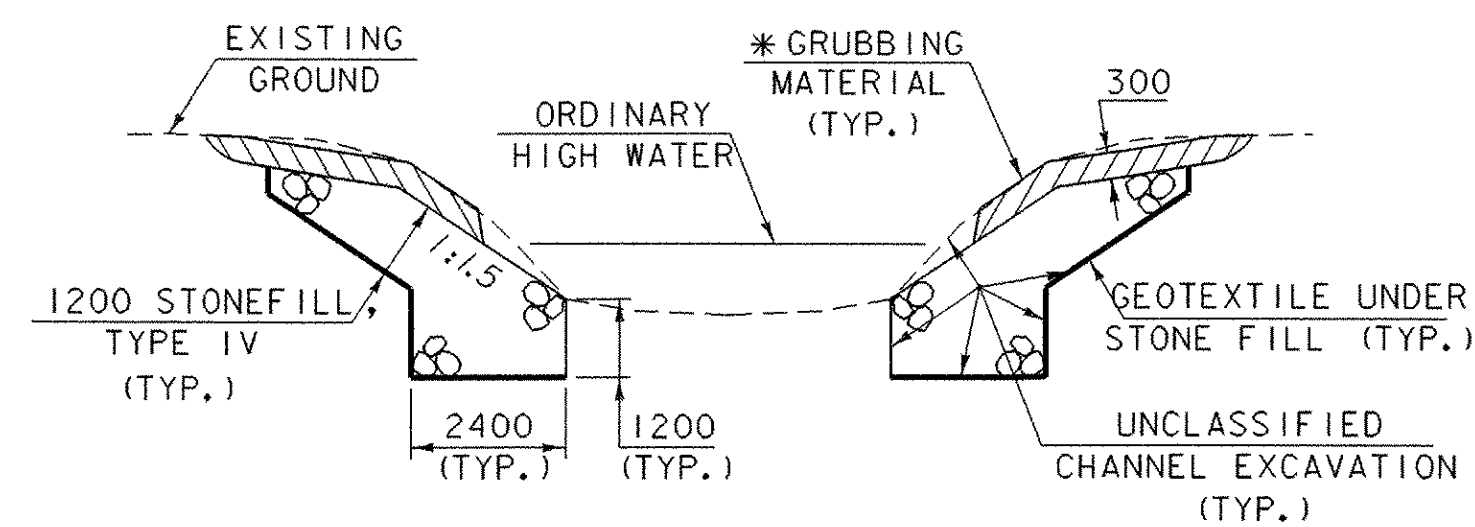
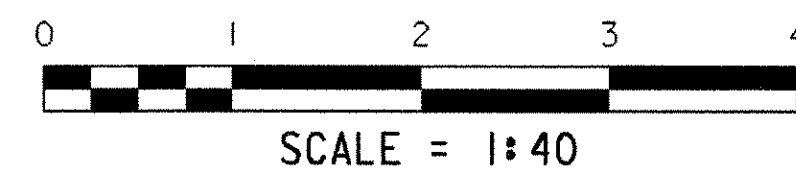
1. THE PAY LIMITS OF STRUCTURE EXCAVATION SHALL BE 500 mm OUTSIDE THE PERIMETER OF THE FOOTING AND EXTEND UP TO EXISTING GROUND OR BOTTOM OF SUBBASE, WHICHEVER IS LOWER.



WITHOUT GUARDRAIL

WITH GUARDRAIL

**ROADWAY TYPICAL SECTION**



**TYPICAL CHANNEL SECTION**

(NOT TO SCALE)

\* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

MATERIAL ITEM	TOLERANCE
PAVEMENT	±5 mm TOTAL THICKNESS
AGGREGATE SURFACE COURSE	± 10 mm
BASE COURSE	± 10 mm
SUBBASE	± 30 mm
SAND BORROW	± 30 mm
GRANULAR BORROW	± 30 mm

PROJECT: <b>VERSHIRE</b>	PROJECT NO.: <b>BRO 1444 (32)</b>
DESIGN FILE NAME: 93j027/structures/sj027typ.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027typ.i	DRAWN BY: P.K. PERRY
DESIGNED BY: P.K. PERRY	CHECKED BY: K.M. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	SHEET: 5 OF 34
TYPICAL SECTIONS	

# GEODETIC CONTROL INFORMATION



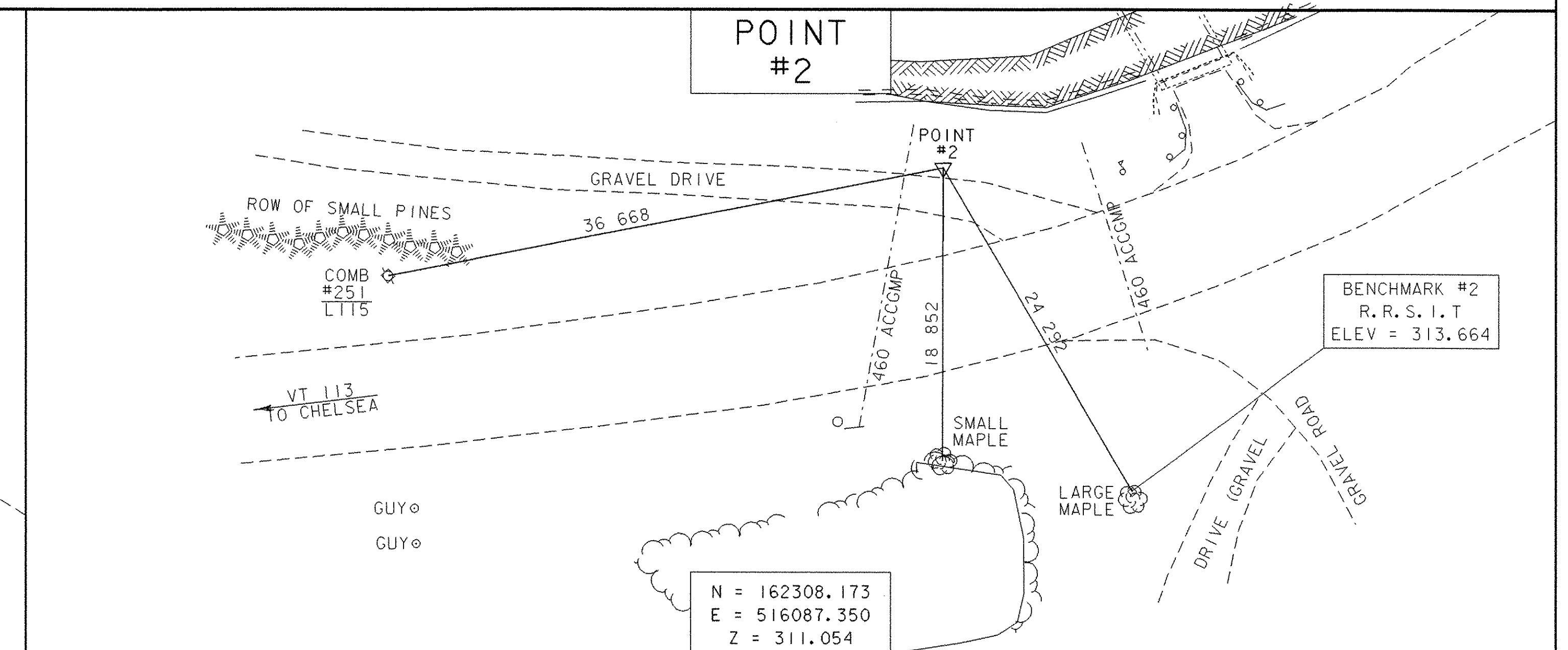
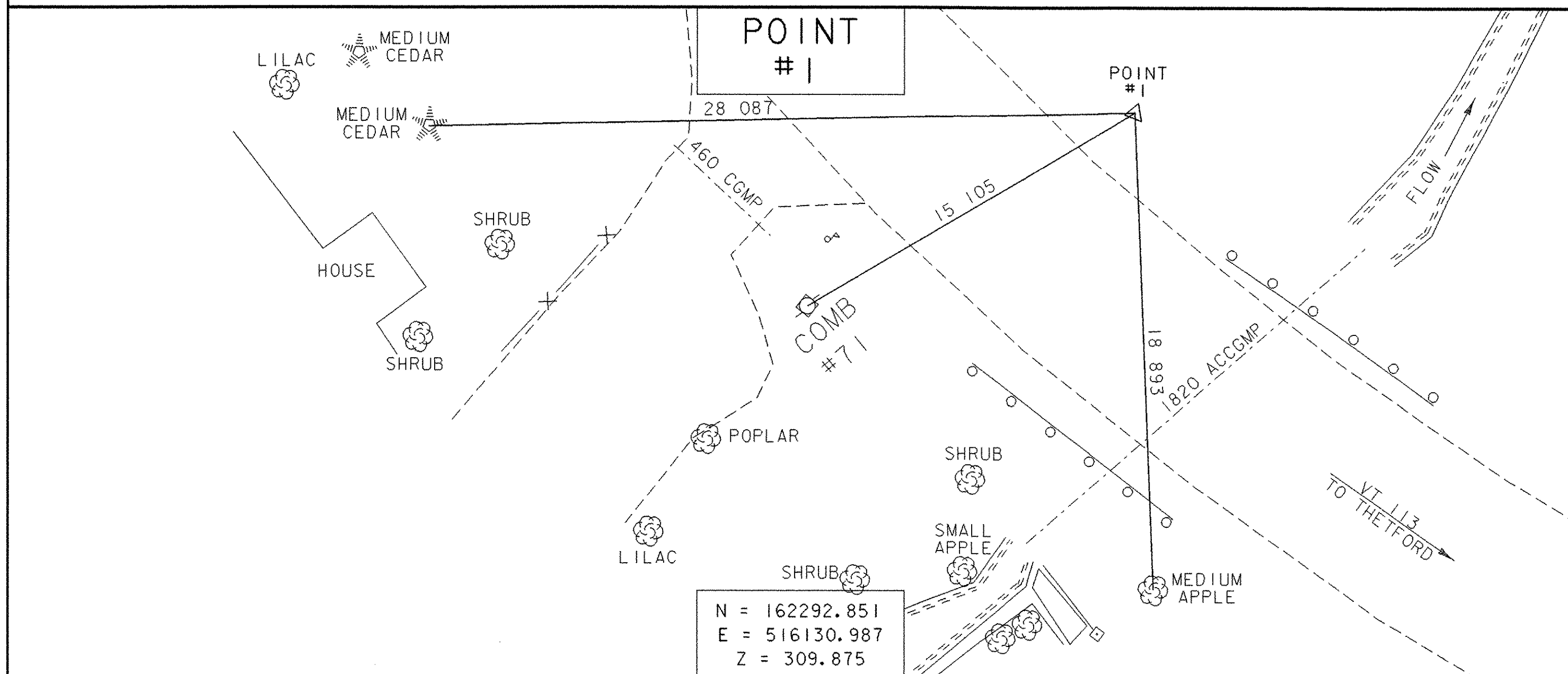
GENERAL LOCATION: NONE PROVIDED

GENERAL LOCATION: NONE PROVIDED

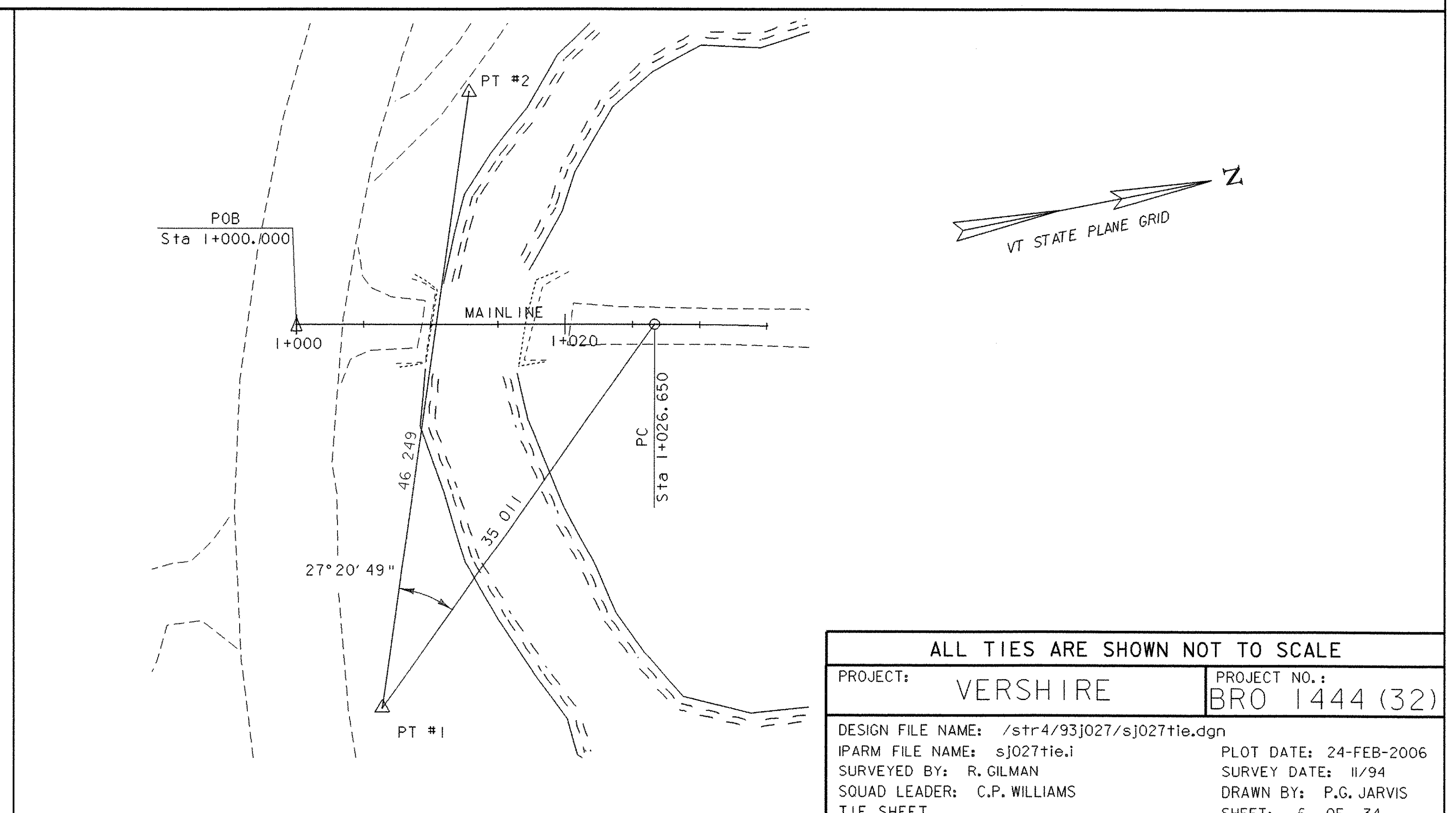
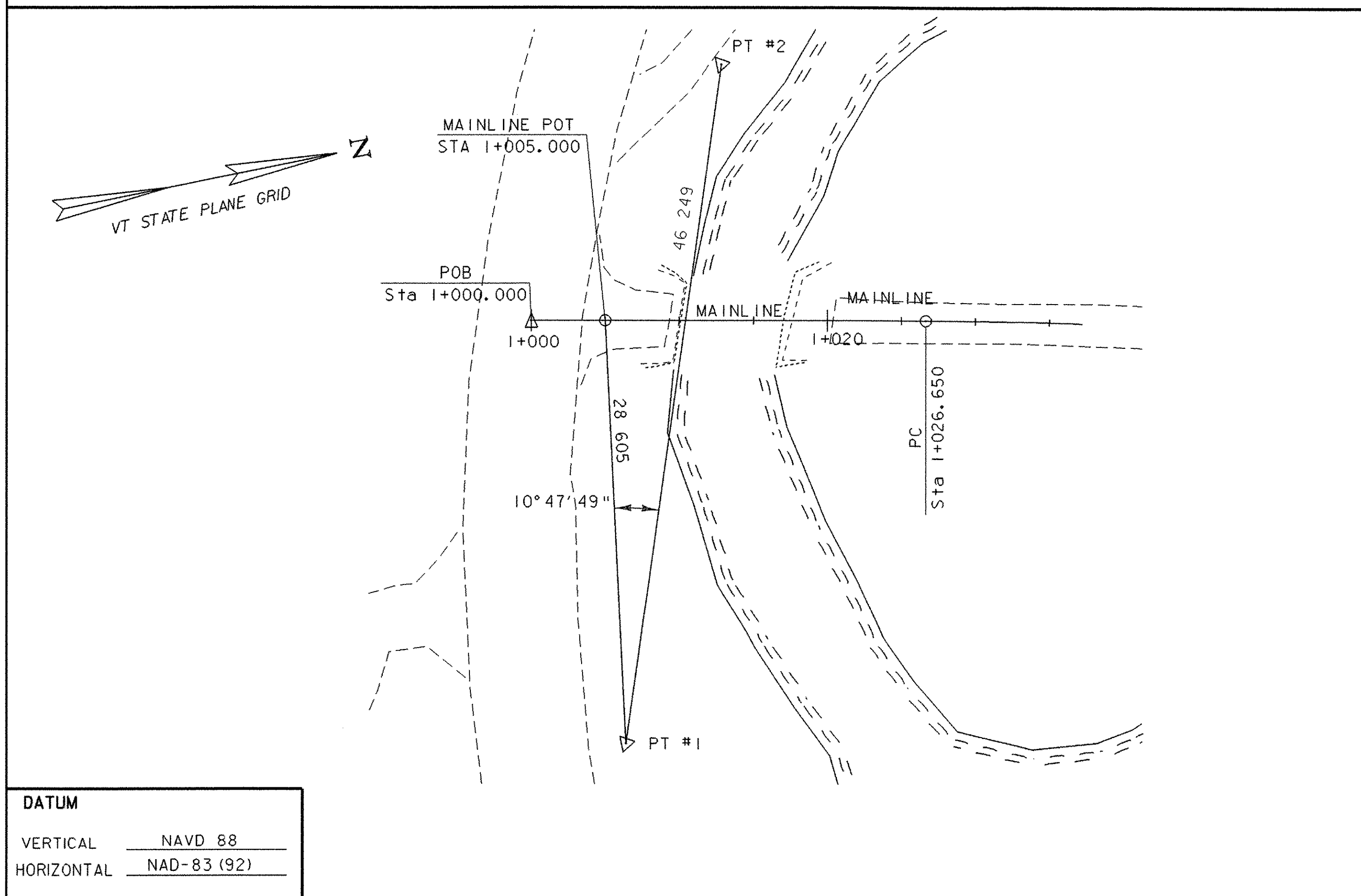
"EAGLE HOLLOW"  
(NOT SHOWN)  
N = 162,507.610 m  
E = 516,842.451 m  
Z = 290.69 m

"EAGLE HOLLOW AZ "  
(NOT SHOWN)  
N = 162,260.477 m  
E = 517,248.145 m  
Z = 284.64 m

## TRAVERSE TIE INFORMATION



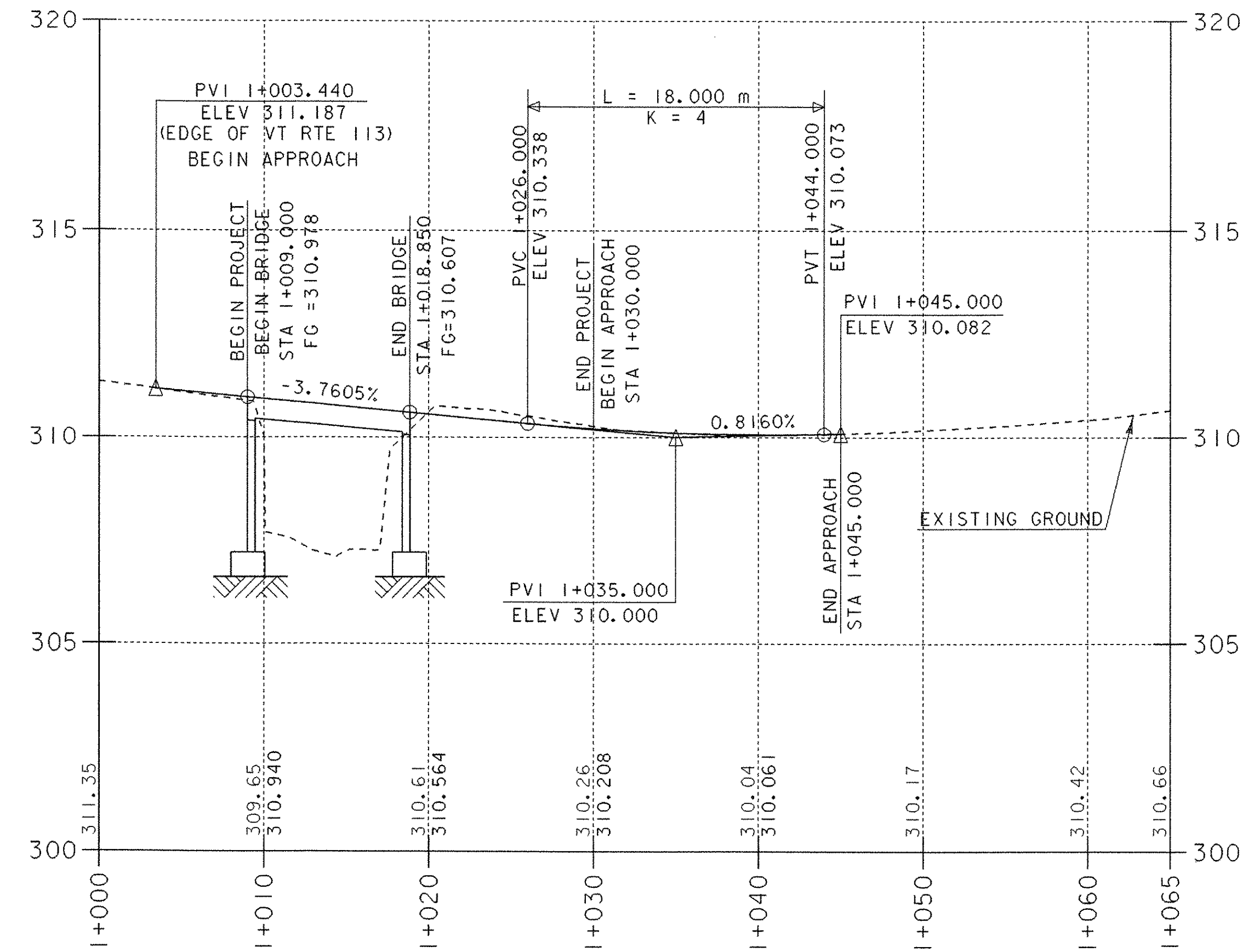
## NEW ALIGNMENT TIE INFORMATION



DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD-83 (92)

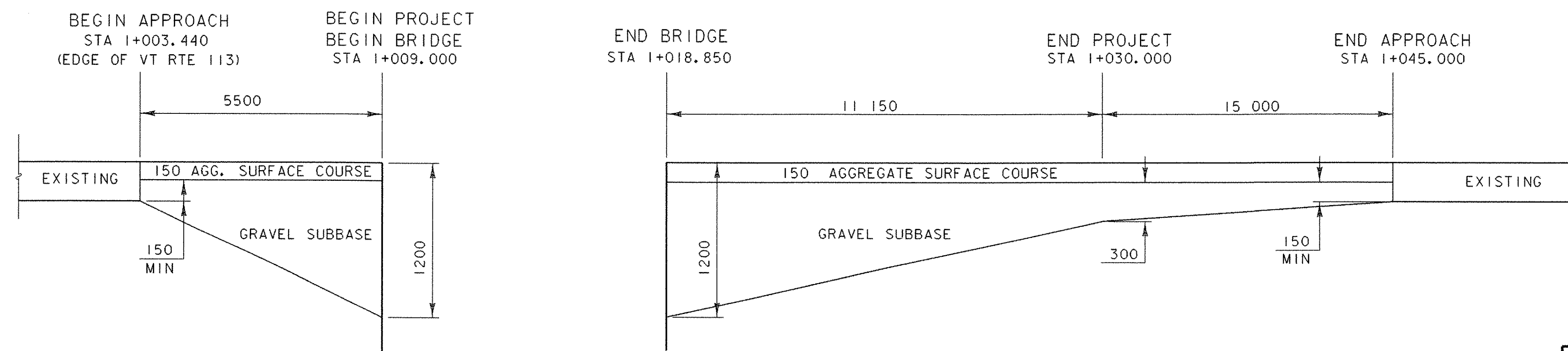
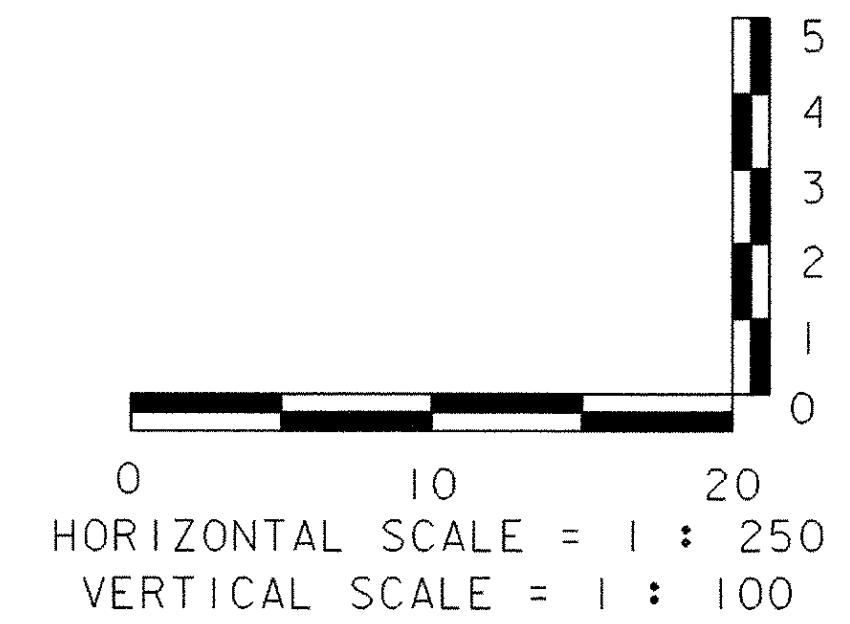
ALL TIES ARE SHOWN NOT TO SCALE	
PROJECT: VERSHIRE	PROJECT NO.: BRO 1444 (32)
DESIGN FILE NAME: /str4/93j027/sj027tie.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027tie.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: P.G. JARVIS
SQUAD LEADER: C.P. WILLIAMS	TIE SHEET
	SHEET: 6 OF 34





### Profile TH 45

NOTE:  
EXISTING CENTERLINE ELEVATIONS ARE SHOWN TO THE HUNDREDTH.  
PROPOSED CENTERLINE ELEVATIONS ARE SHOWN TO THE THOUSANDTH.



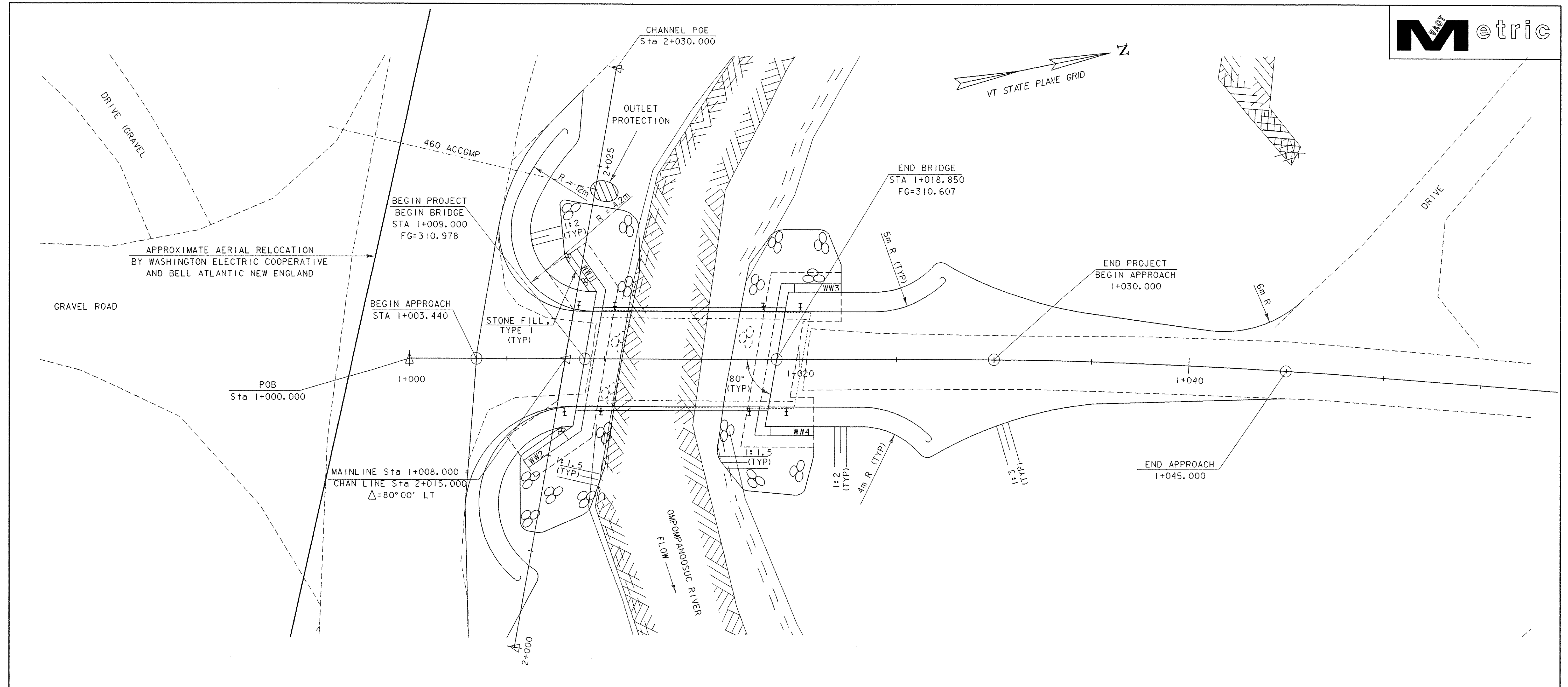
**MATERIAL TRANSITION DIAGRAM**  
NOT TO SCALE

<b>DATUM</b>	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

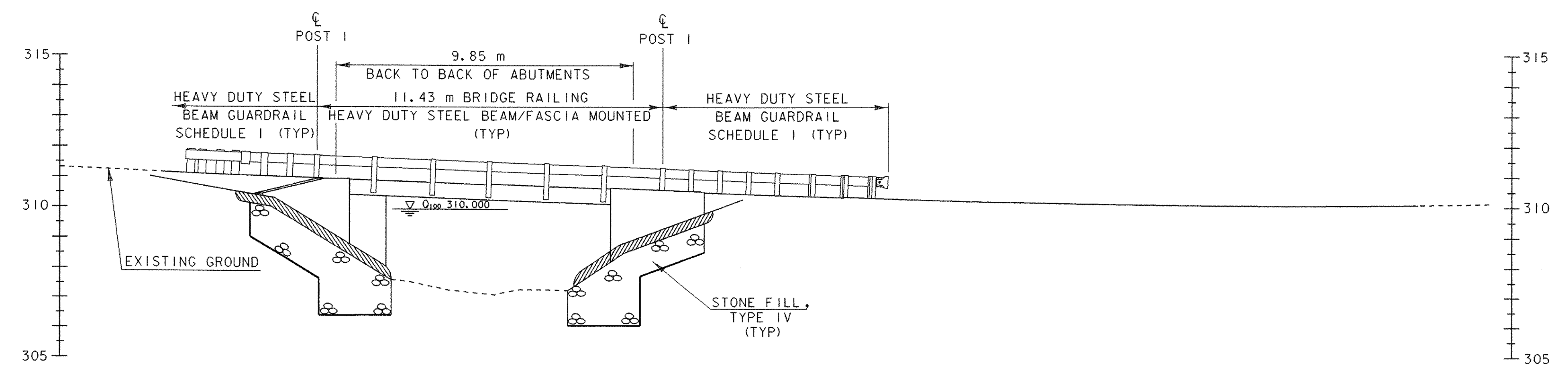
PROJECT: <b>VERSHIRE</b>	PROJECT NO.: BRO 1444(32)
DESIGN FILE NAME: /str4/93j027/sj027pro.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: /str4/93j027/sj027pro.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	SHEET: 8 OF 34
TH 45 PROFILE	







CHANNEL POB Sta 2+000.000  
**PLAN**  
 SCALE 1 : 100



**ELEVATION AT DOWNSTREAM FASCIA**  
 SCALE 1 : 100

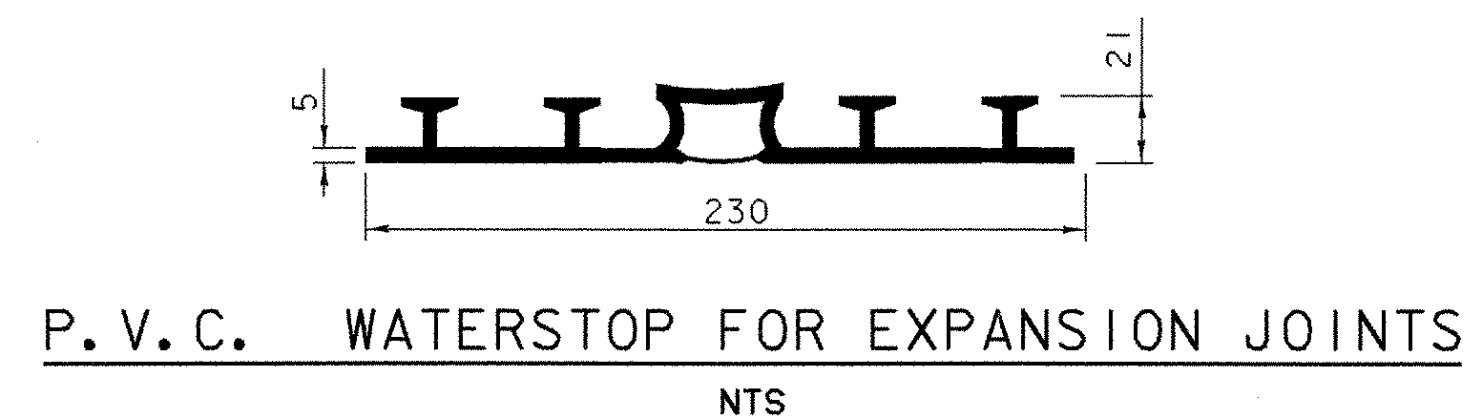
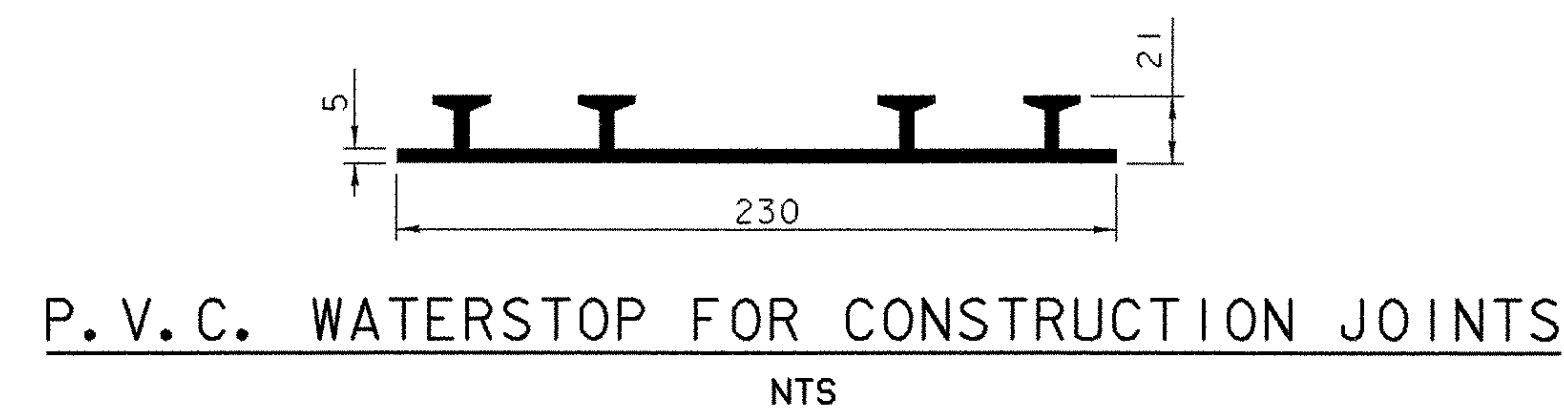
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DESIGN FILE NAME: /str4/93j027/sj027pe.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027pe.i	SURVEY DATE: 11/94
SURVEYED BY: R. MOREAU	DRAWN BY: P.G. JARVIS
SQUAD LEADER: C.P. WILLIAMS	SHEET: 11 OF 34
PLAN AND ELEVATION	

**GENERAL NOTES**

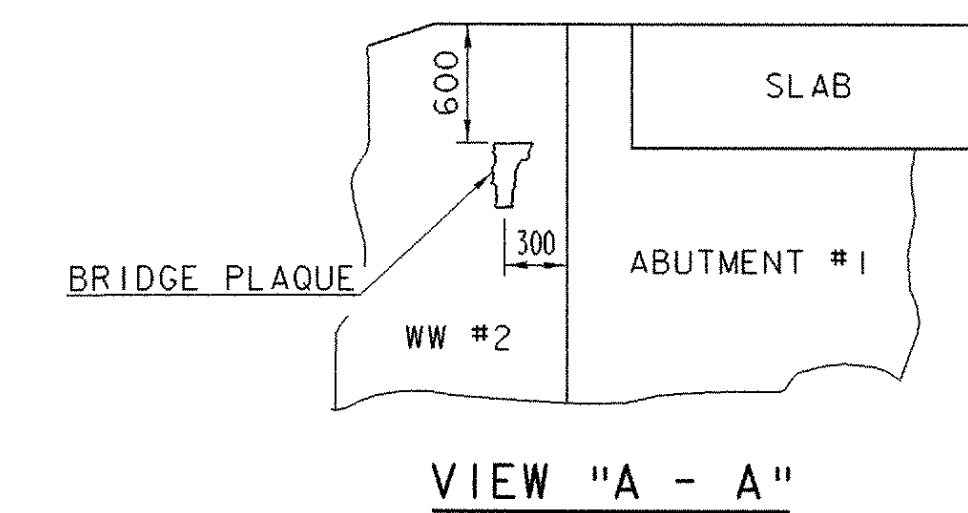
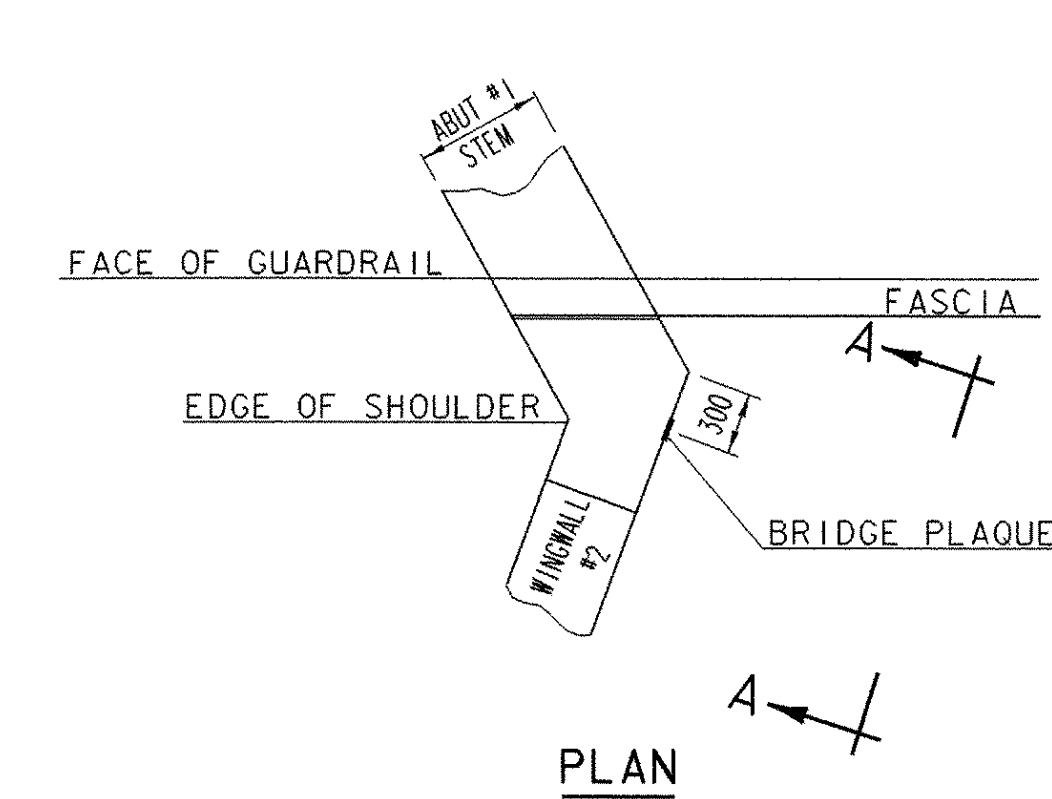
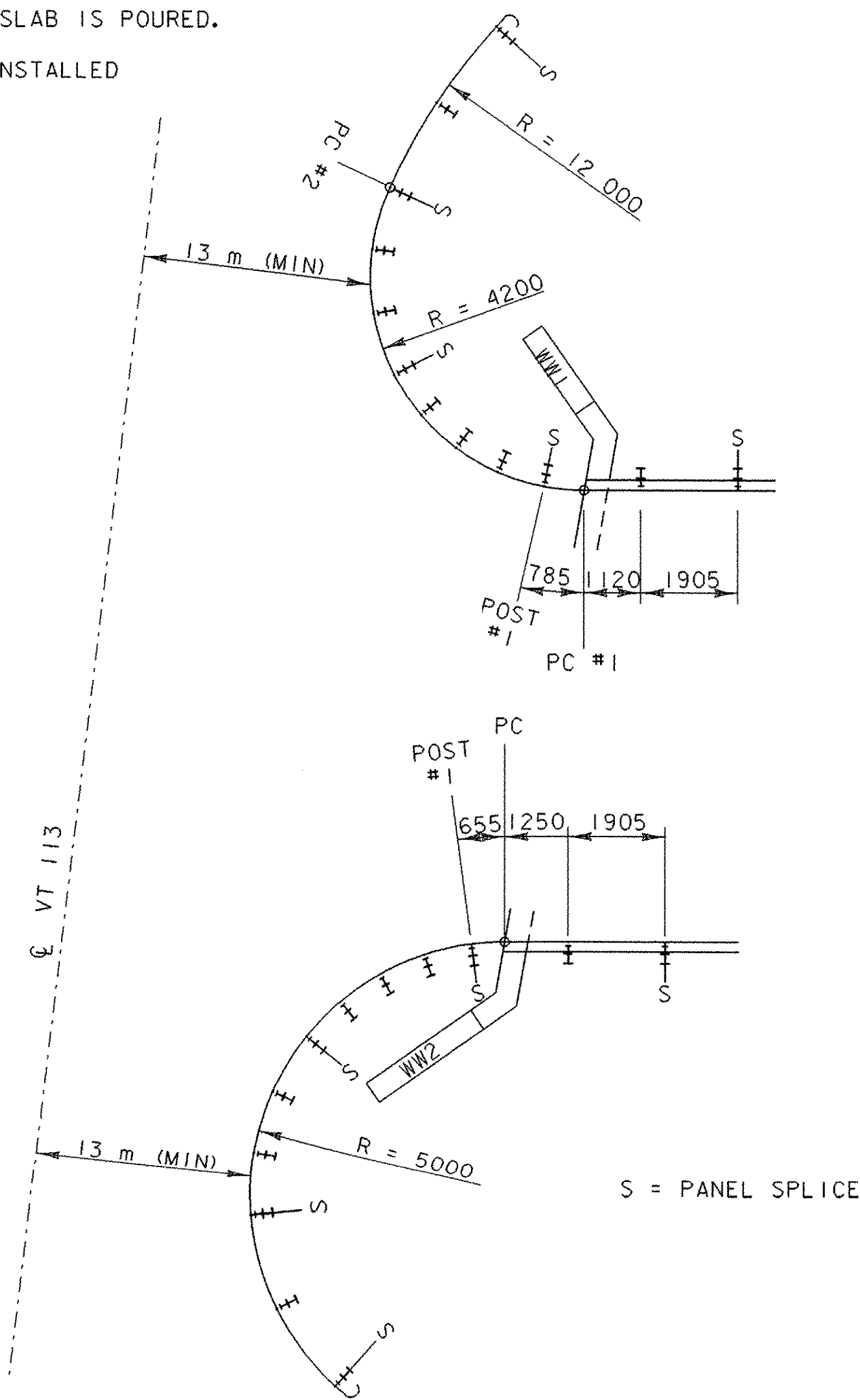
- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTEENTH EDITION.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 20° C, UNLESS OTHERWISE NOTED.
- REINFORCING STEEL PLACEMENT TOLERANCE SHALL BE AS FOLLOWS:  
SPACING +/- 25mm  
CLEARANCE +/- 6mm
- A ONE WAY TEMPORARY BRIDGE WILL BE USED TO MAINTAIN TRAFFIC DOWNSTREAM FROM EXISTING STRUCTURE.
- ALL REINFORCING STEEL IN THE CONCRETE BRIDGE SLAB SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM 507.17. WHEN EPOXY COATED REINFORCING STEEL IS CUT THE UNCOATED ENDS SHALL BE REPAIRED WITH MATERIALS AND PROCEDURES APPROVED BY THE COATING MANUFACTURER. FLAME CUTTING OF EPOXY COATED REINFORCING STEEL WILL NOT BE PERMITTED.
- THE MINIMUM COVER FOR REINFORCING STEEL IN THE SUBSTRUCTURES SHALL BE 50mm ALONG WALL FACES AGAINST EARTH, AND 80mm ELSEWHERE UNLESS DETAILED OTHERWISE
- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 25mm X 25mm.
- JOINTS AND SCORE MARKS IN THE CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- THE BRIDGE DECK SURFACE SHALL BE TEXTURED TRANSVERSELY USING A BROOM OR OTHER METHOD APPROVED BY THE ENGINEER. THE TEXTURING OPERATION SHALL BE DONE SO AS NOT TO INTERFERE WITH THE APPLICATION OF THE INITIAL CURE.
- CONCRETE PORTIONS OF THE ABUTMENT AND WINGWALL ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL NOT BE PLACED UNTIL THE FINISH GRADE HAS BEEN DETERMINED BY THE RESIDENT ENGINEER.
- THE KEY IN THE CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. UPWARD KEYS SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.
- WATER REPELLENT (MOD.-SILANE) SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE SLAB BETWEEN DRIP NOTCHES.
- ANY EXISTING SIGNS NOT REUSED SHALL REMAIN THE PROPERTY OF THE TOWN OF VERSHIRE.
- FULL ACCESS TO ALL THE DRIVES WITHIN THE PROJECT SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
- ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE EXISTING SUPERSTRUCTURE AND ANY PORTION OF THE SUBSTRUCTURE NOT REMOVED UNDER THE ITEM 204.25 "STRUCTURE EXCAVATION" OR ITEM 203.27 "UNCLASSIFIED CHANNEL EXCAVATION".
- "STONE FILL TYPE IV" SHALL BE PLACED IN FRONT OF THE ABUTMENTS BEFORE THE SLAB IS POURED.
- THE BRIDGE PLAQUE SHALL BE FURNISHED BY THE AGENCY OF TRANSPORTATION AND INSTALLED BY THE CONTRACTOR AS SHOWN ON THE DETAILS ON THIS SHEET.

**SUBSTRUCTURES ON LEDGE:**

- THE FOOTINGS FOR THE SUBSTRUCTURES SHALL BE FOUNDED ON LEDGE, WHICH SHALL BE CLEANED OF ALL LOOSE ROCK AND OTHER DEBRIS. THE LEDGE SHALL BE REMOVED AS REQUIRED TO ENSURE THE FOOTINGS ARE PLACED ON COMPETENT ROCK.
- UPON COMPLETION OF STRUCTURE EXCAVATION AND PRIOR TO PLACING FORMWORK, THE RESIDENT ENGINEER SHALL CONTACT THE SOILS AND FOUNDATION ENGINEER/ENGINEERING GEOLOGIST FROM THE VERMONT AGENCY OF TRANSPORTATION TO INSPECT THE LEDGE TO DETERMINE IF IT IS COMPETENT TO SUPPORT THE DESIGN PRESSURE AS SHOWN ON THE PLANS. THE GEOLOGIST SHALL BE ALLOWED 5 WORKING DAYS FROM NOTICE OF EXCAVATION TO MAKE THE INSPECTION AND THE DETERMINATION OF THE COMPETENCY OF THE LEDGE.
- LEDGE THAT IS EXCAVATED FOR THE PLACEMENT OF FOOTINGS SHALL BE EXCAVATED TO PROVIDE A LEVEL SURFACE OR AS DIRECTED BY THE RESIDENT ENGINEER.
- A MAXIMUM OF 150mm OVERBREAKAGE WILL BE ALLOWED AND REPLACED WITH "CONCRETE, HIGH PERFORMANCE CLASS B". OVERBREAKAGE BEYOND 150mm WILL BE REPLACED WITH "CONCRETE, HIGH PERFORMANCE CLASS B" AT THE EXPENSE OF THE CONTRACTOR.
- FOR ALL SUBSTRUCTURE UNITS WHERE LEDGE IS WITHIN 300mm OF THE BOTTOM OF THE FOOTING AS DESIGNED, THE FOOTING MAY BE POURED TO THE TOP OF THE LEDGE USING "CONCRETE, HIGH PERFORMANCE CLASS B".
- FOR ALL SUBSTRUCTURE UNITS WHERE LEDGE IS BELOW THE BOTTOM OF FOOTING BY MORE THAN 300mm, A LEDGE PROFILE SHALL BE PROVIDED TO THE PROJECT MANAGER TO DETERMINE IF THE FOOTING MAY BE LOWERED OR IF A SUBFOOTING IS REQUIRED.
- IF LEDGE IS ABOVE THE DESIGN BOTTOM OF FOOTING, THE FOOTING ELEVATION MAY BE RAISED. BEFORE ANY ADJUSTMENT IS MADE IN FOOTING ELEVATIONS THE PROJECT MANAGER SHALL BE CONTACTED FOR APPROVAL.
- #25 DOWELS SHALL BE DRILLED AND GROUTED INTO LEDGE AS SHOWN ON THE PLANS. THE DOWELS SHALL HAVE A 600mm EMBEDMENT IN THE LEDGE AND SHALL EXTEND IN THE FOOTING A MINIMUM OF 450mm UNLESS NOTED OTHERWISE. THE DRILLING AND GROUTING SHALL BE PAID FOR UNDER THE ITEM 507.16 "DRILLING AND GROUTING DOWELS". HOWEVER, THE DOWELS SHALL BE PAID FOR UNDER THE ITEM 507.15 "REINFORCING STEEL".

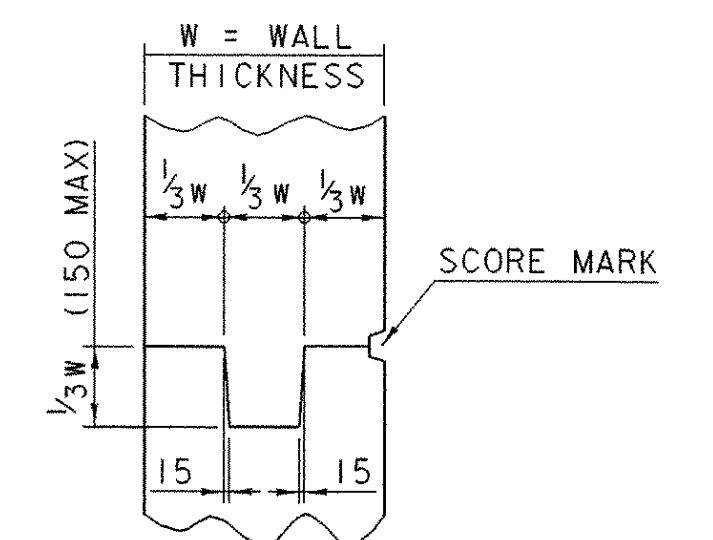
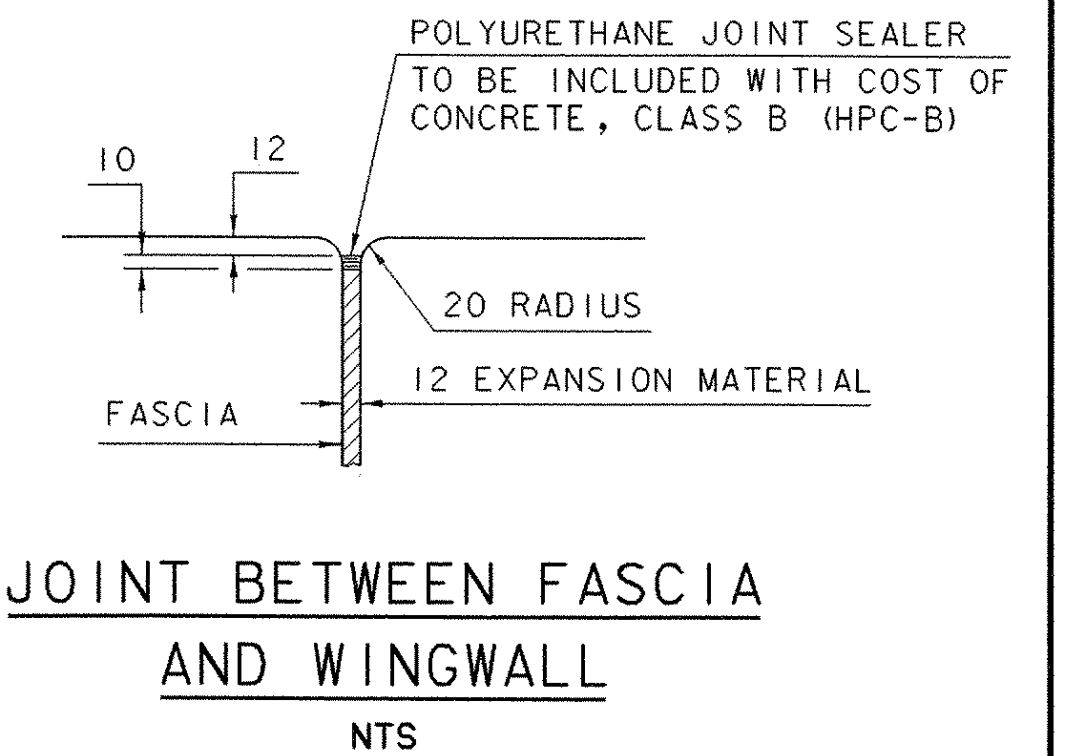


The costs for P.V.C. Waterstop shall be included in the unit price bid for concrete. Other configurations may be used upon approval of the structures engineer.

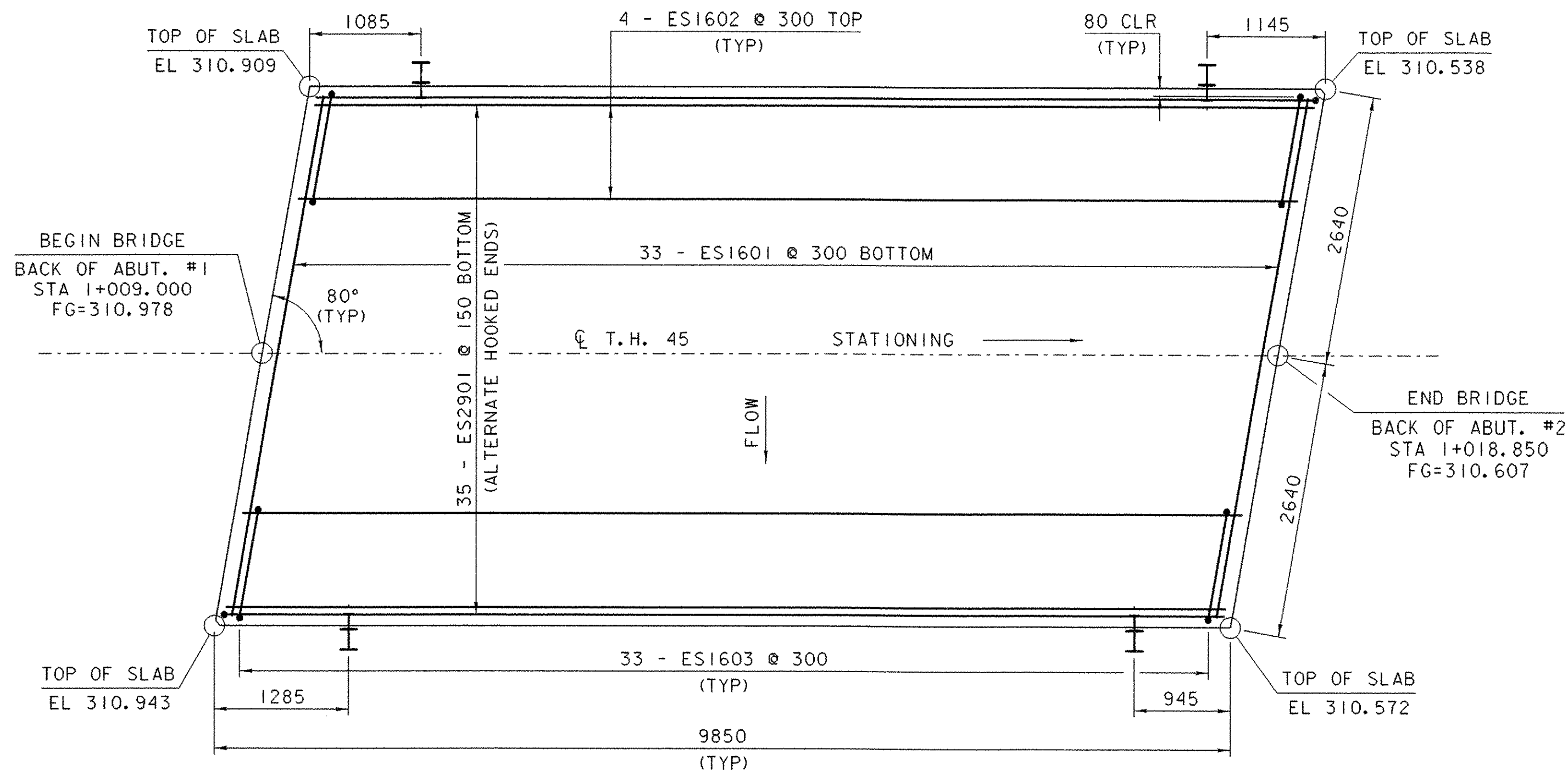


**LOCATE BRIDGE PLAQUE**  
NTS

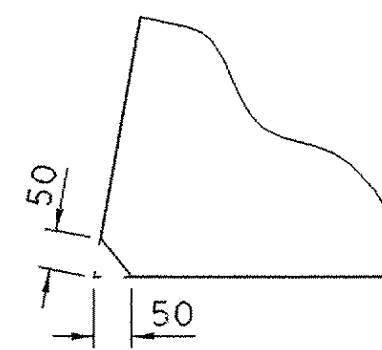
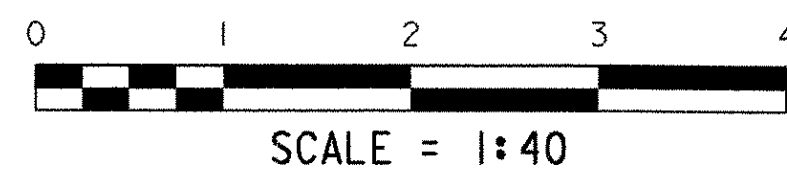
The bridge plaque will be supplied by The Agency of Transportation and shall be installed by the contractor at abutment #1 on the right side as shown or as directed by the engineer.



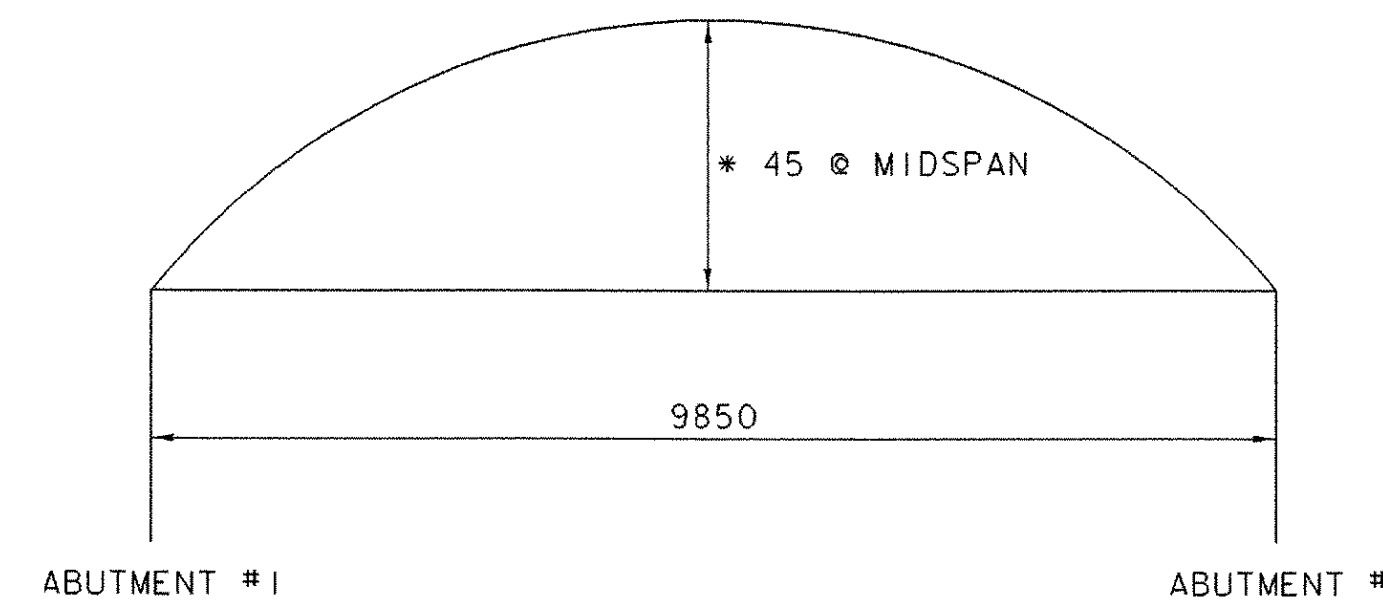
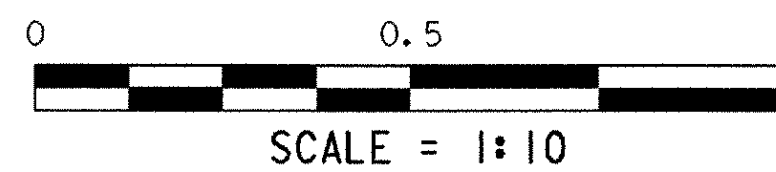
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DESIGN FILE NAME: /93j027/structures/sj027sup.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027not.i	DRAWN BY: P.K. PERRY
DESIGNED BY: P.K. PERRY	CHECKED BY: K.M. HIGGINS
SQUAD LEADER: C.P. WILLIAMS	NOTES AND MISCELLANEOUS DETAILS
	SHEET: 12 OF 34



**BRIDGE PLAN**

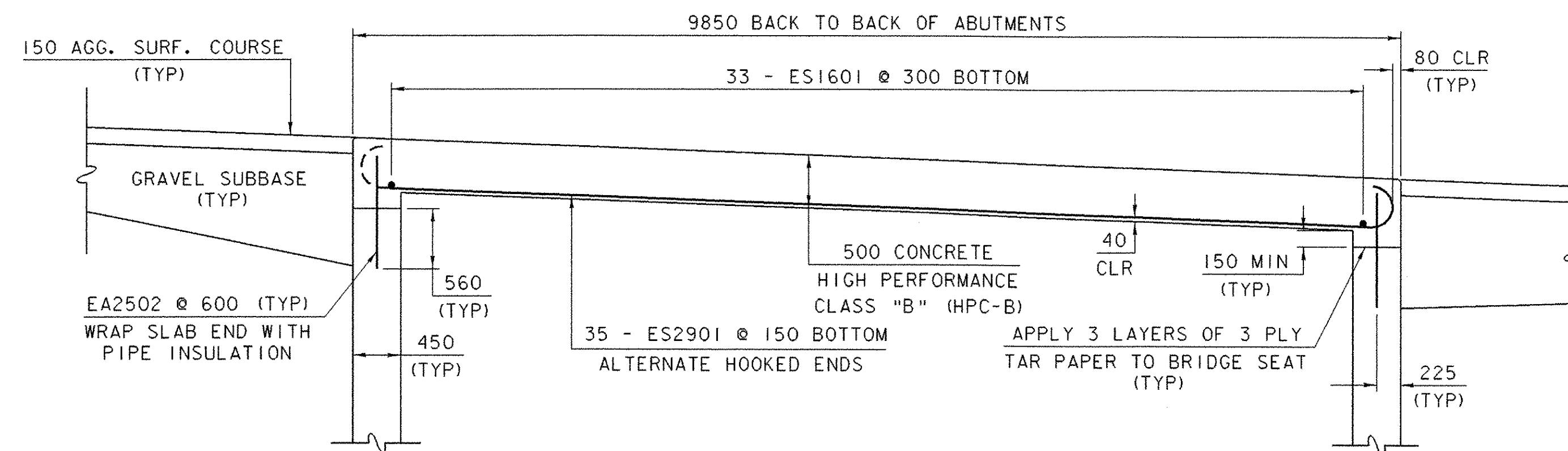


**ACUTE CORNER DETAIL**

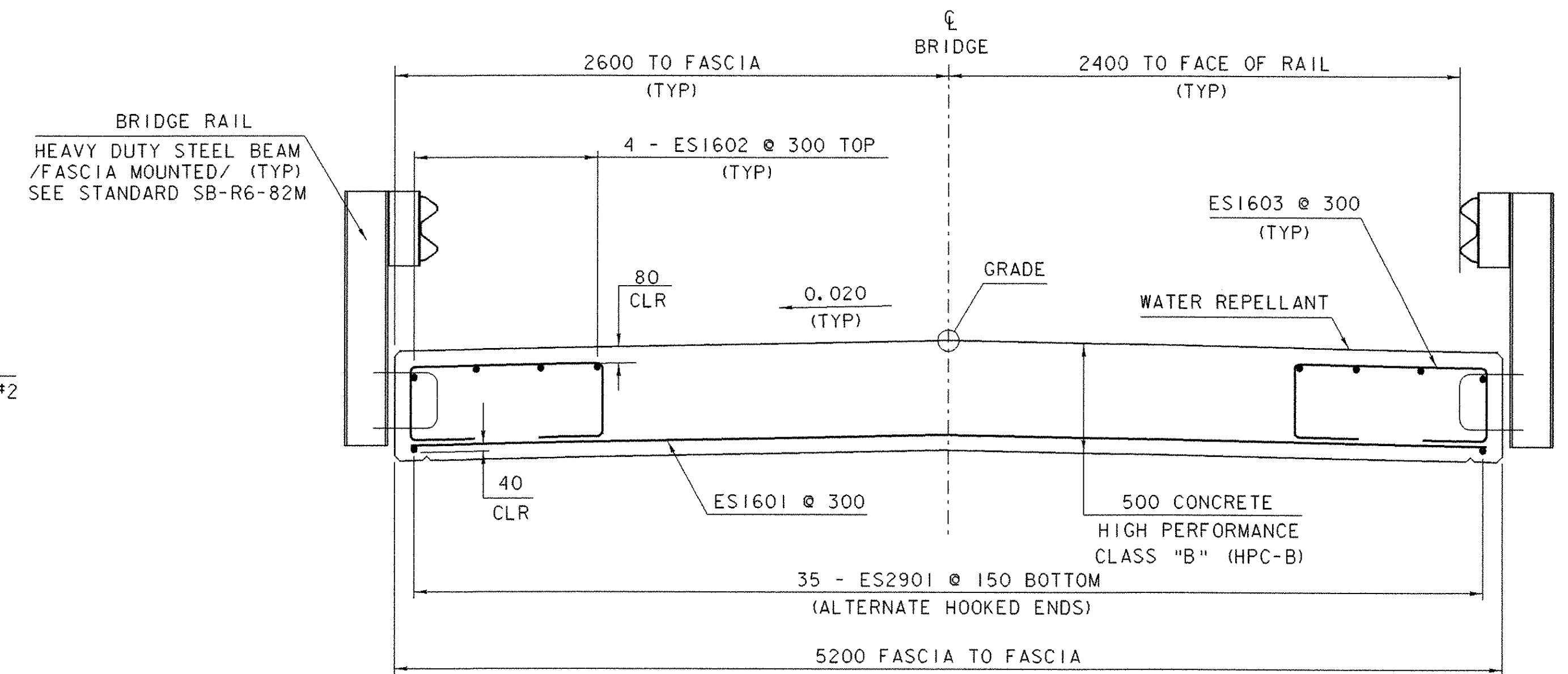
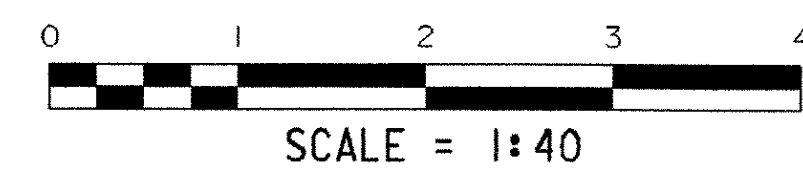


**CAMBER NTS**

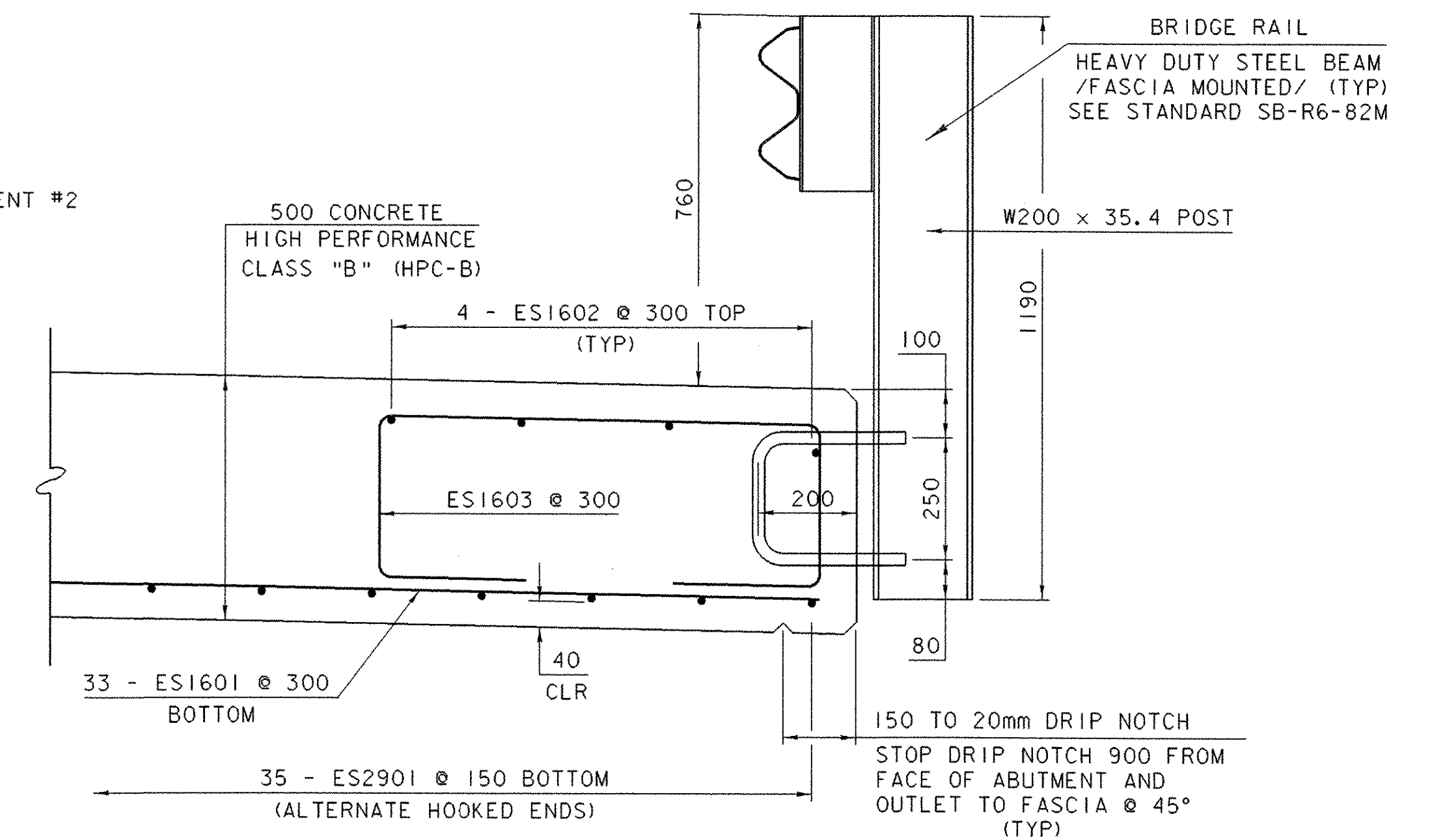
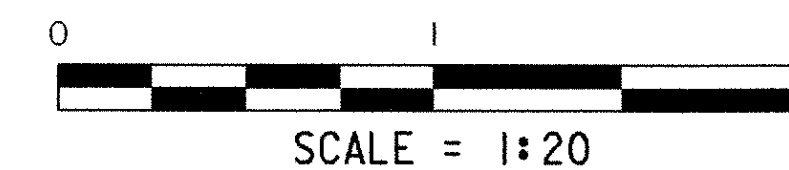
\* SET CONSTRUCTION FORMS TO THIS CAMBER  
CAMBER SHALL APPROXIMATE A CIRCULAR CURVE



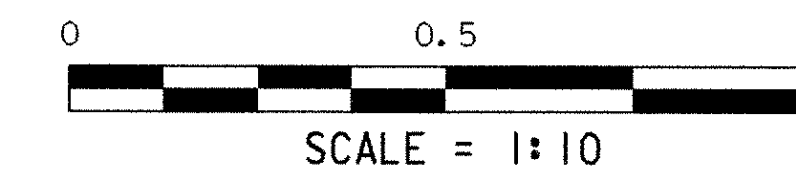
**ELEVATION ALONG ROADWAY**



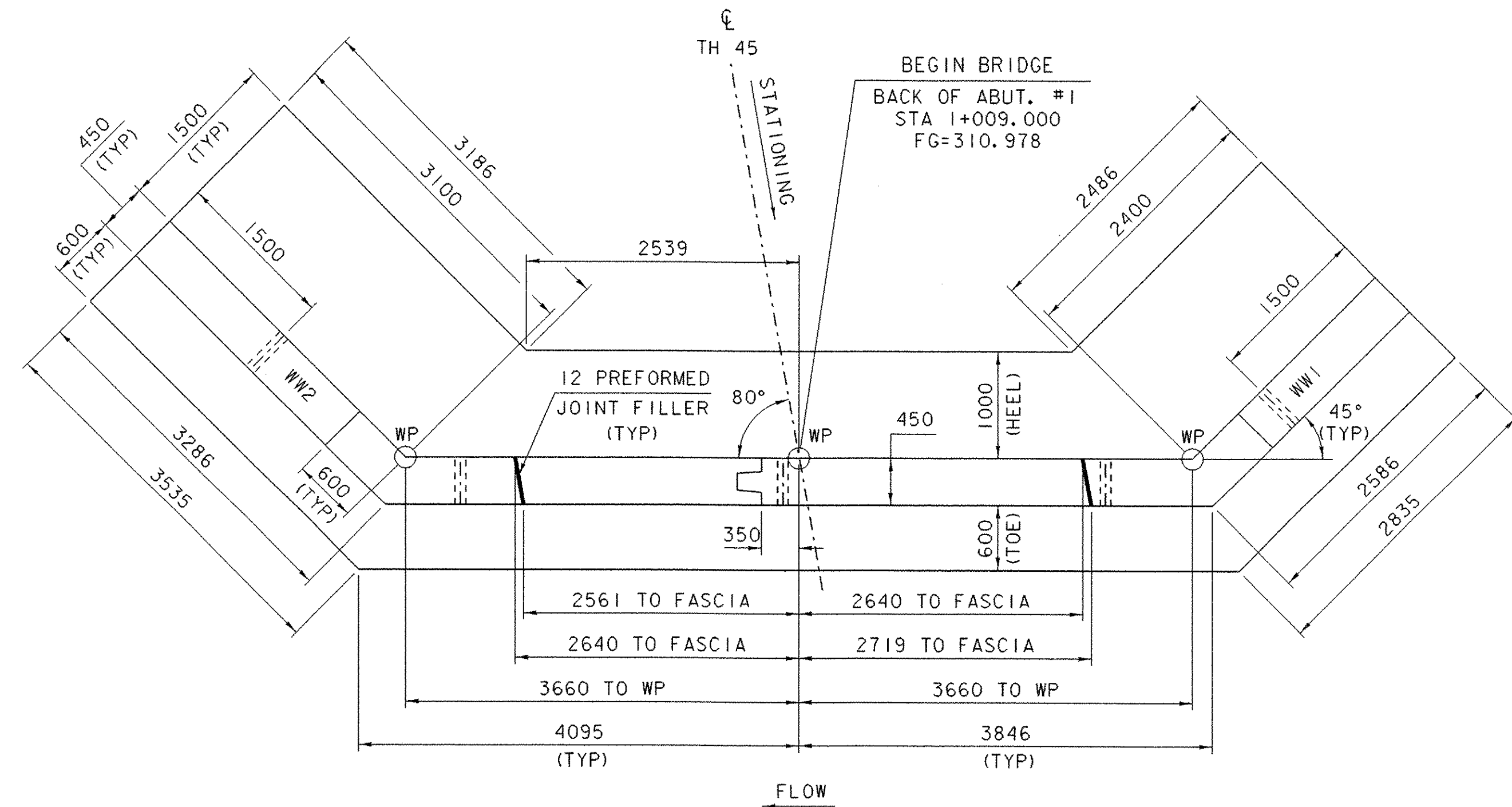
**BRIDGE TYPICAL SECTION**



**FASCIA & RAILING DETAILS**



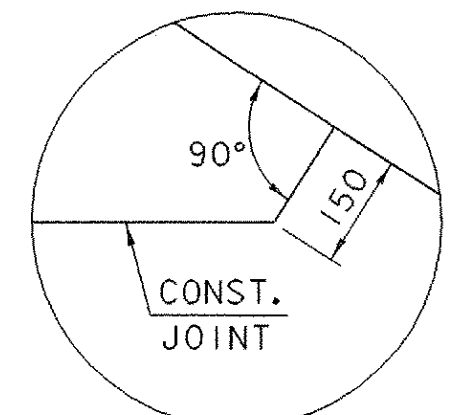
PROJECT: <b>VERSHIRE</b>	PROJECT NO.: <b>BRO 1444 (32)</b>
DESIGN FILE NAME: /93j027/structures/sj027sup.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027sup.i	DRAWN BY: P. K. PERRY
DESIGNED BY: P. K. PERRY	CHECKED BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	SHEET: 13 OF 34
SLAB DETAILS	



**ABUTMENT NO. 1 PLAN**

0 1 2 3 4

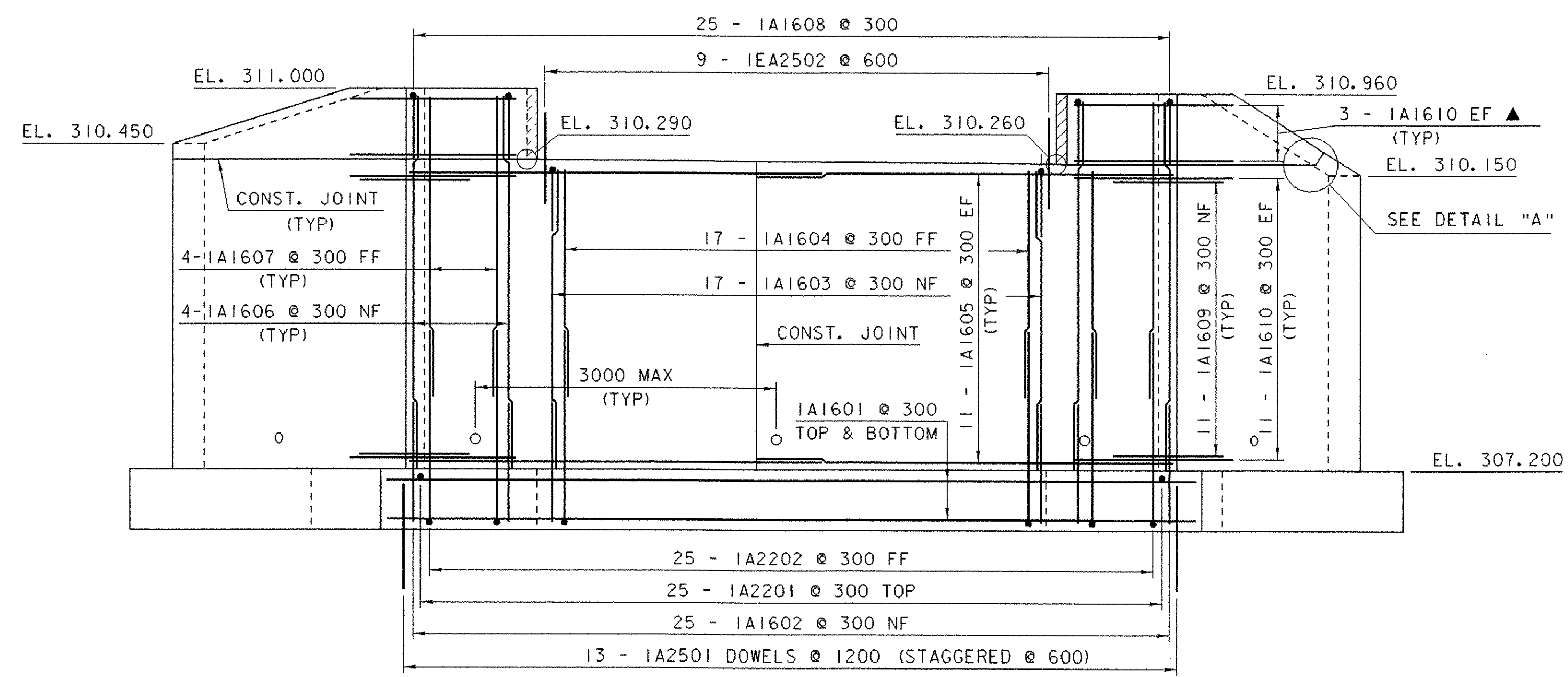
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**DETAIL "A"**

0 0.5 1

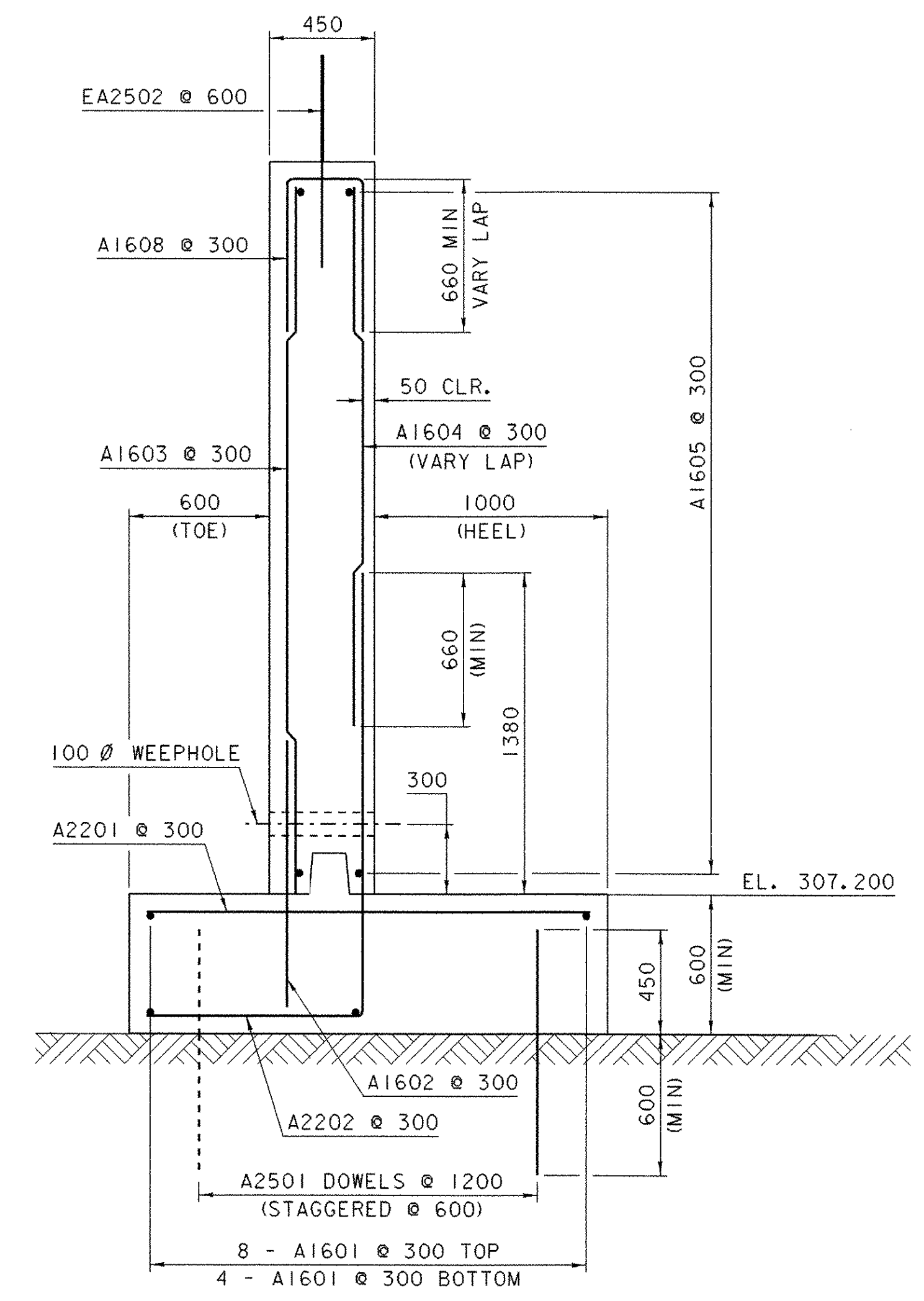
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**ABUTMENT NO. 1 ELEVATION**

0 1 2 3 4

SCALE = 1:40



**NOTE:**  
THE TOP OF FOOTING ELEVATION WAS DETERMINED BASED ON SURVEY INFORMATION AND EXPOSED LEDGE WITHIN THE STREAM. THE ELEVATION AND GEOMETRY SHOWN REPRESENT THE LOWEST LEDGE ELEVATION EXPECTED. SEE GENERAL NOTES (SUBSTRUCTURES ON LEDGE) FOR MORE INFORMATION.

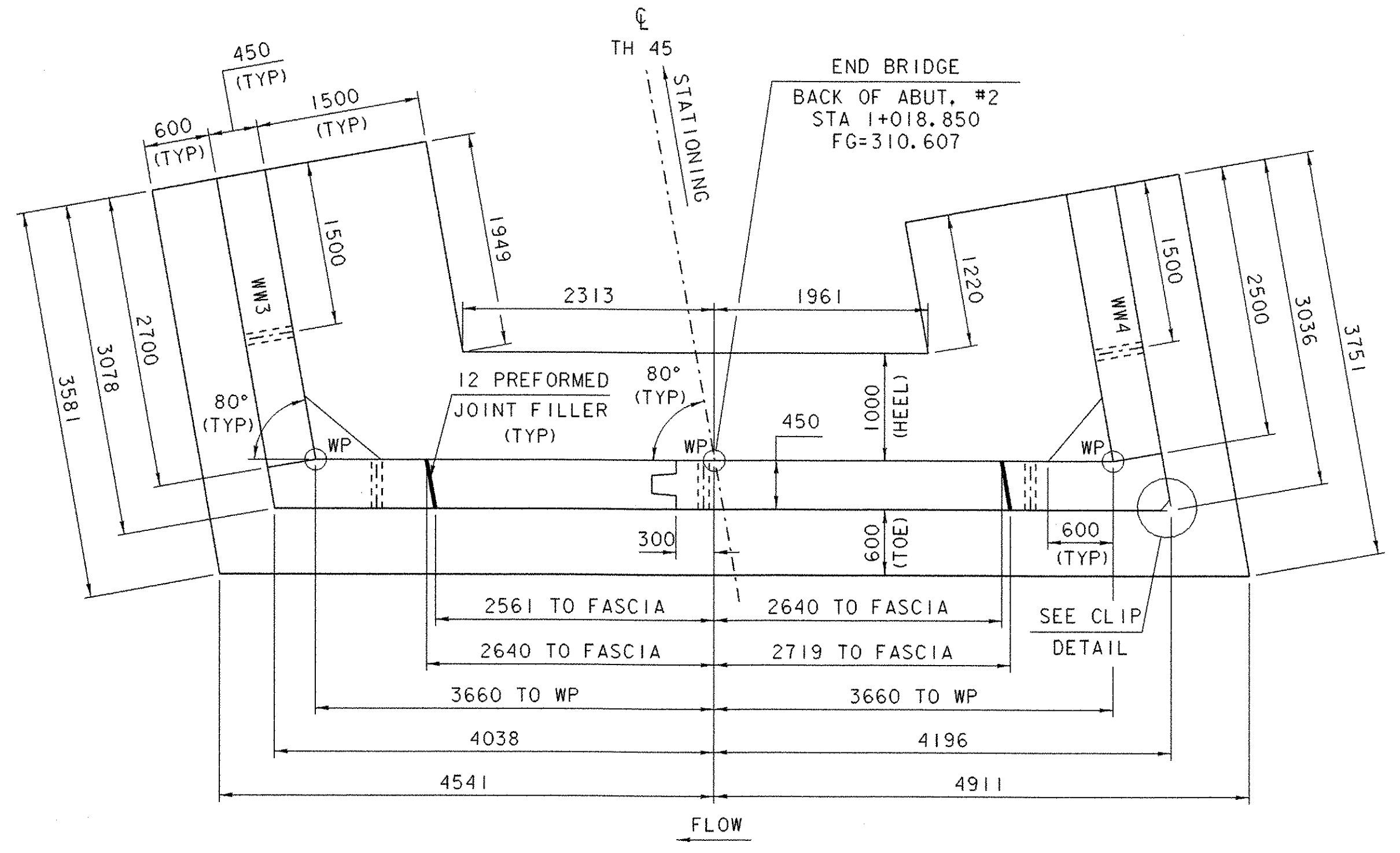
**ABUTMENT TYPICAL SECTION**

0 1 2

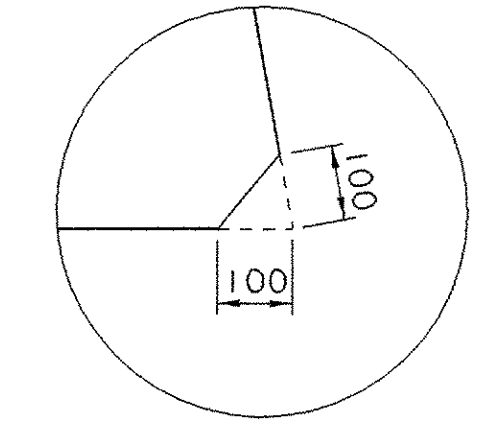
SCALE = 1:20

**NOTE:**  
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FF = FAR FACE  
EF = EACH FACE  
▲ = CUT TO FIT IN FIELD  
80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
ALL LAPS NOT DETAILED SHALL BE 660.  
SEE SHEET 16 FOR CORNER DETAILS.

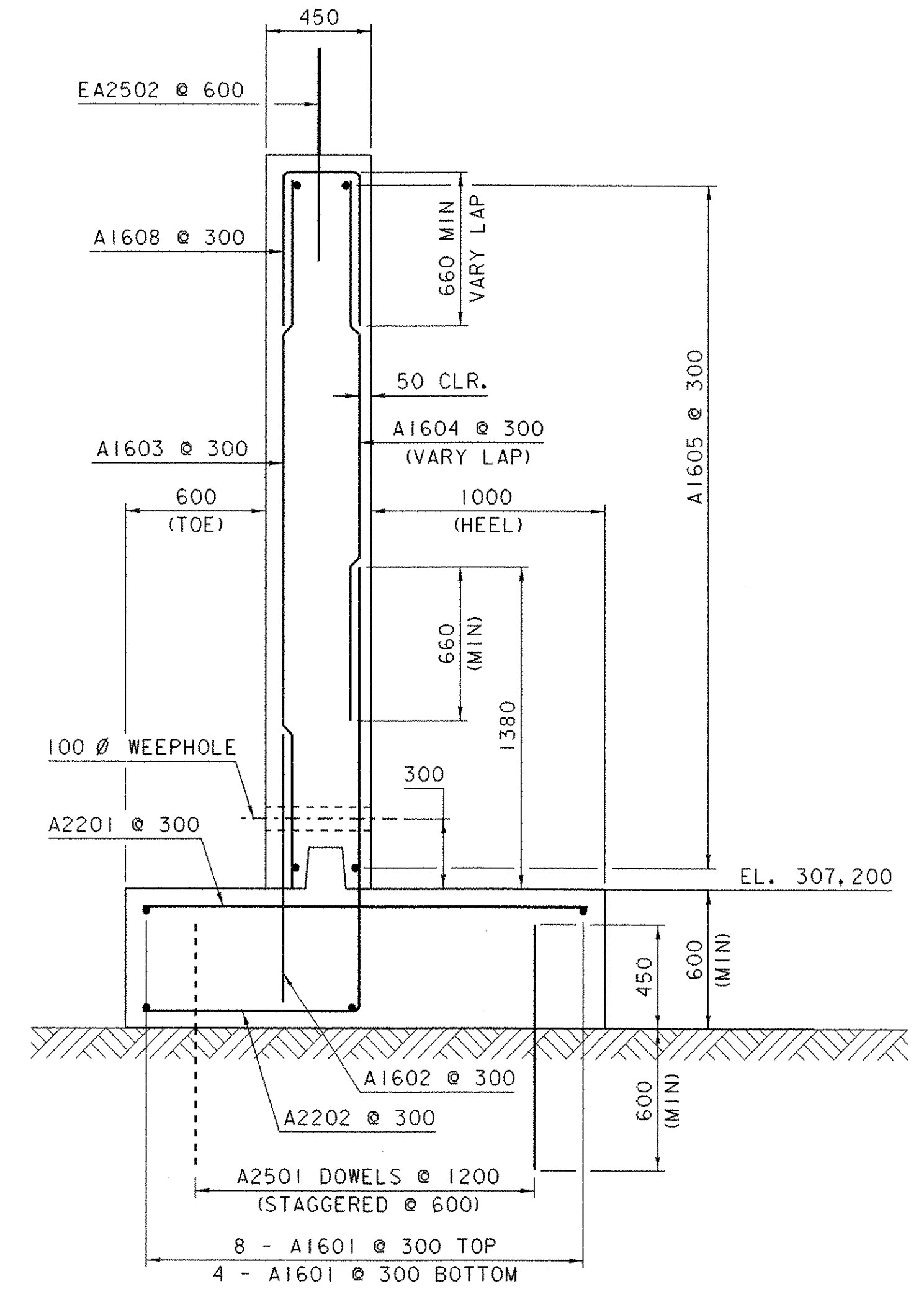
PROJECT: <b>VERSHIRE</b>	PROJECT NO.: <b>BRO 1444 (32)</b>
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IPARM FILE NAME: sj027abi.i	DRAWN BY: P.K.PERRY
DESIGNED BY: P.K.PERRY	CHECKED BY: K.M.HIGGINS
SQUAD LEADER: C.P.WILLIAMS	SHEET: 14 OF 34
ABUTMENT NO. 1 DETAILS	



**ABUTMENT NO. 2 PLAN**  
 0 1 2 3 4  
 SCALE = 1:40

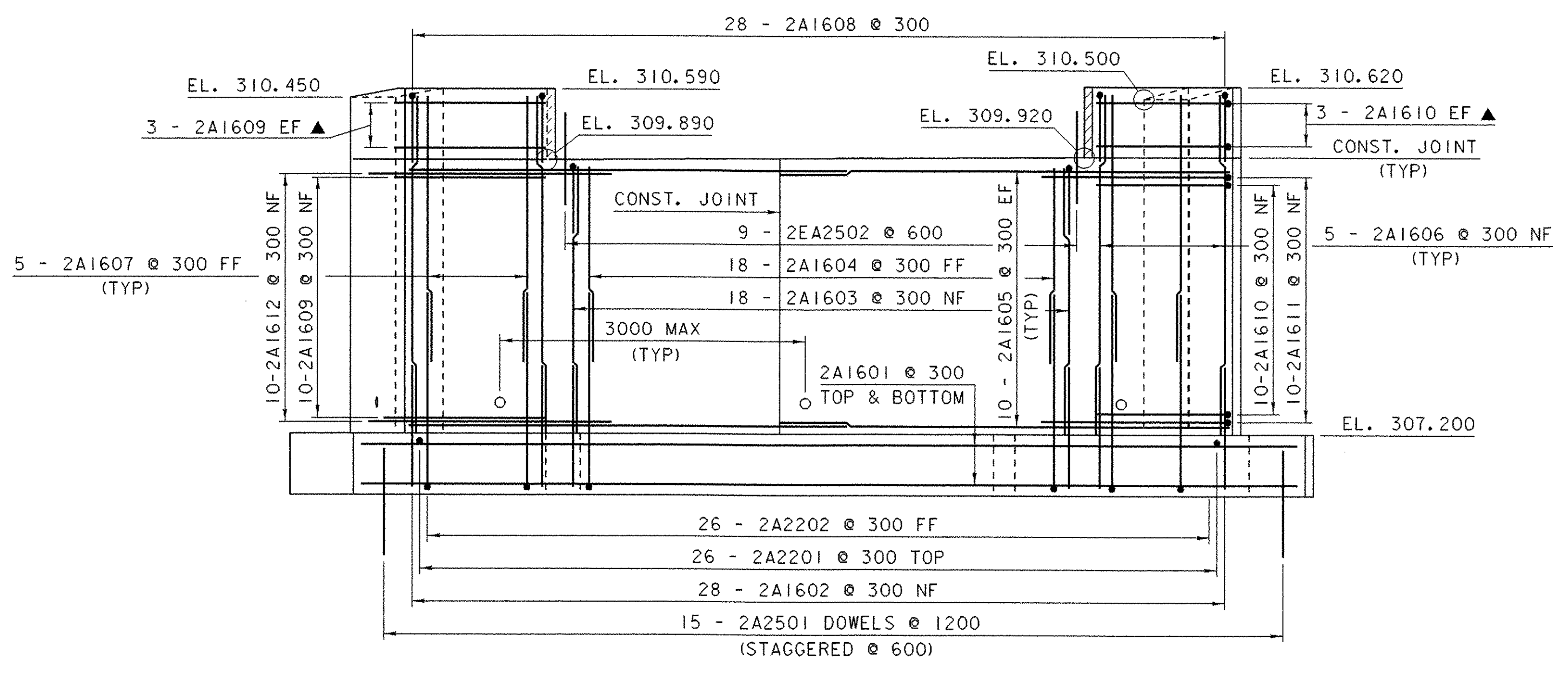


**CLIP DETAIL**  
 0 0.5 1  
 SCALE = 1:10



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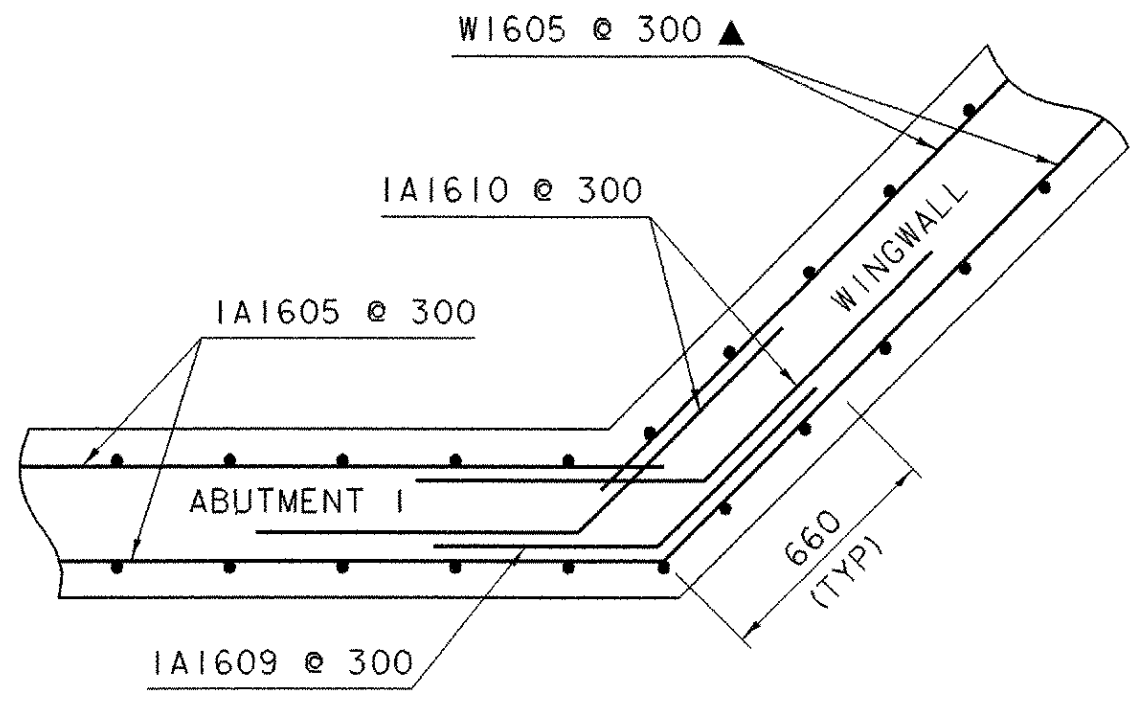
**ABUTMENT TYPICAL SECTION**  
 0 1 2  
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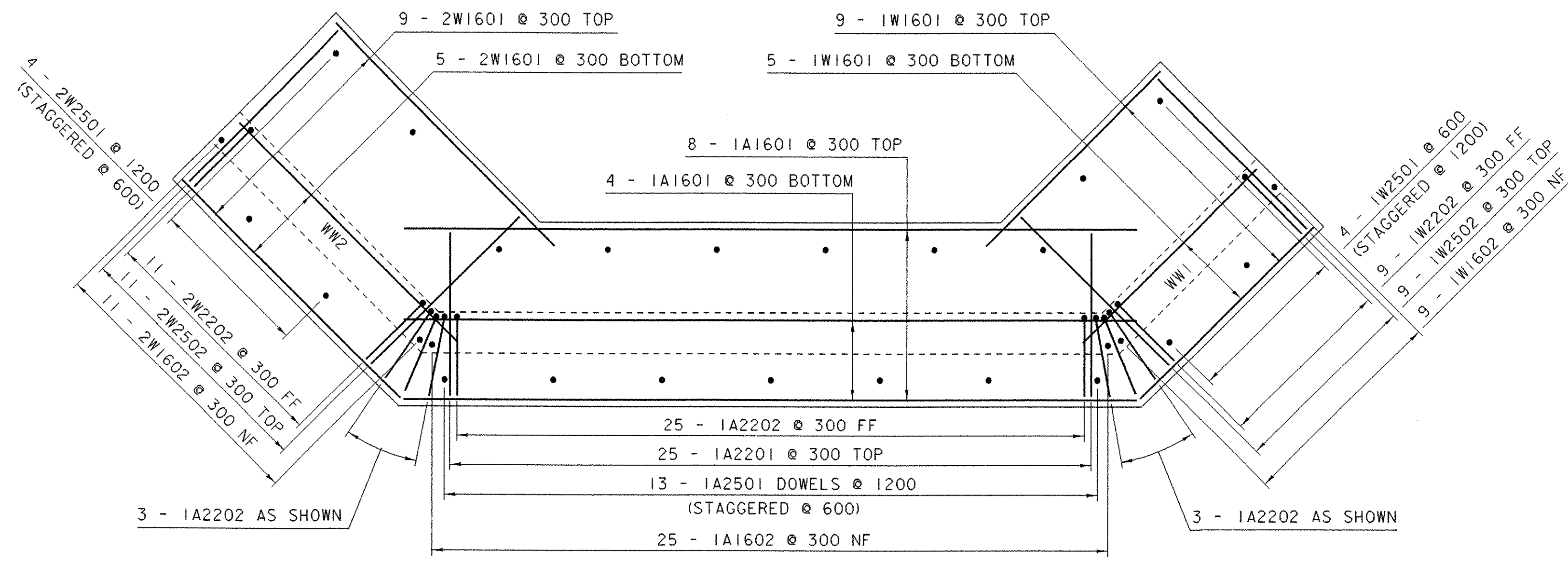
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 0 1 2 3 4  
 SCALE = 1:40

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 80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 ALL LAPS NOT DETAILED SHALL BE 660.  
 SEE SHEET 16 FOR CORNER DETAILS.

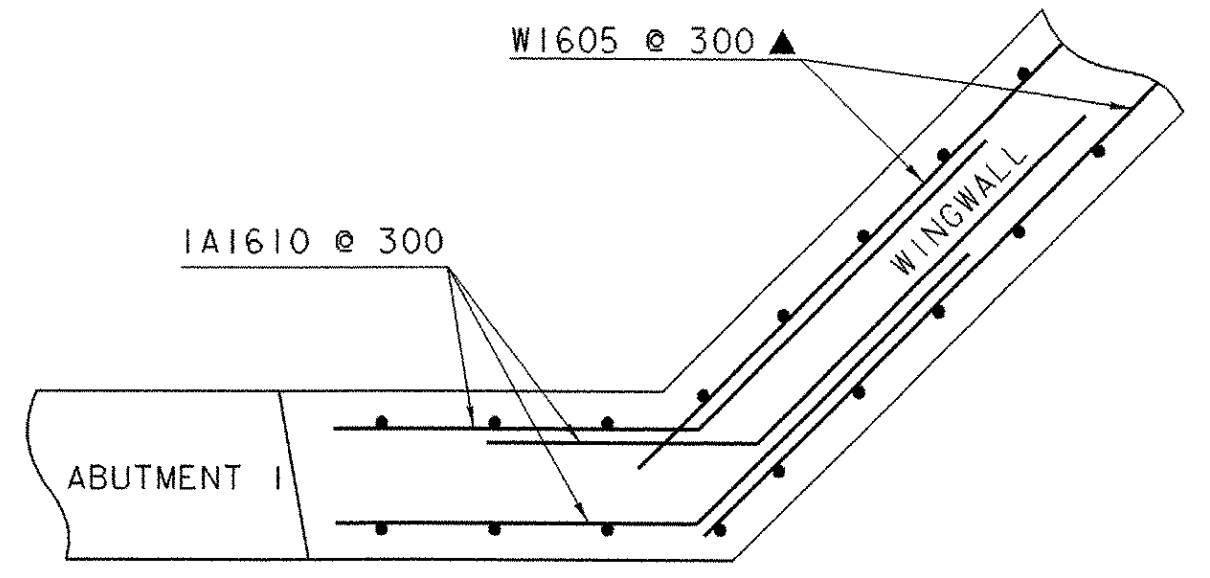
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IPARM FILE NAME: sj027ab2.i	DRAWN BY: P.K.PERRY
DESIGNED BY: P.K.PERRY	CHECKED BY: K.M.HIGGINS
SQUAD LEADER: C.P.WILLIAMS	SHEET: 15 OF 34
ABUTMENT NO. 2 DETAILS	



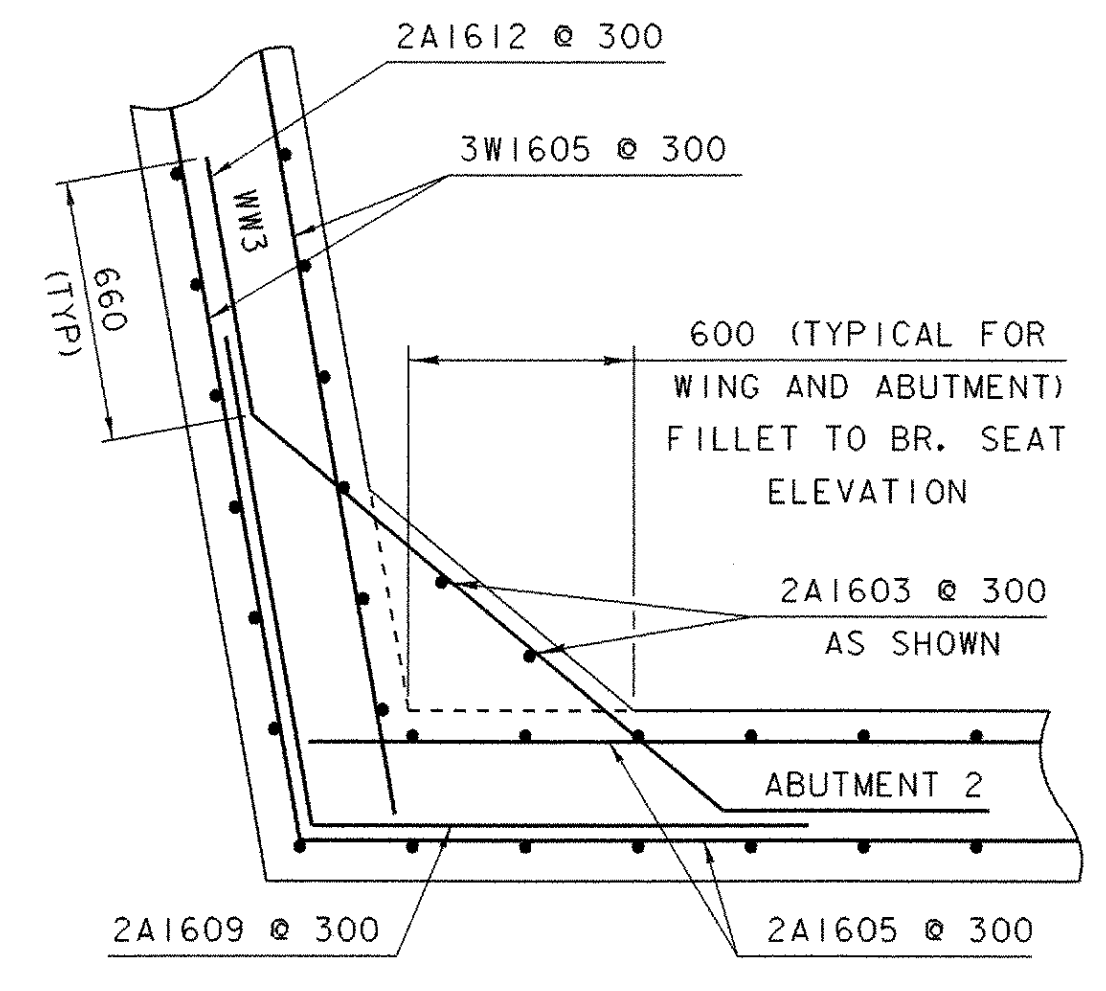
**WINGWALL 1 & 2  
CORNER DETAIL  
BELOW BRIDGE SEAT**  
nts



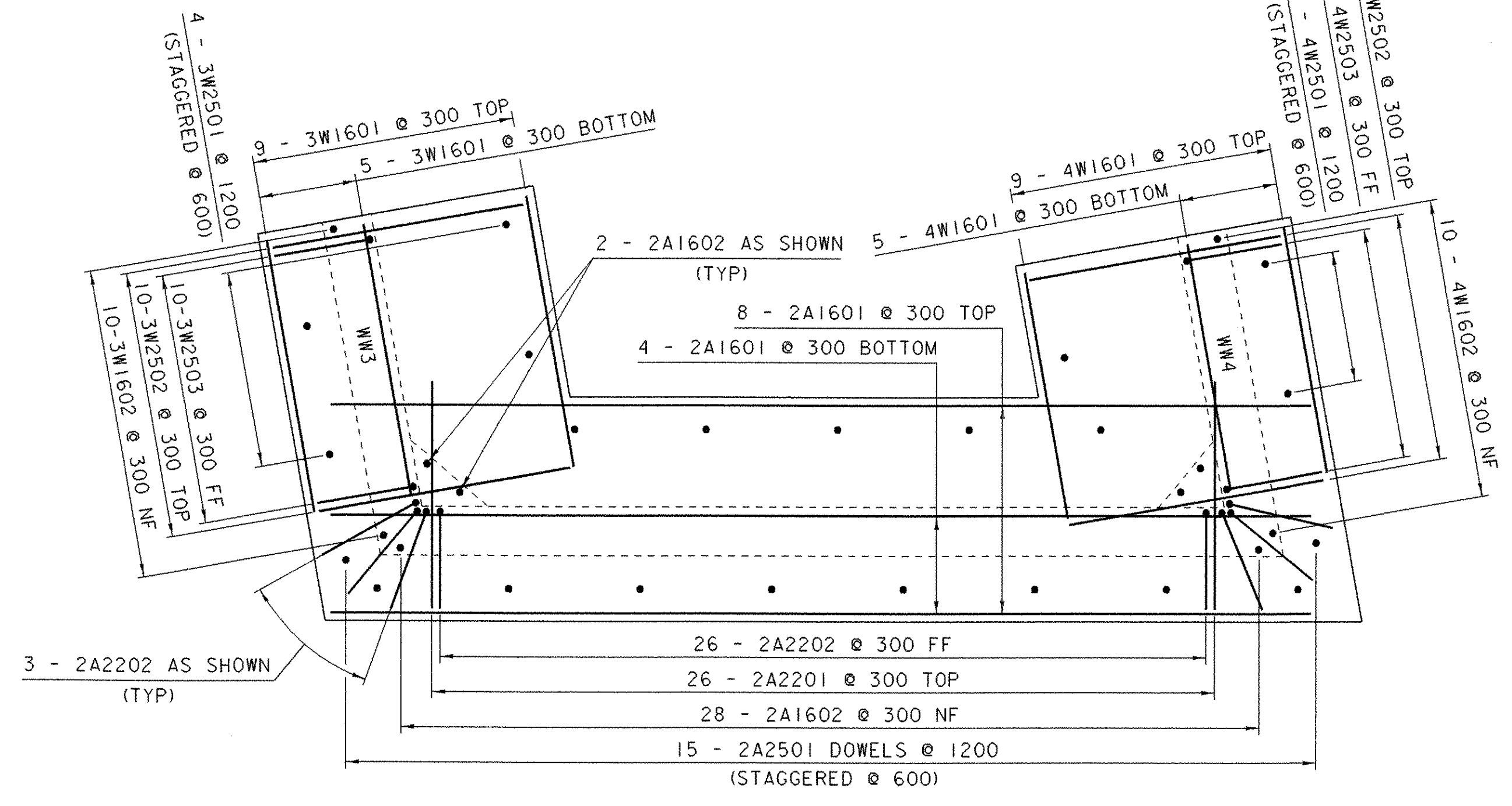
**ABUTMENT NO. 1 PLAN**  
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SCALE = 1:40



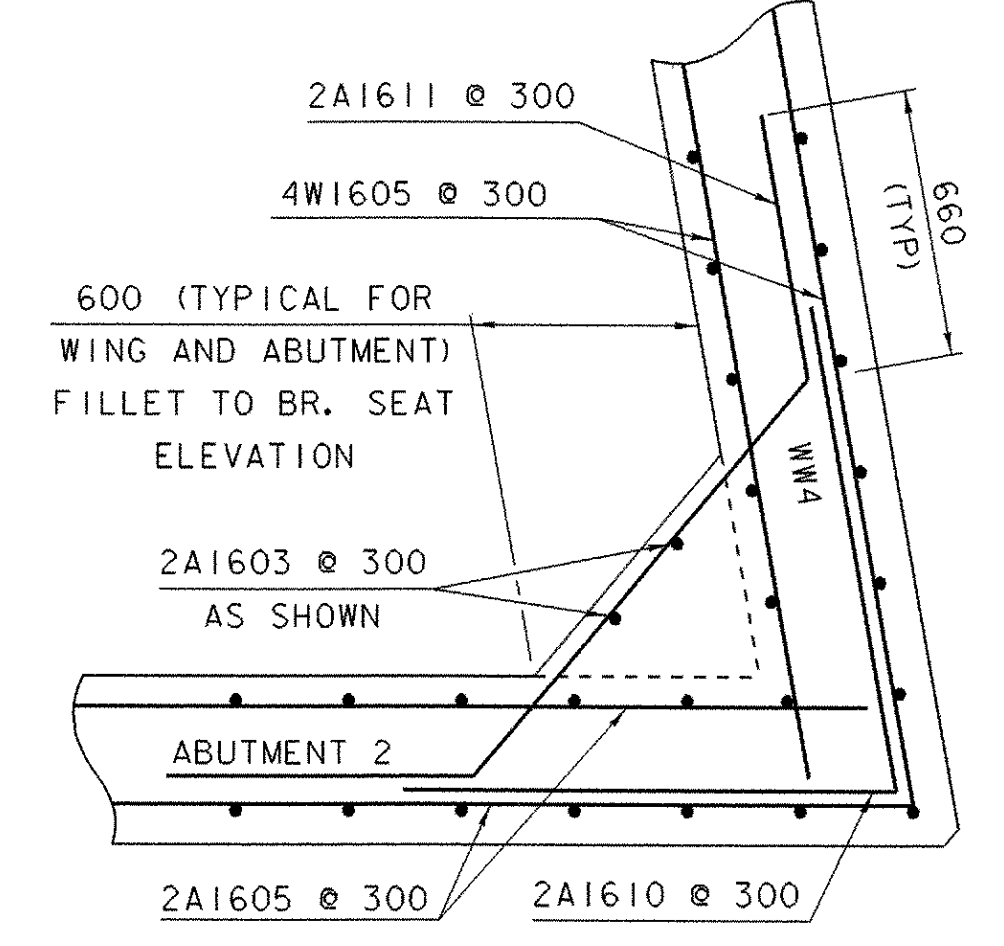
**WINGWALL 1 & 2  
CORNER DETAIL  
ABOVE BRIDGE SEAT**  
nts



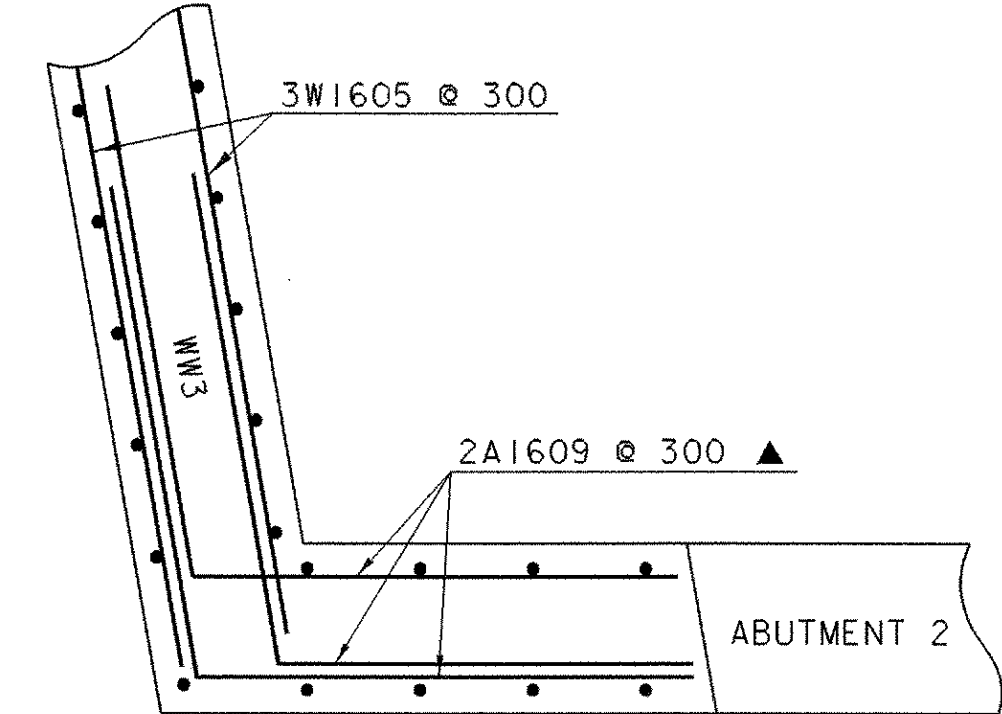
**WINGWALL 3  
CORNER DETAIL  
BELOW BRIDGE SEAT**  
nts



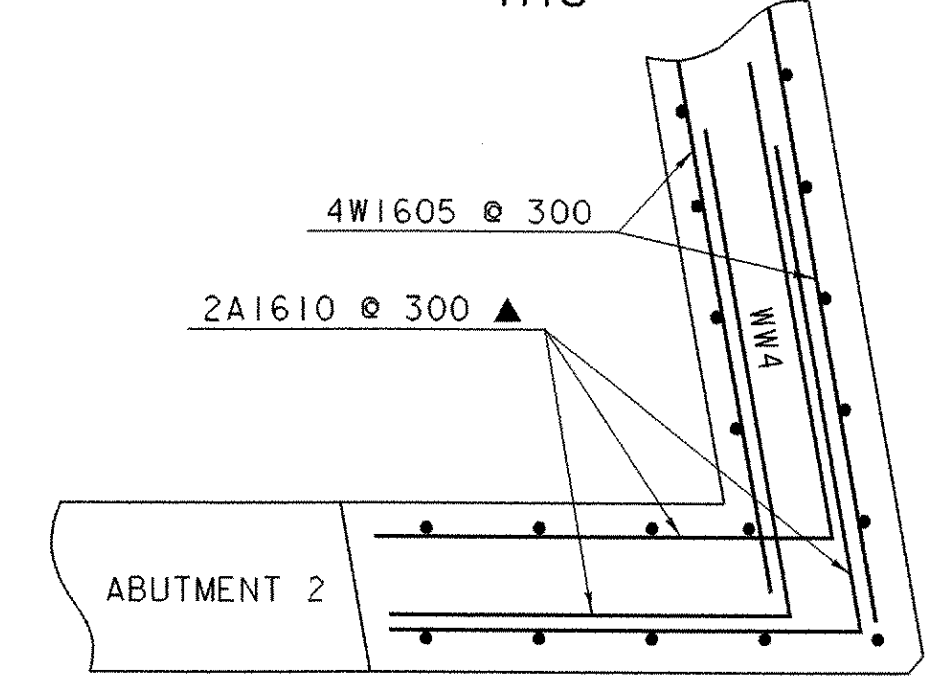
**ABUTMENT NO. 2 PLAN**  
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SCALE = 1:40



**WINGWALL 4  
CORNER DETAIL  
BELOW BRIDGE SEAT**  
nts



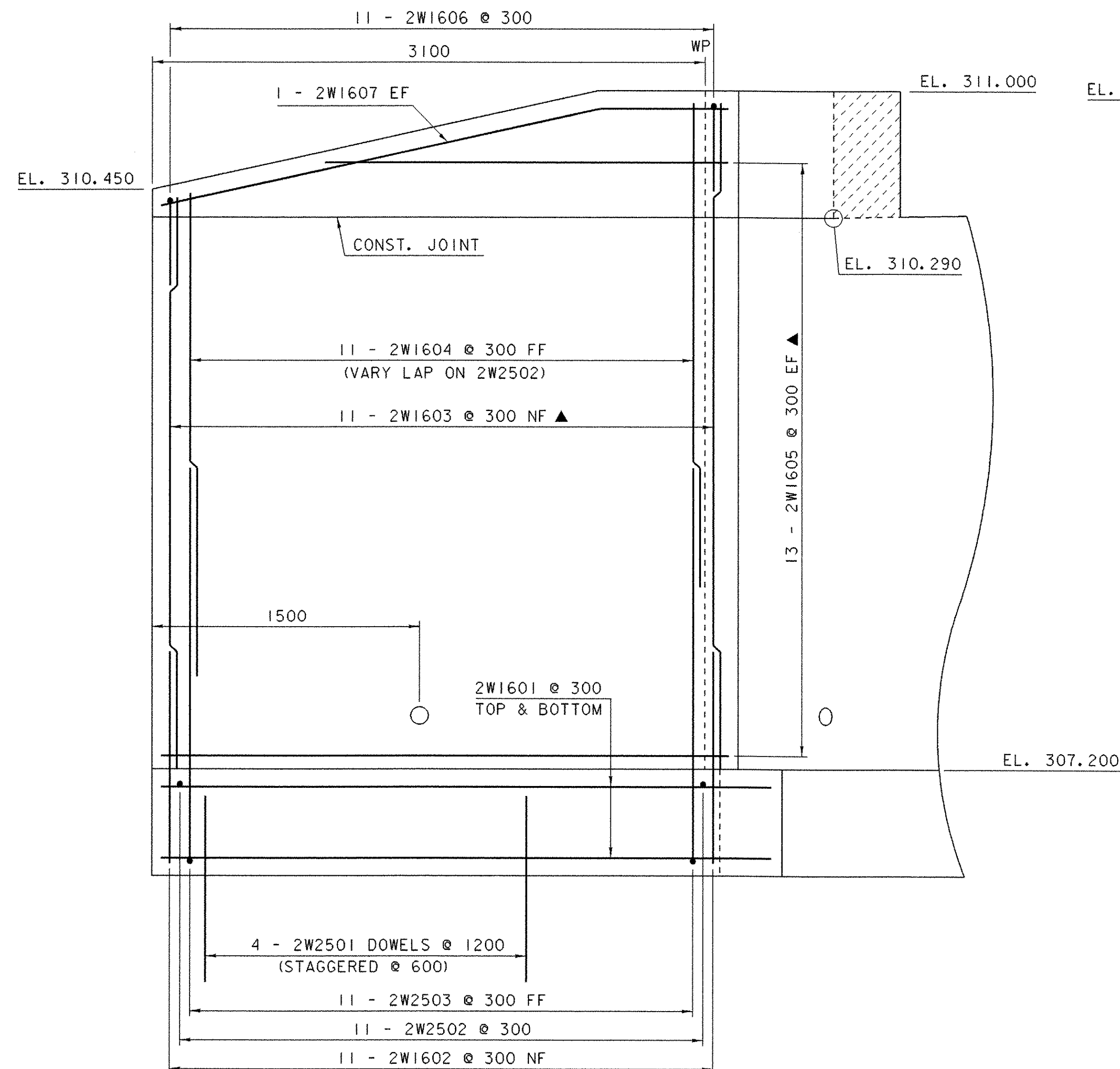
**WINGWALL 3  
CORNER DETAIL  
ABOVE BRIDGE SEAT**  
nts



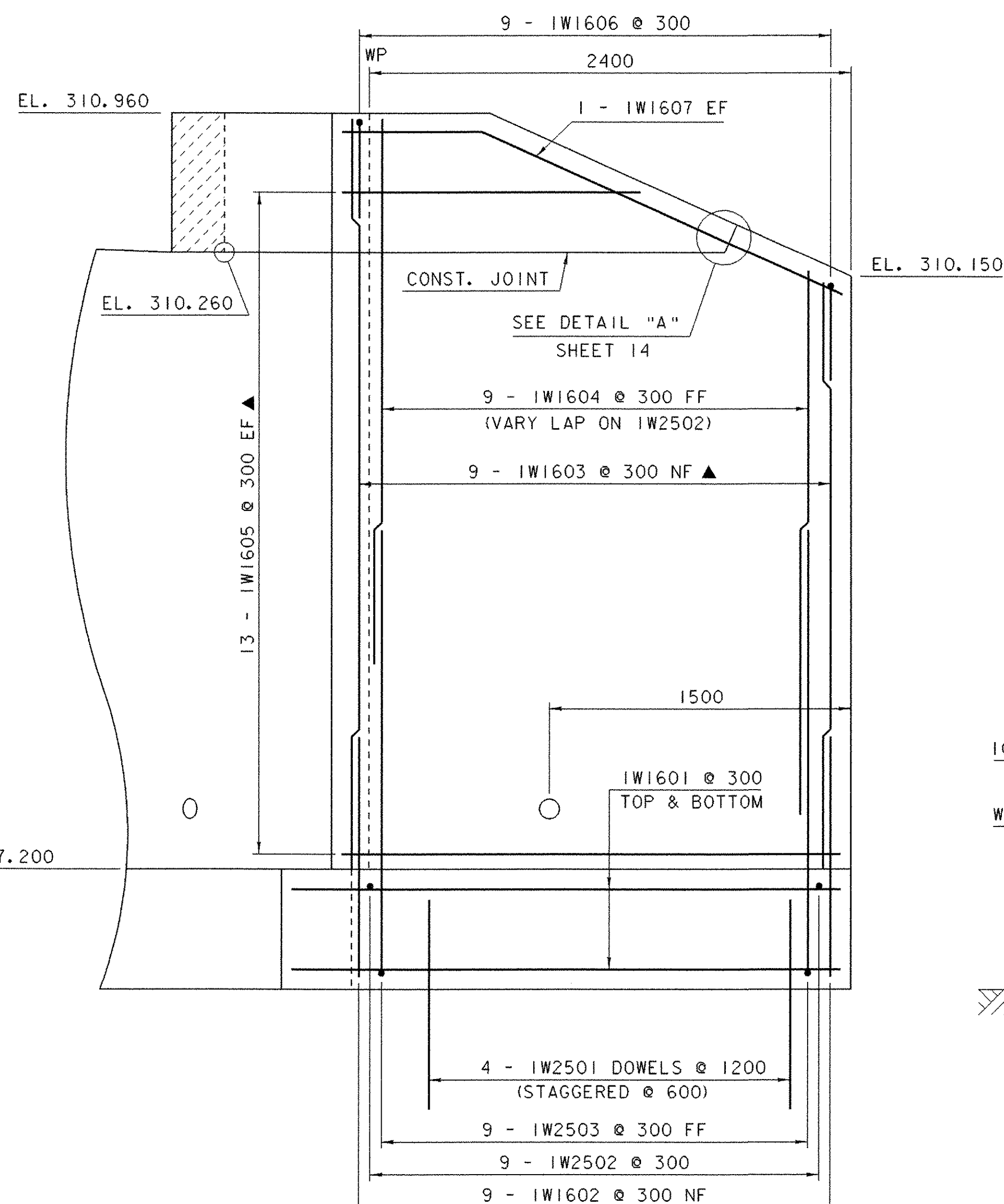
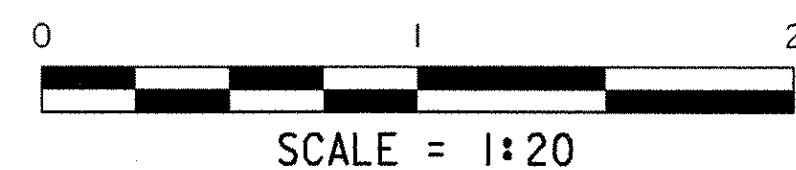
**WINGWALL 4  
CORNER DETAIL  
ABOVE BRIDGE SEAT**  
nts

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80 CLR. UNLESS OTHERWISE  
SPECIFIED ON THE PLANS.  
ALL LAPS NOT DETAILED  
SHALL BE 660.

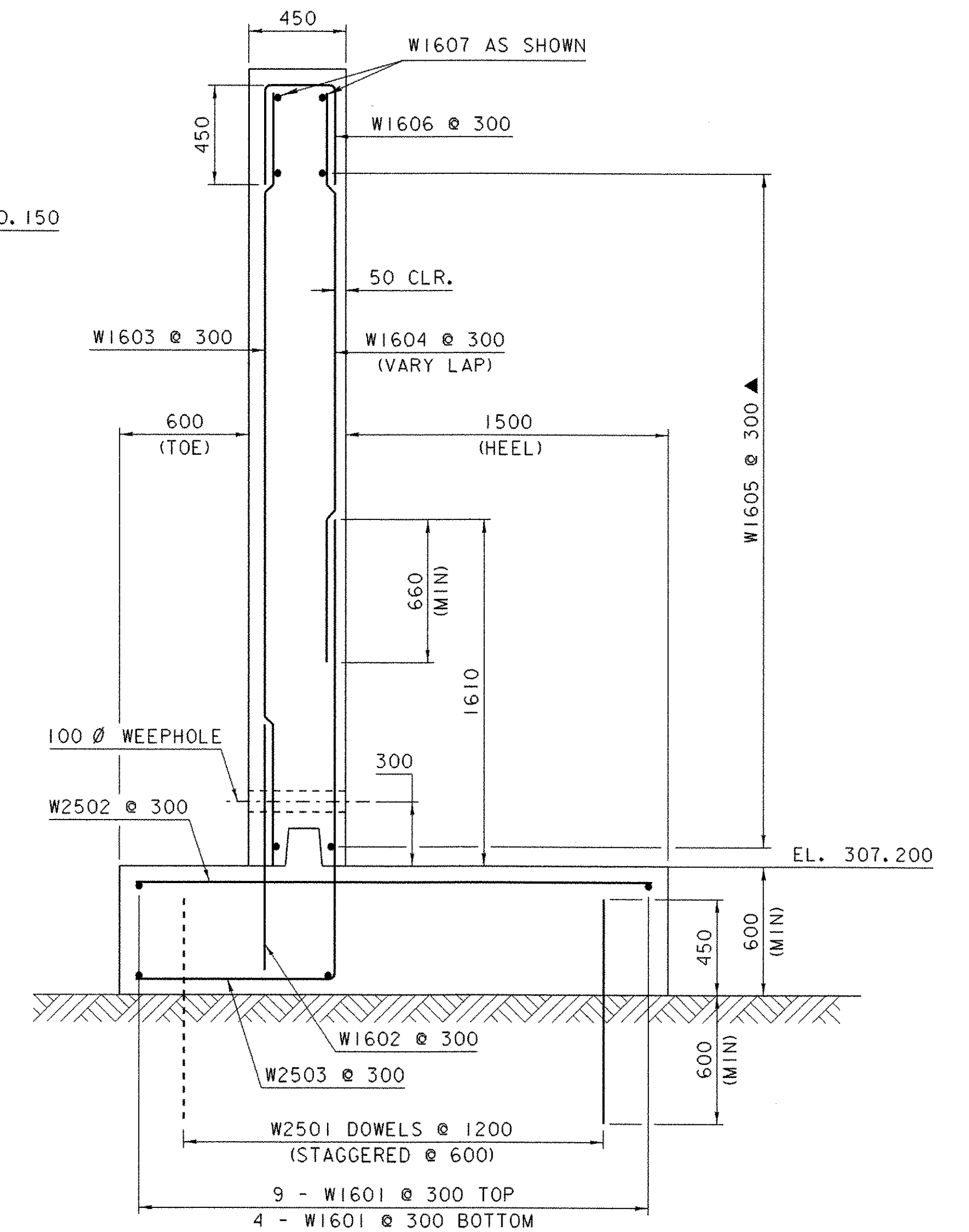
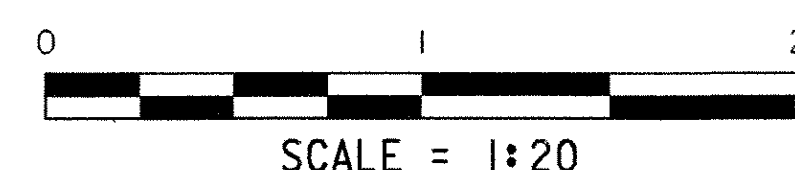
PROJECT: <b>VERSHIRE</b>	PROJECT NO.: <b>BRO 1444 (32)</b>
DESIGN FILE NAME: /93j027/structures/sj027sub.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027ftg.i	DRAWN BY: P. K. PERRY
DESIGNED BY: P. K. PERRY	CHECKED BY: K. M. HIGGINS
SQUAD LEADER: C. P. WILLIAMS	SHEET: 16 OF 34
FOOTING REINFORCING DETAILS	



WINGWALL NO. 2 ELEVATION



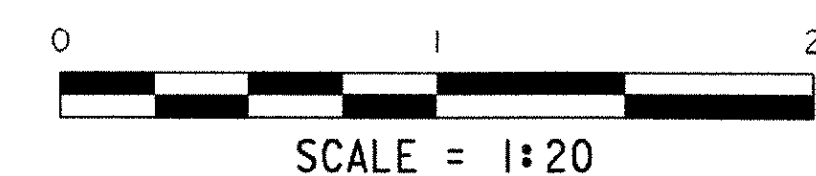
WINGWALL NO. 1 ELEVATION



NOTE:

THE TOP OF FOOTING ELEVATION WAS DETERMINED BASED ON SURVEY INFORMATION AND EXPOSED LEDGE WITHIN THE STREAM. THE ELEVATION AND GEOMETRY SHOWN REPRESENT THE LOWEST LEDGE ELEVATION EXPECTED. SEE GENERAL NOTES (SUBSTRUCTURES ON LEDGE) FOR MORE INFORMATION.

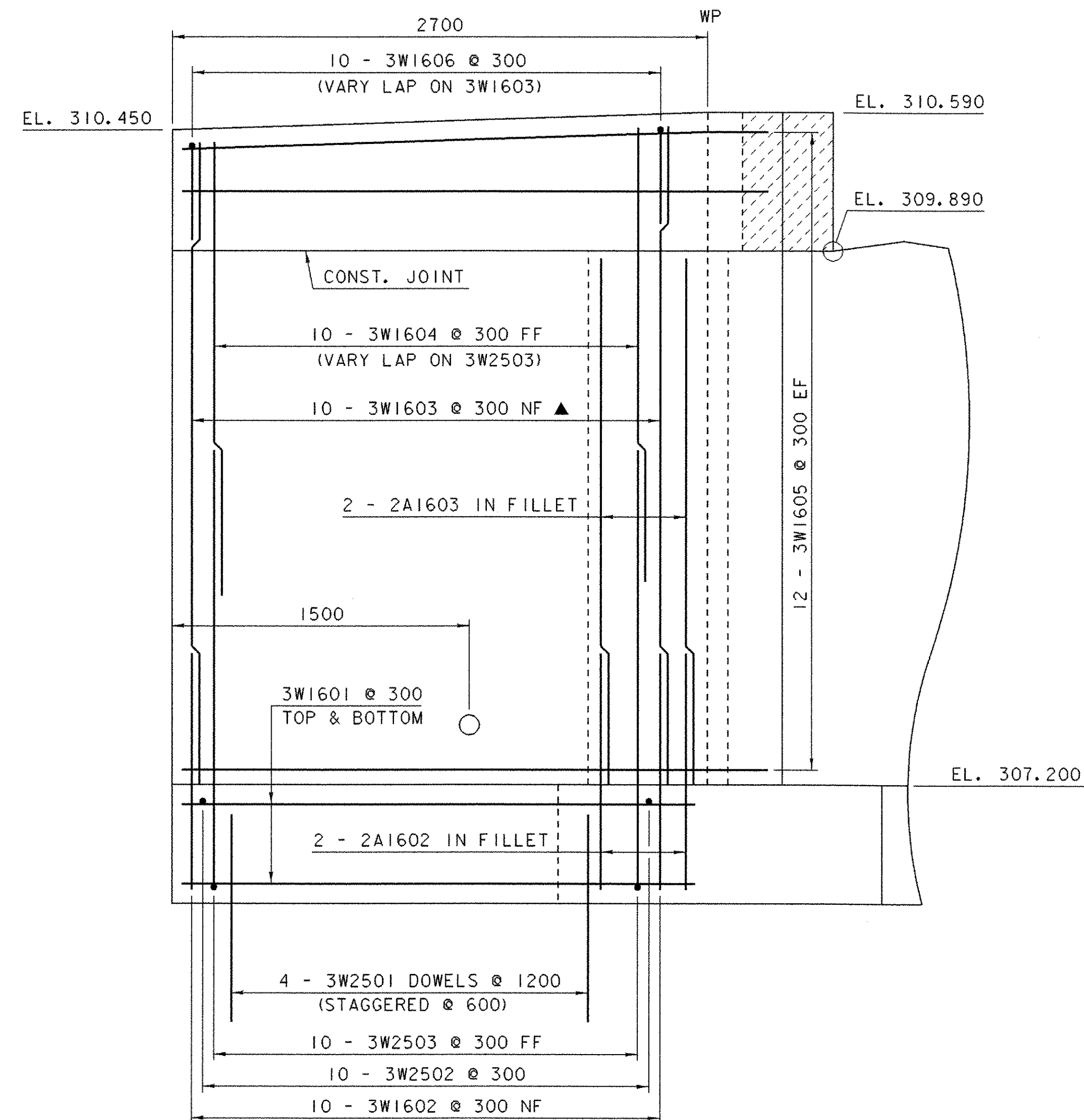
WINGWALL TYPICAL SECTION



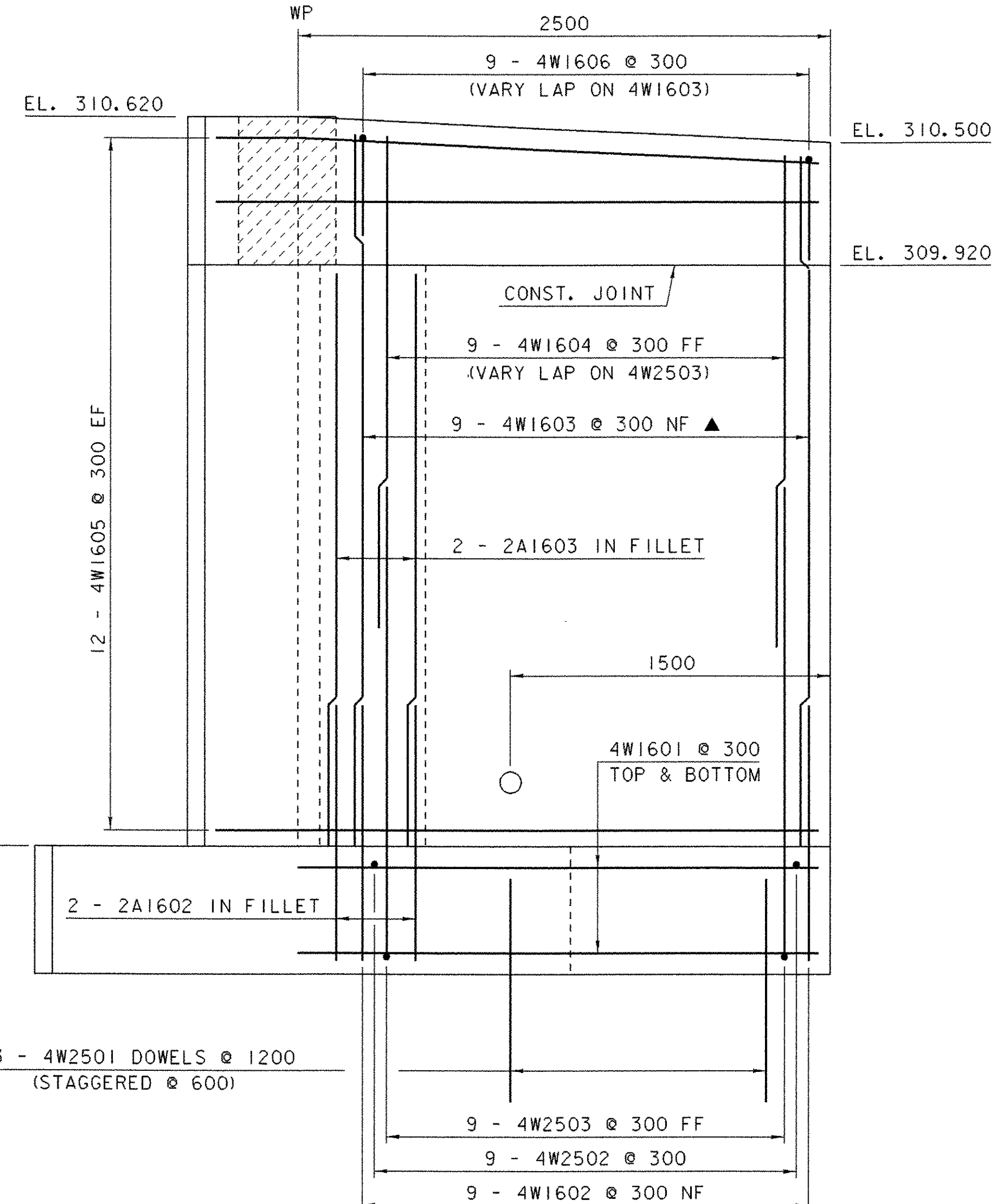
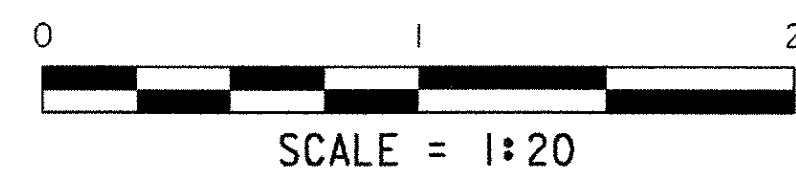
NOTE:

NF = NEAR FACE  
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 ▲ = CUT TO FIT IN FIELD  
 80 CLR. UNLESS OTHERWISE  
 SPECIFIED ON THE PLANS.  
 ALL LAPS NOT DETAILED  
 SHALL BE 660.

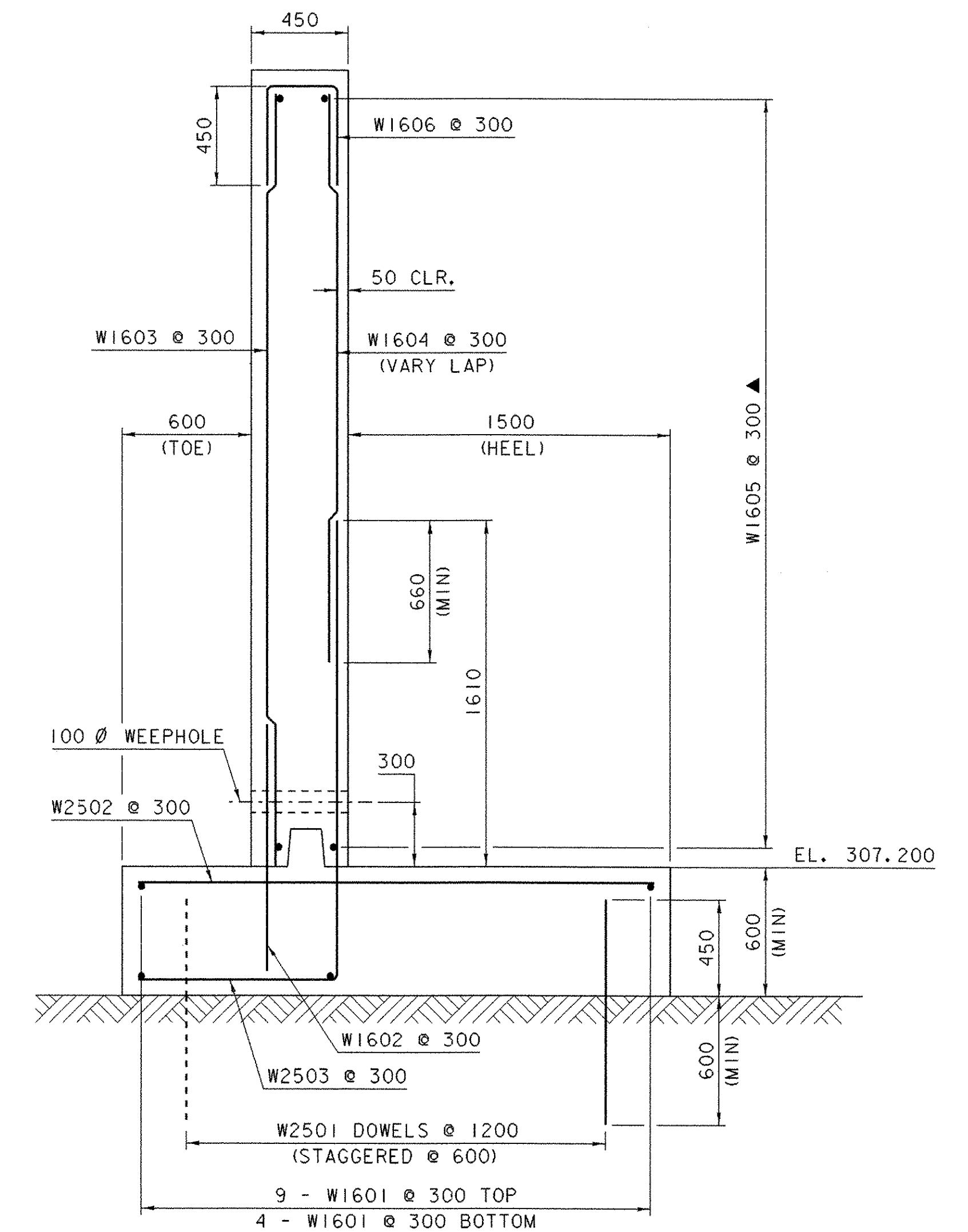
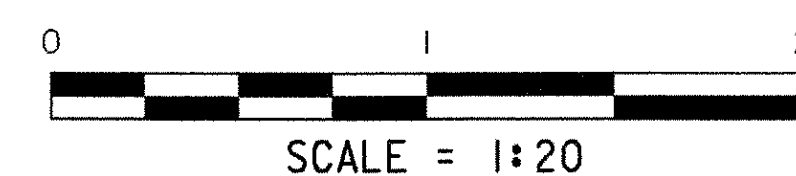
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DESIGN FILE NAME: /93j027/structures/sj027sub.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027twl.i	DRAWN BY: P.K.PERRY
DESIGNED BY: P.K.PERRY	CHECKED BY: K.M.HIGGINS
SQUAD LEADER: C.P.WILLIAMS	SHEET: 17 OF 34
WINGWALL 1 & 2 DETAILS	



WINGWALL NO. 3 ELEVATION



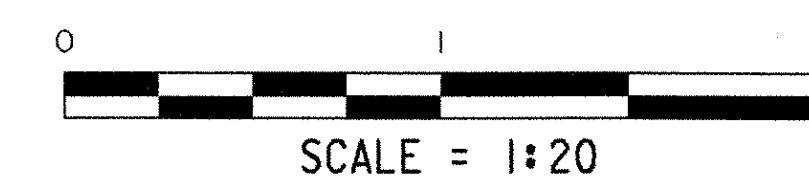
WINGWALL NO. 4 ELEVATION



NOTE:

THE TOP OF FOOTING ELEVATION WAS DETERMINED BASED ON SURVEY INFORMATION AND EXPOSED LEDGE WITHIN THE STREAM. THE ELEVATION AND GEOMETRY SHOWN REPRESENT THE LOWEST LEDGE ELEVATION EXPECTED. SEE GENERAL NOTES (SUBSTRUCTURES ON LEDGE) FOR MORE INFORMATION.

WINGWALL TYPICAL SECTION



NOTE:

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 EF = EACH FACE  
 ▲ = CUT TO FIT IN FIELD  
 80 CLR. UNLESS OTHERWISE SPECIFIED ON THE PLANS.  
 ALL LAPS NOT DETAILED SHALL BE 660.

PROJECT: VERSHIRE	PROJECT NO.: BRO 1444 (32)
DESIGN FILE NAME: /93j027/structures/sj027sub.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027ww3.i	DRAWN BY: P.K.PERRY
DESIGNED BY: P.K.PERRY	CHECKED BY: K.M.HIGGINS
SQUAD LEADER: C.P.WILLIAMS	SHEET: 18 OF 34
WINGWALL 3 & 4 DETAILS	

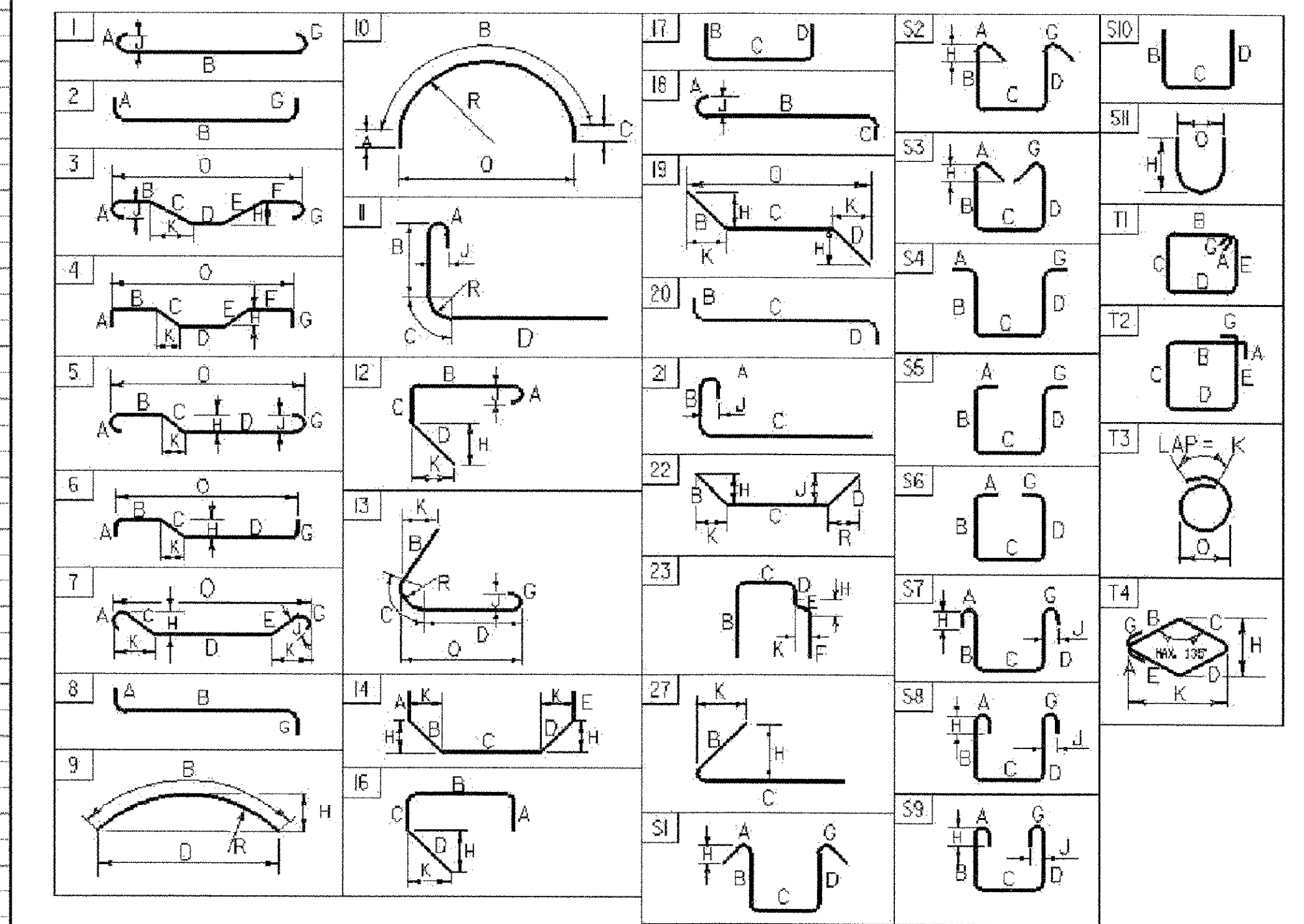
# REINFORCING STEEL SCHEDULE



ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
<b>DECK</b>																		<b>ABUTMENT NO. 2</b>																	
*	34	16	5120	ES1601	STR													12	16	9292	2A1601	STR													
*	9	16	9690	ES1602	STR													32	16	1180	2A1602	STR													
	66	16	2200	ES1603	S6	300	350	930	350						300			*	23	16	2610	2A1603	STR												
Δ	37	29	10085	ES2901	1	375	9700											18	16	1890	2A1604	STR													
<b>ABUTMENT NO. 1</b>																		<b>WINGWALL NO. 3</b>																	
	12	16	8030	1A1601	STR													28	22	1890	2A2201	STR													
	26	16	1180	1A1602	STR													15	25	1050	2A2501	STR													
	17	16	2980	1A1603	STR													9	25	1130	2EA2502	STR													
	17	16	2260	1A1604	STR													28	16	1640	2A1608	S10	700	320	700										
	22	16	4180	1A1605	STR													▲	19	16	2634	2A1609	19	1290	1290	---			1270	220					
	8	16	3680	1A1606	STR													▲	19	16	2634	2A1610	27	1290	1290	---			1270	220					
*	9	16	3000	1A1607	STR													▲	10	16	3070	2A1611	22	660	1600	660			510	420					
Δ	27	22	1890	1A2201	STR													▲	10	16	3210	2A1612	22	660	1880	660			420	500					
	13	25	1050	1A2501	STR													32	22	2620	2A2202	17	920	1910	---										
	9	25	1130	1EA2502	STR													<b>WINGWALL NO. 4</b>																	
	25	16	1640	1A1608	S10	700	320	700										13	16	2620	3W1601	STR													
	22	16	1320	1A1609	19	660	660	---										10	16	1180	3W1602	STR													
▲	56	16	1750	1A1610	19	1140	1140	---										▲	10	16	3170	3W1603	STR												
	31	22	2820	1A2202	17	920	1910	---										10	16	2360	3W1604	STR													
<b>WINGWALL NO. 1</b>																		<b>WINGWALL NO. 2</b>																	
*	13	16	2675	1W1601	STR													4	25	1050	3W2501	STR													
	10	16	1180	1W1602	STR													12	25	2390	3W2502	STR													
▲	9	16	3680	1W1603	STR													10	16	1220	3W1606	S10	450	320	450										
	9	16	2730	1W1604	STR													Δ	11	25	2390	1W2502	STR												
▲	26	16	2426	1W1605	STR													9	16	1220	1W1606	S10	450	320	450										
	4	25	1050	1W2501	STR													2	16	2440	1W1607	19	690	1900	---			285	635						
Δ	11	25	2390	1W2502	STR													9	25	3050	1W2503	17	920	2140	---										
	13	16	3375	2W1601	STR													<b>WINGWALL NO. 3</b>																	
	11	16	1180	2W1602	STR													13	16	2420	4W1601	STR													
▲	11	16	3720	2W1603	STR													9	16	1180	4W1602	STR													
	11	16	2770	2W1604	STR													9	16	3340	4W1603	STR													
▲	26	16	3126	2W1605	STR													9	16	2390	4W1604	STR													
	4	25	1050	2W2501	STR													24	16	2880	4W1605	STR													
	11	25	2390	2W2502	STR													3	25	1050	4W2501	STR													
	11	16	1220	2W1606	S10	450	320	450									9	25	2390	4W2502	STR														
	2	16	3266	2W1607	19	700	2490	---									9	16	1220	4W1606	S10	450	320	450											
	11	25	3050	2W2503	17	920	2140	---									9	25	3050	4W2503	17	920	2140	---											

~ NOTES ~

- UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M31M (ASTM A 615M-S). ALL BARS SHALL BE GRADE 420, UNLESS OTHERWISE DESIGNATED.
- FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- \* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- Δ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE	NOMINAL MASS (kg/m)	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER (mm)	CROSS SECTIONAL AREA (mm²)	PERIMETER (mm)
#10	0.560	9.5	71	29.84
#13	0.994	12.7	129	39.90
#16	1.552	15.9	199	49.95
#19	2.235	19.1	284	60.00
#22	3.042	22.2	387	69.74
#25	3.973	25.4	510	79.80
#29	5.060	28.7	645	90.16
#32	6.404	32.3	819	101.47
#36	7.907	35.8	1006	112.47
#43	11.380	43.0	1452	135.09
#57	20.240	57.3	2581	180.01

PROJECT NAME: **Vershire**  
 PROJECT NUMBER: **BRO 1444(32)**  
 FILE NAME: sj027rss.xls PLOT DATE: 11/3/2005  
 PROJECT MANAGER: C.P. Williams DRAWN BY: P.K.PERRY  
 DESIGNED BY: P.K.PERRY CHECKED BY: K.M. HIGGINS  
 REINFORCING STEEL SCHEDULE SHEET 19 OF 34





**STATE OF VERMONT  
AGENCY OF TRANSPORTATION  
RIGHT OF WAY PLANS  
DETAIL SHEET**

**TABLE OF PROJECT PROPERTY ACQUISITION**

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS	REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
1	RICKER, ARNOLD E. & JEANNINE W.	9	1+013.518 RT.	1+065.000 CL.			DETOUR (T) .054HA±						INCLUDES EROSION CONTROL (0.13A±)			ELECTRONIC IPARMS TO STRUCTURES	11-28-05		
			1+019.279 RT.	1+033.835 RT.			SLOPE (T) 15.45SM±						(166.30 S.F. ±)						
			1+019.255 LT.	1+048.917 LT.			CONST. (T) 29.46SM±						INCLUDES EROSION CONTROL (317.12 S.F. ±)						
			1+035.626 CL.				DRIVE (T)						2.75M± (9') GRAVEL						
2	WASHINGTON ELECTRIC COOPERATIVE, INC.												UTILITY						
3	VERIZON - NEW ENGLAND, INC.												UTILITY						

ACCT.hlawrence  
IP\_PWP:dms03741\vrj027d.dgn  
DATE PLOTTED 24-FEB-2006

DR. (P)- DRAINAGE RIGHT  
DIT. (P)- DITCHING RIGHT  
CH. (P)- CHANNEL RT.  
DRIVE (T)- DRIVE RIGHT  
CUL. (P)- CULVERT RIGHT  
[W]- WATER SOURCES

PRESENT R.O.W.  
 TAKING WITHOUT ACCESS  
 TAKING WITHOUT ACCESS ALONG PROPERTY LINE  
 TAKING WITH ACCESS  
 PERMANENT EASEMENT  
 TEMPORARY EASEMENT

**LEGEND**  

 C&T (P) CLEARING & TRIMMING  
 CZ (P) CLEAR ZONE  
 CONST (T) CONSTRUCTION EASEMENT  
 SR SLOPE RIGHTS  
 F PROPERTY LINE  
 L TOP OF CUT  

 TOP OF SLOPE  
 TOE OF SLOPE  
 UE (P) PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 03-01-02  
CHIEF, PLANS & TITLES

R. O. W. PLANS  
**VERSHIRE**  
**BRO 1444(32)**  
R. O. W. SHEET 8 OF 9 SHEETS  
SHEET 21 OF 34

## EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

### Project Description:

This project involves the placement of a temporary bridge, the removal and replacement of bridge #20 and its abutments, and some minor approach work. Bridge #20 is located in the town of Vershire on TH 45 at the intersection of VT Rte 113 and TH 45. The temporary and permanent bridges are one lane bridges. The new bridge is a concrete slab 8.5 meters in length spanning the Ompompanoosuc River. The new bridge will be located on the same alignment and therefore require only minor work to the approaches. There is an overhead power line that will be relocated.

It is anticipated that this project will last one construction season.

Area of disturbance is approximately 0.098 hectares (0.24 acres).

### Site Inventory and Analysis:

#### OFF SITE DRAINAGE CHARACTERISTICS

The property surrounding the project site consists of well established vegetation with moderate slopes at the project site and very steep slopes at the edges of river. The property surrounding the project site is mostly grass land with woods in the distance. Due to the nature of the surrounding terrain the project site could receive runoff water on to the project site from nearby slopes.

#### DRAINAGE, WATERWAYS, BODIES OF WATER:

The Ompompanoosuc River is the main water source. A small brook enters the river east of the project location. The river is classified as meandering and perennial with a streambed of gravel, cobbles, and ledge. The tributary area at the bridge crossing is 26.4 sq km. This river does have a tendency of rising fast.

#### TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:

The topography of the project site is mostly open fields with patches of wooded areas. The land at the project site is predominately flat. The embankment slopes within the project site range from approximately 1:1 to 1:6. The bridge is located at an intersection providing the only access to a single house. An overhead power line at the south end of the bridge will be relocated.

#### VEGETATION:

The vegetation in the project area is made up of grass. The impact to vegetation will be limited to that which is affected by construction of the temporary bridge and the removal and replacement of the new abutments. After the project it finished the slopes will be stabilized with stone fill and vegetation will be reestablished with standard seed and mulch practices.

#### SOILS:

All soil data came from the U.S. Department of Agriculture Soil Conservation Service for the county of Orange, Vermont. There is only one type of soil present in the project area. The soil in the project area is classified as Windsor, loamy fine sand, with a K-value of 0.17, and slopes ranging from 0-25%.

Note: Generally, K-values indicate the following: 0.0 – 0.23 = low erode ability; 0.24 – 0.36 = moderate erode ability; 0.37 and higher = higher erode ability.

#### SENSITIVE RESOURCE AREAS:

There are no 'Threatened & Endangered Species' living on or near the project site and there are no historical or archeologically sensitive areas on or near the project site.

#### PROXIMTY TO NATURAL OR MAN-MADE FEATURES:

Disturbance of soils near natural or man-made waters consists of that which is necessary to the placement of the temporary bridge, the removal and replacement of bridge #20 and its abutments, and some minor approach work. Stabilization of disturbance to the stream banks will be accomplished with stone fill, type IV and under laid with erosion control matting.

## TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

Temporary erosion prevention measures to be utilized include:

"Project Demarcation Fencing," denoted -PDF- on the plans and/or Silt Fence delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding, mulching, and biodegradable erosion control matting or equivalent product shall be utilized on slopes steeper than 1:3 that are not lined with stone fill. These slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. Any slopes to be several days prior to final grading shall be tracked and mulched. The forecast of rainfall events shall also trigger protection of exposed slopes.

If temporary ditches are required, stone check dams will be placed to reduce flow velocities and thus reduce the potential for erosion. Check dams will be placed along the ditches such that the elevation of the top of each check dam corresponds with the elevation of the toe of the preceding upslope check dam. See "Erosion Control Detail sheet EPSC2M". The check dams may be removed once the stone lining of the ditch is complete and the surrounding area stabilized.

#### Temporary measures to control sediment transport include:

Silt fence will be installed a distance of 5' to 10' (1500-3000) from the toe of slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100' (30,000). Silt fence shall be installed prior to any upslope earthwork.

Measures such as temporary stone check dams, silt fence, and sand bags shall be checked regularly for accumulation of sediment. Sediment built-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an area such that they will not be subject to erosion. Sand bags will be used to divert the stream in lieu of cofferdams as shown on the Erosion Prevention and Sediment Control Plan.

## PERMANENT EROSION CONTROL MEASURES

Stone lining of the stream banks with stone fill, type IV as specified by VTrans Hydraulics personnel. This stone will protect from stream bank erosion during design storm events. Stone fill, Type I will be utilized behind the wing walls at Abutment 1 to reduce erosion potential.

## GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transportation. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sediment of receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed by the engineer. See section 105.23 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install all erosion and sediment control measures as shown in the Erosion Control Plan or as directed by the engineer. Do not modify the type, size or location of any control or practice without approval of the engineer. Any changes shall be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures shall be taken as needed.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation shall be established if the area is to be without construction activity for a period of 14 days. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be established wherever possible.

Control only sediment-laden runoff generated by the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

Do not allow construction equipment to operate on the down slope side of perimeter control measures.

Temporary sediment settling basin may or may not be utilized on this project. If a sediment settling basin is to be used for dewatering a cofferdam or sediment trap, it should be sized based upon the following criteria: (See Sediment Settling Basin Sizing Criteria.)

## SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH = 2:1			
Q (gpm)	Q (m <sup>3</sup> /s)	(ft <sup>2</sup> )	(m <sup>2</sup> )	L (ft)	W (ft)	L (m)	W (m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

PROJECT: VERSHIRE	PROJECT NO.: BRO 1444 (32)
DESIGN FILE NAME: /pw93j027/s93j027x1s.dgn	PLT DATE: 24-FEB-2006
IPARM FILE NAME: sj027ecnarr.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: M. FESSEL
SQUAD LEADER: C. P. WILLIAMS	SHEET: 22 OF 34
EROSION CONTROL NARRATIVE	

**EROSION AND SEDIMENT CONTROL NOTES:**

- 1) THE AREA OF DISTURBANCE IS 0.098 ha (0.24 ACRES)
- 2) AN UPGRADED TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.
- 3) ANY CHANGES MADE TO THE EROSION PREVENTION AND SEDIMENT CONTROL PLAN DURING CONSTRUCTION SHALL BE APPROVED BY THE RESIDENT ENGINEER AND DOCUMENTED.
- 4) TIME ALL GRADING TO MINIMIZE SOIL EXPOSURE.
- 5) RETAIN EXISTING VEGETATION WHENEVER FEASIBLE.
- 6) AT THE END OF EACH DAY'S GRADING OPERATIONS, SHAPE EARTHWORK TO MINIMIZE THE EROSION FROM STORM RUNOFF.
- 7) TEMPORARILY MULCH AND SURFACE ROUGHEN ALL DISTURBED AREAS WHICH WILL NOT RECEIVE FURTHER DISTURBANCE FOR A PERIOD OF 7 DAYS OR MORE.
- 8) TEMPORARILY SEED AND MULCH ALL DISTURBED AREAS WHICH WILL NOT RECEIVE FURTHER DISTURBANCE FOR A PERIOD OF 14 DAYS OR MORE.
- 9) FINAL SEED AND COVER SHALL BE APPLIED WITHIN 48 HOURS OF FINAL GRADING.
- 10) KEEP RUNOFF VELOCITIES LOW, CONSTRUCT CHECK DAMS AS REQUIRED.
- 11) PREPARE TEMPORARY DRAINAGEWAYS TO HANDLE CONCENTRATED FLOW UNTIL PERMANENT DRAINAGE IS CONSTRUCTED AND STABILIZED.
- 12) ALL DISTURBED AREAS WITH SLOPES GREATER THAN 1:3 WILL REQUIRE EROSION MATTING (SEE EROSION AND SEDIMENT CONTROL DETAIL SHEET EPSC-5M).
- 13) SPECIAL CONSIDERATION MUST BE GIVEN TO THE FIRST PUMP-DOWN OF THE SEDIMENT TRAPS. THIS WILL CONTAIN THE GREATEST VOLUME OF WATER WITH A HIGH SEDIMENT LOAD. THE CONTRACTOR MAY PROVIDE ADDITIONAL SEDIMENT TRAPS WITHIN THE RIGHT-OF-WAY IF REQUIRED OR CONTROL THE RATE OF DRAW-DOWN. ADDITIONAL SEDIMENT TRAPS MUST BE APPROVED BY THE RESIDENT ENGINEER.
- 14) CLEAN SEDIMENT CONTROL MEASURES (SEDIMENT TRAPS, SILT FENCE, ETC.) WHEN HALF FULL OF SEDIMENT
- 15) AFTER COMPLETION OF THE SUBSTRUCTURE, THE SEDIMENT IN THE TRAPS SHALL BE REMOVED AND THE GROUND RESTORED TO ITS ORIGINAL SLOPES OR GRADED AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- 16) THE CONTRACTOR WILL USE OTHER TEMPORARY OR PERMANENT EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE RESIDENT ENGINEER. SEE SECTION 105.23 OF THE VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001.
- 17) MONITOR AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DAILY AND AFTER EACH RAIN STORM.
- 18) SEE SHEET 27-30 FOR EROSION AND SEDIMENT CONTROL DETAILS.
- 19) ASK FOR ASSISTANCE AND RECOMMENDATIONS AS NEEDED.

**SEEDING FORMULA  
RURAL AREAS**

% WT.	kg/ha	NAME	PUR %	GERM %
37.5	26.0	CREEPING RED FESCUE	98	85
37.5	26.0	TALL FESCUE	95	90
5.0	4.0	RED TOP	95	90
15.0	10.0	BIRDSFOOT TREFOIL	98	85
5.0	4.0	ANNUAL RYE GRASS	95	85
100.0	70.0			

**GENERAL NOTES**

- SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
- SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.
- FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
- AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.
- HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.
- TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

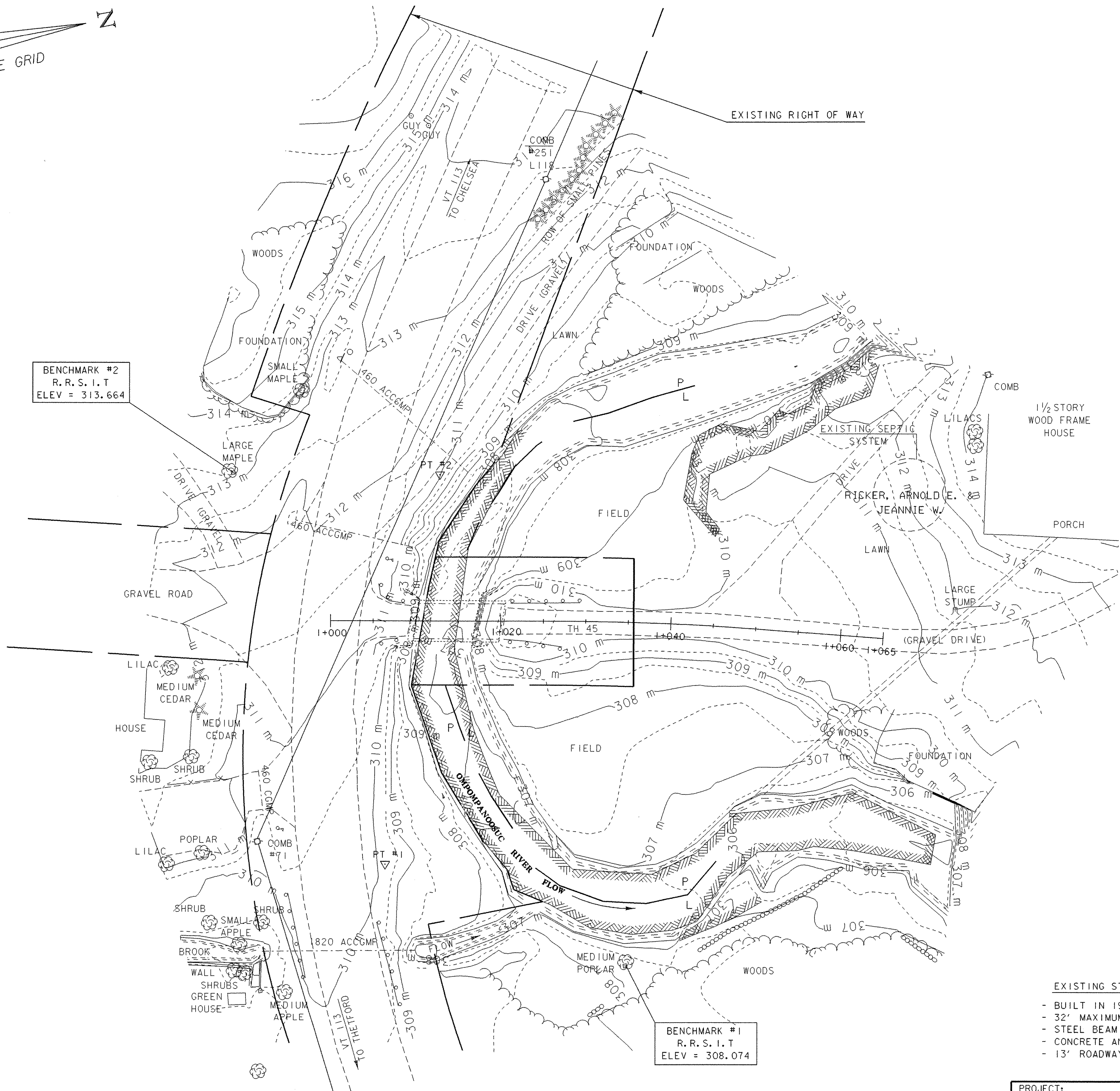
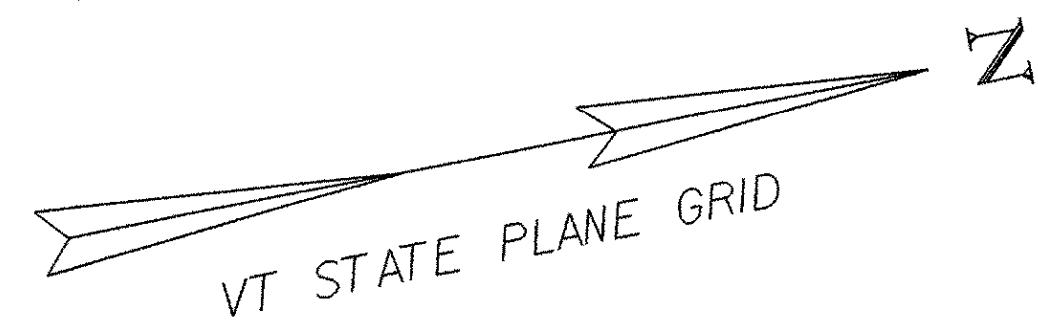
**GENERAL NOTES:**

- 1) PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING ADDITIONAL INFORMATION FOR APPROVAL AND INCLUSION IN THE COMPLETE EROSION AND SEDIMENT CONTROL PLANS:
  - LOCATION OF WASTE, BORROW AND STAGING AREAS, MATERIAL STOCKPILES, REFUELING AND MAINTENANCE AREAS AND CONCRETE TRUCK WASHOUT LOCATION (ATTACH MAP IF NECESSARY). A DISCUSSION AND ADDITIONAL DETAILS NEEDED FOR PROTECTION AND STABILIZATION OF THESE AREAS SHALL BE INCLUDED AS WELL.
  - MODIFICATIONS REQUIRED TO THESE EROSION AND SEDIMENT CONTROL PLANS.
  - GRADING PLAN / CONSTRUCTION SEQUENCE (INCLUDING PROPOSED DATES ASSOCIATED WITH JOB MILESTONES AS INDICATED ON THE SEQUENCE CONSISTENT WITH PROJECT CRITICAL PATH METHOD SCHEDULE.)
  - REVISED NARRATIVE MATCHING THE GRADING PLAN AND CONSTRUCTION SEQUENCE (RE: TEMPORARY SEEDING AND MULCHING / STABILIZATION).
  - NAME, ADDRESS, PHONE NUMBER AND BASIC QUALIFICATIONS OF "ON-SITE COORDINATOR".
- 2) WORK SHALL BE GENERALLY CONSISTENT WITH GUIDANCE PROVIDED IN THE LATEST REVISION OF THE VERMONT HANDBOOK FOR SOIL EROSION AND SEDIMENT CONTROL ON CONSTRUCTION SITES AND THE ASSOCIATED GENERAL CONTRACTORS OF VERMONT FIELD HANDBOOK.

**PERIMETER CONTROL NOTES:**

- 1) IDENTIFY SENSITIVE AREAS AND AREAS PRONE TO EROSION BASED ON SITE EVALUATION.
- 2) CLEARLY DEMARCAT SENSITIVE AREAS TO AVOID DISTURBANCE USING BRIGHTLY COLORED SNOW FENCE, MIN 8" WIDE FLAGGING OR SIMILAR.
- 3) PROTECT ALL SENSITIVE AREAS AND WATER FEATURES FROM SEDIMENT.
- 4) DIVERT OR OTHERWISE KEEP ALL CONCENTRATED OFF-SITE "RUN-ON" FROM AREAS TO BE DISTURBED.
- 5) PERIMETER CONTROLS (SILT FENCE, FILTER CURTAIN, ETC.) TO BE INSTALLED PRIOR TO SOIL DISTURBANCE AND MAINTAINED UNTIL SITE IS PERMANENTLY STABILIZED TO THE SATISFACTION OF THE ENGINEER AND ON-SITE COORDINATOR.
- 6) SEED AND MULCH SHALL BE APPLIED IMMEDIATELY TO ALL LAWNS DISTURBED BEYOND THE WORK AREA DELINEATED ON THESE PLANS.
- 7) PREVENT SEDIMENT FROM LEAVING THE SITE BY MAINTAINING AND MODIFYING PERIMETER CONTROLS AS NEEDED.

PROJECT: VERSHIRE	PROJECT NO. : BRO 1444 (32)
DESIGN FILE NAME: PW93J027/s93J027ecnotes.dgn	PLOT DATE: 24-FEB-2006
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SURVEYED BY: R. MOREAU	DRAWN BY: H. I. SALLS
SQUAD LEADER: C. P. WILLIAMS	SHEET: 23 OF 34
EROSION CONTROL NOTES	



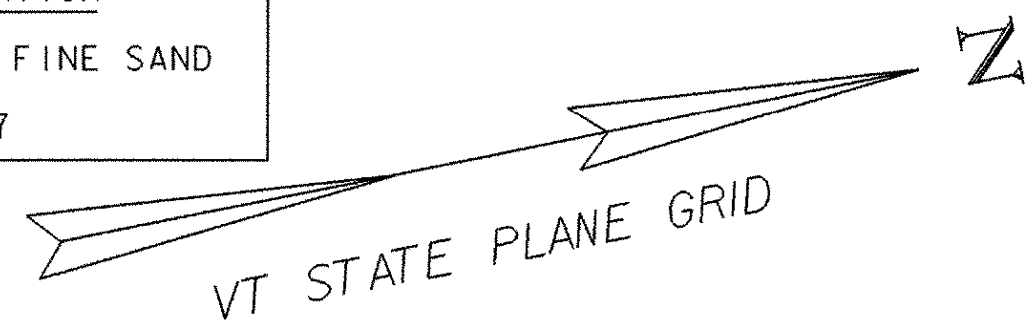
**EXISTING CONDITIONS**

- EXISTING STRUCTURE**
- BUILT IN 1919
  - 32' MAXIMUM SPAN
  - STEEL BEAM WITH TIMBER DECK
  - CONCRETE AND STONE ABUTMENTS
  - 13' ROADWAY WIDTH

<b>DATUM</b>	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT: <b>VERSHIRE</b>	PROJECT NO. : <b>BRO 1444 (32)</b>
DESIGN FILE NAME: pw93j027/sj027bdr_ero.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027excon.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: M.FESSEL
SQUAD LEADER: C. P. WILLIAMS	SHEET: 24 OF 34
EXISTING CONDITIONS	

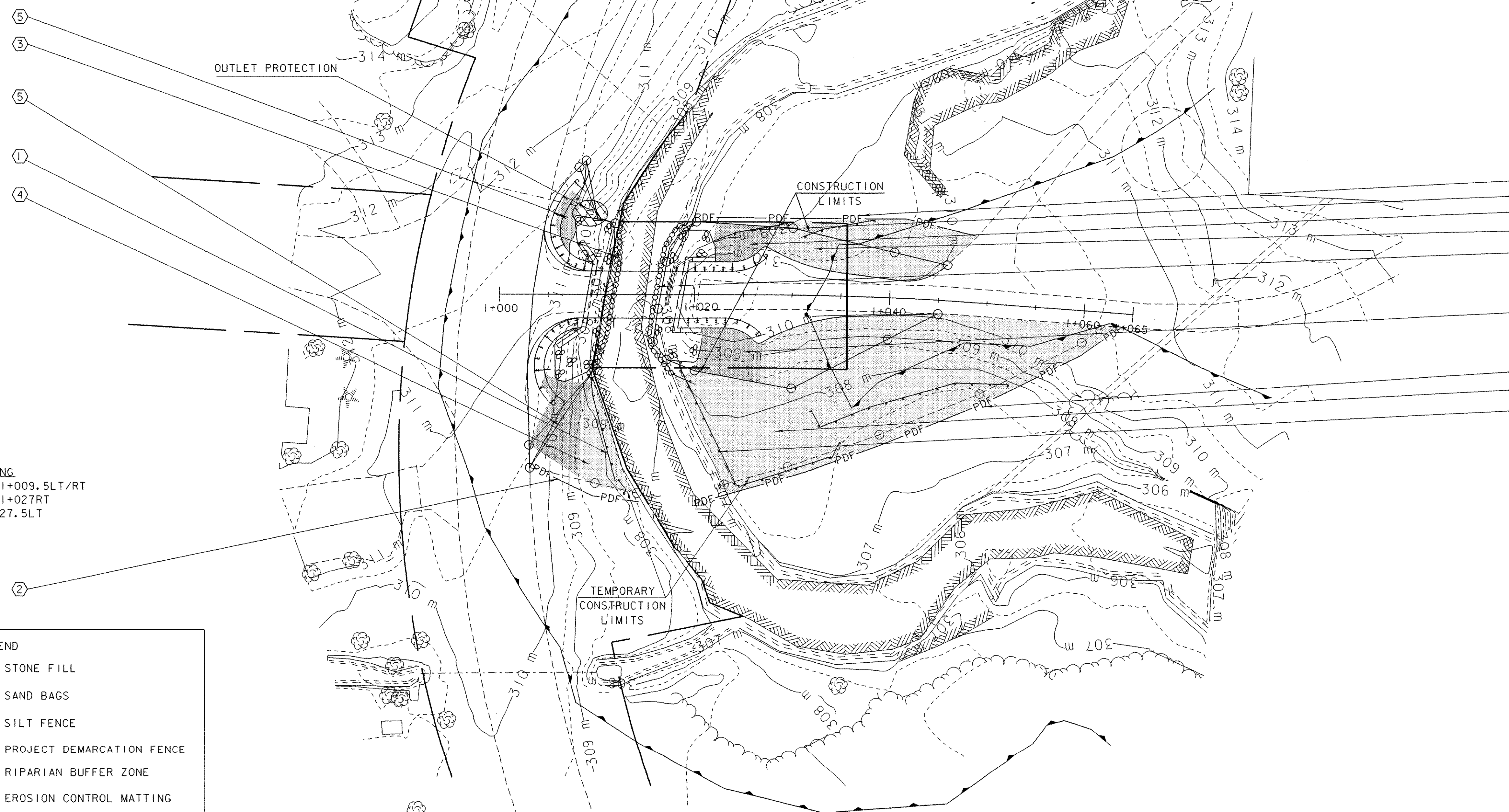
SOIL CLASSIFICATION  
 WINDSOR, LOAMY FINE SAND  
 SLOPES: 0-25%  
 "K FACTOR" 0.17



EROSION AND SEDIMENT CONTROL INDEX	
NO.	DESCRIPTION
①	INSTALL SILT FENCE TO CONTAIN SEDIMENT AS REQUIRED
②	PROJECT LIMITS DEMARCATION FENCE (SNOW FENCE (MOD.-PDF))
③	SAND BAGS FOR STREAM ISOLATION
④	SEED AND MULCH. Apply to disturbed areas as needed.
⑤	EROSION CONTROL MATTING

NOTE: ALL DISTURBED AREAS WITH SLOPES GREATER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING. SEE EROSION CONTROL DETAILS SHEET AND CROSS SECTIONS.

- NOTES**
1. INSTALL SILT FENCE TO CONTROL SEDIMENT FROM DISTURBED SOILS. INSTALL PRIOR TO SOIL DISTURBANCE.
  2. SEED AND MULCH DISTURBED AREAS AS REQUIRED. SEE EROSION CONTROL NOTES ON SHEET #23.
  3. INSTALL EROSION CONTROL MATTING ON DISTURBED SLOPES GREATER THAN 1:3. NOT REQUIRED ON AREAS WHERE STONE FILL IS PLACED.
  4. PAYMENT FOR SAND BAGS FOR STREAM ISOLATION, THEIR INSTALLATION AND REMOVAL WHEN NO LONGER REQUIRED SHALL BE INCIDENTAL TO ITEM 204.25 "STRUCTURE EXCAVATION".

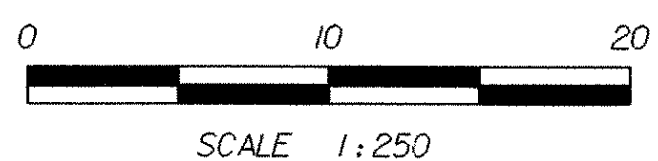


INSTALL EROSION MATTING  
 STA 1+005LT/RT - STA 1+009.5LT/RT  
 STA 1+020.75RT - STA 1+027RT  
 STA 1+022LT - STA 1+027.5LT

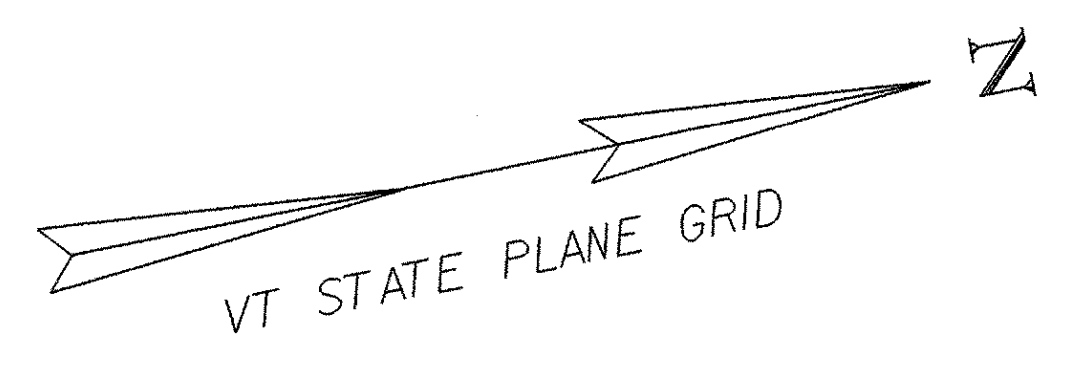
LEGEND	
	STONE FILL
	SAND BAGS
	SILT FENCE
	PROJECT DEMARCATION FENCE
	RIPARIAN BUFFER ZONE
	EROSION CONTROL MATTING
	SEED AND MULCH

**DATUM**  
 VERTICAL NAVD 88  
 HORIZONTAL NAD 83/92

**EROSION PREVENTION AND SEDIMENT CONTROL**



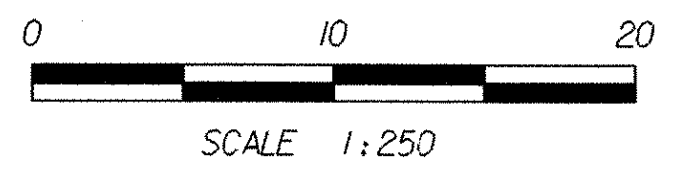
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IPARM FILE NAME: sj027ero.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: M.FESSEL
SQUAD LEADER: C. P. WILLIAMS	SHEET: 25 OF 34
EROSION PREVENTION AND SEDIMENT CONTROL	



APPROXIMATE AERIAL RELOCATION BY  
WASHINGTON ELECTRIC COOPERATIVE  
AND BELL ATLANTIC NEW ENGLAND



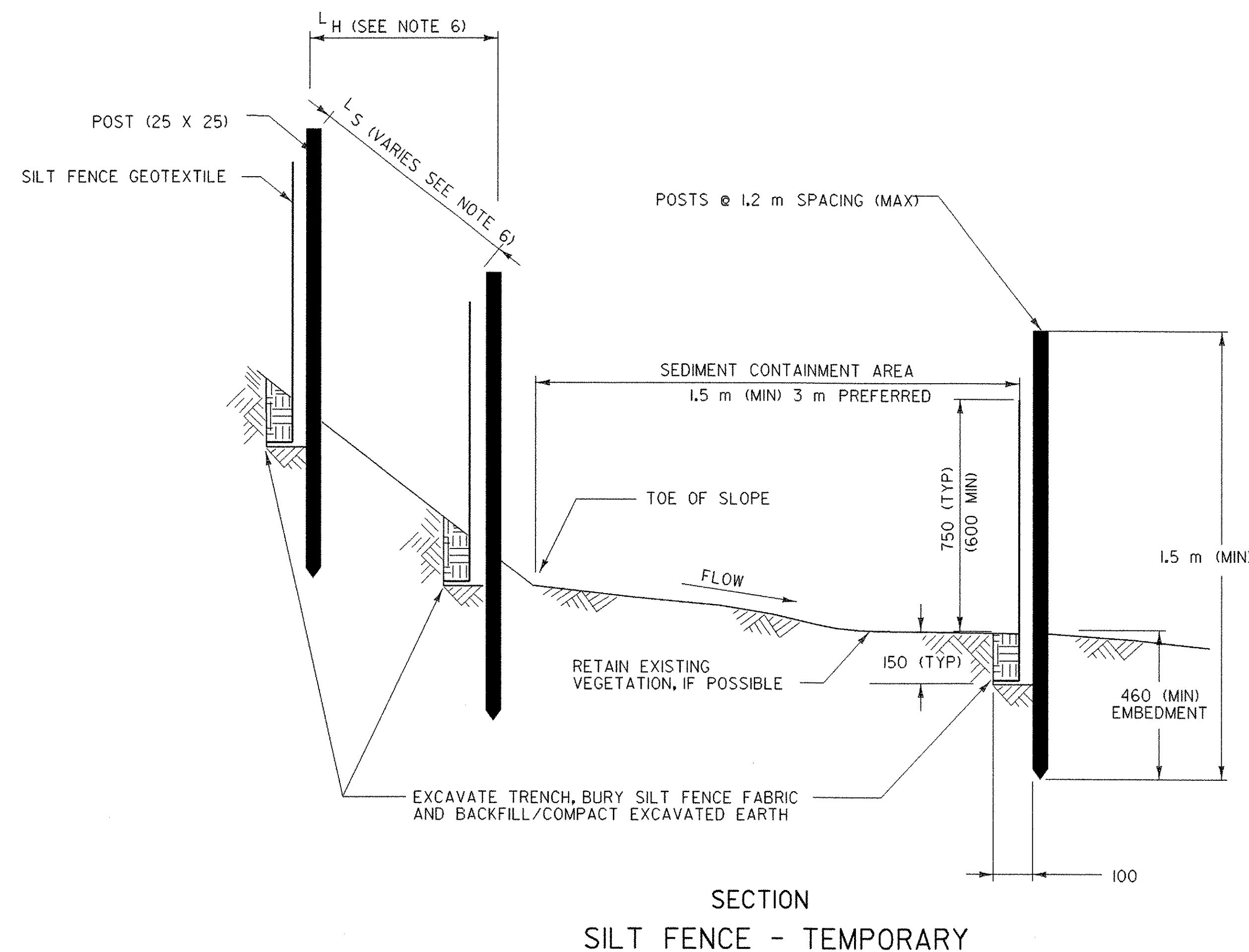
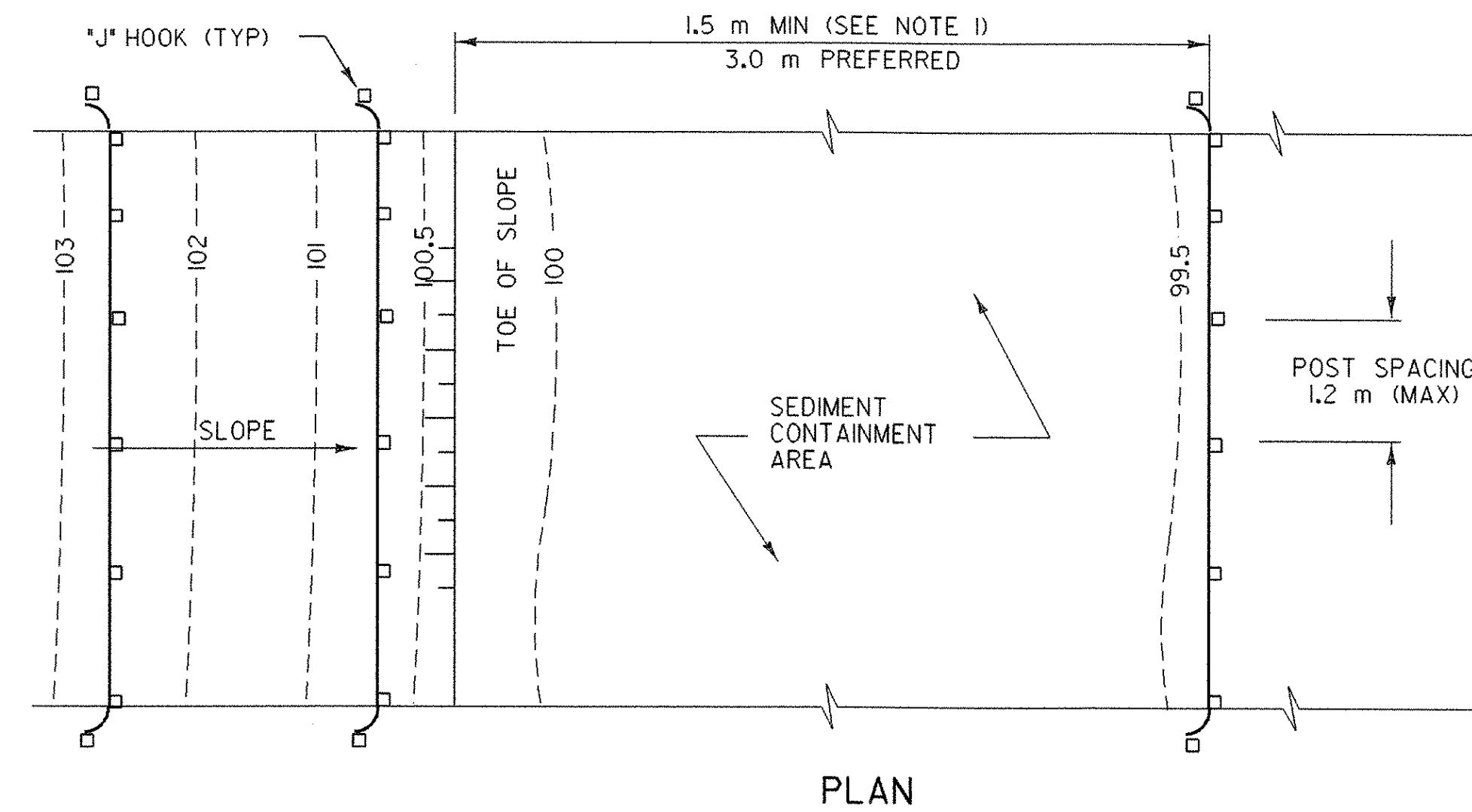
**FINAL CONDITIONS**



<b>DATUM</b>	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83/92

PROJECT: <b>VERSHIRE</b>	PROJECT NO.: BRO 1444 (32)
DESIGN FILE NAME: pw93j027/sj027bdr_ero.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027fincon.i	SURVEY DATE: 11/94
SURVEYED BY: R. GILMAN	DRAWN BY: M.FESSEL
SQUAD LEADER: C. P. WILLIAMS	SHEET: 26 OF 34
FINAL CONDITIONS	

### SILT FENCE



#### APPLICATION NOTES:

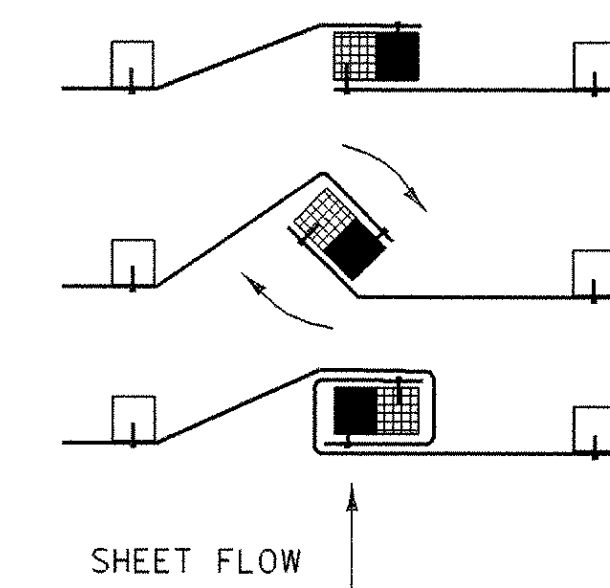
- A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
- C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

#### GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 1.5 m BEYOND TOE OF SLOPE, 3 m PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 150 mm BELOW GROUND, AND KEYED IN 100 mm. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 30 m OF SILT FENCE SHALL BE 0.1 Ha.
6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) m	HORIZONTAL LENGTH (LH) m
3 : 1	25	24
4 : 1	40	39
5 : 1	60	60
> 5 : 1	80	80

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

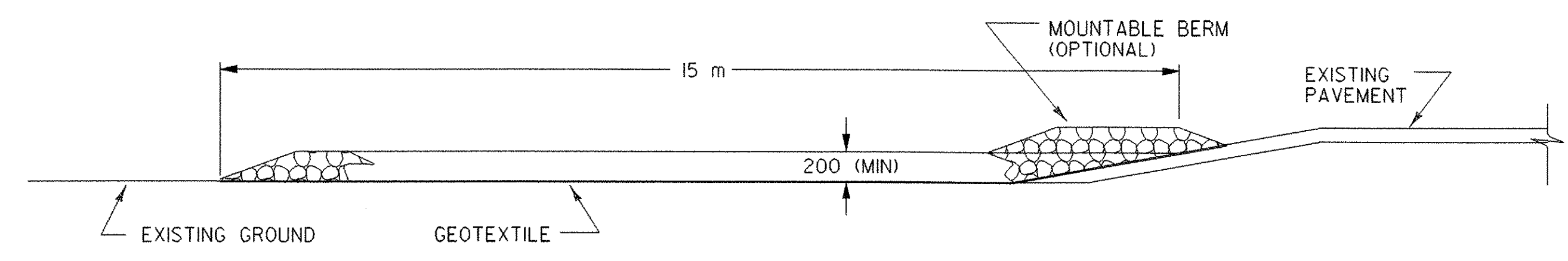
## EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE

# EPSC-1M

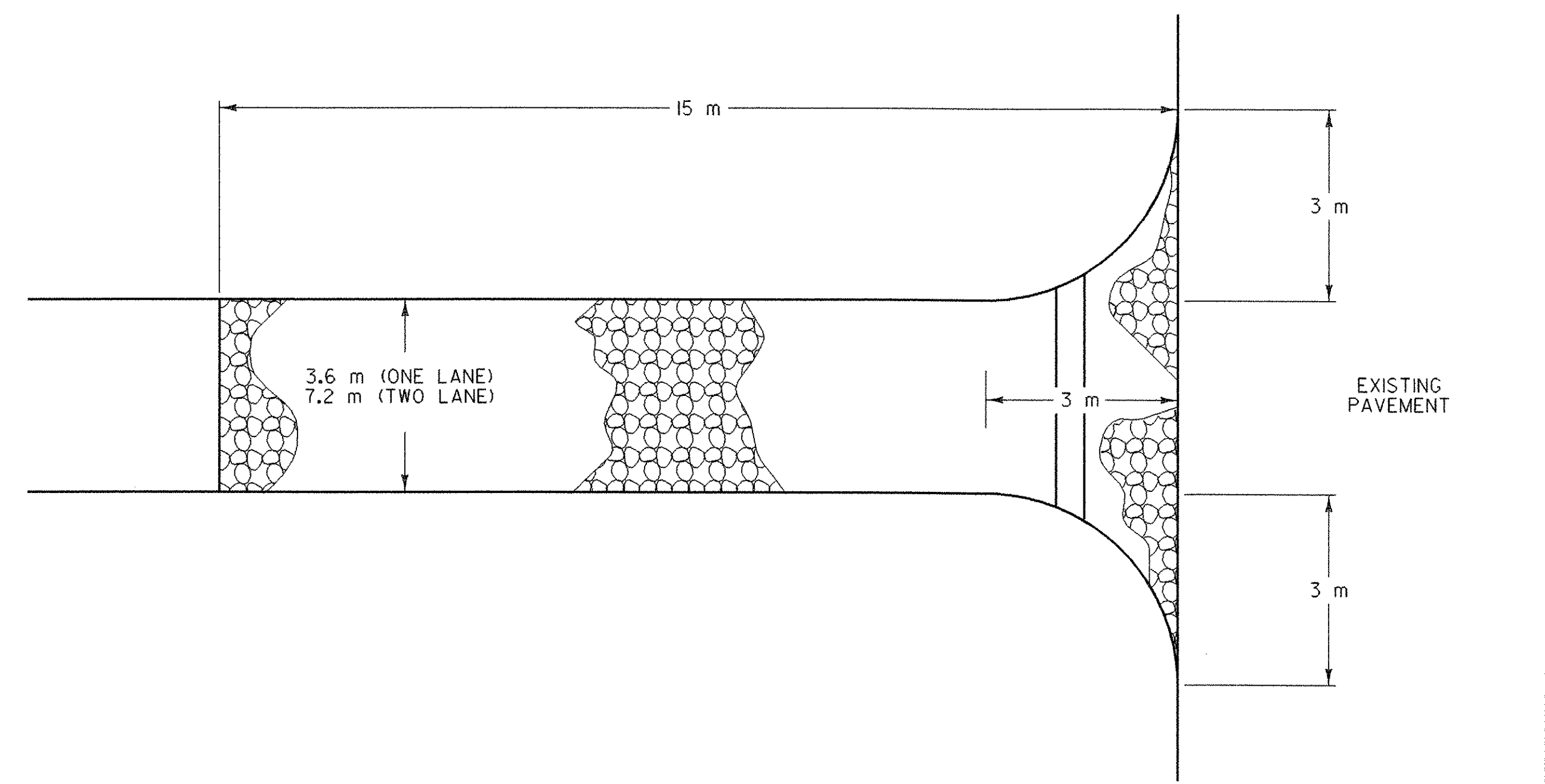
PROJECT: VERSHIRE	PROJECT NO. : BRO 1444 (32)
DESIGN FILE NAME: pw93j027/s93j027ecnotes.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027epsclm.i	SURVEY DATE: 3/93
SURVEYED BY: R. MOREAU	DRAWN BY:
SQUAD LEADER: C. P. WILLIAMS	SHEET: 27 OF 34
SILT FENCE	



### STABILIZED CONSTRUCTION ENTRANCE



TYPICAL CONSTRUCTION ENTRANCE PROFILE  
(CUT AND DITCH SECTIONS)



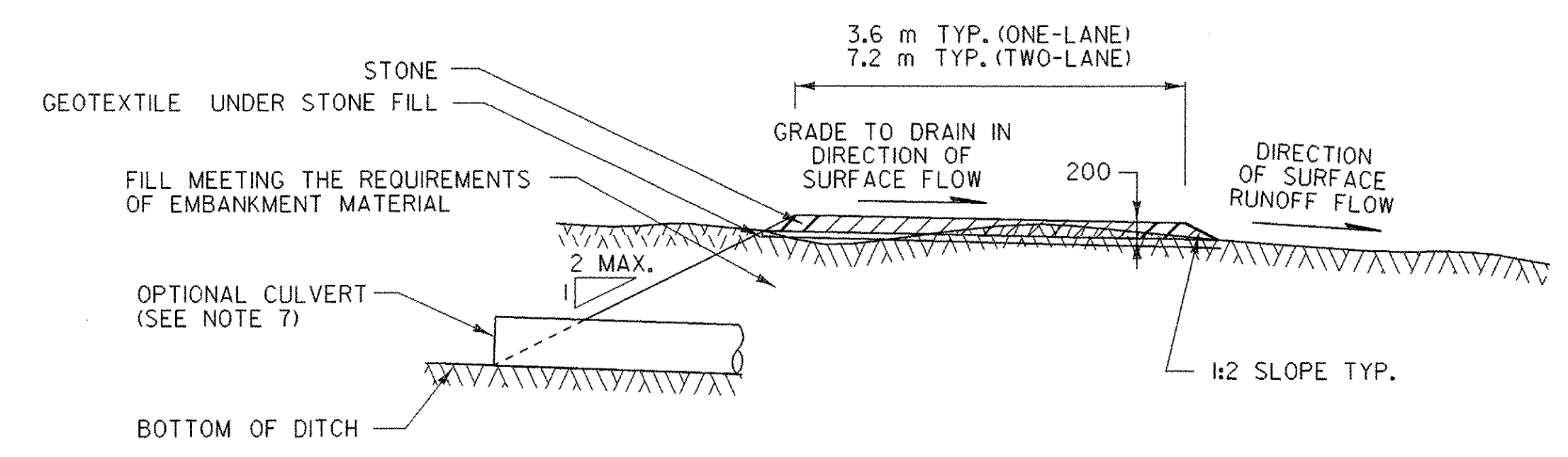
TYPICAL CONSTRUCTION ENTRANCE PLAN  
(CUT/DITCH AND FILL SECTIONS)

#### APPLICATION NOTES:

A. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

#### GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 50 mm AND 100 mm.
2. LENGTH - 15 m (MIN)
3. THICKNESS - 200 mm (MIN)
4. WIDTH - 3.6 m (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



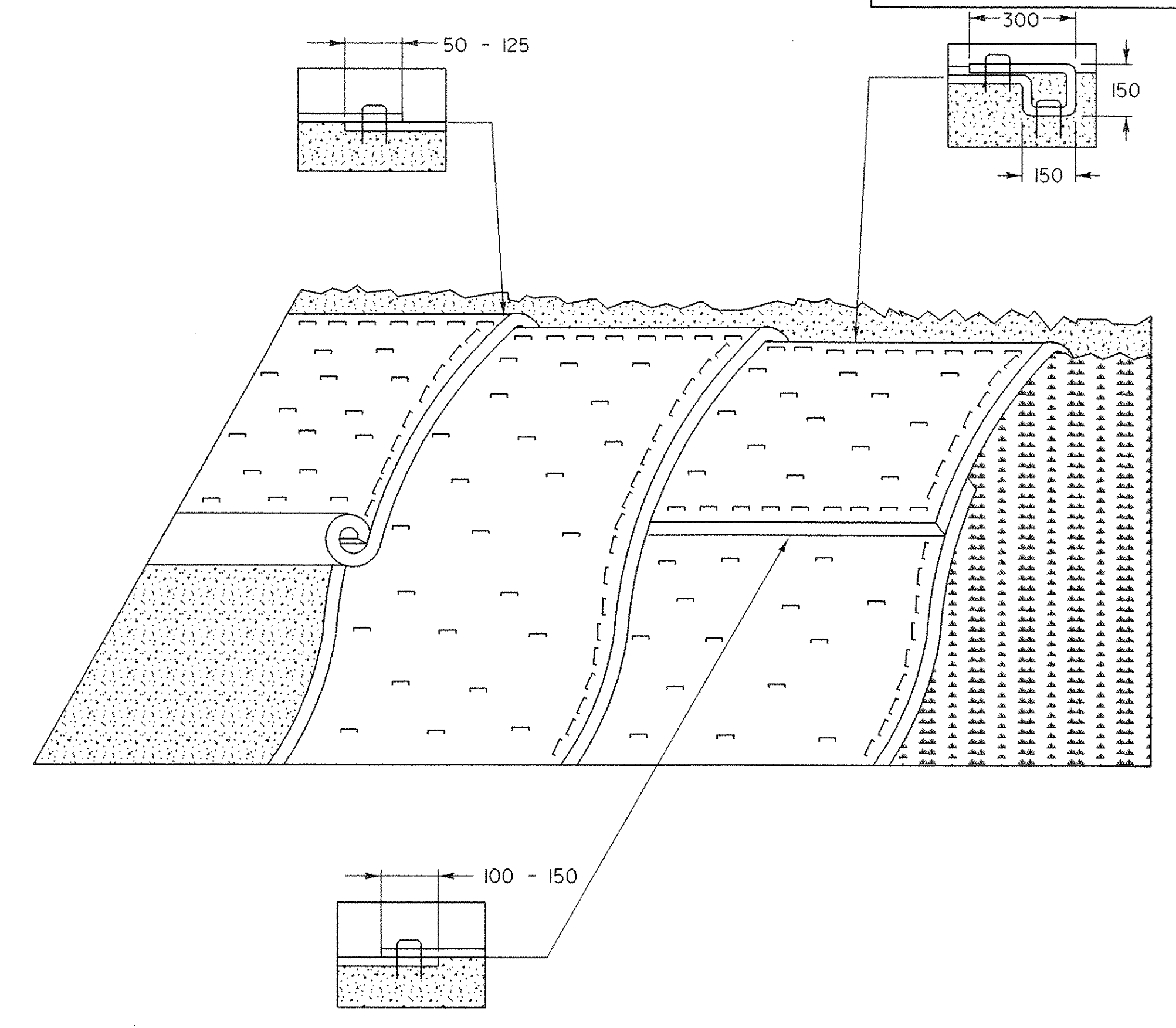
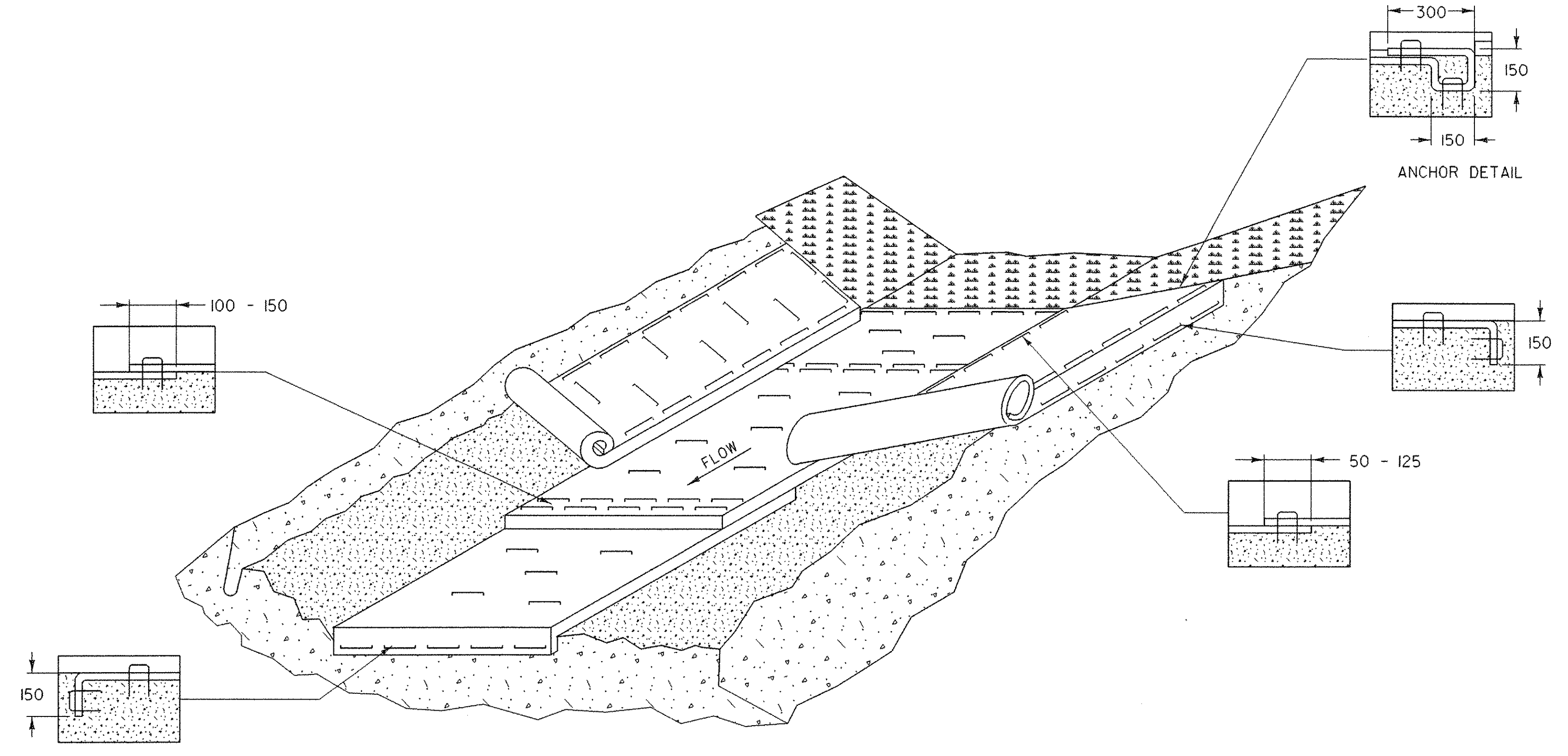
TYPICAL CONSTRUCTION ENTRANCE SECTION

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

## EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

### EPSC-4M

PROJECT: VERSHIRE	PROJECT NO.: BRO 1444 (32)
DESIGN FILE NAME: pw93j027/s93j027ecnotes.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027epsc4m.i	SURVEY DATE: 3/93
SURVEYED BY: R. MOREAU	DRAWN BY:
SQUAD LEADER: C. P. WILLIAMS	SHEET: 29 OF 34
STABILIZED CONSTRUCTION ENTRANCE	



**EROSION PROTECTION FOR DITCHES**

**APPLICATION NOTES:**

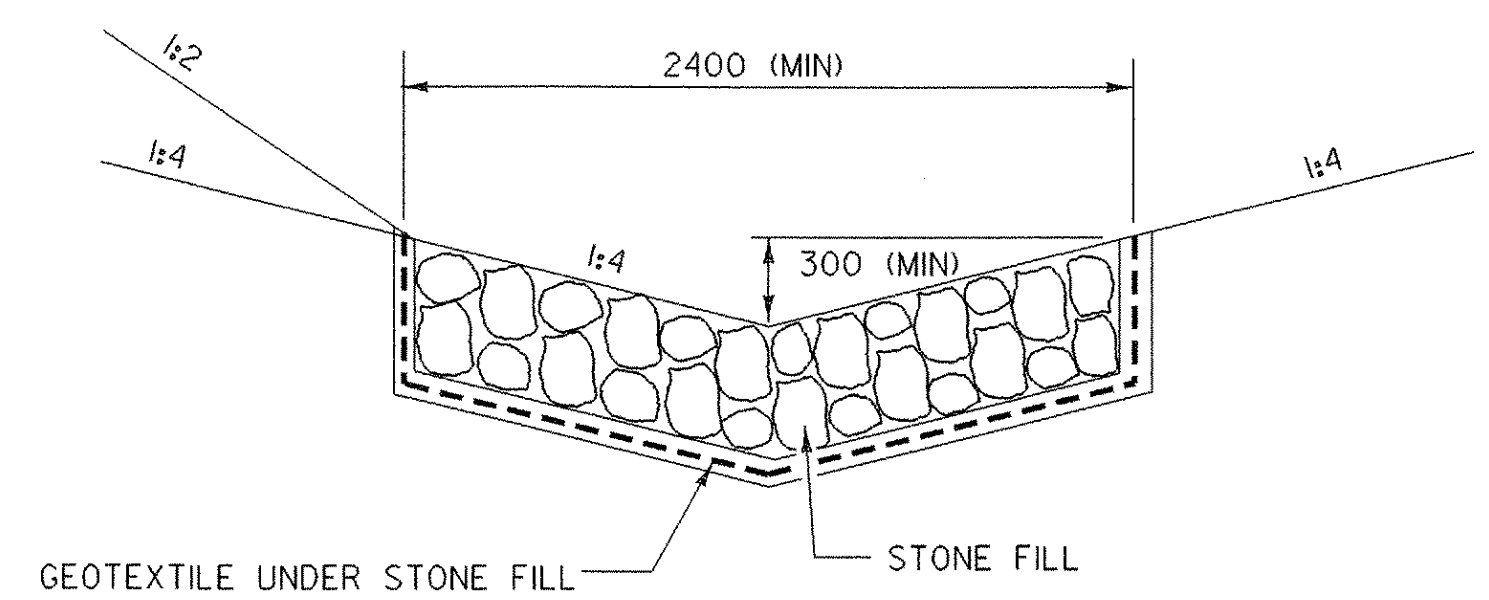
- A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.
- B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

DITCH AND CHANNEL PROTECTION	
SLOPE	LINING
< 1%	GRASS
1% TO 4 %	EROSION MATTING
4 % TO 10 %	STONE FILL, TYPE I
> 10 %	STONE FILL, TYPE II

STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	0.3 m
TYPE II	0.6 m

**GENERAL NOTES:**

1. WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
2. GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
3. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
4. INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
5. INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
6. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
9. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
10. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
11. PAYMENT FOR MAINTAINING EROSION CONTROL MATTING SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



**TEMPORARY  
STONE LINED  
DITCH**

**EROSION PREVENTION FOR SIDE SLOPES**

**APPLICATION NOTES:**

- A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION
- B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:
  - SIDE SLOPES > 3:1 (H:V)
  - AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
  - WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

**GENERAL NOTES:**

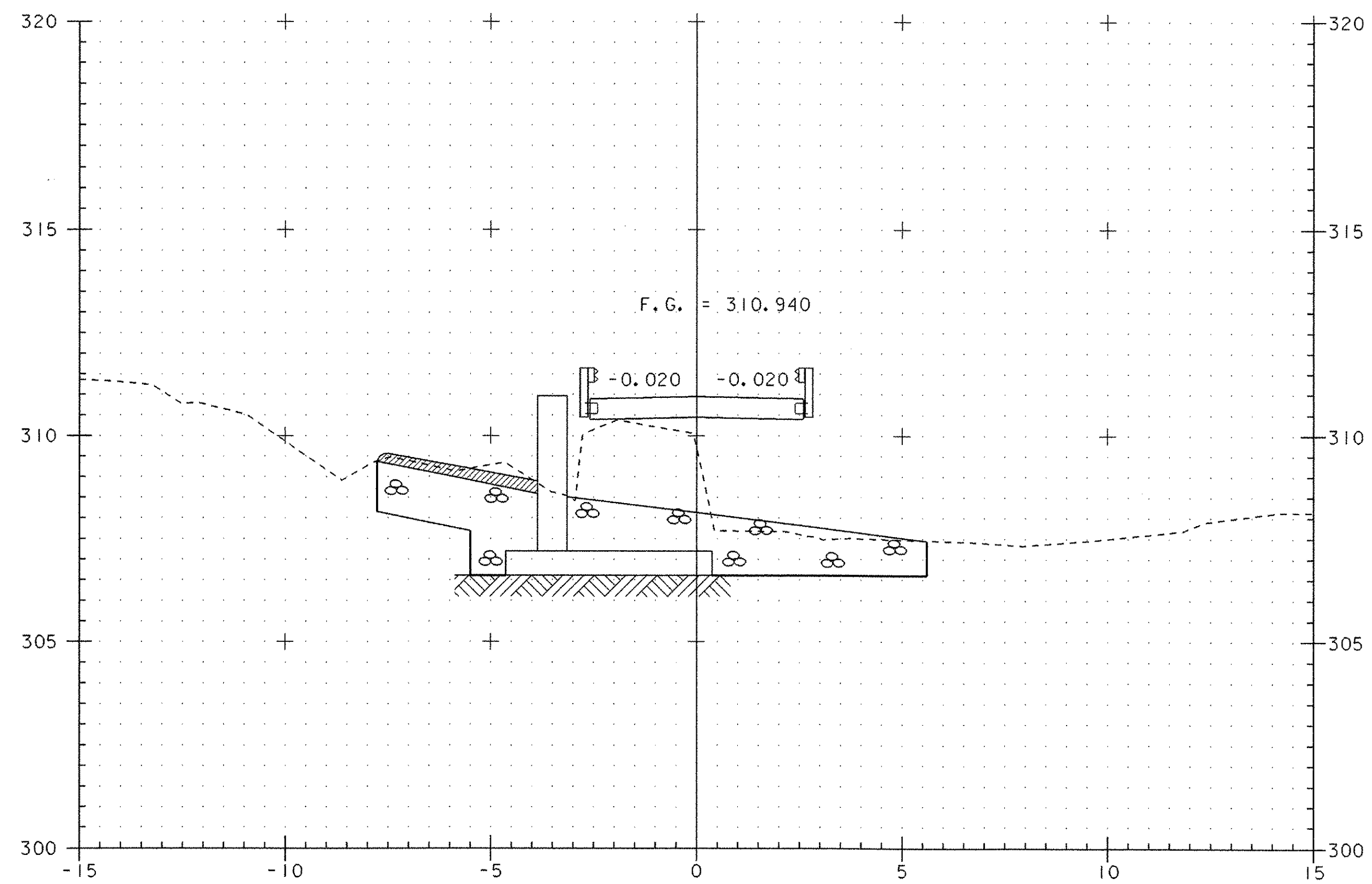
1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
5. OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
6. OVERLAP ADJACENT MATTING AS SHOWN.
7. CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
9. MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
10. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
11. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING EROSION CONTROL MATTING SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

**EROSION PREVENTION &  
SEDIMENT CONTROL DETAILS  
DITCH & SIDE SLOPE PROTECTION**

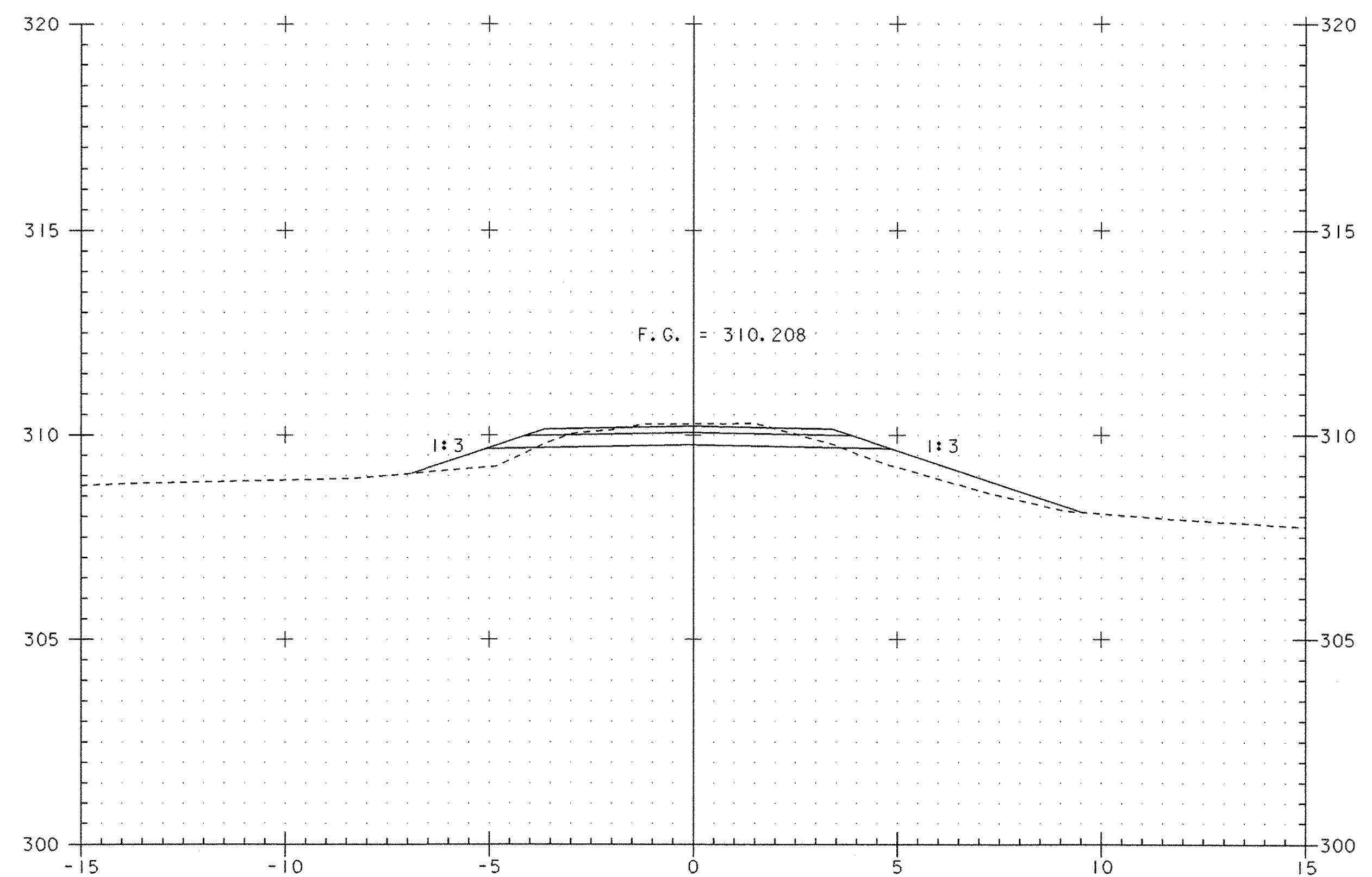
**EPSC-5M**

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

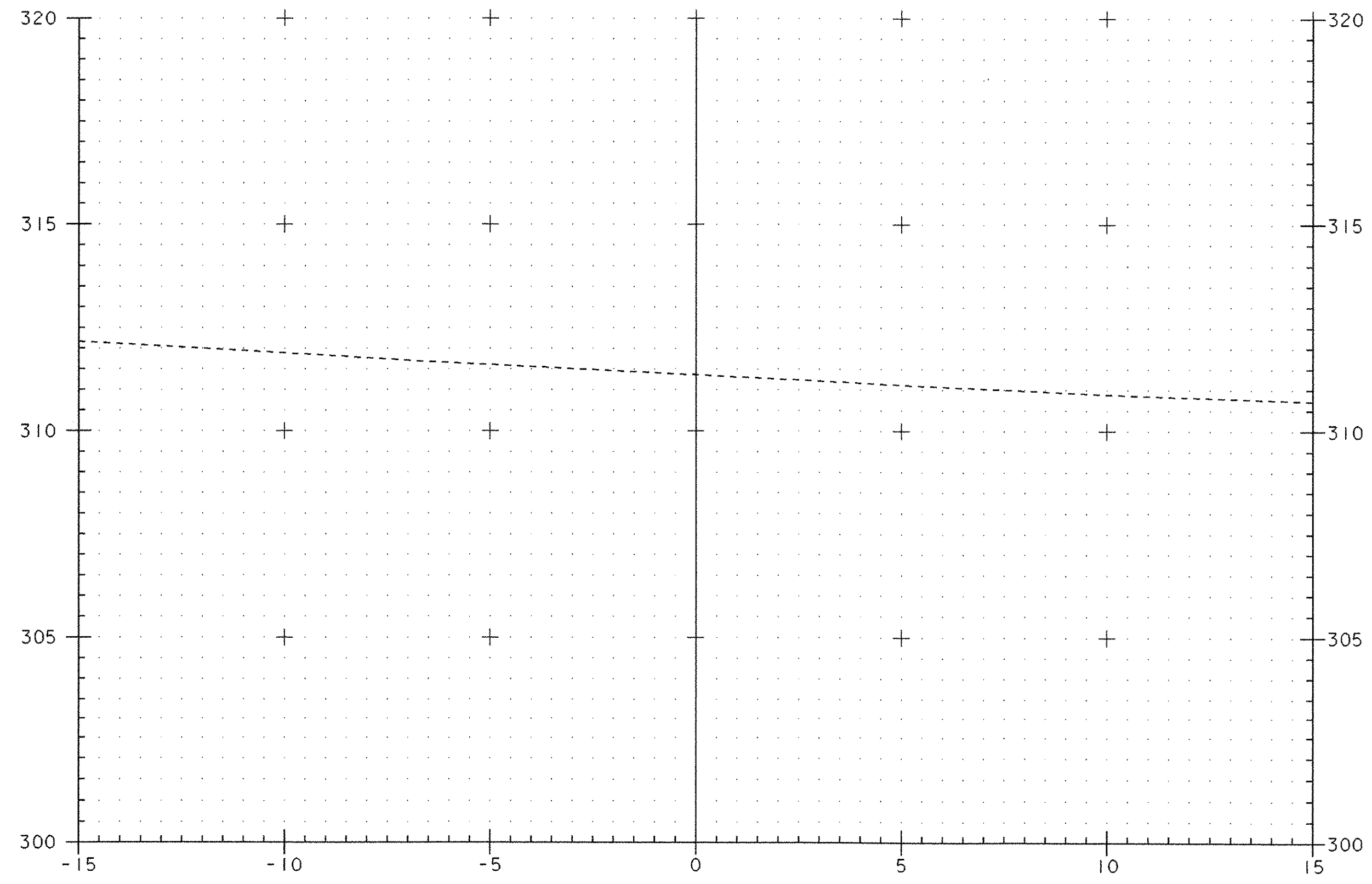
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IPARM FILE NAME: sj027epsc5m.l	SURVEY DATE: 3/93
SURVEYED BY: R. MOREAU	DRAWN BY:
SQUAD LEADER: C. P. WILLIAMS	SHEET: 30 OF 34
DITCH & SIDE SLOPE PROTECTION	



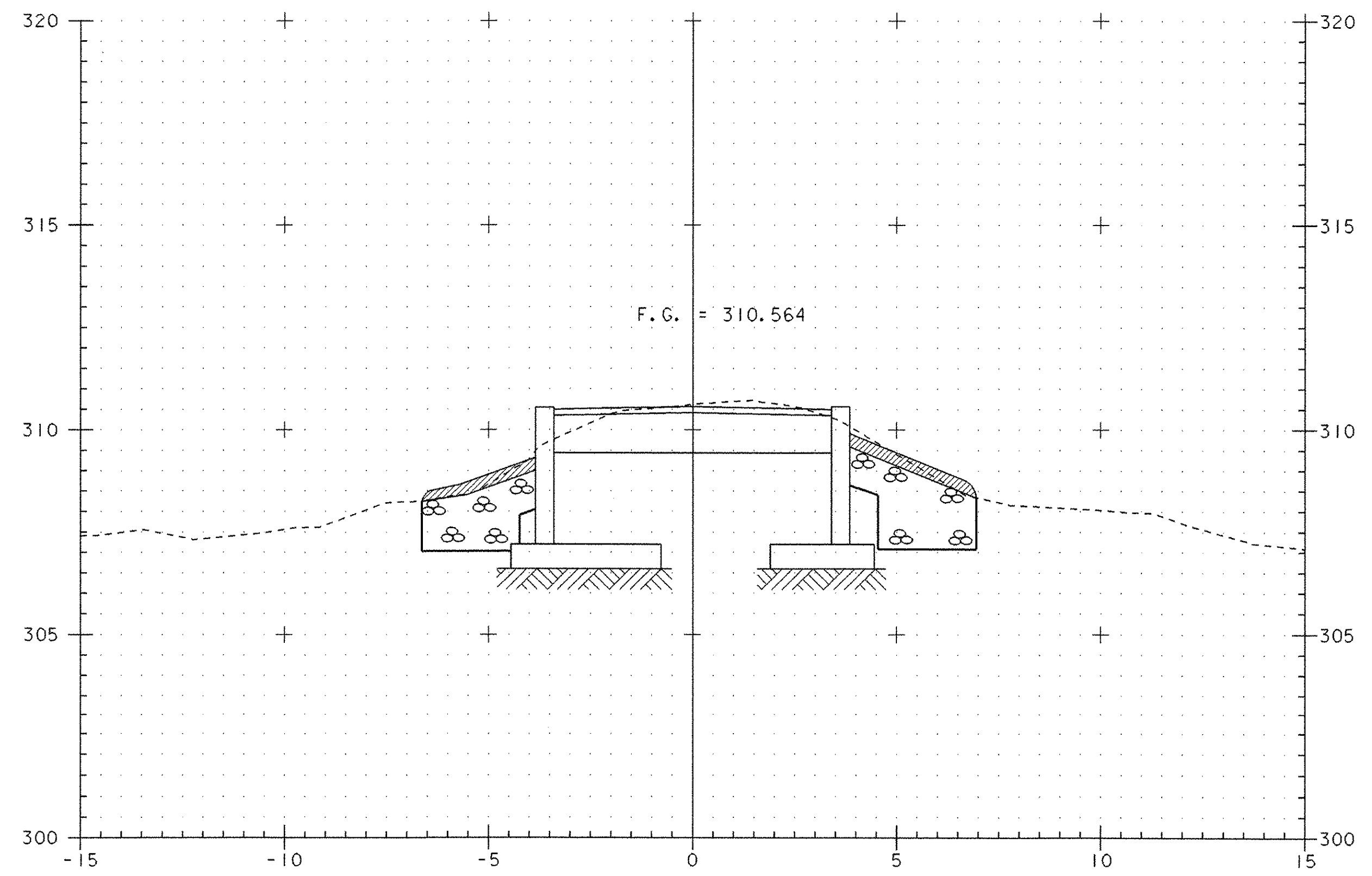
1+010  
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BEGIN BRIDGE  
STA 1+009.000



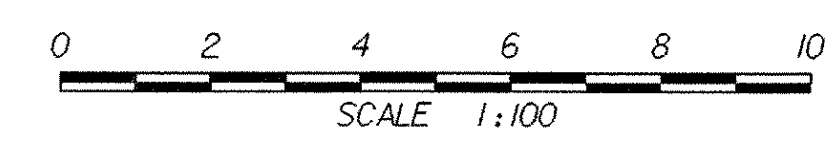
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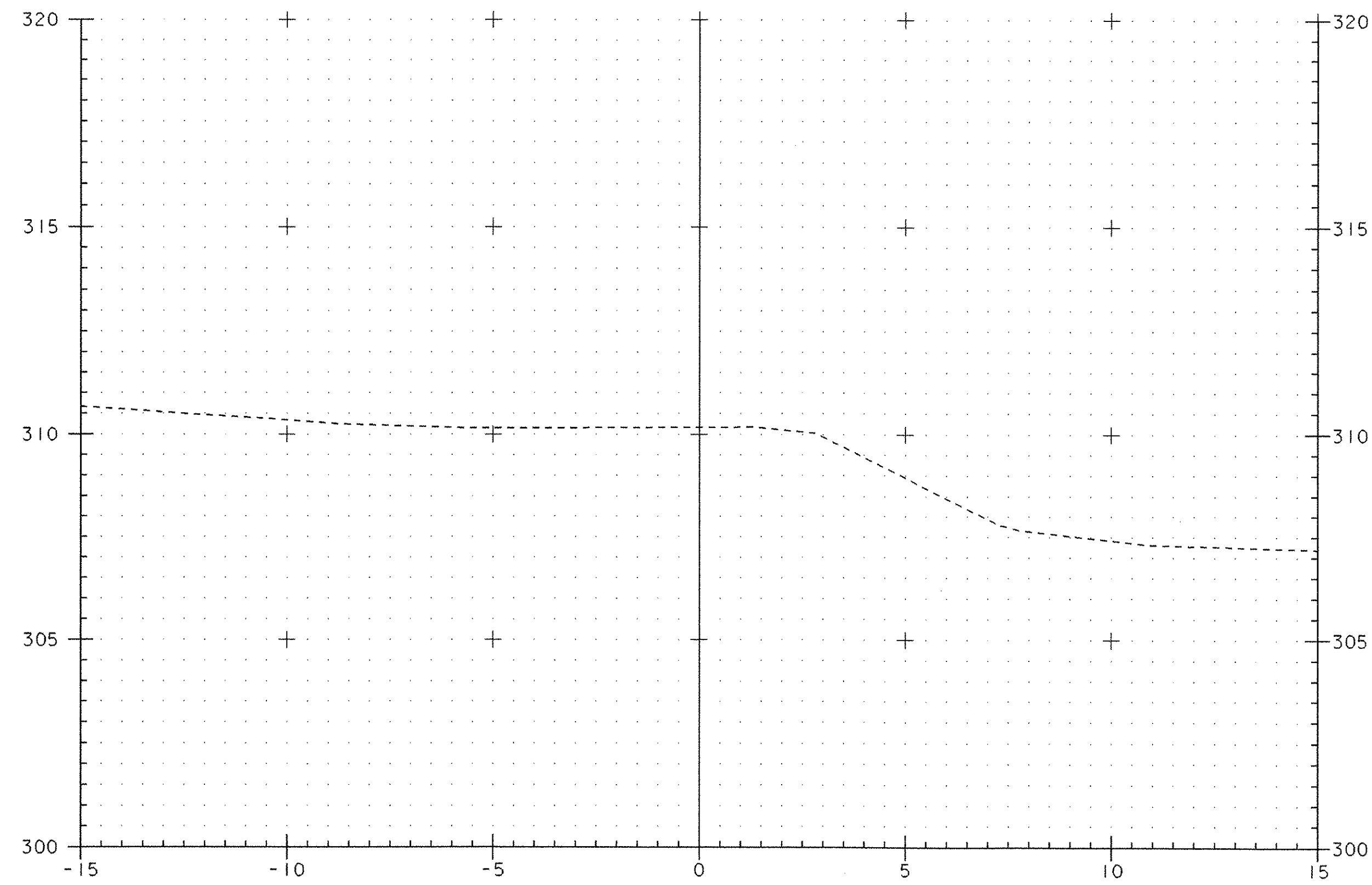
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(EDGE VT RTE 113)



1+020  
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STA 1+018.850

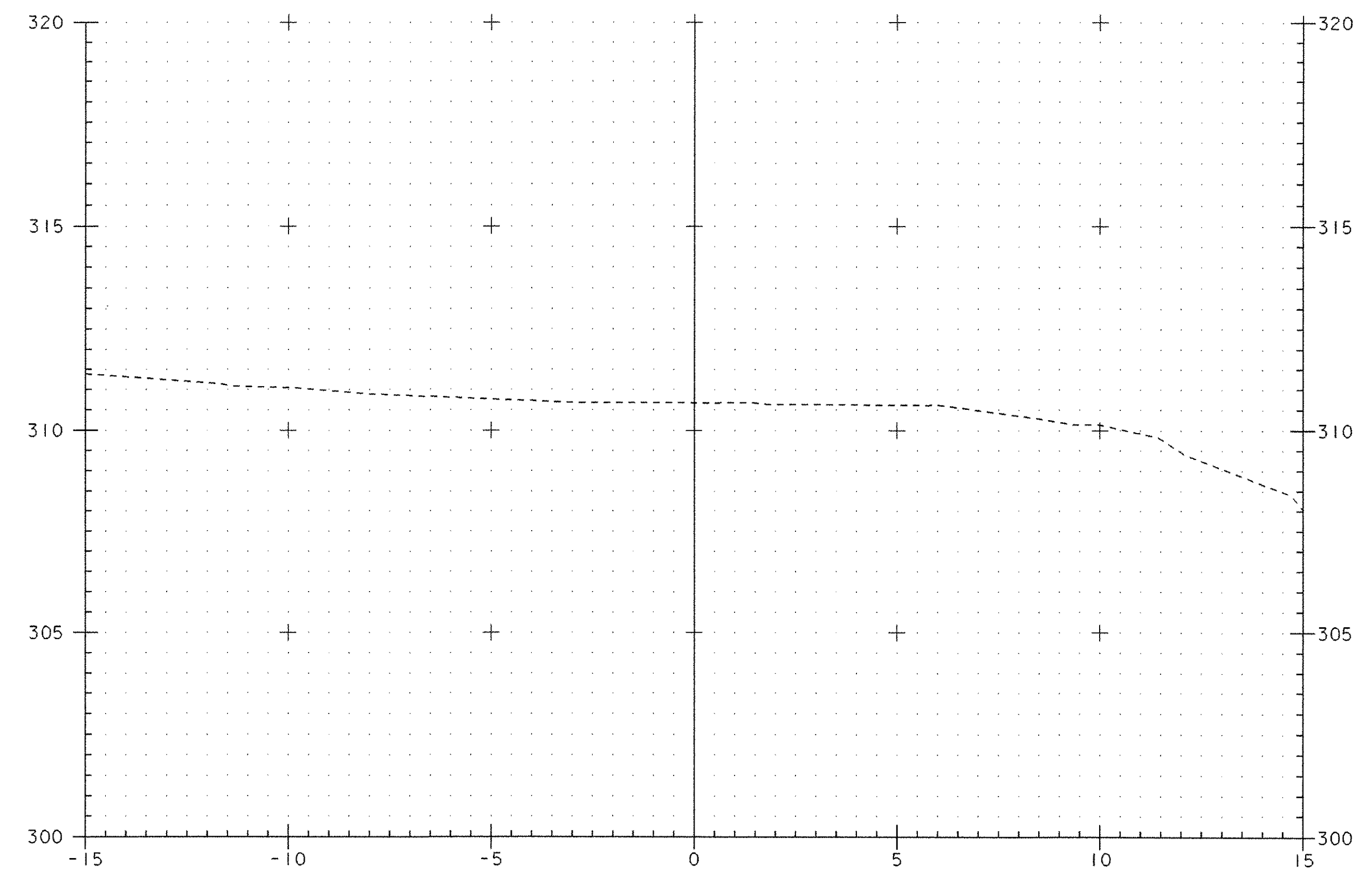


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MAINLINE CROSS SECTIONS	
SECTION 1+000.000 THROUGH 1+030.000	SHEET: 31 OF 34

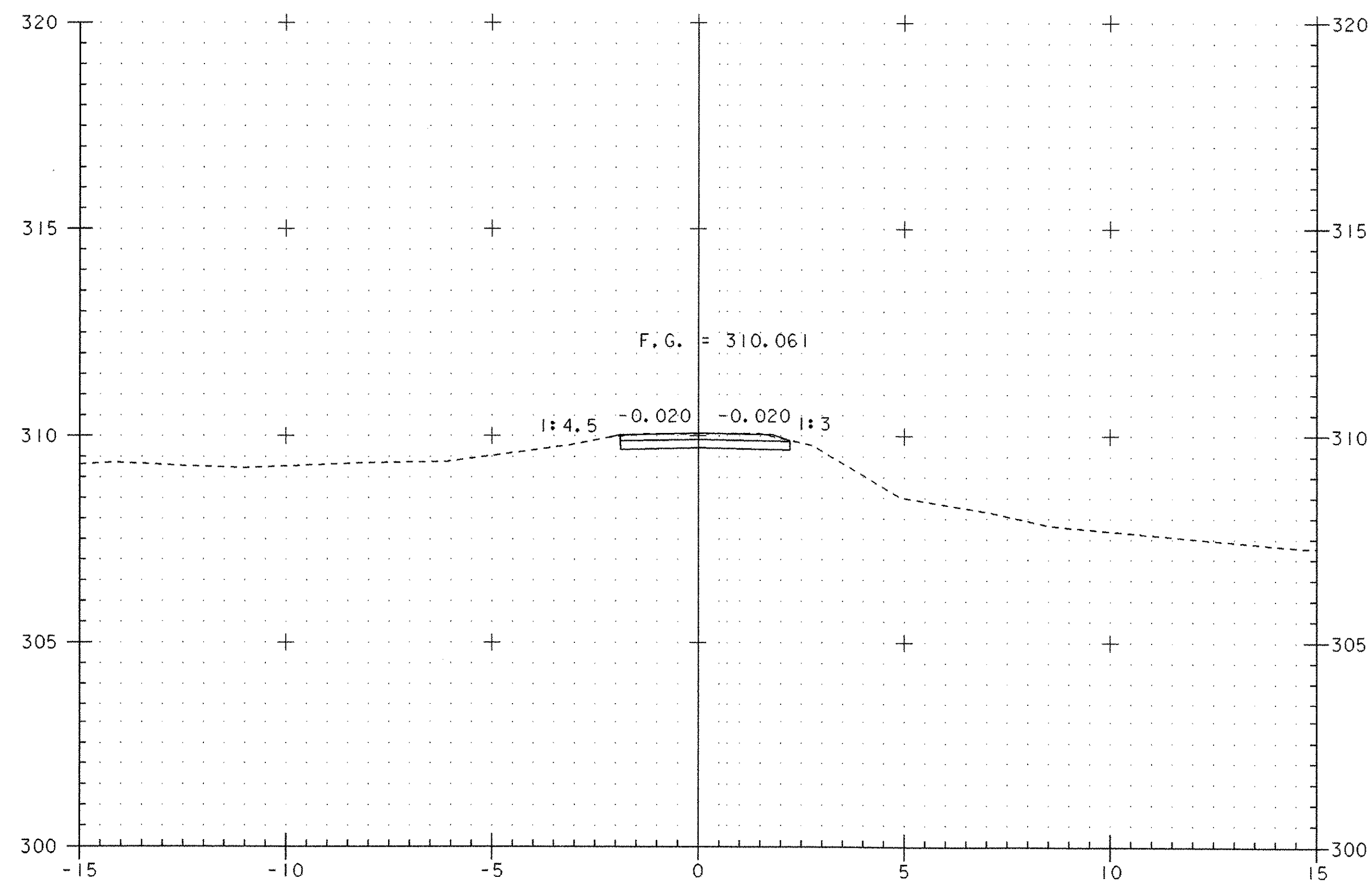


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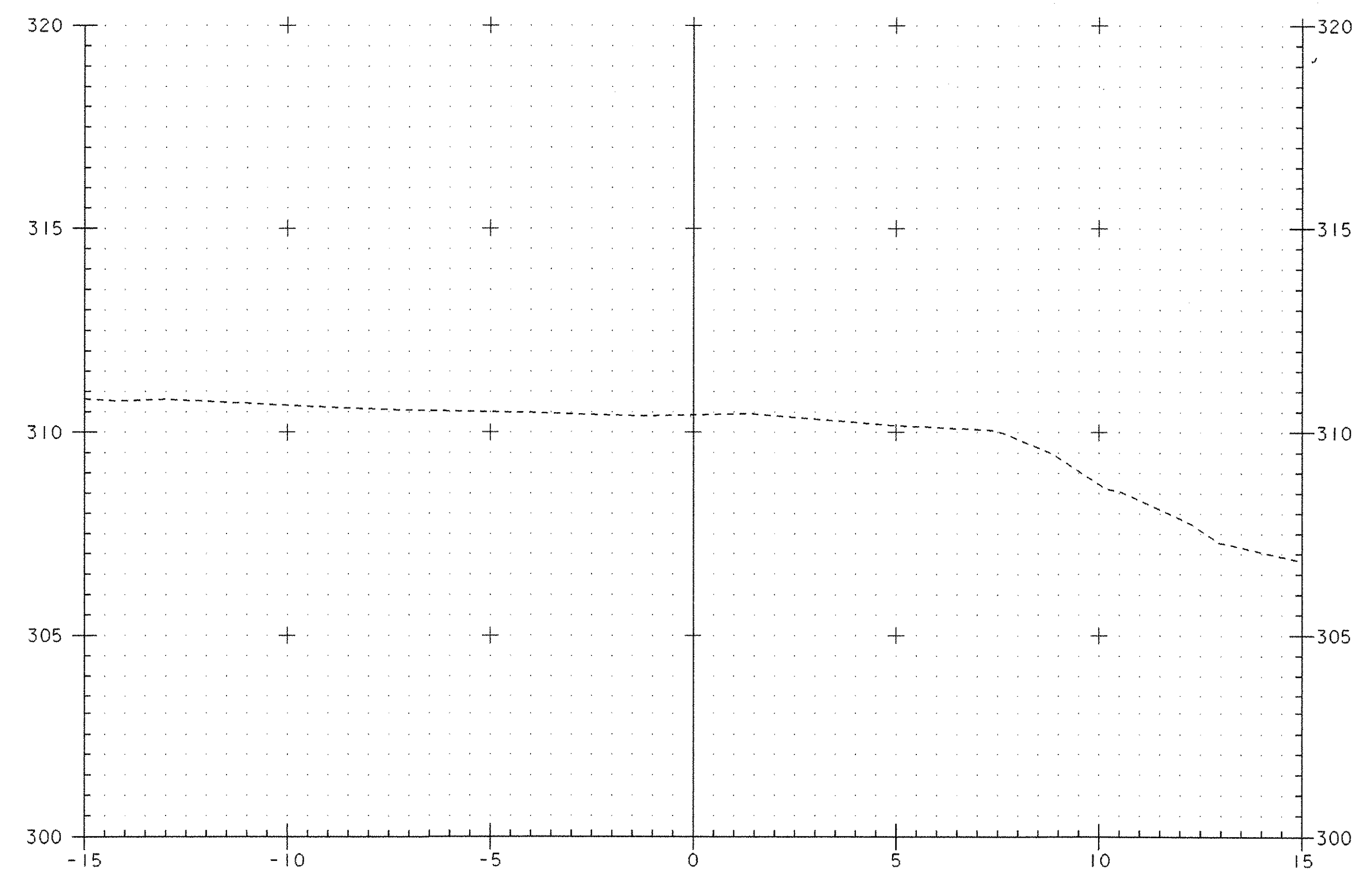
END APPROACH  
STA I+045.000



I+065



I+040



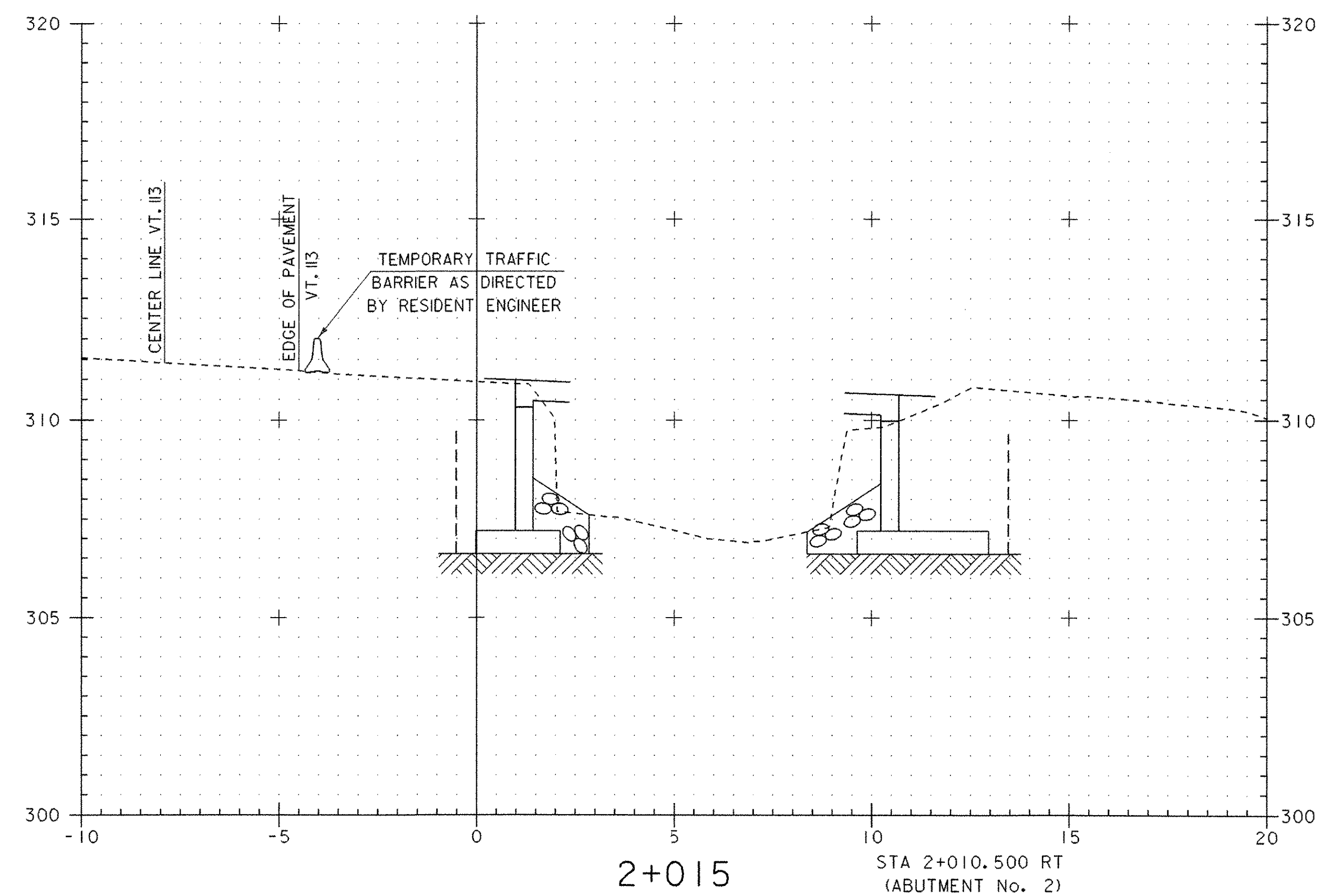
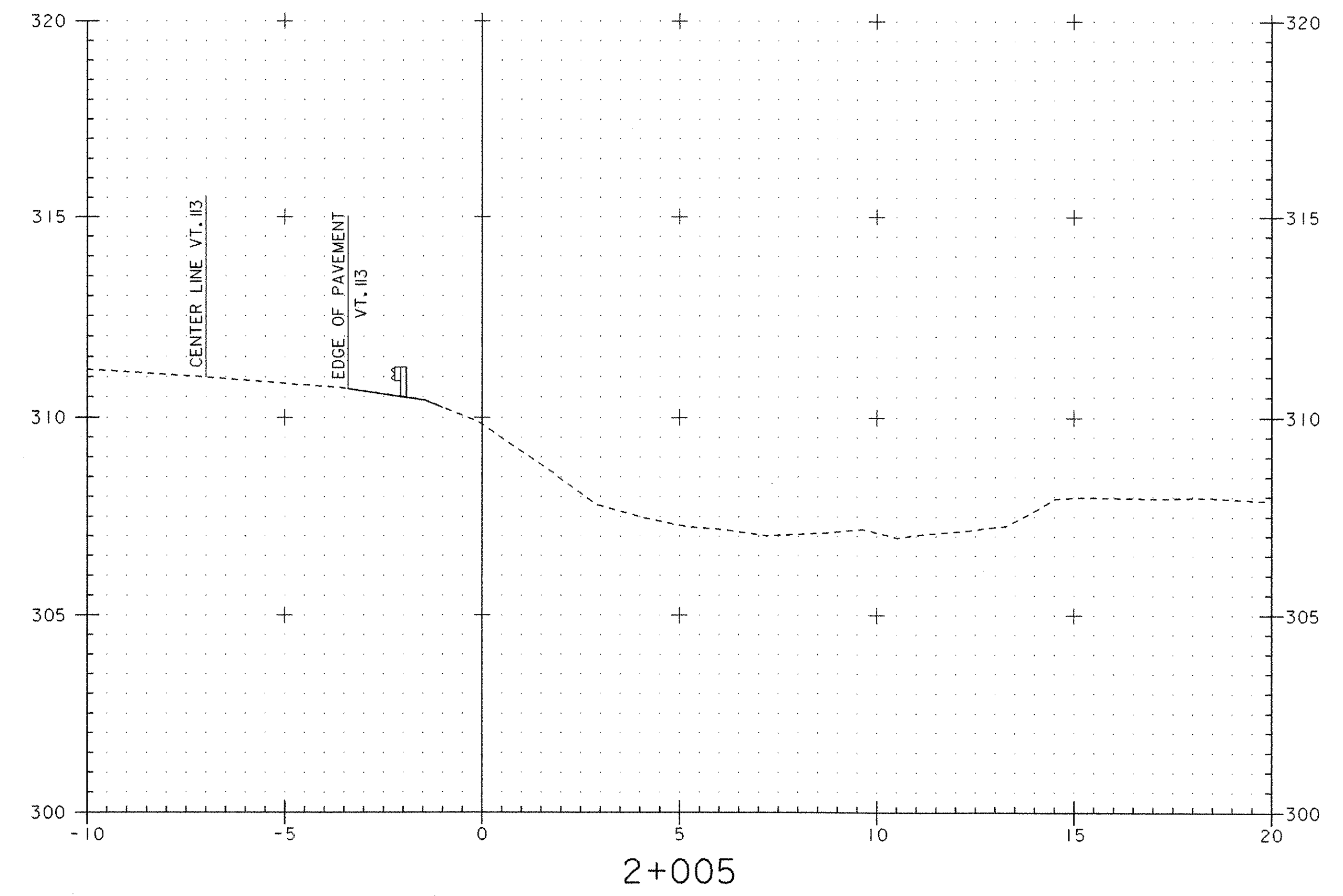
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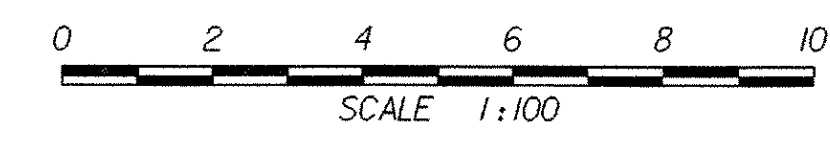
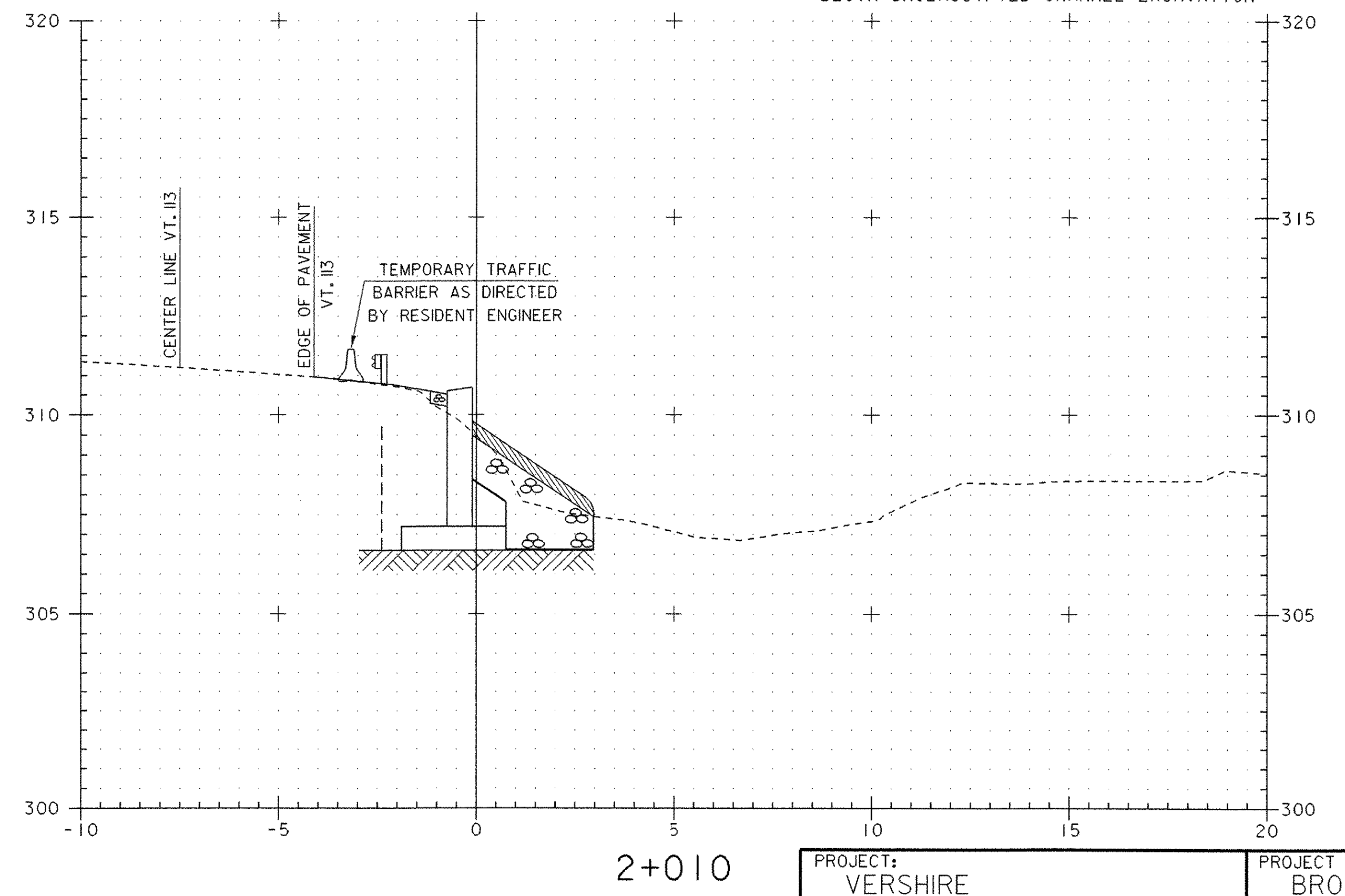
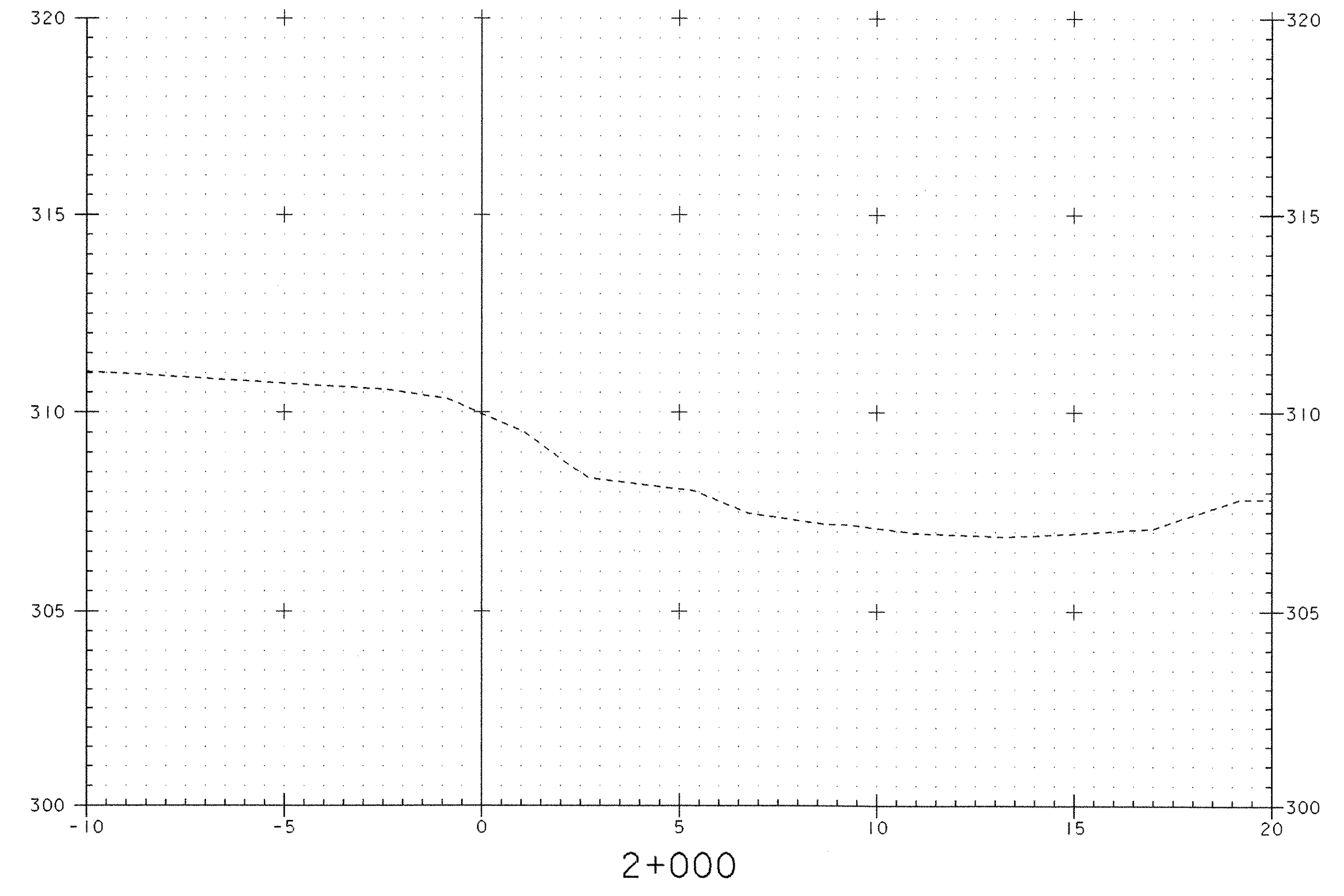
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MAINLINE CROSS SECTIONS	
SECTION I+040.000 THROUGH I+065.000	SHEET: 32 OF 34

STA 2+006.000 LT  
(ABUTMENT No. 1)

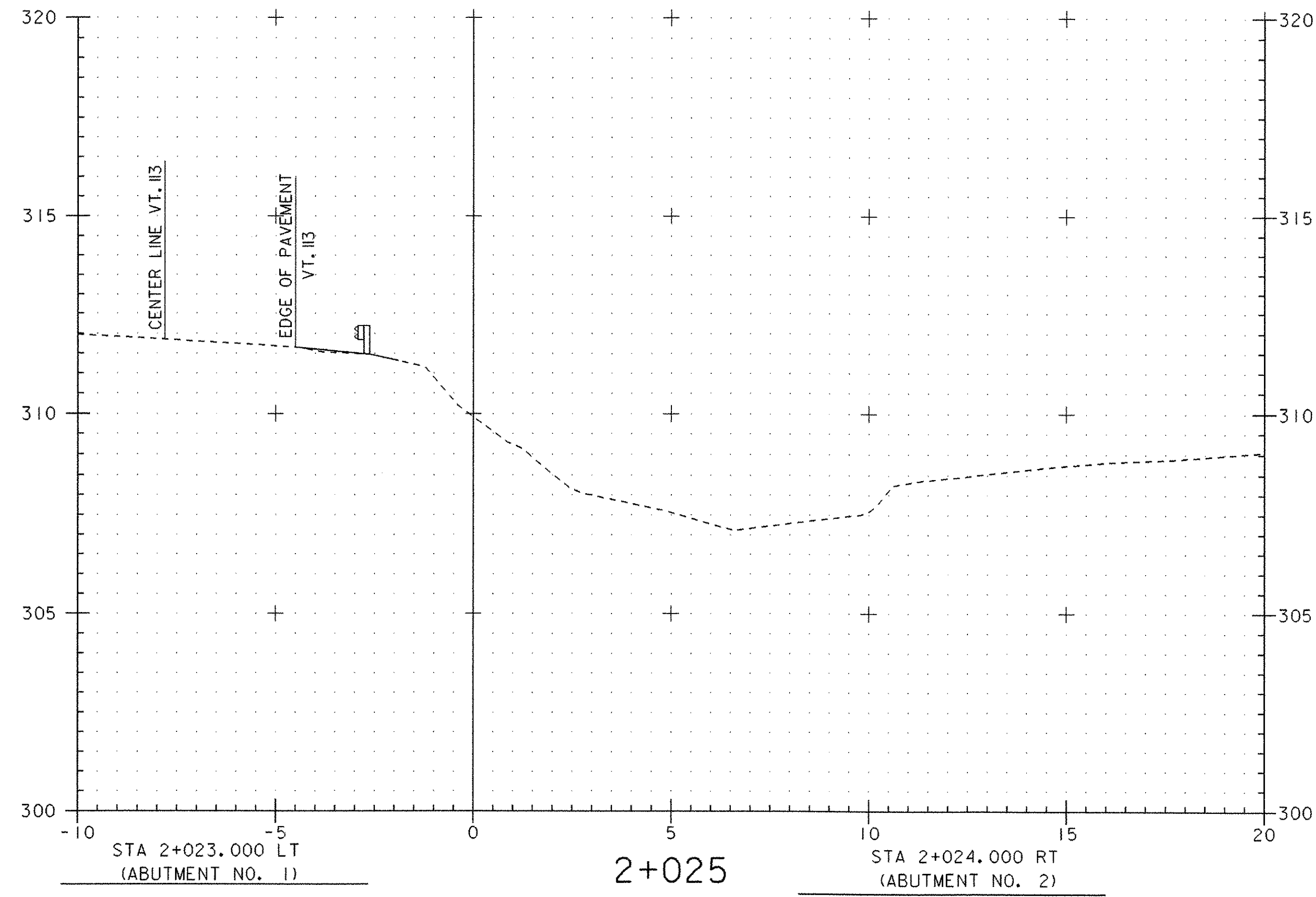
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BEGIN GEOTEXTILE UNDER STONE FILL  
BEGIN GRUBBING MATERIAL  
BEGIN UNCLASSIFIED CHANNEL EXCAVATION



STA 2+010.500 RT  
(ABUTMENT No. 2)  
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BEGIN GEOTEXTILE UNDER STONE FILL  
BEGIN GRUBBING MATERIAL  
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

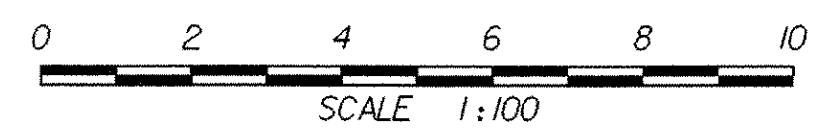
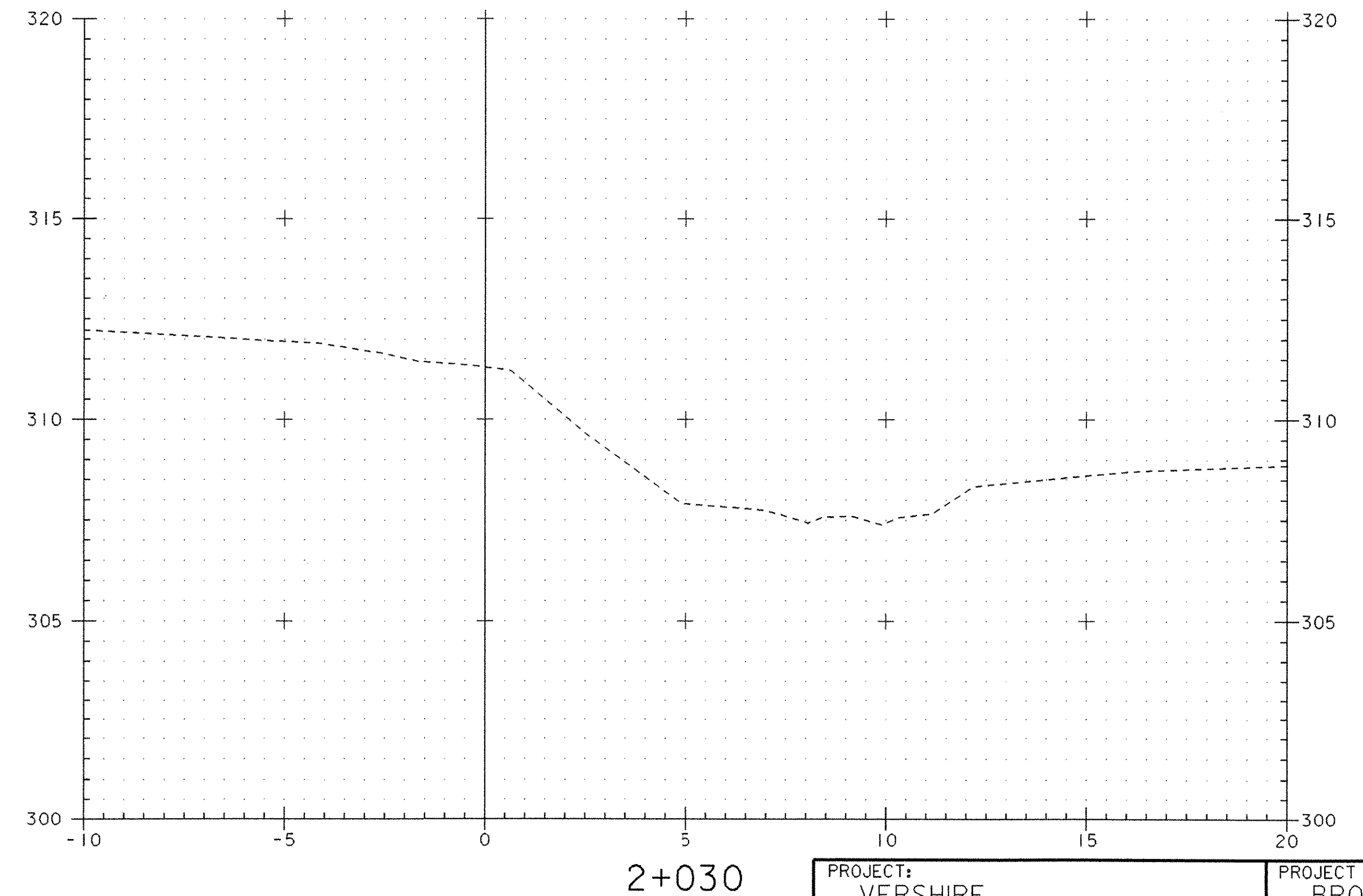
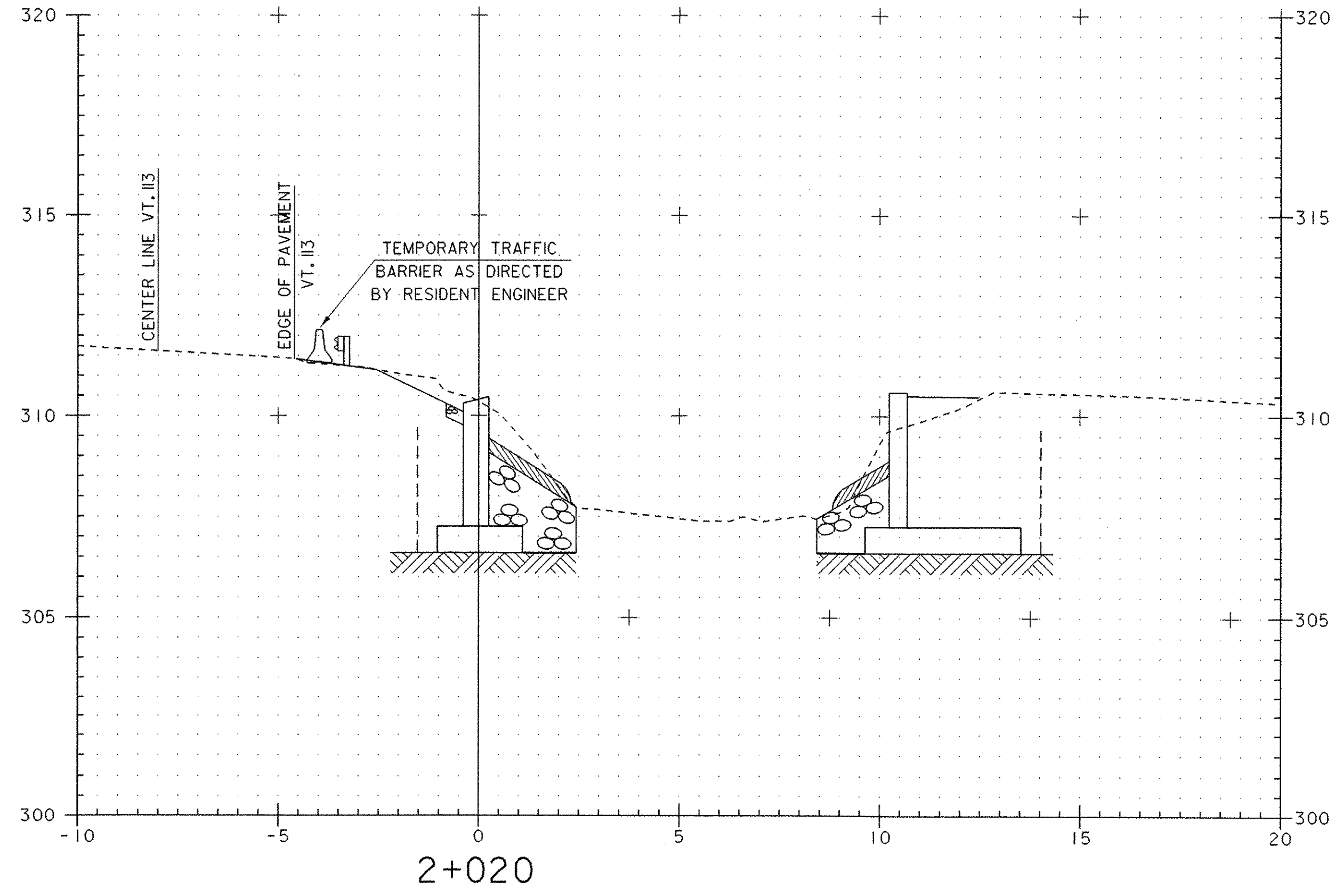


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DESIGN FILE NAME: 93j027/structures/sj027.xsl.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027.chi	
CHANNEL LINE CROSS SECTIONS	
SECTION 2+000.000 THROUGH 2+015.000	SHEET: 33 OF 34



END STONE FILL TYPE IV  
 END GEOTEXTILE UNDER STONE FILL  
 END GRUBBING MATERIAL  
 END UNCLASSIFIED CHANNEL EXCAVATION

END STONE FILL TYPE IV  
 END GEOTEXTILE UNDER STONE FILL  
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PROJECT: VERSHIRE	PROJECT NO.: BRO 1444(32)
DESIGN FILE NAME: 93j027/structures/sj027xsl.dgn	PLOT DATE: 24-FEB-2006
IPARM FILE NAME: sj027ch2.i	
CHANNEL LINE CROSS SECTIONS	
SECTION 2+020.000 THROUGH 2+030.000	SHEET: 34 OF 34