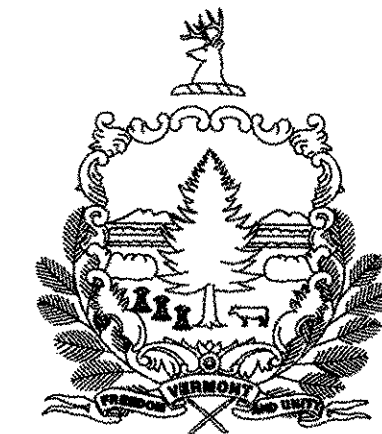


SEE SHEET 2 OF 50 FOR INDEX OF SHEETS AND LIST OF STANDARDS

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT

TOWN OF CHARLESTON

COUNTY OF ORLEANS

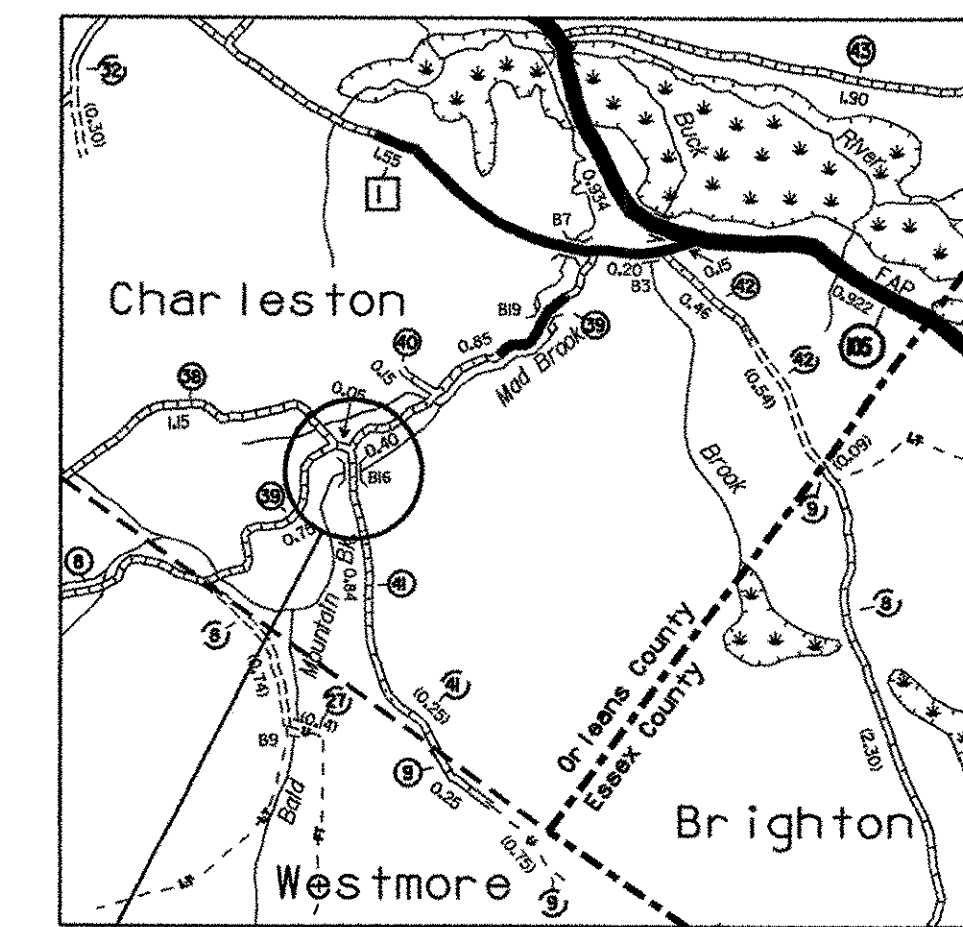
ROUTE NO : TH 41 BRIDGE NO : 16

CLASS 2 TOWN HIGHWAY, MINOR COLLECTOR

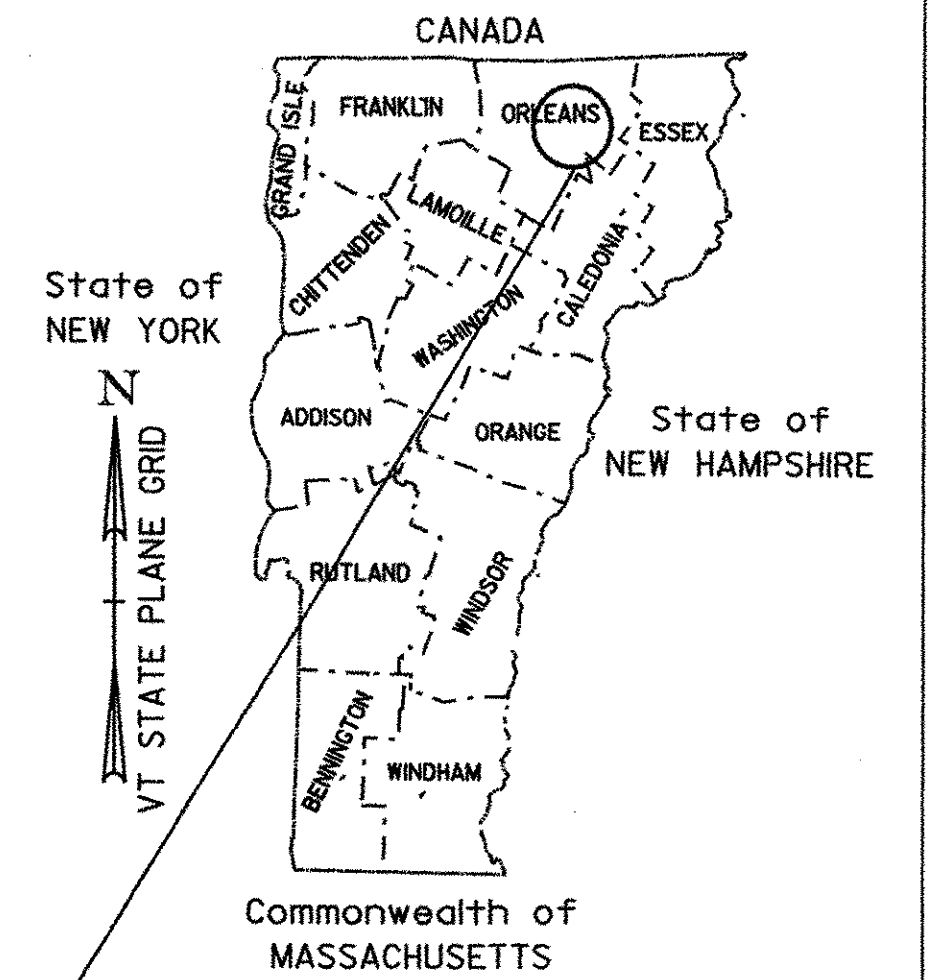
- PROJECT LOCATION : Located in the county of Orleans, town of Charleston on TH 41, bridge 16, over Mad Brook near the intersection of TH 41 and TH 39.

- PROJECT DESCRIPTION : Replacement of existing bridge with a new structure, including associated channel and roadway work.

LENGTH OF STRUCTURE :	17.420 METERS.
LENGTH OF ROADWAY :	42.580 METERS.
LENGTH OF PROJECT :	60.000 METERS.



Project Location
Charleston BRO 1449 (22)



RECORD PLANS

CONTRACTOR: TREMBLAY CONSTRUCTION, LLC - WASHINGTON, VT

RESIDENT ENGINEER: DOUG BUMPS

CONSTRUCTION BEGAN: JUNE 16, 2006

CONSTRUCTION COMPLETE: OCTOBER 25, 2006

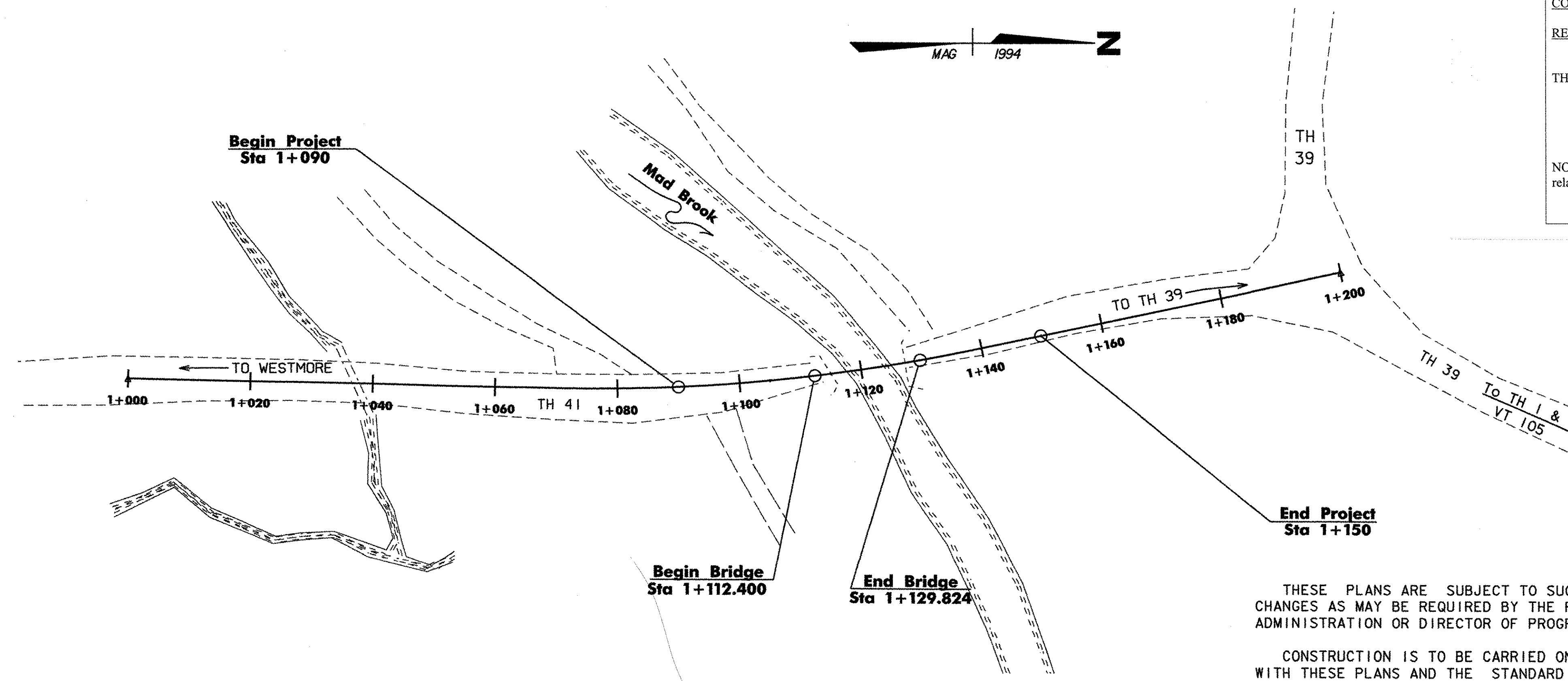
RECORD PLANS BY: DOUG BUMPS & N. GARBACIK

I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY *Doug Bumps* RESIDENT ENGINEER

DATE January 30, 2007

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.



CONVENTIONAL SIGNS

COUNTY LINE	---
TOWN LINE	- - - -
LIMITS OF ACCESS	○-○-○-○
POINT OF ACCESS	X
FENCE LINE	-x-x-
STONE WALL	
TRAVELED WAY	---o---o---
GUARD RAIL	---o---o---
RAILROAD	==== ====
SURVEY LINE	---+---+---
CULVERT	---+---+---
POWER POLE	○-○-○-○
TELEPHONE POLE	○-○-○-○
TREES	***
CONTROL OF ACCESS	///
PROPERTY LINE	---
R.O.W. TAKING LINE	---SR---
SLOPE RIGHTS	○-○-○-○
TOP OF CUT	△-△-△-△
TOE OF SLOPE	○-○-○-○

DATUM	
VERTICAL	NAD83
HORIZONTAL	N/A



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

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

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.

APPROVED *Paul Felton* DATE 3-30-06
DIRECTOR OF PROGRAM DEVELOPMENT

PROJECT NAME: **TH 41 Br 16 over Mad Brook**
PROJECT NUMBER: **Charleston BRO 1449 (22)**
PROJECT MANAGER: **MARTHA EVANS-MONGEON**

PROJECT SHEETS

- 1. TITLE SHEET
- 2. INDEX SHEET
- 3. PRELIMINARY INFORMATION SHEET
- 4. TYPICAL SECTION SHEET
- 5 - 6. QUANTITY SHEETS
- 7 - 8. RIGHT OF WAY LAYOUT SHEETS
- 9. RIGHT OF WAY DETAIL SHEET
- 10. TIE SHEET
- 11 - 12. LAYOUT SHEETS
- 13. SIGN SUMMARY SHEET
- 14. PROFILE SHEET
- 15.-16. EROSION PREVENTION GENERAL NOTES
- 17. EXISTING CONDITION
- 18. EROSION AND SEDIMENT CONTROL
- 19. FINAL CONDITION SITE PLAN
- 20.-21. EROSION CONTROL DETAILS
- 22. TRAFFIC CONTROL
- 23. BORING INFORMATION SHEET
- 24.-25. BORING LOGS
- 26. PLAN AND ELEVATION
- 27. GENERAL NOTES SHEET
- 28. SUPERSTRUCTURE DETAILS (DETAILS 1 - 4)
- 29. LEFT FASCIA PRESTRESSED BOX BEAM DETAILS (DETAILS 5 - 8)
- 30. RIGHT FASCIA/INTERIOR PRESTRESSED BOX BEAM DETAILS (DETAILS 9 - 10)
- 31. PRESTRESSED BOX BEAM SECTION DETAILS (DETAILS 11 - 13)
- 32. PRESTRESSED BOX BEAM ELEVATION (DETAILS 14 - 15)
- 33. BEARING DETAILS (TIMBER) (DETAIL 16)
- 34. ABUTMENT #1 PLAN AND LAYOUT (DETAILS 17 - 19)
- 35. ABUTMENT #2 PLAN AND LAYOUT (DETAILS 20 - 22)
- 36. ABUTMENT TYPICAL REINFORCING DETAILS (DETAILS 23 - 24)
- 37. ABUTMENT #1 REINFORCING DETAILS (DETAILS 25 - 27)
- 38. WINGWALLS #1 AND #2 REINFORCING DETAILS (DETAILS 28 - 31)
- 39. ABUTMENT #2 REINFORCING DETAILS (DETAILS 32 - 34)
- 40. WINGWALLS #3 AND #4 REINFORCING DETAILS (DETAILS 35 - 38)
- 41. BLANK
- 42. REINFORCING STEEL SCHEDULE SHEET
- 43.-46. ROADWAY CROSS SECTIONS
- 47.-50. CHANNEL CROSS SECTIONS

STANDARD SHEETS



E-100	CONSTRUCTION APPROACH SIGNS	01/02/04
E-100A	SIDE ROAD CONSTRUCTION APPROACH SIGNS	01/02/04
E-101	CONSTRUCTION SIGN DETAILS	05/30/03
E-102	CONSTRUCTION SIGN DETAILS	06/30/03
E-102A	CONSTRUCTION SIGN DETAILS	05/01/04
E-106	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	03/01/04
E-107	DELINEATION, BARRICADES, AND DETOUR FOR CONSTRUCTION AREAS	06/30/03
E-107A	BREAKAWAY BARRICADE DETAILS	08/08/95
E-110	MAJOR MAINTENACE OPERATION LANE CLOSURE	08/08/95
E-119	UTILITY WORK ZONE	03/01/04
E-121	STANDARD SIGN PLACEMENT- CONVENTIONAL ROAD	08/08/95
E-143	REGULATORY SIGN DETAILS	06/05/04
E-150	WARNING SIGN DETAILS	05/20/99
E-160	FLANGED CHANNEL STEEL SIGN POST	05/20/99
G-1M	STEEL BEAM GUARDRAIL WITH STEEL POSTS	01/03/00
G-1dM	STEEL BEAM GUARDRAIL APPROACH AND END TERMINAL	01/03/00
SB-R6-82M	BRIDGE RAILING HEAVY DUTY STEEL BEAM	07/10/97

INDEX SHEET

PROJECT NAME:	Charleston	PLOT DATE:	13-APR-2006
PROJECT NUMBER:	BRO 1449 (22)	DRAWN BY:	G. Colgrove
FILE NAME: .../93J051/sJ05Iind.dgn		CHECKED BY:	
PROJECT MANAGER: M. Evans-Mongeon		SHEET	2 OF 50
DESIGNED BY: G. Colgrove			

HYDROLOGIC DATA

DRAINAGE AREA: 12.6 sq. km
 CHARACTER OF TERRAIN: Mountainous and forested
 CHARACTER & TYPE OF STREAM: Perennial but flashy, straight, probably incised, and semi-alluvial
 NATURE OF STREAMBED: Gravel, cobbles and a boulders

Q2.33= 6 cms	Q50= 31 cms
Q10= 18 cms	Q100= 36 cms
Q25= 26 cms	Q500= 51 cms

DATE OF FLOOD OF RECORD: Unknown
 WATER SURFACE ELEV.: Unknown ESTIMATED DISCHARGE: Unknown
 NATURAL STREAM VELOCITY @ Q25 = 3.0 mps
 ICE CONDITIONS: Moderate DEBRIS: Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE.

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

EXISTING STRUCTURE

STRUCTURE TYPE: Single span Mabey Bridge YEAR BUILT: 1945
 CLEAR SPAN (NORMAL TO STREAM): 10 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.4 m
 WATERWAY OF FULL OPENING: 32 sq. m
 DISPOSITION OF STRUCTURE: Remove both abutments and superstructure

TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEV. @ Q2.33= 429.2 m	VELOCITY= 1.9 mps
Q10= 429.6 m	" = 2.7 mps
Q25= 429.8 m	" = 3.0 mps
Q50= 429.9 m	" = 3.1 mps
Q100= 430.0 m	" = 3.2 mps

LONG TERM STREAM BED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: >Q100
 RELIEF ELEVATION: 431.2 DISCHARGE OVER ROAD @ Q100: 0

UPSTREAM STRUCTURE: TOWN: None DISTANCE: _____
 HIGHWAY NO.: _____ STRUCTURE NO.: _____
 STRUCTURE TYPE: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____

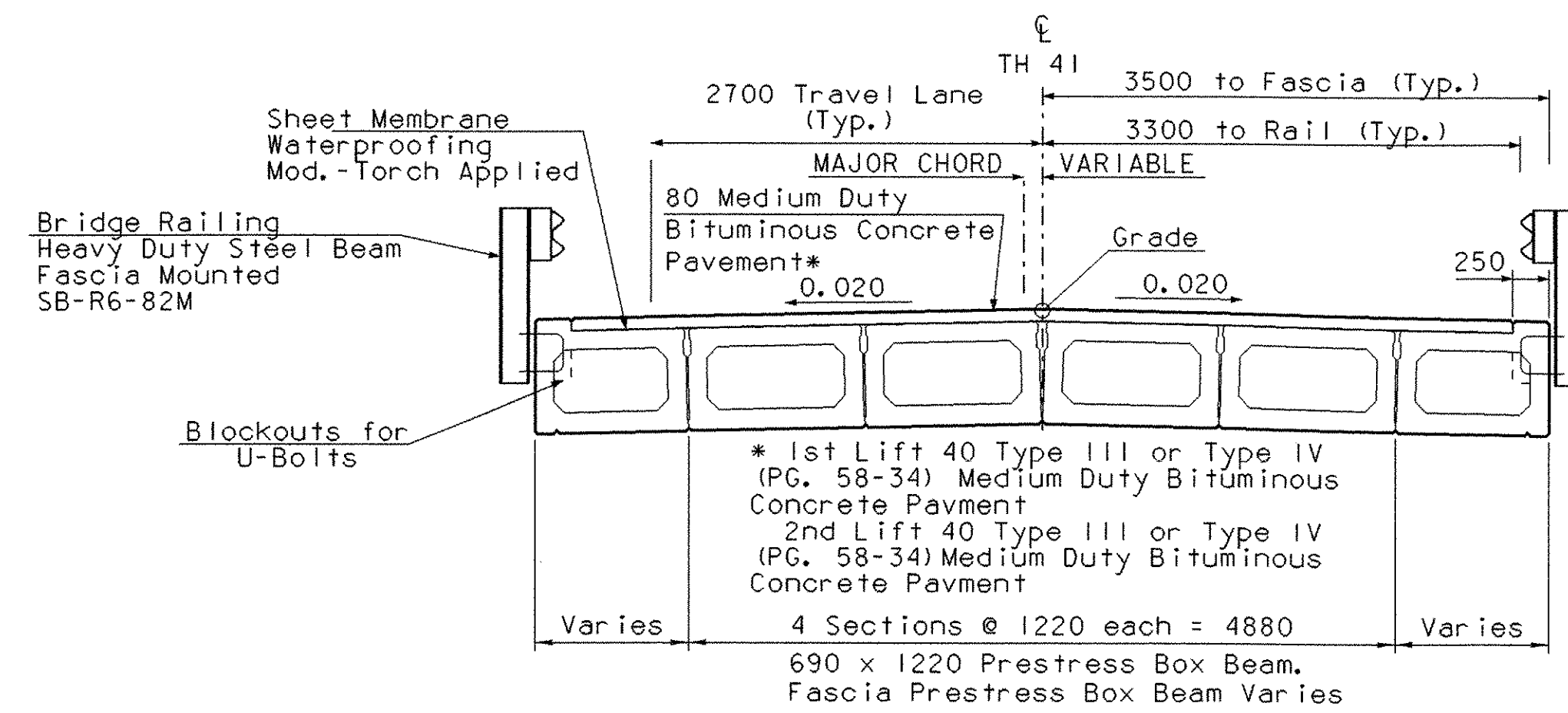
DOWNSTREAM STRUCTURE: TOWN: Charleston DISTANCE: 1.6 km
 HIGHWAY NO.: T.H. 39 STRUCTURE NO.: 19
 STRUCTURE TYPE: Single span side girder
 CLEAR SPAN: 6.4 m CLEAR HEIGHT: 2.3 m
 YEAR BUILT: NA FULL WATERWAY: 14 sq. m

DESIGN CRITERIA:

- DESIGN LIVE LOAD AASHTO: HL-93
- DESIGN SPAN: 15.9 m
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: _____ ON LEDGE: _____
- ULTIMATE PILE CAPACITY: 2730 KN ALLOWABLE LOAD: 1210 KN TYPE: 310HP110
 MAX DRIVING LENGTH: 14 (EST.)
- PILE STEEL AASHTO GRADE: 50 ksi
- REINFORCING STEEL GRADE: 400
- CONCRETE CLASS: HPC-A f_c: 35 MPa
 CLASS HPC-B f_c: 25 MPa

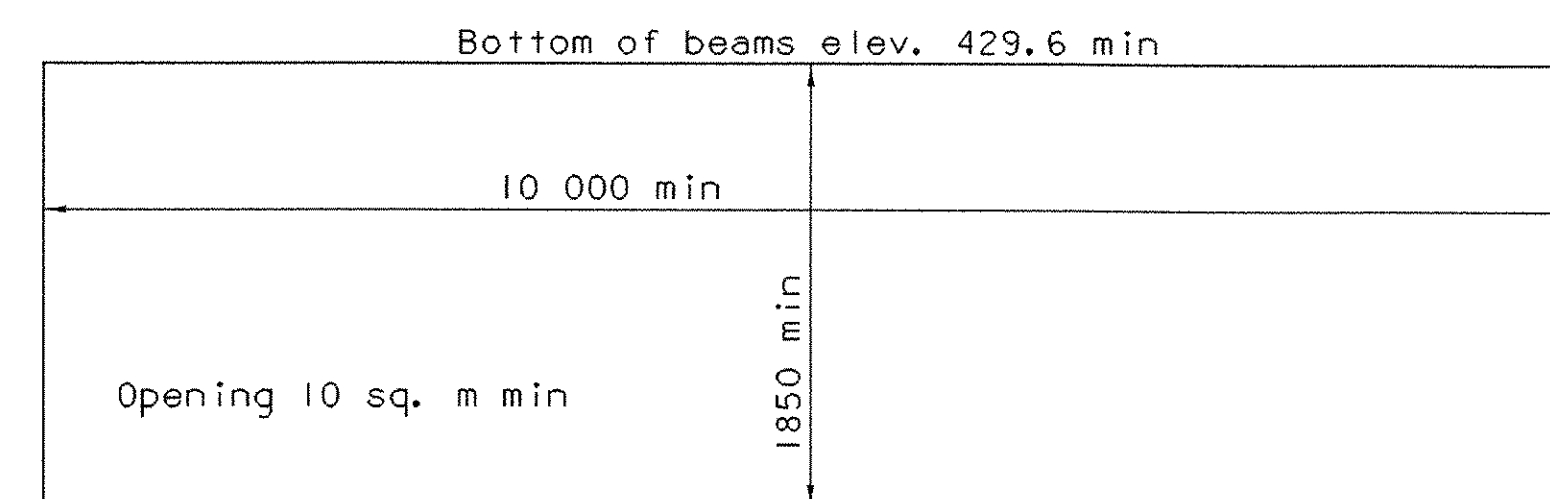
TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? Yes IF YES, ON EXISTING STRUCTURE: N/A OR ON TEMPORARY BRIDGE: Yes*
- TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY: One TRAFFIC CONTROL SIGNALS REQUIRED: No
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): 10 m minimum VERTICAL CLEARANCE ABOVE STREAMBED: Bottom of beams elev. 429.6 min.
 WATERWAY OF FULL OPENING: 10 sq. m minimum
 ARE SIDEWALKS REQUIRED? No IF SO, ON WHAT SIDE? _____
 *STRUCTURE TYPE: Relocate existing modular bridge for use as Temporary Bridge



TYPICAL BRIDGE SECTION

SCALE = 1:40



TEMPORARY BRIDGE PROFILE ALONG TEMP C

(NOT TO SCALE)

LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A=2.17, f _{LL} =0.5 V ^{1.67} /G	27	34					
POSTED A=1.55, f _{LL} =0.53 V ^{1.67} /G	38	48	67		42	43	57
OPERATING A=1.30, f _{LL} =0.6 V ^{1.67} /G		56	78	81	48	50	

CONTROLLING CASE: $RF = \frac{\phi M_N - 1.3 M_{DL}}{A \times M_{LL+1}}$ OR $RF = \frac{f_{PE} - f_{DL} - f_{(ALLOW)}}{f_{LL+1}}$
 FOR SECTION STRENGTH FOR BOTTOM STRESS

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	% ADTT
1998	100	15		<1	3
2018	140	20		<1	5

ESAL for flexible pavement from 1998 to 2018: 28,000
 ESAL for flexible pavement from 1998 to 2038: 81,000
 Design speed: 50km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span prestressed concrete girders and deck

CLEAR SPAN (NORMAL TO STREAM): 14 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 2.7 m
 WATERWAY OF FULL OPENING: 29 sq. m

WATER SURFACE ELEV. @ Q2.33= 429.2 m	VELOCITY= 1.9 mps
Q10= 429.6 m	" = 2.7 mps
Q25= 429.8 m	" = 3.0 mps
Q50= 429.9 m	" = 3.1 mps
Q100= 430.0 m	" = 3.2 mps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: >Q100
 RELIEF ELEVATION: 431.2 DISCHARGE OVER ROAD @ Q100: 0

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 430.1
 VERTICAL CLEARANCE @ Q25 = 0.3 m (0.1 m at Q100)

SCOUR: 0.3 m of contraction scour at Q100 and Q500
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 0.3 cms
 ORDINARY LOW WATER: 0.1 cms DEPTH: 0.1 m
 ORDINARY HIGH WATER: 2.4 cms DEPTH: 0.3 m

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of **Charleston** Bridge No. **16**

Highway No. **TH 41** Log Sta. _____

Preliminary Information Sheet

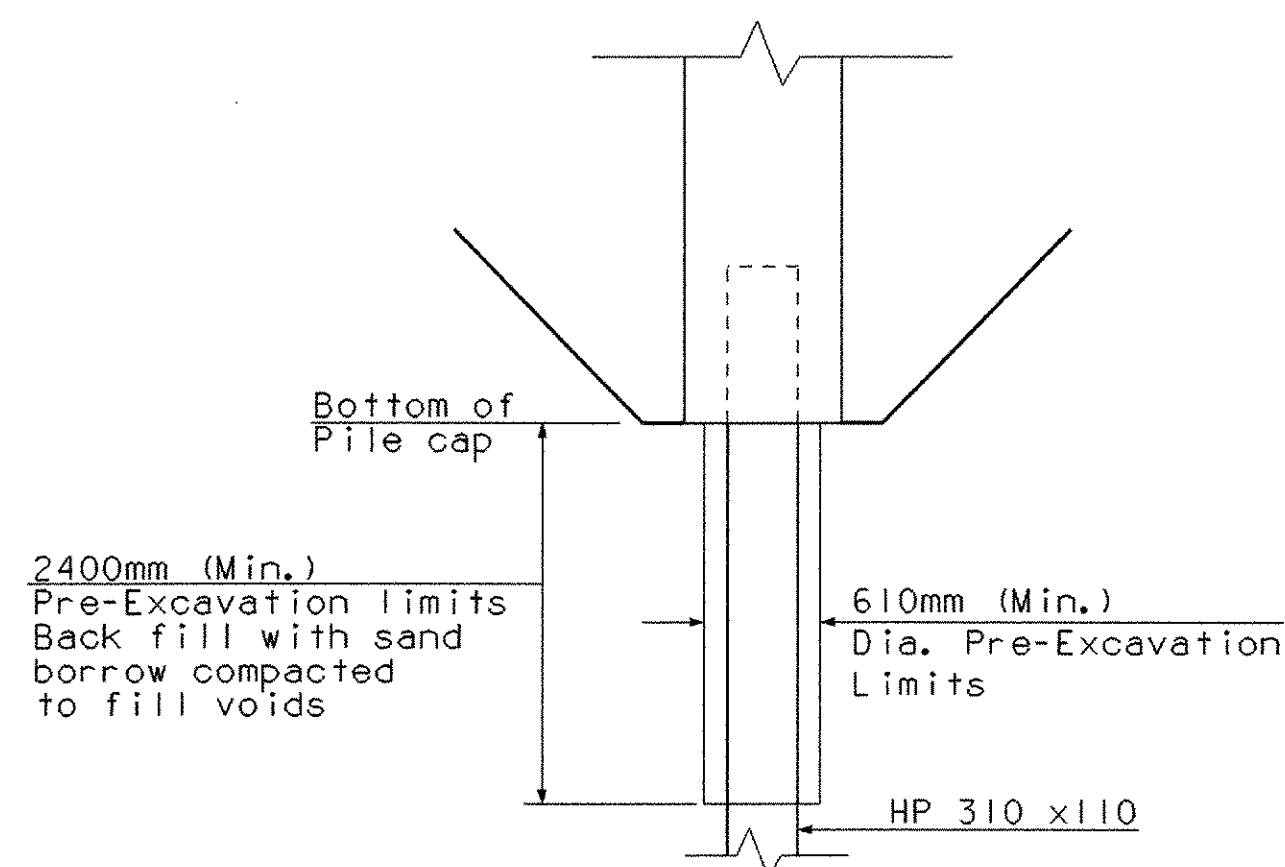
TH41 Br 16 Over Mad Brook

Designed By: G.Colgrave Drawn By: G.Colgrave
 Checked By: S.Scribner Date: _____ Bridge Design Supervisor: M. EVANS MONGEON Date: _____

PROJECT: **Charleston** PROJECT NO.: **BRO 1449(22)**

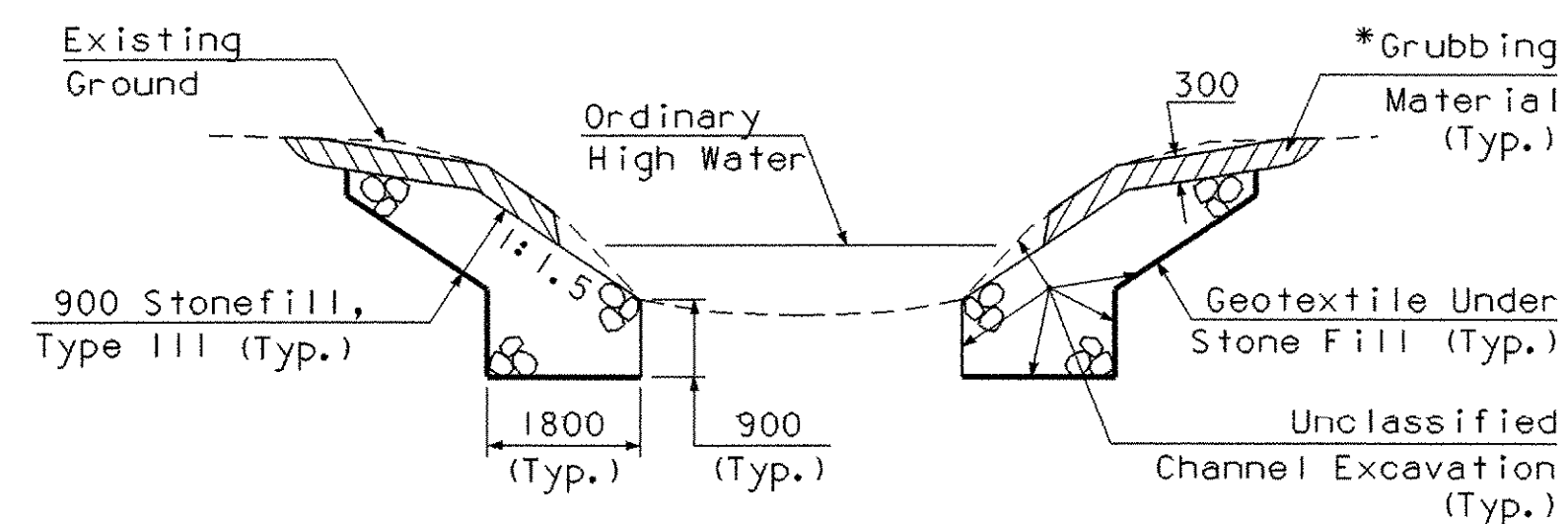
I.G.C. Info. IP_FWP:dms02605vs j05ipl.dgn s j05ipl.j

Bridge Sheet No. _____ Sheet 3 of 50



PRE-EXCAVATION LIMITS DETAIL

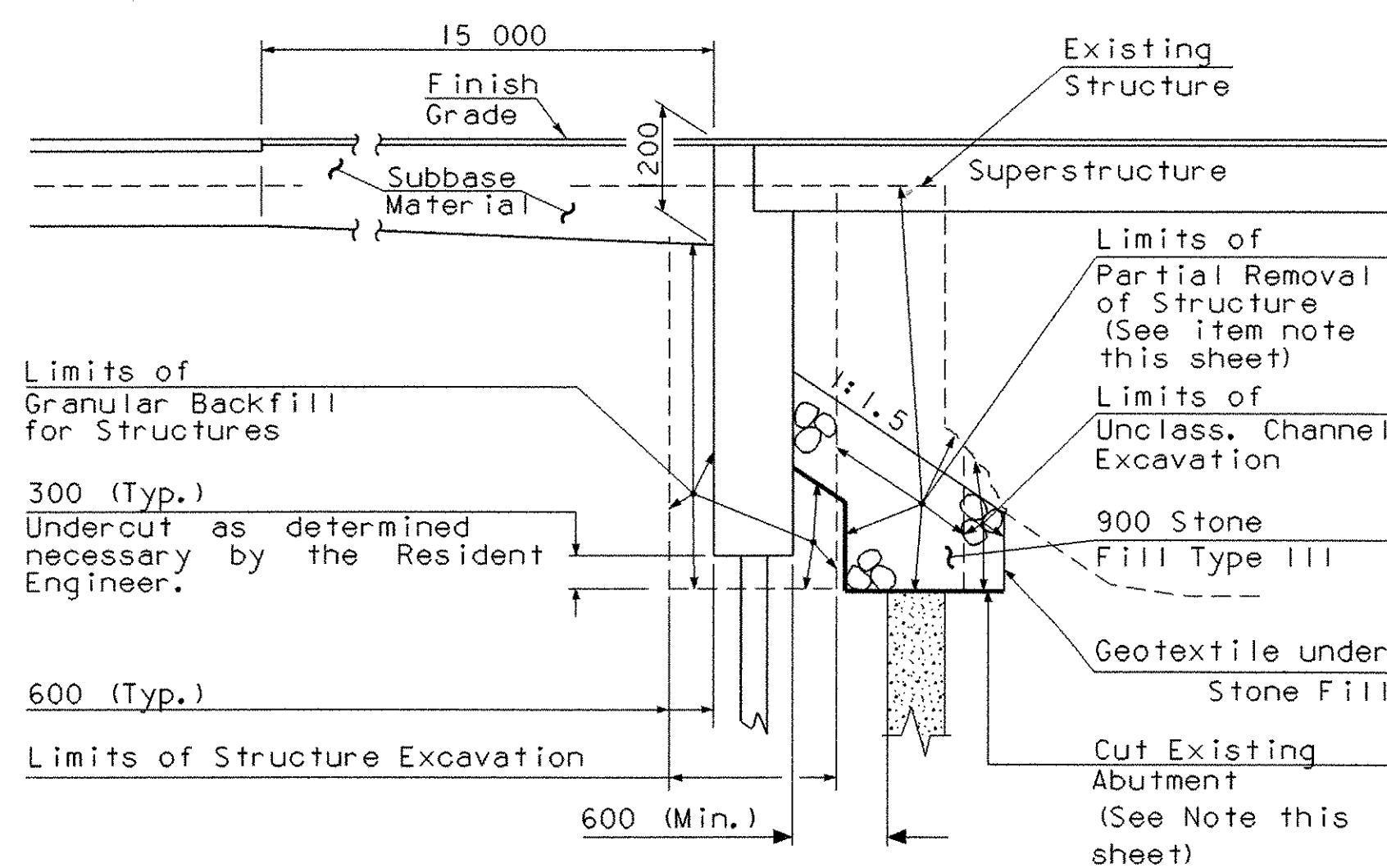
(NOT TO SCALE)



*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.

TYPICAL CHANNEL SECTION

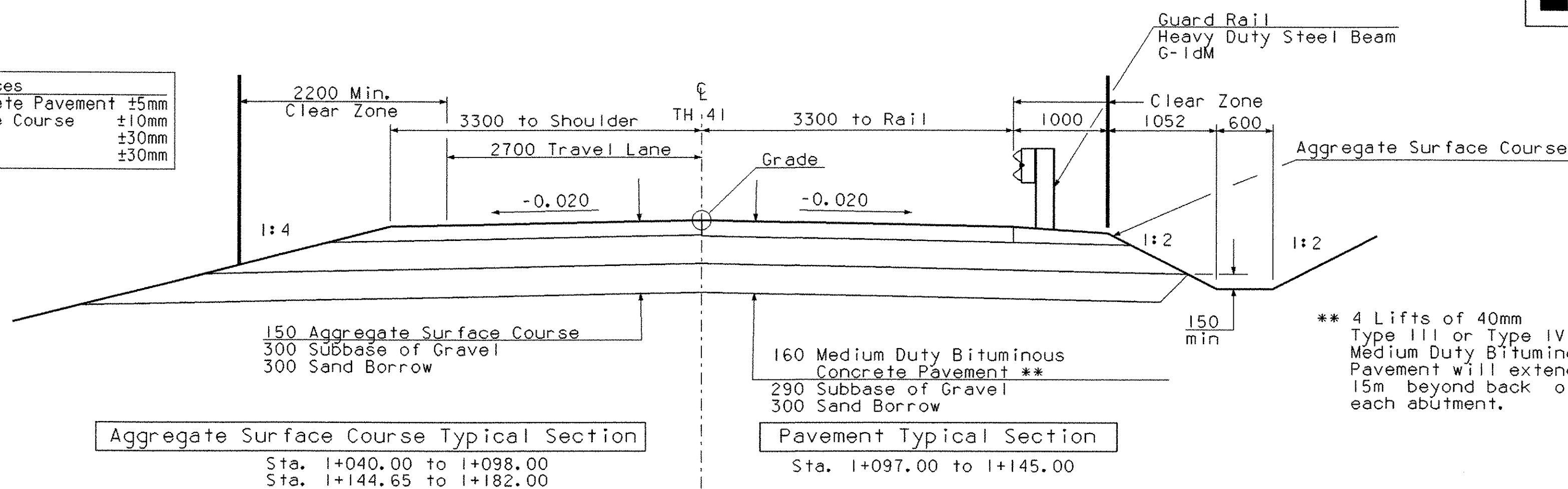
(NOT TO SCALE)



TYPICAL ABUTMENT SECTION

(NOT TO SCALE)

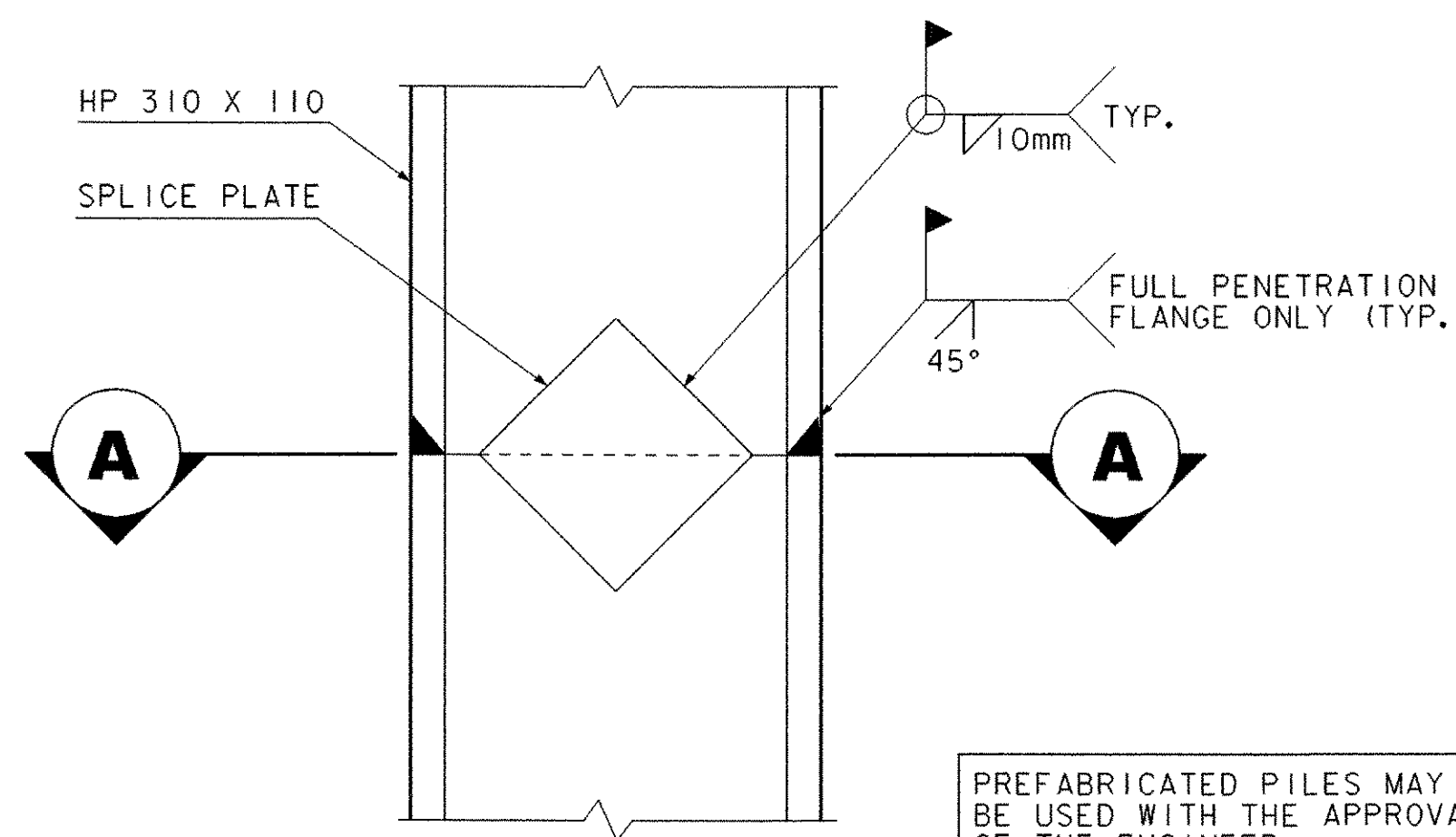
Material Tolerances	
Bituminous Concrete Pavement	±5mm
Aggregate Surface Course	±10mm
Subbase of gravel	±30mm
Sand Borrow	±30mm



** 4 Lifts of 40mm Type III or Type IV (PG 58-34) Medium Duty Bituminous Concrete Pavement will extend 15m beyond back of each abutment.

TYPICAL ROADWAY SECTION

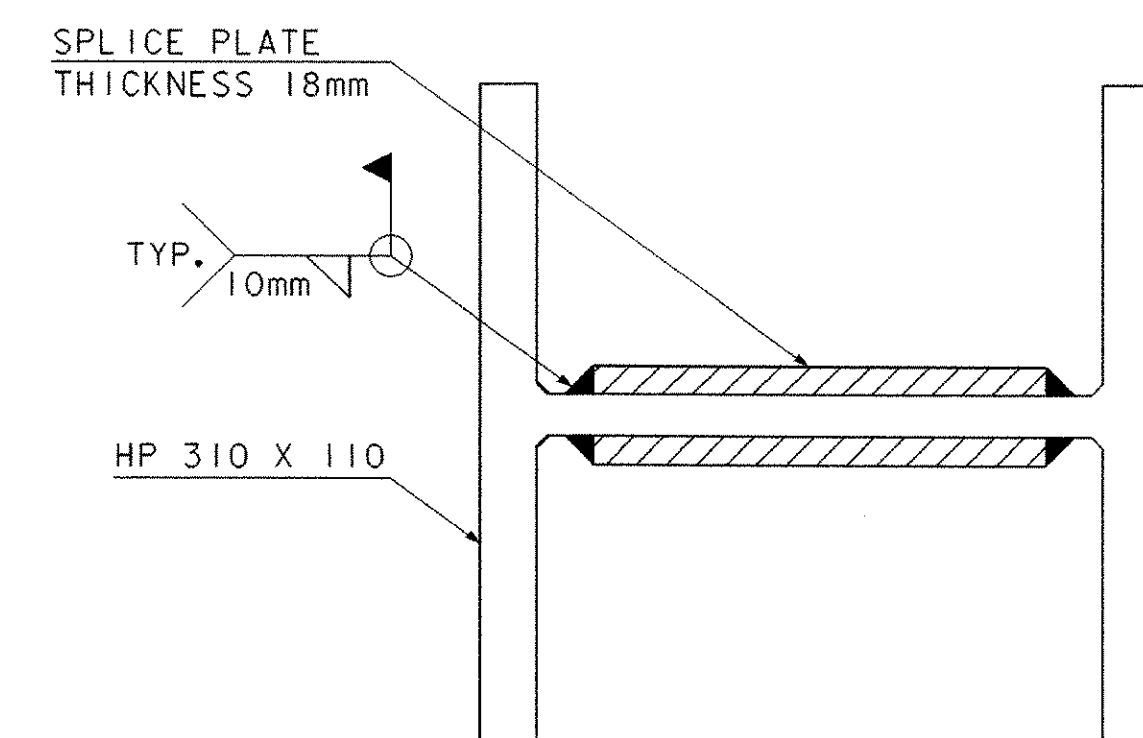
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PREFABRICATED PILES MAY BE USED WITH THE APPROVAL OF THE ENGINEER

PILE FIELD SPLICE DETAIL

(NOT TO SCALE)



A

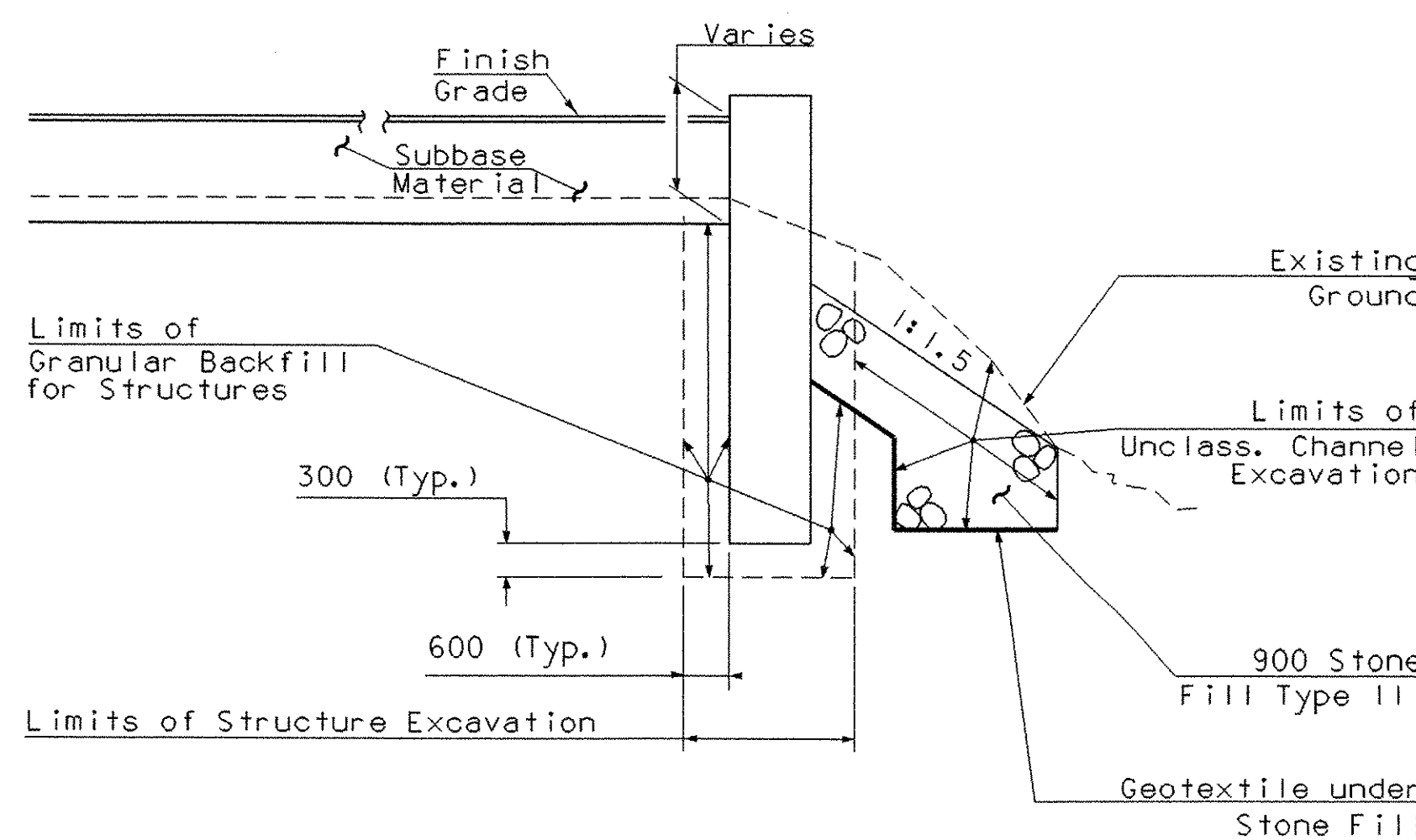
NOTES

- Pay Item 529.20 (Partial Removal of Structure)
Superstructure: The superstructure will be moved from its current location to the temporary bridge location, this work will be paid for under 528.10 One-Way Temporary Bridge (Mod.-Existing Modular).
The Contractor is only required to remove the portions of the existing abutments that fall within the areas where the new abutments will be constructed or where stone fill or granular backfill for structures is to be placed. This removal is to be paid for under the item "Partial Removal of Structure".

TYPICAL SECTIONS SHEET

PROJECT NAME: CHARLESTON
PROJECT NUMBER: BRO 1449 (22)

FILE NAME: .../93J051/SJ051TYP.DGN PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS MONGEON DRAWN BY: G. COLGROVE
DESIGNED BY: G. COLGROVE CHECKED BY:
SHEET 4 OF 50



TYPICAL EARTHWORKS SECTION

(NOT TO SCALE)

QUANTITY SHEET 1



SUMMARY OF ESTIMATED QUANTITIES										TOTALS			DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
FULL E&C ITEMS	ROADWAY	ABUT #1	ABUT #2	DECK	TEMP EROSION CONTROL	EROSION CONTROL				ROUND	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
	1										1		LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10			
	660										660		CM	COMMON EXCAVATION	203.15			
		55	145								200		CM	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
	125										125		CM	SAND BORROW	203.31			
		60	70								130		CM	STRUCTURE EXCAVATION	204.25			
		18	17								35		CM	GRANULAR BACKFILL FOR STRUCTURES	204.30			
	370										370		CM	SUBBASE OF GRAVEL	301.15			
	160										160		CM	AGGREGATE SURFACE COURSE	401.10			
	16			9							25		KG	EMULSIFIED ASPHALT	404.65			
	76			22							98		T	MEDIUM DUTY BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.27			
		25	25								50		CM	HIGH PERFORMANCE CONCRETE, CLASS B	501.34			
		10	10								20		M	PRE-EXCAVATION OF INTEGRAL ABUTMENT PILES	503.20			
		1									1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10			
		45	45								90		M	STEEL PILING FOR INTEGRAL ABUTMENTS (HP 310 x 110)	505.26			
		1	1								2		EACH	DYNAMIC PILE LOADING TEST	505.46			
		2105	2065								4170		KG	REINFORCING STEEL	507.15			
				101							101		M	PRESTRESSED CONCRETE BOX BEAMS (690 x 1220)	510.21			
				84							84		M	GROUTING SHEAR KEYS	510.24			
		6	6	8							20		L	WATER REPELLENT (MOD.-SILANE)	514.10			
				120							120		SM	SHEET MEMBRANE WATERPROOFING (MOD.-TORCH APPLIED)	519.20			
														* BEGIN OPTIONS *				
				15.22							15.22		M	JOINT SEALER HOT POURED	524.11			
				15.22							15.22		M	JOINT SEALER, COLD POURED	524.13			
														* END OPTIONS *				
				43							43		M	BRIDGE RAILING - HD STEEL BEAM/FASCIA MOUNTED (GALVANIZED)	525.41			
	1										1		LS	ONE-WAY TEMPORARY BRIDGE (MOD.-EXISTING MODULAR)	528.10			
		0.5	0.5								1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20			
				26							26		EACH	BEARING DEVICE ASSEMBLY (TIMBER)	531.10			
	10										10		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25			
	190										190		CM	DUST CONTROL WITH WATER	609.10			
		1	1				3				5		CM	STONE FILL, TYPE I	613.10			
		57	123								180		CM	STONE FILL, TYPE III	613.12			
								275			275		M	SNOW FENCE (MOD.-PDF)	620.70			
	66.30										66.30		M	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21			
	4										4		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60			
	12										12		M	TEMPORARY TRAFFIC BARRIER	621.90			
	20										20		HR	FLAGGERS	630.15			
	1										1		LS	FIELD OFFICE-ENGINEERS	631.10			
	1										1		LS	TESTING EQUIPMENT - CONCRETE	631.16			
	1										1		LS	TESTING EQUIPMENT - BITUMINOUS	631.17			
	1										1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I)	631.25			
	1										1		LS	MOBILIZATION /DEMOBILIZATION	635.11			

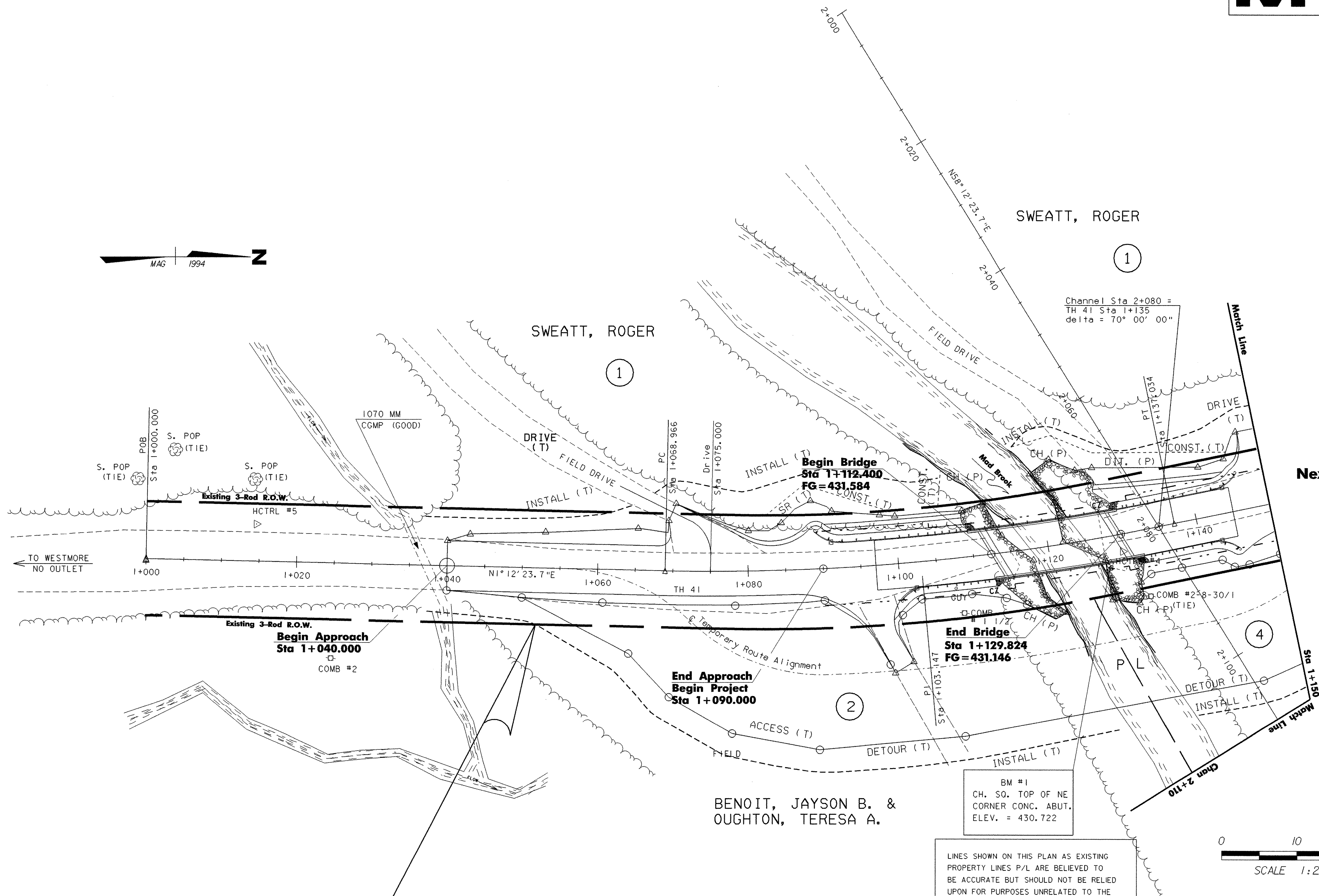
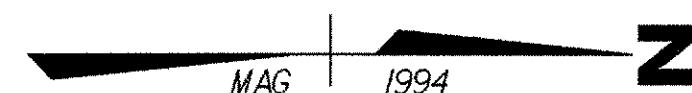
PROJECT NAME: **Charleston**
 PROJECT NUMBER: **BRO 1449 (22)**
 FILE NAME: Quantities.xls
 PROJECT MANAGER: **M. EVANS-MONGEON**
 DESIGNED BY: **G. COLGROVE**
 IPARM: sj051qty1.i
 PLOT DATE: **12/19/05**
 DRAWN BY: **G. ROKES**
 CHECKED BY: **G. COLGROVE**
 SHEET **5** OF **50**

QUANTITY SHEET 2



SUMMARY OF ESTIMATED QUANTITIES										TOTALS			DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES			
FULL E&C ITEMS	ROADWAY	ABUT #1	ABUT #2	DECK	TEMP EROSION CONTROL	EROSION CONTROL					ROUND	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
	1											1		LS	TRAFFIC CONTROL	641.10			
		65	139			6						210		SM	GEOTEXTILE UNDER STONE FILL	649.31			
						220						220		SM	GEOTEXTILE FOR SILT FENCE	649.51			
							20					20		KG	SEED	651.15			
							20					20		KG	SEED-WINTER RYE	651.17			
								130				130		KG	FERTILIZER	651.18			
								2				2		T	AGRICULTURAL LIMESTONE	651.20			
								2				2		T	HAY MULCH	651.25			
									10			10		EACH	HAY BALES FOR EROSION CONTROL	651.26			
	120											120		CM	TOPSOIL	651.35			
									135			135		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			
						2390			200			2590		SM	EROSION MATTING	654.10			
	3											3		SM	TRAFFIC SIGNS, TYPE A	675.20			
	19											19		M	FLANGED CHANNEL SIGN POST	675.301			

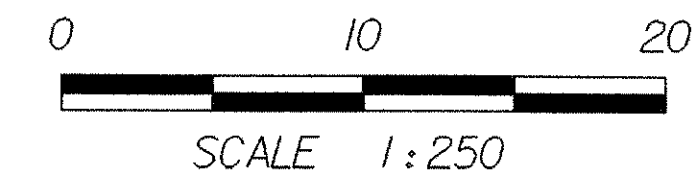
PROJECT NAME: **Charleston**
 PROJECT NUMBER: **BRO 1449 (22)**
 FILE NAME: Quantities.xls
 PROJECT MANAGER: M. EVANS-MONGEON
 DESIGNED BY: G. COLGROVE
 IPARM: sj051qty2.i
 PLOT DATE: 12/19/05
 DRAWN BY: G. ROKES
 CHECKED BY: G. COLGROVE
 SHEET 6 OF 50



Channel Sta 2+080 =
TH 41 Sta 1+135
delta = 70° 00' 00"

BM #1
CH. SQ. TOP OF NE
CORNER CONC. ABUT.
ELEV. = 430.722

LINES SHOWN ON THIS PLAN AS EXISTING
PROPERTY LINES P/L ARE BELIEVED TO
BE ACCURATE BUT SHOULD NOT BE RELIED
UPON FOR PURPOSES UNRELATED TO THE
TOWN OF CHARLESTON'S ACQUISITION OF LAND
AND RIGHTS FOR THIS PROJECT.



BEGIN R. O. W. PROJECT
BRO 1449(22) STA. 1+051.6
7.5M (24.75') RT.

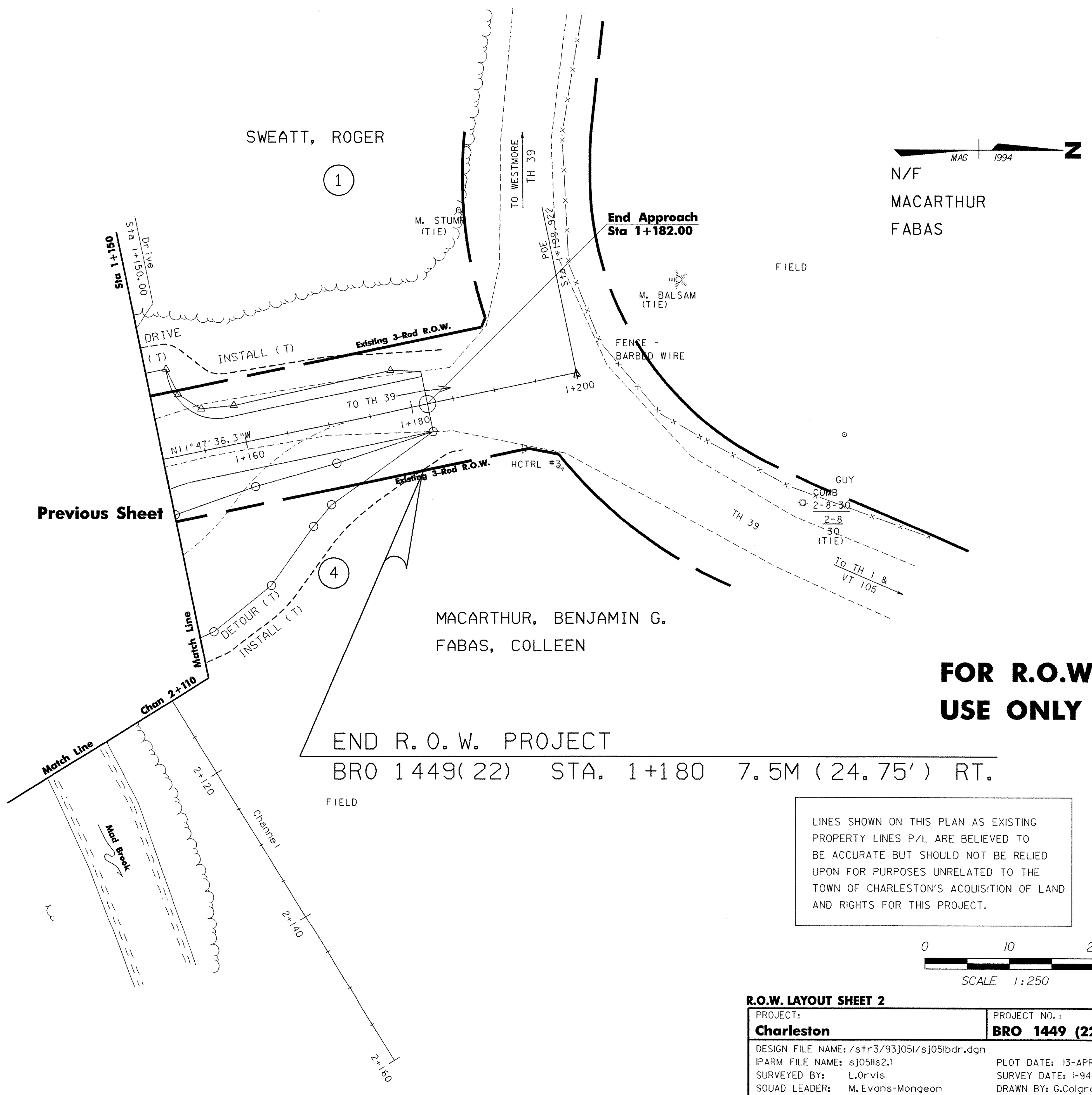
FOR EROSION
CONTROL DETAIL,
SEE R. O. W. SHEET
6 OF 9

PROJECT: Charleston	PROJECT NO. : BRO 1449 (22)
DESIGN FILE NAME: /str3/93j051/sj051bdr.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051sl1	SURVEY DATE: 1-94
SURVEYED BY: L.Orvis	DRAWN BY: G.Colgrove
SQUAD LEADER: M. Evans-Mongeon	SHEET: 7 OF 50
DESIGNED BY: G. Colgrove	

DATUM	
VERTICAL	NAD83
HORIZONTAL	N/A

Next Sheet

R.O.W. LAYOUT SHEET 1



MAG 1994
 N/F
 MACARTHUR
 FABAS

Previous Sheet

**FOR R.O.W.
 USE ONLY**

END R.O.W. PROJECT
 BRO 1449(22) STA. 1+180 7.5M (24.75') RT.

LINES SHOWN ON THIS PLAN AS EXISTING
 PROPERTY LINES P/L ARE BELIEVED TO
 BE ACCURATE BUT SHOULD NOT BE RELIED
 UPON FOR PURPOSES UNRELATED TO THE
 TOWN OF CHARLESTON'S ACQUISITION OF LAND
 AND RIGHTS FOR THIS PROJECT.

0 10 20
 SCALE 1:250

DATUM	
VERTICAL	NAD83
HORIZONTAL	N/A

R.O.W. LAYOUT SHEET 2	
PROJECT: Charleston	PROJECT NO.: BRO 1449 (22)
DESIGN FILE NAME: /s+r3/93j051/sj051bdr.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051s2.1	SURVEY DATE: 1-94
SURVEYED BY: L.Orvis	DRAWN BY: G.Colgrove
SQUAD LEADER: M.Evans-Mongeon	SHEET: 8 OF 50
DESIGNED BY: G.Colgrove	



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

TABLE OF PROJECT PROPERTY ACQUISITION

ALL STATIONS ARE FROM THE REVISED ζ

PARCEL NO.	GRANTOR	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKING	REM.	RIGHTS	TITLE TAKEN	DATE	TOWN OR CITY RECORDED	BK.	PG.	REMARKS	
1	SWEATT, ROGER	8, 9	1+061.6 LT.	1+064.7 LT.			INSTALL (T) 3 SM±	WDOE	1-16-03	CHARLESTON	57	54	EROSION CONTROL 32 S.F.±	
			1+075.0 LT.				DRIVE (T)							2.5M GRAVEL (8')
			1+067.6 LT.	1+106.5 LT.			INSTALL (T) 113 SM±							EROSION CONTROL 1216 S.F.±
			1+082.3 LT.	1+099.2 LT.			CONST. (T) 27 SM±							291 S.F.±
			1+085.9 LT.	1+093.5 LT.			SLOPE (T) 7 SM±							75 S.F.±
			1+106.0 LT.	1+110.0 LT.			CONST. (T) 12 SM±							INCLUDES EROSION CONTROL 129 S.F.±
			1+109.1 LT.	1+113.0 LT.			CHANNEL (P) 4 SM±							INCLUDES EROSION CONTROL 43 SF±
			1+116.6 LT.	1+173.4 LT.			INSTALL (T) 71 SM±							EROSION CONTROL 764 S.F.±
			1+116.6 LT.	1+145.4 LT.			CONST. (T) 61 SM±							657 S.F.±
			1+118.5 LT.	1+127.2 LT.			CHANNEL (P) 21 SM±							226 S.F.±
1+126.3 LT.	1+137.0 LT.			DITCH (P) 9 SM±							97 S.F.±			
1+150.0 LT.				DRIVE (T)								4.8M GRAVEL (16')		
2	BENOIT, JAYSON B. & OUGHTON, TERESA A.	8	1+051.6 RT.	1+125.5 RT.			INSTALL (T) 237 SM±	WDOE	06-02-03	CHARLESTON	57	520	EROSION CONTROL 2551 S.F.±	
			1+057.1 RT.	1+129.5 RT.			DETOUR (T) .09 HA±						INCLUDES EROSION CONTROL ONE WAY VEHICULAR 0.22A±	
			1+080.0 RT.				ACCESS (T)						ACCESS TO FIELD FROM DETOUR DURING CONSTRUCTION	
			1+117.0 RT.	1+122.0 RT.			CHANNEL (P) 7 SM±						75 S.F.±	
3	NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY D/B/A/ BELL ATLANTIC - NEW ENGLAND												UTILITY	
														ELECTRONIC IPARMS TO STRUCTURES
4	MACARTHUR, BENJAMIN G. FABAS, COLLEEN	8, 9	1+127.9 RT.	1+131.4 RT.			CHANNEL (P) 7 SM±	WDOE	05-11-04	CHARLESTON	59	618	75 S.F.±	
			1+124.0 RT.	1+172.2 RT.			DETOUR (T) .05 HA±						INCLUDES EROSION CONTROL, ONEWAY VEHICULAR .12 A±	
			1+134.3 RT.	1+180.0 RT.			INSTALL (T) 135 SM±						EROSION CONTROL 1453 S.F.±	

REVISION NO.	SHEET	DESCRIPTION OF REVISION	DATE	MADE BY	APPROVED BY
1	7	PARCEL NO. 1A+B MAJOR. CHANGE ALL ENGLISH CONVERSION AREAS IN REMARKS COLUMN TO THE INDICATED REVISED NUMBERS. PER C.O. 9152.	09-13-00	S. L. D.	R. P. D.
2	7, 8, 9	PARCEL NO. 1. CHANGE OWNERSHIP OF PARCEL 1A TO STONE, ARLAND JR. CHANGE OWNERSHIP OF PARCEL 1B TO SWEATT, ROGER, PER C.O. 9214.	12-17-01	G. J. F.	R. P. D.
3	7, 8, 9	PARCEL NO. 1 CHANGE OWNERSHIP OF PARCEL 1 TO SWEATT, ROGER PER C.O. 9217.	01-14-02	P. J. H.	R. P. D.
4	7, 8	PARCEL NO. 2 CHANGE OWNERSHIP OF PARCEL 2 TO STONE, ARLAND JR. PER C.O. 9218.	01-14-02	P. J. H.	R. P. D.
5	7, 8, 9	PARCEL NO. 4 CREATED PARCEL NO. 4 MACARTHUR, BENJAMIN G. & FABAS, COLLEEN PER C.O. 9219.	01-14-02	P. J. H.	R. P. D.
6	7	PARCEL NO. 2 STONE DELETE CHANNEL (P) AT STA. 1+127.9 RT. ~ 1+131.4 RT. DELETE INSTALL (T) AT STA. 1+134.3 RT. ~ 1+180.0 RT. PER C.O. 9220.	01-30-02	G. J. F.	R. P. D.
7	7, 8	PARCEL NO. 2 STONE. CHANGE OWNER TO BENOIT, JAYSON B. & OUGHTON, TERESA A. PER C.O. 9249.	07-16-02	M. J. R.	R. P. D.
			03-21-06		

ACCT.mcaasidy
IP:\PWP\dms02605\s\j051bdr.dgn
DATE PLOTTED 13-APR-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
L PROPERTY LINE
TOP OF CUT
TOE OF SLOPE
UE (P) PERMANENT UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 08-14-00
CHIEF, PLANS & TITLES

R.O.W. DETAIL SHEET

**Charleston
BRO 1449 (22)**

SHEET 9 OF 50

GPS CONTROL POINTS

Points 1 & 2 were temporary points established using GPS

[Tie Data not Available]

[For Tie Data, See TRAV PT 3]

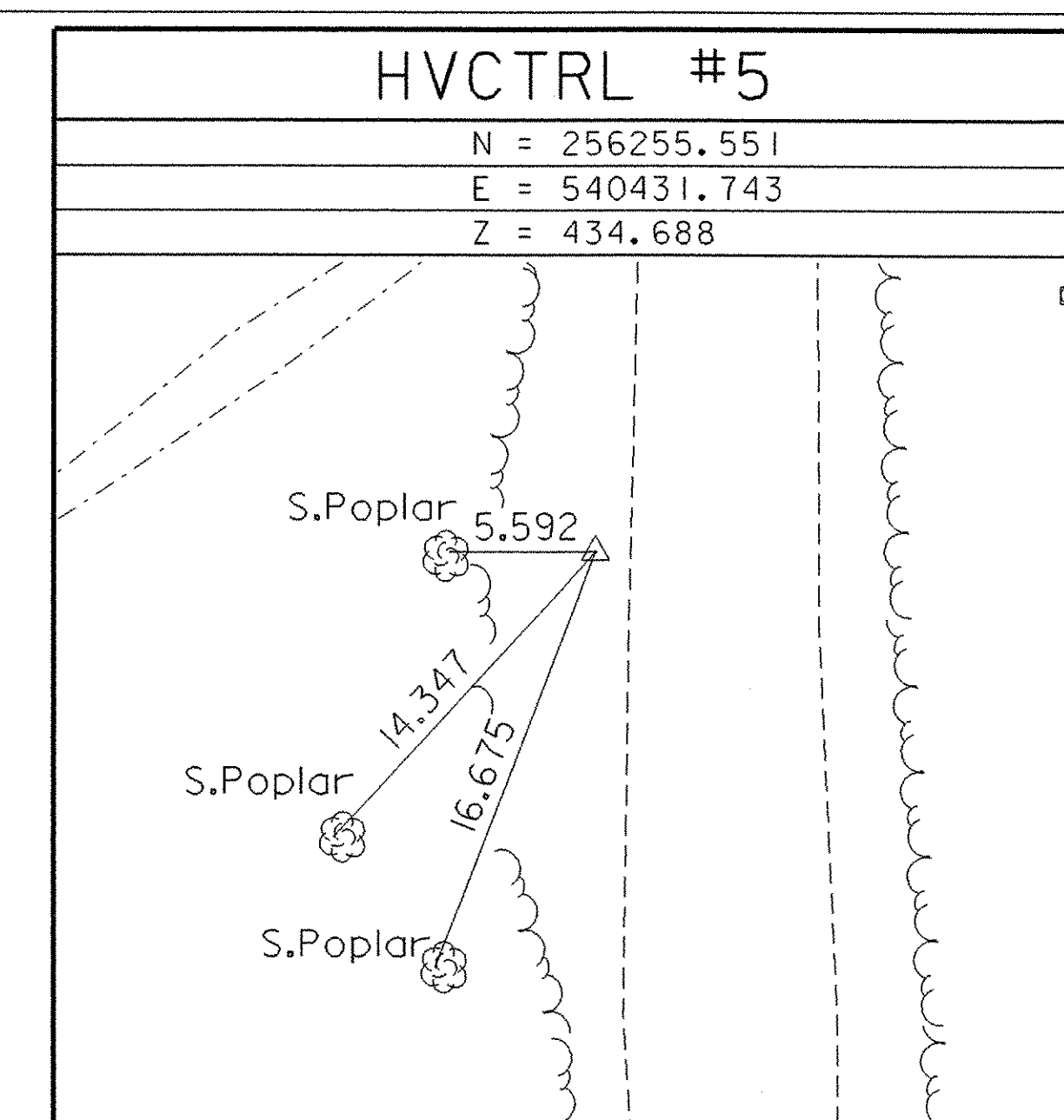
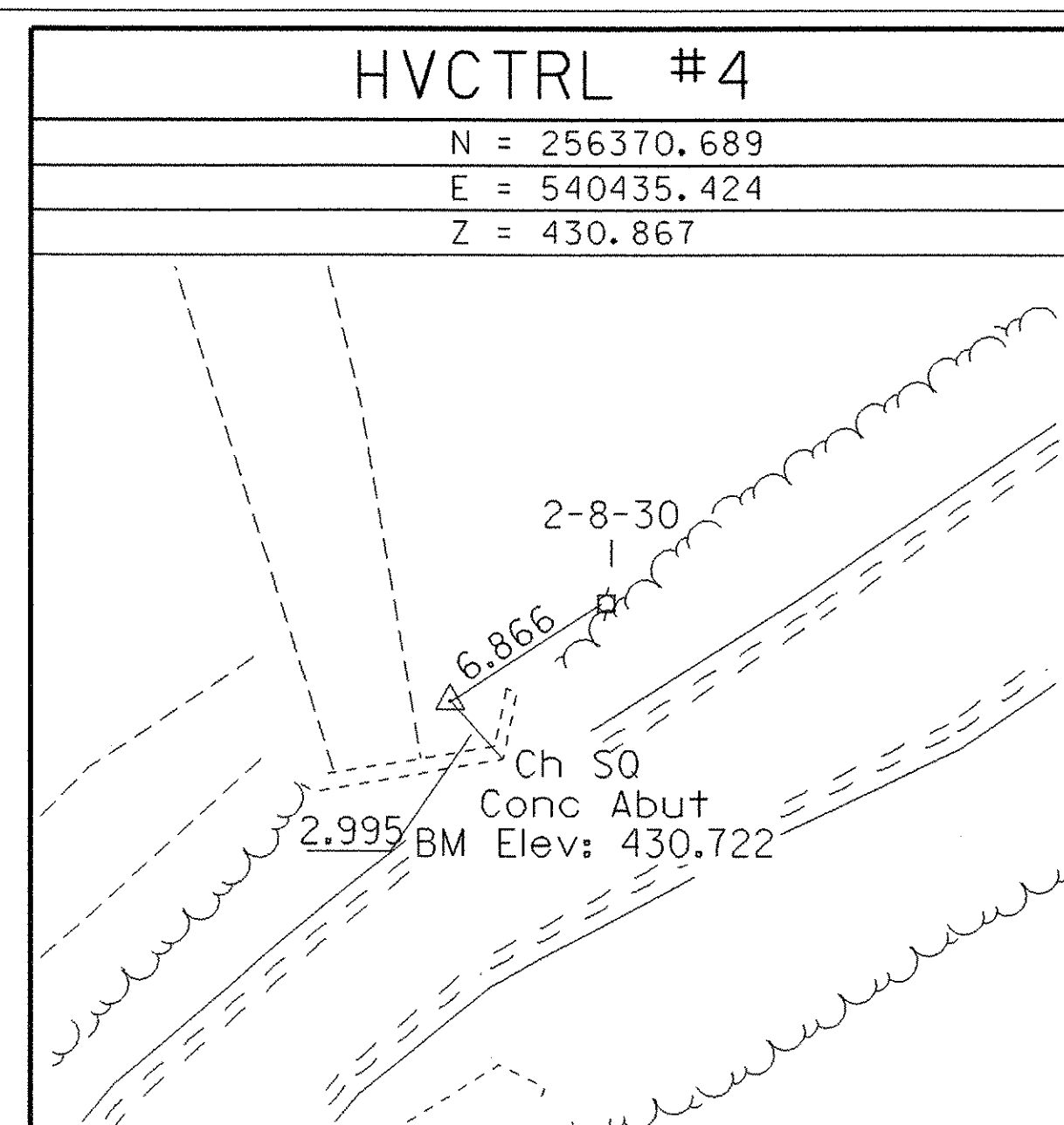
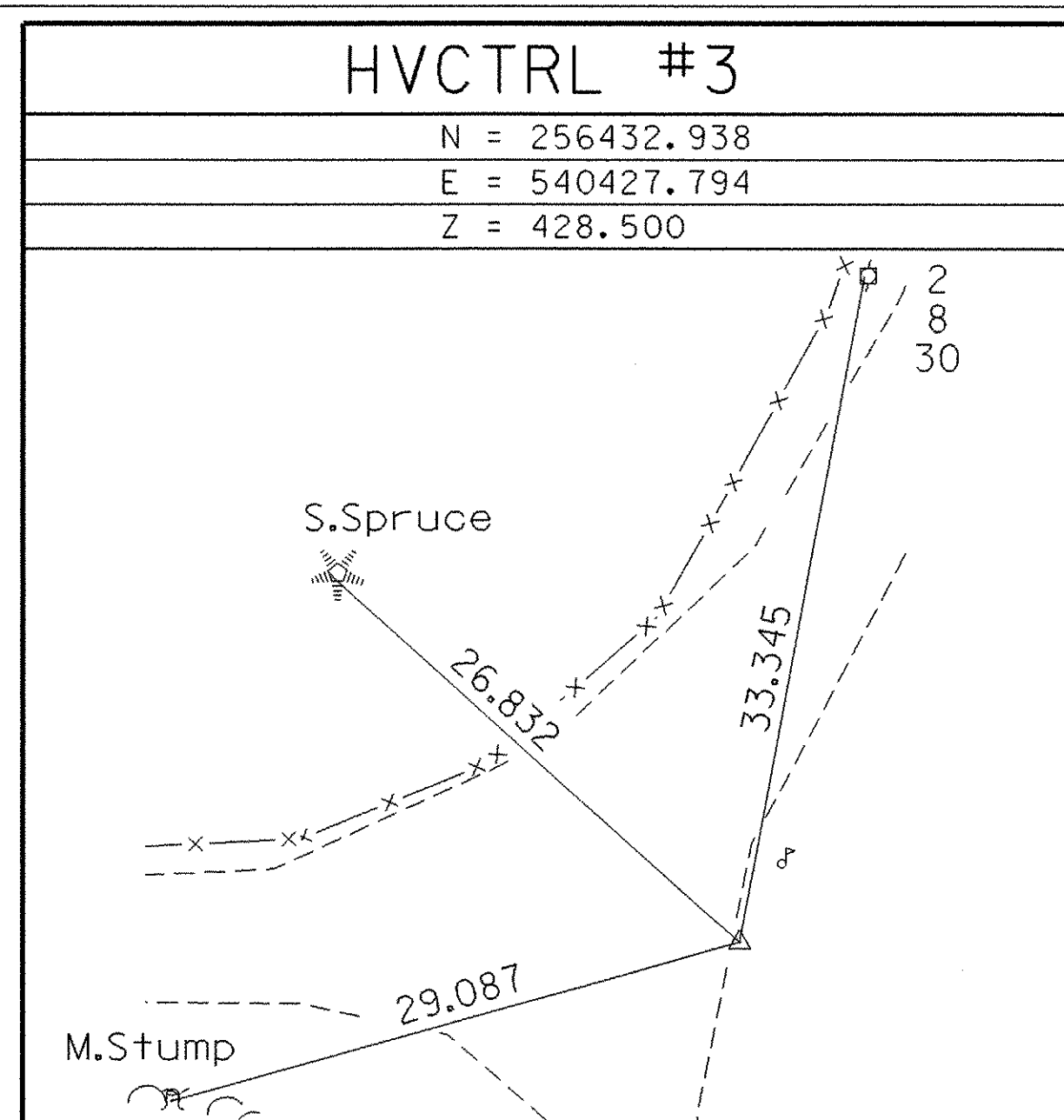
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East: 540756.385

North: 256432.938
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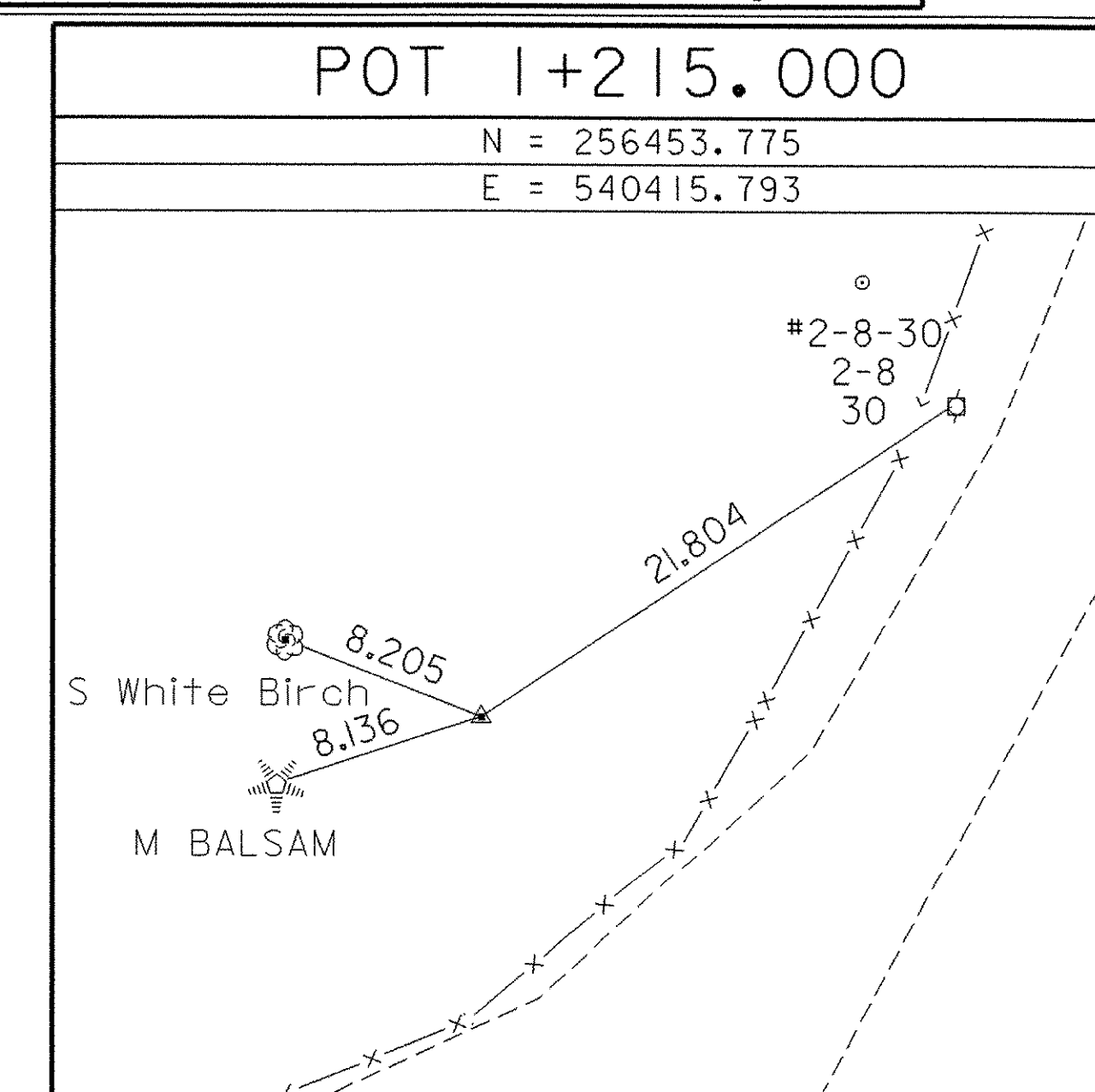
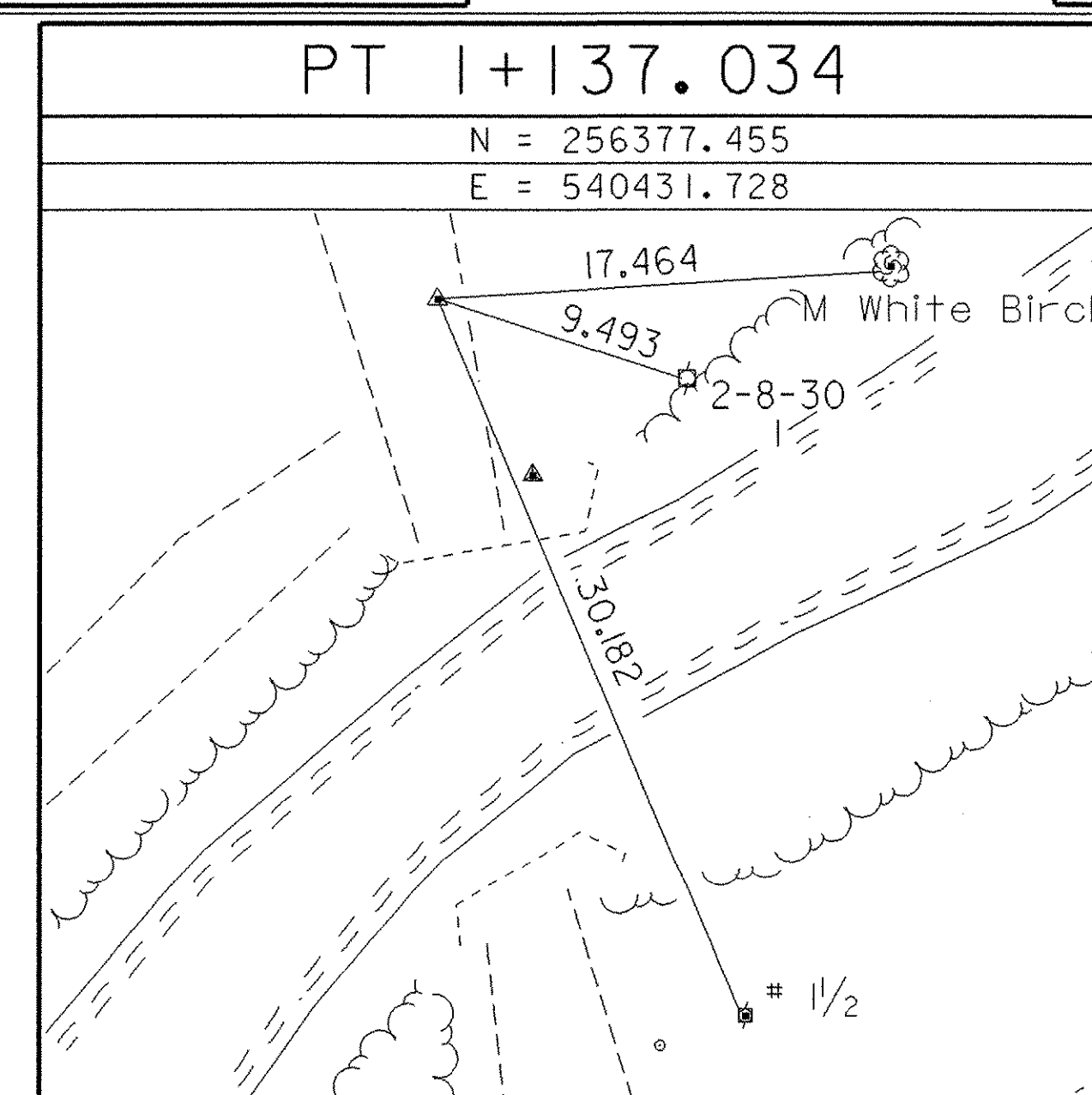
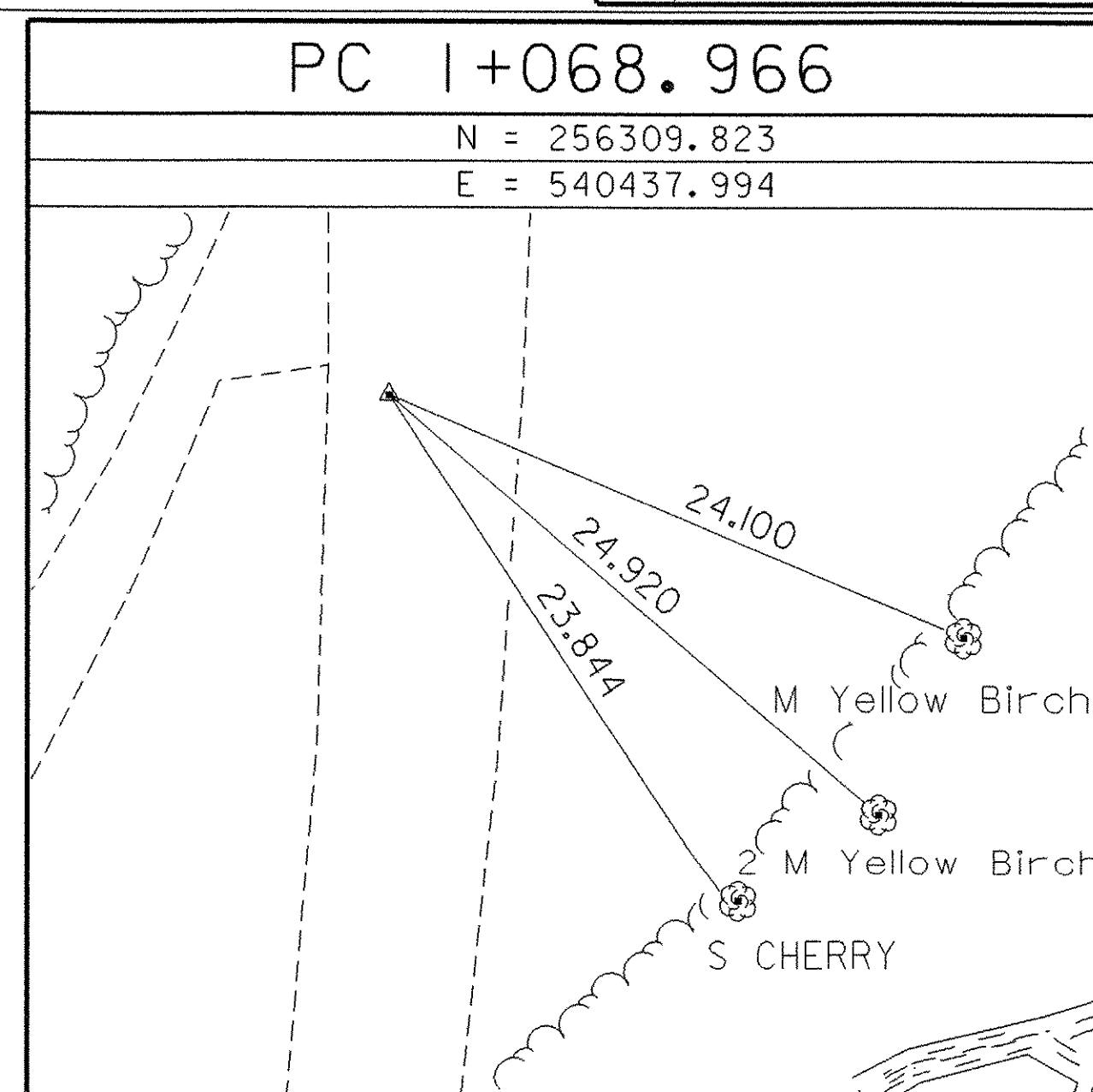
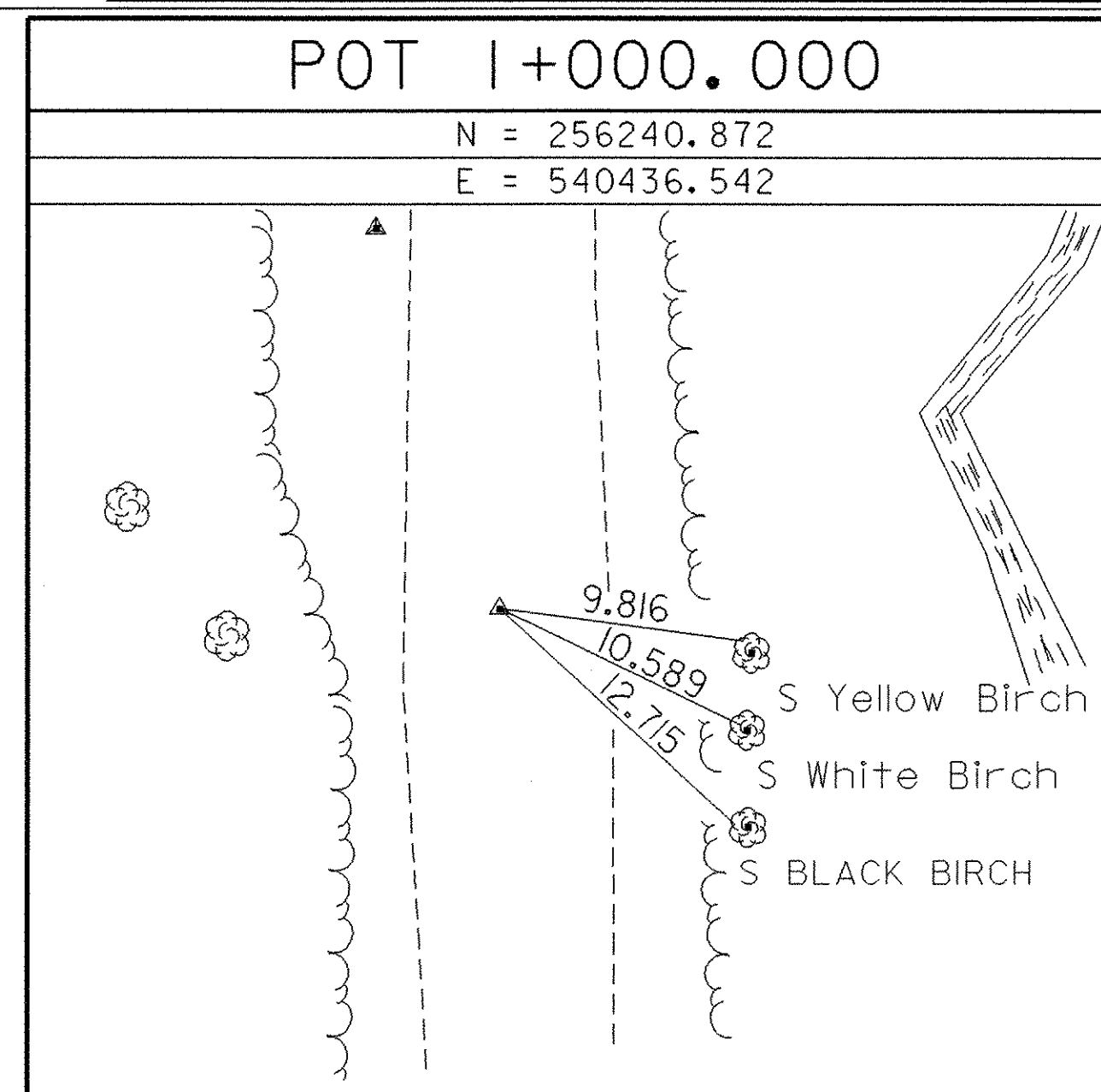
Point Designated by rebar driven in Earth

Point Designated by rebar driven in Earth

TRAVERSE TIES



ALIGNMENT TIES



* Main Traverse completed 11/04/94 by L.Orvis P.C. & R.Bullock
* Alignment staked and Tied 12/20/05 by R.Gilman P.C. & P.Winters

DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (92)

TIE SHEET

PROJECT NAME: Charleston
PROJECT NUMBER: BRO 1449 (2)

FILE NAME: 93J051\survey\93J051.tdgn	PLOT DATE: 13-APR-2006
PROJECT LEADER: M. EVANS-MONGEON	DRAWN BY: R. Bullock
DESIGNED BY:	CHECKED BY:
IPARM: sj051tie.i	SHEET 10 OF 50

Set New Sign (Traffic Signs, Type A)

Sta. 1+035 Rt. "Stop Ahead"

Anchor For Steel Beam Rail

Sta. 1+093.03 Lt.
Sta. 1+103.48 Rt.
Sta. 1+142.56 Lt.
Sta. 1+141.58 Rt.

Grass Lined Ditch

Sta. 1+070.00 Lt. - Sta. 1+109.00 Lt.
Sta. 1+126.50 Lt. - Sta. 1+147.50 Lt.

Heavy Duty Steel Beam Guard Rail (Galvanized)

Sta. 1+088.91 Lt. - Sta. 1+108.11 Lt.
Sta. 1+099.97 Rt. - Sta. 1+111.17 Rt.
Sta. 1+131.30 Lt. - Sta. 1+146.45 Lt.
Sta. 1+133.75 Rt. - Sta. 1+145.10 Rt.

Bridge Rail - HD Steel Beam/Fascia Mtd./Galvanized

Sta. 1+108.11 Lt. - Sta. 1+131.30 Lt.
Sta. 1+111.17 Rt. - Sta. 1+133.75 Rt.

Construct Drive

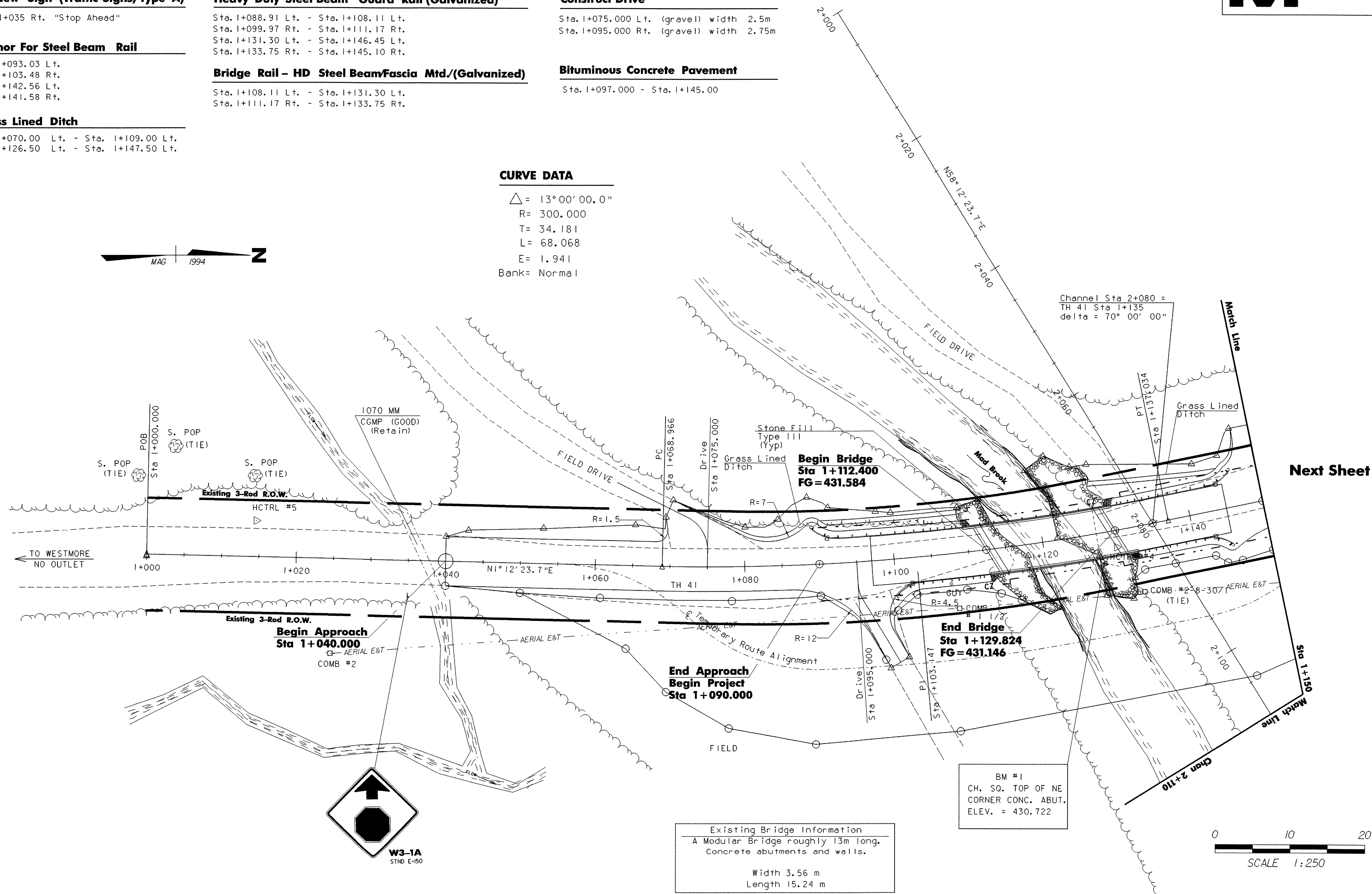
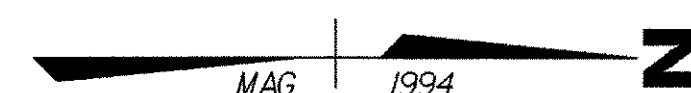
Sta. 1+075.000 Lt. (gravel) width 2.5m
Sta. 1+095.000 Rt. (gravel) width 2.75m

Bituminous Concrete Pavement

Sta. 1+097.000 - Sta. 1+145.00

CURVE DATA

$\Delta = 13^{\circ}00'00.0''$
R= 300.000
T= 34.181
L= 68.068
E= 1.941
Bank= Normal

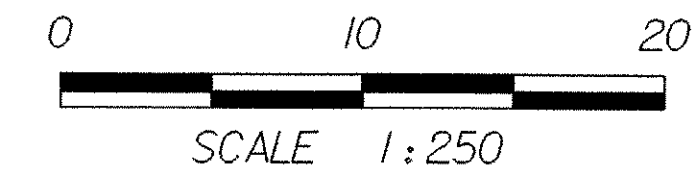


Next Sheet

Existing Bridge Information
A Modular Bridge roughly 13m long.
Concrete abutments and walls.

Width 3.56 m
Length 15.24 m

BM #1
CH. SQ. TOP OF NE
CORNER CONC. ABUT.
ELEV. = 430.722



DATUM	
VERTICAL	NAD83
HORIZONTAL	N/A

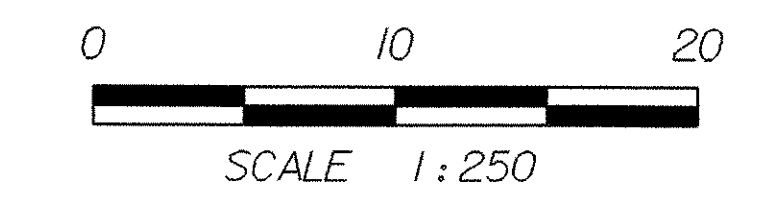
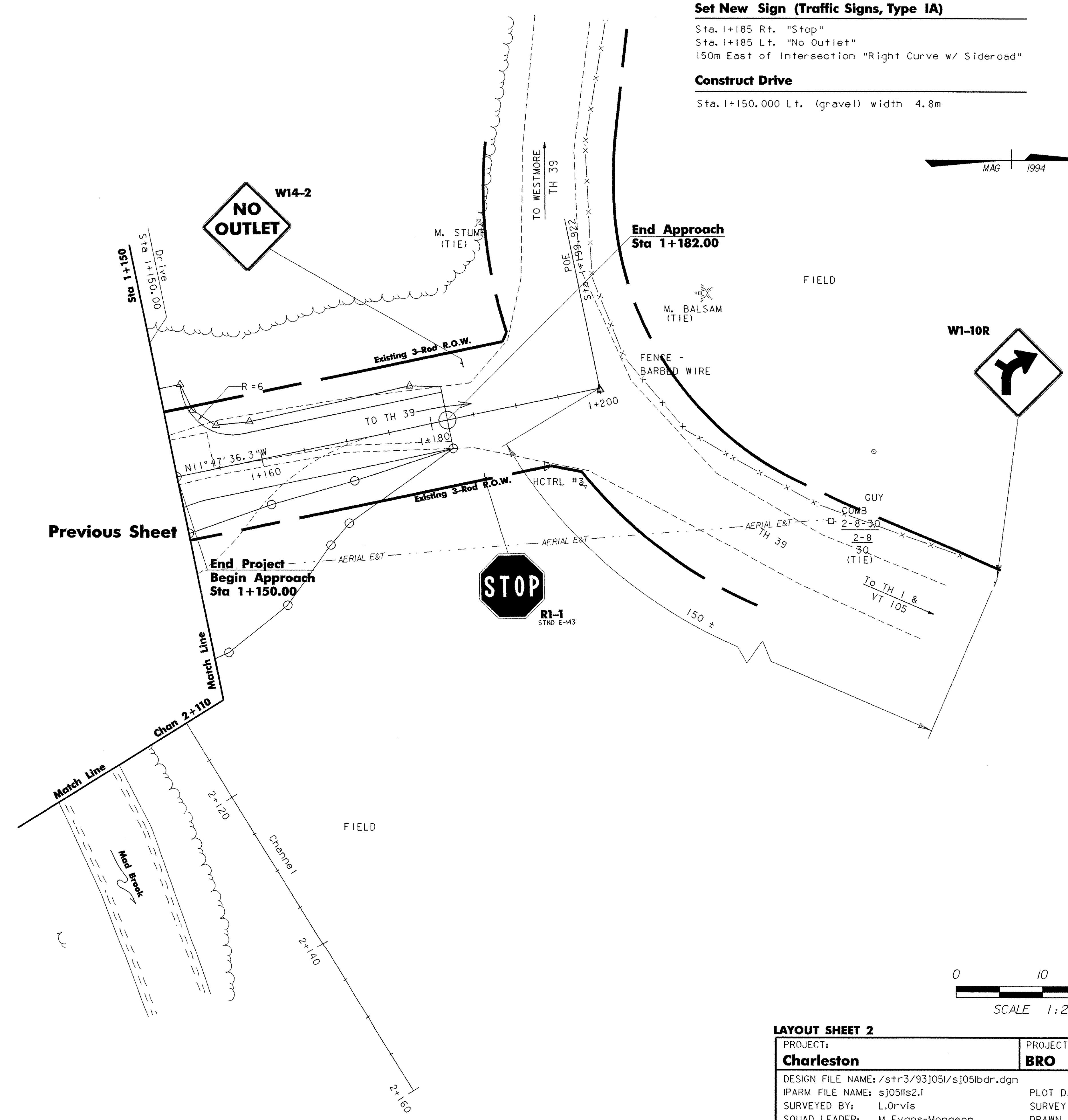
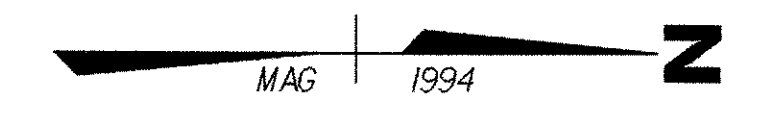
LAYOUT SHEET 1	
PROJECT: Charleston	PROJECT NO.: BRO 1449 (22)
DESIGN FILE NAME: /str3/93j051/sj051bdr.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051sl1	SURVEYED BY: L.Orvis
SURVEYED BY: L.Orvis	SURVEY DATE: 1-94
SQUAD LEADER: M. Evans-Mongeon	DRAWN BY: G.Colgrove
DESIGNED BY: G.Colgrove	SHEET: 11 OF 50

Set New Sign (Traffic Signs, Type IA)

Sta. 1+185 Rt. "Stop"
 Sta. 1+185 Lt. "No Outlet"
 150m East of Intersection "Right Curve w/ Sideroad"

Construct Drive

Sta. 1+150.000 Lt. (gravel) width 4.8m

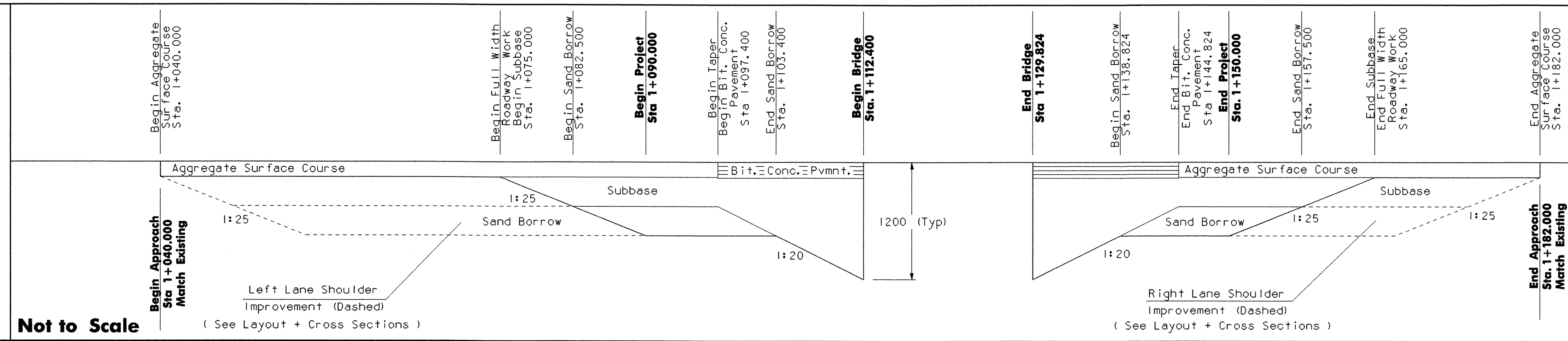


DATUM	
VERTICAL	NAD83
HORIZONTAL	N/A

LAYOUT SHEET 2	
PROJECT:	PROJECT NO.:
Charleston	BRO 1449 (22)
DESIGN FILE NAME: /str3/93j051/sj051bdr.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051s2.1	SURVEY DATE: 1-94
SURVEYED BY: L.Orvis	DRAWN BY: G.Colgrove
SQUAD LEADER: M. Evans-Mongeon	SHEET: 12 OF 50
DESIGNED BY: G.Colgrove	



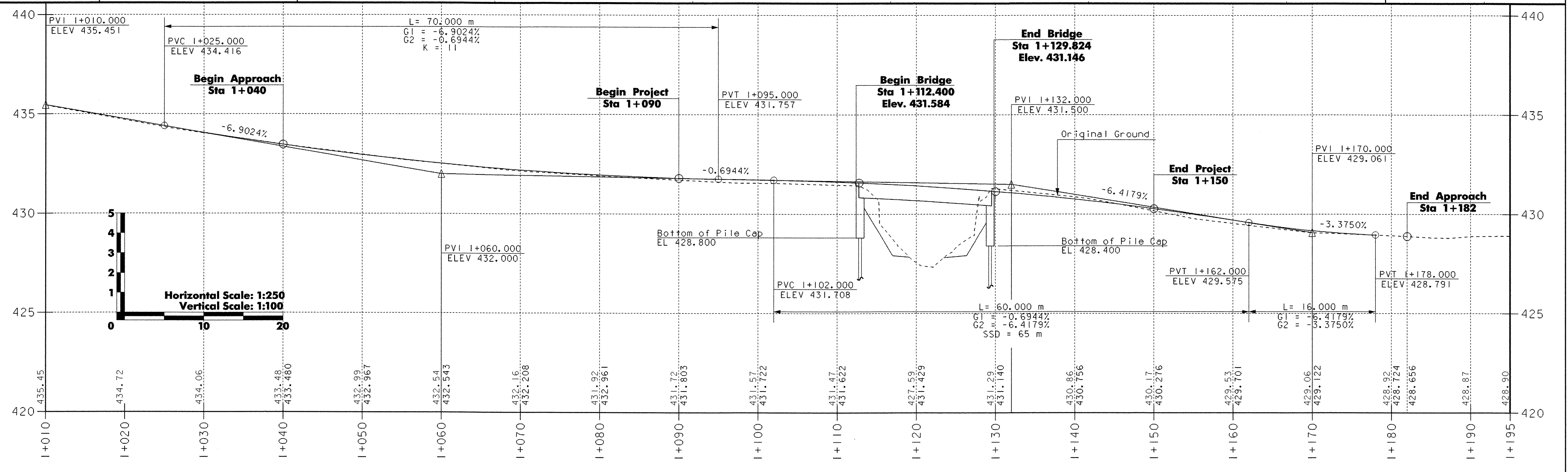
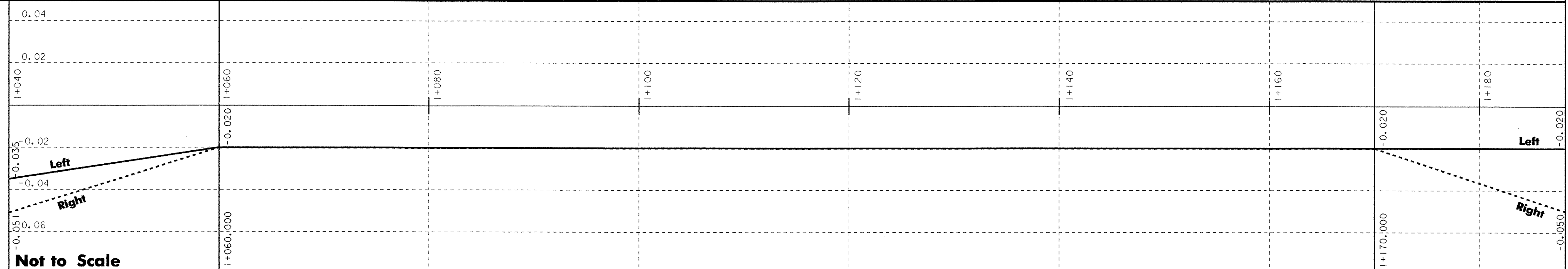
MATERIAL TRANSITION PROFILE



Not to Scale

(See Layout + Cross Sections)

ROADWAY BANKING PROFILE



PROFILE SHEET

DATUM _____

VERTICAL _____

HORIZONTAL _____

ROADWAY PROFILE

PROJECT: **Charleston**

DESIGN FILE NAME: /str2/93j051/sj051prf.dgn
IPARM FILE NAME: sj051prf.i
SURVEYED BY: L. Orvis/R. Bullock
SQUAD LEADER: M. Evans-Mongeon
DESIGNED BY: G. Colgrove

PROJECT NO.: **BRO 1449 (22)**

PLOT DATE: 13-APR-2006
SURVEY DATE: 1/24/94
DRAWN BY: G. Colgrove
SHEET: 14 OF 50

PROJECT DESCRIPTION

THIS PROJECT IS LOCATED ON TH-41 BEGINNING AT A POINT APPROXIMATELY 1958 METERS WEST OF TH-1 (HUDSON RD.) AND 1383 METERS EAST OF THE WESTMORE-CHARLESTON TOWN LINE. THE PROJECT LENGTH IS 60 METERS. THE PURPOSE OF THE PROJECT IS TO REPLACE AND WIDEN BRIDGE 16 OVER THE MAD BROOK. A ONE-WAY TEMPORARY BRIDGE WILL BE UTILIZED TO CARRY TRAFFIC DURING CONSTRUCTION.

THIS PROJECT INCLUDES THE REMOVAL OF THE OLD BRIDGE AND RAILING, GRADING, DRAINAGE, SUB-BASE, INSTALLATION OF GUARDRAILS, LANDSCAPING, SIGNAGE, AND NECESSARY APPROACH WORK. THE TOTAL DISTURBED AREA EXCLUDING WASTE, BORROW AND STAGING AREAS, IS 0.3253 HECTARES.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS

THERE CURRENTLY EXISTS A GRASS DRAINAGE DITCH ALONG THE SOUTHWEST SIDE OF TH-41 IN THE AREA OF THE BRIDGE. THE BANKS OF THE BROOK, SLOPE MODERATE TO STEEP, IN THE VICINITY OF THE BRIDGE. THE TERRAIN AROUND THE BRIDGE SLIGHTLY SLOPES FROM THE SOUTHWEST TO THE NORTH EAST OF THE BRIDGE. THE VEGETATION IN THE IMMEDIATE VICINITY OF THE BRIDGE, IS PRIMARILY BRUSH AND TALL GRASS COVER.

DRAINAGE, WATERWAYS, BODIES OF WATER

THE MAD BROOK FLOWS UNDER THE EXISTING BRIDGE. THERE ARE NO MAJOR DRAINAGE WAYS IN THE PROJECT AREA THAT CARRY RUNOFF FROM THE ROAD TO THE RIVER, AND THERE ARE NO KNOWN EPHEMERAL STREAMS OR PONDS WITHIN THE PROJECT SITE.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES

THE TERRAIN IS SLIGHTLY SLOPED FROM THE SOUTHWEST TO THE NORTHEAST. IN THE VICINITY OF THE BROOK; THE SLOPES TO THE BROOK ARE MODERATE TO STEEP IN THE VICINITY OF THE PROJECT SITE. THE SURROUNDING AREA IS A RURAL SITE WITH TH-41 BEING A GRAVEL ROAD AND LOW TRAFFIC VOLUME WITH NO OUTLET. THERE ARE NO BUILDINGS IN THE IMMEDIATE PROJECT AREA. THE EXISTING CABLE, TELEPHONE, AND ELECTRICAL UTILITIES WITHIN THE PROJECT SITE WILL NOT BE MOVED BY THEIR RESPECTIVE OWNERS. THERE ARE NO MUNICIPAL WATER OR SEWER LINES CURRENTLY ON THE EXISTING BRIDGE AND ARE NONE IN THE VICINITY OF THE PROJECT.

VEGETATION

THE PROJECT SITE CONSISTS OF BRUSH AND VARIED GROWTH FOREST ON THE SOUTHWEST AND NORTHWEST OF THE PROJECT. ON THE SOUTHEAST AND NORTHEAST OF THE PROJECT CONSISTS OF TALL OR CUT GRASS FIELDS WITH BRUSH GROWING ALONG THE MAD BROOK CHANNEL.

IN ORDER TO PLACE THE TEMPORARY BRIDGE ON THE DOWN STREAM SIDE OF THE EXISTING BRIDGE, BRUSH WILL NEED TO BE REMOVED AROUND THE MAD BROOK CHANNEL AND REPLACED WITH SIMILAR PLANTINGS UPON THE DETOUR'S REMOVAL.

SOILS

THE SOIL TYPE IDENTIFIED FOR THIS PROJECT SITE IS MONADNOCK FINE SANDY LOAM 3% TO 8%. THIS SOIL TYPE IS DESCRIBED AS SHALLOW TO MODERATE IN DEPTH, BEDROCK COULD BE ENCOUNTERED 1.5 TO 2 METERS IN DEPTH. THIS SOIL GROUP HAS A "K" VALUE OF 0.24 THE POTENTIAL FOR HIGH EROSION, WITH A HYDRAULIC SOIL GROUP B.

OTHER SOILS ON THIS PROJECT ARE AS FOLLOWS:

MONADNOCK FINE SANDY LOAM 8% TO 15%. THIS SOIL TYPE IS DESCRIBED AS SHALLOW TO MODERATE IN DEPTH, BEDROCK COULD BE ENCOUNTERED 1.5 TO 2 METERS IN DEPTH. THIS SOIL GROUP HAS A "K" VALUE OF 0.22 THE POTENTIAL FOR HIGH EROSION, WITH A HYDRAULIC SOIL GROUP C.

BUCKLAND, VERY FINE SANDY LOAM 8% TO 15%. THIS SOIL TYPE IS DESCRIBED AS SHALLOW TO MODERATE IN DEPTH, BEDROCK COULD BE ENCOUNTERED 1.5 TO 2 METERS IN DEPTH. THIS SOIL GROUP HAS A "K" VALUE OF 0.20 THE POTENTIAL FOR HIGH EROSION, WITH A HYDRAULIC SOIL GROUP C.

SENSITIVE RESOURCE AREAS

THERE ARE NO IDENTIFIED WETLANDS IN THE PROJECT AREA.

NO THREATENED AND ENDANGERED SPECIES, PRIME AGRICULTURAL LAND, OR CRITICAL HABITATS HAVE BEEN IDENTIFIED WITHIN THE PROJECT AREA.

PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE REMOVAL OF THE EXISTING STRUCTURE, CONSTRUCTION AND REMOVAL OF THE TEMPORARY BRIDGE AND CONSTRUCTION OF THE NEW BRIDGE WILL TAKE PLACE ON THE BANKS AND OVER THE MAD BROOK.

GENERAL EROSION AND SEDIMENT CONTROL GUIDELINES

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE WORK OUTLINED IN THIS NARRATIVE CONSISTS OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO CONTROL EROSION AND MINIMIZE THE SEDIMENTATION OF RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION CONTROLS.

THE INSTALLATION, USE, AND REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES WITH CONSTRUCTION ACTIVITIES TO ENSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION AND SEDIMENT CONTROL SHALL BE COORDINATED. TEMPORARY STABILIZATION PRACTICES IN INCREMENTAL STAGES AS CONSTRUCTION PROCEEDS SHALL BE EMPLOYED. THE CONTRACTOR WILL USE ADDITIONAL EROSION CONTROL MEASURES AS NECESSITATED BY THE SEQUENCE OF CONSTRUCTION AND AS DIRECTED BY THE RESIDENT ENGINEER. SEE SECTION 105.23 OF THE VERMONT AOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001.

THE RESIDENT ENGINEER MAY DIRECT THE INSTALLATION OF CERTAIN EROSION CONTROL MEASURES IN ORDER TO AVOID POTENTIAL EROSION PROBLEMS, OR TO RESPOND TO STORM EVENTS OR DAMAGE BY CONSTRUCTION OPERATIONS.

INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN IN THE EROSION CONTROL PLAN OR AS DIRECTED BY THE RESIDENT ENGINEER. DO NOT MODIFY THE TYPE, SIZE OR LOCATION OF ANY CONTROL OR PRACTICE WITHOUT APPROVAL OF THE RESIDENT 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 OR REPLACE ANY DAMAGED MEASURES.

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. 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. IN GENERAL, PRESERVE EXISTING GRASSES, SHRUBS, AND TREES WHEREVER POSSIBLE.

CONTROL ONLY SEDIMENT-LADEN RUNOFF GENERATED BY THE PROJECT SITE. COLLECT AND ROUTE CLEAN OFFSITE RUNOFF AROUND OR THROUGH 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.

ALL IN-STREAM CONSTRUCTION SHALL TAKE PLACE IN A LOW WATER CHANNEL BETWEEN JUNE 1 AND OCTOBER 1.

SPECIFIC GUIDELINES

PERIMETER EROSION CONTROLS

PRIOR TO ANY CONSTRUCTION ACTIVITIES, THE PROJECT DEMARCATION FENCING (PDF) SHALL BE PLACED ALONG THE PERIMETER OF THE PROJECT AS SHOWN ON THE EROSION CONTROL PLANS. THE INSTALLATION OF THE PDF WILL BE PERFORMED SUCH THAT NO VEGETATION ON THE OUTSIDE OF THE FENCING IS DISTURBED.

CONSTRUCT PERIMETER CONTROLS TO ENSURE THAT ANY DISTURBED SEDIMENT DOES NOT LEAVE THE SITE AFTER THE CLEARING OF TREES AND SHRUBS, BUT PRIOR TO ANY GRUBBING AND EXCAVATION. SEDIMENT TRAPS/BASINS, WHERE WATER HAS BEEN ADEQUATELY TREATED, MAY BE DIRECTED TO NEARBY UNDISTURBED STREAMS OR SWALES.

INSTALL PERIMETER SILT FENCE IN AREAS OF PROPOSED WORK AS SHOWN ON THE PLANS PRIOR TO GRUBBING AND ADDITIONAL SILT FENCING.

AFTER PERIMETER CONTROLS ARE IN PLACE, AND PRIOR TO GRADING OPERATIONS, CONSTRUCT TEMPORARY ONSITE SEDIMENT TRAPS WHERE NECESSARY. GRADE DISTURBED AREAS TO DRAIN TOWARDS THE SEDIMENT TRAPS WHERE POSSIBLE.

TEMPORARY DETOUR EROSION CONTROLS

ON PARTIALLY COMPLETED FILL AND CUT SLOPES, ALL EXPOSED SLOPES WILL BE STABILIZED WITH EROSION MATTING AT THE END OF EACH WORKING DAY. ONCE THE DETOUR FILL SLOPES ARE COMPLETED, THE ENTIRE DETOUR, INCLUDING ALL FILL AND CUT SLOPES SHALL BE ENTIRELY COVERED WITH EROSION MATTING AND SEEDED.

EROSION CONTROL NARRATIVE

PROJECT NAME: Charleston
PROJECT NUMBER: BR0 1449 (22)

FILE NAME: 93J051/STR/sj051erobdr.dgn PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE CHECKED BY: K. VIANI
IPARM: sj051ernl1 SHEET 15 OF 50

BRIDGE EROSION

THE NEW SUBSTRUCTURES WILL BE CONSTRUCTED AWAY FROM THE CHANNEL AND ABOVE THE WATER TABLE, SO THE USE OF COFFERDAMS IS NOT REQUIRED.

ROADWAY EROSION CONTROLS

ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED FOLLOWING FINAL GRADING ACTIVITIES.

DETOUR REMOVAL AND FINAL EROSION CONTROLS

REMOVE TEMPORARY DETOUR FILL MATERIAL TO ORIGINAL GROUND.

AS THE TEMPORARY DETOUR FILLS ARE REMOVED, ALL EXPOSED SOIL SURFACES WILL BE STABILIZED WITH EROSION MATTING AND/OR SEED AND MULCH. ON PARTIALLY REMOVED TEMPORARY FILL SLOPES, ALL EXPOSED SOIL SURFACES WILL BE STABILIZED AT THE END OF EACH WORK DAY.

THE CHANNEL STONE FILL SLOPES WILL BE COMPLETED, AND GRUBBING MATERIAL WILL BE APPLIED TO STONE FILLED AREAS AROUND EACH ABUTMENT. THE GRUBBING MATERIAL SHALL NOT BE PLACED BENEATH THE NEW STRUCTURE OR BELOW THE ORDINARY HIGH WATER ELEVATION. REFER TO THE HYDRAULICS INFORMATION ON THE PRELIMINARY INFORMATION SHEET.

THE NEWLY PLACED GRUBBING MATERIAL SHALL BE STABILIZED WITH EROSION MATTING AND/OR SEED AND MULCH AS DIRECTED BY THE RESIDENT ENGINEER.

REMOVAL OF SILT FENCE SHALL COMMENCE ONLY AFTER ALL UP-SLOPE AREAS ARE STABILIZED AND WELL ESTABLISHED, AND THE RESIDENT ENGINEER HAS APPROVED THE REMOVAL.

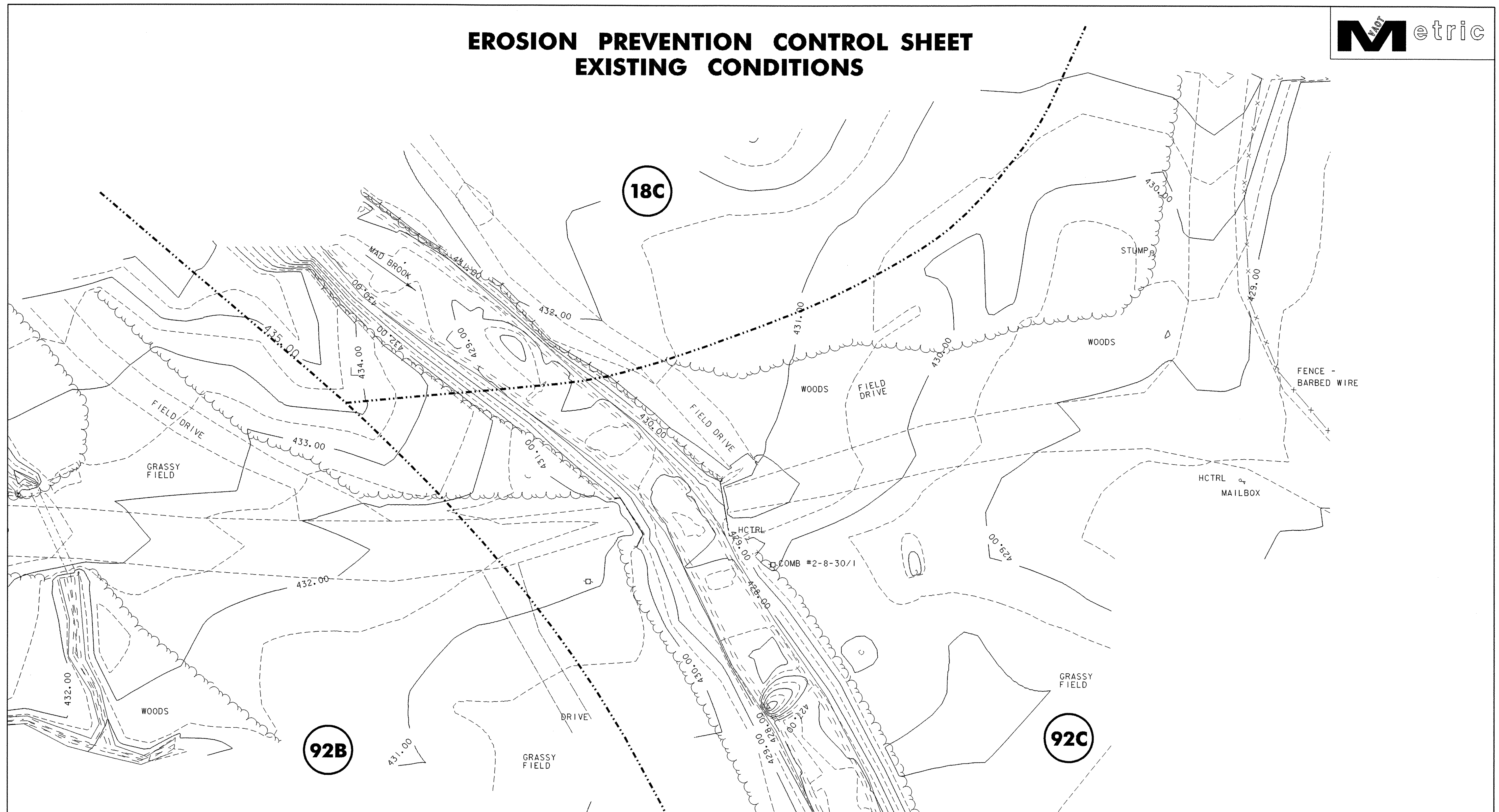
REMOVE ALL REMAINING TEMPORARY EROSION CONTROL MEASURES, RE-GRADE ANY AREAS IF NECESSARY, TREAT ALL RE-GRADED AREAS WITH EROSION MATTING AND/OR SEED AND MULCH, AND ESTABLISH ANY FINAL EROSION CONTROL DEVICES AS DEEMED NECESSARY BY THE RESIDENT ENGINEER.

EROSION CONTROL NARRATIVE

PROJECT NAME: Charleston
PROJECT NUMBER: BRO 1449 (22)

FILE NAME: 93J051/STR/sj051erobdr.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: K. VIANI
IPARM: sj051ern2.i	SHEET 16 OF 50

EROSION PREVENTION CONTROL SHEET EXISTING CONDITIONS

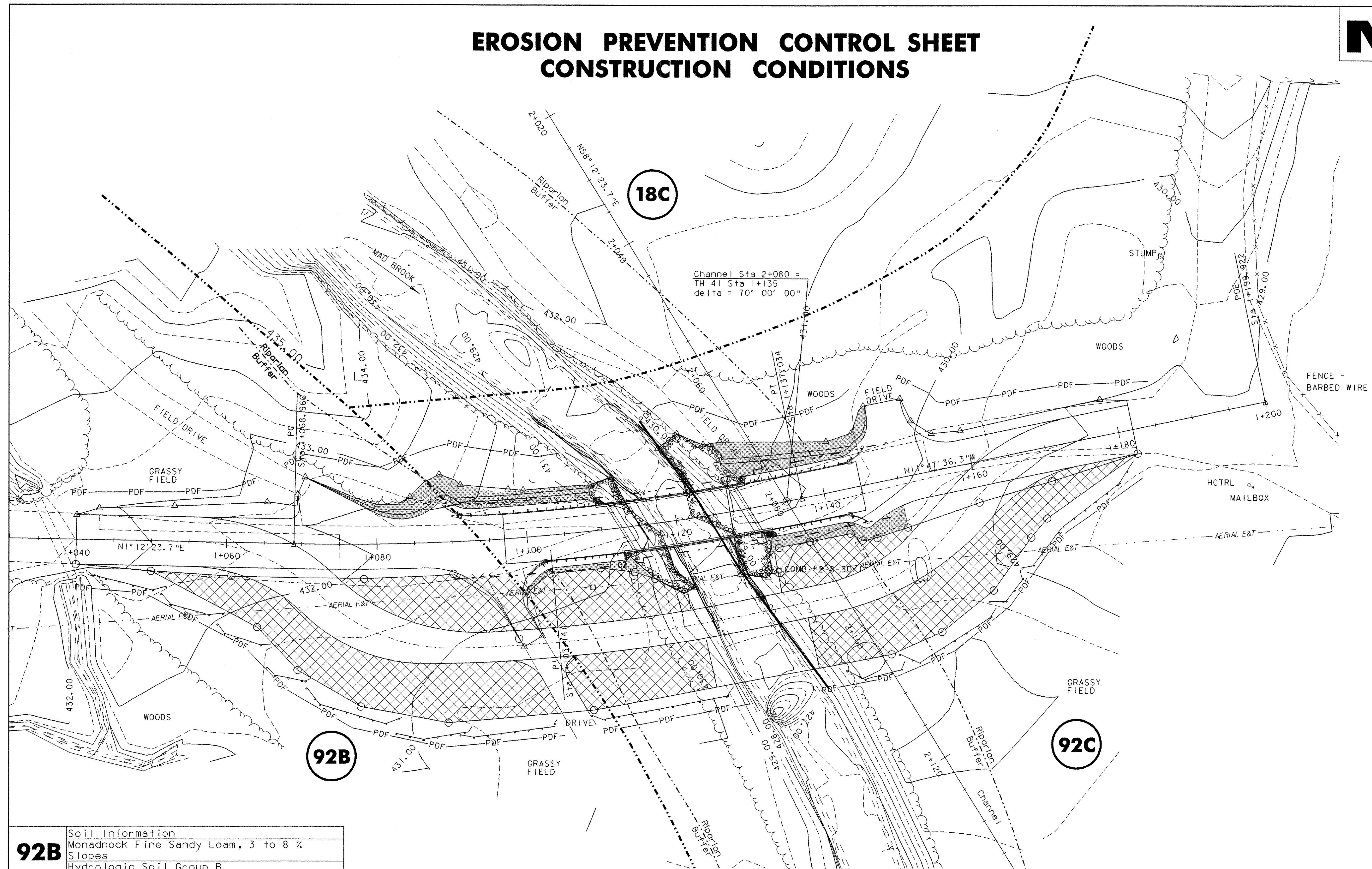


92B	Soil Information
	Monadnock Fine Sandy Loam, 3 to 8 % Slopes
	Hydrologic Soil Group B
	Depth to Bed Rock: >1.5m
	Depth to Water Table: >1.5m
92C	Soil Information
	Monadnock Fine Sandy Loam, 8 to 15 % Slopes
	Hydrologic Soil Group B
	Depth to Bed Rock: >1.5m
	Depth to Water Table: >1.5m
18C	Soil Information
	Buckland, Very Fine Sandy Loam, 8 to 15 % Slopes, Very Stony
	Hydrologic Soil Group C
	Depth to Bed Rock: 2m
	Depth to Water Table: 1.23m
Potentially Highly Erodible Soil	

LEGEND	
- - - - -	SOIL TYPE BOUNDARY

EROSION PREVENTION CONTROL SHEET EXISTING CONDITIONS			
PROJECT NAME:	Charleston		
PROJECT NUMBER:	BR0 1449 (22)		
FILE NAME:	93J051/STR/sj051erobdr.dgn	PLOT DATE:	13-APR-2006
PROJECT MANAGER:	M. EVANS-MONGEON	DRAWN BY:	G. ROKES
DESIGNED BY:	G. COLGROVE	CHECKED BY:	K. VIANI
IPARM:	sj051erol.i	SHEET	17 OF 50

EROSION PREVENTION CONTROL SHEET CONSTRUCTION CONDITIONS

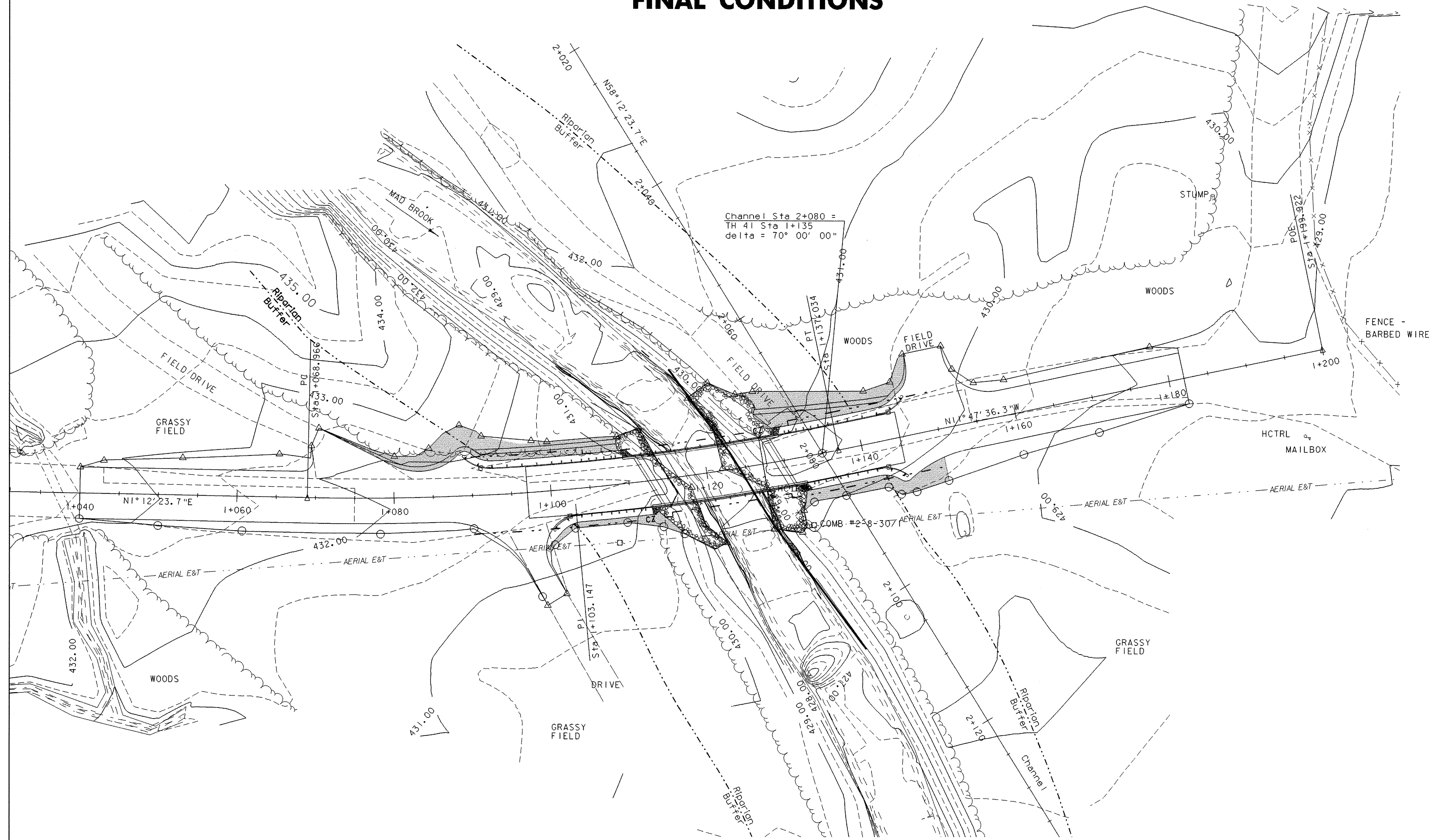


92B	Soil Information Monadnock Fine Sandy Loam, 3 to 8 % Slopes Hydrologic Soil Group B Depth to Bed Rock: >1.5m Depth to Water Table: >1.5m Potentially Highly Erodible Soil
92C	Soil Information Monadnock Fine Sandy Loam, 8 to 15 % Slopes Hydrologic Soil Group B Depth to Bed Rock: >1.5m Depth to Water Table: >1.5m Potentially Highly Erodible Soil
18C	Soil Information Buckland, Very Fine Sandy Loam, 8 to 15 % Slopes, Very Stony Hydrologic Soil Group C Depth to Bed Rock: 2m Depth to Water Table: 1.23m Potentially Highly Erodible Soil

LEGEND	
	SOIL TYPE BOUNDARY
	RIPARIAN BUFFER
	TEMPORARY EROSION CONTROL MATTING
	EROSION CONTROL MATTING
	PROJECT DEMARCATION FENCE
	SILT FENCE

EROSION PREVENTION CONTROL SHEET CONSTRUCTION CONDITIONS	
PROJECT NAME:	Charleston
PROJECT NUMBER:	BR0 1449 (22)
FILE NAME: 93j051/STR/sj051er-obdr.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: K. VIANI
IPARM: sj051erol1	SHEET 18 OF 50

EROSION PREVENTION CONTROL SHEET FINAL CONDITIONS



LEGEND	
	RIPARIAN BUFFER
	EROSION CONTROL MATTING

EROSION PREVENTION CONTROL SHEET FINAL CONDITIONS	
PROJECT NAME:	Charleston
PROJECT NUMBER:	BR0 1449 (22)
FILE NAME: 93J051/STR/sj051erobdr.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: K. VIANI
IPARM: sj051er03.l	SHEET 19 OF 50

SILT FENCE

APPLICATION NOTES:

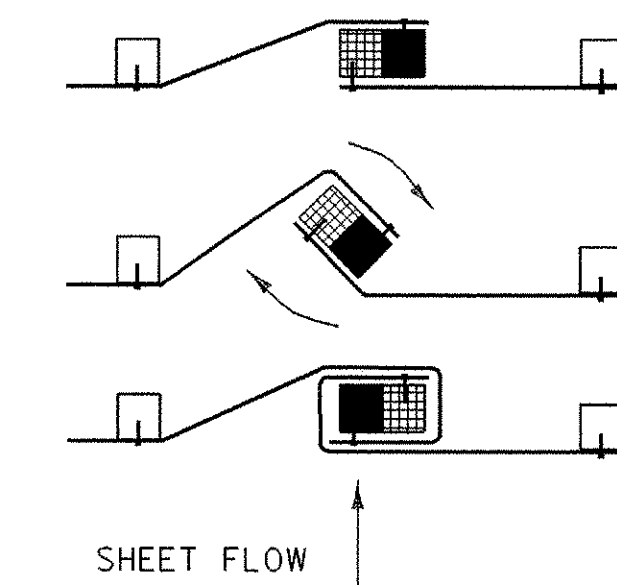
- THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES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

GENERAL NOTES:

- 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.
- ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
- IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
- 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.
- MAXIMUM DRAINAGE AREA TRIBUTARY TO 30 m OF SILT FENCE SHALL BE 0.1 Ha.
- THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

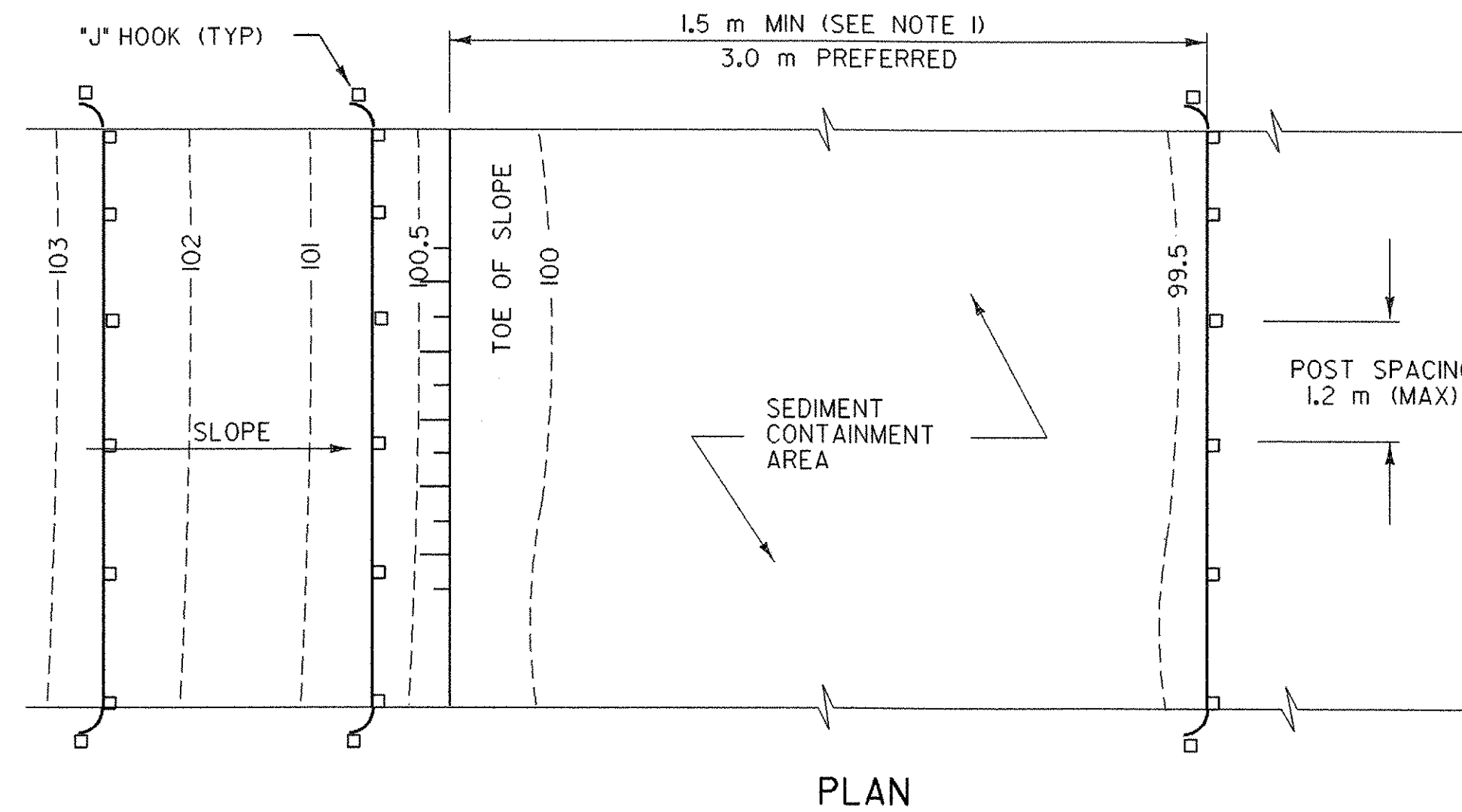
CONSTRUCTED SLOPE	SLOPE LENGTH (LS) m	HORIZONTAL LENGTH (LH) m
3 : 1	25	24
4 : 1	40	39
5 : 1	60	60
> 5 : 1	80	80

- 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.
- 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.
- 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.
- PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
- PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
- 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.

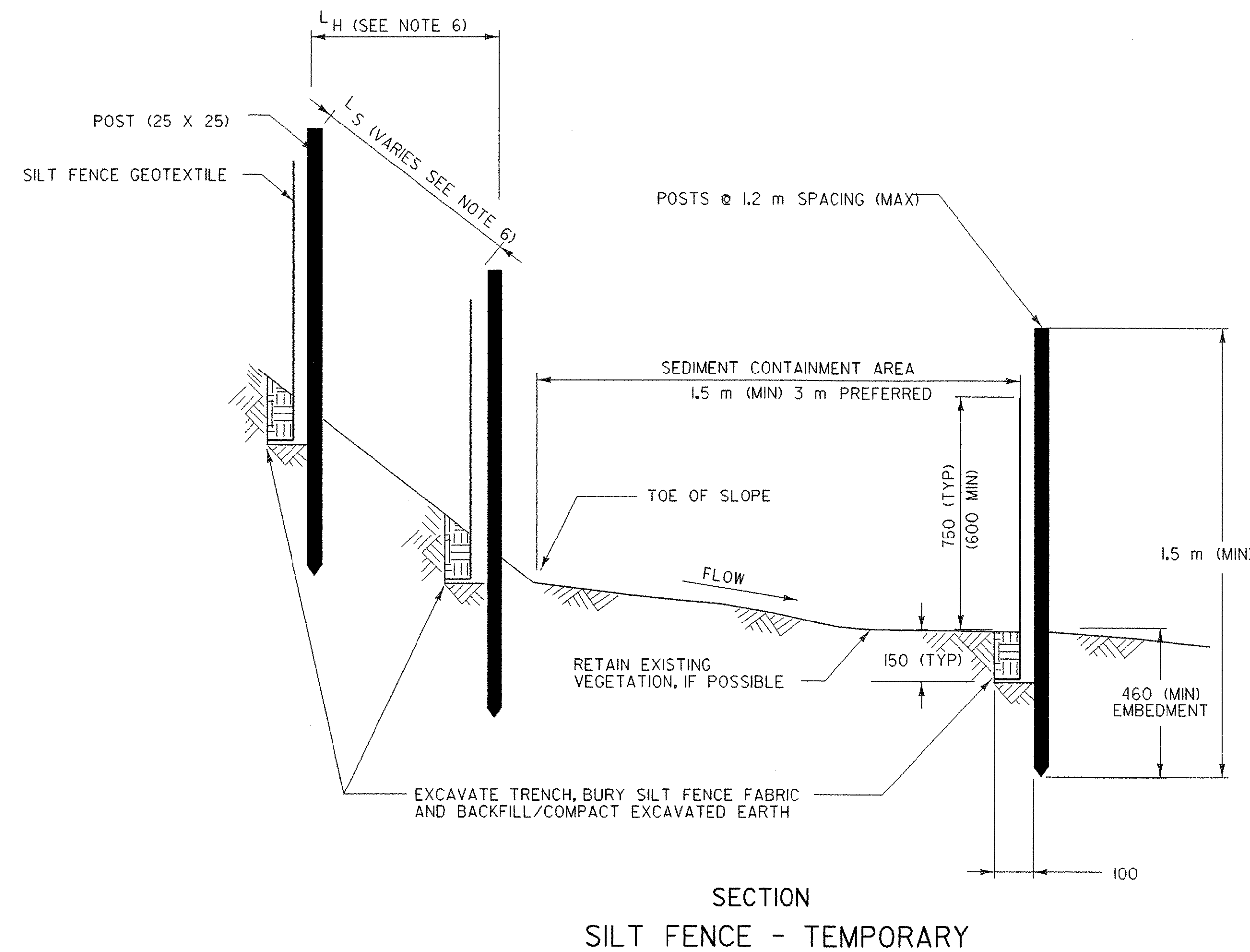


- PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
- ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
- DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

SPLICING DETAIL



PLAN



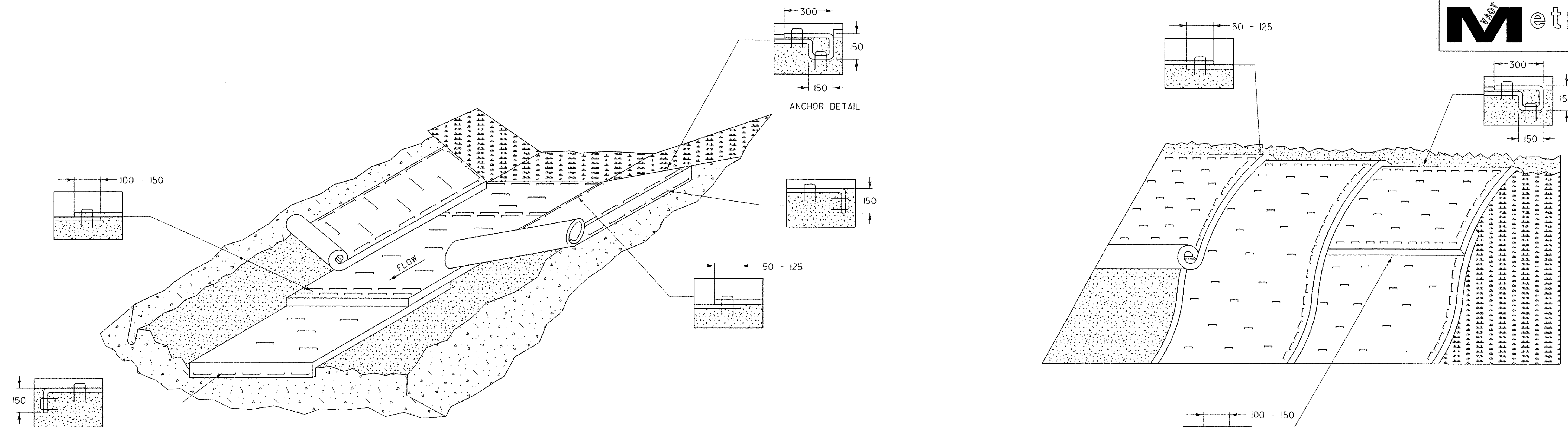
SECTION
SILT FENCE - TEMPORARY

EROSION PREVENTION & SEDIMENT CONTROL DETAILS SILT FENCE

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

PROJECT NAME: CHARLESTON
PROJECT NUMBER: BRO 1449 (22)

FILE NAME: S:\r\ 93\051\sj051erobdr.dgn PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON DRAWN BY:
DESIGNED BY: CHECKED BY: K. VAINI
IPARM sj051erodetl.i SHEET 20 OF 50



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

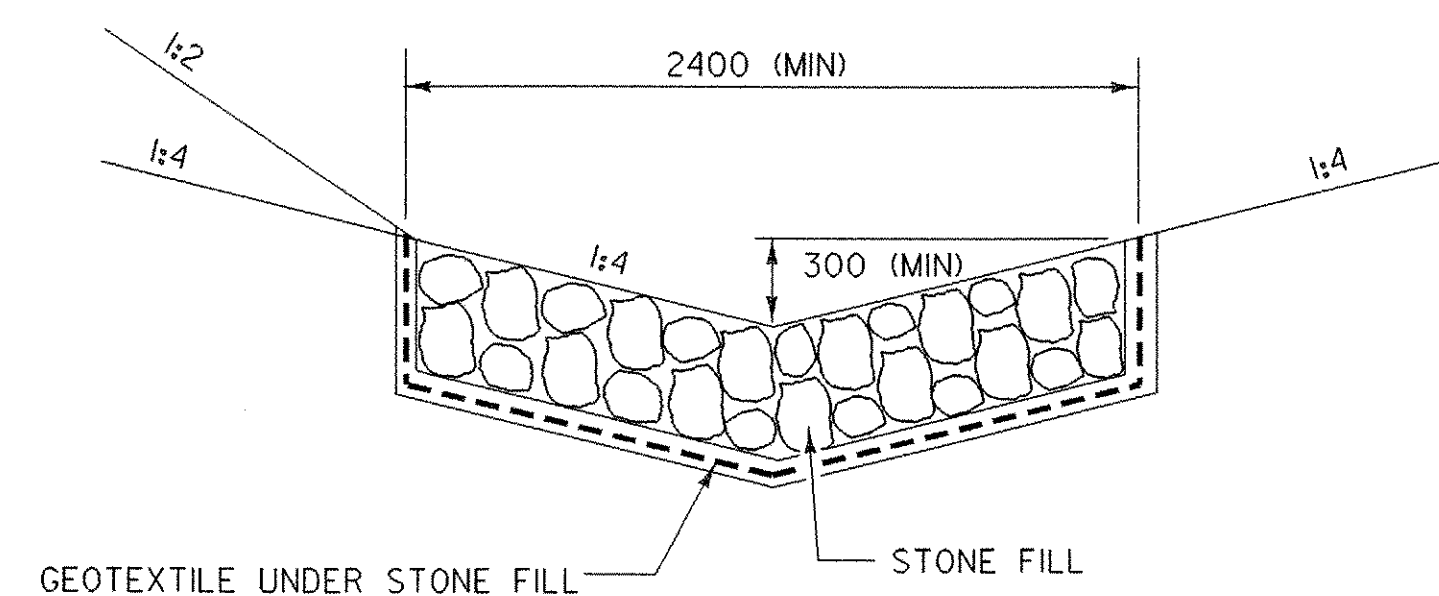
- A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.
- B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

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

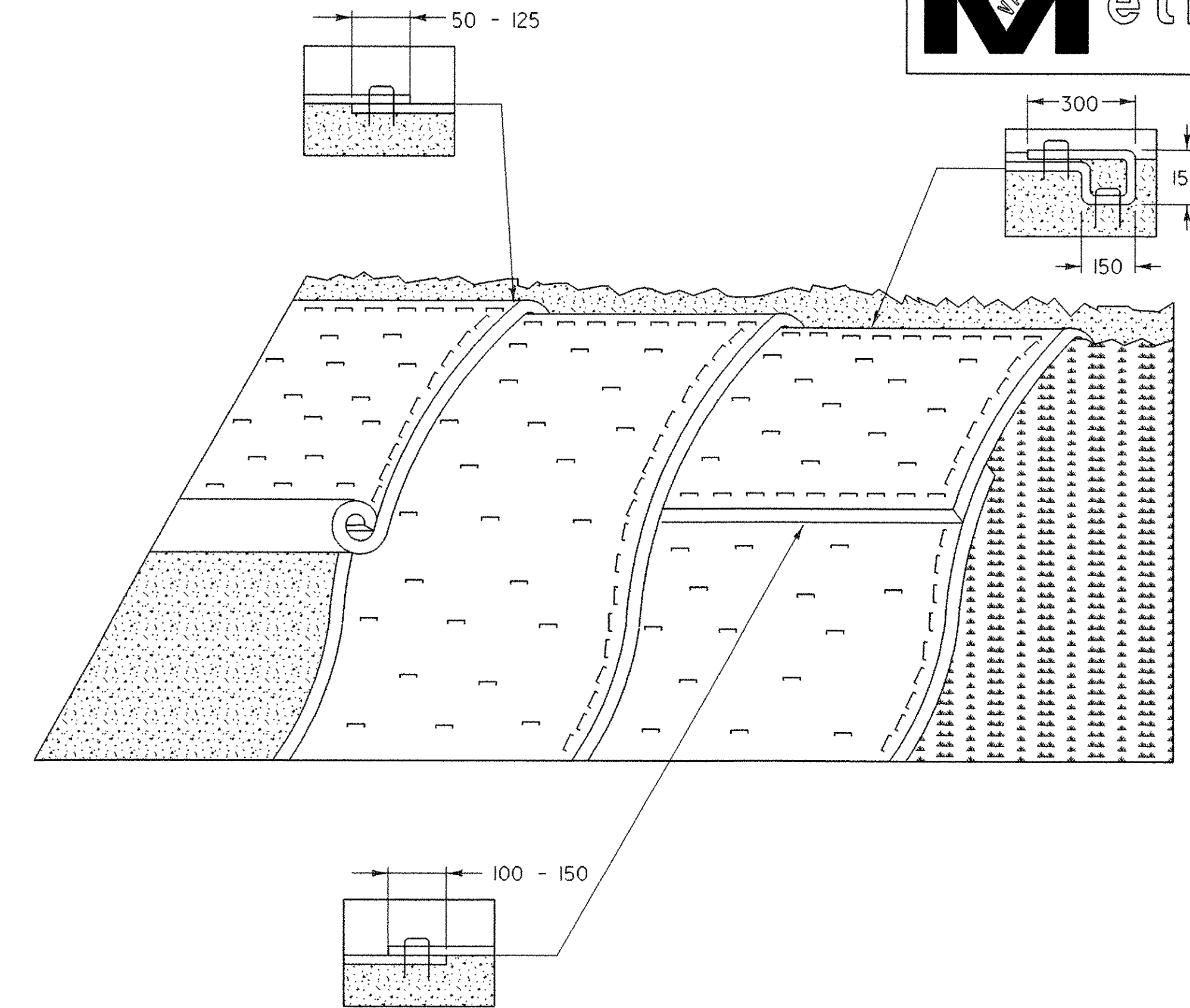
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	0.3 m
TYPE II	0.6 m

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.

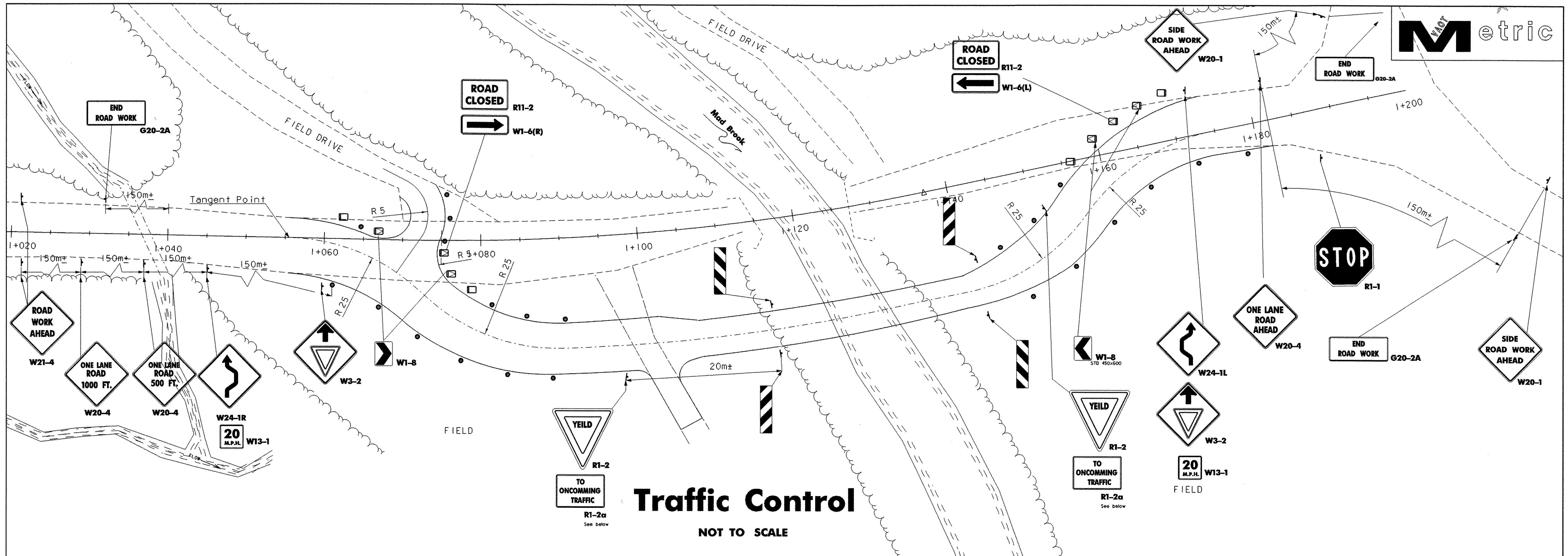
GENERAL NOTES:

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.

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

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

PROJECT NAME:	CHARLESTON
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	Str\ 93j051\sj051erobdr.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	IPARM sj051erodet2.1
PLOT DATE:	13-APR-2006
DRAWN BY:	CHECKED BY: K. VIANI
	SHEET 21 OF 50

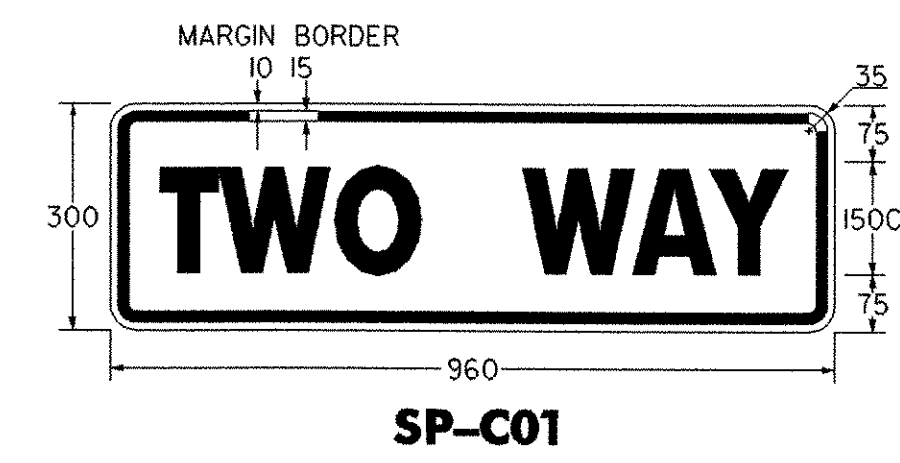
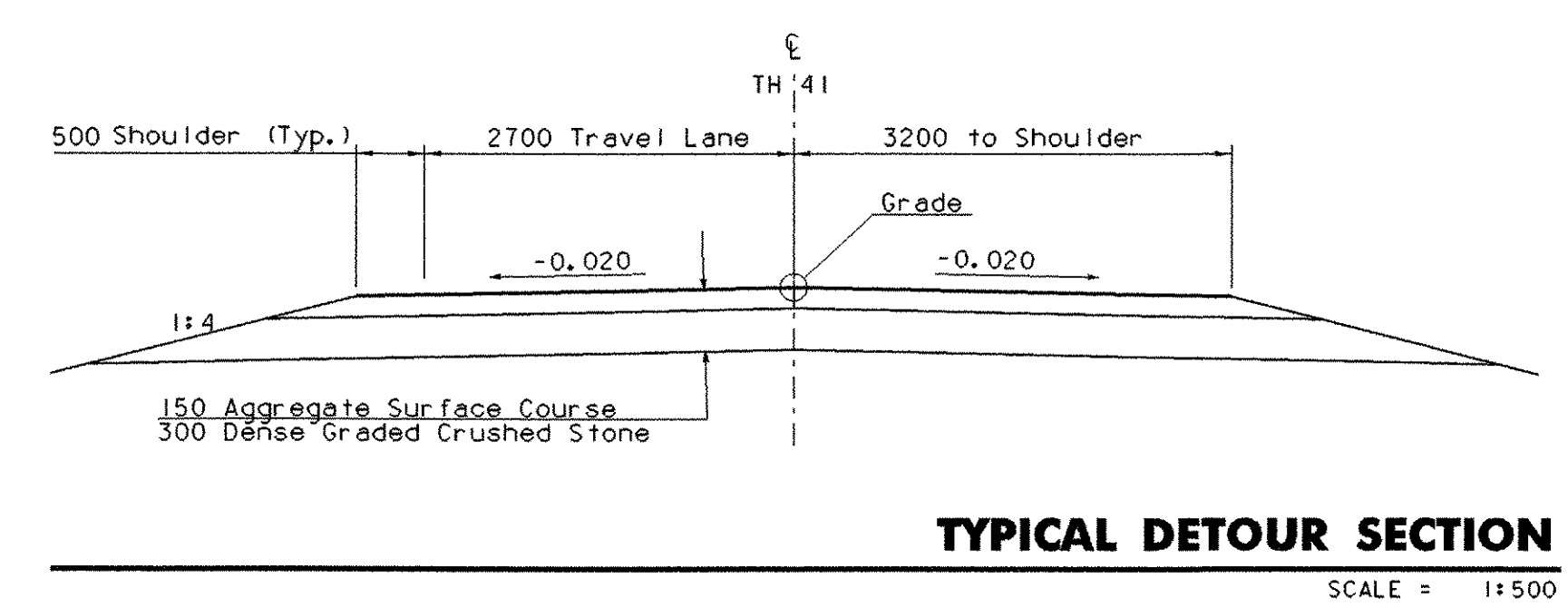


Traffic Control

NOT TO SCALE

Temporary Traffic Control Notes

1. Refer to Standard E-100 for notes on signs.
2. Refer to Standards E-100, E-101, E-102, and E-102A for construction sign details.
3. Refer to Standard E-106 for details on the Reflectorized Plastic Drum and for reflectorized cones. Refer to Standard E-107 for the Delineation Barricades and Detours for construction. Standard E-107A shall be referred to for the Break-Away Barricade Type III details.
4. The Contractor may submit an alternate traffic control plan, however, the Resident Engineer must approve the plan before it is used for the project.
5. The Contractor is responsible for moving existing bridge to the temporary bridge location (See General Notes S, b, c, and d). If the Contractor submits an alternate control plan and it is approved by the Resident Engineer, refer to standards E-110 and E-119.
6. Flaggers shall be paid for by the item, 630.15, Flaggers.
7. Due to limited space between the intersection of TH 39 and TH 41 and the beginning of the project, the Contractor may be required to space the traffic control signs closer than 150m (as shown above).
8. All temporary signs and other traffic control devices shall belong to the Contractor. At the end of the project the Contractor shall be responsible for their removal.
9. See Standard E-121 for sign placement.
Temporary traffic barrier should be substituted for the channelling devices shown when any of the following are met:
A) The bridge deck is removed
B) The bridge rails removed, or
C) In the judgment of the Resident Engineer temporary barrier is needed.
10. When temporary barrier is used, barrier ends facing oncoming traffic shall be tapered beyond the clear zone, or protected with an approved end treatment designed for the 85th percentile speed or the posted speed limit of the road way.
11. Item locations are approximate.
12. The Contractor shall be responsible to confirm any measurements in the field.
13. Use chart on right if barrier is used for channellization.
14. All items used for temporary traffic control, including temporary traffic barriers, if used, shall be paid for under item 621.90, 'Temporary Traffic Barrier'.



BARRIER TAPER RATE

POSTED OR 85TH PERCENTILE SPEED	TAPER RATE
50 K.P.H.	7 TO 1
60 K.P.H.	9 TO 1
80 K.P.H.	11 TO 1
100 K.P.H.	13 TO 1

- LEGEND**
- ↑ — SIGN
 - ⊗ — REFLECTORIZED PLASTIC DRUMS (SEE STD. E-106). DRUM SPACING (IN FEET) IS EQUAL TO DETOUR SPEED (IN MPH)
 - — TYPE III BARRICADES SEE STD. E-107A
 - ▣ — TYPE III BARRICADES (MOD.) SEE STD. E-107A

OTHER STDS. : E-100, E-101, E-102, E-102A, E-106, E-107, E-107A, E-110, E-121, REQUIRED

DATUM

VERTICAL	NAD83
HORIZONTAL	n/a

PROJECT: Charleston	PROJECT NO. : BRO 1449 (22)
DESIGN FILE NAME: /str2/93j051/sj051tra.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051tra.i	SURVEY DATE:
SURVEYED BY:	DRAWN BY: GWC
SQUAD LEADER: M. Evans-Mongeon	SHEET: 22 OF 50
Traffic Control	

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

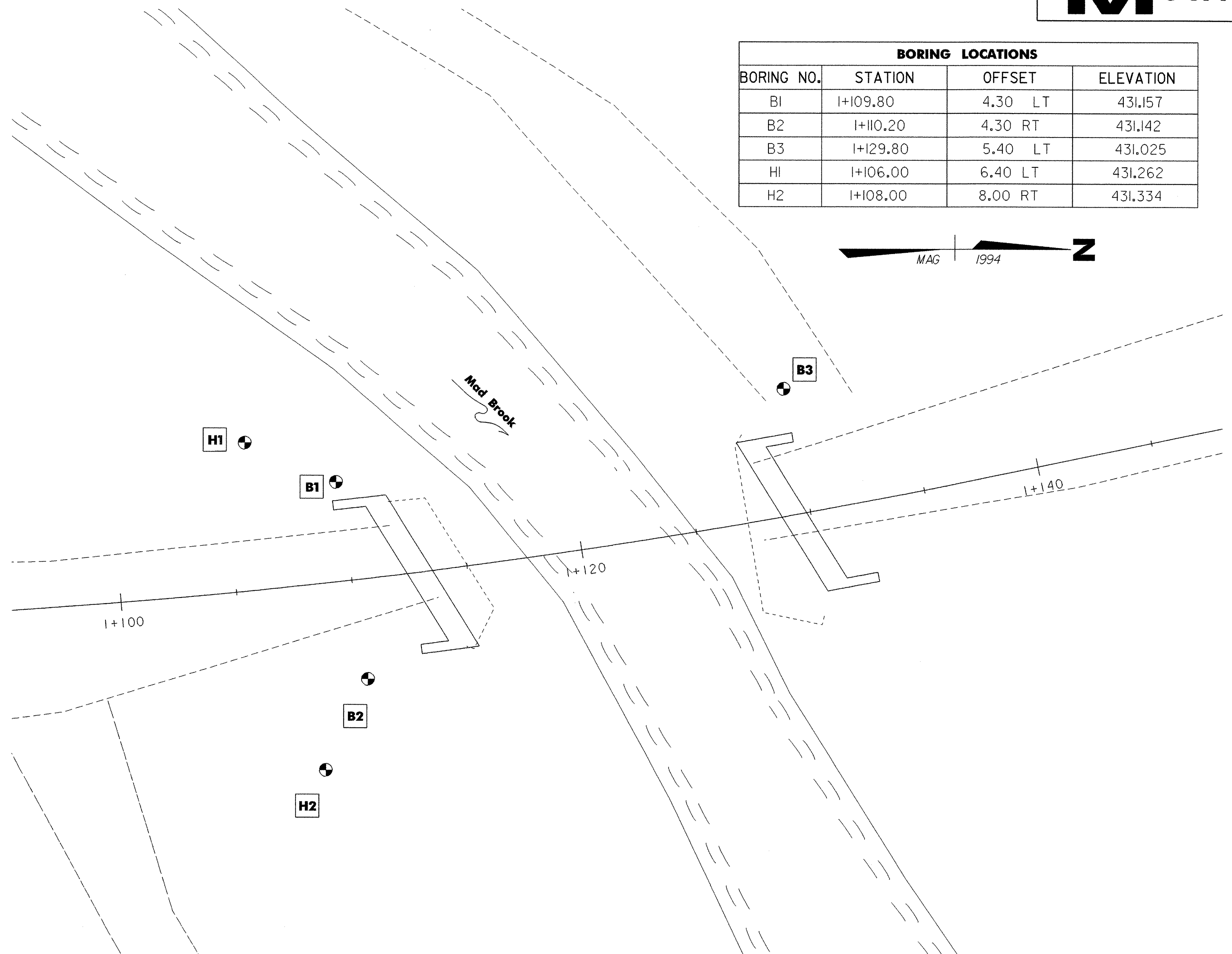
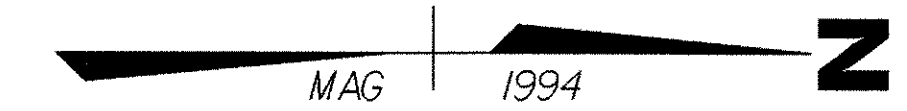
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊕	Auger Boring
⊕	Rod Sounding
S	Sample
N	Standard Penetration Test
	Blow Count Per 300 mm For:
	50.8 mm O.D. Sampler
	35.0 mm I.D. Sampler
	Hammer Weight Of 63.5 kg.
	Hammer Fall Of 762 mm
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 30.1mm
BX	Core Size 42.0 mm
NX	Core Size 54.7 mm
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	To Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
ROD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

BORING LOCATIONS			
BORING NO.	STATION	OFFSET	ELEVATION
B1	I+109.80	4.30 LT	431.157
B2	I+110.20	4.30 RT	431.142
B3	I+129.80	5.40 LT	431.025
H1	I+106.00	6.40 LT	431.262
H2	I+108.00	8.00 RT	431.334



DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 304.8 mm.

COBBLE - Rock fragments with an average dimension between 76.2 and 304.8 mm.

GRAVEL - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).

SAND - Particles of rock < 2 mm (#10 sieve) and > 75 μm (#200 sieve).

SILT - Soil < 75 μm (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

MUCK - Soft organic soil (containing > 10% organic material).

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

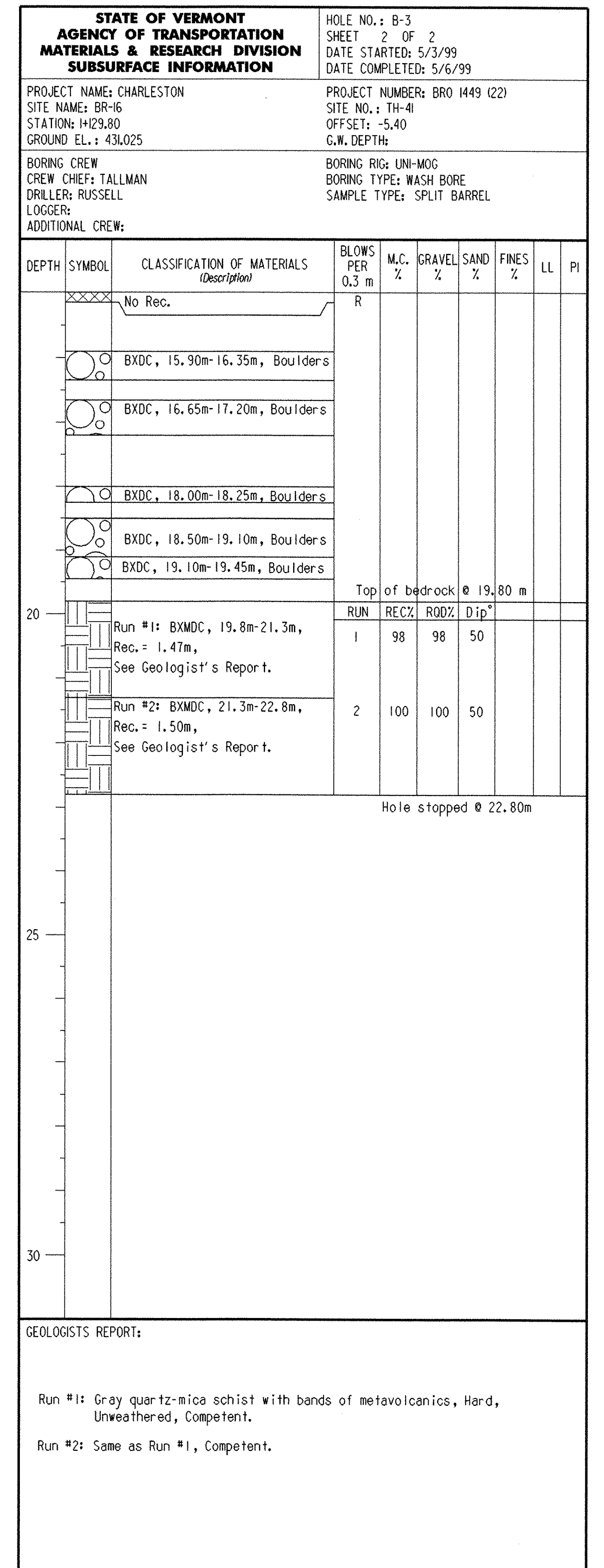
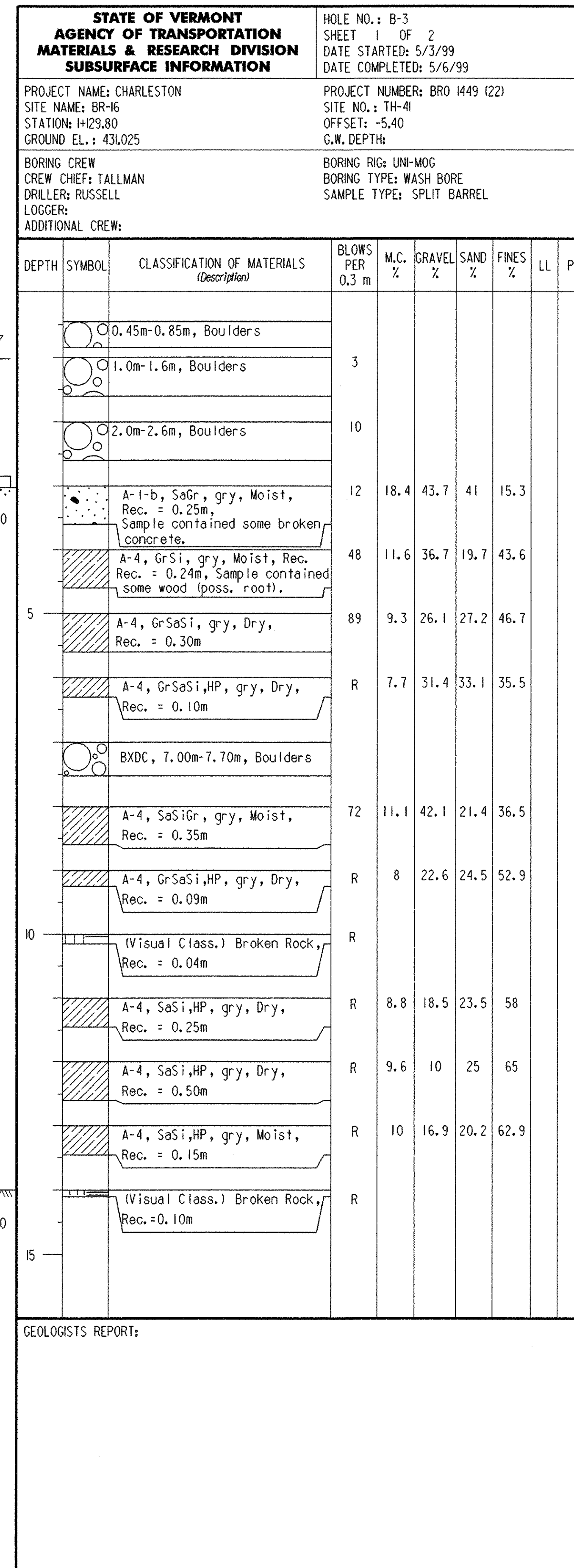
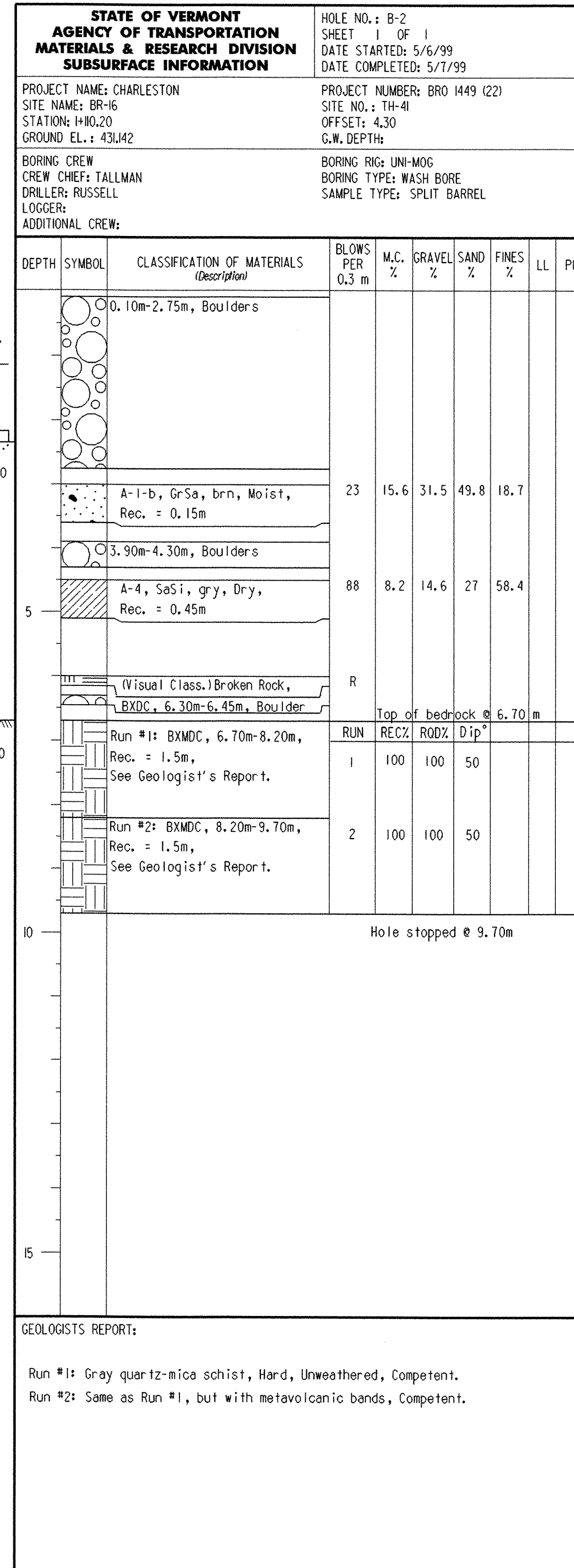
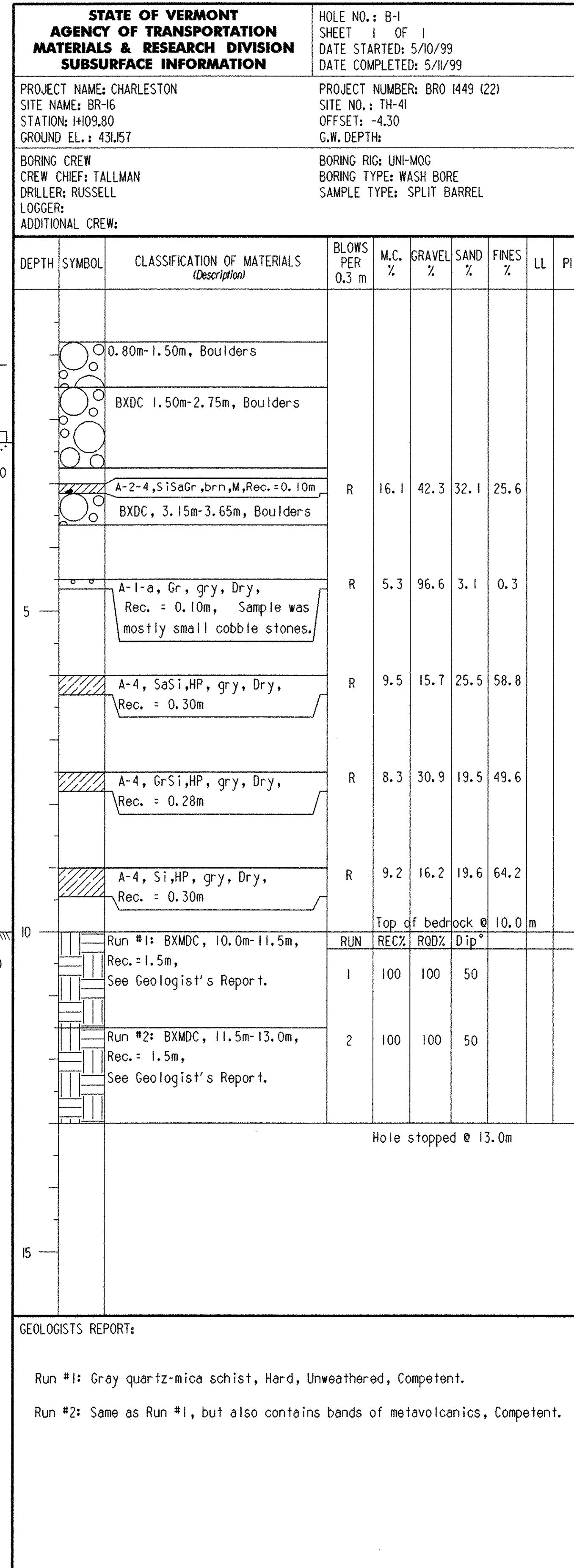
DIP - Inclination of bed with a horizontal plane.

GENERAL NOTES

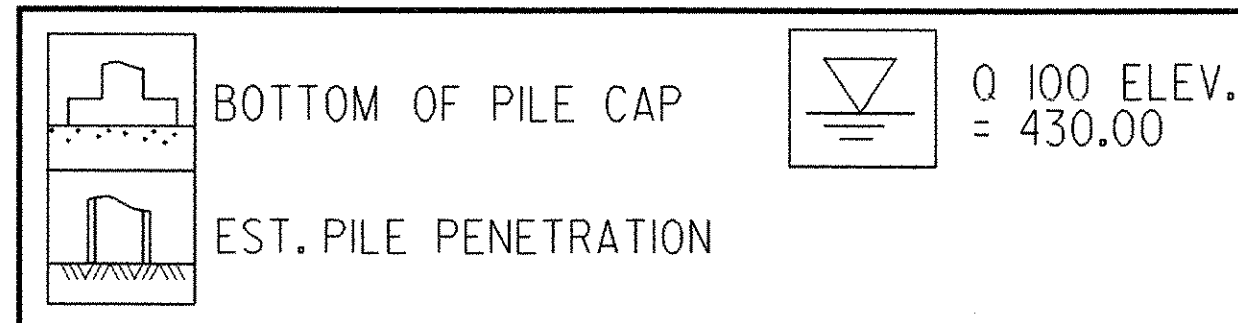
- The subsurface explorations shown herein were made between 5/3/99 and 5/12/99 by the Agency.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

BORING LOCATION SHEET

PROJECT: Charleston	PROJECT NO.: BRO 1449 (22)
DESIGN FILE NAME: /str3/93j051/sj051bdr.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME: sj051sl1	SURVEY DATE: 1-94
SURVEYED BY: L.Orvis	DRAWN BY: G.Colgrove
SQUAD LEADER: M. Evans-Mongeon	SHEET: 23 OF 50
DESIGNED BY: G. Colgrove	



KEY

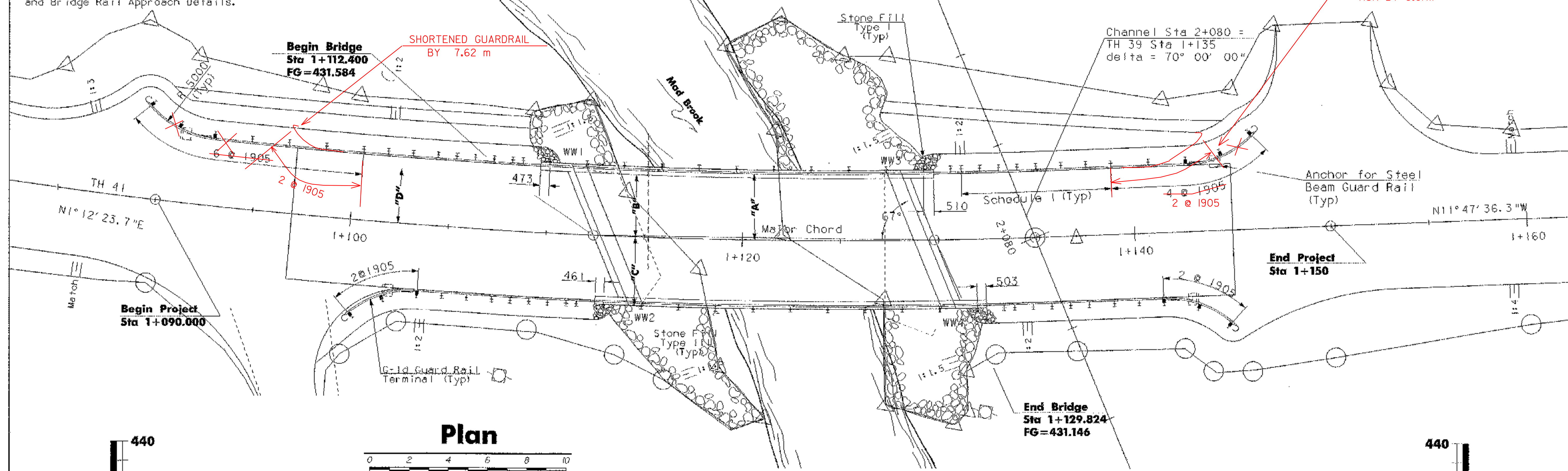


PROJECT: Charleston	PROJECT NO.: BRO 1449 (22)
DESIGN FILE NAME: /matres/93j051/mj051bor.dgn	PLOT DATE: 13-APR-2006
IPARM FILE NAME:	SQUAD LEADER: C. C. BENDA
DRAWN BY: J. TOUCHETTE	DATE: 05/99
	SHEET: 24 OF 50

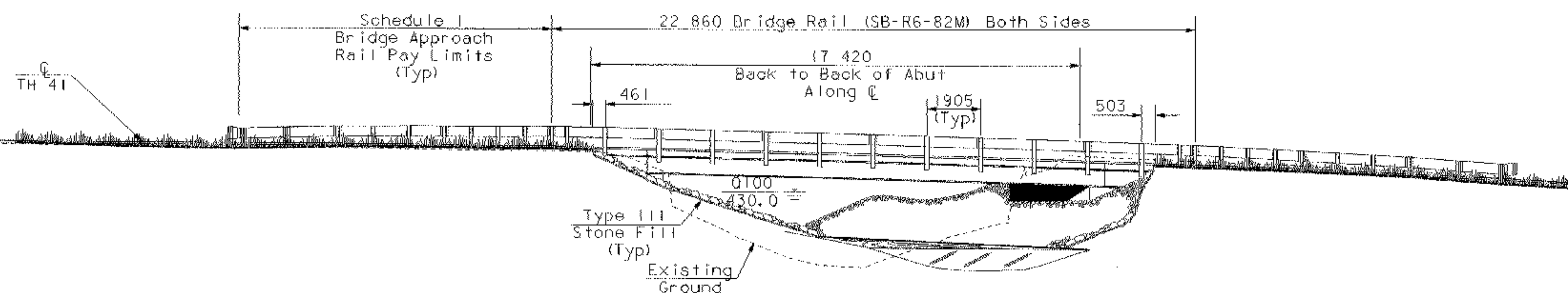
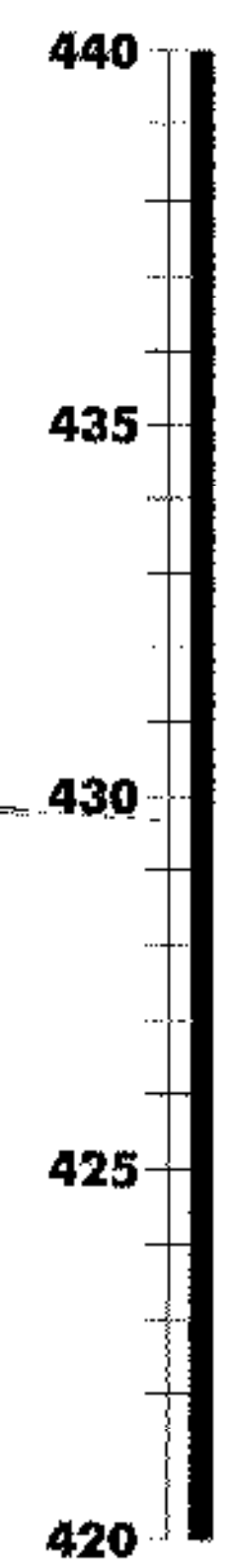
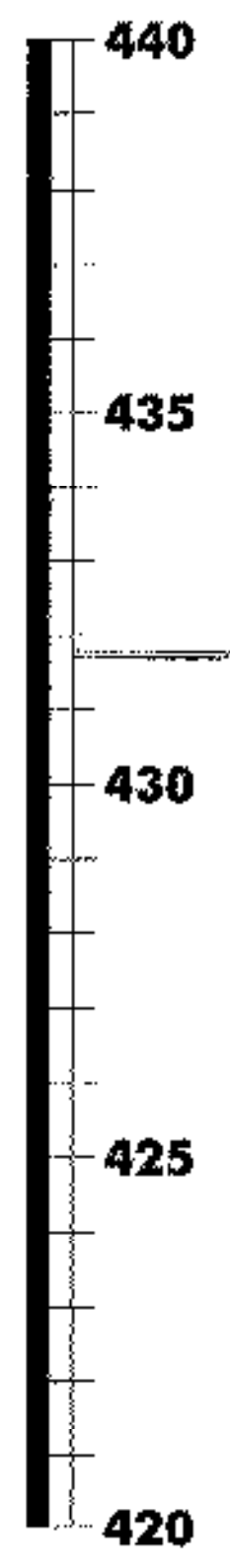
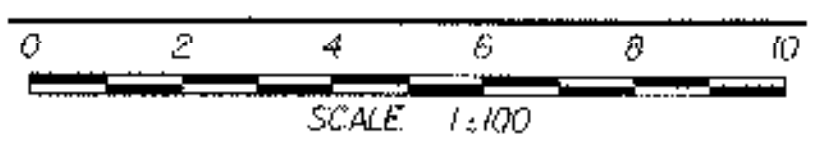
Guard Rail Notes:

1. For Guardrail Placement Details Refer to Standard G-1M for Steel Posts.
2. Refer to Standard G-1dM for Guardrail Terminal Details.
3. Refer to Standard SB-R6-82M for Bridge Rail Details and Bridge Rail Approach Details.

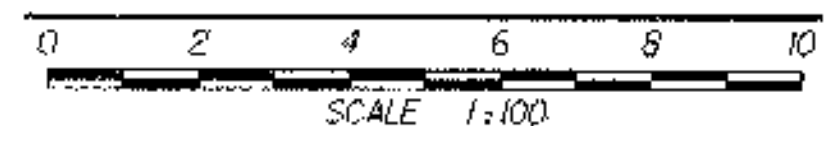
"A"	3300	To Face of Rail (Typ)
"B"	3090	To Face of Curb (Typ)
"C"	3500	To Fascia (Typ)
"D"	2700	To Edge of Travel Lane (Typ)



Plan



Elevation



DATUM	
VERTICAL	_____
HORIZONTAL	_____

PLAN AND ELEVATION

PROJECT:	Charleston	PROJECT NO.:	BRO 1449 (22)
DESIGN FILE NAME:	/str2/93/051/sj051bdr.dgn		
IPARM FILE NAME:	sj054pe.t		
DESIGNED BY:	George Colgrove	PLOT DATE:	13-APR-2006
SQUAD LEADER:	M. Evans-Mongeon	SURVEY DATE:	1/24/94
Plan & Elevation, Guard Rail Sheet		DRAWN BY:	G. Colgrove
		SHEET:	26 OF 50

GENERAL NOTES SHEET



1. GENERAL ITEMS

- a. All materials and construction shall conform to the State of Vermont Agency of Transportation's Standard Specifications for Construction, dated 2001, and its latest revisions, and the AASHTO LRFD Bridge Design Specifications, Third Edition, with the 2005 interims.
- b. Bridge #16 is designed for the HL93 live load with no allowance for future pavement.
- c. In-stream construction shall be restricted to June 1 to October 1, unless the Contractor obtains written permission from the Stream Alteration Engineer to do work outside of that time frame.
- d. All work for this project must be in compliance with the Vermont General Permit (GP-58) from the United States of America Army Corps of Engineering.
- e. The Contractor shall take all precautions necessary to prevent siltation or pollution, especially the discharge of raw concrete, into any brook, stream or river.
- f. The Contractor is required to clearly delineate the construction limits with the Project Demarcation Fence (PDF) as shown in these plans.
- g. The cost of signs and barricades required shall be incidental to the item 641.10 "Traffic Control".
- h. The term "Town" shall refer to the "Town of Charleston"

2. CHANNEL WORK

- a. The Stone fill, Type III shall be placed in front of the abutments before the prestressed concrete beams are erected.

3. CONCRETE

- a. No traffic shall be allowed on the new deck until the pavement has been placed.
- b. The key in concrete construction joints shall be monolithic and continuous for the full length of the joint; any upward key shall be placed integrally with the concrete below the joint.
- c. All exposed edges of concrete shall be chamfered 25mm by 25mm or as otherwise indicated on the plans.
- d. Joints and score marks in concrete shall be constructed as indicated on the plans or as directed by the engineer.
- e. All reinforcing steel shall be detailed and fabricated using procedures and tolerances in accordance with applicable publications of the Concrete Reinforcing Steel Institute (CRSI).
- f. Reinforcing placement tolerances shall be:
Spacing +/- 25 mm
Clearance +/- 5 mm
- g. Minimum cover for reinforcing steel shall be 50 mm along the back faces of walls against earth, 65 mm along the top surface of the deck and 75 mm elsewhere, unless otherwise noted.
- h. Water repellent (MOD.-Silane) shall be applied to all exposed concrete surfaces except the underside of the deck between the drip beads.
- i. All dimensions are horizontal or vertical and are given at 20°C unless otherwise noted.
- j. The abutments and wingwalls shall be constructed with High Performance Concrete, Class B.

4. PRESTRESSED MEMBERS

- a. Prestressed Members Shall:
 - Conform with section 510A "Prestressed Concrete."
 - Be 690 mm x 1220 mm x 16700 mm (Nominal) with skewed ends. (Exterior Units will have curved fascias.)
 - Have positive midspan camber of 17 mm at erection with only beam dead load.
 - Have the ends of the strands recessed and grouted as per standard practice.
 - Have voids terminating 1263 mm from ends of beam and being continuous between lateral posttensioning strands as shown in these plans.
 - Have drain holes provided at the ends of each void.
 - Have concrete with $f'c = 45$ MPa, and $f_c = 40$ MPa
 - The concrete mix must include a corrosion inhibitor admixture.

4. PRESTRESSED MEMBERS (Continued)

- Be designed to comply with the following unfactored loads:

Moments (kN-m)	EXT	INT
Member	342.0	363.2
SDL (Midspan)	4.2	4.9
SDL (Ends)	0.0	0.0
Pavement (Midspan)	44.0	60.0
Pavement (End)	0.0	0.0
LL+I (Midspan)	483.0	468.0
LL+I (Ends)	0.0	0.0

Shear (kN)		
Member	94.0	100.6
SDL	1.1	1.3
Pavement	11.0	15.0
Live Load + I	241.0	200.0

- b. The fabricator may alter the design as detailed in these plans to accommodate their specific operation. This alteration must be designed by a Professional Engineer and meet the above criteria. Any alterations must be approved by the Structures Engineer.
- c. The price per unit shall include all materials cast into the units and all of the costs associated with the transverse post-tensioning strands. Materials include, but not limited to the following:
 - Oakum Backer-Rod for the longitudinal shear keys.
 - Grout used to fill post-tensioning and bolt pockets or for any other purpose that is not specified in the Item 510.24 "Grouting Shear Keys"
- d. The construction sequence found on this Sheet may be used for installing the prestressed units. The Contractor may submit an alternative sequence to the Structures Section for their information. If not otherwise specified in these plans or in the specifications, all work and materials required in setting the beams shall be paid for by item 510.21 "Prestressed Concrete Box Beams (1220x690)".

5. TEMPORARY BRIDGE DETOUR

- a. The Contractor may use the existing Modular-type bridge at the project site as the temporary bridge. All work associated with the installation of the temporary bridge, including moving the existing bridge shall be incidental to item 528.10 "One-Way Temporary Bridge (MOD.-Existing Modular)".
- b. The Contractor may use any means available to move the bridge including but not limited to dismantling and reassembling or lifting by crane to the temporary location. The Contractor also has the option of installing an alternate temporary bridge. The method used must be accomplished between 8:00am and 3:00pm in a single day and shall be approved by the Resident Engineer. This work shall be referred to as "moving" the bridge. The Contractor must notify the town two weeks prior to moving the existing bridge.
- c. This note applies only if the Contractor uses the existing modular bridge as the temporary. The Contractor shall inspect the existing bridge, prior to moving it. The Contractor shall provide replacements for any part that is damaged prior to construction. All replacement parts shall be ordered and delivered to the project site prior to moving the existing bridge. The Contractor is responsible for ensuring that the existing modular type bridge will carry all construction loads that they intend to place on it. Payment for the work and parts shall be included with item 528.10 "One Way Temporary Bridge (MOD.-Existing Modular)".
- d. The Contractor shall use care in moving or dismantling the existing Modular-Type Bridge. The Contractor will replace any part damaged while they are moving or dismantling the bridge, at no additional cost to the State. The Contractor will not be responsible for any damage caused by normal use prior to moving or dismantling it.
- e. Once traffic is switched over to the new Bridge, the Contractor shall package the existing bridge parts as specified by the Resident Engineer. The Contractor shall notify the Town two weeks prior to transporting the parts to the Town shed. This work shall be incidental to item 528.10 "One-Way Temporary Bridge (MOD.-Existing Modular)".

6. BEARING NOTES

- a. The wood bearings shall be paid for under the item 531.10 "Bearing Device Assembly (Timber)". This project requires a total of 24 bearing assemblies. A bearing device assembly consists of 6 25 mm high-grade "AC" plywood layers bonded together as shown in these plans and wrapped tightly with a self adhesive waterproof wrap.
- b. The Contractor shall provide two extra Bearing Assemblies for purposes of inspection. Upon delivery the Resident Engineer will select two Bearing Assemblies at random and remove the waterproof membrane wrap to insure the proper procedure was used in their construction.

7. PROJECT CONSTRUCTION SEQUENCE

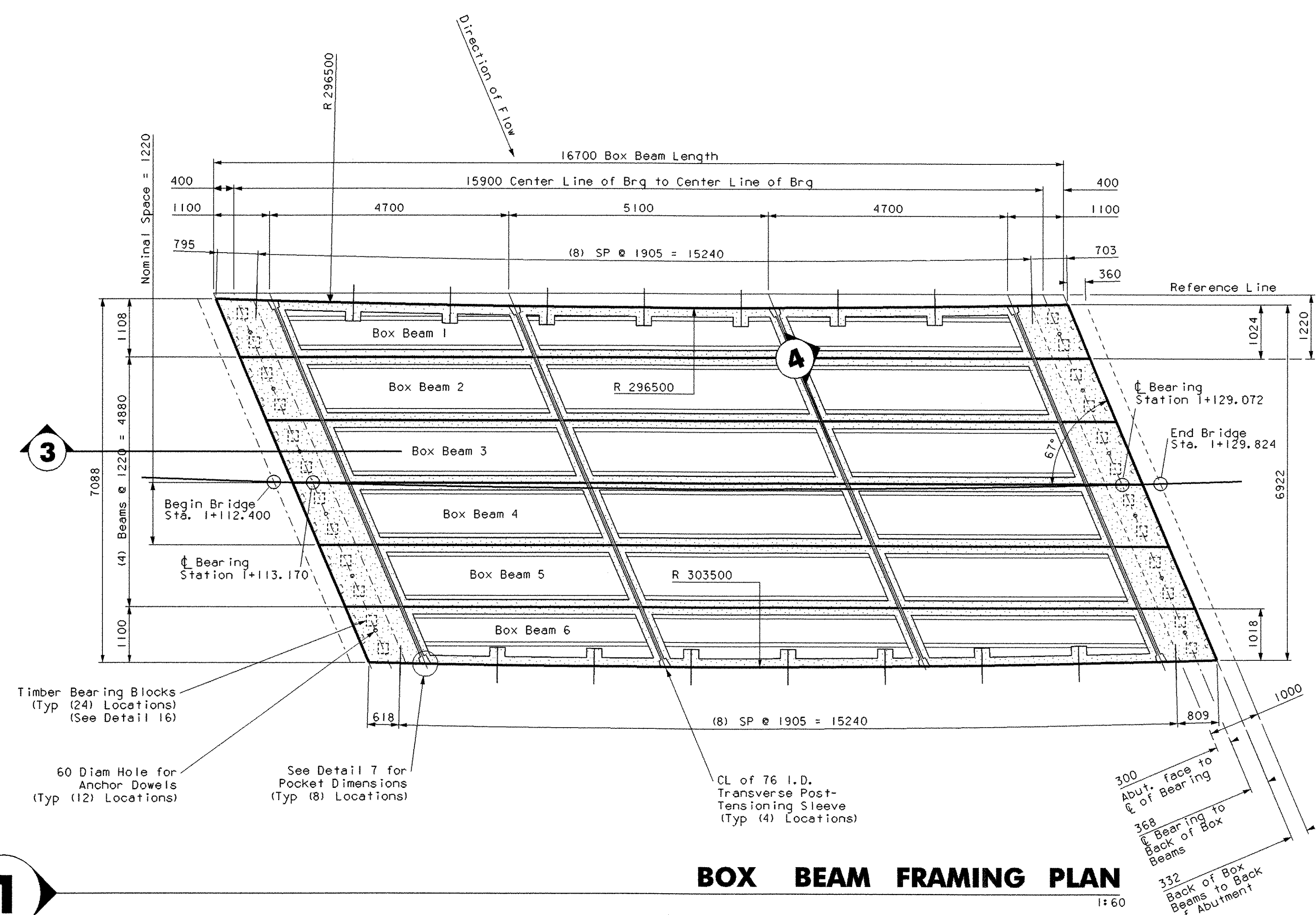
The Contractor shall follow the project sequence provided below or develop one that must be approved by the Engineer. If the Contractor wishes to develop a construction sequence, a copy must be sent to the Structures Section for reference only.

7. PROJECT CONSTRUCTION SEQUENCE

- a. Move existing Modular-Type Bridge to temporary location.
 - b. Excavate the ground for the abutments and wingwalls 300mm below the respective elevation as shown in these plans.
 - c. Drive the piling as shown in these plans. Place 300mm of Granular Backfill for Structures as shown in these plans, then compact to specifications.
 - d. The Contractor may place a "Mud" slab, with 75 mm min. thickness, using 20 MPa (min.) concrete. This will aid in forming the pile cap. The top of the "Mud" slab shall be troweled smooth, level, and set at the pile cap base elevation. A bond breaker, such as sand, shall be used prior to the placement of the pile cap. Payment for this work will be incidental to item 204.25 "Structure Excavation".
 - e. Form and place the concrete for the abutments and wingwalls to the construction joint as shown in these plans.
 - f. The Contractor may drill and set the anchor bolts before or after the beams are set.
 - g. Upon receiving the box beams, place two bearing assemblies at each abutment for each beam, where the beam will be set, as shown in these plans.
 - h. Starting with beams 3 and 4, set the box beams on the bearings (fitting over the anchor bolts if necessary.) If not done already, the Contractor may drill and set the anchor bolts. When the grout used in setting the anchor bolts has cured, apply the plate washer and nut as shown in these plans. Tighten the nut. Prior to placing the concrete, the anchor bolts shall be loosened by 3 mm to allow for free play while the concrete cures.
 - i. Form the backwall and the remainder of the wingwalls. Place concrete to fill the space under the beams. Bleeder holes shall be used to ensure the void under the beams is filled. Once the void under the beams is filled, the remainder of the concrete for the backwall and wingwalls shall be placed.
 - j. Backfill with Granular Backfill for Structures and apply the roadway subbase to the subgrade elevation of the pavement.
 - k. The prestressed units shall be overlaid first with Sheet Membrane Waterproofing (MOD-Torch Applied) and then Bituminous concrete pavement.
- ## 8. PILES
- a. This project requires 310 x 110 AASHTO M 223 Grade 345 Piles. The Contractor may not substitute an alternate size or grade of the pile nor change the number of piles.
 - b. The piles require pile shoes. The Contractor shall select cast steel pile shoes which conform to the VAOT Standard Specifications 505.04 and 730.01. The cost of the pile shoes shall be included with the item 505.16 "Steel Piling (HP 310 X 110)."
 - c. The Contractor will prevent splicing a pile within a length of 6 m below the bottom of the pile cap.
 - d. To aid in the proper pile placement or alignment, the Contractor has the option to place each pile in a pre-excavated hole as specified in VAOT Standard Specifications 503. In the case of pre-excavation, the Contractor shall use corrugated PVC culvert pipe as a permanent sleeve in place of the smooth lined temporary casing. The Contractor will not be responsible for removing the sleeve after the piles have been driven and the peastone backfill applied. For piles pre-excavated, the costs of this work shall be included with the item 503.20 "Pre-Excavation of Integral Abutment Piles."
 - e. The Contractor shall cut the Pile head within 60 mm of the elevation detailed on the contract plans. The pile at the cutoff elevation shall be free from driving damage as determined by the resident engineer. Piles shall have a minimum of 150 mm concrete cover. Piles shall be within 5 degrees from vertical in its final position. The Resident Engineer may stop the pile driving to check the pile alignment. The Contractor is not permitted to apply lateral loads on the pile to correct misalignment, or splicing a properly aligned section on a misaligned section. The Contractor shall bear all costs, including delays, associated with necessary corrective action to bring misaligned piles into the tolerances described above.
 - f. The Contractor shall drive the piles to ledge with a maximum ultimate axial pile capacity of 2730 kN as determined by the resident engineer.
 - g. For estimating purposes, the pile lengths have been assumed to be 10.0 m. Actual in place lengths may vary.

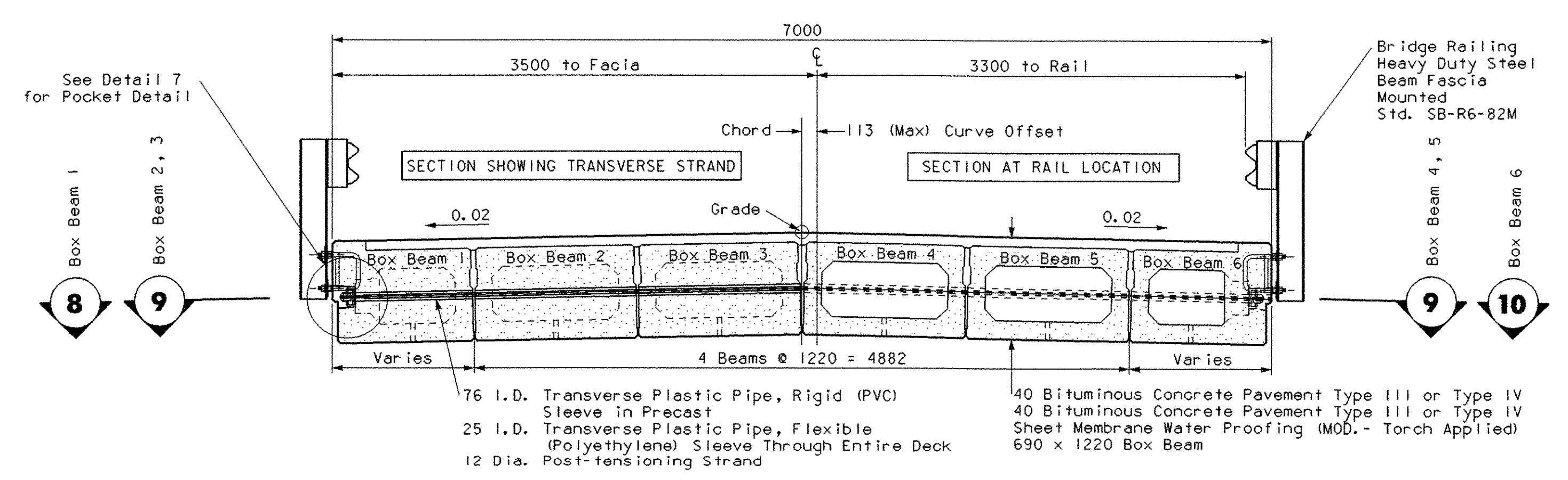
GENERAL NOTES SHEET

PROJECT NAME:	Charleston		
PROJECT NUMBER:	BRO 1449 (22)		
FILE NAME: .../93J051/sj051gen.dgn	PLOT DATE:	13-APR-2006	
PROJECT MANAGER: M. Evans-Mongeon	DRAWN BY:	G. Colgrove	
DESIGNED BY: G. Colgrove	CHECKED BY:	M. Evans-Mongeon	
	SHEET	27	OF 50



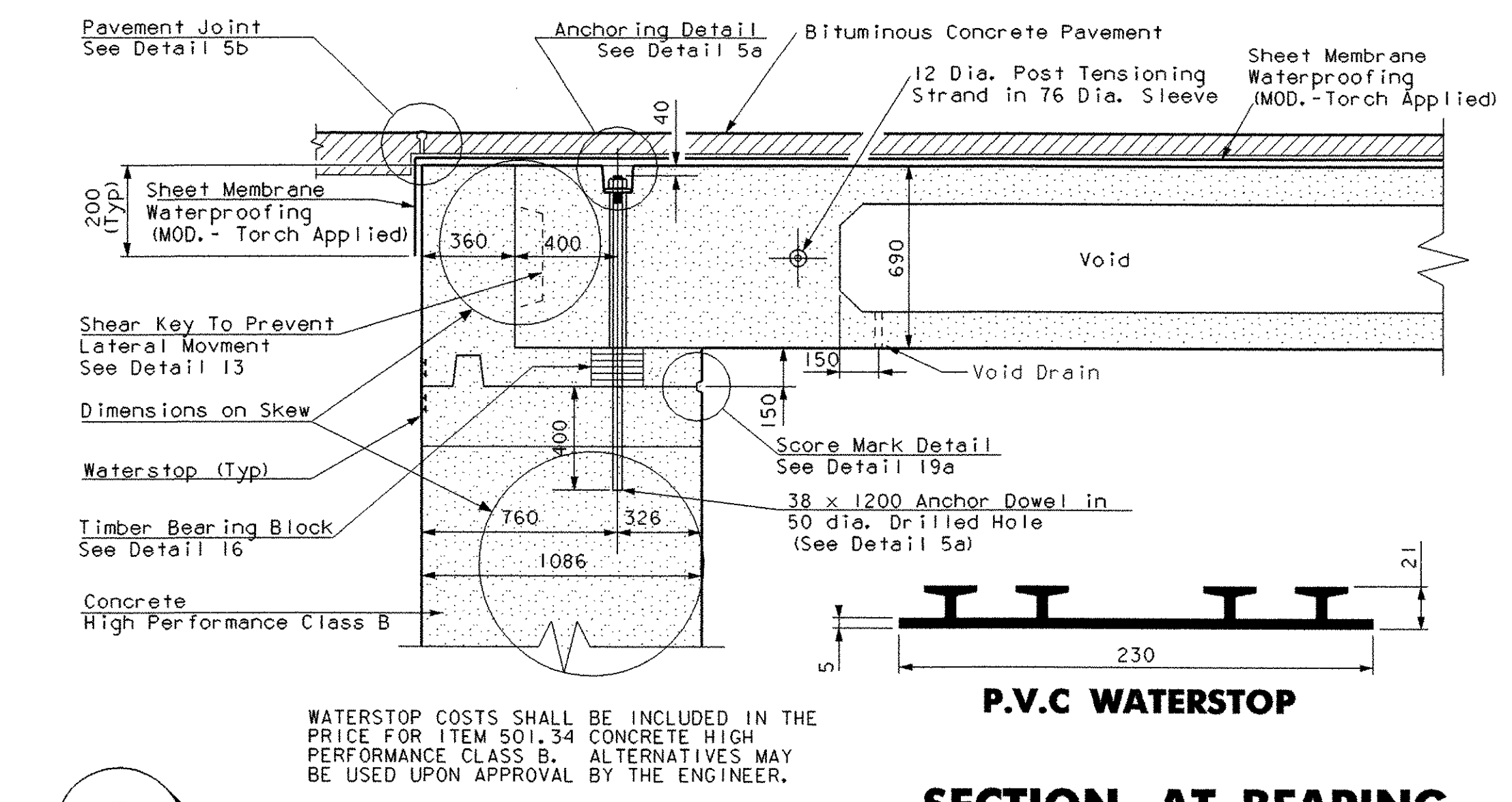
BOX BEAM FRAMING PLAN
1:60

1



TYPICAL TRANSVERSE SECTION
1:30

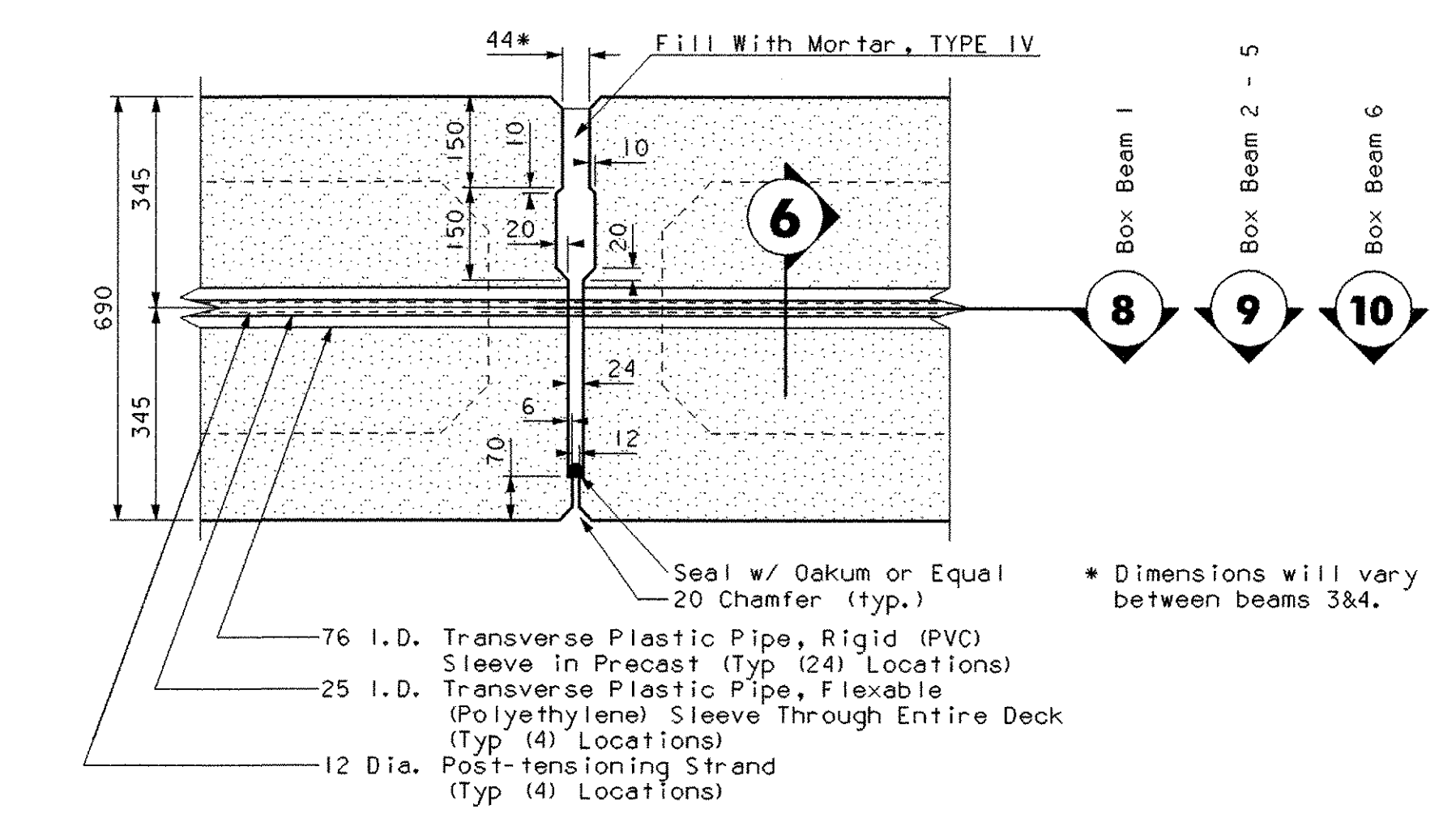
2



WATERSTOP COSTS SHALL BE INCLUDED IN THE PRICE FOR ITEM 501.34 CONCRETE HIGH PERFORMANCE CLASS B. ALTERNATIVES MAY BE USED UPON APPROVAL BY THE ENGINEER.

P.V.C WATERSTOP
SECTION AT BEARING
1:20

3

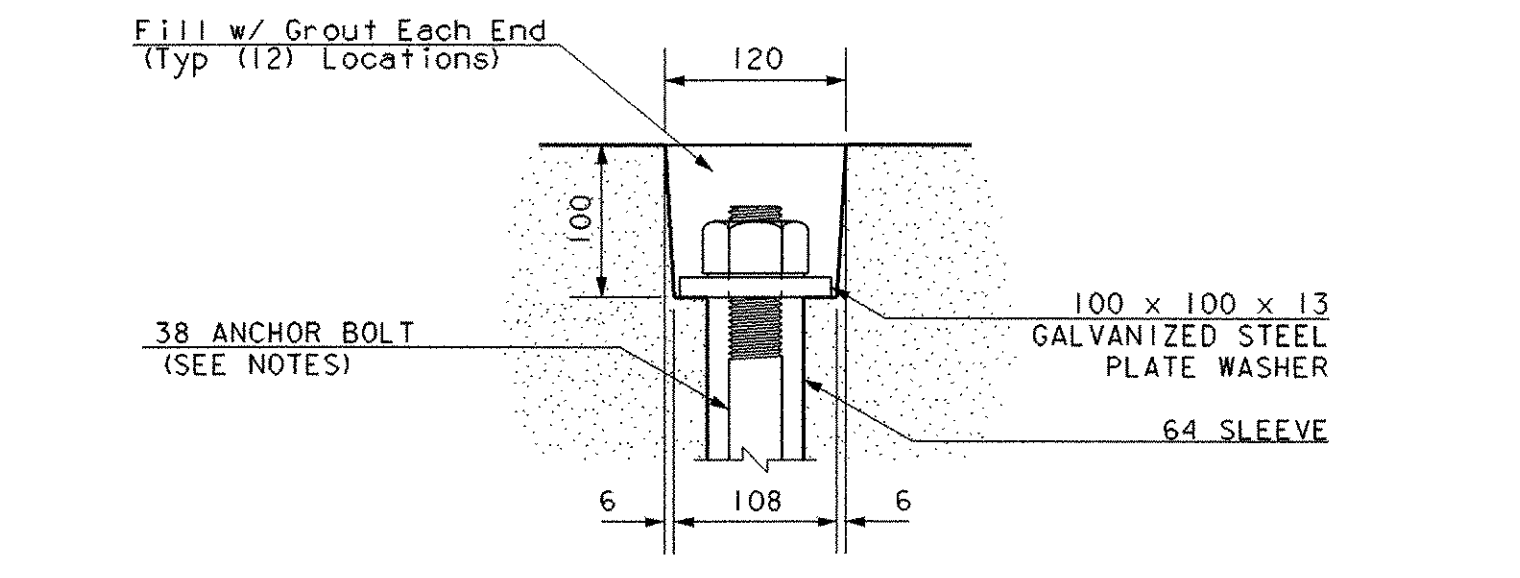


SHEAR KEY SECTION
1:10

4

SUPERSTRUCTURE DETAILS

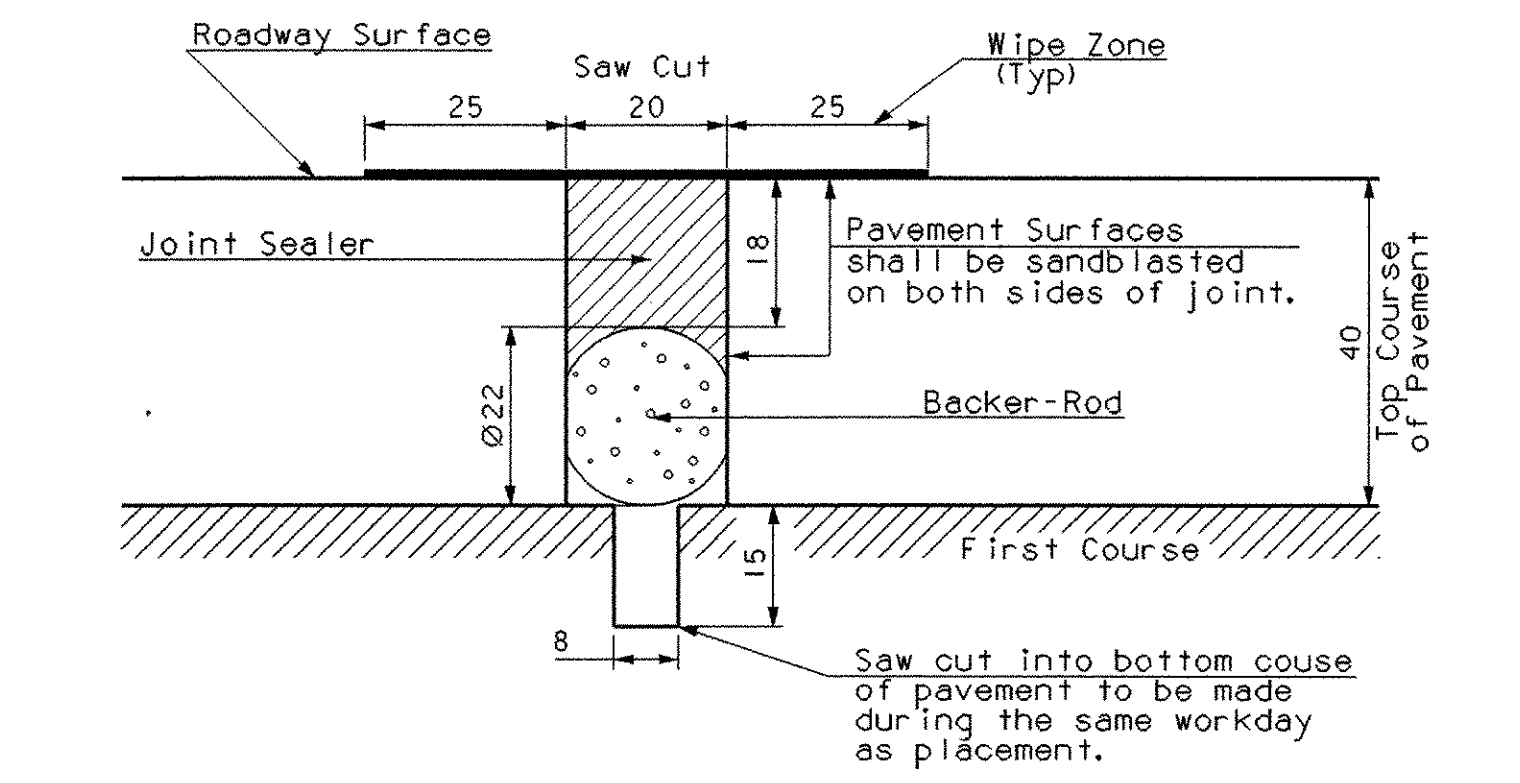
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PROJECT NUMBER:	BR0 1449 (22)
FILE NAME:	93J051/STR/sj05lpsl.dgn
PROJECT MANAGER:	M. Evans-Mongeon
DESIGNED BY:	George Colgrove
IPARM:	sj05lpsl.l
PLOT DATE:	13-APR-2006
DRAWN BY:	G. Colgrove
CHECKED BY:	S. Scribner
SHEET	28 OF 50



Anchoring Detail Notes

- Anchor bolts, steel plates and nuts shall be paid for as part of Item 510.21 Prestressed Concrete Box Beams (I220x690)
- All Anchor Bolts and Nuts are AASHTO M164M and shall be zinc coated. All Washers are AASHTO M270M Grade 345 and shall be galvanized by AASHTO M111M.

5a ANCHORING DETAIL 1:5



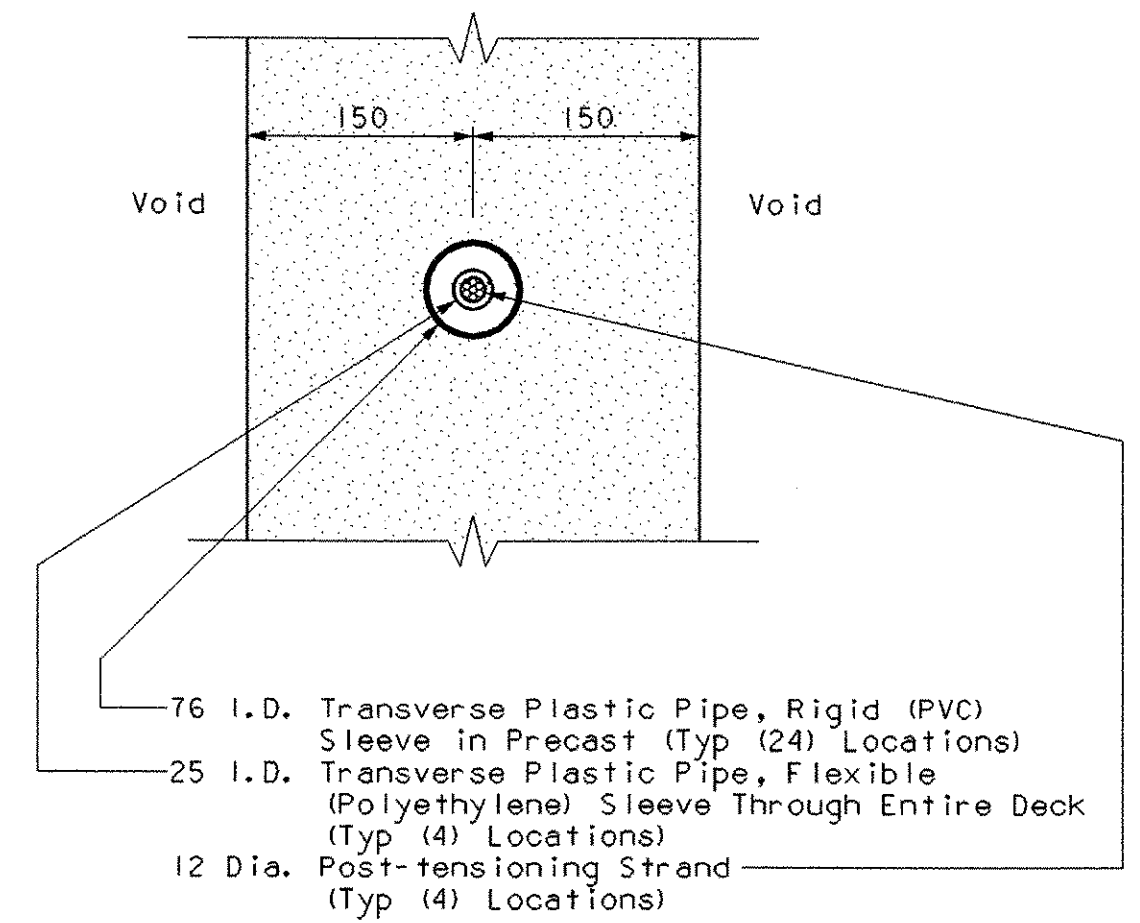
The Contractor shall locate the joint accurately by string lining, or other means, prior to paving, so that the saw cut will be made directly over the ends of the concrete deck. The Contractor shall dry-cut the joint in a single pass, then remove all debris and dust particles prior to applying the joint sealer. Refer to VT Specification 524.

BACKER ROD: Use a 22mm diameter heat resistant foam backer-rod. Press the backer-rod into the joint making sure it is snug. Backer rod and saw cutting of pavement will be considered incidental to Item 524.11 (Joint sealer hot poured) or Item 524.13 (Joint sealer cold poured).

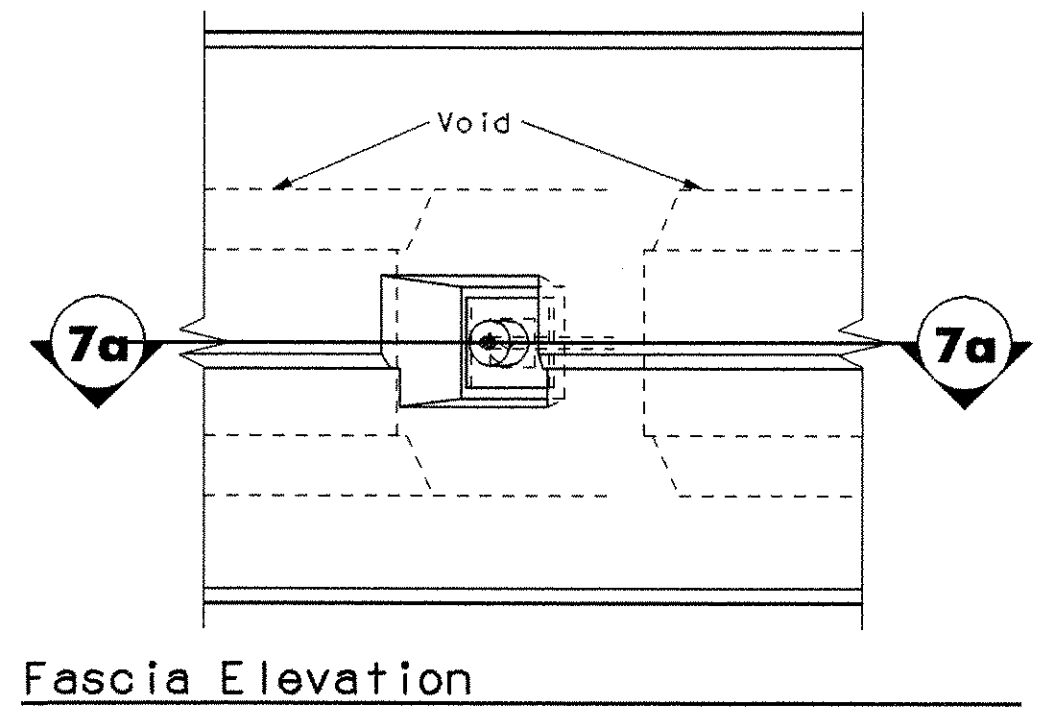
JOINT SEALER: Use either a hot or cold poured joint sealer. Overfill the joint cut then wipe flush with a "V" or "U" shaped squeegee to provide a 25mm wipe zone each side of joint.

5b PAVEMENT JOINT DETAIL NTS

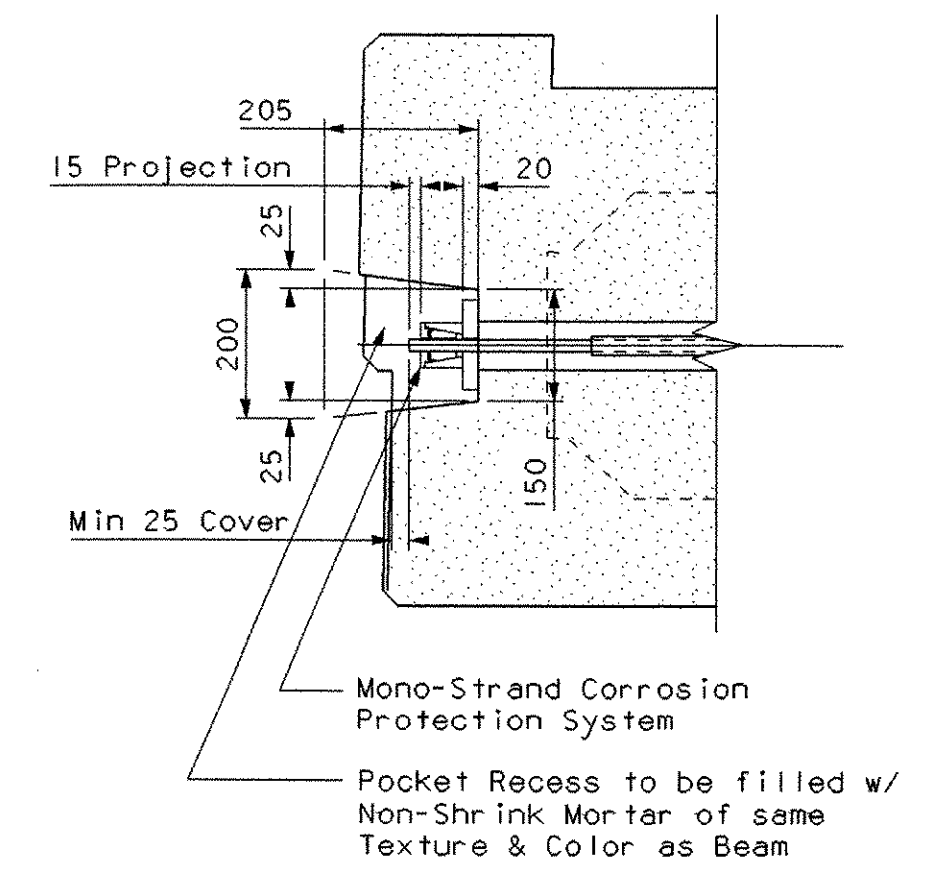
5 END OF BRIDGE DETAILS



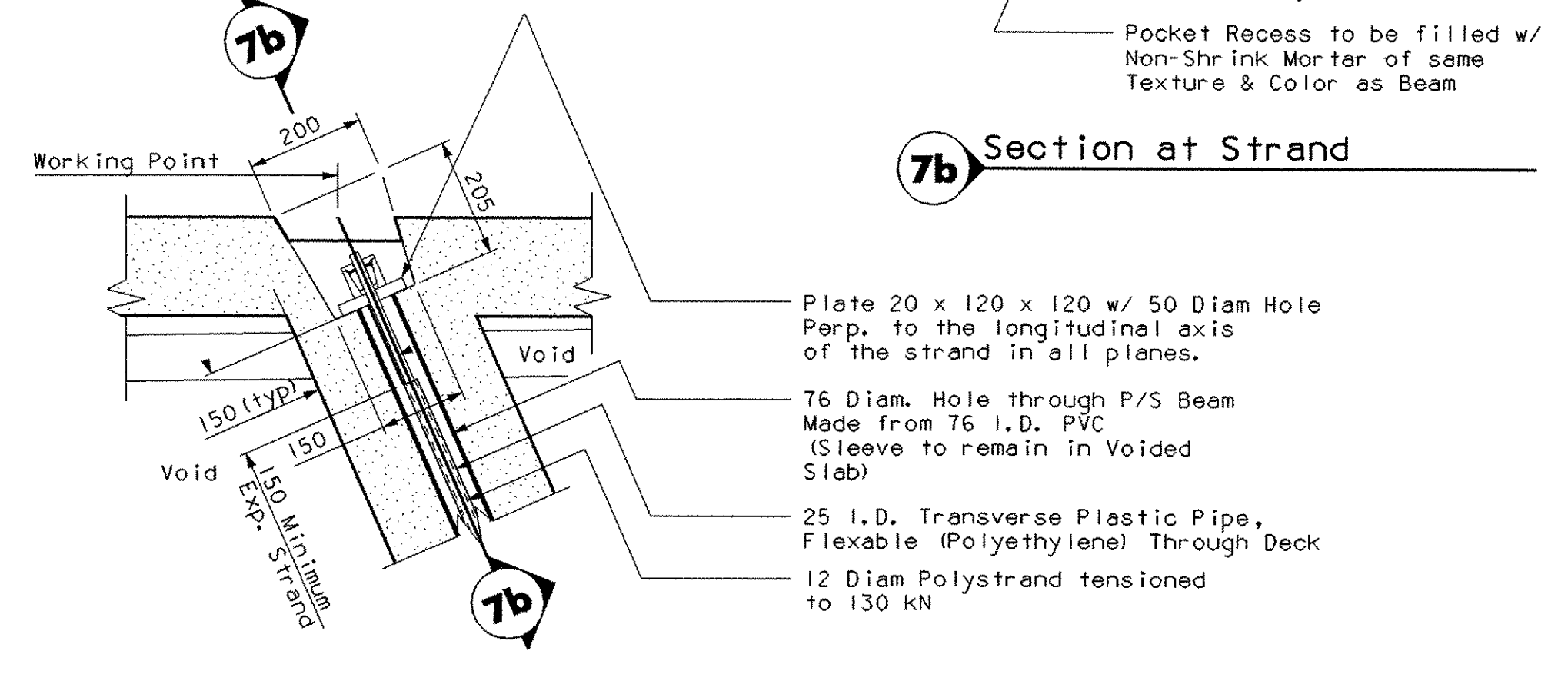
6 POST TENSIONING STRAND SLEEVE 1:5



7a Fascia Elevation

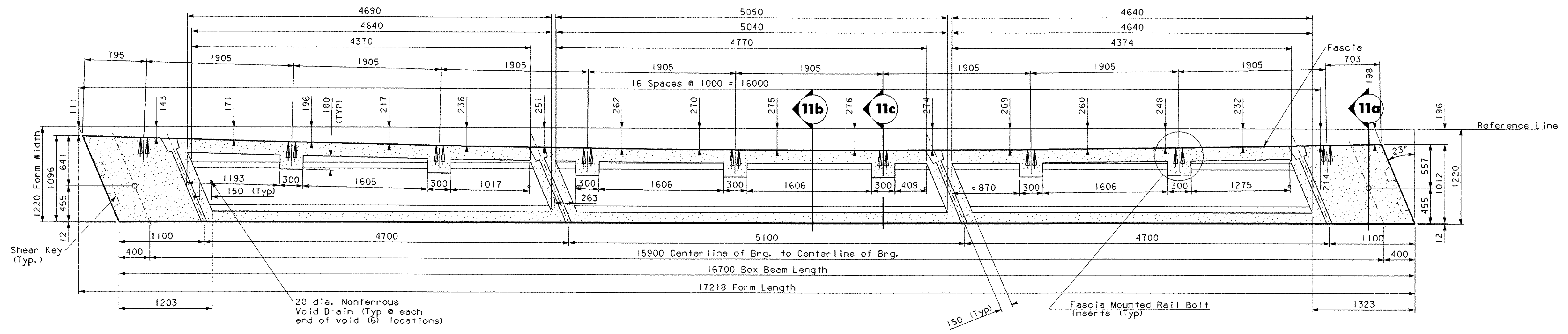


7b Section at Strand



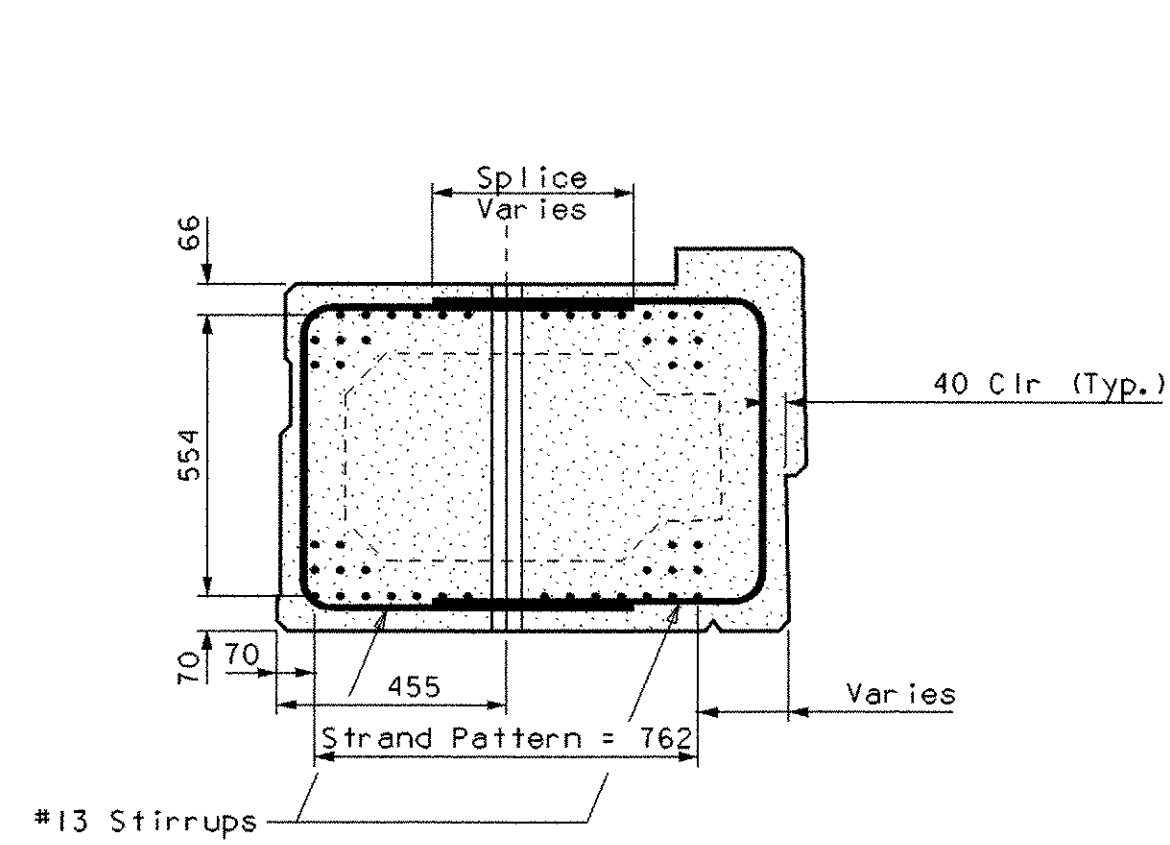
7a Plan of Pocket

7 POST TENSIONING STRAND POCKET 1:10

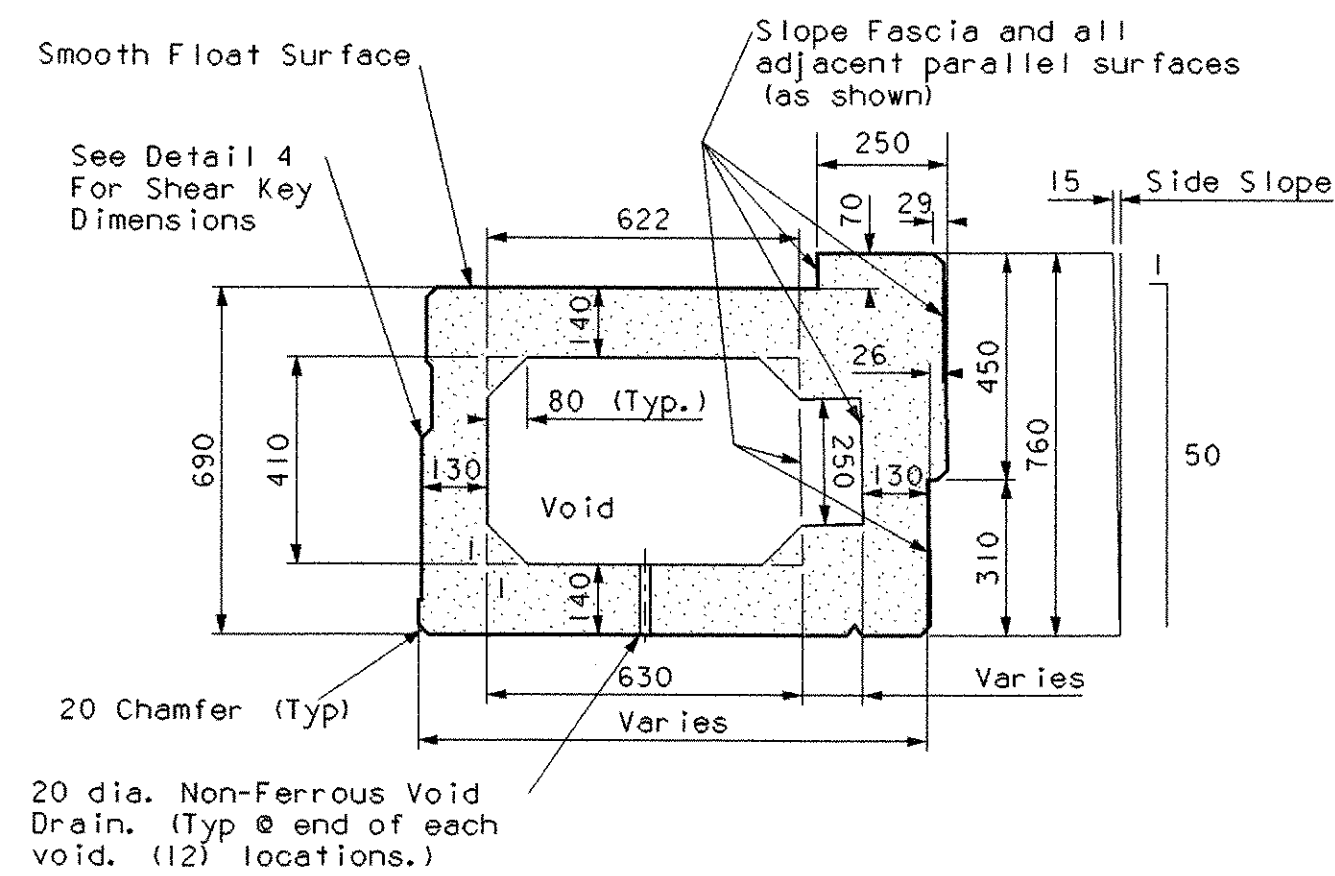


8 BOX BEAM 1 DIMENSIONAL PLAN @ STRAND ELEVATION 1:30

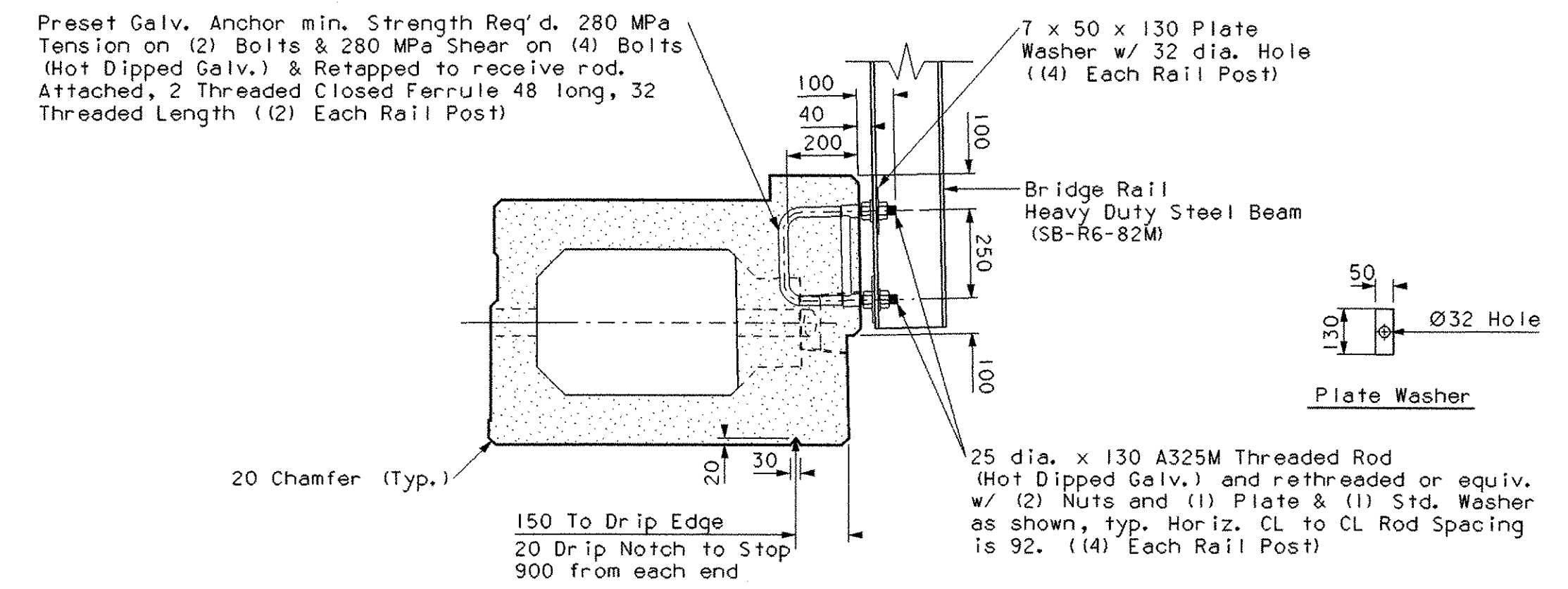
LEFT FASCIA PRESTRESSED BOX BEAM DETAILS	
PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	93J051/STR./sj051psl.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	George Colgrove
IPARM:	sj051ps2.1
PLOT DATE:	13-APR-2006
DRAWN BY:	G. Colgrove
CHECKED BY:	S. Scribner
SHEET 29 OF 50	



11a Reinforcing Details



11b Dimensional Details

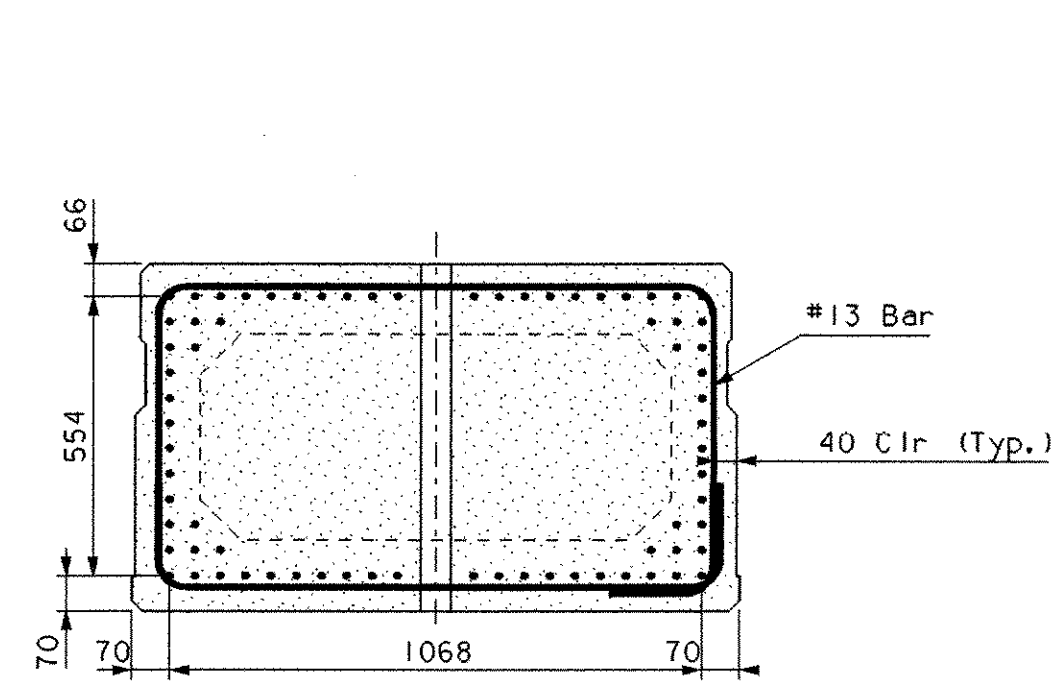


11c Fascia Dimensional Detail

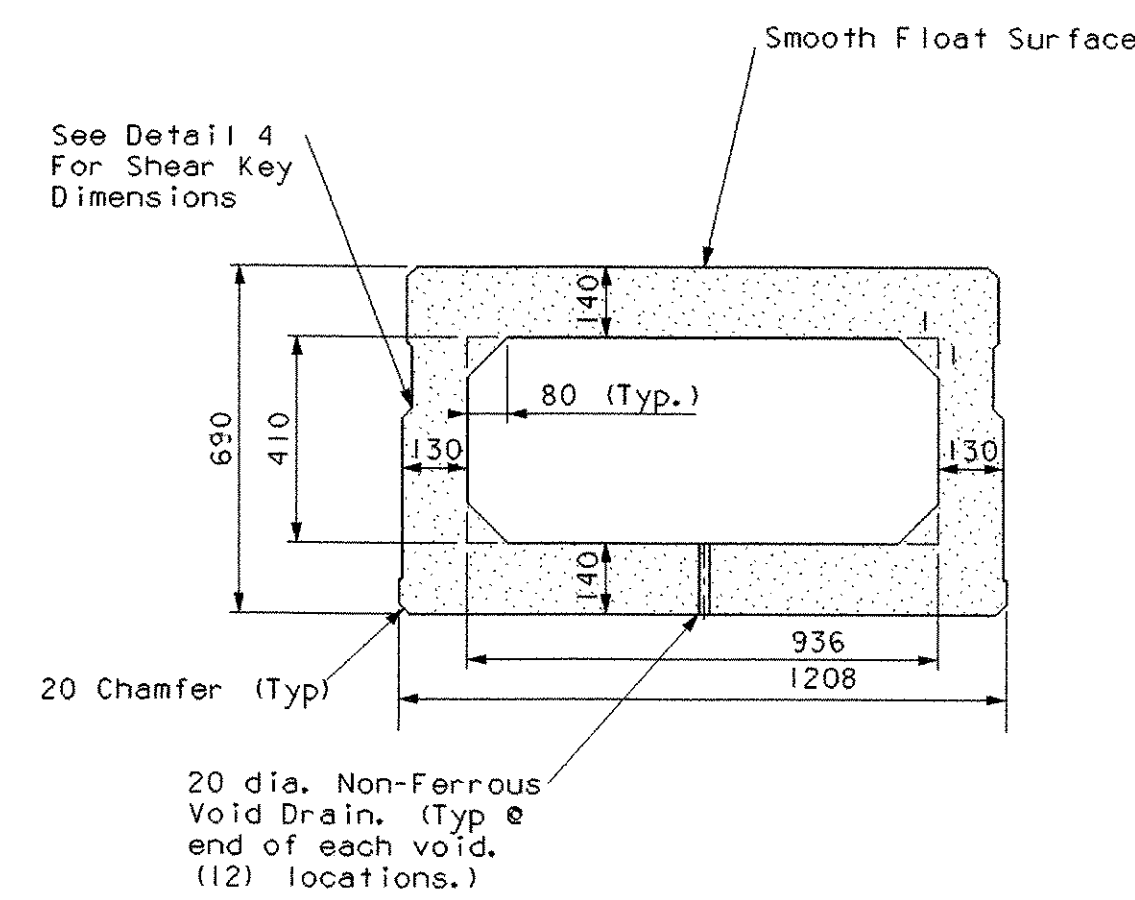
FASCIA BEAM SECTIONS

1:15

11



12a Reinforcing Details

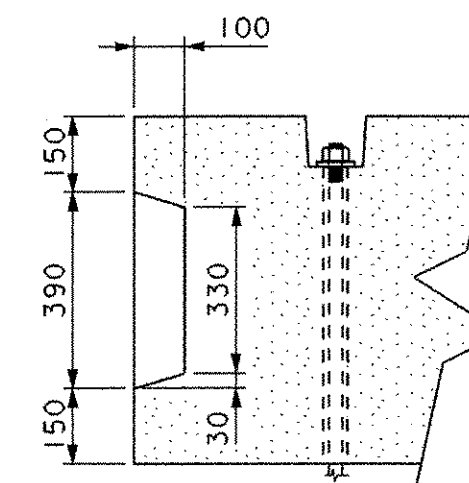


12b Dimensional Details

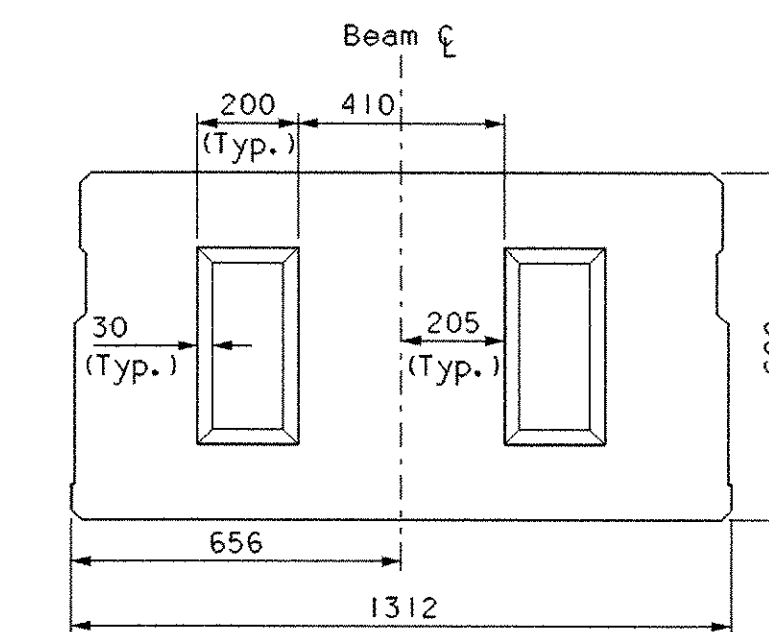
INTERIOR BEAM SECTIONS

1:15

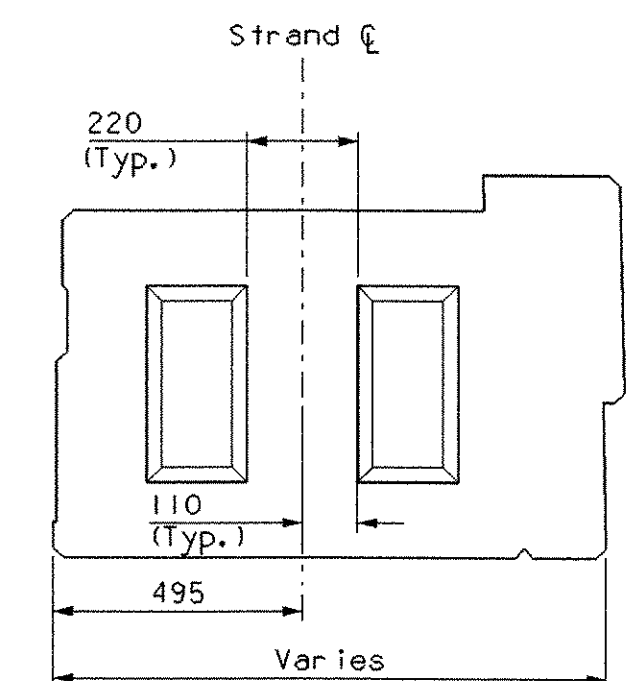
12



13a Side View



13b Beams 2 Thru 5 Skewed End View



13c Beams 1 and 6 Skewed End View

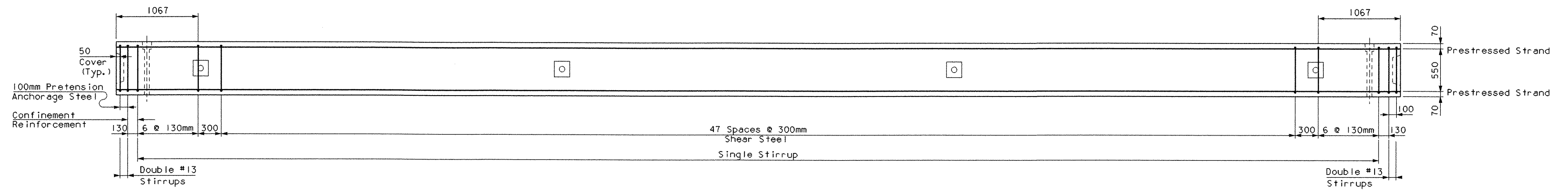
13

END SHEAR KEY TO PREVENT HORIZONTAL MOVEMENT

1:15

PRESTRESSED BOX BEAM SECTION DETAILS

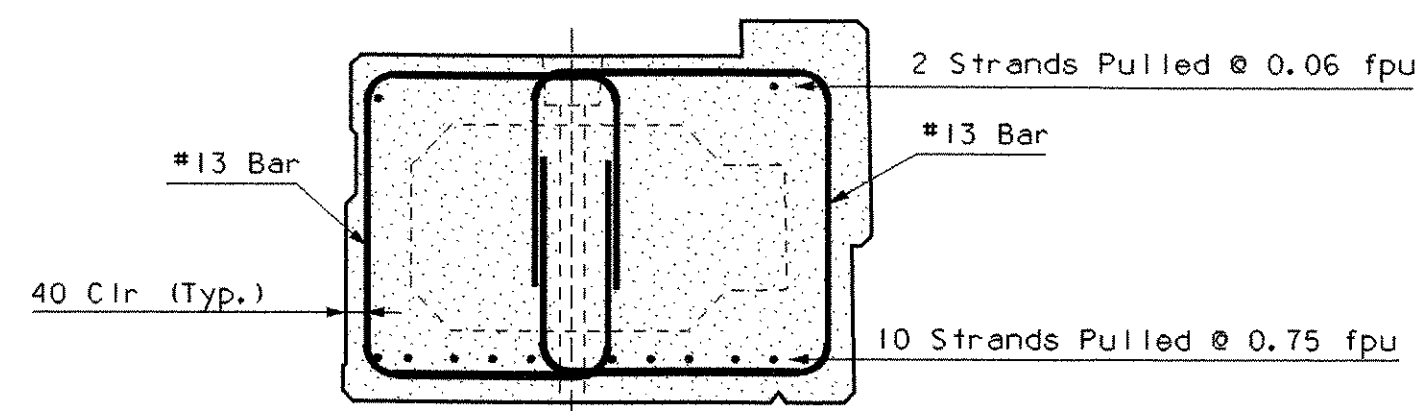
PROJECT NAME:	Charleston	PLOT DATE:	13-APR-2006
PROJECT NUMBER:	BRO 1449 (22)	DRAWN BY:	G. Colgrove
FILE NAME:	93J051/STR./sJ051ps.dgn	CHECKED BY:	S. Srobnier
PROJECT MANAGER:	A. Portolupi	SHEET	31 OF 50
DESIGNED BY:	George Colgrove		
IPARM:	sJ051ps4.i		



14

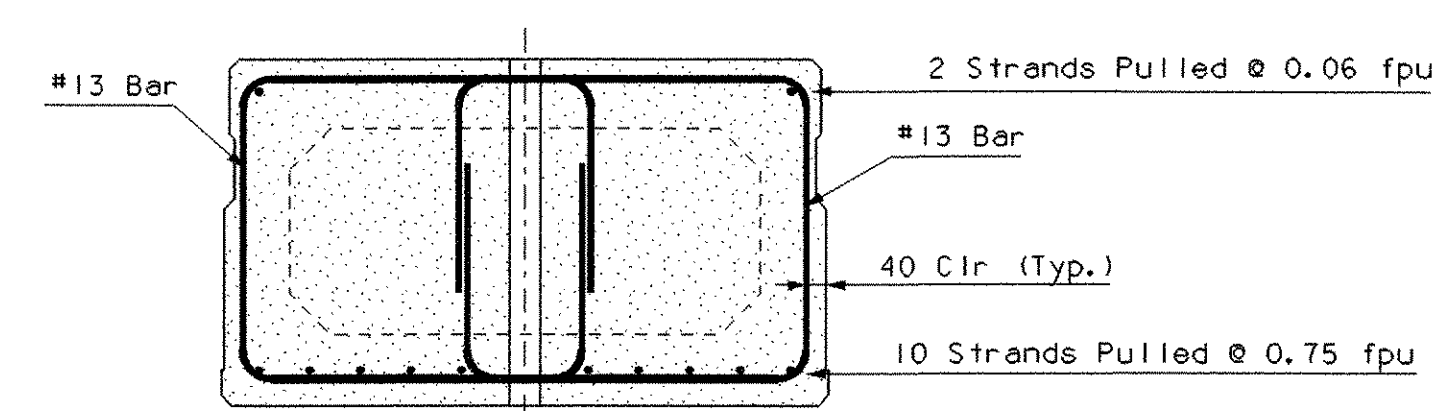
TYPICAL BEAM ELEVATION

1:30



15a

Beams 1 and 6 Pre-Tensioned Anchorage Zone



15b

Beams 2 thur 5 Pre-Tensioned Anchorage Zone

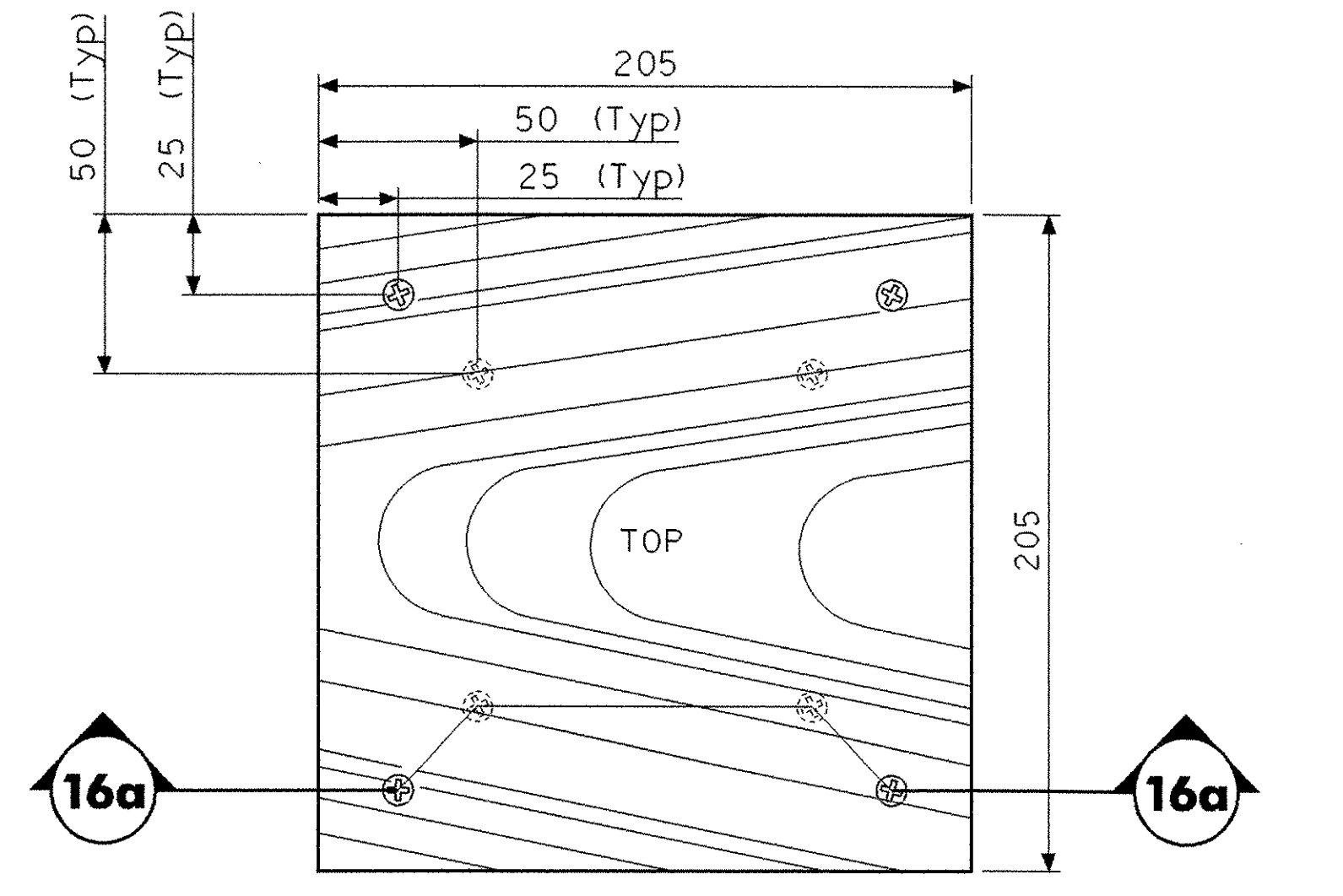
15

PRE-TENSIONED ANCHORAGE ZONE / STRAND LAYOUT

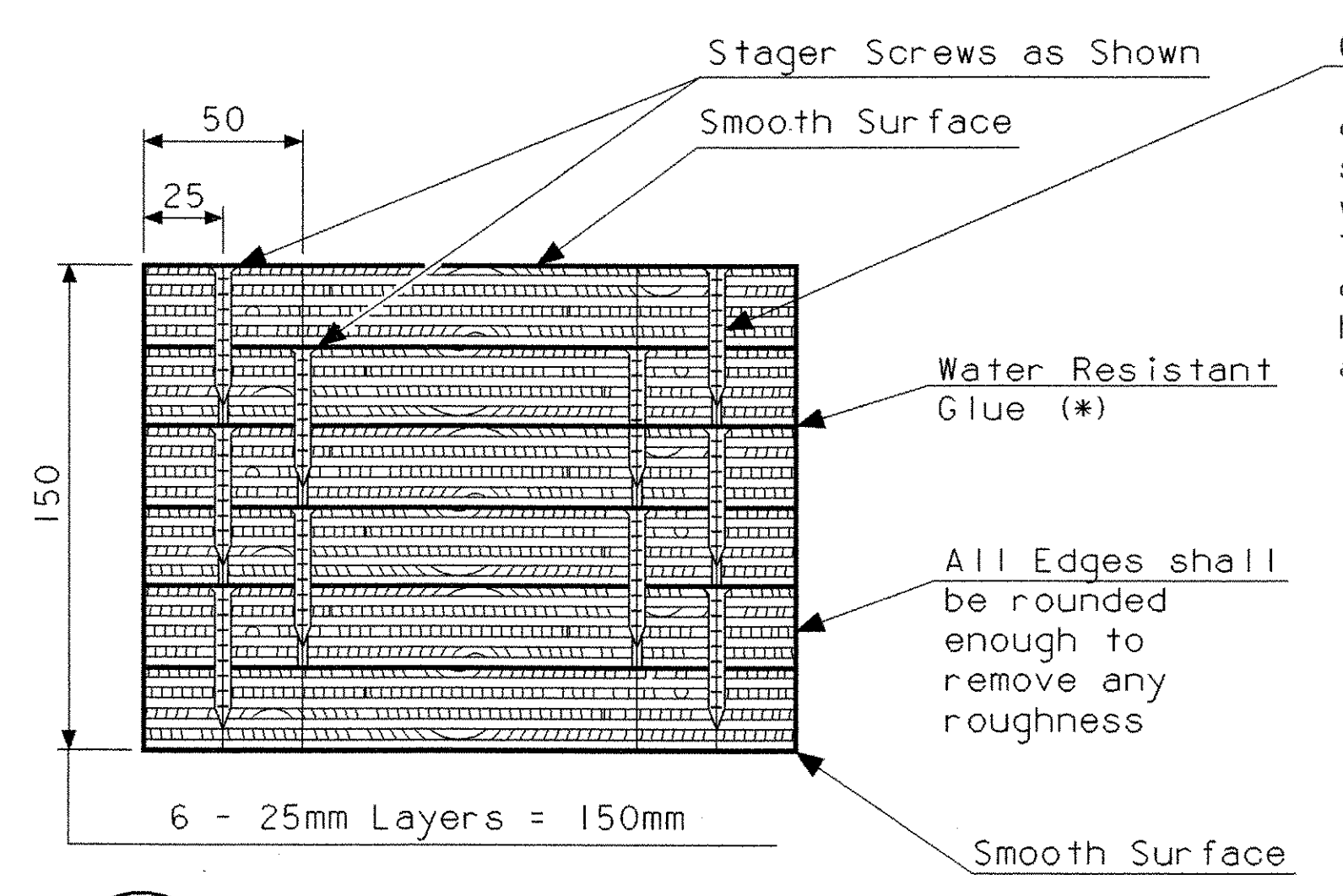
1:15

PRESTRESSED BOX BEAM ELEVATION AND STRAND LAYOUT

PROJECT NAME: Charleston	PLOT DATE: 13-APR-2006
PROJECT NUMBER: BRO 1449 (22)	DRAWN BY: G. Colgrove
FILE NAME: 93J051/STR/sj051ps1.dgn	CHECKED BY: S. Scibner
PROJECT MANAGER: M. Evans-Mongeon	SHEET 32 OF 50
DESIGNED BY: George Colgrove	
IPARM:sj051ps5.1	



16 **TOP VIEW**
SCALE 1:2



16a **SIDE VIEW**
Side view of AC Plywood Layering SCALE 1:2

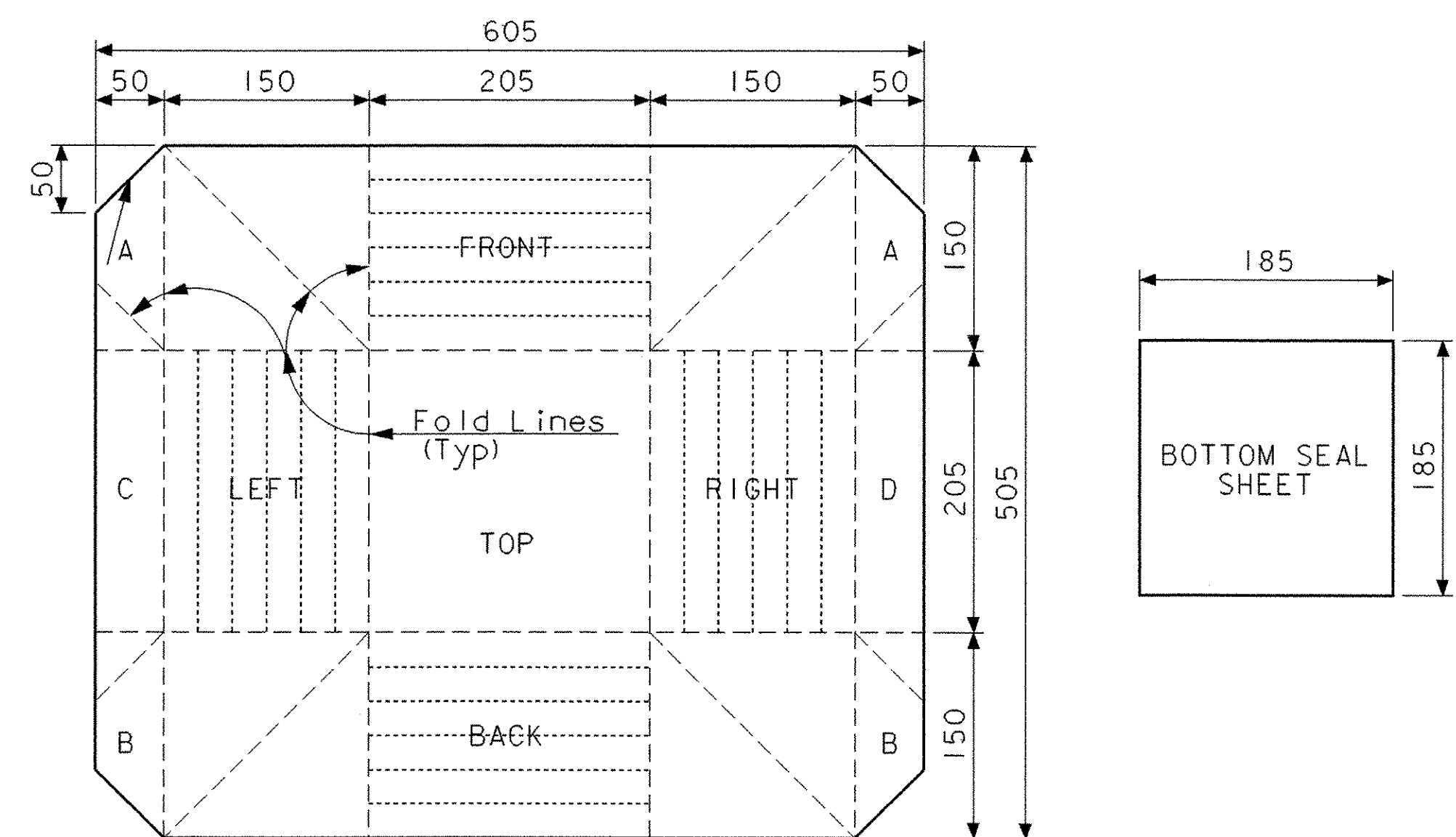
6 layers of 205 x 205 x 24.6 Plywood (*). Each layer bonded to the next with a water resistant glue (*) and fastened with 121mm galvanized wood screws (*). The screw holes shall be predrilled with a 3mm drill. The top layer shall only have the 4 outer holes drilled. The bottom layer shall have the 4 outer holes drilled to 12mm. All other layers shall have all holes drilled as shown.

NOTES:

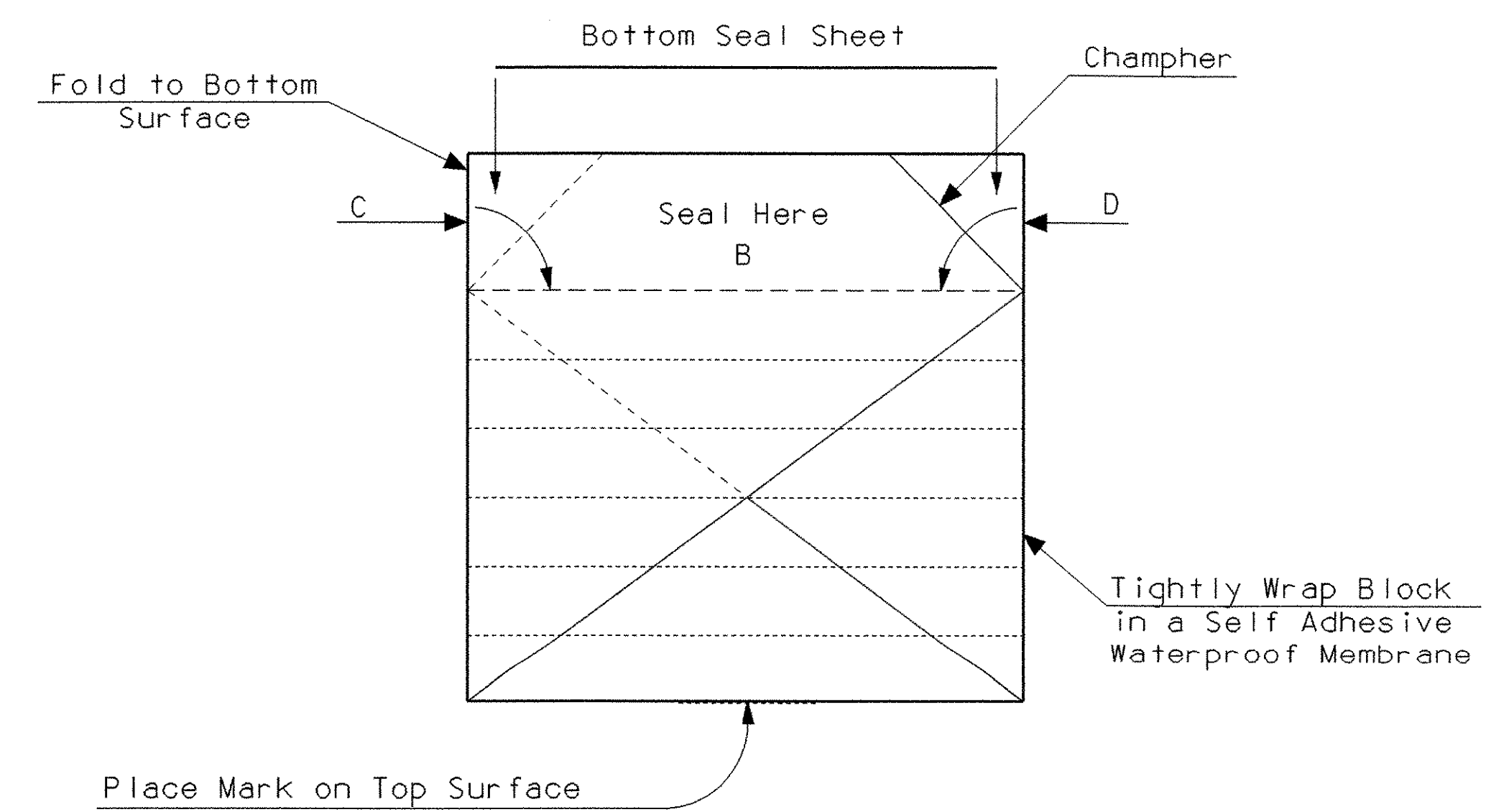
- The Plywood must be received dry and moisture free, and must be stored in a dry place prior to fabrication. The Contractor may use a laminated engineered timber product that meets or exceeds the requirements specified on this sheet and can be trimmed to the dimensions shown on this sheet. In this case, the laminations of the product must be parallel to the bearing surface in the same manner as the plywood is detailed on this sheet.
- There will be a +/- 1mm Tolerance on any measurement shown on this sheet for plywood and + 5mm for waterproof membrane.
- The bearing shall be constructed with the grade A side of the Plywood facing outward for the top and bottom layers.
- The blocks shall be sanded smooth prior to placing them into the linseed oil. All edges shall be rounded slightly.
- Once the 205x205x150 blocks are bonded and fastened, the blocks shall be placed in a vat of linseed oil for one week to ensure the oil has been fully absorbed into the wood. The blocks shall be rotated and flipped in the vat daily to ensure full coverage.
- After the blocks are removed from the linseed oil, they shall be hand dried with an absorbing cloth to remove any excess oil.
- The blocks shall be allowed to air dry in a moisture free place for 24 hours.
- Each block shall be inspected for any remaining oil. Once all excess oil is removed, they shall be tightly wrapped in a self adhesive waterproof membrane as shown on this sheet. The fabricator shall ensure that the waterproof membrane is not torn after application. Holes may be patched with additional waterproof membrane. Such patches shall be rectangular in size and large enough to cover an area that measures a minimum of 25mm outside the perimeter of the hole. The fabricator shall ensure that the entire membrane sheet is in contact with the block and that there are no air bubbles/blisters. Blisters 5 mm or less may be neglected. Blisters may be punctured using a razor blade to puncture the bubble. The puncture hole shall be repaired using a 50 mm square piece of membrane.
- A mark shall be placed on the top of the block, as shown.
- The bearing blocks shall be kept free of moisture during shipping and while in storage.

(*) MATERIALS SPECIFICATIONS

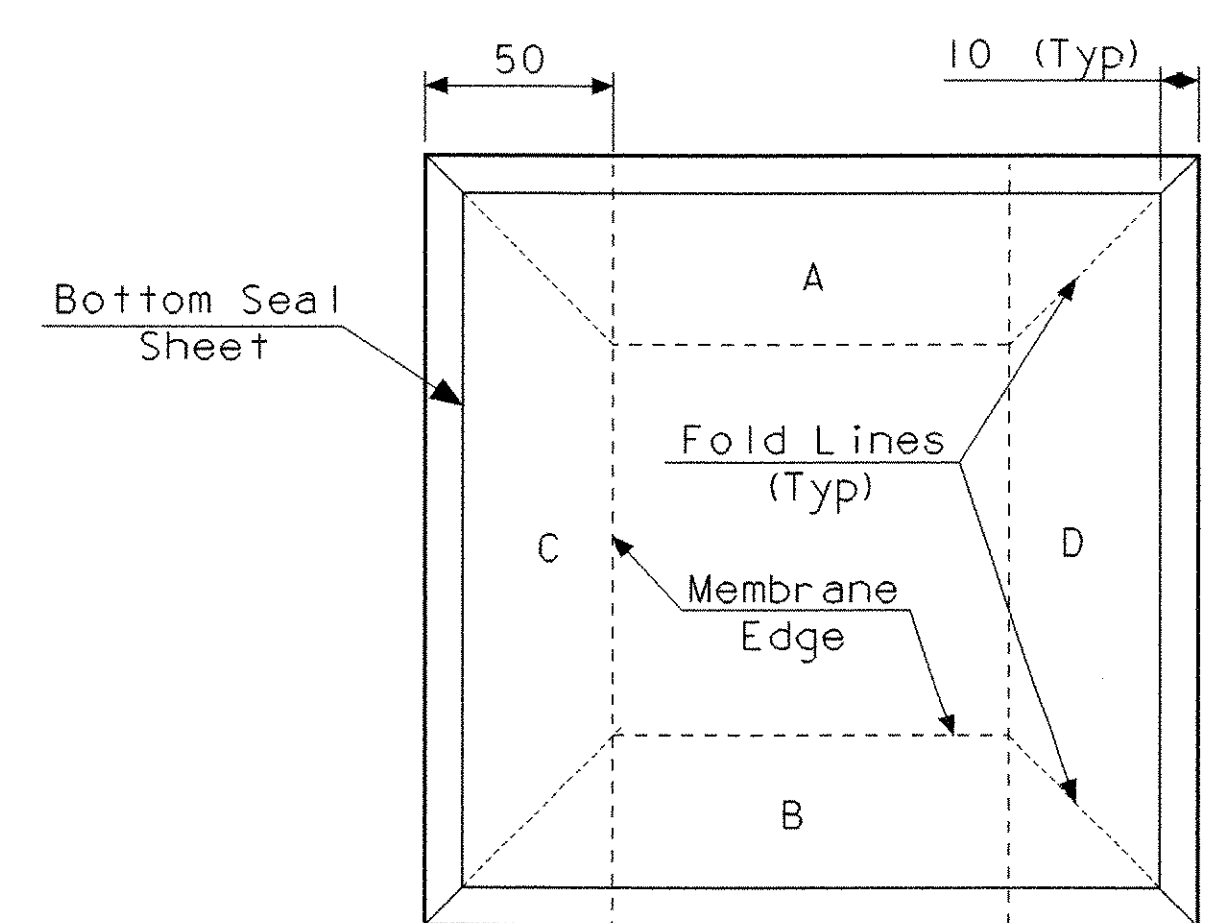
- PLYWOOD:**
Shall be a high grade AC Plywood as specified by ANSI/AITC A 190.1 or a marine grade plywood as specified in the A.P.A Plywood Design Specifications.
- WOOD SCREWS:**
Shall be galvanized wood screws as specified by ANSI/ASME 18.6.1.
- GLUE:**
Shall be a water resistant glue or epoxy which conforms to ASTM D2559.
- MEMBRANE:**
Shall be a self adhesive waterproof membrane which conforms to the following specifications:
 - Thickness: ASTM D3767, Method A
 - Tensile strength: ASTM D412 (Die C modified)
 - Elongation: ASTM D412 (Die C MOD)
 - Low temperature flexibility: ASTM D1970
 - Adhesion to plywood: ASTM D903
 - Permeance (max): ASTM E96
 - Material weight installed (max): ASTM D461



16b **TEMPLATE OF SELF ADHESIVE WATERPROOF MEMBRANE**
SCALE 1:4



16c **BACK VIEW OF SELF ADHESIVE WATERPROOF MEMBRANE WRAP**
SCALE 1:2



16d **BOTTOM VIEW OF SELF ADHESIVE WATERPROOF MEMBRANE WRAP**
SCALE 1:2

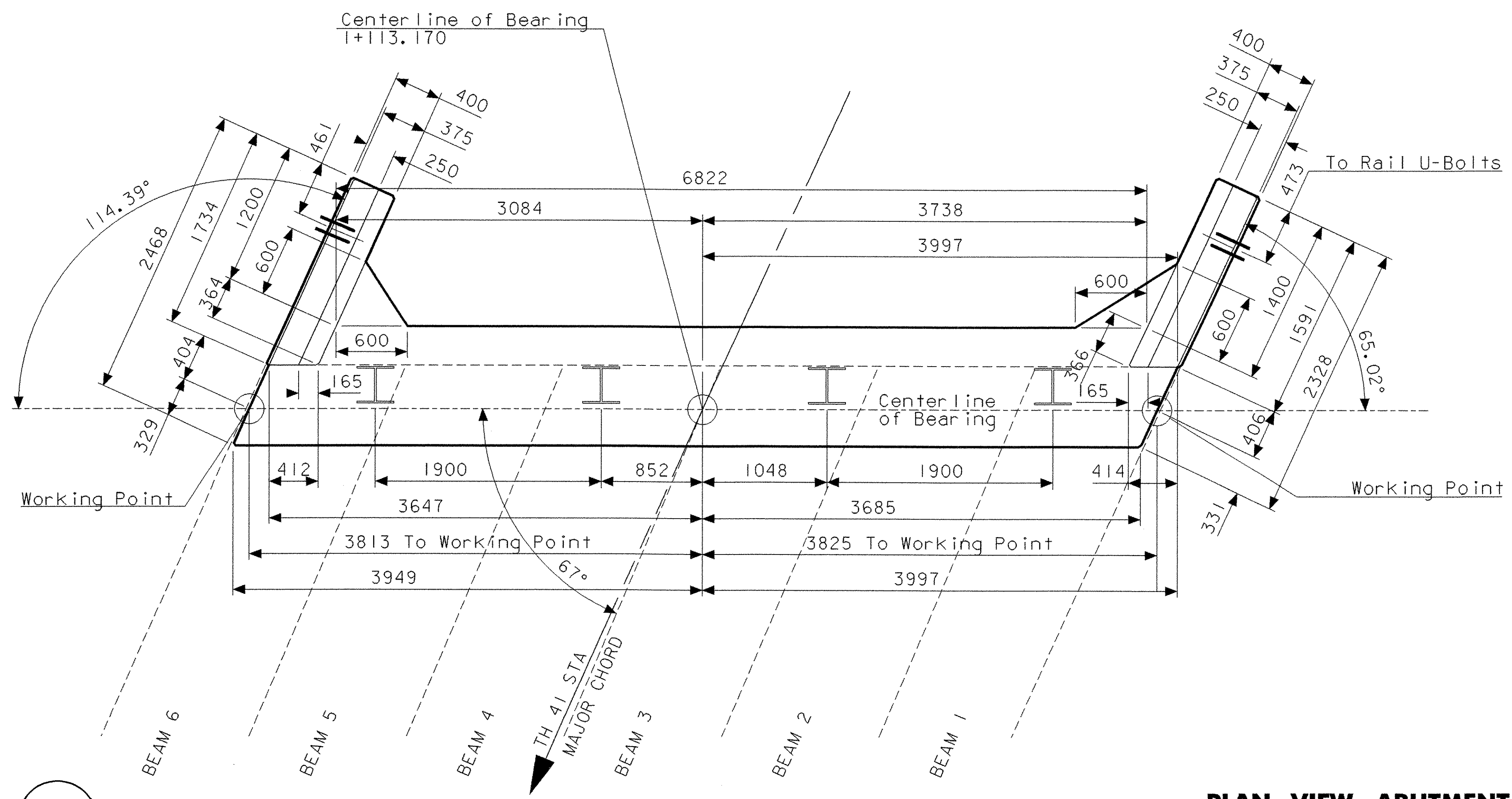
MATERIALS REQUIRED: (ENGLISH UNITS)

For a total of 26 wood block bearings:	
3	Sheets of 4ft x 8ft x 3/8 inch AC Exterior Plywood #
3	Pounds of 1 3/4" Galvanized Wood Screws (9 gauge)
1	8200 long by 1220 wide sheet of Waterproof ##
	Membrane from roll.
	Linseed Oil
All materials and labor used to construct the required number of bearing devices shall be made part of item 531.10, "Bearing Device Assembly (Timber)"	

Use a [US] 4 ft x 8 ft x 3/8 inch measure for plywood
About a [US] 27 ft length from a 4 ft roll.

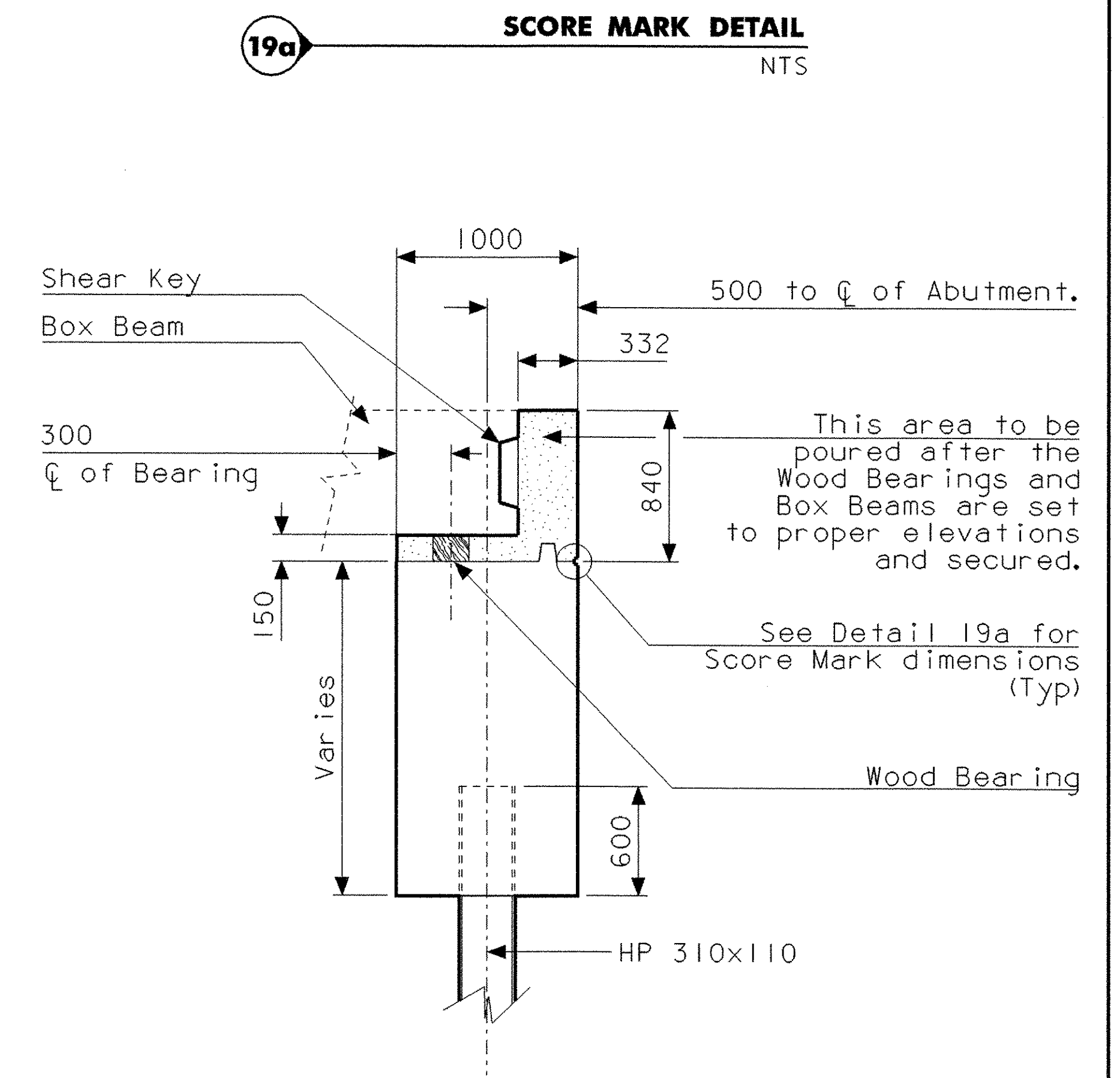
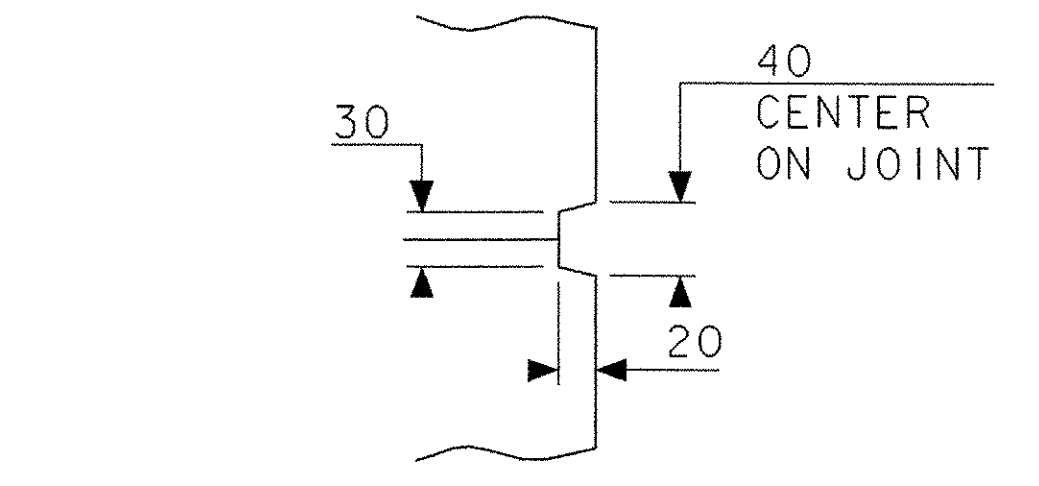
Bearing Device (Timber)

PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME: .../Structures/bearing.dgn	PLOT DATE: 13-APR-2006
PROJECT LEADER: M. Evans-Mongeon	DRAWN BY: G. Colgrove
DESIGNED BY: G. Colgrove	CHECKED BY:
IPARM: sj051ber.i	SHEET 33 OF 50



PLAN VIEW ABUTMENT #1

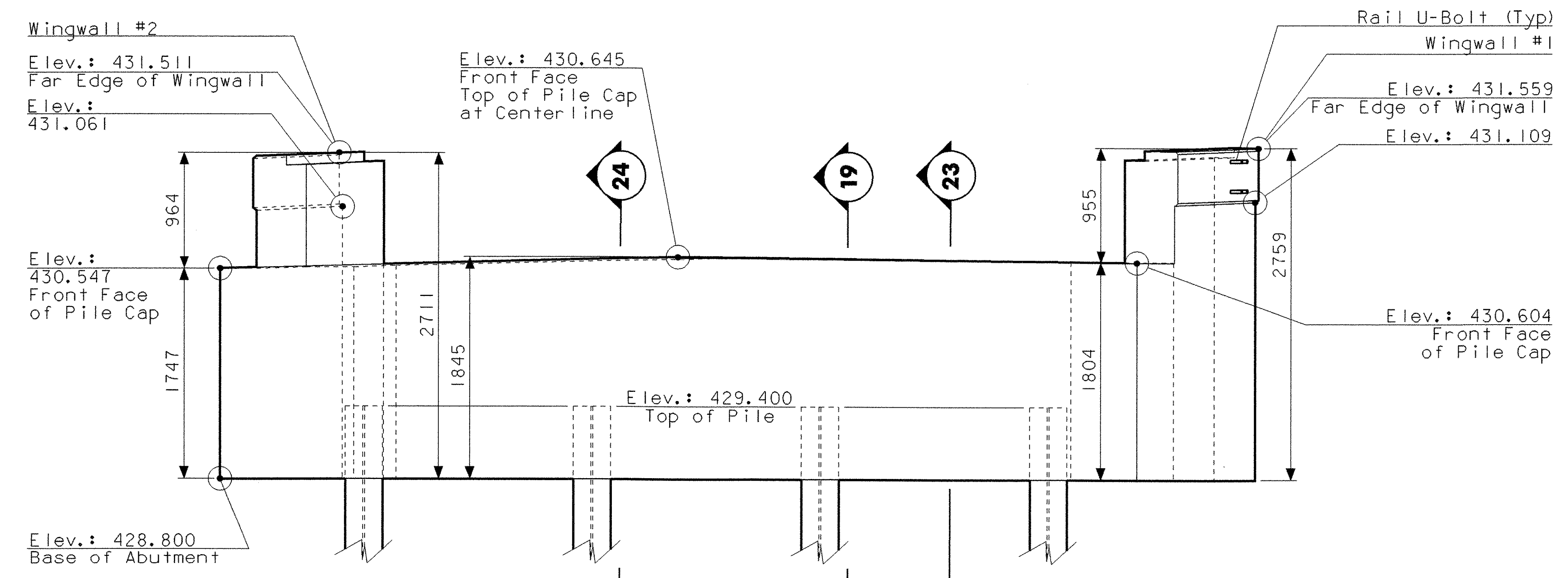
SCALE 1:250



ABUTMENT TYPICAL

SCALE 1:250

17



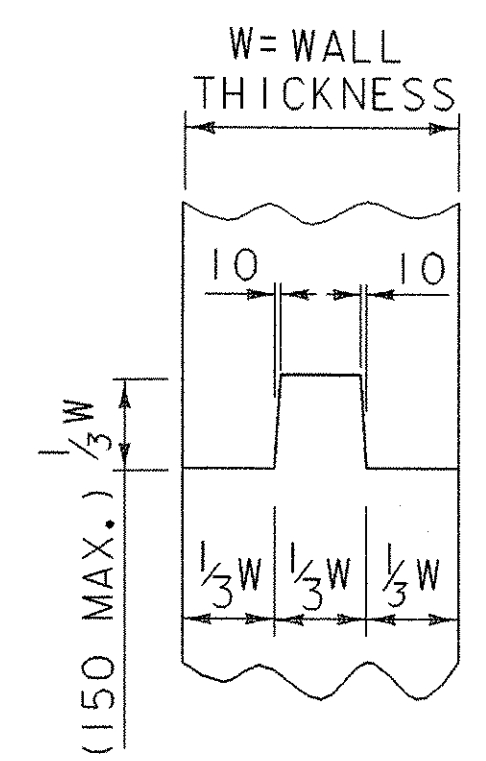
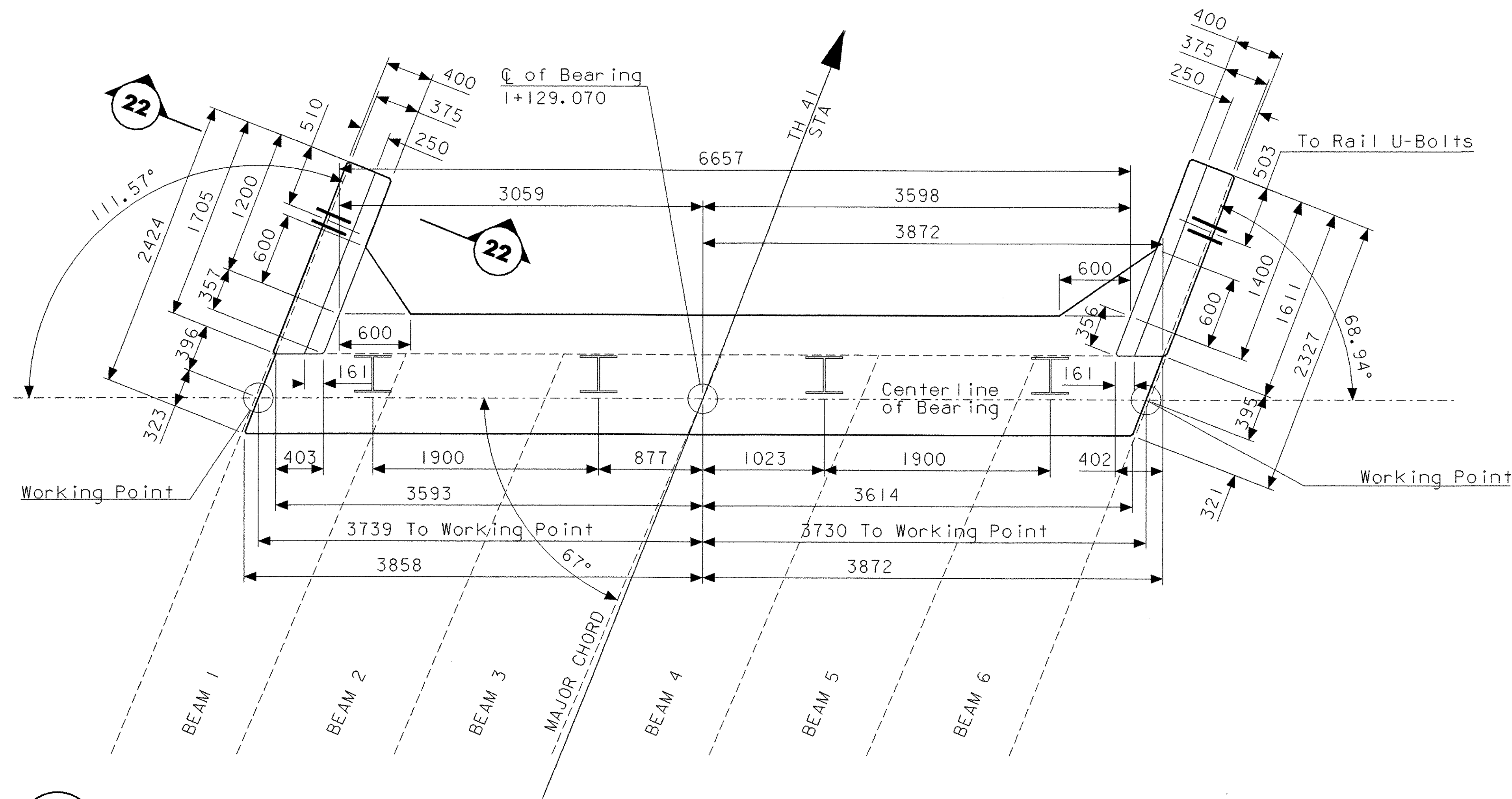
ELEVATION ABUTMENT #1

SCALE 1:250

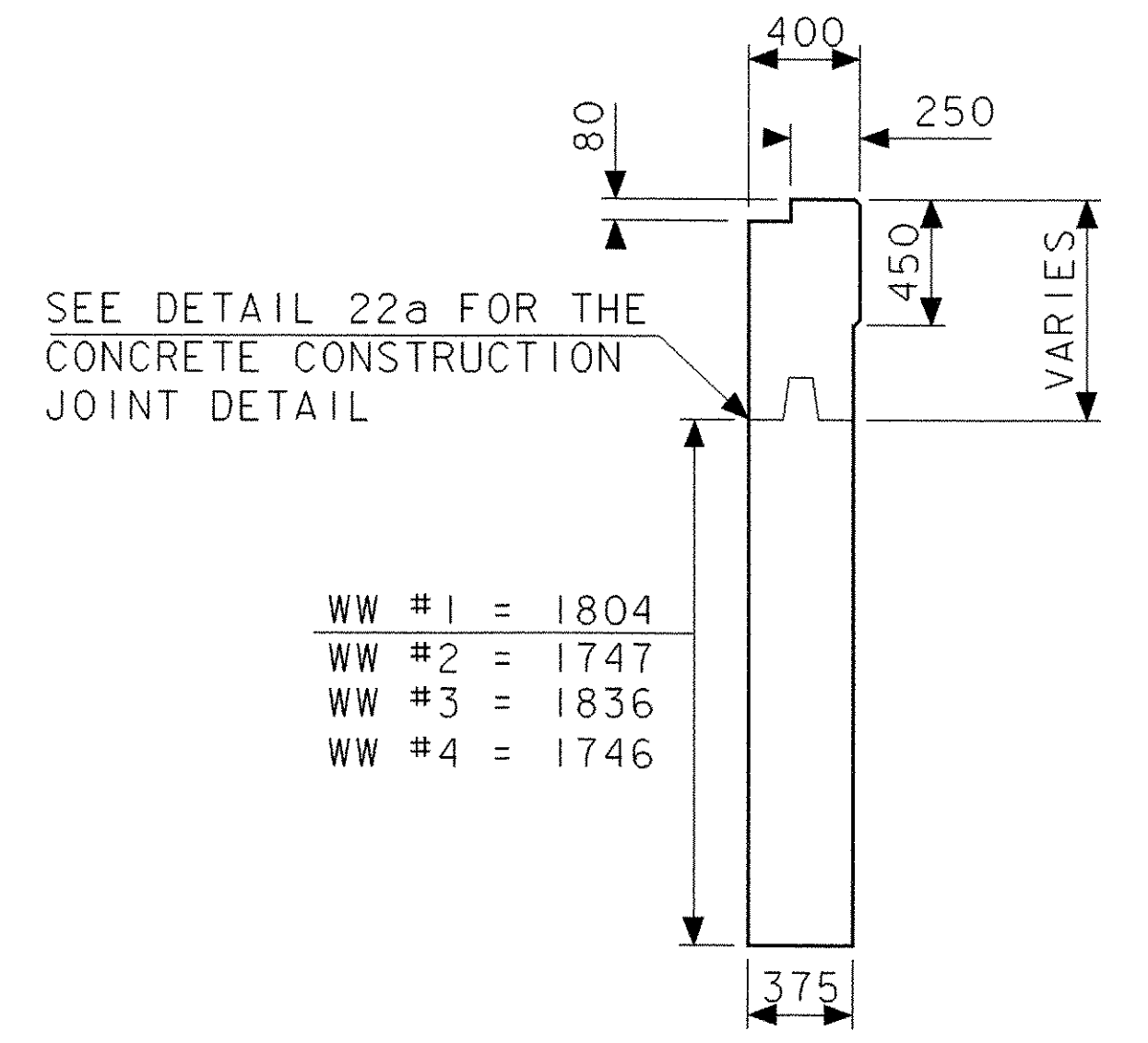
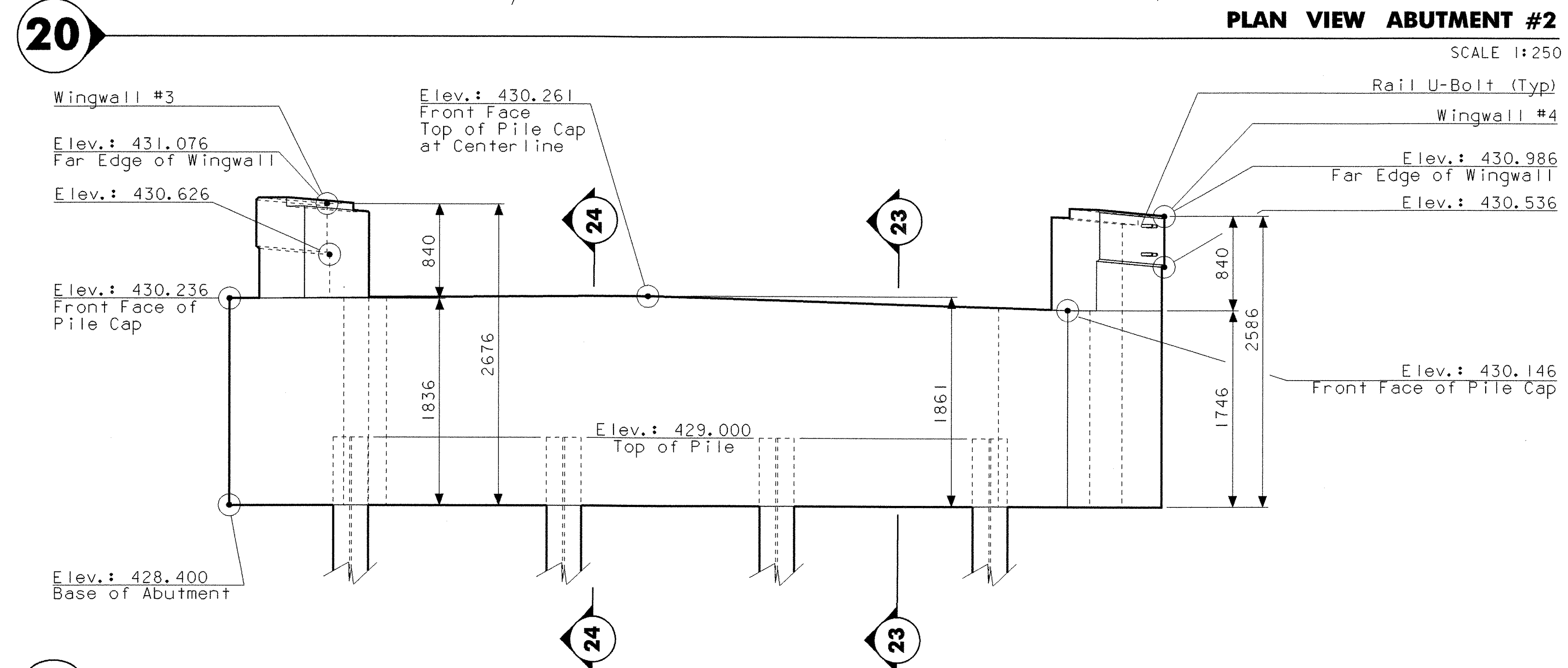
18

ABUTMENT #1 PLAN AND LAYOUT

PROJECT NAME: Charleston	PLOT DATE: 13-APR-2006
PROJECT NUMBER: BRO 149 (22)	DRAWN BY: G. COLGROVE
FILE NAME: 93J051/STR./s105labt.dgn	CHECKED BY: S. SCRIBNER
PROJECT MANAGER: M. EVANS-MONGEON	SHEET 34 OF 50
DESIGNED BY: G. COLGROVE	
IPARM: s105labt.l	



22a TYPICAL CONCRETE CONSTRUCTION JOINT
NTS

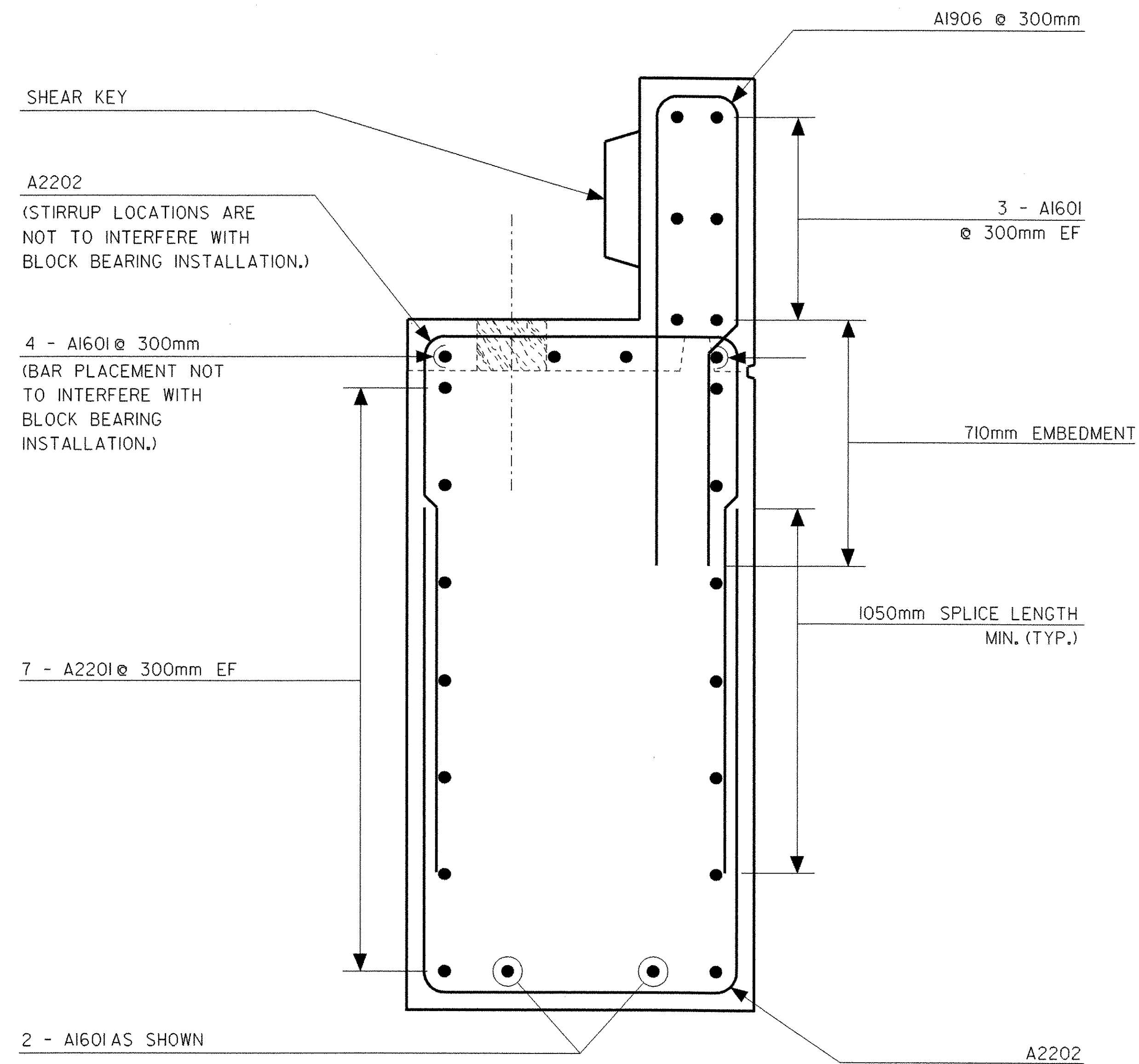


22 WINGWALL TYPICAL
SCALE 1:250

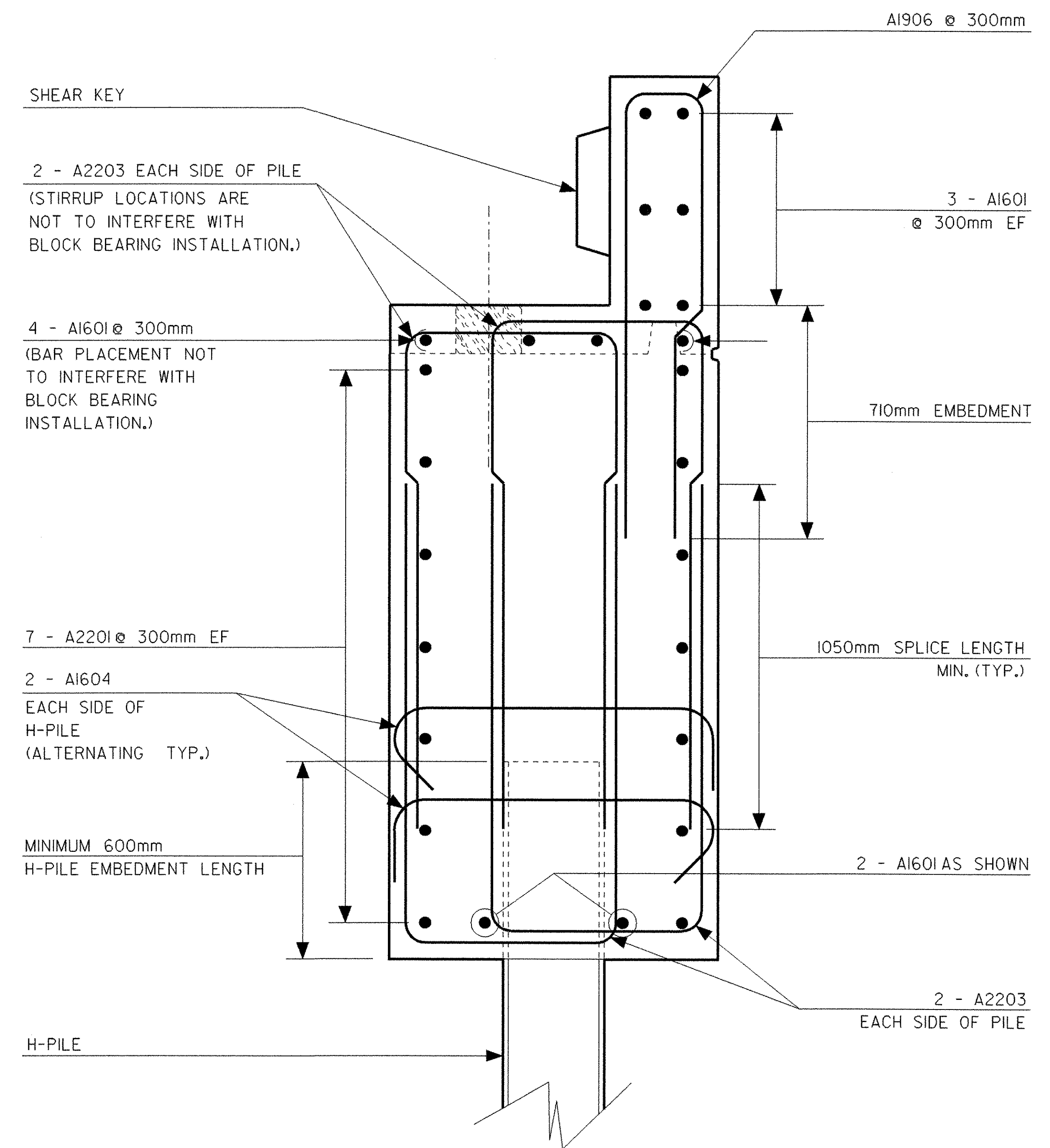
21 ELEVATION VIEW ABUTMENT #2
SCALE 1:250

ABUTMENT #2 PLAN AND LAYOUT

PROJECT NAME:	Charleston	PLOT DATE:	13-APR-2006
PROJECT NUMBER:	BRO 1449 (22)	DRAWN BY:	G. COLGROVE
FILE NAME:	93j051/STR./s105lab1	CHECKED BY:	S. SCRIBNER
PROJECT MANAGER:	M. EVANS-MONGEON	SHEET	35 OF 50
DESIGNED BY:	G. COLGROVE		
IPARM:	s105lab12.i		



23 ABUTMENT TYPICAL REINFORCING DETAILS
SCALE 1:100

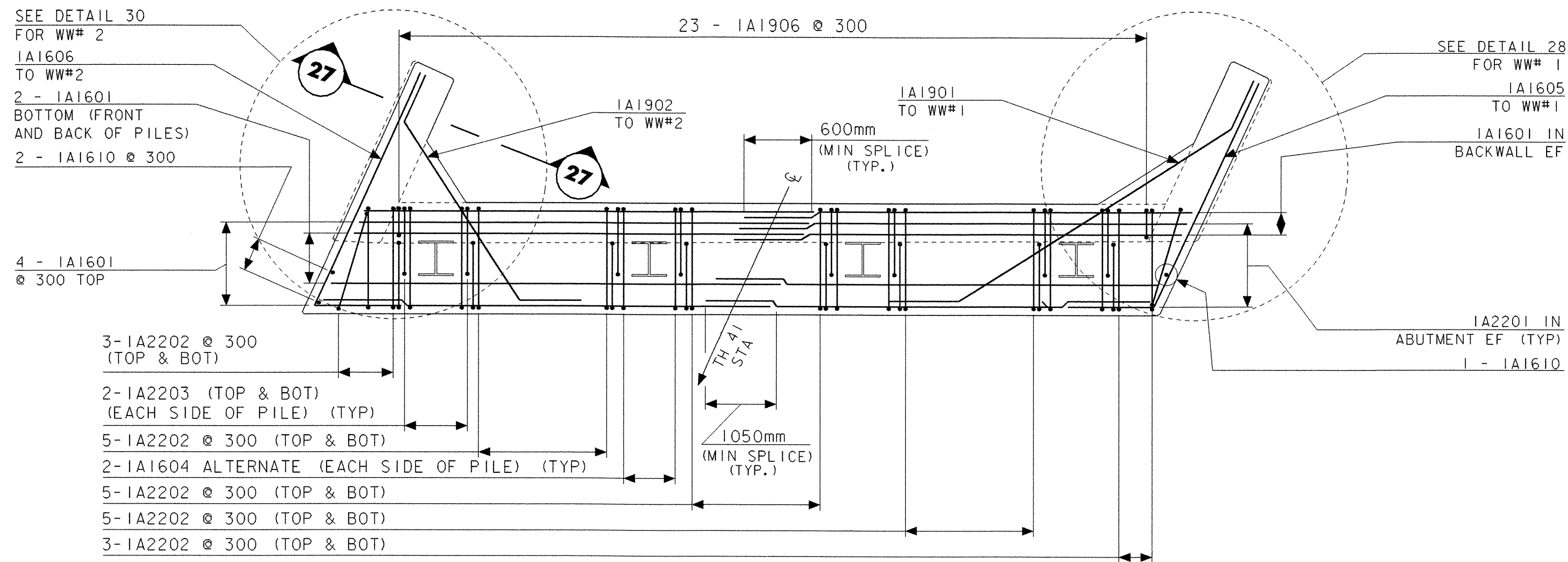


24 ABUTMENT TYPICAL REINFORCING DETAILS WITH PILES
SCALE 1:100

NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE

ABUTMENT 1 & 2 TYPICAL REINFORCING DETAILS

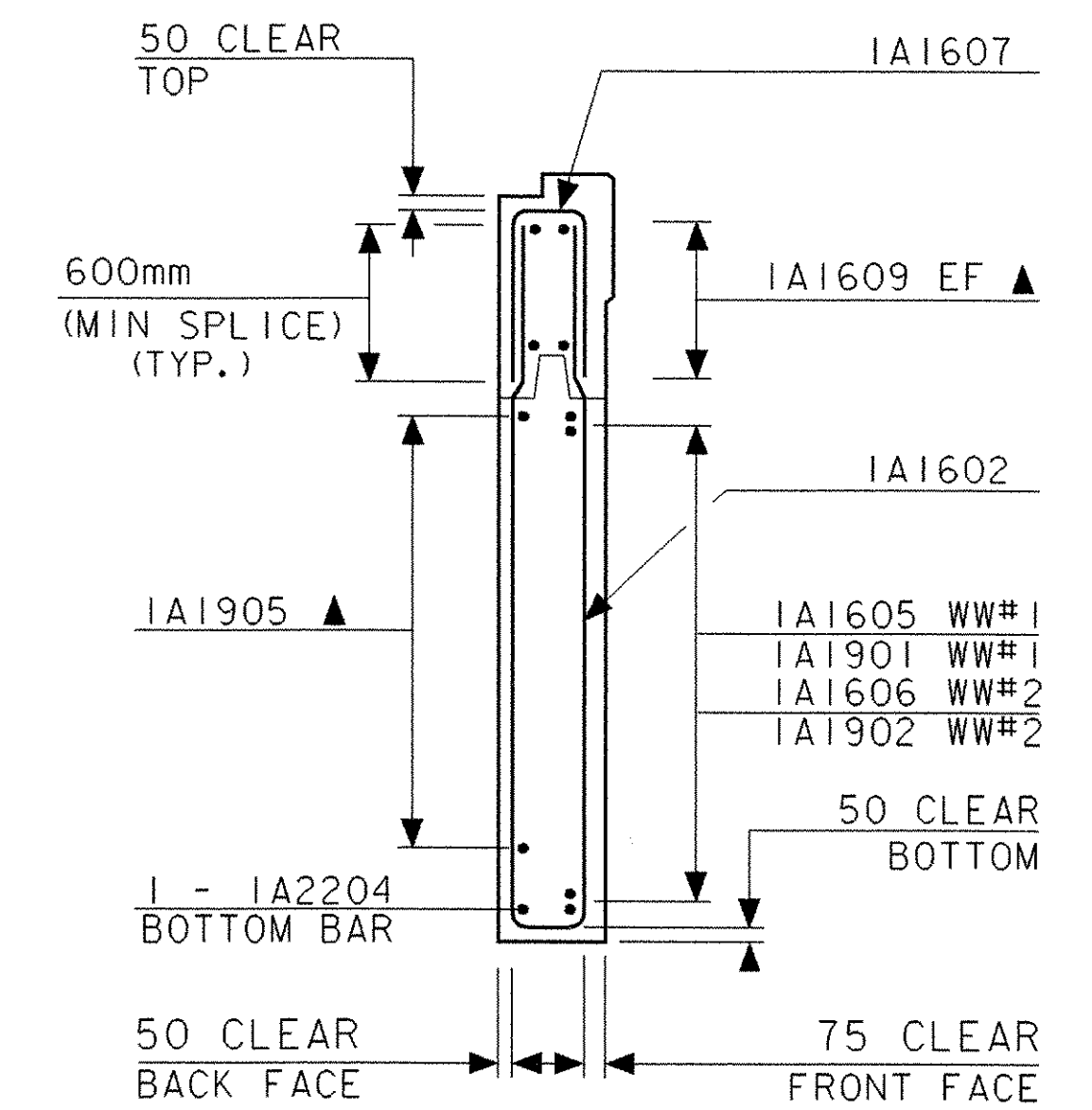
PROJECT NAME: Charleston	PLOT DATE: 13-APR-2006
PROJECT NUMBER: BRO 1449 (22)	DRAWN BY: G. ROKES
FILE NAME: 93J051/STR/sj05lab+.dgn	CHECKED BY: S. SCRIBNER
PROJECT MANAGER: M. EVANS-MONGEON	SHEET 36 OF 50
DESIGNED BY: G. COLGROVE	
IPARM: sj05lab+yp.l	



25

REINFORCING DETAILS ABUTMENT#1

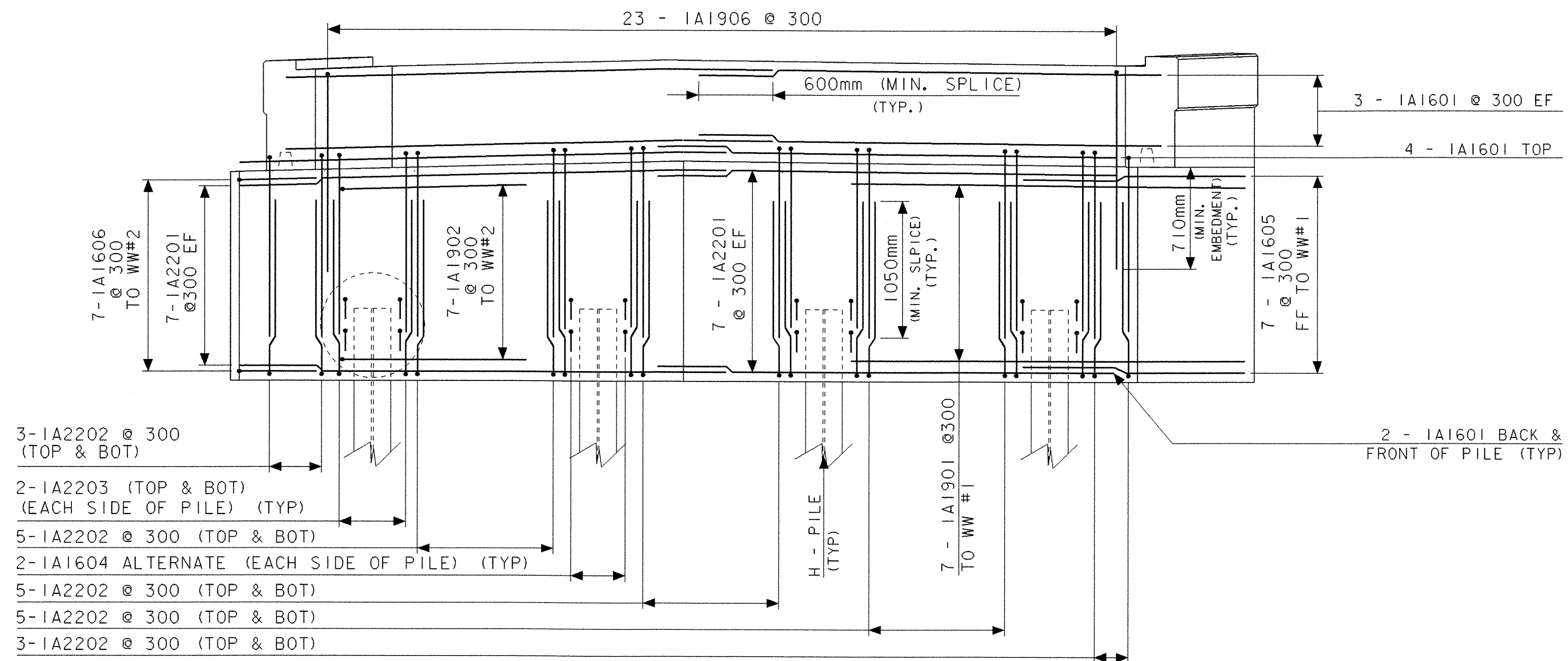
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27

TYPICAL 1&2 WINGWALL REINFORCING PLACEMENT

NTS



26

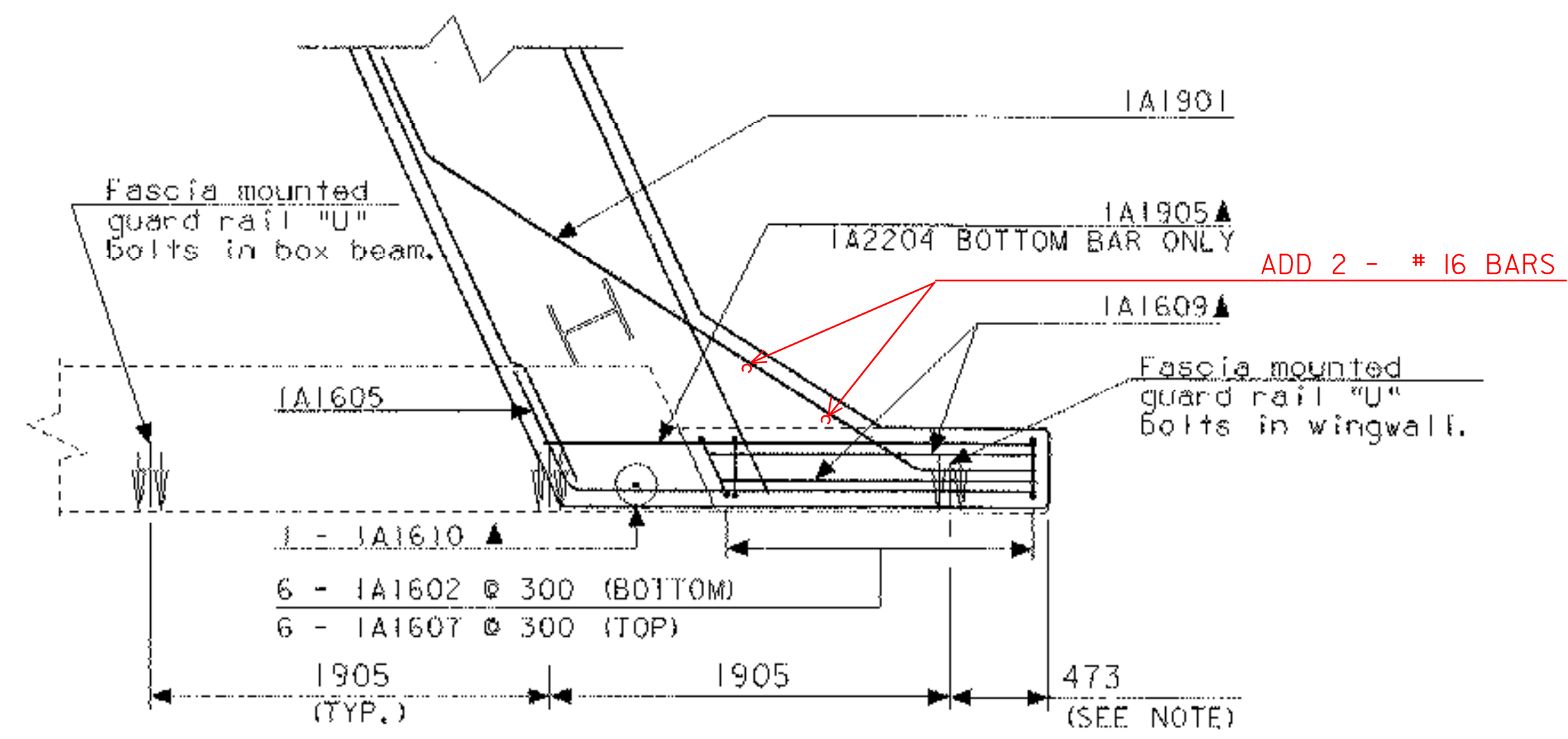
ELEVATION VIEW REINFORCING STEEL ABUTMENT #1

SCALE 1:250

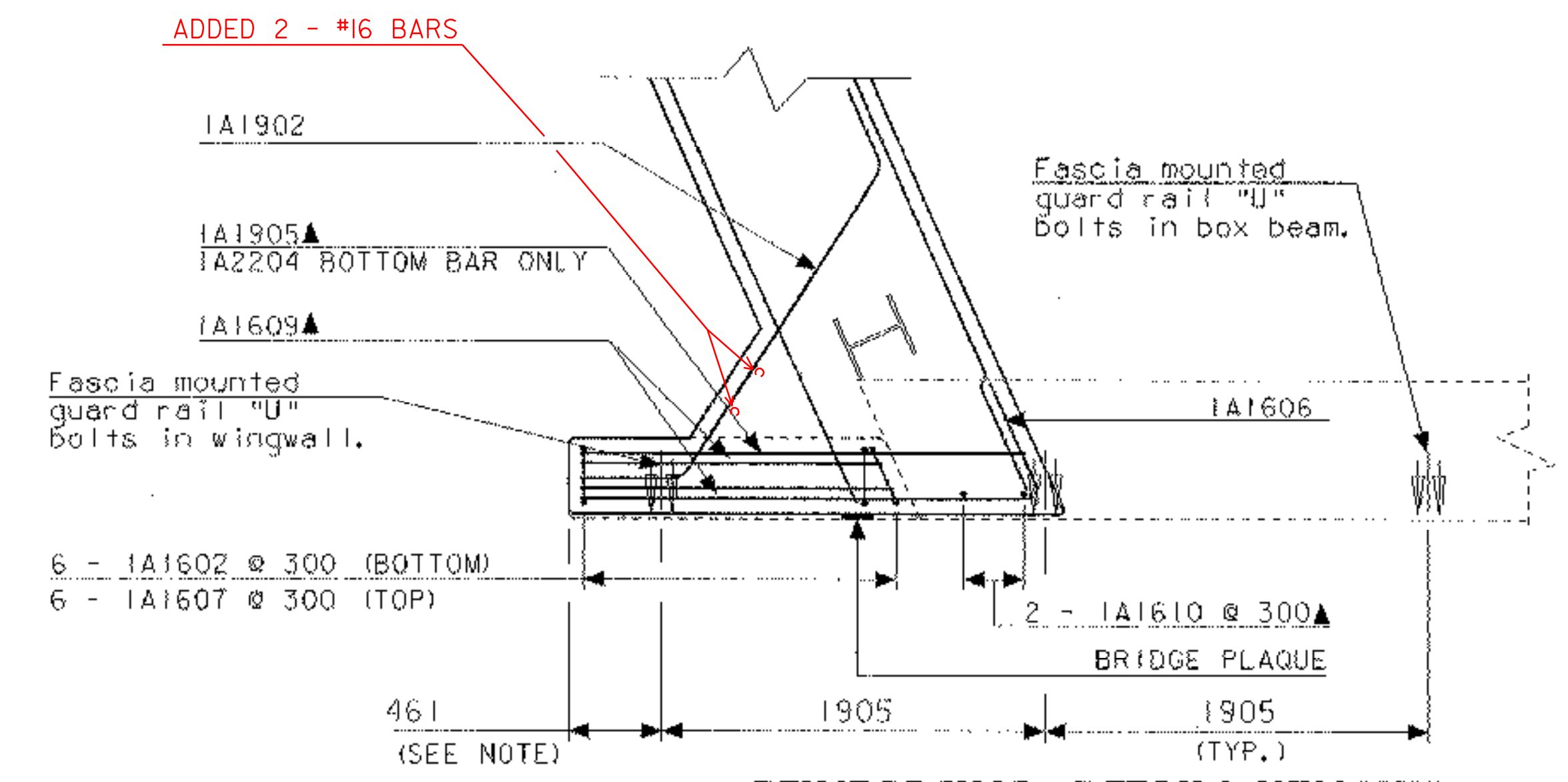
NF - NEAR FACE
 FF - FAR FACE
 EF - EACH FACE

ABUTMENT #1 REINFORCING DETAILS

PROJECT NAME:	CHARLESTON	PLOT DATE:	13-APR-2006
PROJECT NUMBER:	BRO 1449 (22)	DRAWN BY:	G. ROKES
FILE NAME:	93J051/STR/sj05lab+1.dgn	CHECKED BY:	S. SCRIBNER
PROJECT MANAGER:	M. EVANS-MONGEON	SHEET	37 OF 50
DESIGNED BY:	G. COLGROVE		
IPARM:	sj05labrbl		

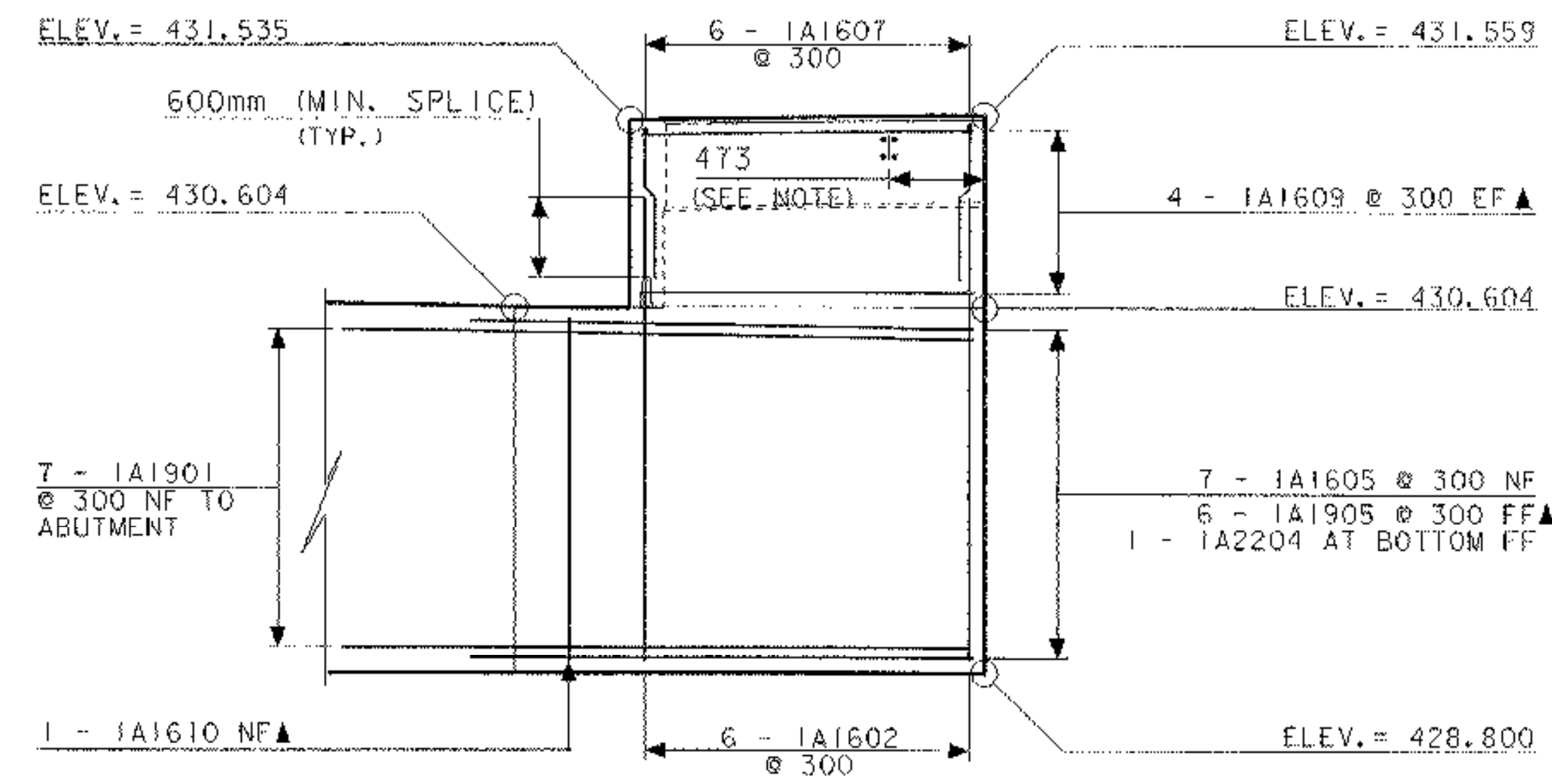


28 REINFORCING DETAILS WINGWALL #1
SCALE 1:250

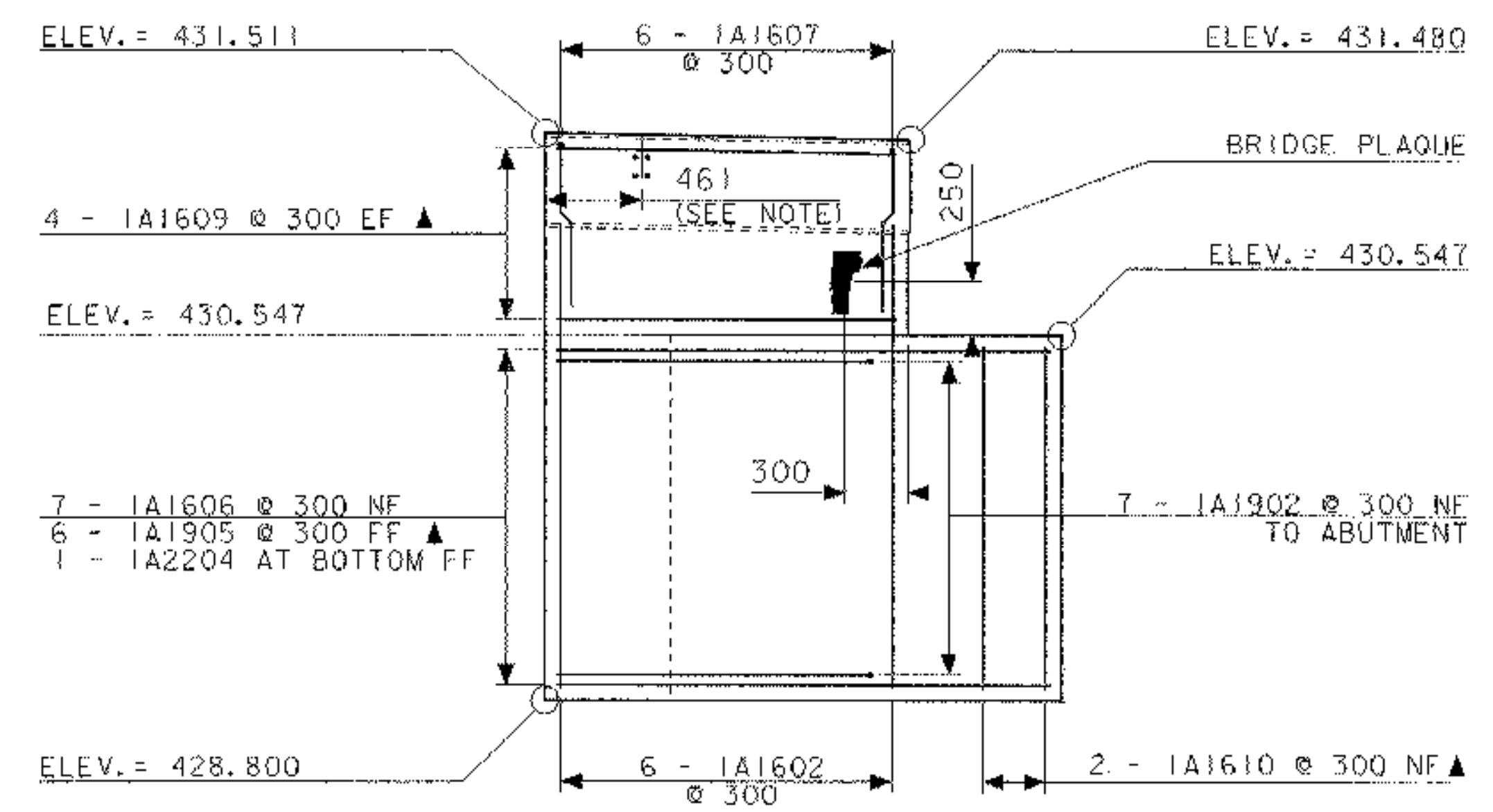


30 REINFORCING DETAILS WINGWALL #2
BRIDGE PLAQUE LAYOUT
SCALE 1:250

VTRANS WILL SUPPLY THE BRIDGE PLAQUE. THE CONTRACTOR WILL INSTALL THE PLAQUE ON WINGWALL #2 AS SHOWN OR AS THE ENGINEER DIRECTS. ALL WORK REQUIRED TO INSTALL THE PLAQUE SHALL BE PAID INCIDENTAL TO ITEM 501.34, "CONCRETE, HIGH PERFORMANCE CLASS B."



29 PLAN VIEW REINFORCING DETAILS WINGWALL #1
SCALE 1:250



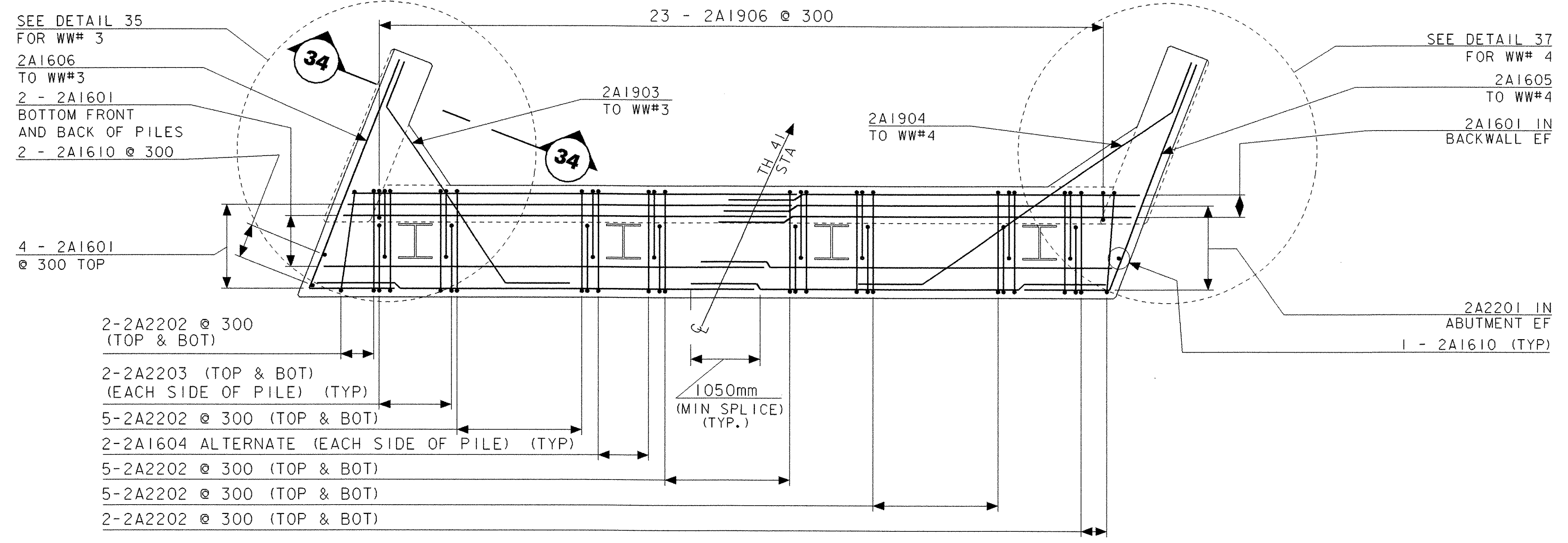
31 PLAN VIEW REINFORCING DETAILS WINGWALL #2
BRIDGE PLAQUE LAYOUT
SCALE 1:250

NOTE:
The locations on the wing wall for guard rail fascia "U" bolts will be verified once the box beams are secured in place. Measurements will be taken from the box beam guard rail fascia "U" bolts to verify the final wing wall "U" bolt locations, adjust guard rail "U" bolts in the wing wall as necessary for proper guard rail fit.

NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE

WINGWALLS 1 AND 2 REINFORCING DETAILS

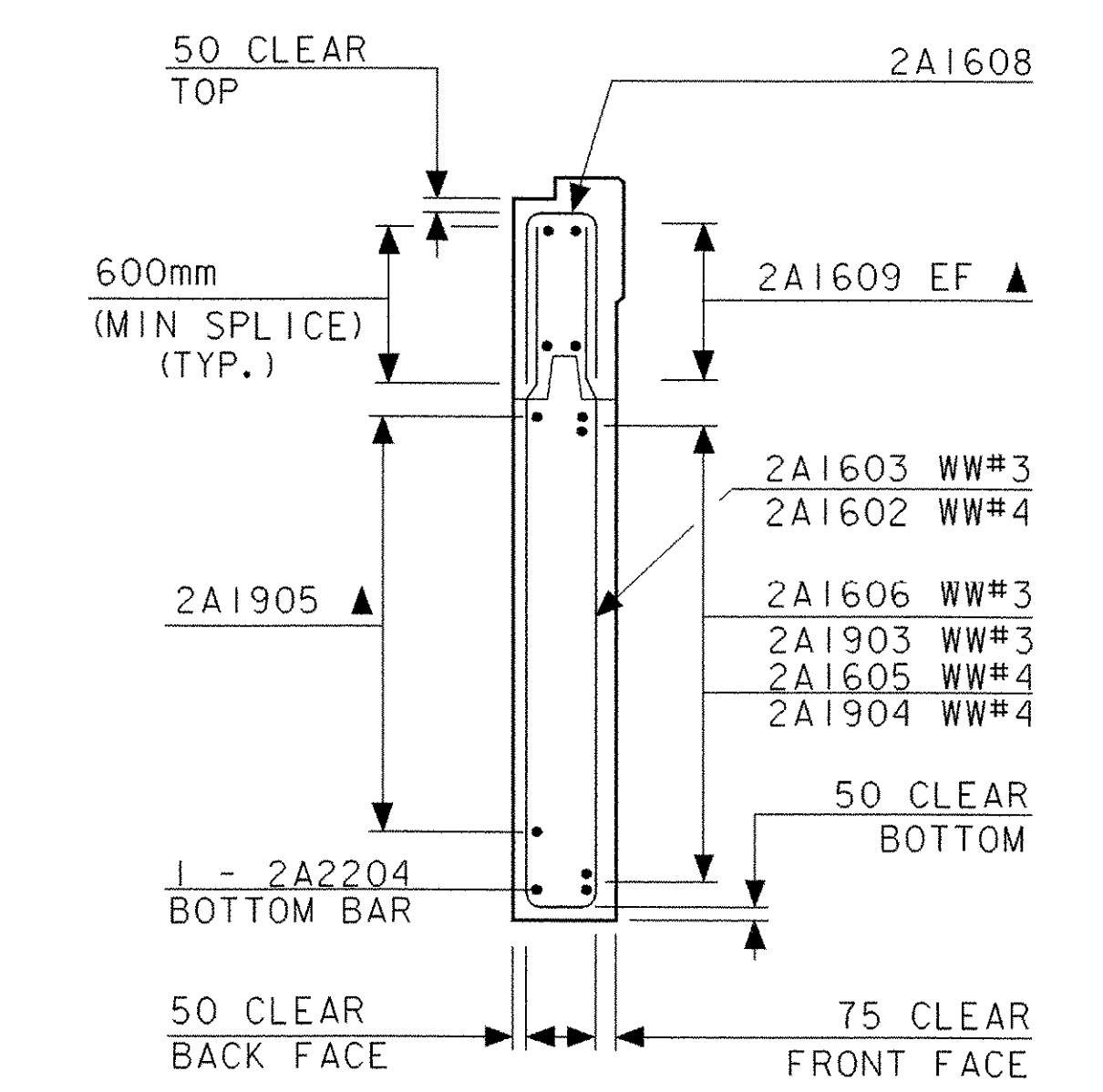
PROJECT NAME:	CHARLESTON	PLOT DATE:	13-APR-2006
PROJECT NUMBER:	BRO (449) (22)	DRAWN BY:	G. ROKES
FILE NAME:	93J051/STR/sJ051ab+.dgn	CHECKED BY:	S. SCRIBNER
PROJECT MANAGER:	M. EVANS-MONGEON	SHEET	38 OF 50
DESIGNED BY:	G. COLGROVE		
IPARM:	sJ051wrb1		



32

REINFORCING DETAILS ABUTMENT #2

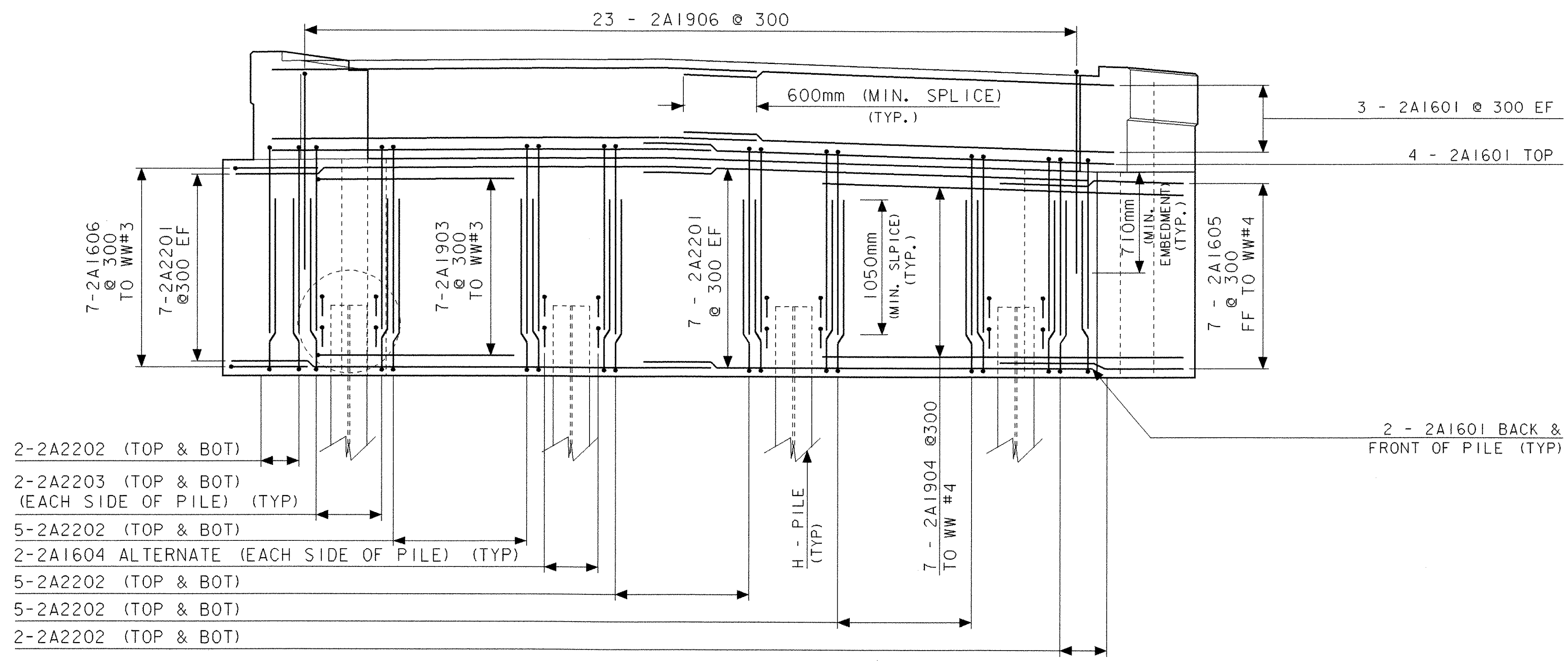
SCALE 1:250



34

TYPICAL 3&4 WINGWALL REINFORCING PLACEMENT

NTS



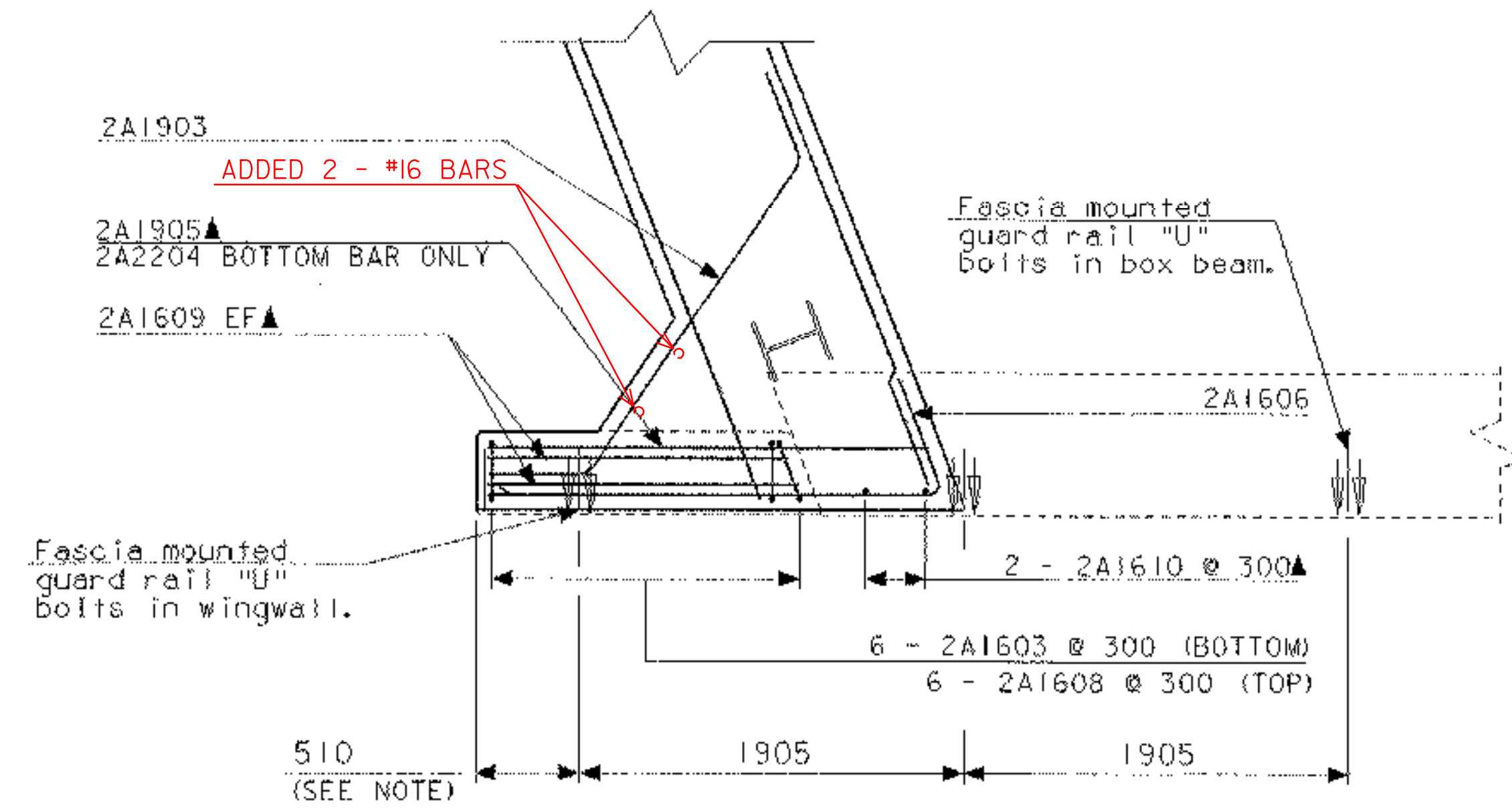
33

ELEVATION VIEW REINFORCING ABUTMENT #2

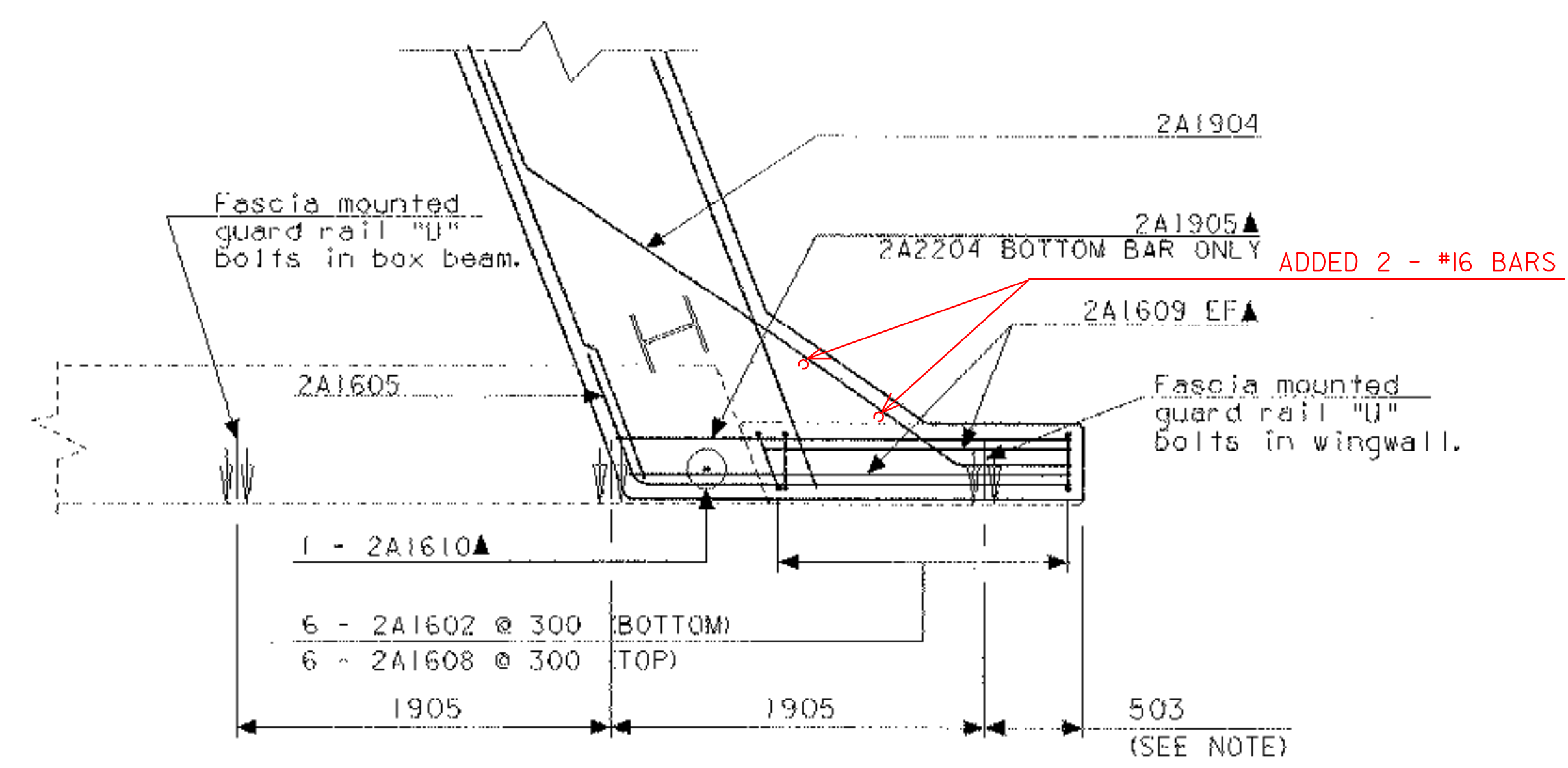
SCALE 1:250

NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE

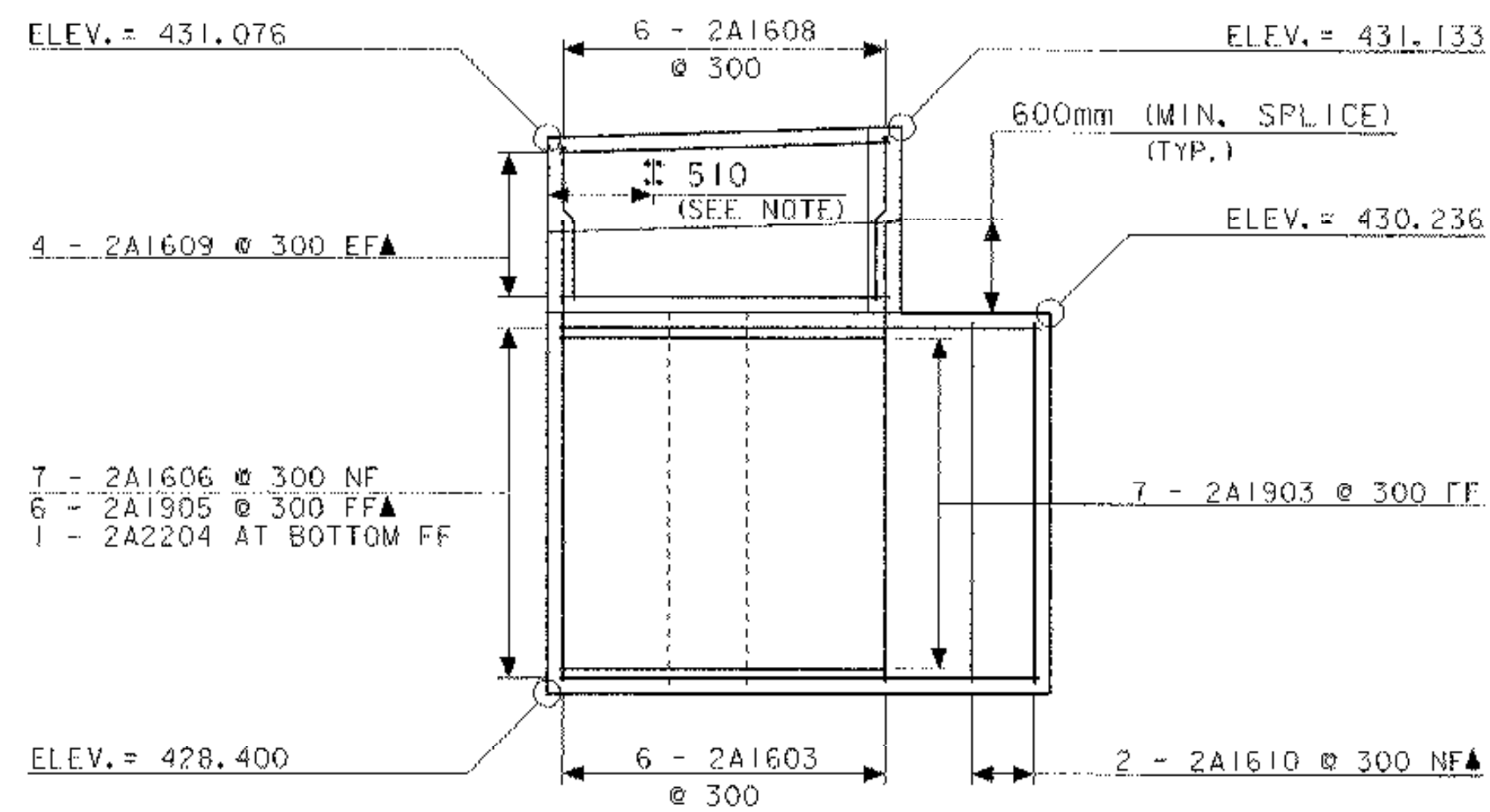
ABUTMENT #2 REINFORCING DETAILS	
PROJECT NAME:	CHARLESTON
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	93J051/STR/sj05lab+.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	G. COLGROVE
IPARM:	sj05labrb2.i
PLOT DATE:	13-APR-2006
DRAWN BY:	G. ROKES
CHECKED BY:	S. SCRIBNER
SHEET 39 OF 50	



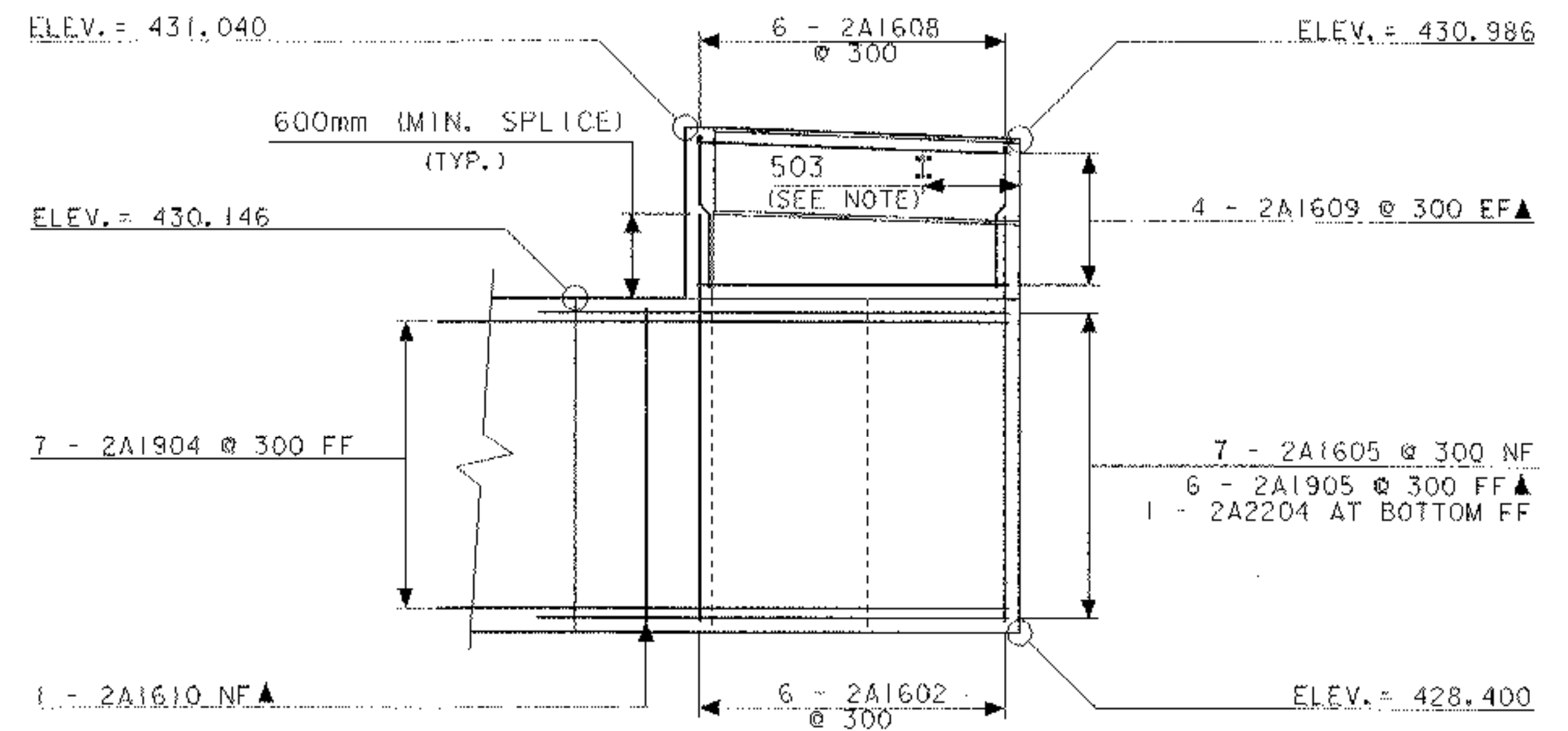
35 REINFORCING DETAILS WINGWALL #3
SCALE 1:250



37 REINFORCING DETAILS WINGWALL #4
SCALE 1:250



36 PLAN VIEW REINFORCING DETAILS WINGWALL #3
SCALE 1:250



38 PLAN VIEW REINFORCING DETAILS WINGWALL #4
SCALE 1:250

NOTE:

The locations on the wing wall for guard rail fascia "U" bolts will be verified once the box beams are secured in place. Measurements will be taken from the box beam guard rail fascia "U" bolts to verify the final wing wall "U" bolt locations, adjust guard rail "U" bolts in the wing wall as necessary for proper guard rail fit.

NF - NEAR FACE
FF - FAR FACE
EF - EACH FACE

WINGWALLS 3 AND 4 REINFORCING DETAILS

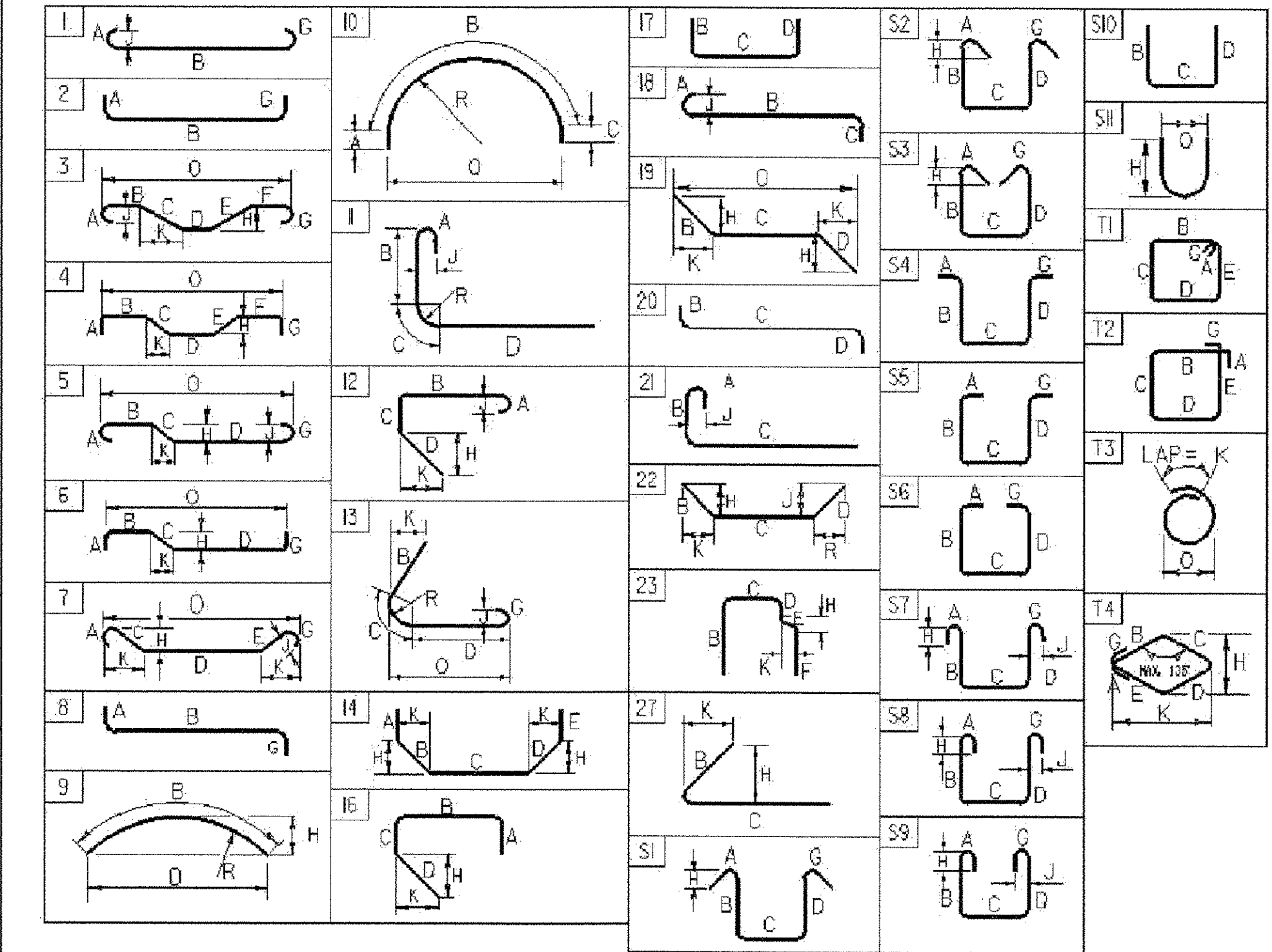
PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	93J051/STR/sj051ab1.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	G. COLGROVE
IPARM:	sj051wrb2.r
PLOT DATE:	13-APR-2006
DRAWN BY:	G. ROKE'S
CHECKED BY:	S. SCRIBNER
SHEET	40 OF 50

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				
ABUTMENT 1																																							
	24	16	4120	1A1601	STR																																		
	12	16	5010	1A1602	S10		2380	250	2380																														
	16	16	1170	1A1604	16	155	875	---	140																														
	7	19	2940	1A1605	22		710	2230																															
	7	19	3010	1A1606	27		710	2300																															
	12	16	1750	1A1607	S10		750	250	750																														
	▲	16	16	1635	1A1609	STR																																	
	* ▲	4	16	1730	1A1610	STR																																	
	7	19	4215	1A1901	22		710	3135	370																														
	7	19	3160	1A1902	22		410	2040	710																														
	* ▲	13	19	2335	1A1905	STR																																	
	23	19	3530	1A1906	S10		1650	230	1650																														
	28	22	4300	1A2201	STR																																		
	41	22	4165	1A2202	S10		1645	875	1645																														
	32	22	3890	1A2203	S10		1645	600	1645																														
	* ▲	3	22	2335	1A2204	STR																																	
ABUTMENT 2																																							
	24	16	4120	2A1601	STR																																		
	6	16	5010	2A1602	S10		2380	250	2380																														
	6	16	5150	2A1603	S10		2450	250	2450																														
	16	16	1170	2A1604	16	155	875	---	140																														
	7	19	2940	2A1605	22		710	2230																															
	7	19	3010	2A1606	27		710	2300																															
	12	16	1610	2A1608	S10		680	250	680																														
	▲	16	16	1635	2A1609	STR																																	
	* ▲	4	16	1730	2A1610	STR																																	
	7	19	3235	2A1903	22		435	2090	710																														
	7	19	4120	2A1904	22		710	3010	400																														
	* ▲	13	19	2335	2A1905	STR																																	
	23	19	3530	2A1906	S10		1650	230	1650																														
	28	22	4300	2A2201	STR																																		
	38	22	4165	2A2202	S10		1645	875	1645																														
	32	22	3890	2A2203	S10		1645	600	1645																														
	* ▲	3	22	2335	2A2204	STR																																	

~ 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 M 31M (ASTM A 615M-SI). 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.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

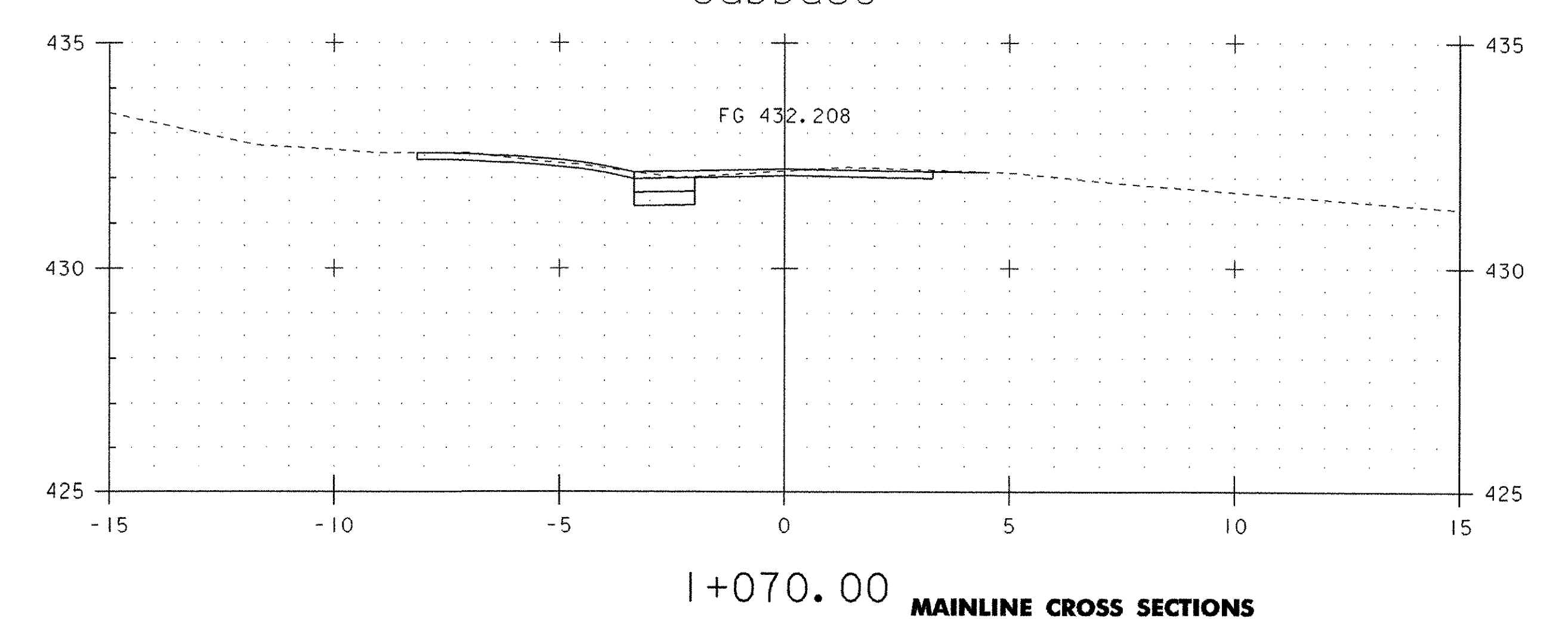
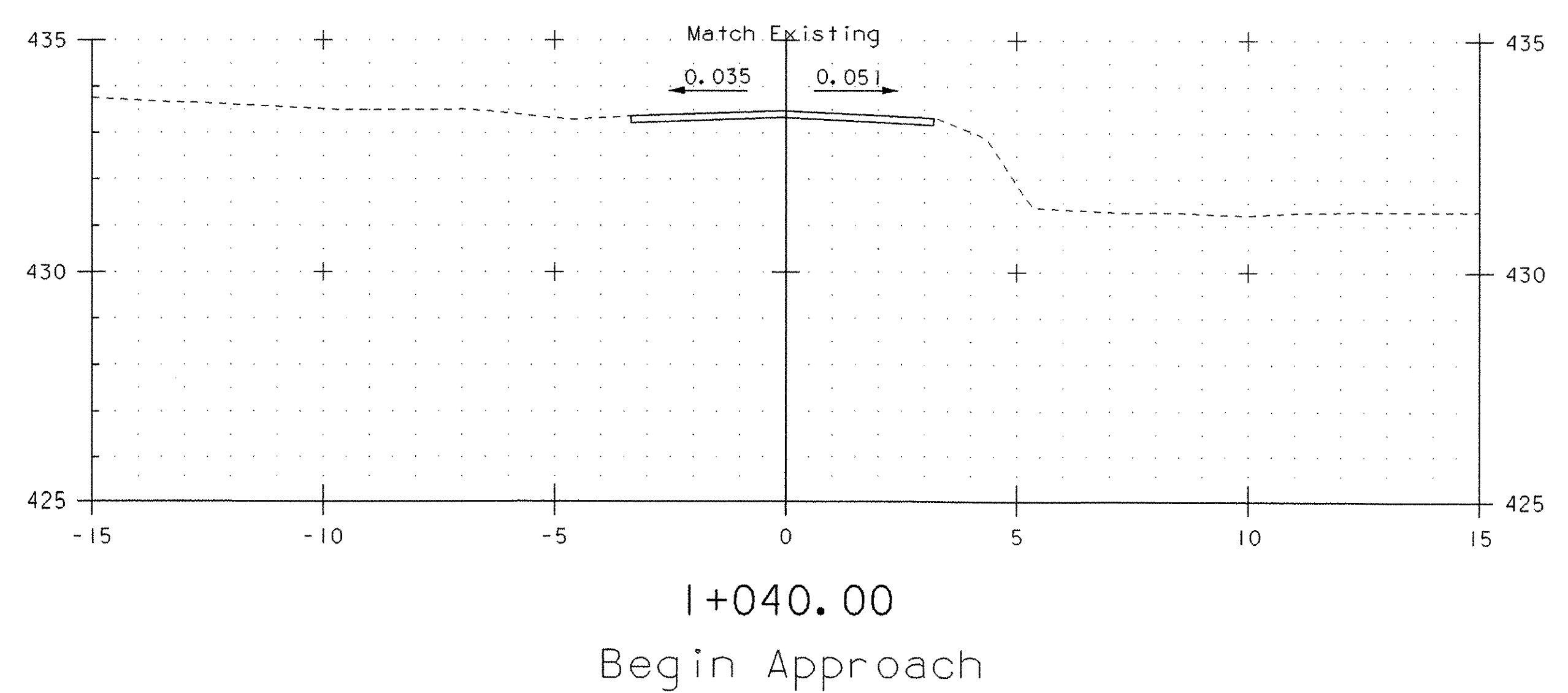
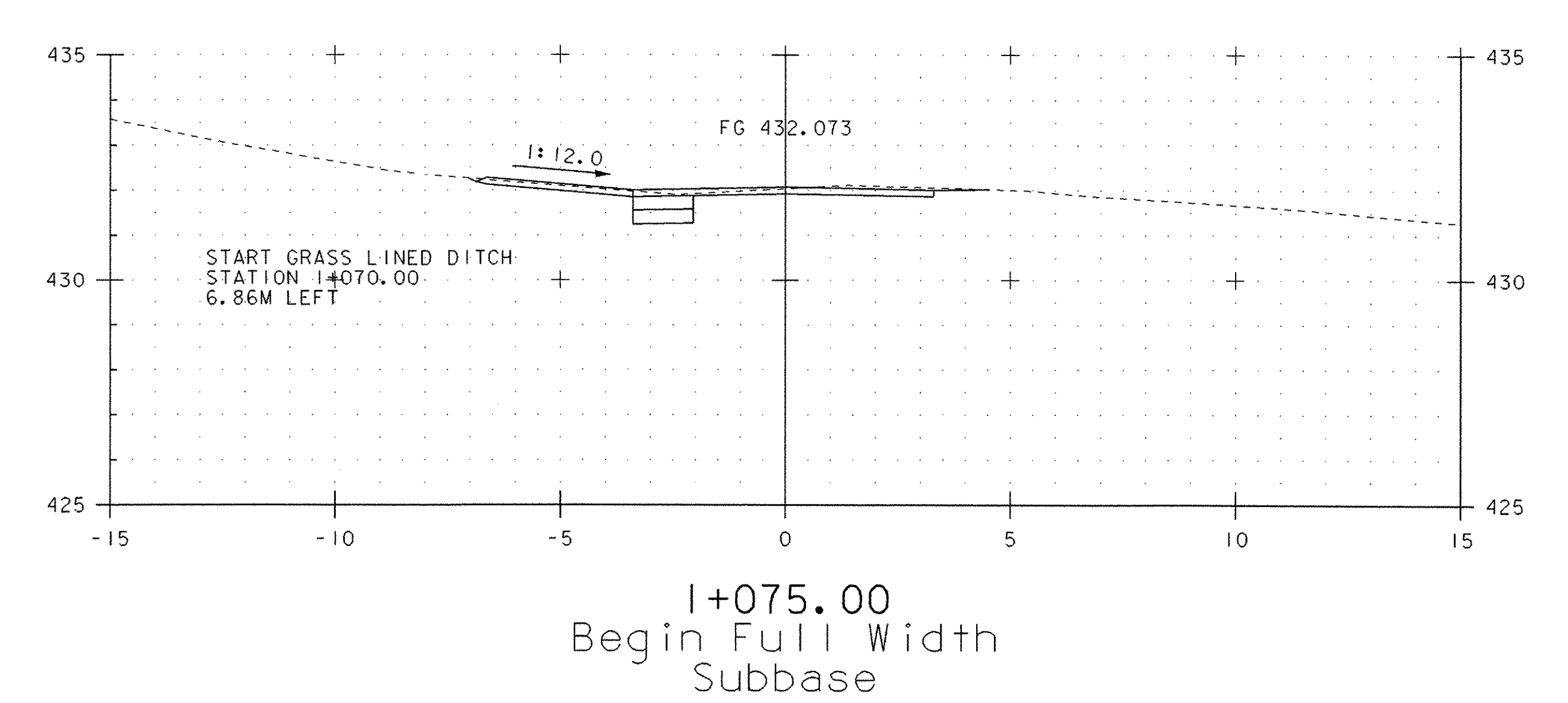
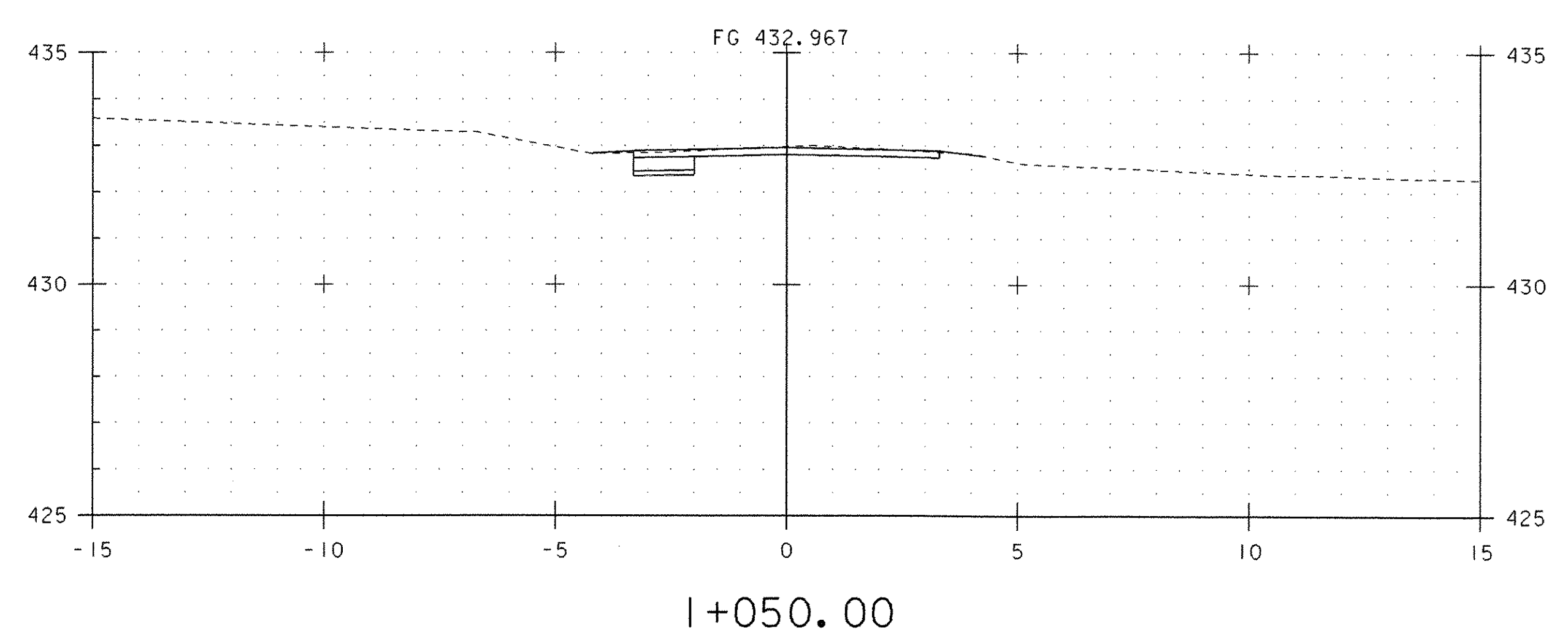
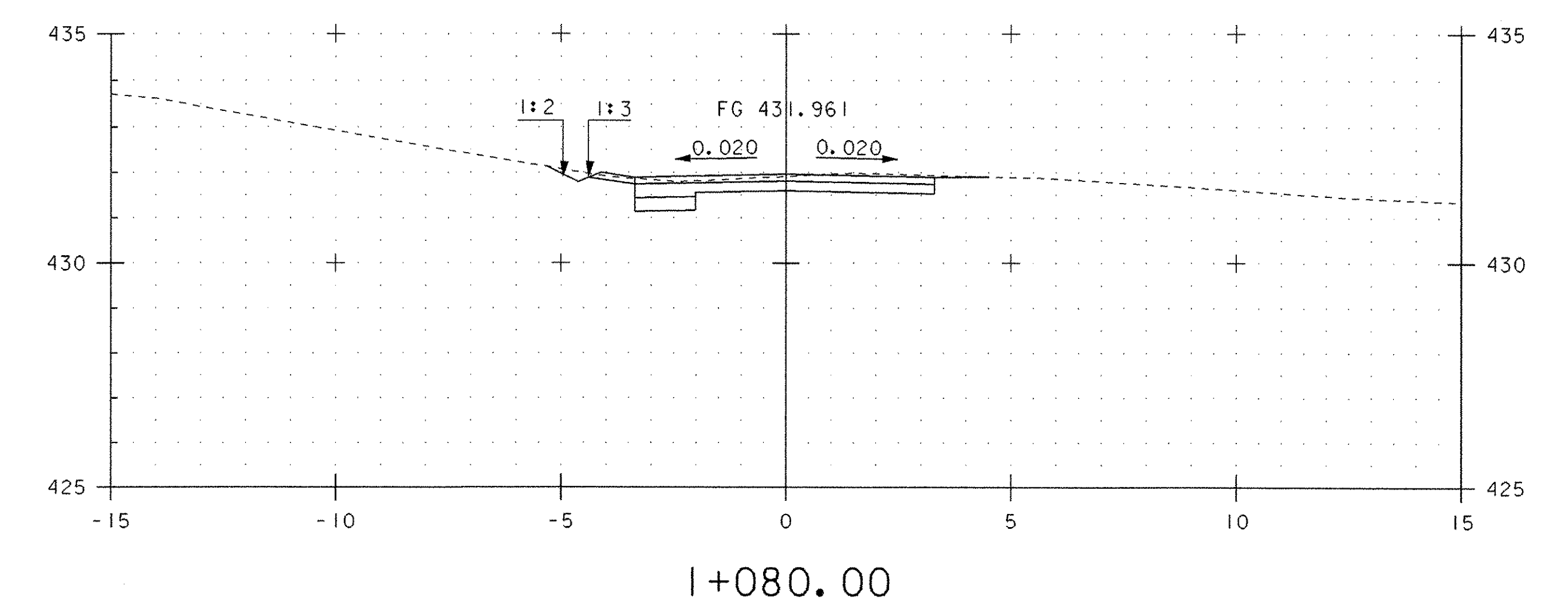
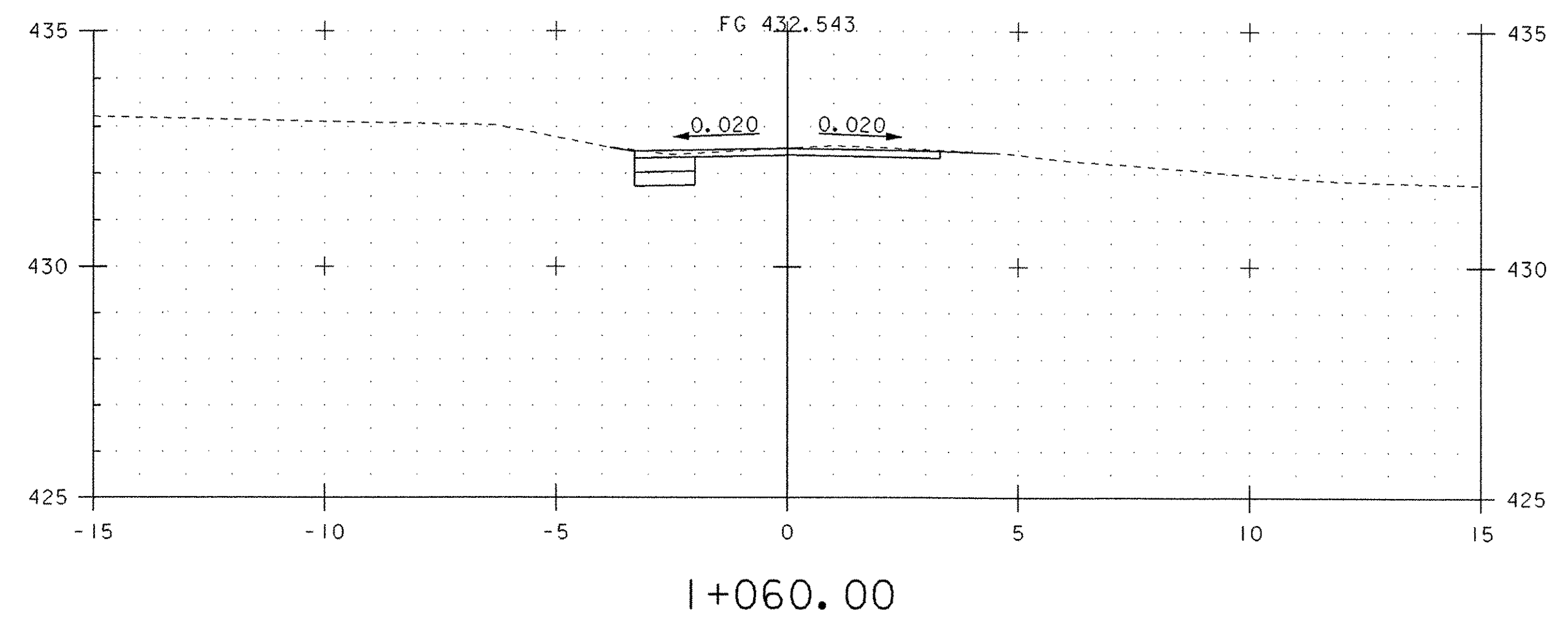


ASTM STANDARD REINFORCING BARS

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

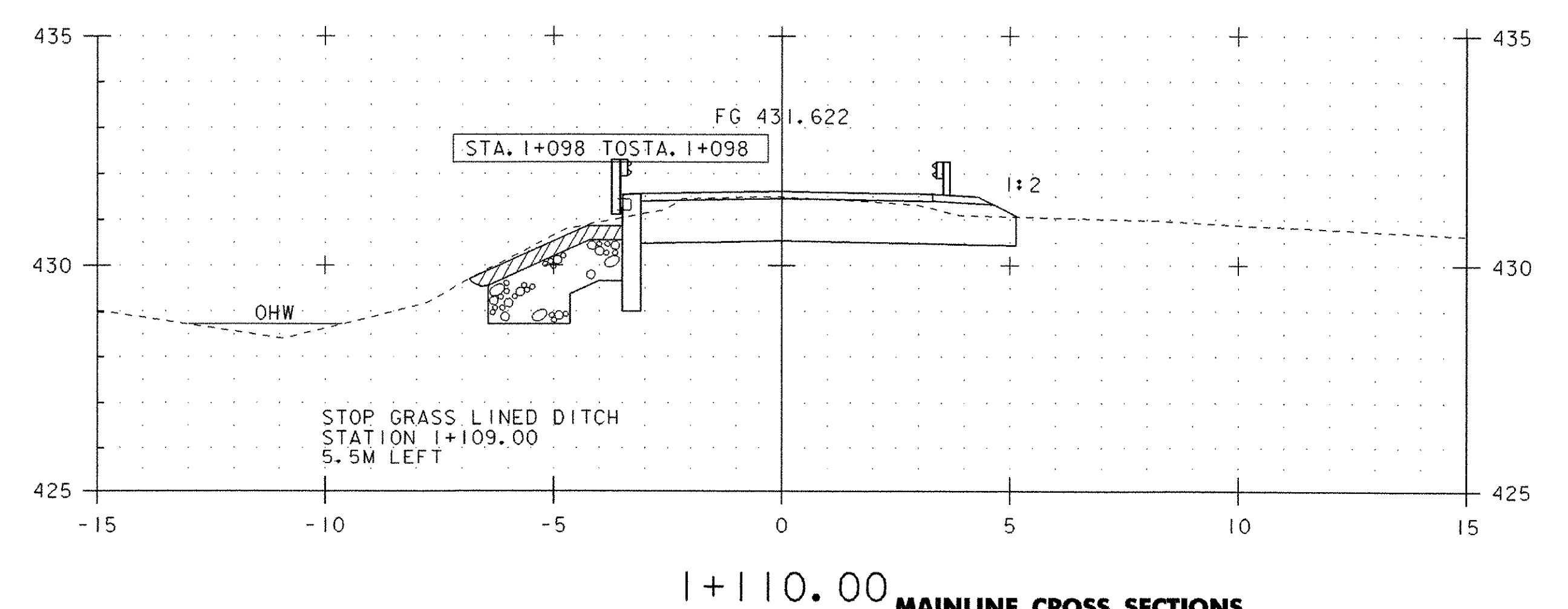
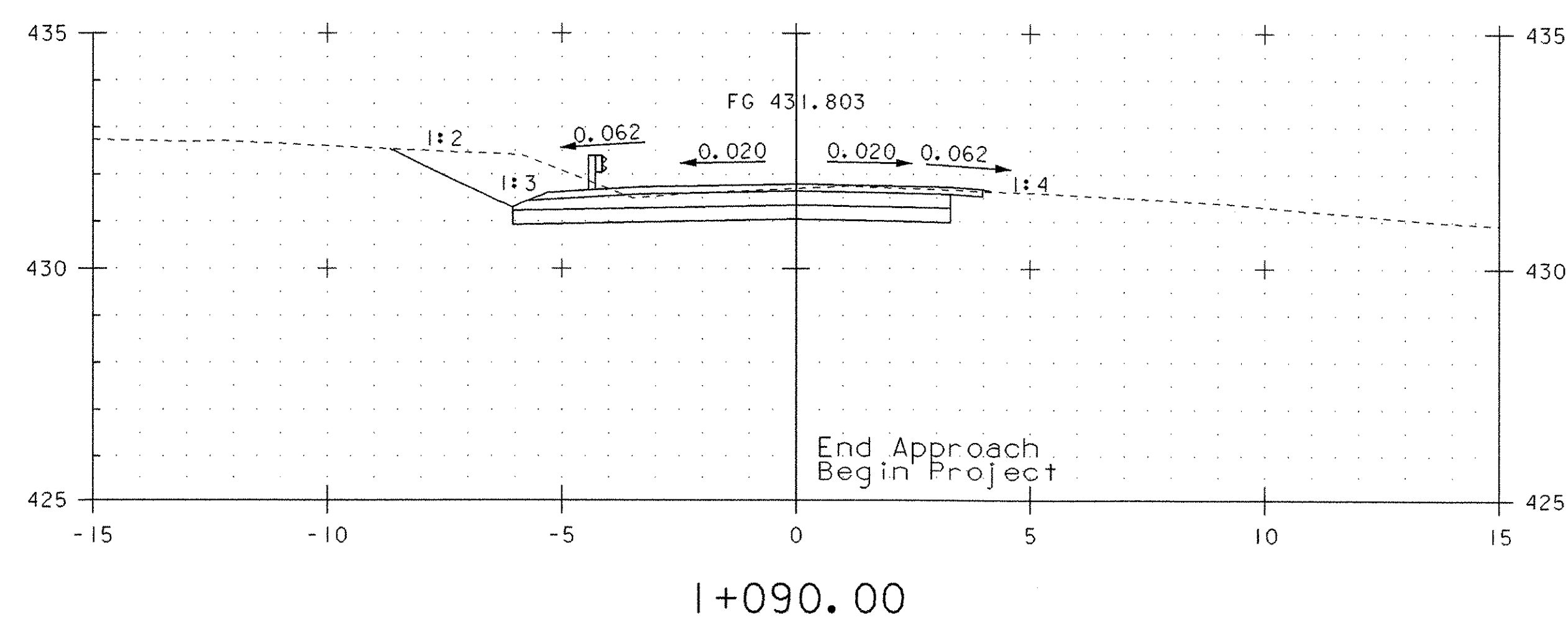
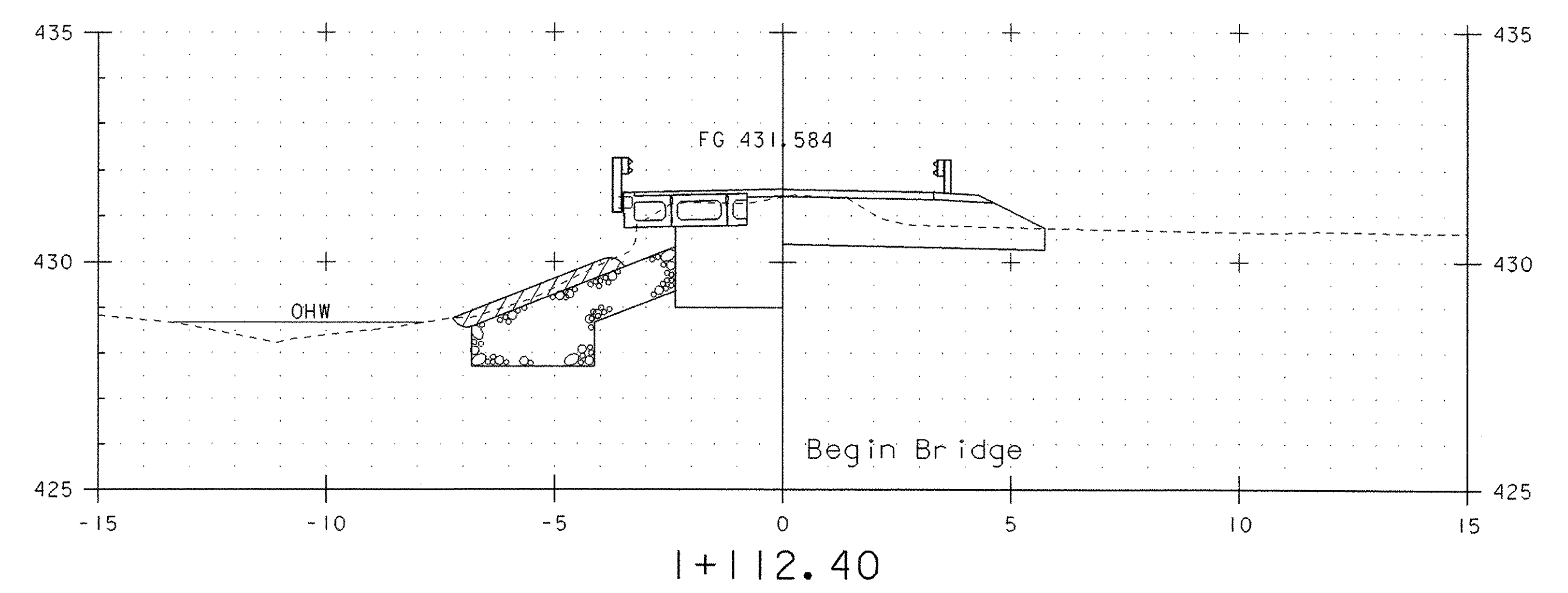
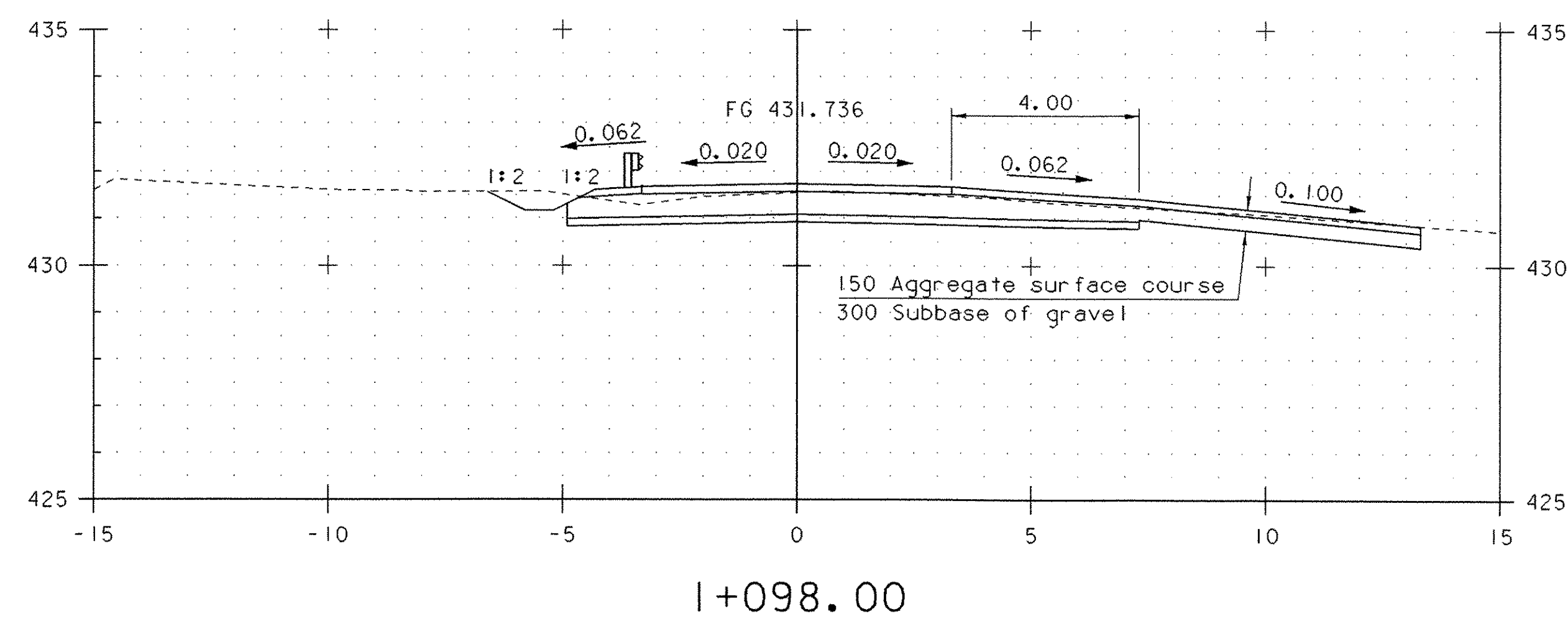
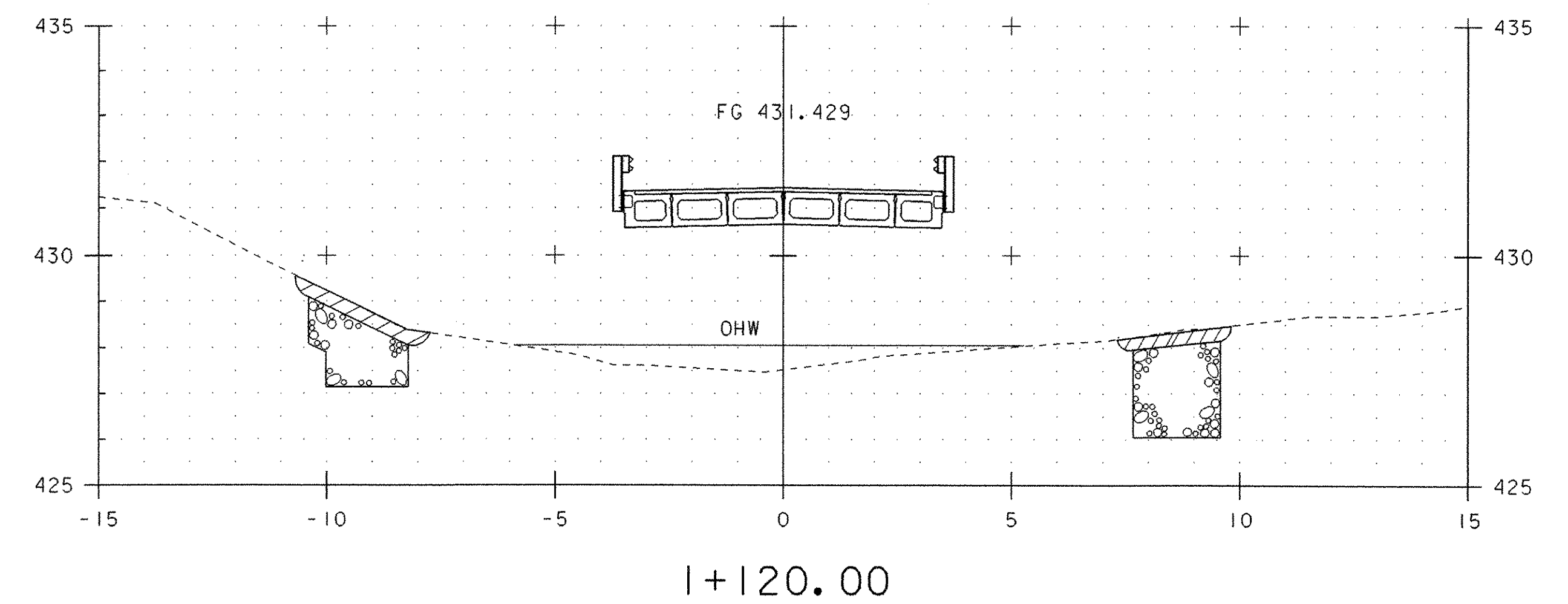
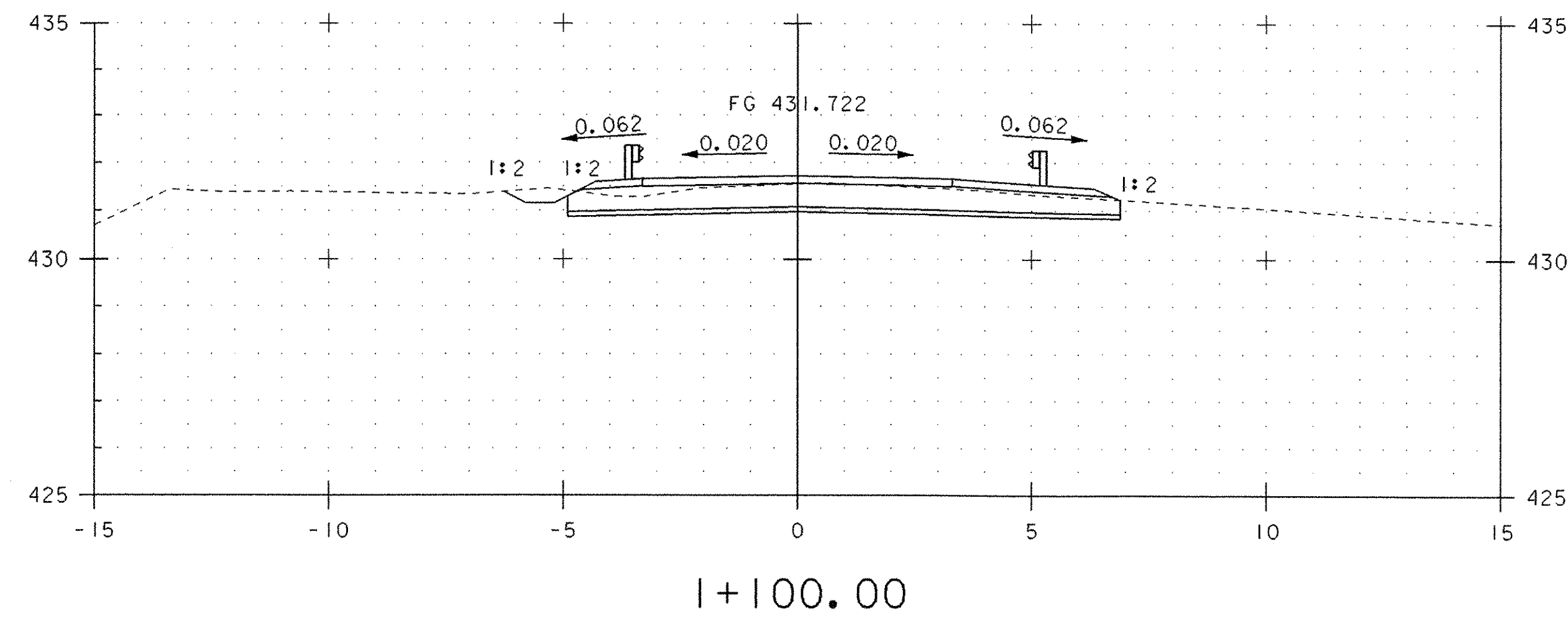
PROJECT NAME: **CHARLESTON**
 PROJECT NUMBER: **BRO 1449 (22)**
 FILE NAME: sj051rebar.xls
 PROJECT MANAGER: M. EVANS-MONGEON
 DESIGNED BY: G. COLGROVE
 REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: 1/18/2006
 DRAWN BY: G. ROKES
 CHECKED BY: G. COLGROVE
 SHEET 42 OF 50



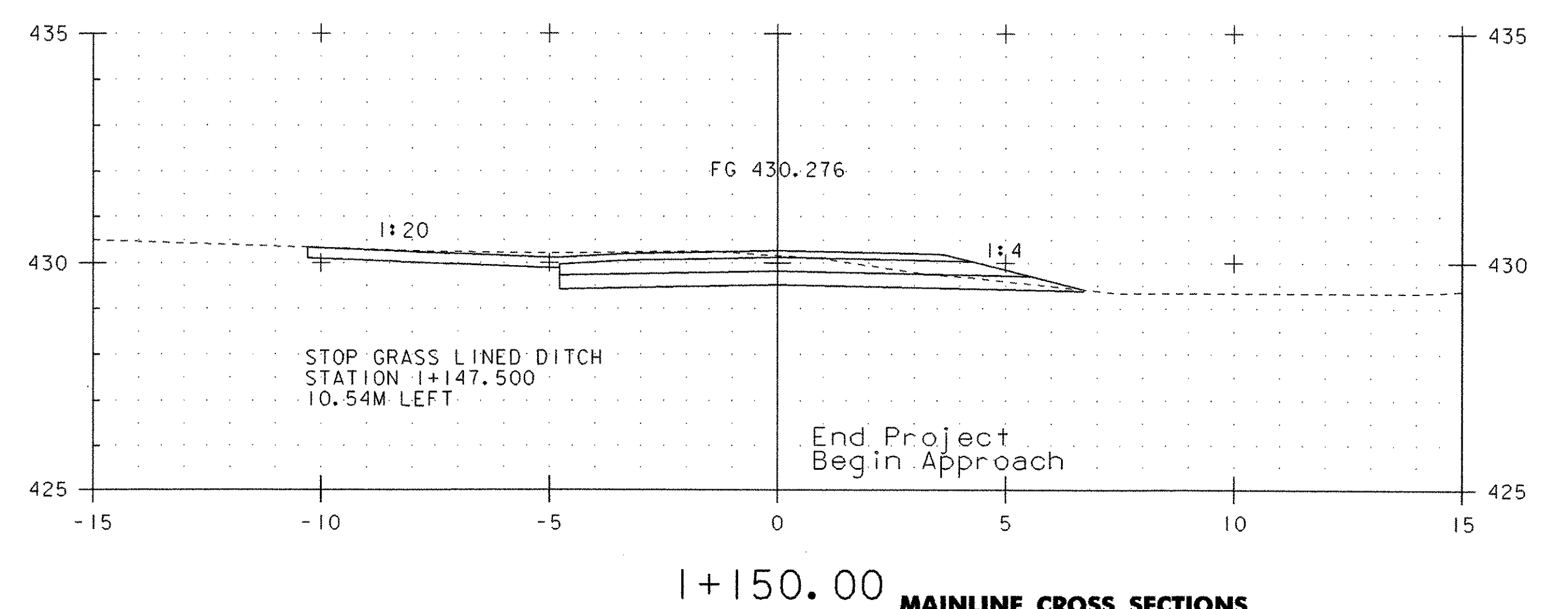
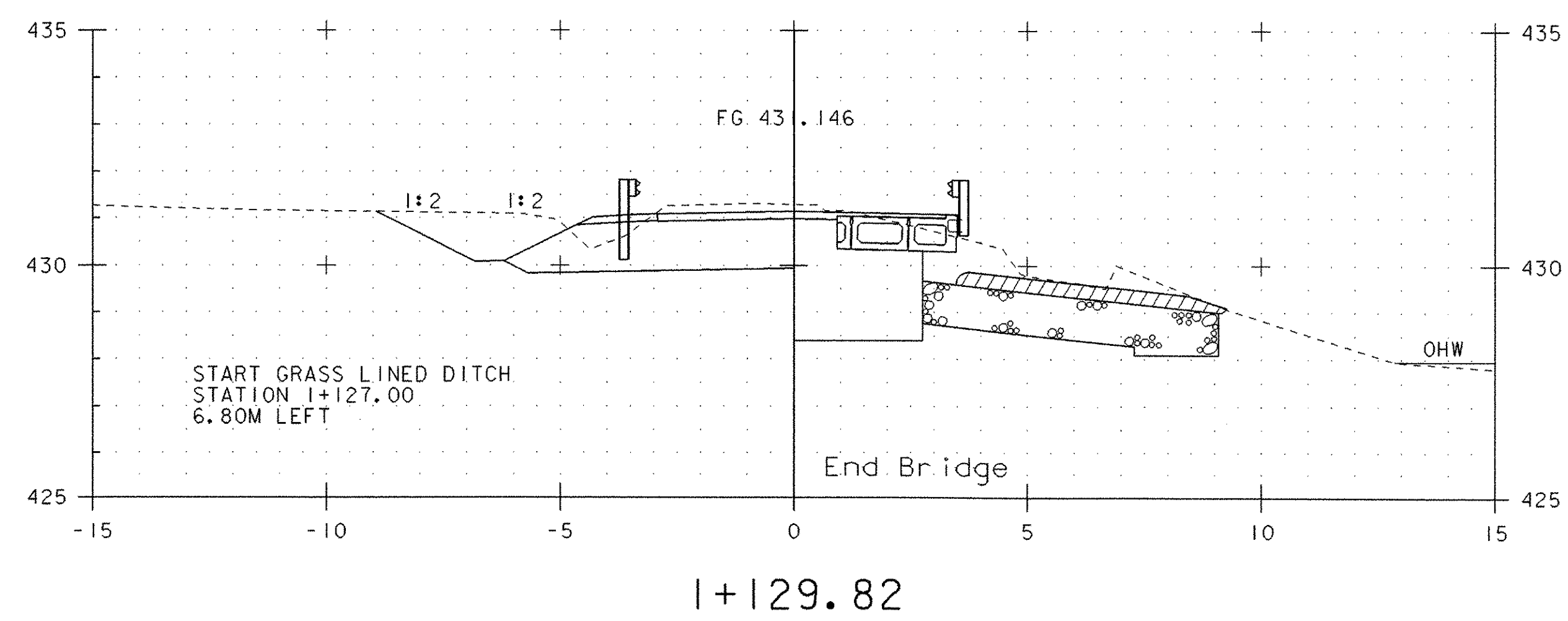
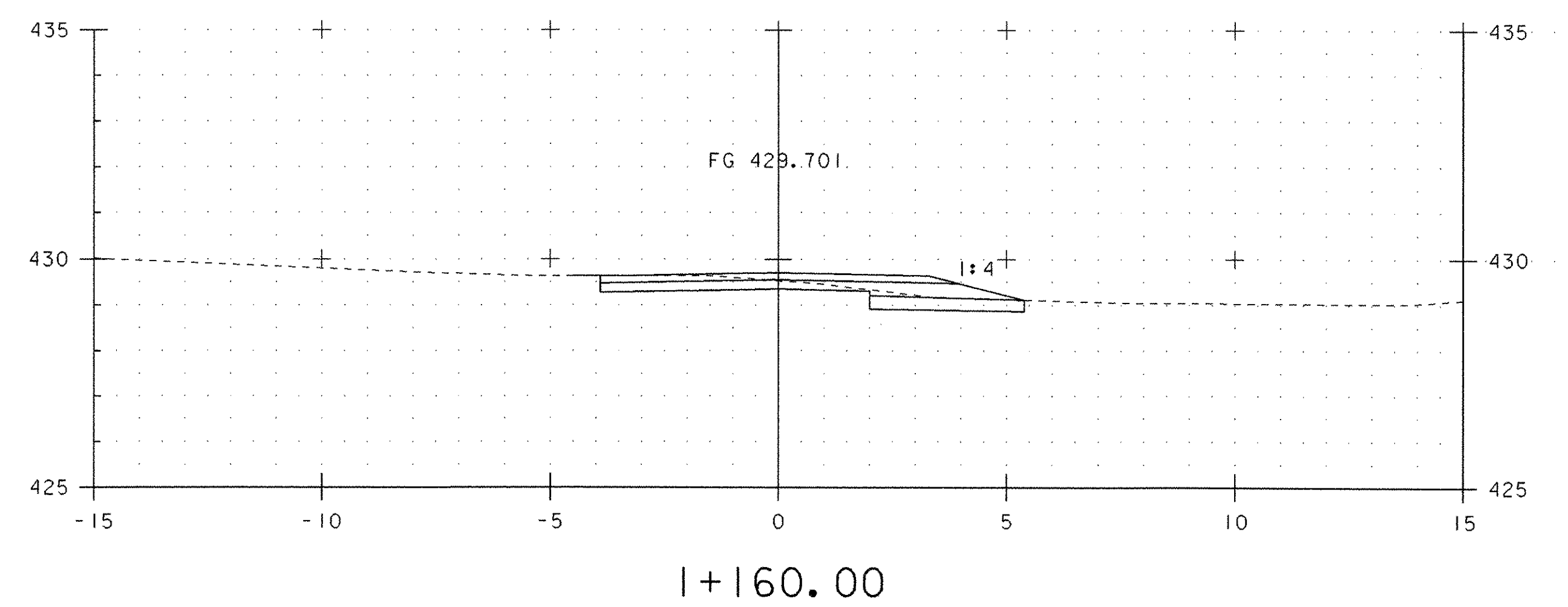
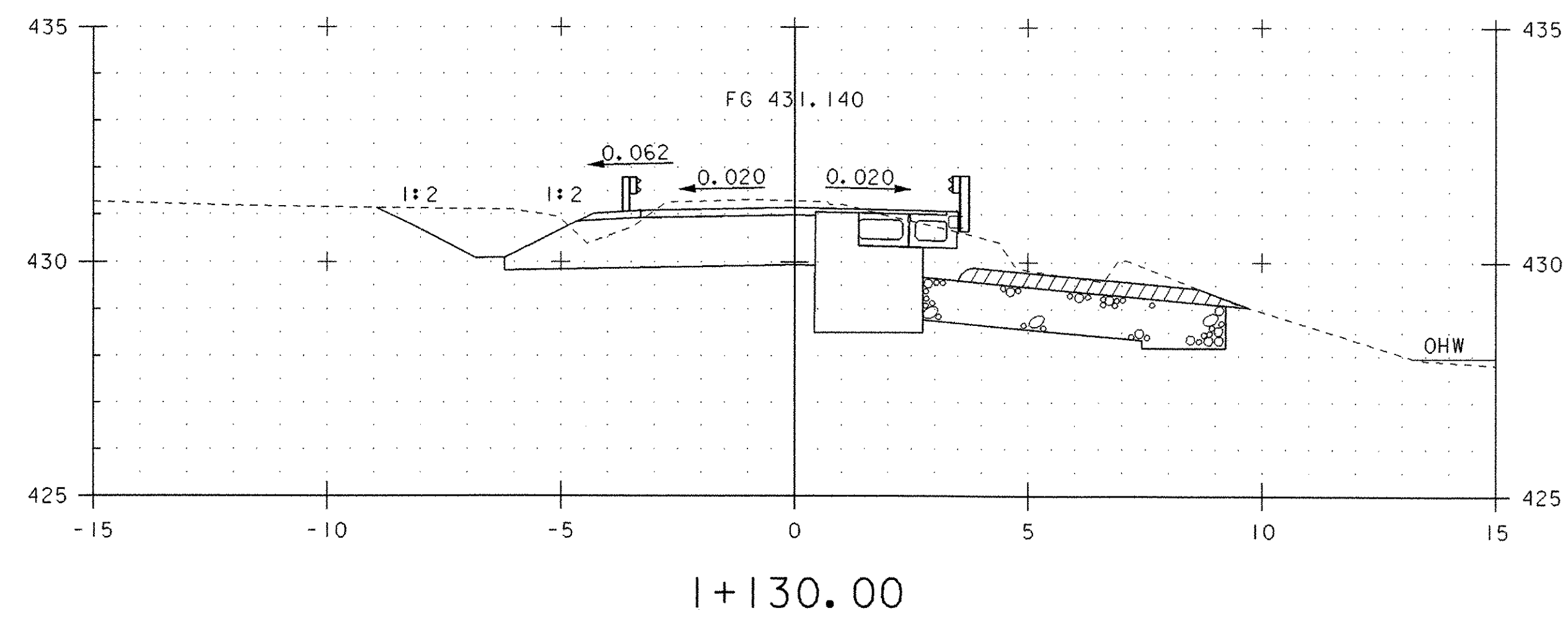
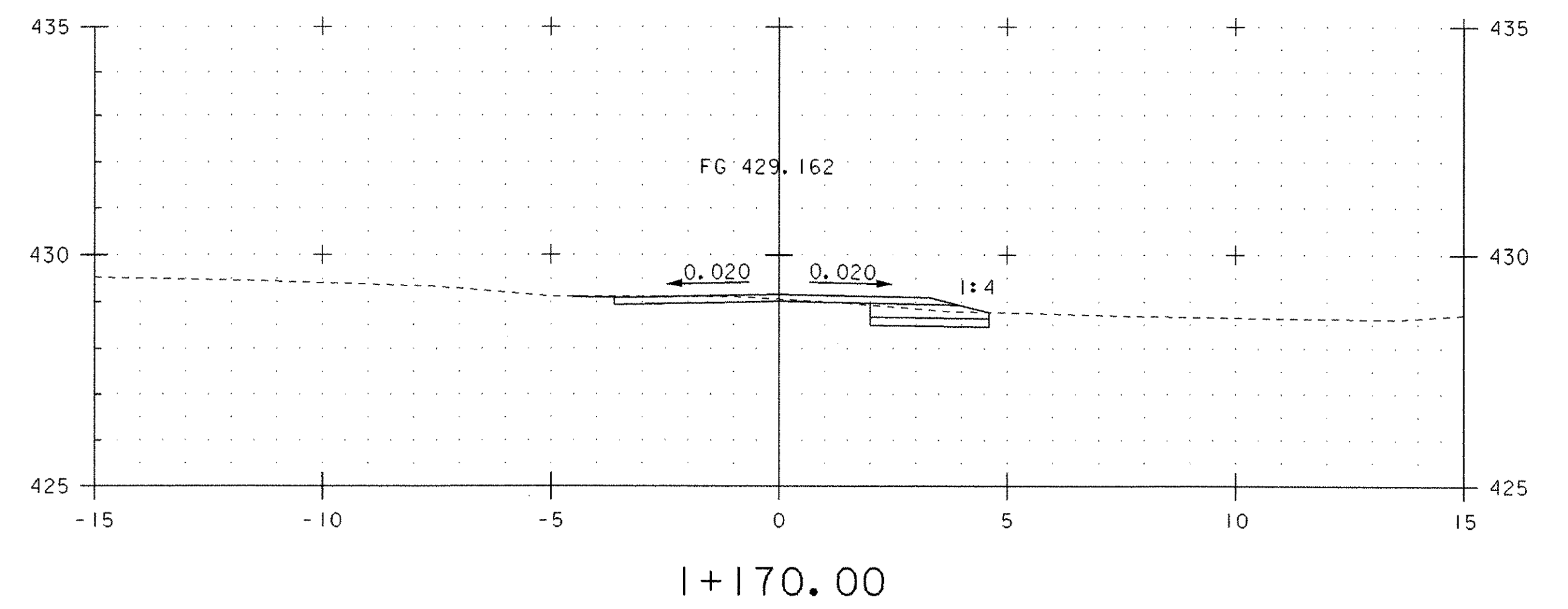
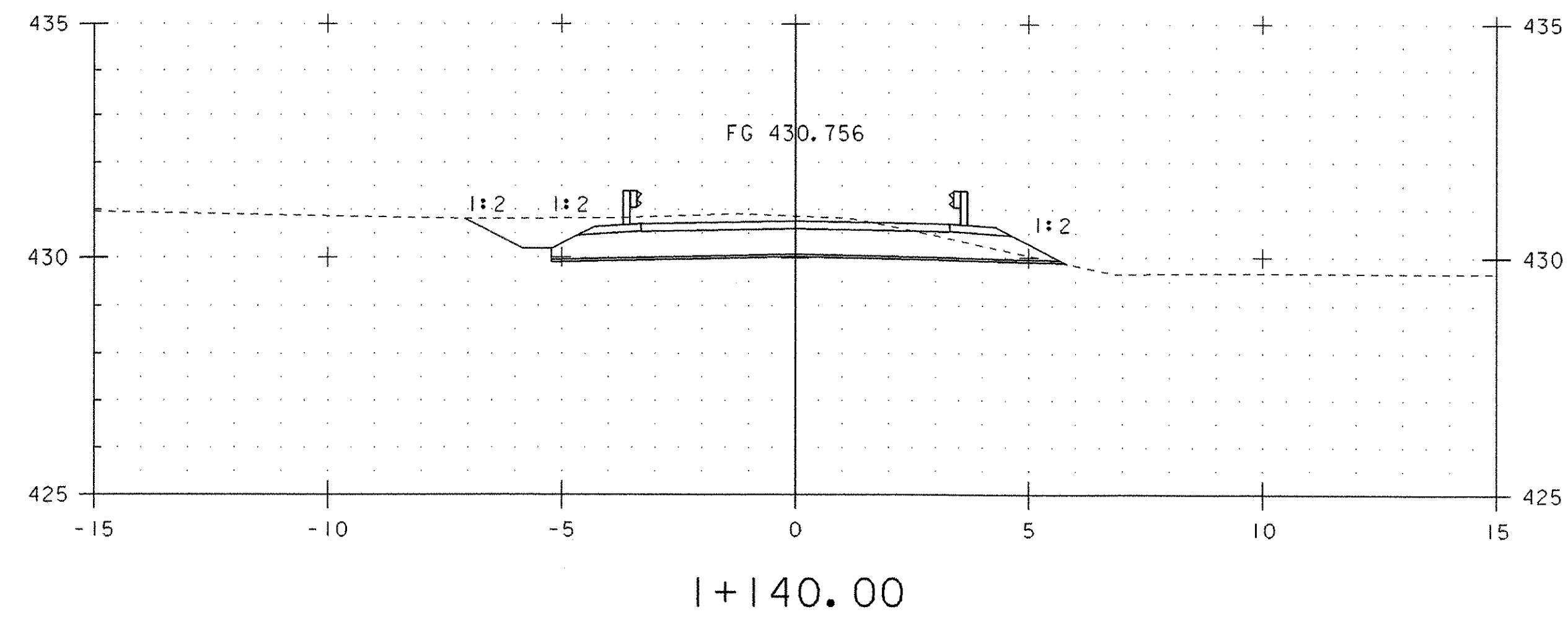
MAINLINE CROSS SECTIONS

PROJECT NAME: Charleston	PLOT DATE: 13-APR-2006
PROJECT NUMBER: BR0 149 (22)	DRAWN BY: G. ROKES
FILE NAME: 93J051/STR/sj051wk1.dgn	CHECKED BY: G. COLGROVE
PROJECT MANAGER: M. EVANS-MONGEON	SHEET 43 OF 50
DESIGNED BY: G. COLGROVE	
IPARM: sj051m1xs.1	



MAINLINE CROSS SECTIONS

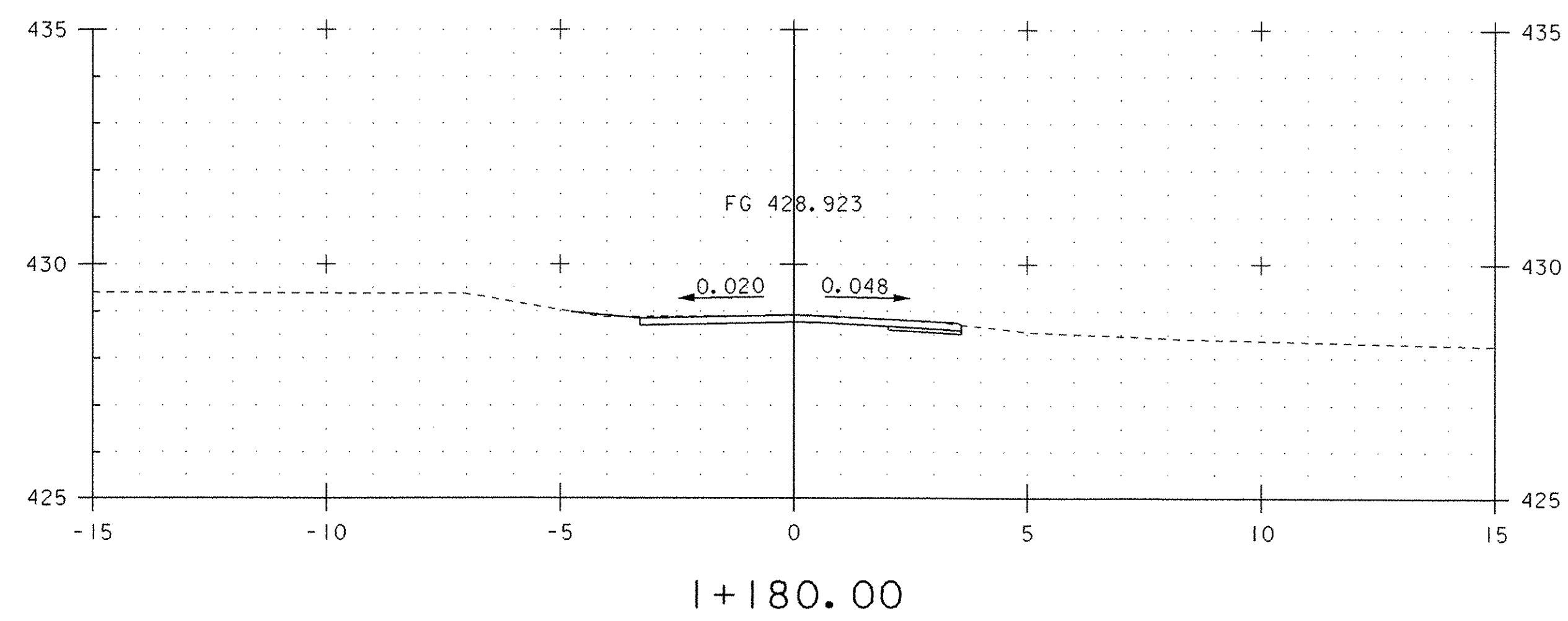
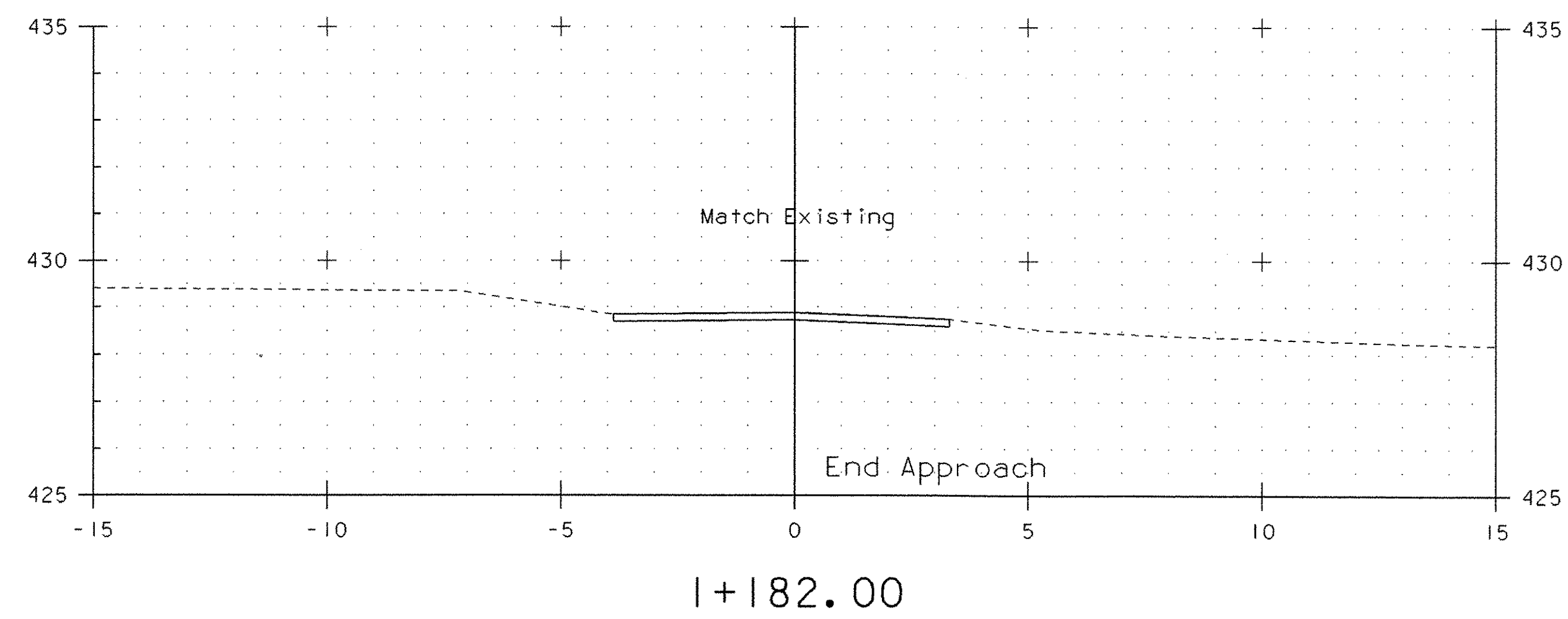
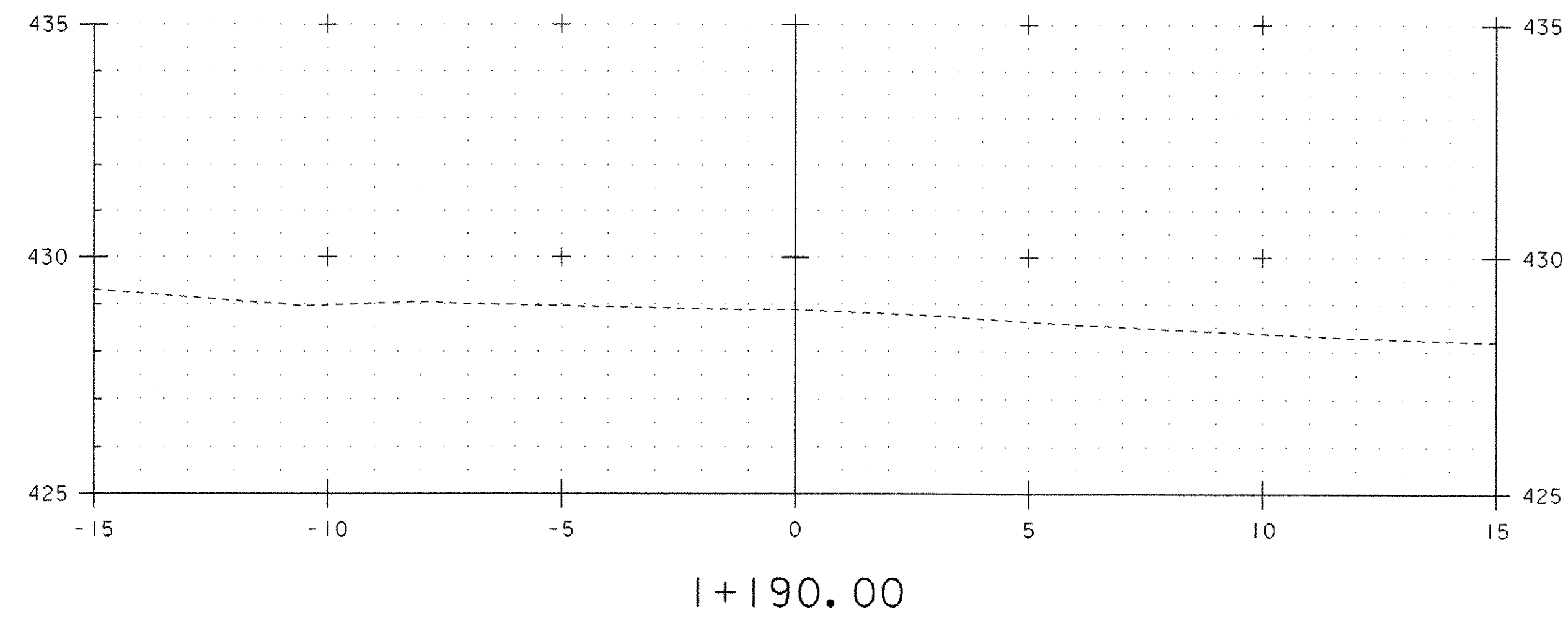
PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	93J051/STR/sj051wk1.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	G. COLGROVE
IPARM:	sj051m1xsl1
PLOT DATE:	13-APR-2006
DRAWN BY:	G. ROKES
CHECKED BY:	G. COLGROVE
SHEET	44 OF 50



MAINLINE CROSS SECTIONS

PROJECT NAME: Charleston
PROJECT NUMBER: BR0 1449 (22)

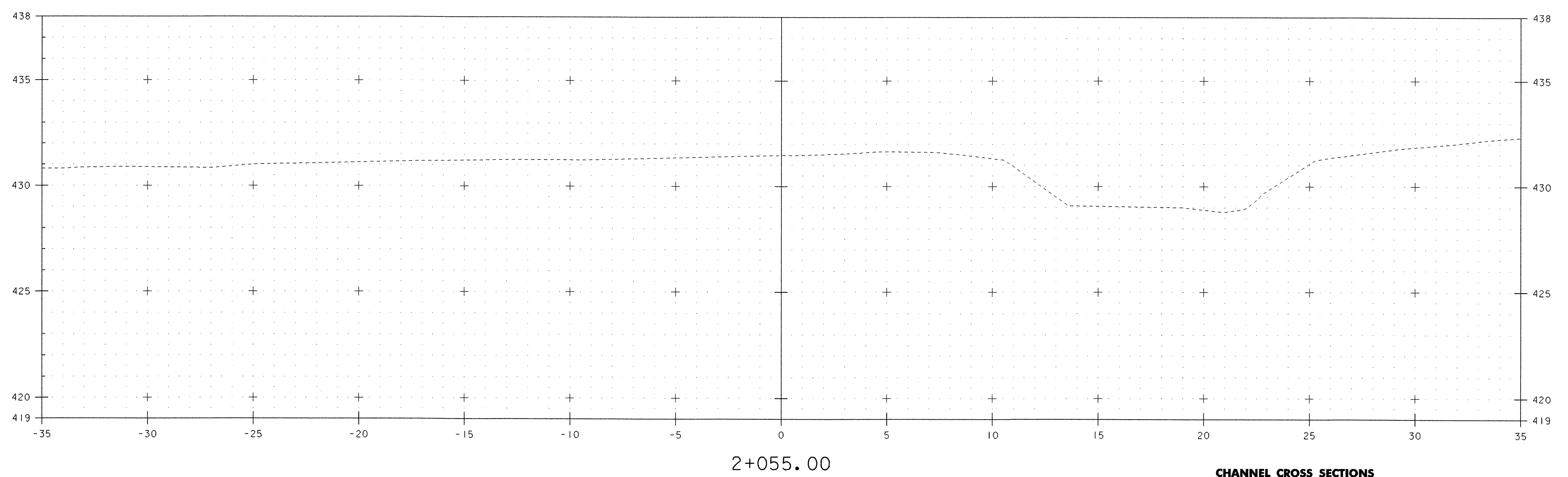
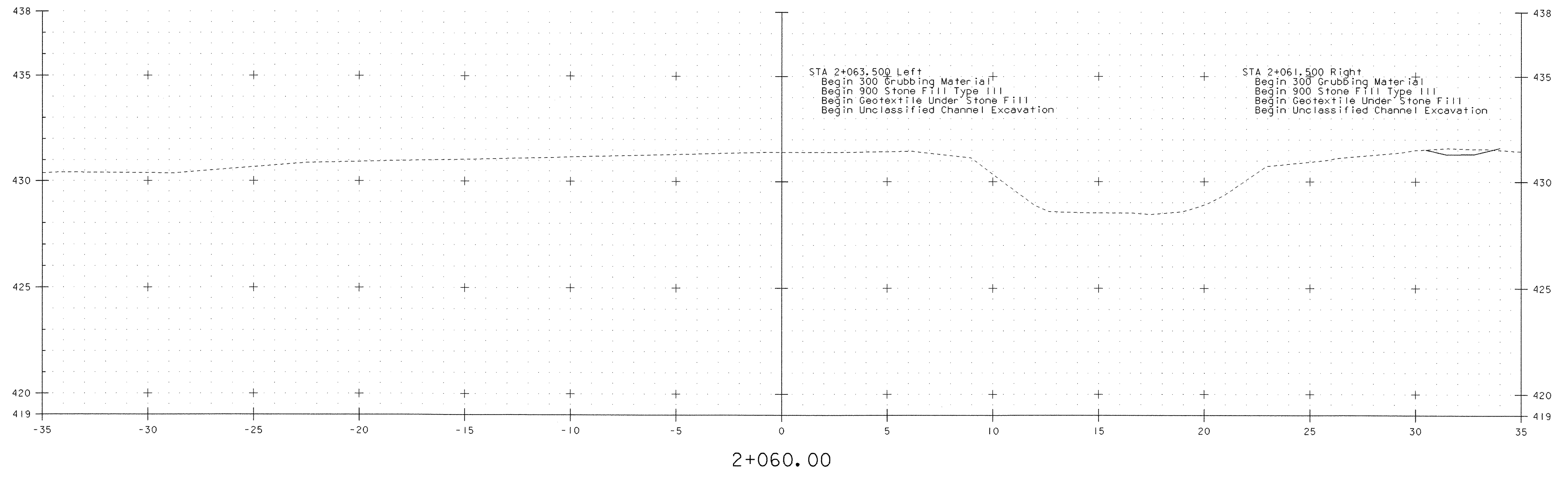
FILE NAME: 93J051/STR/sj051wk1.dgn PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE CHECKED BY: G. COLGROVE
IPARM: sj051m1xs2.l SHEET 45 OF 50



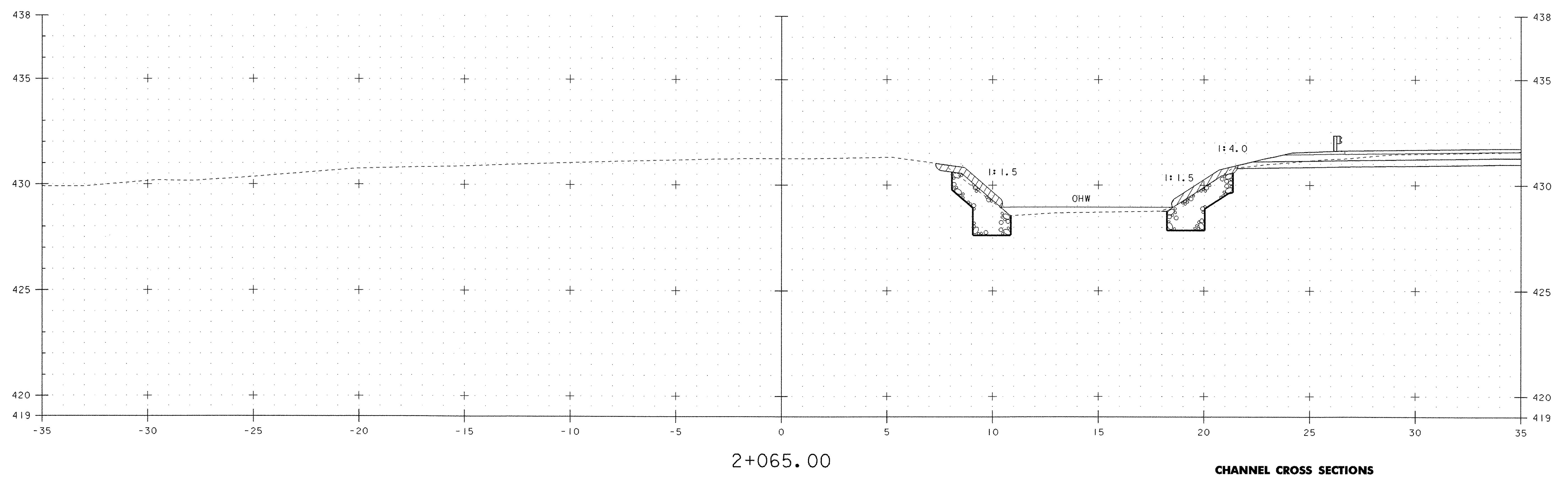
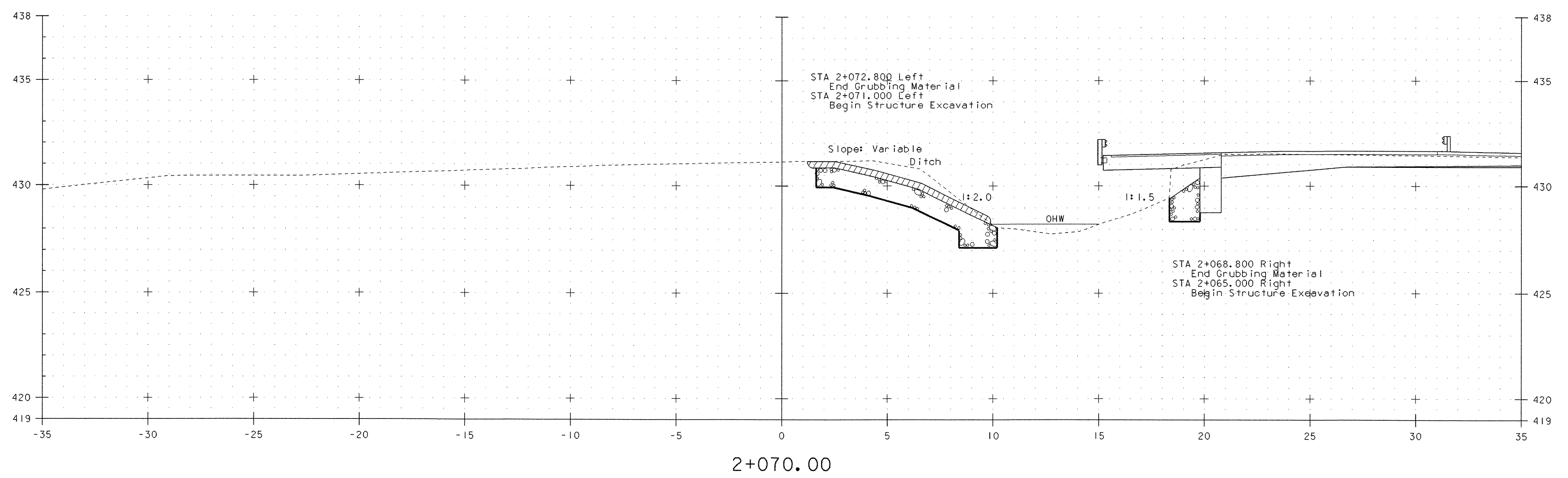
MAINLINE CROSS SECTIONS

PROJECT NAME: Charleston
 PROJECT NUMBER: BR0 1449 (22)

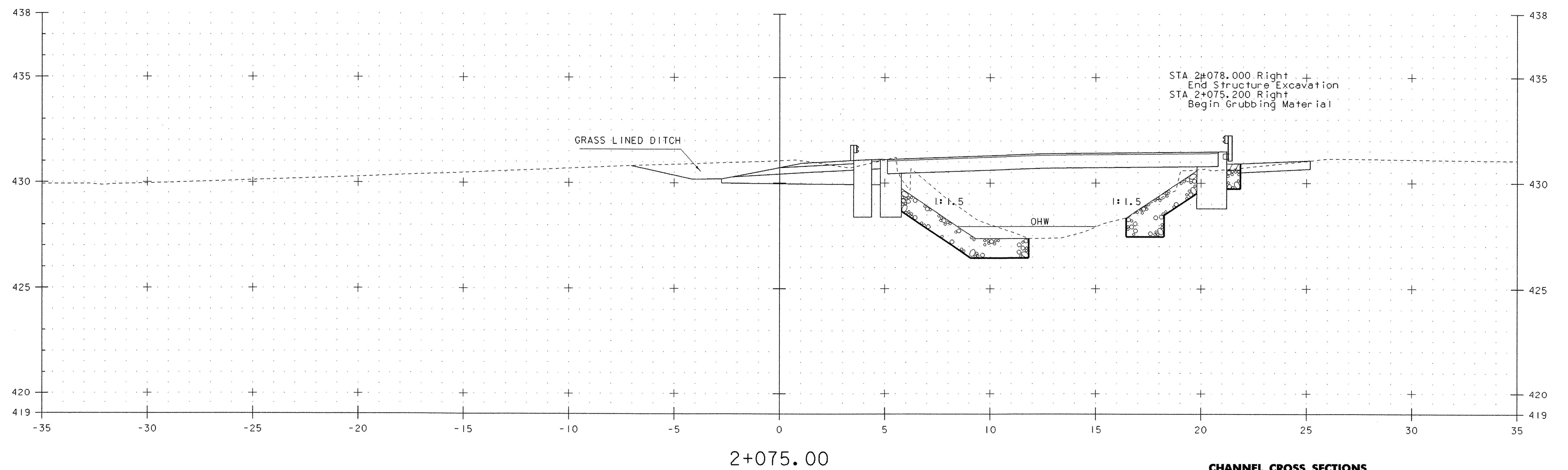
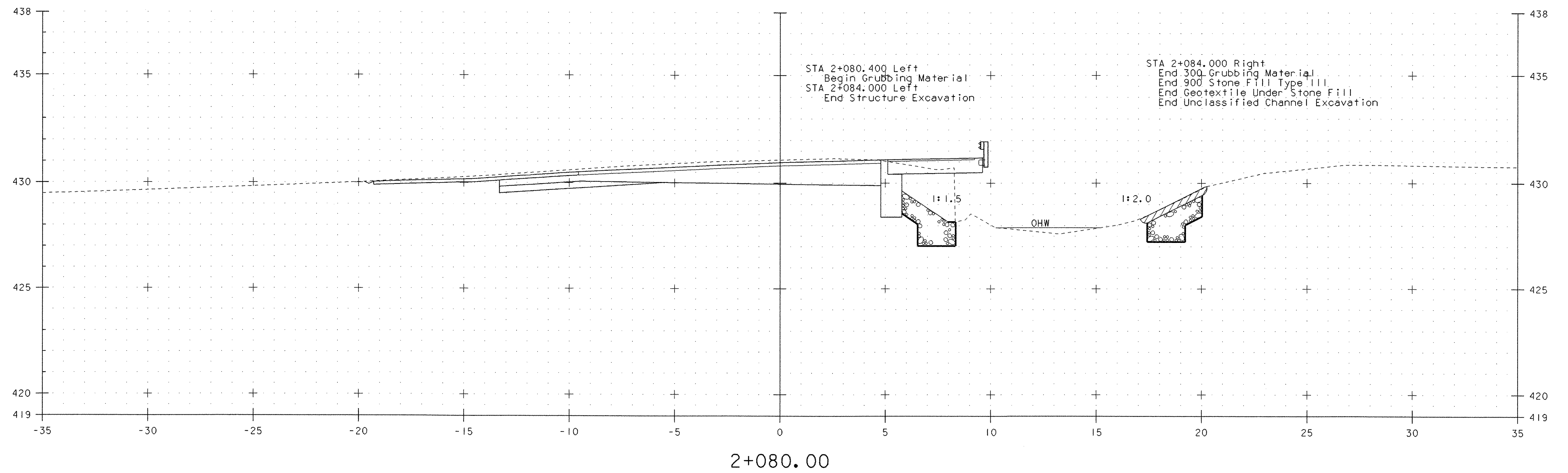
FILE NAME: 93J051/STR/sj05lwk1.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: G. COLGROVE
IPARM: sj05lmlxs3.l	SHEET 46 OF 50



CHANNEL CROSS SECTIONS	
PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME: 93J05I/STR/sj05lwk1.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: G. COLGROVE
IPARM: sj05lck1.s1	SHEET 47 OF 50

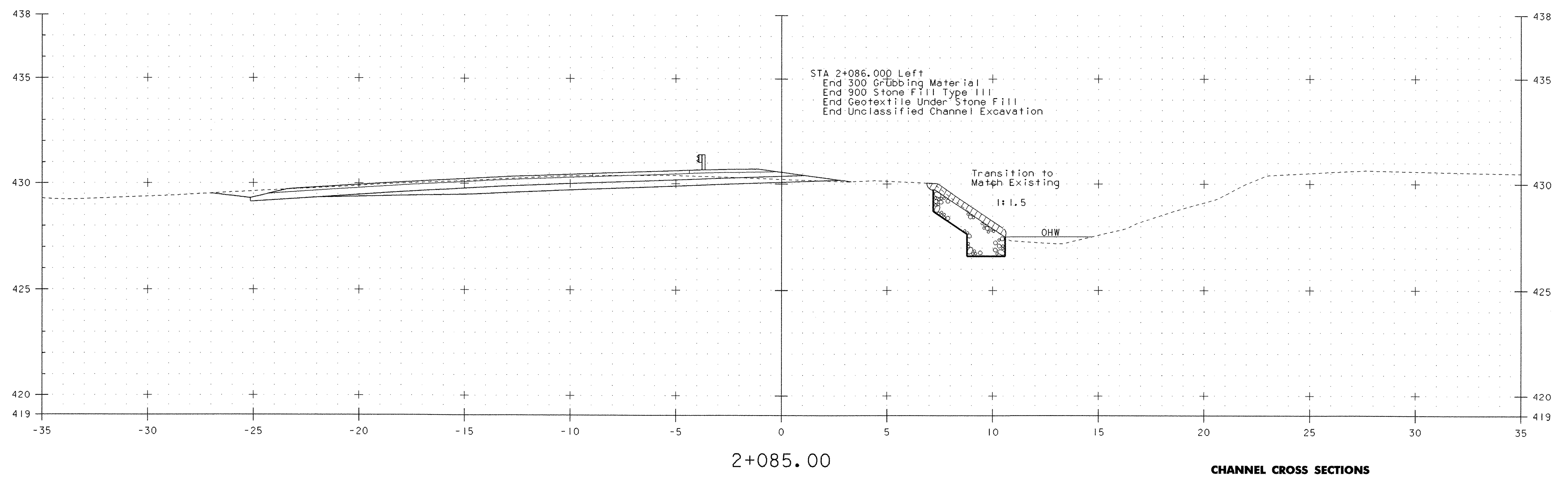
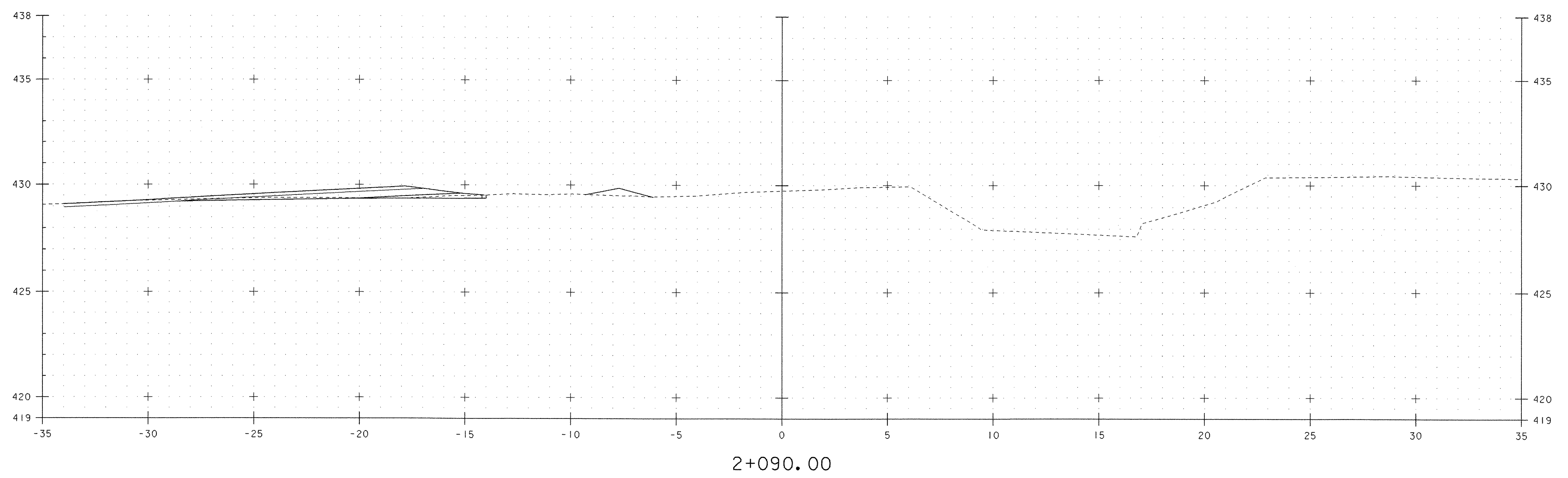


CHANNEL CROSS SECTIONS	
PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME: 93J051/STR/sj051wk1.dgn	PLOT DATE: 13-APR-2006
PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: G. COLGROVE
IPARM: sj051clxlsl	SHEET 48 OF 50



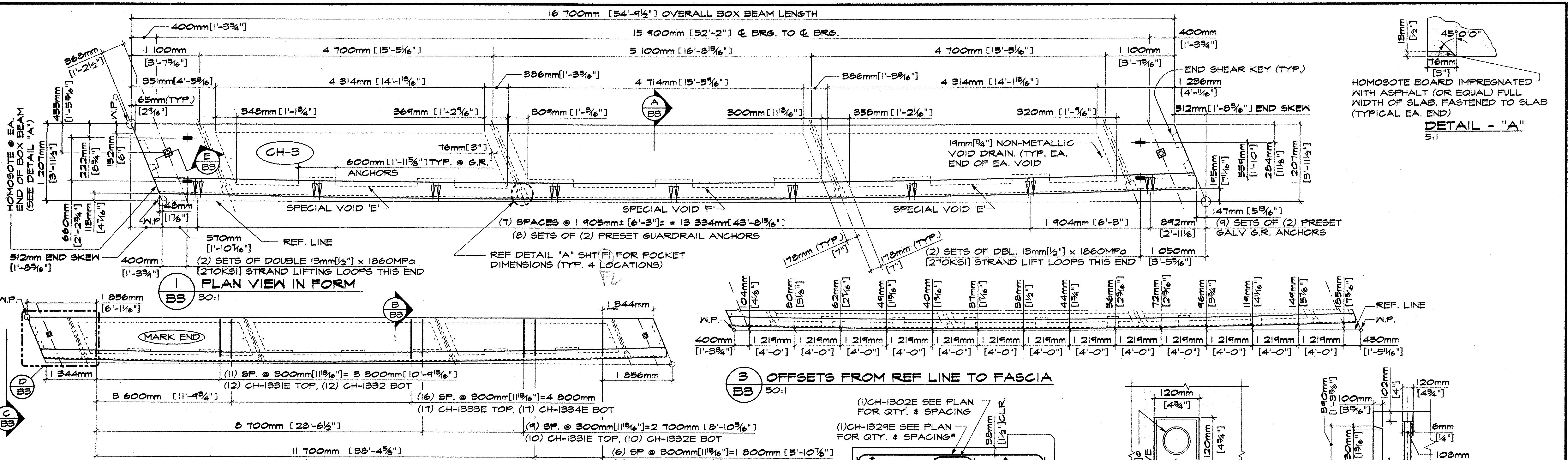
CHANNEL CROSS SECTIONS

PROJECT NAME:	Charleston
PROJECT NUMBER:	BRO 1449 (22)
FILE NAME:	93J051/STR/sj051wk1.dgn
PROJECT MANAGER:	M. EVANS-MONGEON
DESIGNED BY:	G. COLGROVE
IPARM:	sj051clxs2.1
PLOT DATE:	13-APR-2006
DRAWN BY:	G. ROKES
CHECKED BY:	G. COLGROVE
SHEET	49 OF 50



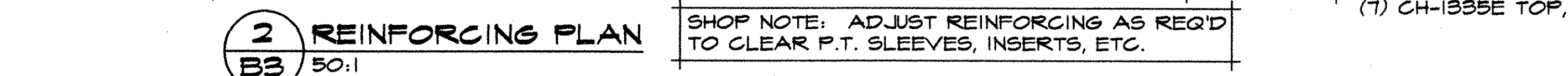
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PROJECT NUMBER:	BRO 1449 (22)
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PROJECT MANAGER: M. EVANS-MONGEON	DRAWN BY: G. ROKES
DESIGNED BY: G. COLGROVE	CHECKED BY: G. COLGROVE
IPARM: sj051clxs3.j	SHEET 50 OF 50

Date: 8/1/2006
Filename: ...WSTA.B3_Charleston_Box.3.dgn



1 PLAN VIEW IN FORM
B3 30:1

HOMOSOTE BOARD IMPREGNATED WITH ASPHALT (OR EQUAL) FULL WIDTH OF SLAB, FASTENED TO SLAB (TYPICAL EA. END)
DETAIL - "A"
5:1

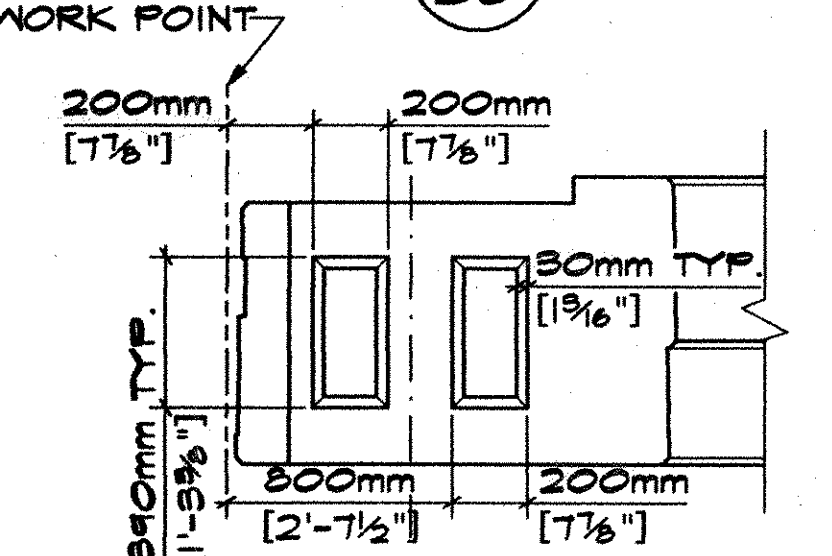


2 REINFORCING PLAN
B3 50:1

SHOP NOTE: ADJUST REINFORCING AS REQ'D TO CLEAR P.T. SLEEVES, INSERTS, ETC.



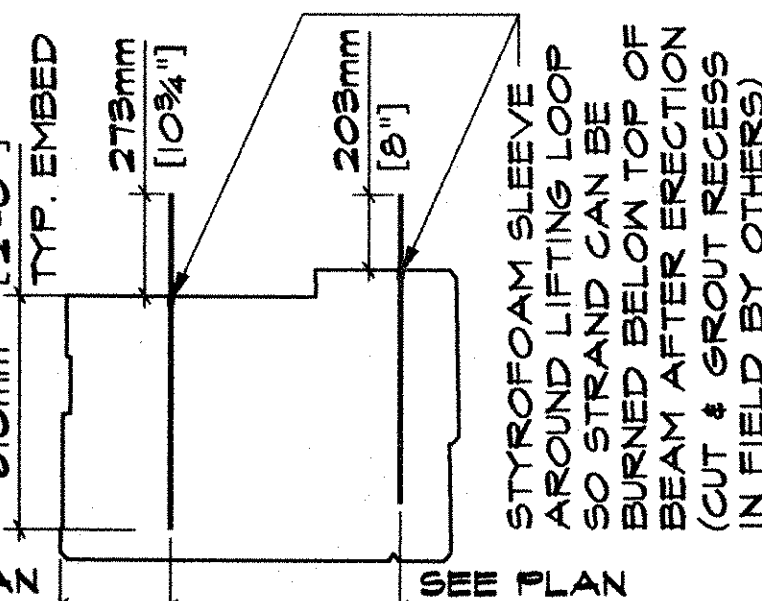
3 OFFSETS FROM REF LINE TO FASCIA
B3 50:1



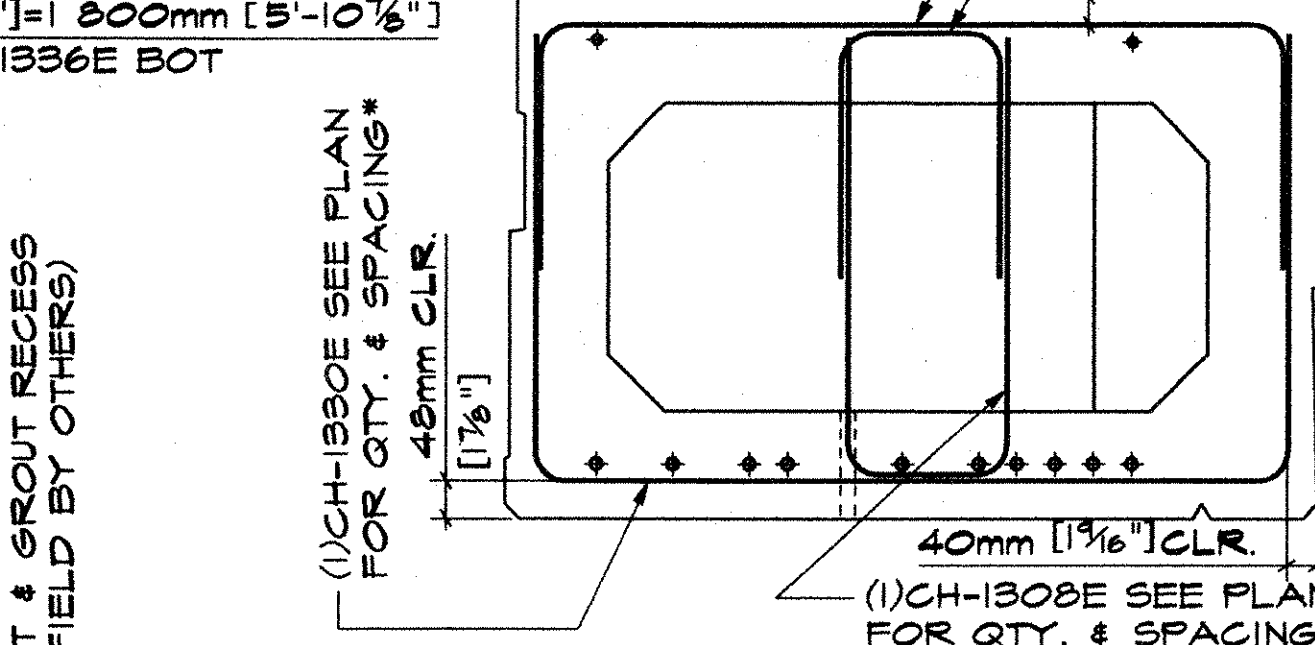
E END SHEAR KEY LAYOUT
20:1 DIMENSIONED ALONG END SKEW

DETENSIONING SCHEDULE
N.T.S.

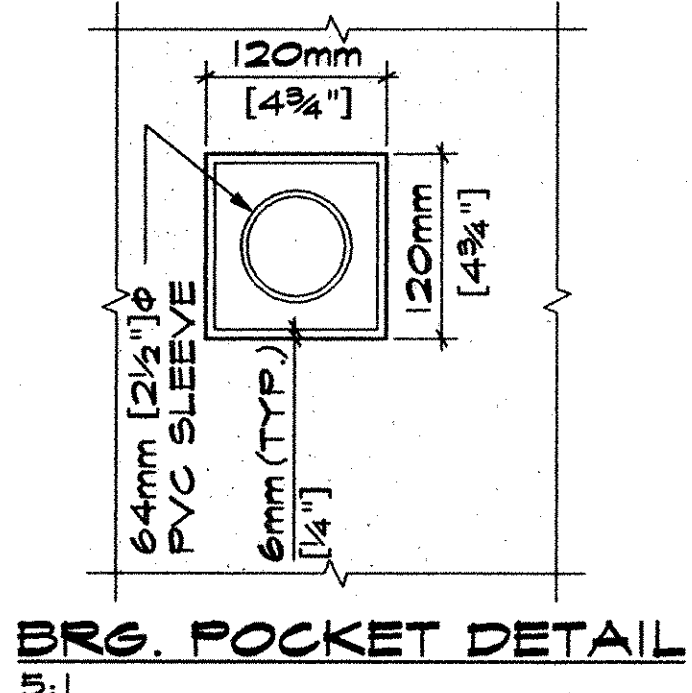
4	5	3	9	2
11	10	7	6	3



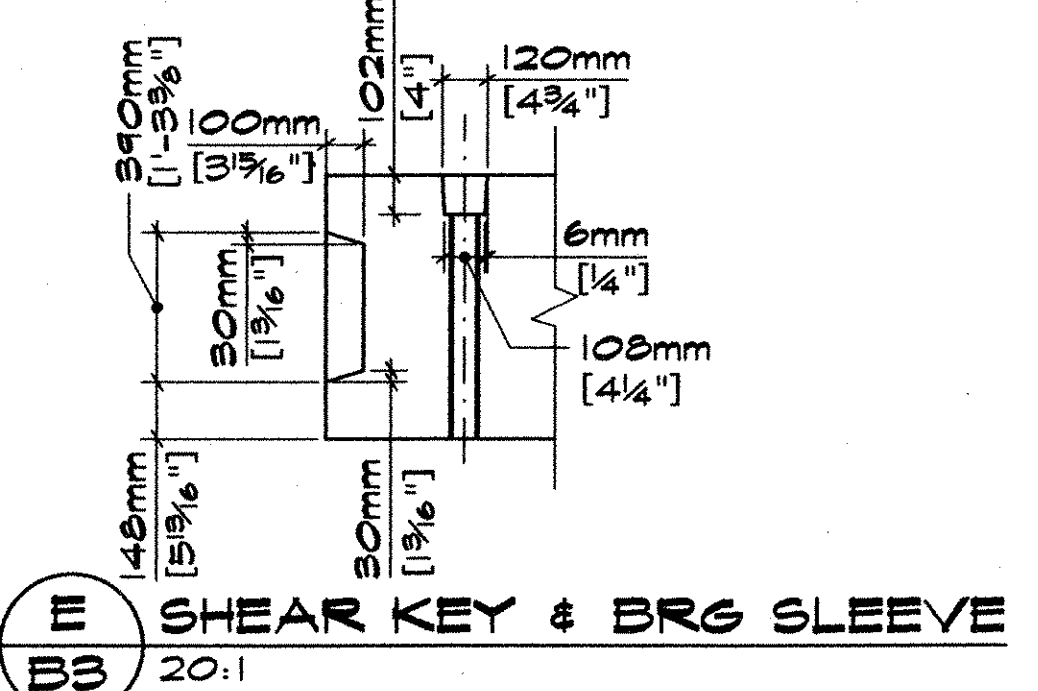
F LIFTING LOOP DETAIL
20:1



C END BLOCK REINFORCING
B3 10:1



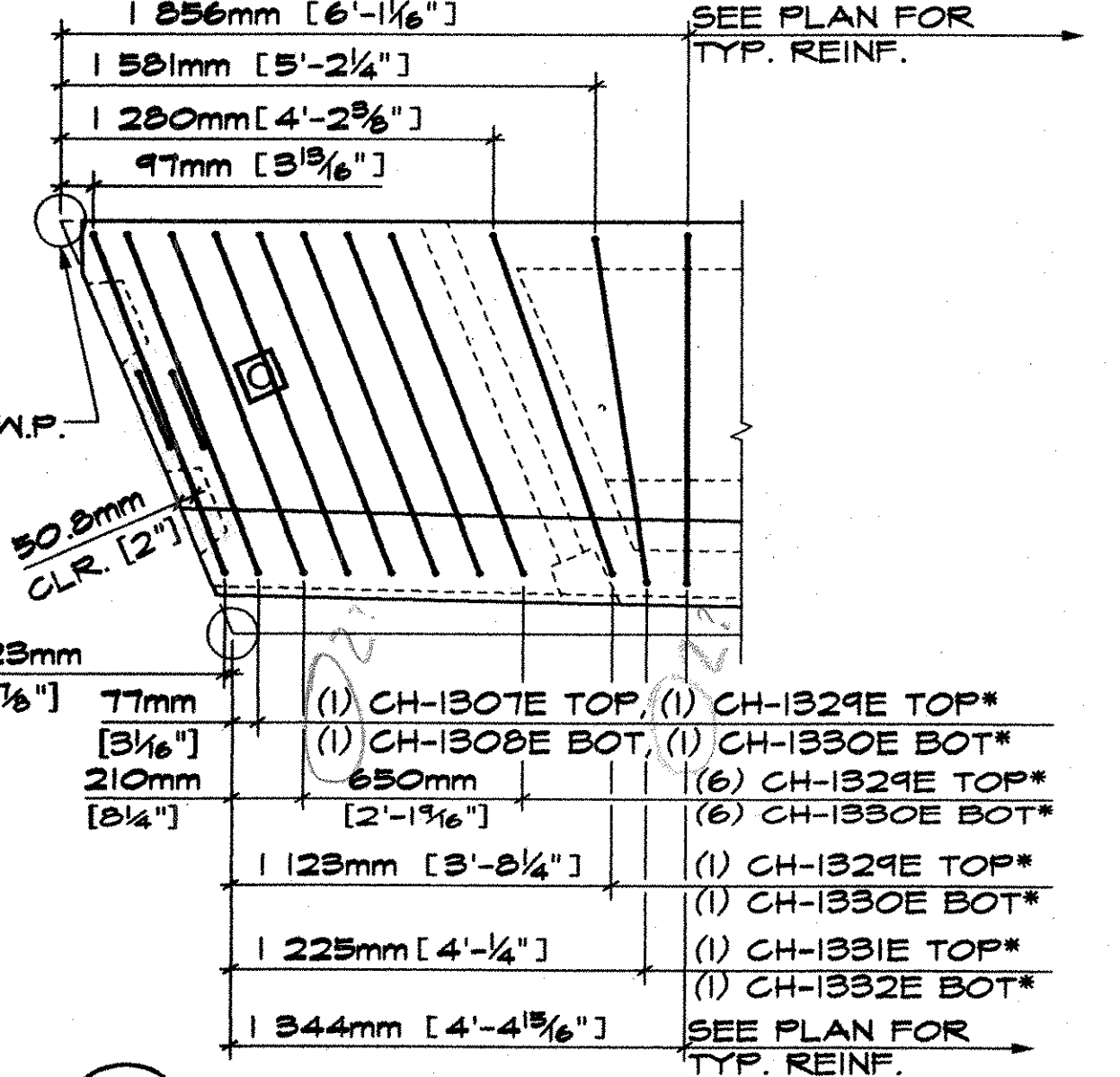
D BRG. POCKET DETAIL
5:1



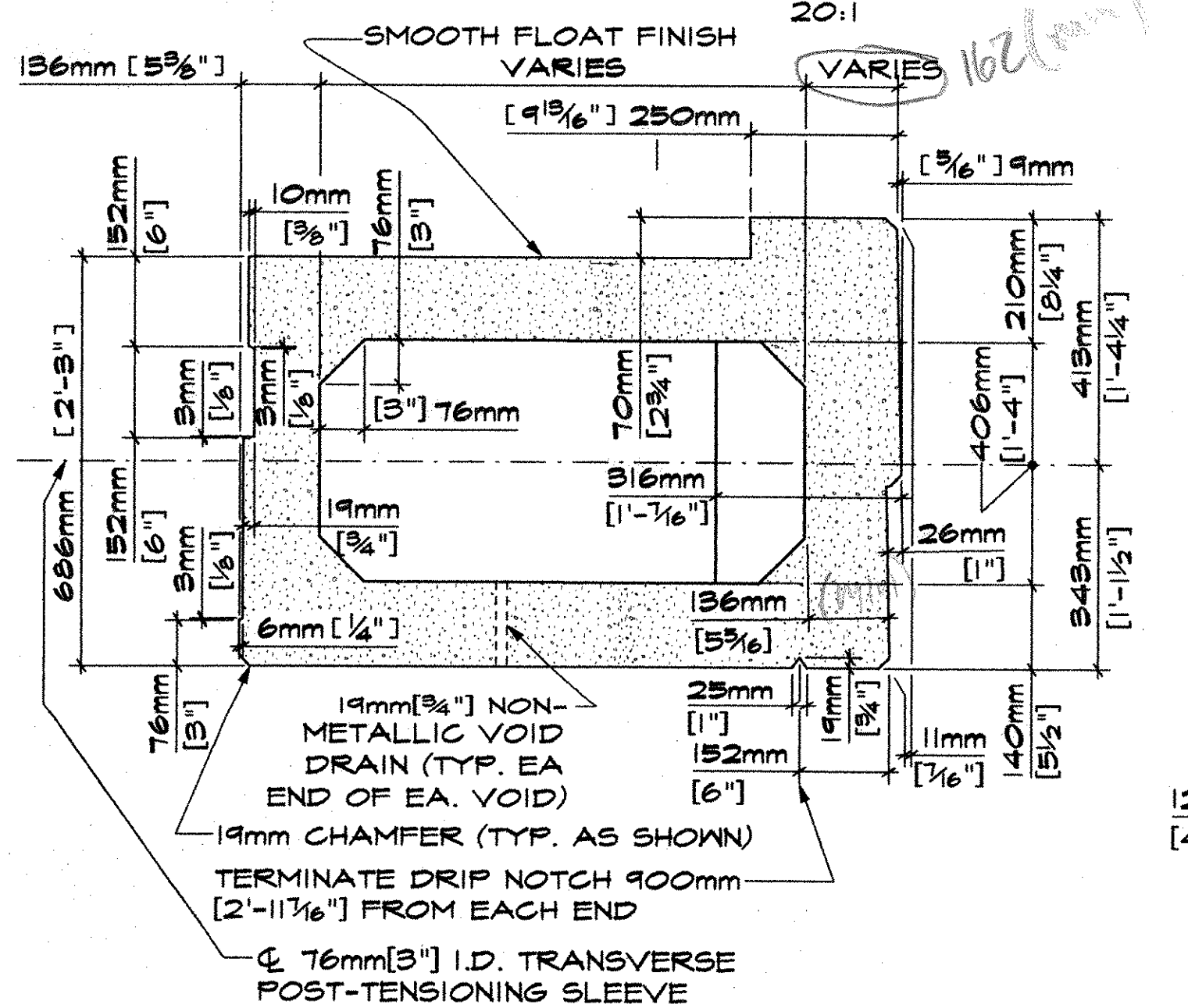
E SHEAR KEY & BRG SLEEVE
B3 20:1

FOR ADDITIONAL DIMENSIONS & LAYOUT REF. END SHEAR KEY LAYOUT THIS SHT.

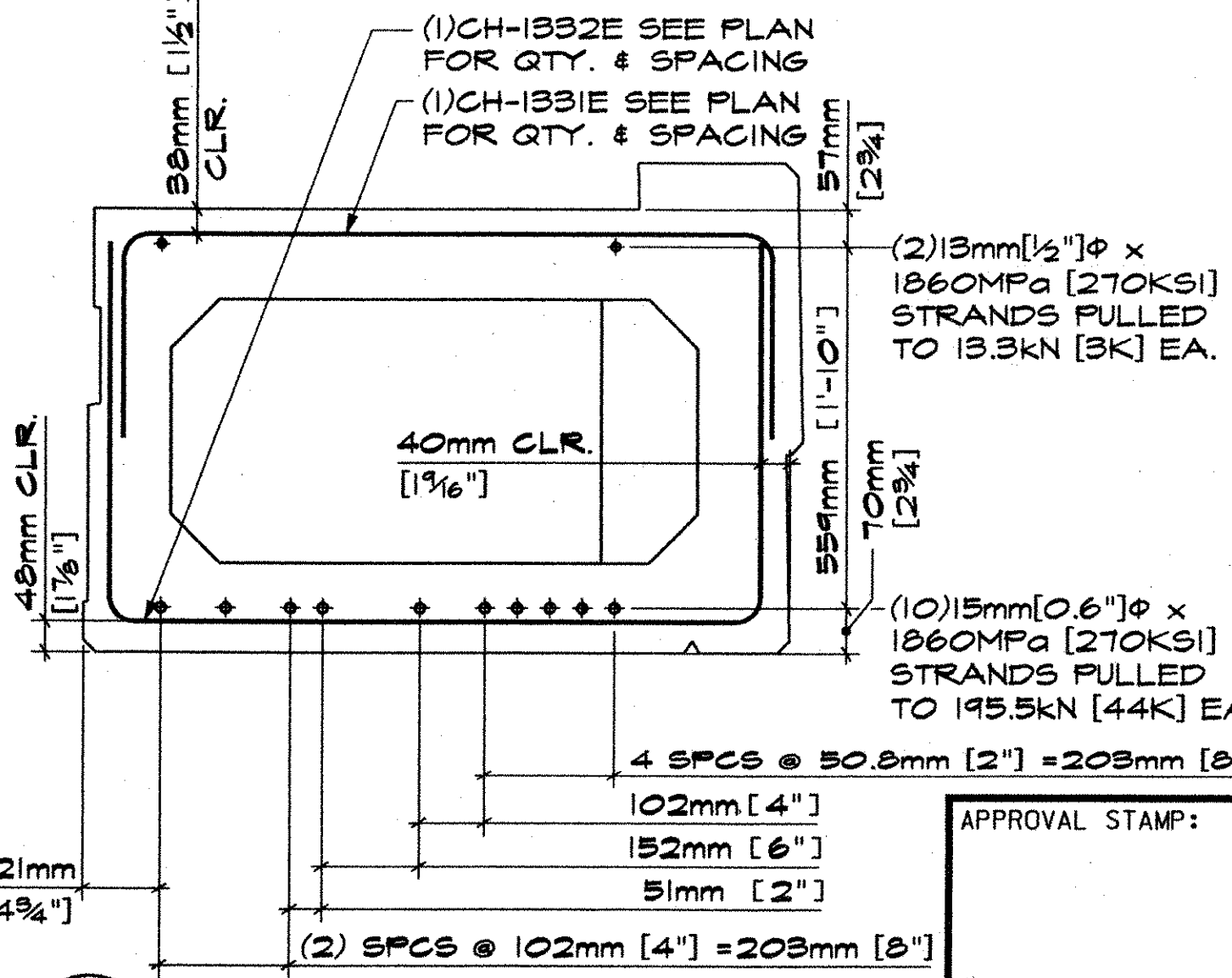
MARK:	CH-3	QTY:	1	WT.:	24.3 T	BEAM 216KN	BEAM 9.2 m
				VOL.:	12.0 CY		
MATERIAL LIST / VOIDED SLAB							
ITEM:	MARK:	DESCRIPTION:	QTY./BEAM				
1	1307E	#3(#4) BENT BAR (EPOXY COATED)	4				
2	1308E	#3(#4) BENT BAR (EPOXY COATED)	4				
3	1329E	#3(#4) BENT BAR (EPOXY COATED)	9				
4	1330E	#3(#4) BENT BAR (EPOXY COATED)	9				
5	1331E	#3(#4) BENT BAR (EPOXY COATED)	23				
6	1332E	#3(#4) BENT BAR (EPOXY COATED)	23				
7	1333E	#3(#4) BENT BAR (EPOXY COATED)	17				
8	1334E	#3(#4) BENT BAR (EPOXY COATED)	17				
9	1335E	#3(#4) BENT BAR (EPOXY COATED)	8				
10	1336E	#3(#4) BENT BAR (EPOXY COATED)	8				
11	1337E	#3(#4) BENT BAR (EPOXY COATED)	9				
12	1338E	#3(#4) BENT BAR (EPOXY COATED)	9				
13							
14		PRESET GUARDRAIL ANCHORS U-BOLTS	10				
15		48mm(1 7/8") CLOSED THREADED FERRULE	36				
16							
17							
18							
19							
20		SPECIAL VOID 'D' REF. SHT MI	1				
21		SPECIAL VOID 'E' REF. SHT MI	1				
22		SPECIAL VOID 'F' REF. SHT MI	1				
23		19mm(3/4") x 140mm(5 1/2") NON-FERROUS VOID DR.	6				
24		SET OF DBL 1/2" x 1/2" STRAND LIFTING LOOPS	4				
25							



D END BLOCK REINF. PLAN
B3 20:1



A DIMENSIONAL SECTION
B3 10:1



B REINF. SECTION @ MIDSPAN
B3 10:1

APPROVAL STAMP:
RECEIVED
OK'D BY: [Signature]
AUG 04 2006
RESUBMIT APPROVED [Signature]
BY: [Signature] DATE AUG 4 2006

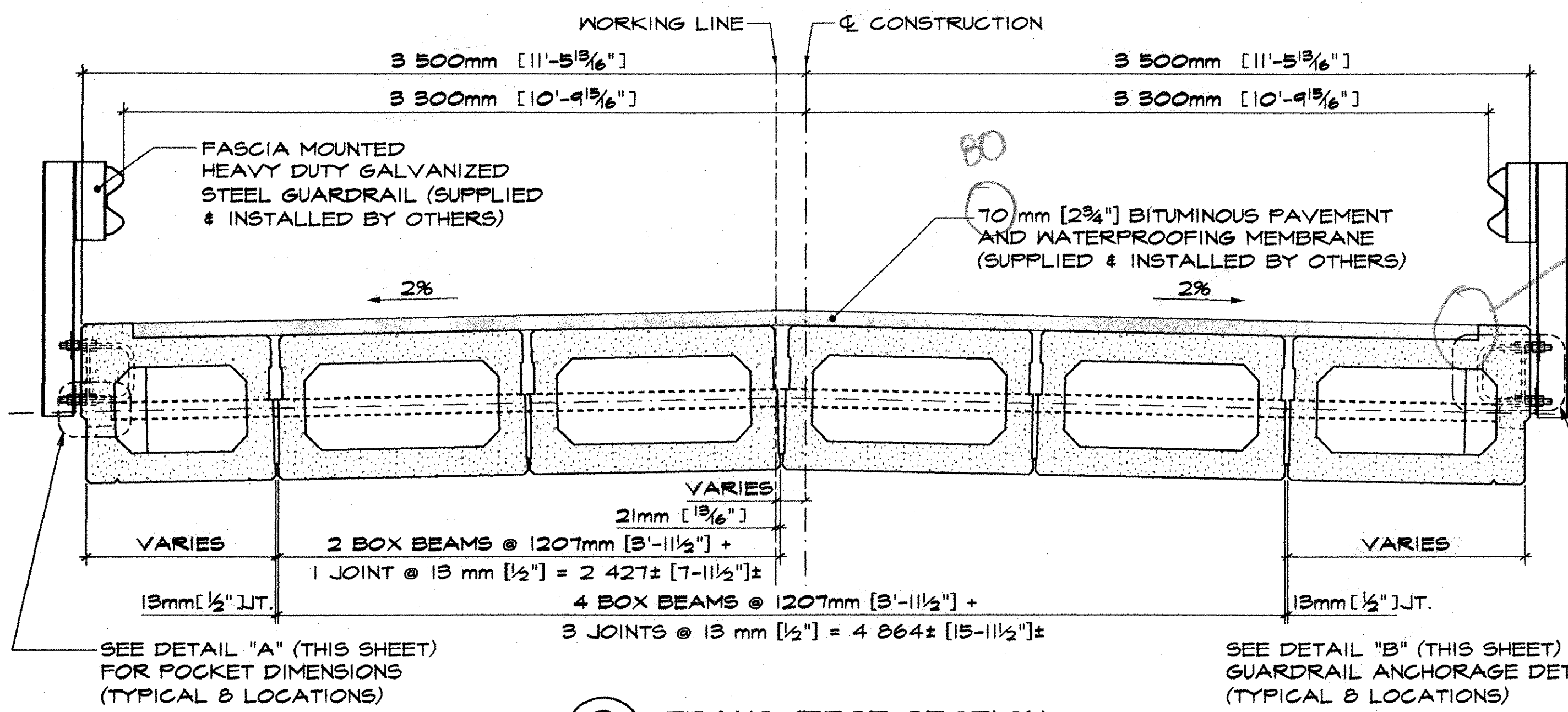
J.P. CARRARA & SONS INC. PRECAST & PRESTRESS MANUFACTURER
2844 CASE ST., WINDLEBURY, VERMONT 05753 Phone: (802) 338-6361 Fax: (802) 338-9910

TREMBLAY CONSTRUCTION, LLC. CONTRACTOR
WASHINGTON, VT.

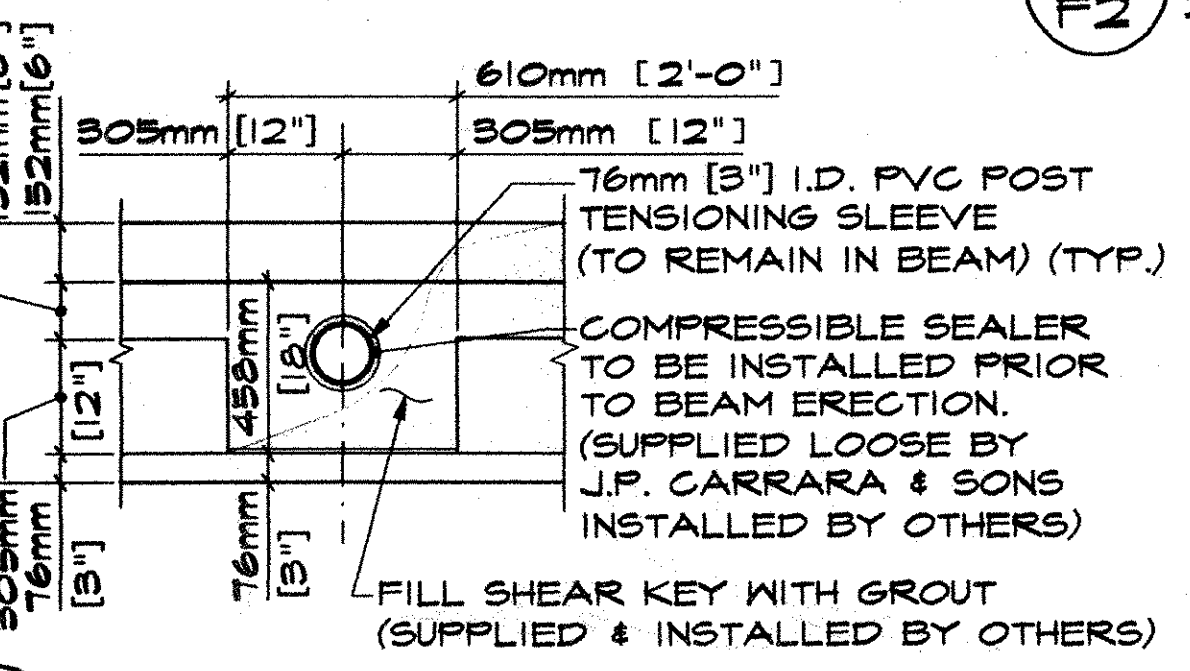
STATE OF VERMONT A.O.T. COUNTY OF ORLEANS
DATE: 7-16-06
SCALE: NOTED

TOWN OF CHARLESTON PROJECT NUMBER BRO-1449(22)
TH41, CLASS 2 TOWN HIGHWAY, BRIDGE NO. 16
CHKD: [Signature] DFTM: ETC
JOB NO: 23241-06

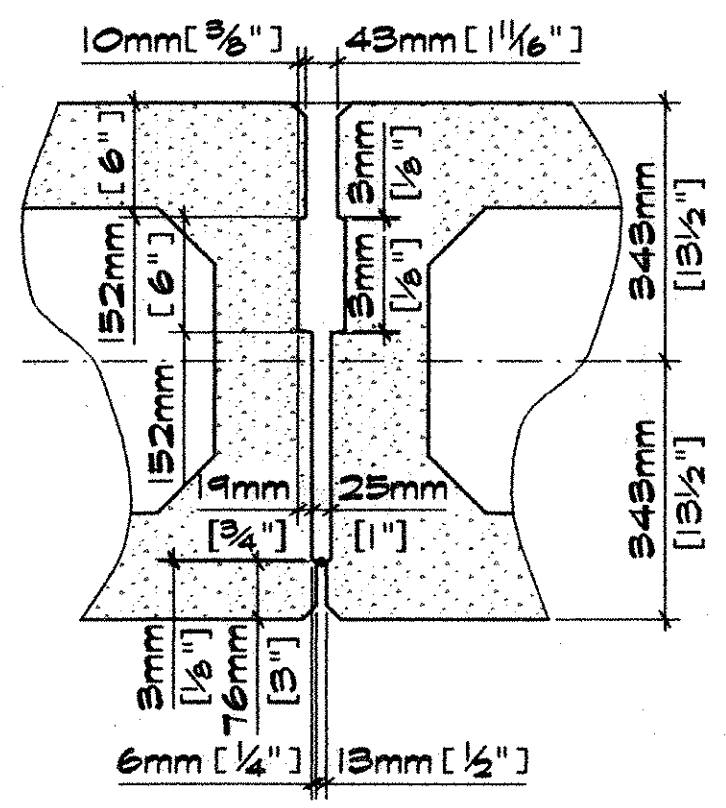
PRESTRESSED BOX BEAM DETAILS DWG NO: **B3**



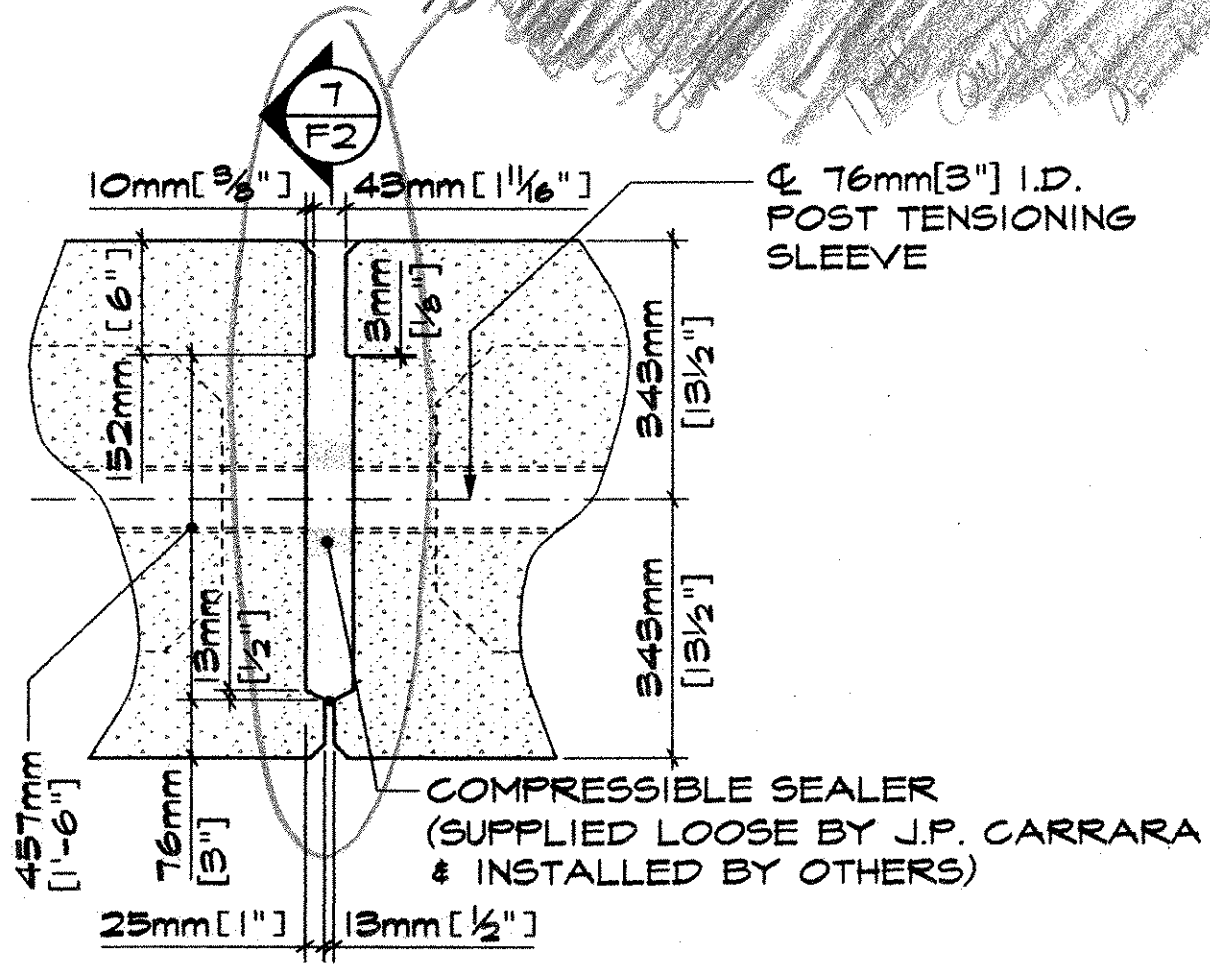
2 TRANSVERSE SECTION
F2 20:1



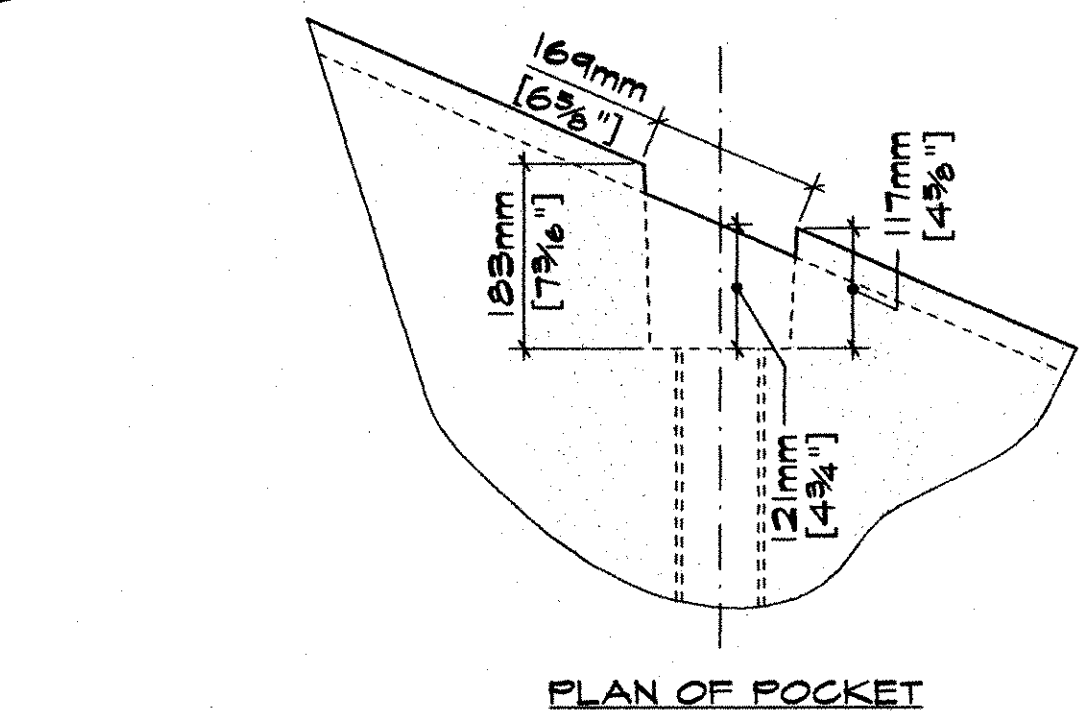
7 SHEAR KEY SECTION THROUGH DUCT
F2 20:1



5 TYP. SHEAR KEY SECTION
F2 10:1



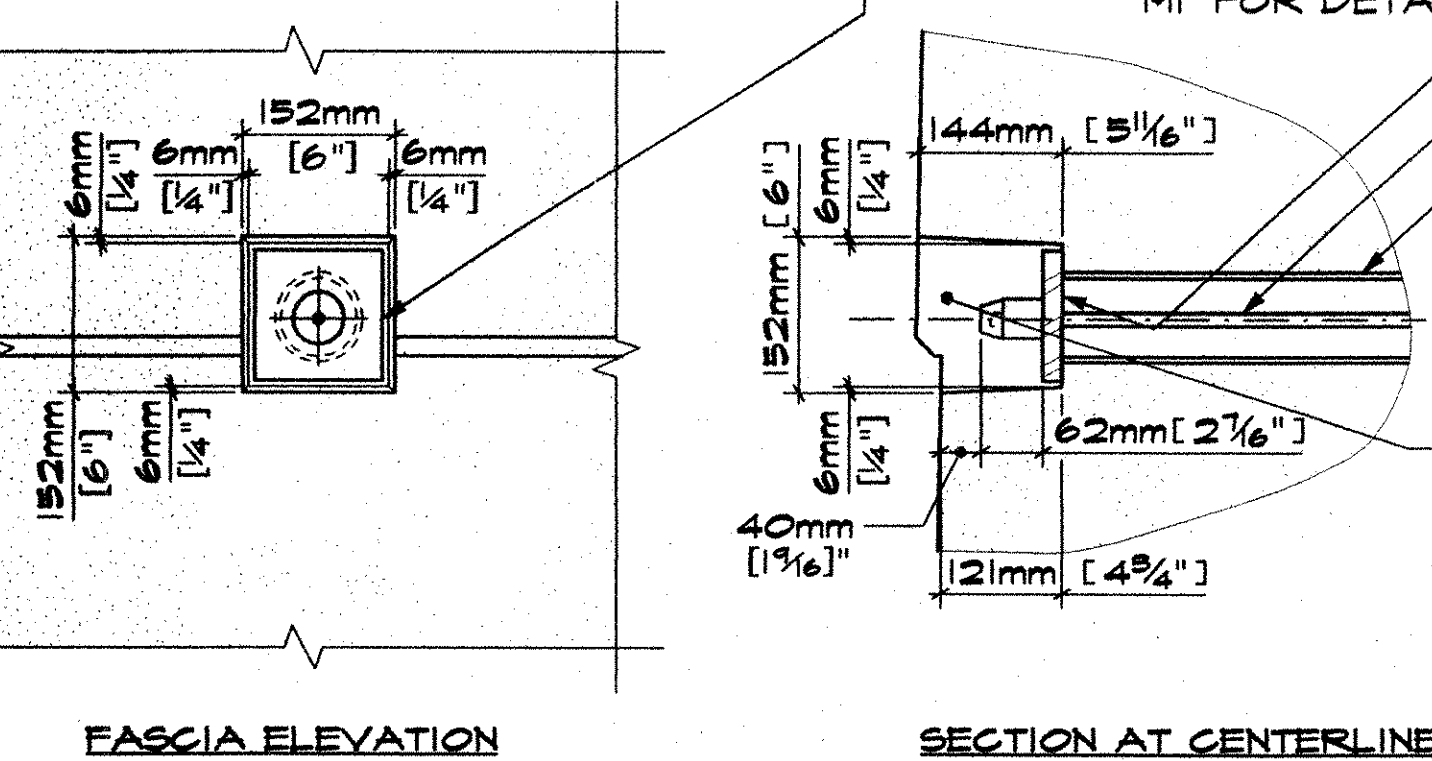
6 SHEAR KEY SECTION @ P.T. SLEEVE
F2 10:1



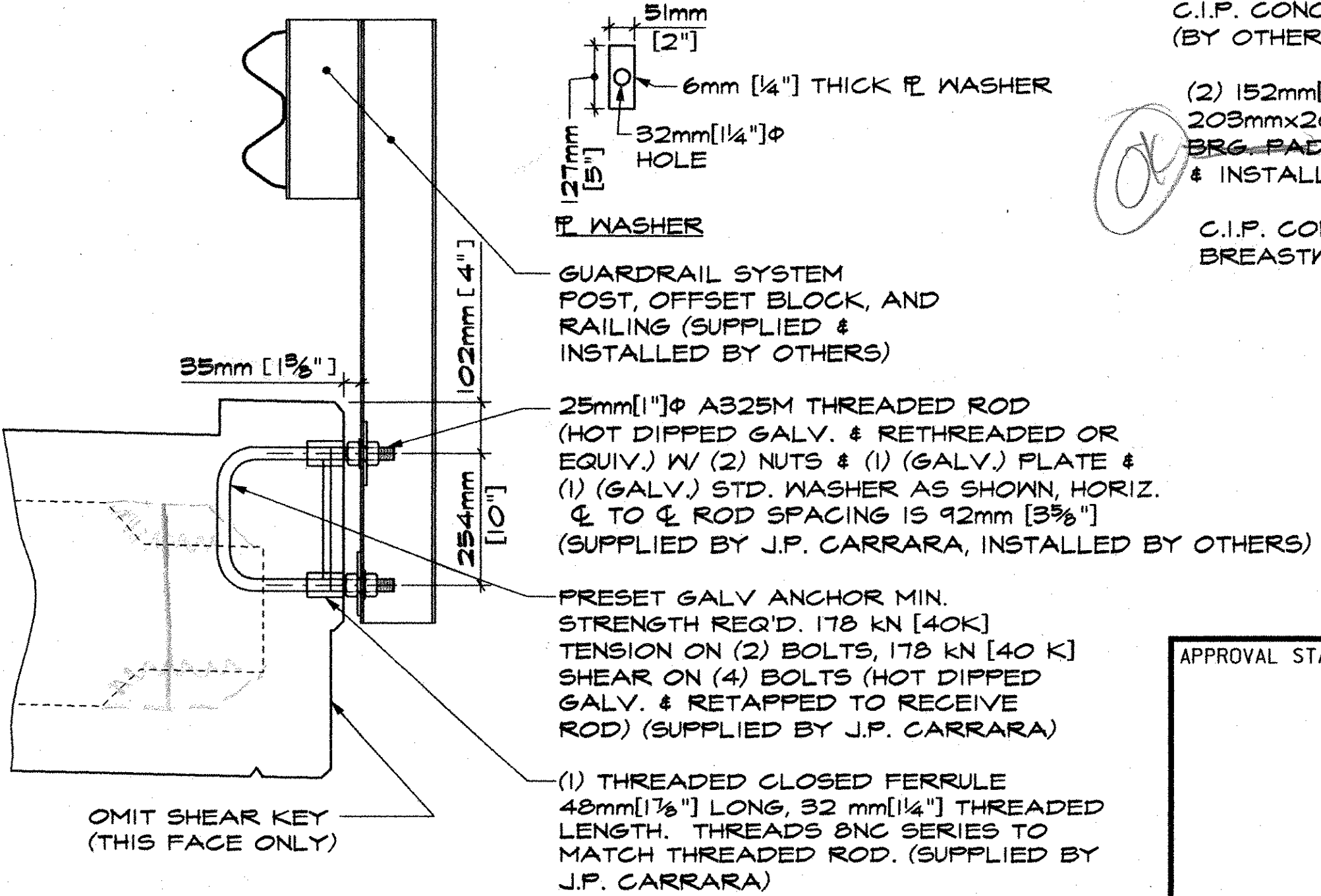
PLAN OF POCKET

EM-1 (19mm [3/4\"/>

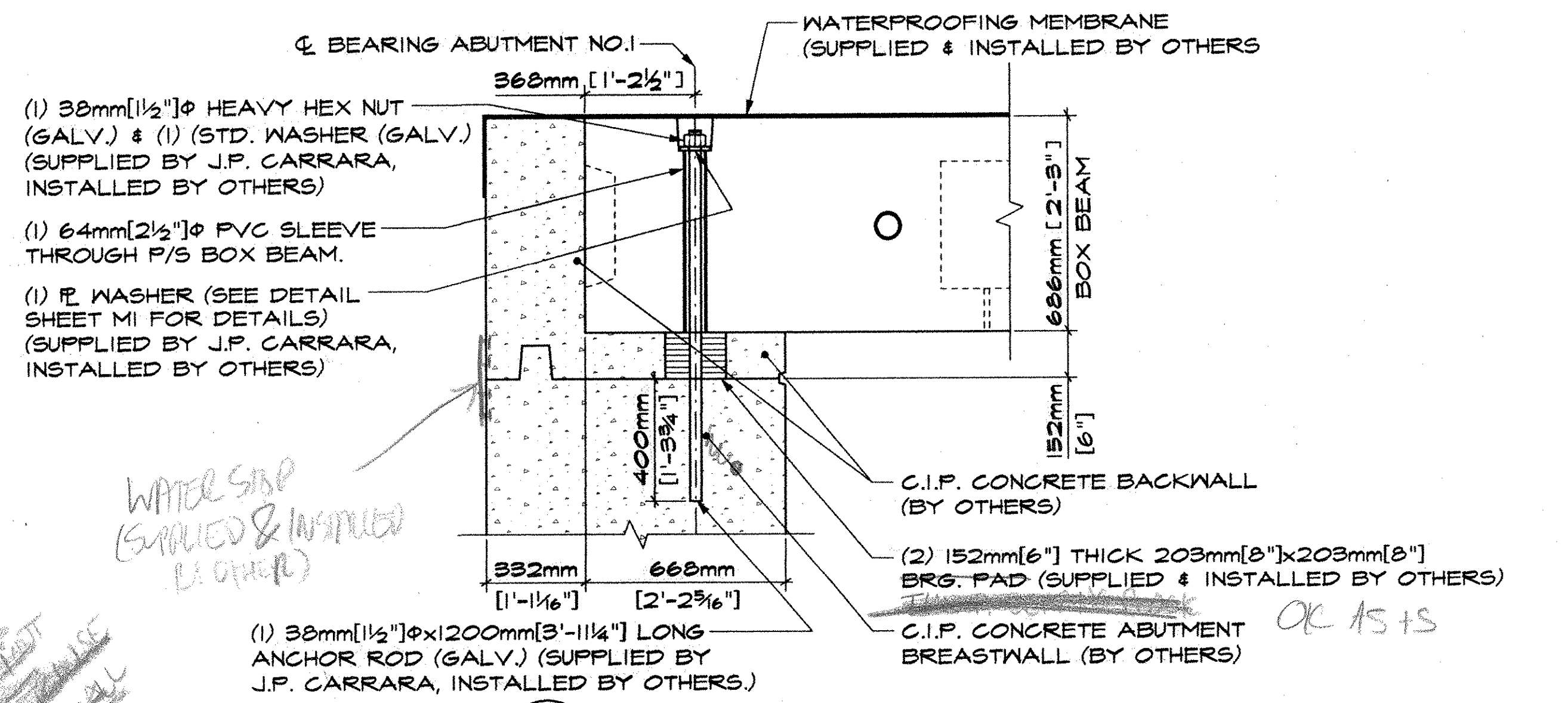
- (1) 3" ϕ HOLE THROUGH F/S BOX BEAM MADE FROM 3" ϕ I.D. PVC (SLEEVE TO REMAIN IN BEAM)
- (1) 1/2" ϕ POLYSTRAND (SUPPLIED & INSTALLED BY J.P. CARRARA)
- (1) EM-1 (SEE SHT 'M1' FOR DETAIL)



A DETAIL "A"
F2 7.5:1



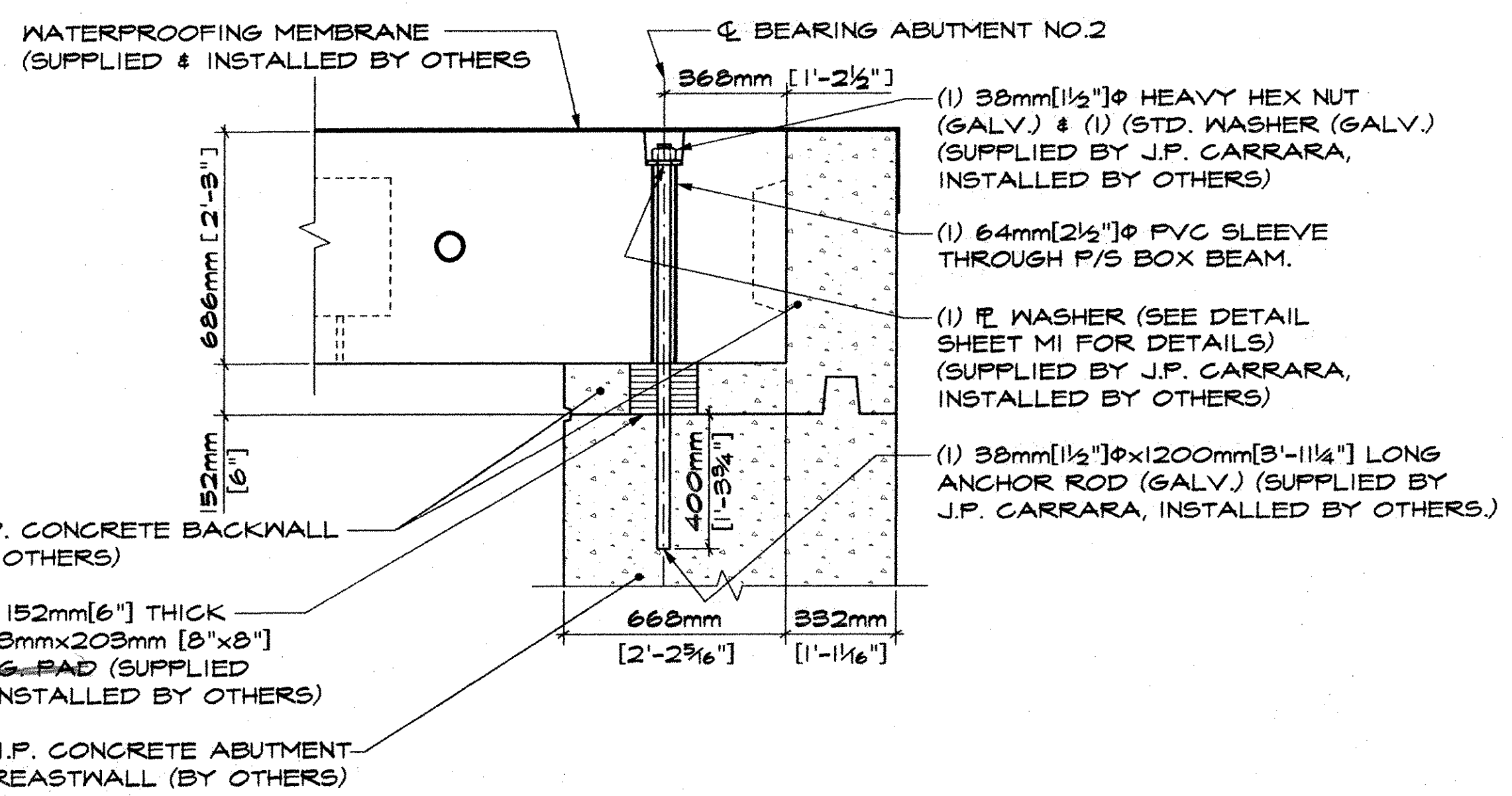
B DETAIL "B"
F2 10:1



3 BEARING SECTION ABUTMENT NO. 1
F2 15:1

- (1) 30mm [1 1/2" ϕ HEAVY HEX NUT (GALV.) & (1) (STD. WASHER (GALV.)) (SUPPLIED BY J.P. CARRARA, INSTALLED BY OTHERS)
- (1) 64mm [2 1/2" ϕ PVC SLEEVE THROUGH F/S BOX BEAM.
- (1) P. WASHER (SEE DETAIL SHEET M1 FOR DETAILS) (SUPPLIED BY J.P. CARRARA, INSTALLED BY OTHERS)

WATER STOP (SUPPLIED & INSTALLED BY OTHERS)



4 BEARING SECTION ABUTMENT NO. 2
F2 15:1

- (1) 30mm [1 1/2" ϕ HEAVY HEX NUT (GALV.) & (1) (STD. WASHER (GALV.)) (SUPPLIED BY J.P. CARRARA, INSTALLED BY OTHERS)
- (1) 64mm [2 1/2" ϕ PVC SLEEVE THROUGH F/S BOX BEAM.
- (1) P. WASHER (SEE DETAIL SHEET M1 FOR DETAILS) (SUPPLIED BY J.P. CARRARA, INSTALLED BY OTHERS)
- (1) 30mm [1 1/2" ϕ x 1200mm [3'-11 1/4" LONG ANCHOR ROD (GALV.) (SUPPLIED BY J.P. CARRARA, INSTALLED BY OTHERS.)

- C.I.P. CONCRETE BACKWALL (BY OTHERS)
- (2) 152mm [6" THICK 203mm x 203mm [8" x 8" BRG. PAD (SUPPLIED & INSTALLED BY OTHERS)
- C.I.P. CONCRETE ABUTMENT-BREASTWALL (BY OTHERS)

APPROVAL STAMP:

RECEIVED
OK'D BY: *OWC*
AUG 04 2006
RESUBMIT APPROVED: *AS NOTED*
BY: DATE: AUG 10 2006

J.P. CARRARA & SONS INC. TREMBLAY CONSTRUCTION, LLC.
Precast & Prestress Manufacturer CONTRACTOR
2464 CASE STR., WOODBURY, VERMONT 05755 Phone: (802) 338-6361 Fax: (802) 338-9010 WASHINGTON, VT.

STATE OF VERMONT A.O.T. COUNTY OF ORLEANS DATE: 7-16-06
SCALE: NOTED

TOWN OF CHARLESTON PROJECT NUMBER BRO-1449(22) TH41, CLASS 2 TOWN HIGHWAY, BRIDGE NO. 16
JOB NO: 23241-06

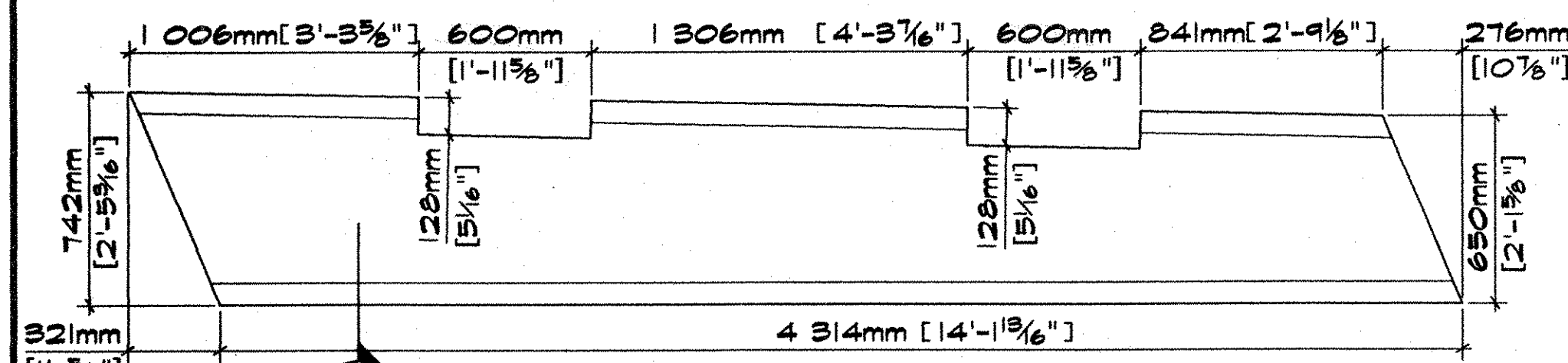
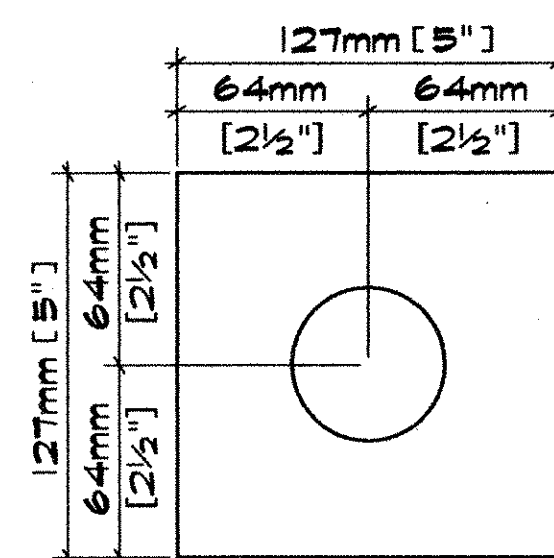
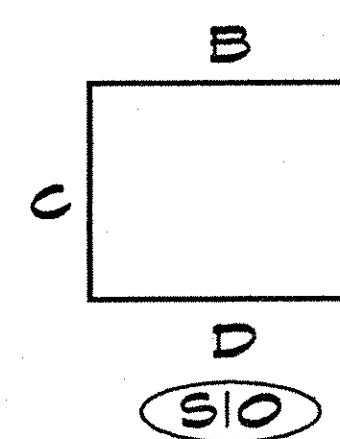
SUPERSTRUCTURE SECTION DWG NO: **F2**

BENT BARS, TIES & STIRRUPS

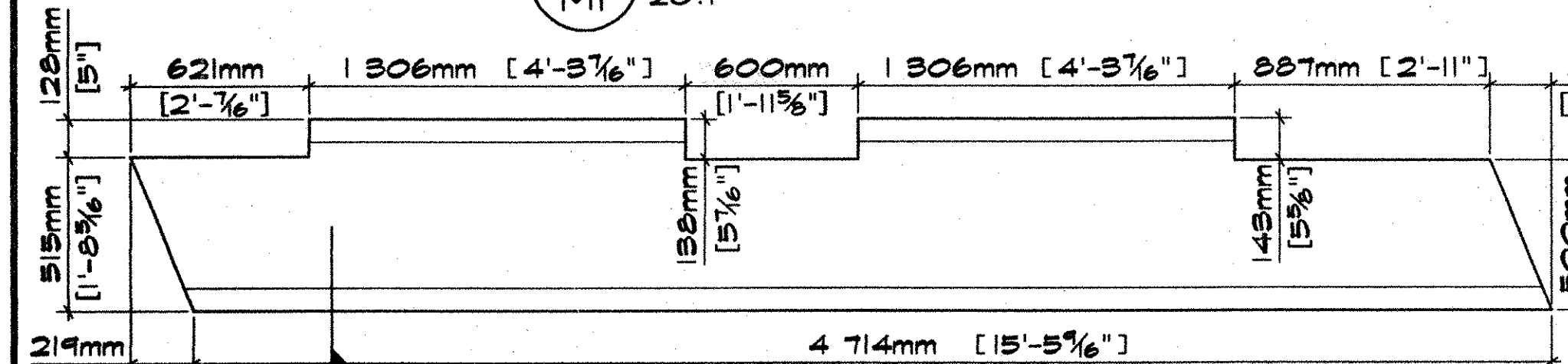
ITEM	MARK	QTY.	SIZE	LENGTH	TYPE	B	C	D	GRADE	REMARKS
1	1301E	12	#13 (#4)	1 470mm [4'-9 1/8"]	SIO	318mm [1'-1/2"]	225mm [2'-10 1/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
2	1302E	12	#13 (#4)	2 034mm [6'-8 1/8"]	SIO	600mm [1'-11 3/8"]	225mm [2'-10 1/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
3	1303E	34	#13 (#4)	1 423mm [4'-8 1/8"]	SIO	318mm [1'-1/2"]	238mm [2'-9"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
4	1304E	34	#13 (#4)	1 987mm [6'-6 1/4"]	SIO	600mm [1'-11 3/8"]	238mm [2'-9"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
5	1305E	16	#13 (#4)	1 576mm [5'-2 1/8"]	SIO	318mm [1'-1/2"]	491mm [3'-3"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
6	1306E	16	#13 (#4)	2 140mm [7'-1/4"]	SIO	600mm [1'-11 3/8"]	491mm [3'-3"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
7	1307E	24	#13 (#4)	2 200mm [7'-2 7/8"]	SIO	318mm [1'-1/2"]	235mm [9 1/4"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
8	1308E	24	#13 (#4)	1 384mm [4'-6 1/2"]	SIO	600mm [1'-11 3/8"]	235mm [9 1/4"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
9	1311E	4	#13 (#4)	1 535mm [5'-1/8"]	SIO	318mm [1'-1/2"]	450mm [3'-1 1/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
10	1312E	4	#13 (#4)	2 099mm [6'-10 5/8"]	SIO	600mm [1'-11 3/8"]	450mm [3'-1 1/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
11	1317E	64	#13 (#4)	1 795mm [5'-10 1/8"]	SIO	318mm [1'-1/2"]	1 210mm [3'-11 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
12	1318E	64	#13 (#4)	2 359mm [7'-9 1/8"]	SIO	600mm [1'-11 3/8"]	1 210mm [3'-11 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
13	1319E	8	#13 (#4)	1 733mm [5'-8 1/4"]	SIO	318mm [1'-1/2"]	1 148mm [3'-9 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
14	1320E	8	#13 (#4)	2 297mm [7'-6 7/8"]	SIO	600mm [1'-11 3/8"]	1 148mm [3'-9 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
15	1323E	192	#13 (#4)	1 712mm [5'-7 1/2"]	SIO	318mm [1'-1/2"]	1 127mm [3'-8 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
16	1324E	192	#13 (#4)	2 276mm [7'-5 3/8"]	SIO	600mm [1'-11 3/8"]	1 127mm [3'-8 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
17	1329E	9	#13 (#4)	1 645mm [5'-4 3/8"]	SIO	318mm [1'-1/2"]	1 060mm [3'-5 3/4"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
18	1330E	9	#13 (#4)	2 209mm [7'-3"]	SIO	600mm [1'-11 3/8"]	1 060mm [3'-5 3/4"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
19	1331E	23	#13 (#4)	1 590mm [5'-2 3/8"]	SIO	318mm [1'-1/2"]	1 005mm [3'-3 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
20	1332E	23	#13 (#4)	2 154mm [7'-1 1/8"]	SIO	600mm [1'-11 3/8"]	1 005mm [3'-3 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
21	1335E	17	#13 (#4)	1 634mm [5'-4 3/8"]	SIO	318mm [1'-1/2"]	1 049mm [3'-5 1/2"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
22	1334E	17	#13 (#4)	2 198mm [7'-2 3/8"]	SIO	600mm [1'-11 3/8"]	1 049mm [3'-5 1/2"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
23	1335E	8	#13 (#4)	1 541mm [5'-1 1/8"]	SIO	318mm [1'-1/2"]	956mm [3'-1 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
24	1336E	8	#13 (#4)	2 105mm [6'-10 3/8"]	SIO	600mm [1'-11 3/8"]	956mm [3'-1 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED
25	1337E	9	#13 (#4)	1 565mm [5'-1 3/8"]	SIO	318mm [1'-1/2"]	980mm [3'-2 3/8"]	318mm [1'-1/2"]	420 [60]	EPOXY COATED
26	1338E	9	#13 (#4)	2 129mm [6'-11 3/8"]	SIO	600mm [1'-11 3/8"]	980mm [3'-2 3/8"]	600mm [1'-11 3/8"]	420 [60]	EPOXY COATED

MISCELLANEOUS MATERIALS

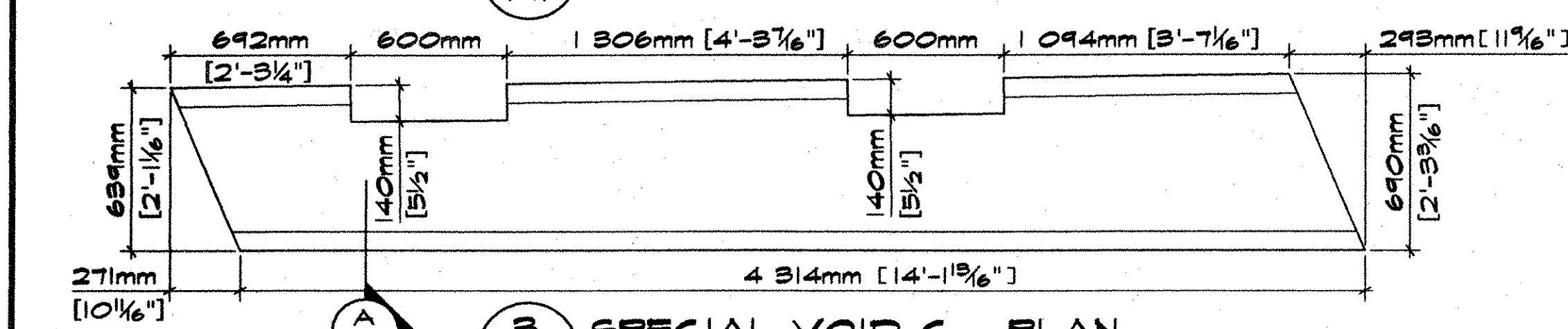
ITEM	MARK	QTY.	DESCRIPTION	
1	EM-1	8	19mm [3/4"] ϕ 127mm x 127mm [5"x5"] GALV. w/ 51mm [2"] ϕ HOLE	FOR ERECTION (SEE DET. THIS SHT.)
2		8	SINGLE USE STRESSING CHUCK	FOR ERECTION
3		4	13mm [1/2"] ϕ POLYSTRANDS x 8534mm [28'-0"]	FOR ERECTION
4		12	38mm [1 1/2"] ϕ x 1190mm [3'-10 3/8"] GALV. ANCHOR ROD	FOR ERECTION (SEE DET. THIS SHT.)
5		12	13mm [1/2"] ϕ 100mm x 100mm [3 15/16" x 3 15/16"] GALV. w/ 41mm [1 5/8"] ϕ HOLE	FOR ERECTION (SEE DET. THIS SHT.)
6		4	935mm [3'-1 1/8"] x 406mm [1'-4"] x 4714mm [15'-5 3/8"] BOX BEAM VOID w/ 397mm [1'-3 3/8"] END SKEW	
7		8	935mm [3'-1 1/8"] x 406mm [1'-4"] x 4314mm [14'-1 1/8"] BOX BEAM VOID w/ 397mm [1'-3 3/8"] END SKEW	
8		1	SPECIAL VOID 'A'	FOR CH-1 (SEE DET. THIS SHT.)
9		1	SPECIAL VOID 'B'	FOR CH-1 (SEE DET. THIS SHT.)
10		1	SPECIAL VOID 'C'	FOR CH-1 (SEE DET. THIS SHT.)
11		1	SPECIAL VOID 'D'	FOR CH-3 (SEE DET. THIS SHT.)
12		1	SPECIAL VOID 'E'	FOR CH-3 (SEE DET. THIS SHT.)
13		1	SPECIAL VOID 'F'	FOR CH-3 (SEE DET. THIS SHT.)
14		36	19mm [3/4"] ϕ x 140mm [5 1/2"] NON-FERROUS VOID DRAIN	
15		24	SET OF DBL 1/2" ϕ STRAND LIFTING LOOPS	
16		36	PRESET GUARDRAIL ANCHORS U-BOLTS	
17		72	48mm [1 7/8"] CLOSED THREADED FERRULE	
18		72	25mm [1"] x 127mm [5"] THREADED ROD	FOR GUARDRAIL ERECTION
19		72	6mm [1/4"] THICK x 51mm [2"] x 127mm [5"] ϕ WASHER w/ 32mm [1 1/4"] ϕ HOLE (GALV.)	FOR GUARDRAIL ERECTION
20		72	25mm [1"] ϕ STD WASHERS (GALV.)	FOR GUARDRAIL ERECTION
21		144	25mm [1"] ϕ HEAVY HEX NUTS (GALV.)	FOR GUARDRAIL ERECTION



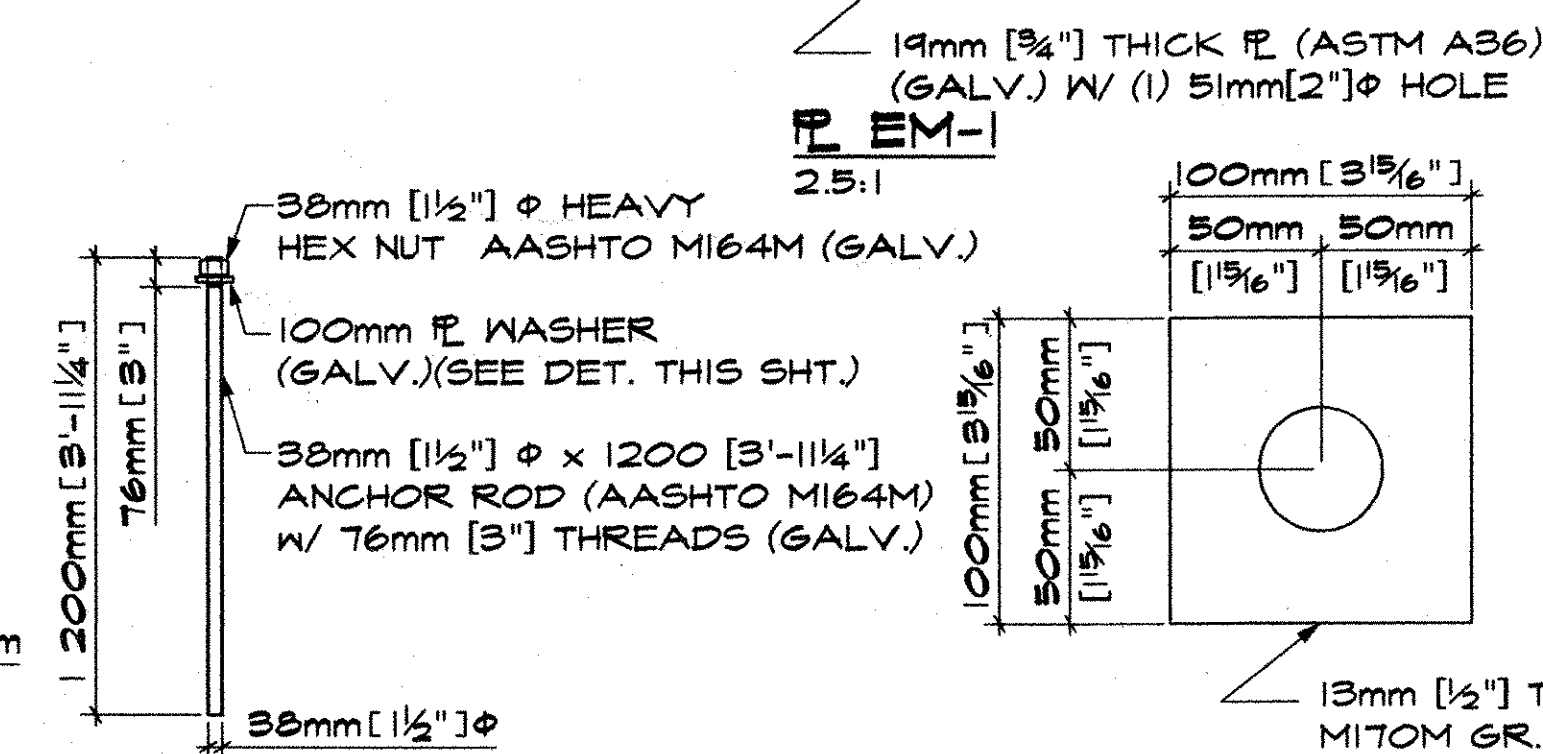
1 SPECIAL VOID A - PLAN
MI 20:1



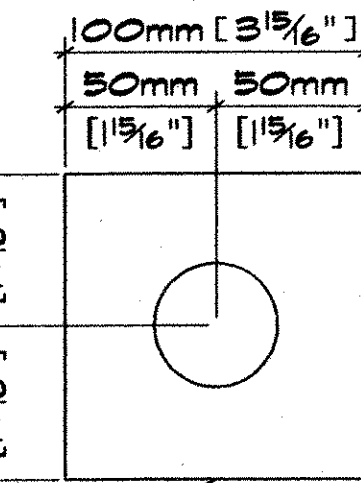
2 SPECIAL VOID B - PLAN
MI 20:1



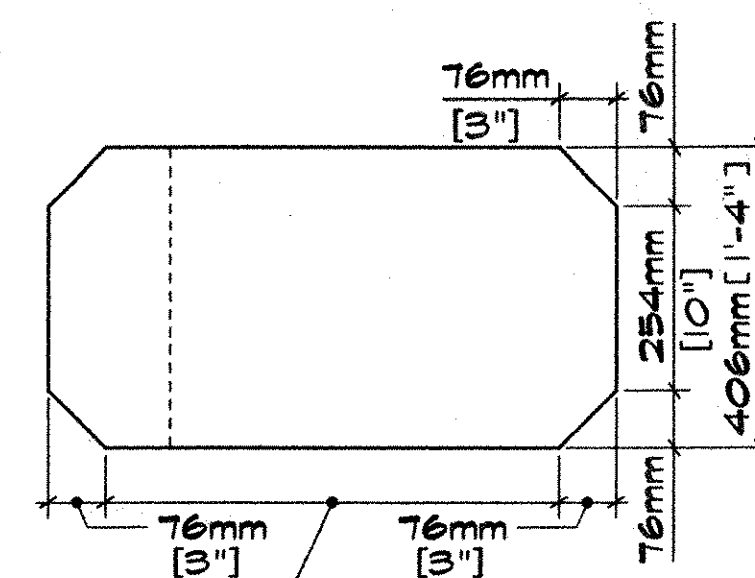
3 SPECIAL VOID C - PLAN
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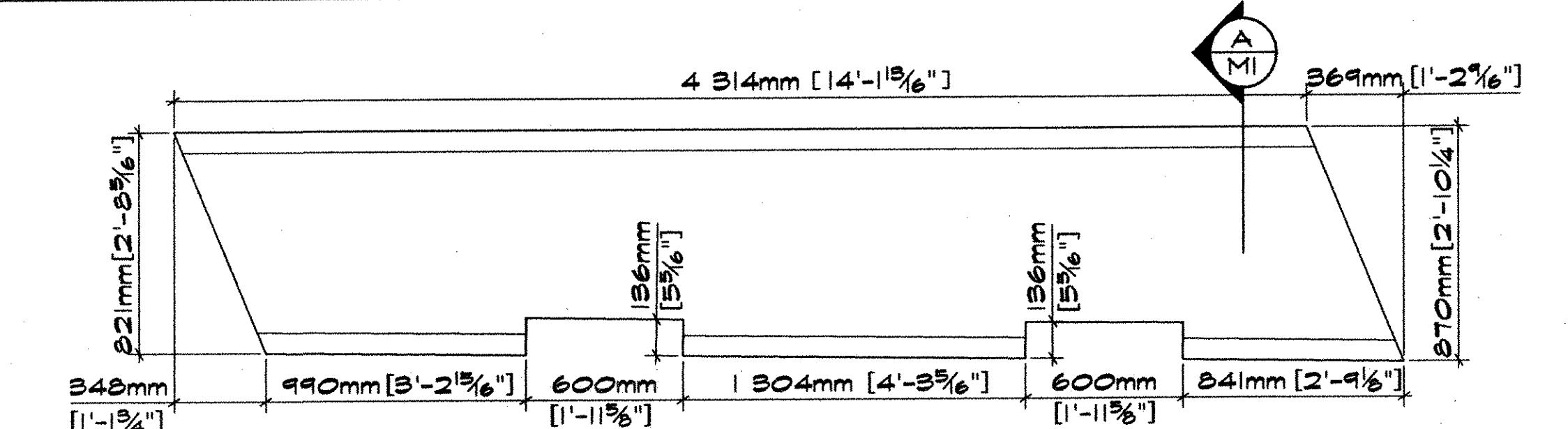
ANCHOR BOLT DETAIL
20:1



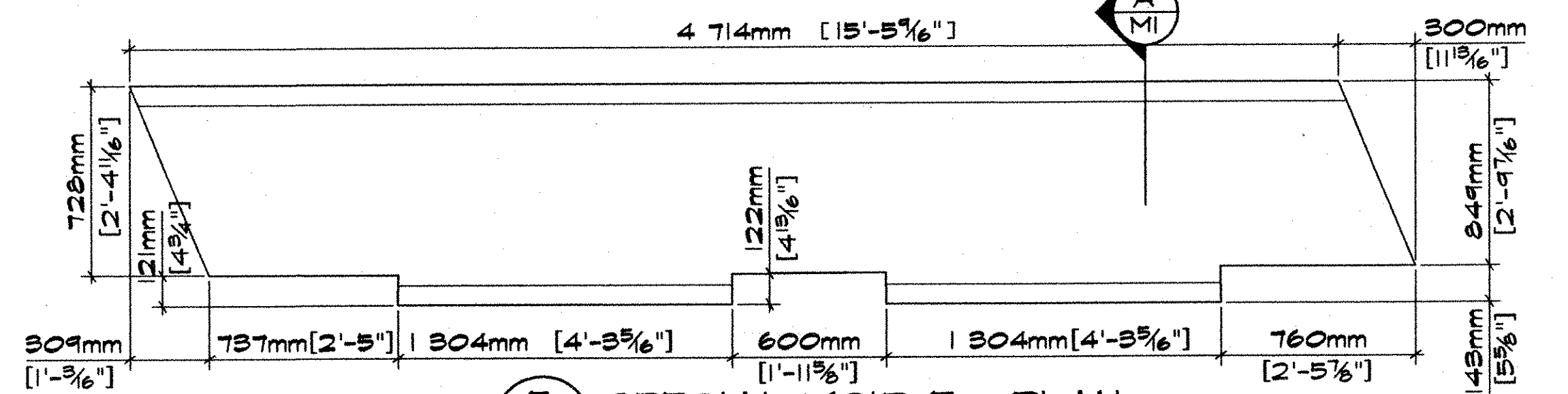
WASHER
2.5:1



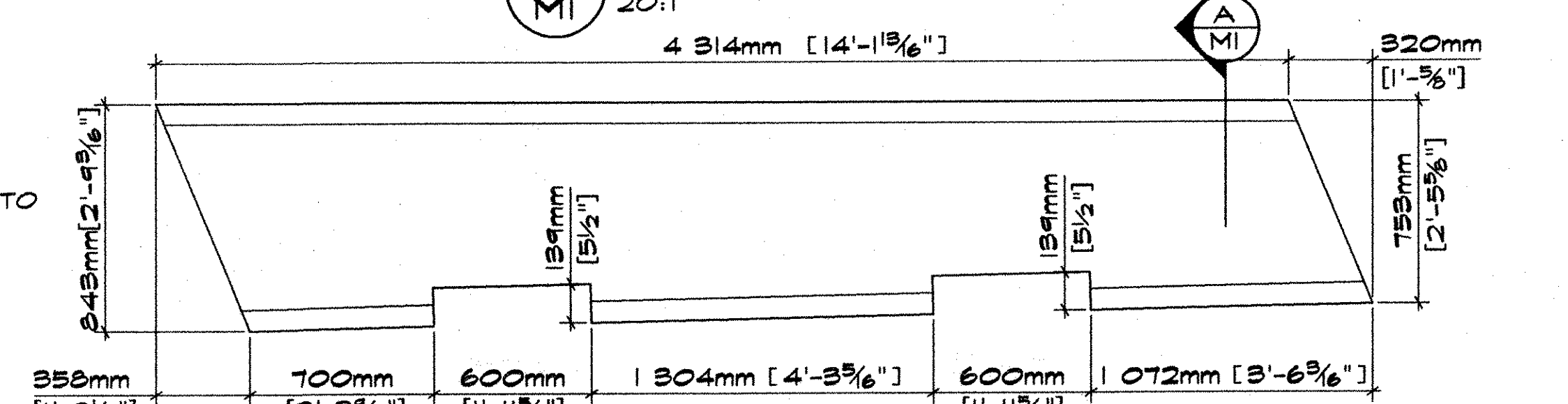
A SPECIAL VOID FOR TYP SECTION
10:1
VOIDS A,B,C,D,E,F



4 SPECIAL VOID D - PLAN
MI 20:1



5 SPECIAL VOID E - PLAN
MI 20:1



6 SPECIAL VOID F - PLAN
MI 20:1

<p>APPROVAL STAMP:</p> <p>RECEIVED</p> <p>CK'D BY: _____ CK'D BY: GWC</p> <p>AUG 04 2006</p> <p>RESUBMIT: _____ APPROVED: X</p> <p>BY: _____ DATE: AUG 10 2006</p>	<p>J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 1064 CASE STR., WOODBURY, VERMONT 05753 Phone: 802-338-6361 Fax: 802-338-9010</p>	<p>TREMBLAY CONSTRUCTION, LLC. CONTRACTOR WASHINGTON, VT.</p>
	<p>STATE OF VERMONT A.O.T. COUNTY OF ORLEANS</p>	<p>DATE: 7-16-06</p> <p>SCALE: NOTED</p>
	<p>TOWN OF CHARLESTON PROJECT NUMBER BRO-1449(22) TH41, CLASS 2 TOWN HIGHWAY, BRIDGE NO. 16</p>	<p>CHKD: _____ DFTM: ETC</p> <p>JOB NO: 23241-06</p>
	<p>MATERIAL LIST</p>	